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**A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE  
PROPOSED VANDYKSDRIFT CENTRAL (VDDC) MINING AND  
INFRASTRUCTURAL DEVELOPMENT IN THE MPUMALANGA  
PROVINCE**

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## **EXECUTIVE SUMMARY**

A Phase I Heritage Impact Assessment (HIA) study as required in terms of Section 38 of the National Heritage Resources Act (Act No 25 of 1999) was done for the proposed Vandyksdrift Central (VDDC) mining infrastructural development project (VDDC Project) on the Eastern Highveld in the Mpumalanga Province of South Africa. The aims with the heritage survey and impact assessment for the VDDC Project were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999) (NHRA) do occur in the project area.
- To establish the significance of the heritage resources in the project area and the level of significance of any possible impact on any of these heritage resources.
- To propose mitigation measures for those types and ranges of heritage resources that may be affected by the proposed VDDC Project.

The heritage survey revealed that the following heritage resources as outlined in Section 38 of the NHRA still occur in the project area, namely:

- Historical structures consisting of rail infrastructure and pump stations.
- Two graveyards.

The heritage resources were geo-referenced and mapped; their significance is indicated whilst the significance of the impact of the development on these remains is also outlined.

### **THE SIGNIFICANCE OF THE HERITAGE RESOURCES**

#### **The significance of the historical remains**

The historical structures comprise remains which are older than sixty years or which are approaching this age and which therefore are protected by the NHRA.

The historical remains are rated as of medium significance. This rating is based on the use of two rating (grading) schemes, namely:

- A scheme of criteria which outlines places and objects as part of the national estate as they have cultural-historical significance or other special value (outlined in Section 3 of the NHRA).
- A field rating scheme according to which heritage resources are graded in three tiers (levels) of significance based on the regional occurrence of heritage resources (Section 7 of the NHRA).

### **The significance of the graveyards**

All graveyards and graves can be considered to be of high significance and are protected by various laws. Legislation with regard to graves includes Section 36 of the NHRA in instances where graves are older than sixty years. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended). Municipal laws with regard to graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must adhere to these laws.

### **Possible impact on the heritage resources**

According to the layout plan for the VDDC Project the following can be noted:

- The historical structures consisting of pump stations and a railway siding will not be affected by the proposed VDDC Project.
- GY02 will be affected by the section of the opencast pit that has not been authorised (Figure 9).

## **THE SIGNIFICANCE OF THE IMPACT ON THE HERITAGE RESOURCES**

### **The significance of the impact on the historical remains**

None of the historical remains will be affected by the proposed VDDC Project. The significance of the impact on these remains therefore is very low.

## **The significance of the impact on the graveyards**

GY01 will not be affected by the VDDC Project. The significance of the impact on GY01 therefore is very low and will remain very low if management measures as outlined in the report are implemented.

GY02 will be affected by open cast mining activities. The significance of the impact on GY02 therefore is very high, but will be low if mitigation measures as outlined in the report be implemented.

### **Mitigating the graveyard (GY02) that will be affected**

GY02 must be exhumed and relocated. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police. Municipal laws with regard to graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must adhere to these laws.

### **Managing the graveyard (GY01) that remains unaffected**

GY01 in the VDDC project area must be managed in order to ensure its future unaffected existence in the project area, namely:

- The graveyard must be demarcated with a fence or with walls and should be fitted with an access gate. Relatives of the deceased must be located by means of social consultation and to obtain permission for fencing or walling the cemetery.

- Regulated visitor hours must be implemented that is compatible with safety rules. This will not be necessary if the graveyard is located next to a public or national road which can provide direct access to the graveyard.
- Corridors of at least 100 m should be maintained between the graveyard's border fences and any developmental components such as roads or other infrastructure that may be developed in the future. This buffer zone must be maintained at all times.
- The graveyard should be inspected every three months. Inspections should be noted in an inspection register. The register should outline the state of the graveyard during each inspection. Reports on damages to any of the graves or to the graveyards (fences, walls, gates) should be followed with the necessary maintenance work. Maintenance work should be recorded in the inspection register.
- The graveyards should be kept tidy from any invader weeds and any other refuse.

### **Chance-find procedures**

Chance-find Procedures are applicable during the construction, operation or closure phases of the VDDC Project and apply to all contractors, subcontractors, subsidiaries or service providers. If any of these institutions' employees find any heritage resources during any developmental activity all work at the site must be stopped and kept on hold. Chance finds must be reported to supervisors and through supervisors to the senior manager on site. Chance find procedures for heritage resources and graveyards are outlined in the report.

### *General (disclaimer)*

It is possible that this Phase I HIA study may have missed heritage resources in the Project Area. If any heritage resources of significance is exposed during the coal mining 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 notify 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.

## **ACRONYMS AND ABBREVIATIONS**

ASAPA	Association of South African Professional Archaeologists
BP	Before Present
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIA	Early Iron Age
EMPr	Environmental Management Programme
EMPR	Environmental Management Programme Report
ESA	Early Stone Age
GPS	Global Positioning System
GY	Graveyard
HIA	Heritage Impact Assessment
LIA	Late Iron Age
LSA	Late Stone Age
MIA	Middle Iron Age
MPRDA	Mineral and Petroleum Resources Development Act, Act No 28 of 2002
MSA	Middle Stone Age
NEMA	National Environmental Management Act, Act No 107 of 1998
NEM:WA	National Environmental Management: Waste Act, Act No 59 of 2008
NHRA	National Heritage Resources Act, Act No 25 of 1999
No	Number
NWA	National Water Act, Act No 36 of 1998
PHRA	Provincial Heritage Resource Agency
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
South32	South32 SA Coal Holdings (Pty) Ltd
ToR	Terms of Reference
VDDC	Vandyksdrift Central
WUL	Water use licence

## TERMINOLOGY

Terms that may be used in this report are briefly outlined below:

- **Conservation:** The act of maintaining all or part of a resource (whether renewable or non-renewable) in its present condition in order to provide for its continued or future use. Conservation includes sustainable use, protection, maintenance, rehabilitation, restoration and enhancement of the natural and cultural environment.
- **Cultural resource management:** A process that consists of a range of interventions and provides a framework for informed and value-based decision-making. It integrates professional, technical and administrative functions and interventions that impact on cultural resources. Activities include planning, policy development, monitoring and assessment, auditing, implementation, maintenance, communication, and many others. All these activities are (or will be) based on sound research.
- **Cultural resources:** A broad, generic term covering any physical, natural and spiritual properties and features adapted, used and created by humans in the past and present. Cultural resources are the result of continuing human cultural activity and embody a range of community values and meanings. These resources are non-renewable and finite. Cultural resources include traditional systems of cultural practice, belief or social interaction. They can be, but are not necessarily identified with defined locations.
- **Heritage resources:** The various natural and cultural assets that collectively form the heritage. These assets are also known as cultural and natural resources. Heritage resources (cultural 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.
- **In-Situ Conservation:** The conservation and maintenance of ecosystems, natural habitats and cultural resources in their natural and original surroundings.

- 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 16<sup>th</sup> century and the 19<sup>th</sup> century and can therefore include the Historical Period.
- Maintenance: Keeping something in good health or repair.
- Pre-historical: 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 here from the 1840's onwards.
- Preservation: Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.
- Recent past: Refers to the 20<sup>th</sup> 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, however, may be close to sixty years of age and may, in the near future, qualify as heritage resources.
- Protected area: A geographically defined area designated and managed to achieve specific conservation objectives. Protected areas are dedicated primarily to the protection and enjoyment of natural or cultural heritage, to the maintenance of biodiversity, and to the maintenance of life-support systems. Various types of protected areas occur in South Africa.
- Reconstruction: Re-erecting a structure on its original site using original components.
- Replication: The act or process of reproducing by new construction the exact form and detail of a vanished building, structure, object, or a part thereof, as it appeared at a specific period.
- Restoration: Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components.



- Stone Age: Refers to the prehistoric past, although Late Stone Age people 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).
- Sustainability: The ability of an activity to continue indefinitely, at current and projected levels, without depleting social, financial, physical and other resources required to produce the expected benefits.
- Translocation: Dismantling a structure and re-erecting it on a new site using original components.
- Project Area: refers to the area (footprint) where the developer wants to focus its development activities.
- Phase I studies refer to surveys using various sources of data in order to establish the presence of all possible types and ranges of heritage resources in any given Project Area (excluding paleontological remains as these studies are done by registered and accredited palaeontologists).
- 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 human remains and the relocation of graveyards, etc. Phase II work involves permitting processes, requires the input of different specialists and the co-operation and approval of the SAHRA.

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# **1 INTRODUCTION**

## **1.1 Background and context**

Jones & Wagener Engineering and Environmental Consultants (J&W) was appointed by South32 SA Coal Holdings Pty Ltd (South32) as an independent Environmental Assessment Practitioner (EAP) to undertake an Integrated Regulatory Process to obtain the required approvals/authorisations for the proposed infrastructure and mining development at the Vandyksdrift Central (VDDC) section of the Wolvekrans Colliery.

The environmental applications foreseen include:

- Application for an Environmental Authorisation (EA) through a Scoping and Environmental Impact Assessment Report (S&EIAR) process and the compilation of an Environmental Management Programme (EMPr) in terms of the National Environmental Management Act, 1998 (Act No 107 of 1998; NEMA) and its 2014 Regulations, as amended in 2017;
- Waste Management Licence Application in terms of the National Environmental Management: Waste Act, 2008 (Act No 59 of 2008; NEM:WA); and
- Integrated Water Use Licence Application in terms of the National Water Act, 1998 (Act No 36 of 1998; NWA), including an Integrated Water and Waste Management Plan.

This Phase I Heritage Impact Assessment (HIA) study undertaken in terms of Section 38 of the National Heritage Resources Act, 1999 (Act No 25 of 1999, NHRA) is part of this process.

## **1.2 Aims with this report**

This study comprises a heritage survey and a HIA study for the VDDC Project. The aims with the heritage survey and impact assessment for the VDDC project area were the following:

- To establish whether any of the types and ranges of heritage resources as outlined in Section 38 of the NHRA do occur in the project area.
- To establish the significance of the heritage resources in the project area and the level of significance of any possible impact on any of these heritage resources.
- To propose mitigation measures for those types and ranges of heritage resources that may be affected by the proposed VDDC Project.

### **1.3 Assumptions and limitations**

The findings, observations, conclusions and recommendations reached in this report are based on the author's best scientific and professional knowledge, available information and his ability to keep up with the physical and other comprehensive challenges that the project commanded. The author has a good understanding of the types and ranges of heritage resources that occur on the Eastern Highveld as he was involved in several heritage impact assessment studies in the area during the last fifteen years (See Part 12, 'Bibliography relating to earlier heritage studies').

The report's findings are based on accepted archaeological survey and assessment techniques and methodologies.

Areas that were not covered on foot comprise current and older abandoned mining areas as well as unaltered pieces of land which seem to have been utilized for agricultural activities in the past. The project area was also surveyed on at least two known occasions in the past when HIAs were done by heritage specialists.

The author reserves the right to modify aspects of the report including the recommendations if and when new information becomes available particularly if this information may have an influence on the reports final results and recommendations.

The heritage survey may have missed heritage resources as heritage sites may occur in tall grass or thick clumps of vegetation whilst others may be located below the surface of the earth and may only be exposed once development commences.

It is also possible that heritage resources may simply have been missed as a result of human failure either to observe or to recognise them as such.

## 2 DETAILS OF THE SPECIALIST

**Profession:** Archaeologist, Museologist (Museum Scientists), Lecturer, Heritage Guide Trainer and Heritage Consultant

**Qualifications:**

BA (Archaeology, Anthropology and Psychology) (UP, 1976)

BA (Hons) Archaeology (distinction) (UP, 1979)

MA Archaeology (distinction) (UP, 1985)

D Phil Archaeology (UP, 1989)

Post Graduate Diploma in Museology (Museum Sciences) (UP, 1981)

**Work experience:**

Museum curator and archaeologist for the Rustenburg and Phalaborwa Town Councils (1980-1984)

Head of the Department of Archaeology, National Cultural History Museum in Pretoria (1988-1989)

Lecturer and Senior lecturer Department of Anthropology and Archaeology, University of Pretoria (1990-2003)

Independent Archaeologist and Heritage Consultant (2003-)

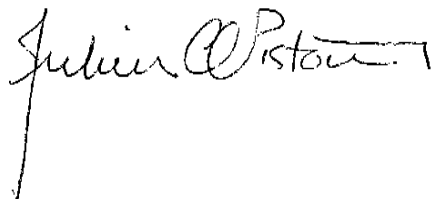
**Accreditation:** Member of the Association for Southern African Professional Archaeologists. (ASAPA)

**Summary:** Julius Pistorius is a qualified archaeologist and heritage specialist with extensive experience as a university lecturer, museum scientist, researcher and heritage consultant. His research focussed on the Late Iron Age Tswana and Lowveld-Sotho (particularly the Bamalatji of Phalaborwa). He has published a book on early Tswana settlement in the North-West Province and has completed an unpublished manuscript on the rise of Bamalatji metal workings spheres in Phalaborwa during the last 1 200 years. He has excavated more than twenty LIA settlements in North-West and twelve IA settlements in the Lowveld and has mapped hundreds of stone walled sites in the North-West. He has written a guide for Eskom's field personnel on heritage management. He has published twenty scientific papers in academic journals and several popular articles on archaeology and heritage matters. He collaborated with environmental companies in compiling State of the Environmental Reports for Ekurhuleni, Hartebeespoort and heritage management plans for the Magaliesberg and Waterberg. Since acting as an independent consultant he has done approximately 800 large to small heritage impact assessment reports. He has a longstanding working relationship with Eskom, Rio Tinto (PMC), Rio Tinto (EXP), Impala Platinum, Angloplats (Rustenburg), Lonmin, Sasol, PMC, Foskor, Kudu and Kelgran Granite, Bafokeng Royal Resources, Pilanesberg Platinum Mine (PPM) etc. as well as with several environmental companies.

### 3 DECLARATION OF INDEPENDENCE

I, Dr Julius CC Pistorius declare the following:

- I act as an independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even, if this result in views and findings that are not favourable for the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialists report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the applications;
- I will comply with the Act, Regulations and other applicable legislation;
- I will consider, to the extent possible, the matters listed in Regulation 13;
- I understand to disclose to the applicant and the competent authority all material information in my possession
- All the particulars furnished by me in this form are true and correct that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority; and
- I realise that a false declaration is offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



1 July 2019

## **4 LEGAL FRAMEWORK**

South Africa's heritage resources ('national estate') are protected by international, national, provincial and local legislation which provides regulations, policies and guidelines for the protection, management, promotion and utilization of heritage resources. South Africa's 'national estate' includes a wide range of various types of heritage resources as outlined in Section 3 of the NHRA (see Box 1).

At a national level, heritage resources are dealt with by the National Heritage Council Act (Act No 11 of 1999) and the NHRA. According to the NHRA, heritage resources are categorized using a three-tier system, namely Grade I (national), Grade II (provincial) and Grade III (local) heritage resources.

At the provincial level, heritage legislation is implemented by Provincial Heritage Resources Agencies (PHRA's) which apply the NHRA together with provincial government guidelines and strategic frameworks. Metropolitan or Municipal (local) policy regarding the protection of cultural heritage resources is also linked to national and provincial acts and is implemented by the SAHRA and the PHRA's.

### **4.1 Legislation relevant to heritage resources**

Legislation relevant to South Africa's national estate includes the following:

- National Environmental Management Act (NEMA), Act No 107 of 1998
- Mineral and Petroleum Resources Development Act (MPRDA), Act No 28 of 2002
- National Heritage Resources Act (NHRA), Act No 25 of 1999.



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

The National Heritage Resources Act (Act No 25 of 1999, Art 3) outlines the following types and ranges of heritage resources that qualify as part of the National Estate, namely:

- (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 by in terms of the Human Tissues Act, 1983 (Act No 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) movable objects, including -
  - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and 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, 1996 (Act No 43 of 1996).

The National Heritage Resources Act (Act No 25 of 1999, Art 3) also distinguishes nine criteria for places and objects 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;
- (a) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- (b) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (c) 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)
- (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;
- (i) sites of significance relating to the history of slavery in South Africa

### **4.1.1 NEMA**

The NEMA stipulates under Section 2(4)(a) that sustainable development requires the consideration of all relevant factors including (iii) the disturbance of landscapes and sites that constitute the nation's cultural heritage must be avoided, or where it cannot be altogether avoided, is minimised and remedied. Heritage assessments are implemented in terms of the NEMA Section 24 in order to give effect to the general objectives. Procedures considering heritage resource management in terms of the NEMA are summarised under Section 24(4) as amended. In addition to the NEMA, the National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003) may also be applicable. This act applies to protected areas and world heritage sites, declared as such in terms of the World Heritage Convention Act, 1999 (Act No 49 of 1999).

### **4.1.2 MPRDA**

The MPRDA stipulates under Section 5(4) no person may prospect for or remove, mine, conduct technical co-operation operations, reconnaissance operations, explore for and produce any mineral or petroleum or commence with any work incidental thereto on any area without (a) an approved environmental management programme or approved environmental management plan, as the case may be.

### **4.1.3 NHRA**

According to Section 3 of the NHRA the 'national estate' comprises a wide range and various types of heritage resources (see Box 1).

#### **4.1.3.1 Heritage Impact Assessment studies**

According to Section 38 of the NHRA, a HIA process must be followed under the following circumstances:

- The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length

- The construction of a bridge or similar structure exceeding 50m in length
- Any development or activity that will change the character of a site and which exceeds 5 000m<sup>2</sup> or which involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m<sup>2</sup>
- Any other category provided for in the regulations of SAHRA, a provincial or local heritage authority or any other legislation such as NEMA, MPRDA, etc.

#### **4.1.3.2 Section 34 (Buildings and structures)**

Section 34 of the NHRA provides for general protection of structures older than 60 years. According to Section 34(1) no person may alter (demolish) any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

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

Alter means any action which affects the structure, appearance or physical properties of a place or object, whether by way of structural or any other works such as painting, plastering, decorating, etc..

Most importantly, Section 34(1) clearly states that no structure or part thereof may be altered or demolished without a permit issued by the relevant PHRA. These permits will not be granted without a HIA being completed. A destruction permit will thus be required before any removal and/or demolition may take place, unless exempted by the PHRA according to Section 34(2) of the NHRA.

#### **4.1.3.3 Section 35 (Archaeological and palaeontological resources and meteorites)**

Section 35 of the NHRA provides for the general protection of archaeological and palaeontological resources, and meteorites. In the event that archaeological resources are discovered during the course of development, Section 38(3) specifically requires that the discovery must immediately be reported to the PHRA, or local authority or museum who must notify the PHRA. Furthermore, no person without permits issued by the responsible heritage resources authority may:

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

Heritage resources may only be disturbed or moved by an archaeologist after being issued with a permit received from SAHRA. In order to demolish heritage resources the developer has to acquire a destruction permit by from SAHRA.

#### **4.1.3.4 Section 36 (Burial grounds and graves)**

Section 36 of the NHRA allows for the general protection of burial grounds and graves. Should burial grounds or graves be found during the course of development, Section 36(6) stipulates that such activities must immediately cease and the discovery reported to the responsible heritage resources authority and the South African Police

Service (SAPS). Section 36 also stipulates that no person without a permit issued by the relevant heritage resources authority may:

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves
- (b) destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- 9(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.

Section 36 of the NHRA divides graves and burial grounds into the following categories:

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

Human remains less than 60 years old are subject to provisions of the National Health Act, 2003 (Act No 61 of 2003), Ordinance 12 of 1980 (Exhumation Ordinance) and Ordinance No 7 of 1925 (Graves and dead bodies Ordinance, repealed by Mpumalanga). Municipal bylaws with regard to graves and graveyards may differ. Professionals involved with the exhumation and relocation of graves and graveyards must establish whether such bylaws exist and must adhere to these laws.

Unidentified graves are handled as if they are older than 60 years until proven otherwise.

Permission for the exhumation and relocation of graves older than sixty years must also be gained from descendants of the deceased (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 No 65 of 1983 as amended).

#### **4.1.3.5 Section 37 (Public monuments and memorials)**

Section 37 makes provision for the protection of all public monuments and memorials in the same manner as places which are entered in a heritage register referred to in Section 30 of the NHRA.

#### **4.1.3.6 Section 38 (Heritage Resource Management)**

Section 38 (8): The provisions of this section do not apply to a development as described in Section 38 (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No 50 of 1991), or any other legislation. Section 38(8) ensures cooperative governance between all responsible authorities through ensuring that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of Subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

The Listed Activities in terms of the Government Notice Regulations (GNRs) stipulated under NEMA for which EA will be applied for, will trigger a HIA as contemplated in Section 38(1) above as follows:

#### 4.2. NEMA Appendix 6 requirements

NEMA Regulations, 2014 (as amended 2017) - Appendix 6	Relevant section in report
Details of the specialist who prepared the report and the expertise of that person to compile a specialist report including a curriculum vitae	Part 2. Details of the specialist
A declaration that the person is independent in a form as may be specified by the competent authority	Part 3. Declaration of independence
An indication of the scope of, and the purpose for which the report was prepared	Part 1. Introduction
An indication of the quality and age of base data used for the specialist report	Part 8. Approach and Methodology
The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Part 8. Approach and Methodology Part 8.1. Field survey
A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Part 8. Approach and Methodology
Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives	Part 9. Heritage survey
An identification of any areas to be avoided, including buffers	Part 9.2 Possible impact on heritage resources
A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 9
A description of any assumptions made and any uncertainties or gaps in knowledge;	Part 1.3. Assumptions and limitations
A description of the findings and potential implications of such findings on the impact of	Part 10 Conclusion and recommendations

<b>NEMA Regulations, 2014 (as amended 2017) - Appendix 6</b>	<b>Relevant section in report</b>
the proposed activity, including identified alternatives, on the environment	
Any mitigation measures for inclusion in the EMPr	Part 9.4 Mitigating the graveyard (GY02) that will be affected
Any conditions for inclusion in the environmental authorisation	Part 9.5 Chance-find procedures
Any monitoring requirements for inclusion in the EMPr or environmental authorisation	Part 9.4 Managing the graveyard (GY01) that remain unaffected
<p>A reasoned opinion –</p> <ul style="list-style-type: none"> <li>• whether the proposed activity, activities or portions thereof should be authorised;</li> <li>• regarding the acceptability of the proposed activity or activities; and</li> </ul> <p>if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr.</p>	<p>Part 10 Conclusion and recommendations</p> <p>Part 9.5 Chance-find procedures</p>
A description of any consultation process that was undertaken during the course of preparing the specialist report	Part 7.4 Consultation process undertaken and comments received from stakeholders
A summary and copies if any comments that were received during any consultation process	Part 7.4 Consultation process undertaken and comments received from stakeholders
Any other information requested by the competent authority.	None



## **5 THE VANDYKSDRIFT CENTRAL (VDDC) PROJECT**

### **5.1 Location**

The VDDC infrastructure development project is a brownfields project within the greater Wolvekrans Colliery mining right area. Wolvekrans Colliery is located between the towns of eMalahleni and Kriel, within the jurisdictional area of the eMalahleni Local Municipality and the Nkangala District Municipality of the Mpumalanga Province. The mine is situated approximately 30 km south-east of the town of eMalahleni, in close proximity to the Duvha Power Station. VDDC is located on the western boundary of Wolvekrans Colliery. The Olifants River determines the southern boundary. The proposed infrastructure development will take place on the farms Kleinkopje 15 IS, VanDyksdrift 19 IS, Wolvekrans 17 IS and Steenkoolspruit 18 IS. (2629AB Van Dyksdrift [1:50 000]; 2628 East Rand [1: 250 000]) (Figure 1).

### **5.2 The nature of the VDDC project area**

The VDDC Project is part of the undulating landscape of the southerly districts of the Mpumalanga Province and is wedged between the Olifants River that runs along the western perimeter of the mine complex and the R544 which demarcated its eastern boundary. It has been subjected to underground and open cast coal mining for many decades and as such represents a brown fields area with low cultural and historical significance.

The larger part of the project area today is covered with mining related activities whilst open veld in most instances comprise former agricultural fields. Few trees occur in the study area, the majority of which are blue gum trees and wattles. Groves with poplar trees have encroached on the banks of the Olifants River.

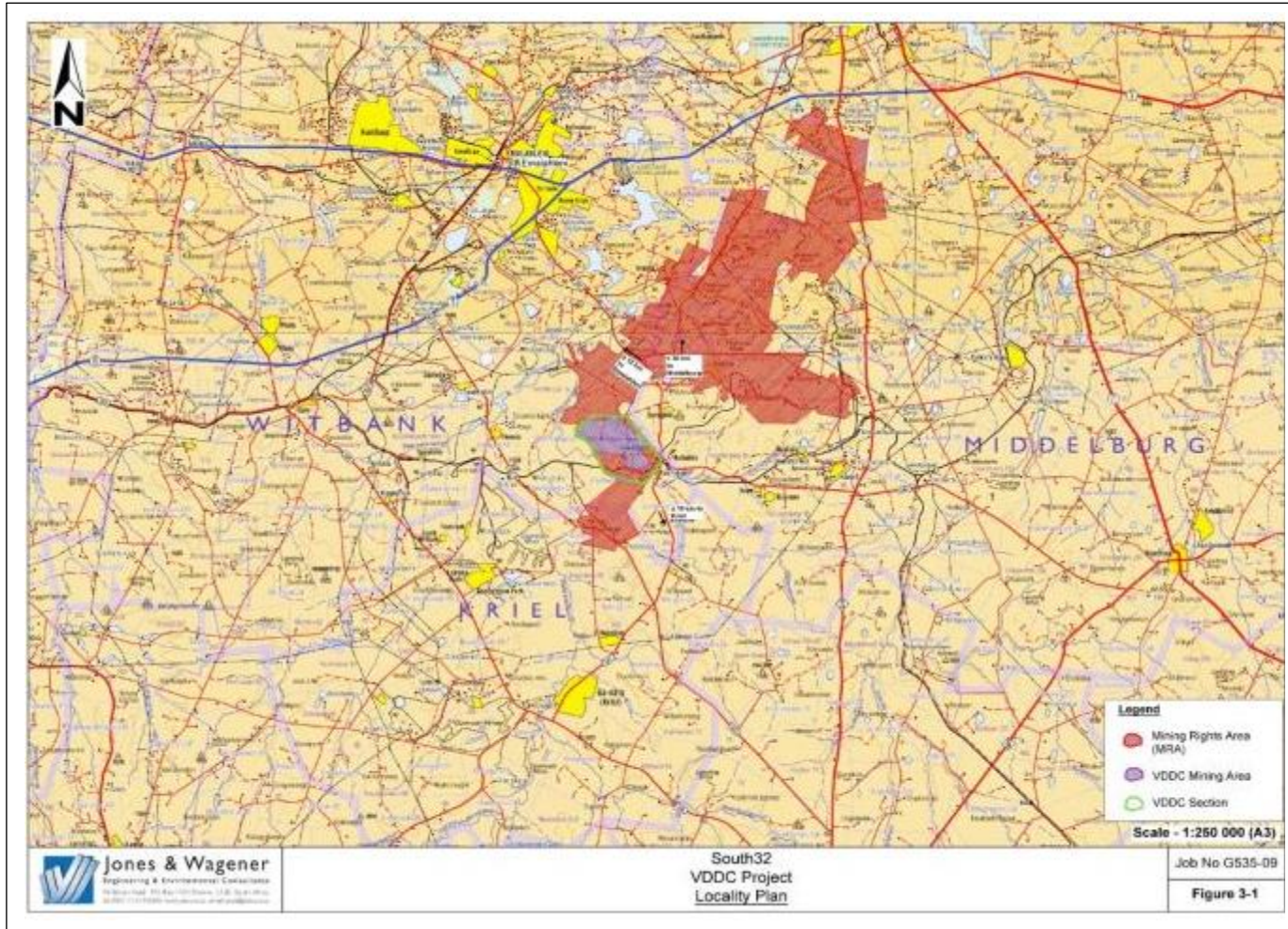


Figure 1- Regional location of the VDDC Project (purple demarcated) on the Eastern Highveld in the Mpumalanga Province

### 5.3 The nature of the VDDC Project

South32 is the holder of an amended mining right for coal, granted by the Minister of Mineral Resources, in terms of the MPRDA and notarially executed on the 21<sup>st</sup> of May 2015 under reference MP30/5/1/2/2/379MR, in respect of its Wolvekrans – Ifalethu Colliery. This mining right comprises of the following areas:

- Ifalethu Colliery (previously referred to as Wolvekrans North Section<sup>1</sup>) consisting of the Hartbeestfontein, Bankfontein (mining now ceased), Goedehoop, Klipfontein sections and the North Processing Plant; and
- Wolvekrans Colliery (previously referred to as the Wolvekrans South Section) consisting of the Wolvekrans, Vlaklaagte (mining ceased), Driefontein, Boschmanskrans, Vandyksdrift, Albion and Steenkoolspruit sections, as well as the South Processing Plants (Eskom and Export). Some of these areas were previously known as Douglas Colliery.

The VDDC area falls within the footprint of historic underground mining operations at the old Douglas Colliery. In 2007, an amendment of the Environmental Management Programme Report (EMPR) for the Douglas Colliery operations was approved, to allow pillar mining (opencast) of the area previously mined by underground bord and pillar mining. Authorisation of the VDDC mining project included the following:

- Opencast operation on the farm Kleinkopje 15 IS;
- Opencast operation on the farm Steenkoolspruit 18 IS;
- Pillar extraction operation on the farm Vandyksdrift 19IS.
- Reclamation of existing slurry ponds; and
- Rewashing of existing discard dumps (PHD, 2006).

The water uses associated with the opencast mining have been authorised in terms of Water Use Licence (WUL) number 24084535 dated 10 October 2008, issued to Douglas Colliery Services Limited.

The No. 2 seam workings are flooded with water and must be dewatered to enable the open pit development to proceed. A dewatering strategy has therefore been developed and an application for EA of the dewatering activities was submitted to the Department of Mineral Resources ; a decision in this regard is pending. The water use activities

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<sup>1</sup> This was previously referred to as Middelburg Colliery

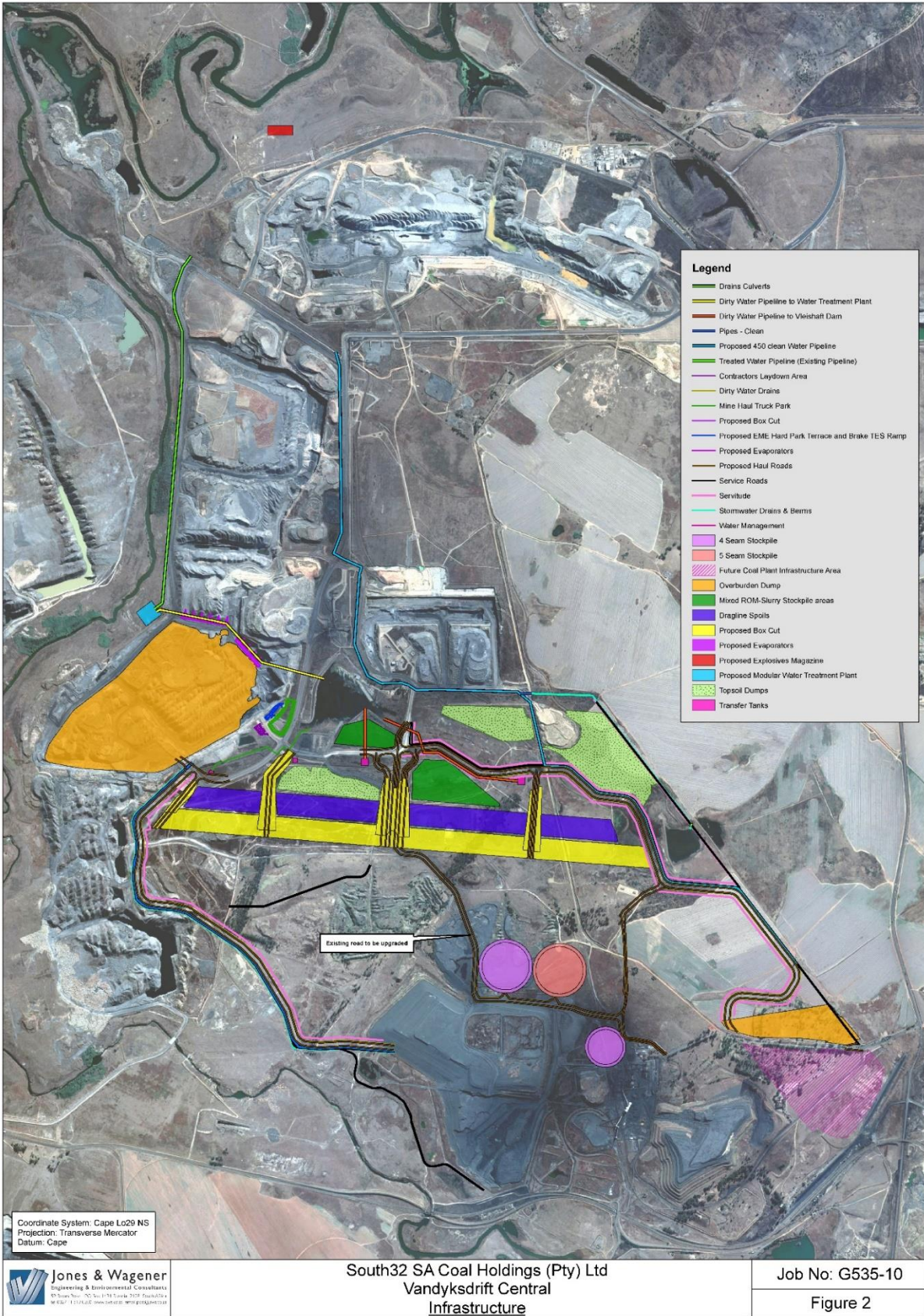
associated with this upfront dewatering strategy have been authorised by WUL number 06/B11F/GCIJ/7943 dated 19 July 2018.

The 2007 approved EMPR Amendment included limited additional infrastructure in support of the opencast mining operations, as it was assumed at that stage that existing infrastructure will be used. In addition, the applications for authorisation of the activities associated with the dewatering strategy, were limited to the infrastructure to facilitate dewatering (i.e. dewatering boreholes, pumps, pipelines, storage tanks, mechanical evaporators, roads and power lines).

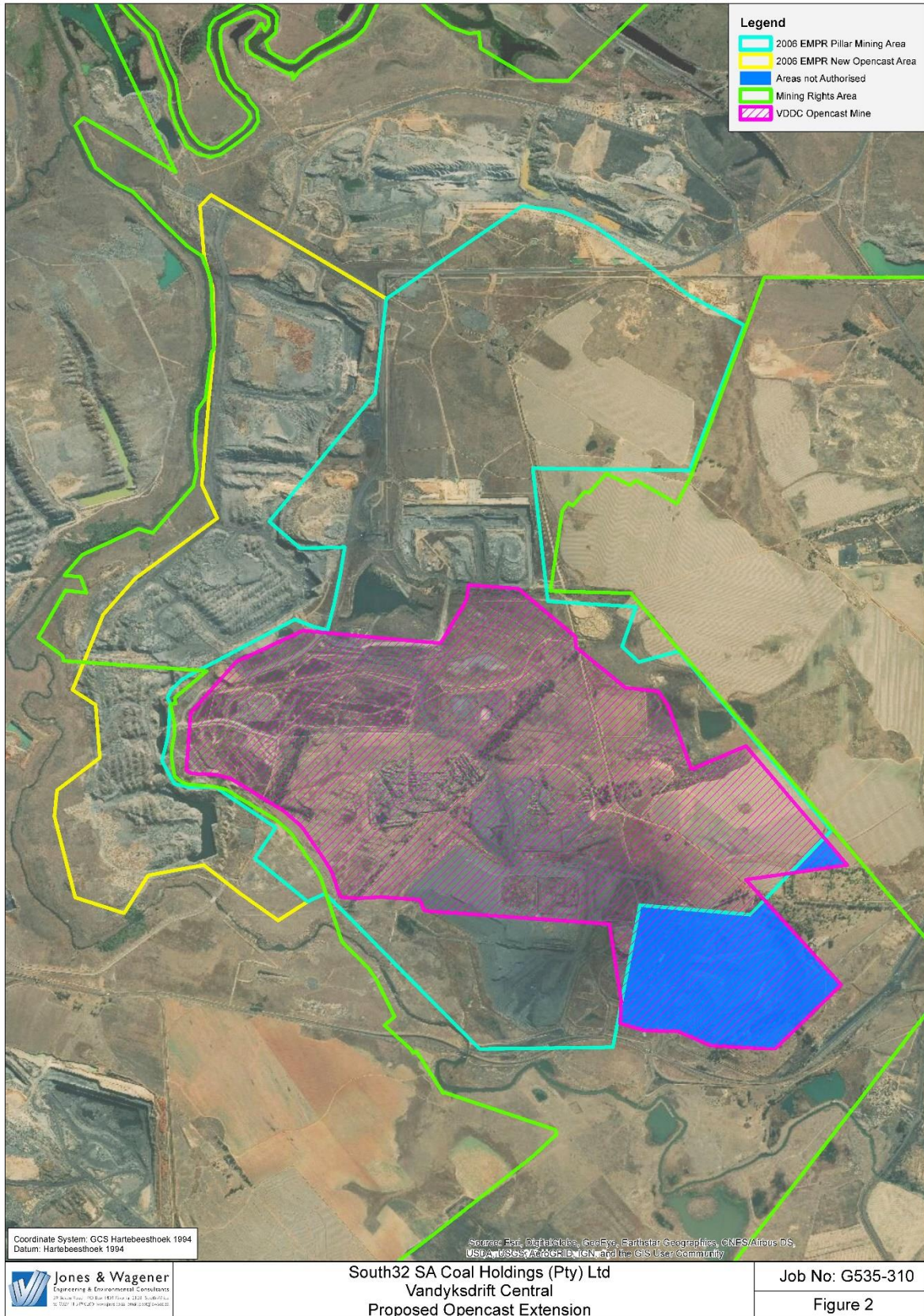
A pre-feasibility investigation has since been conducted, and the need to develop additional infrastructure to support the proposed opencast mining was identified. The additional infrastructure includes the following (**Figure 2a**):

- Storm water management structures (drains and berms);
- Water management measures for the management of mine impacted water;
- Overburden dumps;
- ROM coal stockpile areas;
- Mixed ROM coal and slurry stockpile areas;
- Topsoil stockpiles following clearance of vegetation;
- Pipelines for the conveyance of water;
- Hard park area and brake test ramp; and
- Haul roads and service roads.

The proposed VDDC opencast pit boundary as determined through the pre-feasibility investigation also differs from the mining area approved in the 2007 EMPR amendment. An area of approximately 196 hectares in the latest mine lay-out was not included in the previous mine lay-out and is therefore not approved to be mined according to an open-cast mine methodology (**Figure 2b**).



**Figure 2a- The proposed footprint of the developmental components of the VDDC project.**



**Figure 2b- The VDDC opencast pit compared to the mine lay-out plan in the approved EMPR Amendment of 2007.**

#### **5.4 The heritage character of the larger project area**

A large number of heritage studies have been conducted in the larger project area covering a part of the Eastern Highveld of the Mpumalanga Province during the last one to two decades (see Part 11, 'Bibliography relating to earlier heritage studies'). These studies have revealed that the most common types and ranges of heritage resources near the project area to be found include the following:

- Limited numbers of historical farmstead complexes as these have largely disappeared as a result of various reasons.
- Graveyards associated with colonial farmers who occupied these historical farmstead complexes as well as graveyards belonging to farm workers who lived and worked on these farms.

However, the coal mining complex which developed during the last century on the Eastern Highveld as well as the expansion of dry land agriculture into mega farming enterprises have largely changed the heritage character of a large part of the Eastern Highveld. The archaeological and historical significance of the Eastern Highveld, albeit in a gradual decline and in places disappearing at an alarming rate is described and explained in more detail before the results of the Phase I HIA study is discussed (see Part 6, 'Contextualising the VDDC project area').

## **6 CONTEXTUALISING THE VDDC PROJECT AREA**

The following overview of pre-historical, historical and cultural evidence indicates the wide range of heritage resources which do occur across the Eastern Highveld in which the project area is located, namely:

### **6.1 Stone Age and rock art 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 (ESA) (covers the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (MSA) (refers to the period from 250 000 years ago to 22 000 years ago) and the Late Stone Age (LSA) (the period from 22 000 years ago to 200 years ago).

Dongas and eroded areas at Maleoskop near Groblersdal is one of only a few places in Mpumalanga where ESA Olduwan and Acheulian artefacts have been recorded. Evidence for the MSA has been excavated at the Bushman Rock Shelter near Ohrigstad. This cave was repeatedly visited over a prolonged period. The oldest layers date back to 40 000 years BP (Before Present) and the youngest to 27 000BP (Esterhuysen & Smith 2007).

LSA occupation of the Mpumalanga Province also has been researched at Bushman Rock Shelter where it dates back 12 000BP to 9 000BP and at Höningnestkrans near Badfontein where a LSA site dates back to 4 870BP to 200BP (Esterhuysen & Smith 2007).

The LSA is also associated with rock paintings and engravings which were done by San hunter-gatherers, Khoi Khoi herders and EIA (Early Iron Age) farmers (Maggs 1983, 2008). Approximately 400 rock art sites are distributed throughout Mpumalanga, notably in the northern and eastern regions at places such as Emalahleni (Witbank)



(4), Lydenburg (2), White River and the southern Kruger National Park (76), Nelspruit and the Nsikazi District (250). The Ermelo area holds eight rock paintings (Smith & Zubieta 2007).

The rock art of the Mpumalanga Province can be divided into San rock art which is the most wide spread, herder or Khoe Khoe (Khoi Khoi) paintings (thin scattering from the Limpopo Valley) through the Lydenburg district into the Nelspruit area) and localised late white farmer paintings. Farmer paintings can be divided into Sotho-Tswana finger paintings and Nguni engravings (Only 20 engravings occur at Boomplaats, north-west of Lydenburg). Farmer paintings are more localised than San or herder paintings and were mainly used by the painters for instructional purposes (Smith & Zubieta 2007).

During the LSA and Historical Period, San people called the Batwa lived in sandstones caves and rock shelters near Lake Chrissie in the Ermelo area. The Batwa are descendants of the San, the majority of which intermarried with Bantu-Negroid people such as the Nhlapo from Swazi-descend and Sotho-Tswana clans such as the Pai and Pulana. Significant intermarriages and cultural exchanges occurred between these groups. The Batwa were hunter-gatherers who lived from food which they collected from the veldt as well as from the pans and swamps in the area. During times of unrest, such as the *difaqane* in the early nineteenth century, the San would converge on Lake Chrissie for food and sanctuary. The caves, lakes, water pans and swamps provided relative security and camouflage. Here, some of the San lived on the surfaces of the water bodies by establishing platforms with reeds. With the arrival of the first colonists in the nineteenth century many of the local Batwa family groups were employed as farm labourers. Descendants of the Batwa people still live in the larger Project Area (Schapera 1927; Potgieter 1955; Schoonraad & Schoonraad 1975).

No sites dating from the Stone Age or any lithic scatters with tools, flakes or waste material have been recorded close to where the proposed development is planned.

## 6.2 Iron Age remains

The Iron Age is associated with the first agro-pastoralists or farming communities 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 (EIA) (covers the 1<sup>st</sup> millennium AD) and the Later Iron Age (LIA) (covers the first 880 years of the 2<sup>nd</sup> millennium AD).

Evidence of the first farming communities in the Mpumalanga Province is derived from a few EIA potsherds which occur in association with the LSA occupation of the Höningnest Shelter near Badfontein. The co-existence of EIA potsherds and LSA stone tools suggest some form of 'symbiotic relationship' between the Stone Age hunter-gatherers who lived in the cave and EIA farmers in the area (also note Batwa and Swazi/Sotho Tswana relationship) (Esterhuysen & Smith 2007).

The Welgelegen Shelter on the banks of the Vaal River near Ermelo also reflects some relationship between EIA farmers who lived in this shelter and hunter-gatherers who manufactured stone tools and who occupied a less favourable overhang nearby during AD1200 (Schoonraad & Beaumont 1971).

EIA sites were also investigated at Sterkspruit near Lydenburg (AD720) and in Nelspruit where the provincial governmental offices were constructed. The most infamous EIA site in South Africa is the Lydenburg head site which provided two occupation dates, namely during AD600 and from AD900 to AD1100. At this site the Lydenburg terracotta heads were brought to light. Doornkop, located south of Lydenburg, dates from AD740 and AD810 (Evers 1981; Whitelaw 1996).

The LIA is well represented in Mpumalanga and stretches from AD1500 well into the nineteenth century and the Historical Period. Several spheres of influence, mostly associated with stone walled sites, can be distinguished in the region. Some of the historically well-known spheres of influence include the following:

- Early arrivals in the Mpumalanga Province such as Bakone clans who lived between Lydenburg, Badfontein and Machadodorp and Eastern Sotho clans

such as the Pai, Pulana and Kutswe who established themselves in the eastern parts of the province (Collett 1979, 1983; Delius 2007; Makhura 2007; Delius & Schoeman 2008).

- Swazi expansion into the Highveld and Lowveld of the Mpumalanga Province occurred during the reign of Sobhuza (AD1815 to 1836/39) and Mswati (AD1845 to 1868) while Shangaan clans entered the province across the Lembombo Mountains in the east during the second half of the nineteenth century (Delius 2007; Makhura 2007.).
- The Bakgatla (Pedi) chiefdom in the Steelpoort Valley rose to prominence under Thulare during the early 1800's and was later ruled by Sekwati and Sekhukune from the village of Tsjate in the Leolo Mountains. The Pedi maintained an extended sphere of influence across the Limpopo and Mpumalanga Provinces during the nineteenth century (Mönnig 1978; Delius 1984).
- The Ndzundza-Ndebele established settlements at Kwasimkulu (between Middelburg and Belfast) and at the foot of the Bothasberge (Kwa Maza and Esikhunjini) in the 1700's and lived at Erholweni from AD1839 to AD1883 where the Ndzundza-Ndebele's sphere of influence known as KoNomthjarhelo stretched across the Steenkampsberge.
- The Bakopa lived at Maleoskop (1840 to 1864) where they were massacred by the Swazi while the Bantwane live in the greater Groblersdal and Marble Hall areas.
- Corbelled stone huts which are associated with ancestors of the Sotho on Tafelkop near Davel which date from the AD1700's into the nineteenth century (Hoernle 1930).
- Stone walled settlements spread out along the eastern edge of the Groot Dwarsriver Valley served as the early abode for smaller clans such as the Choma and Phetla communities which date from the nineteenth century.

Stone walled sites which occur closest to the project area are those approximately twenty kilometers to the north-west of the project area. Here the Ndzundza-Ndebele

established a capital Kwasimkulu and other villages in a hilly area from AD1600 onwards.

### **6.3 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 passed close to where Witbank is located today. The first Europeans who came to the area observed the abundance of coal, which is 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 temporarily 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 20<sup>th</sup> 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 sources 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 now older than one century and has become the most important coal mining region 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 coal mines 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-1830s 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 9,5million 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, Mittal and Eskom.

No evidence for early coal mining activities was observed in or near the project area.

## **6.5 A vernacular stone architectural heritage**

A unique stone architectural heritage was established in the eastern Highveld from the second half of the 19<sup>th</sup> century well into the early 20<sup>th</sup> 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 in the eastern Highveld. These included sandstone, ferricrete ('oukclip'), dolerite ('bloukclip'), granite, shale and slate (Naude 1993).

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. Whilst this region is generally devoid of any natural trees which could be used as timber in the construction of farmsteads, outbuildings, cattle enclosures and other

structures, the scarcity of fire wood also prevented the manufacture of baked clay bricks. Consequently stone served as the most important building material in the eastern Highveld (Naude 1993, 2000). One of these historical structures was excavated and described after a heritage mitigation project was conducted for a coal mine (Pistorius 2005).

LIA Sotho, Pedi, Ndebele and Swazi communities contributed to the Eastern Highveld's stone walled architecture. The tradition set by these groups influenced settlers from Natal and the Cape Colony to utilise the same resources to construct dwellings and shelters. Farmers from Scottish, Irish, Dutch, German and Scandinavian descent settled and farmed in the eastern Highveld. They brought the knowledge of stone masonry from Europe. This compensated for the lack of fire wood on the Eastern Highveld which was necessary to bake clay bricks.

No sandstone structures were recorded in the project area although farmsteads with wagon sheds and outbuildings that were constructed with this building material occur in the wider Eastern Highveld area .

## **6.6 Most common types and ranges of heritage resources**

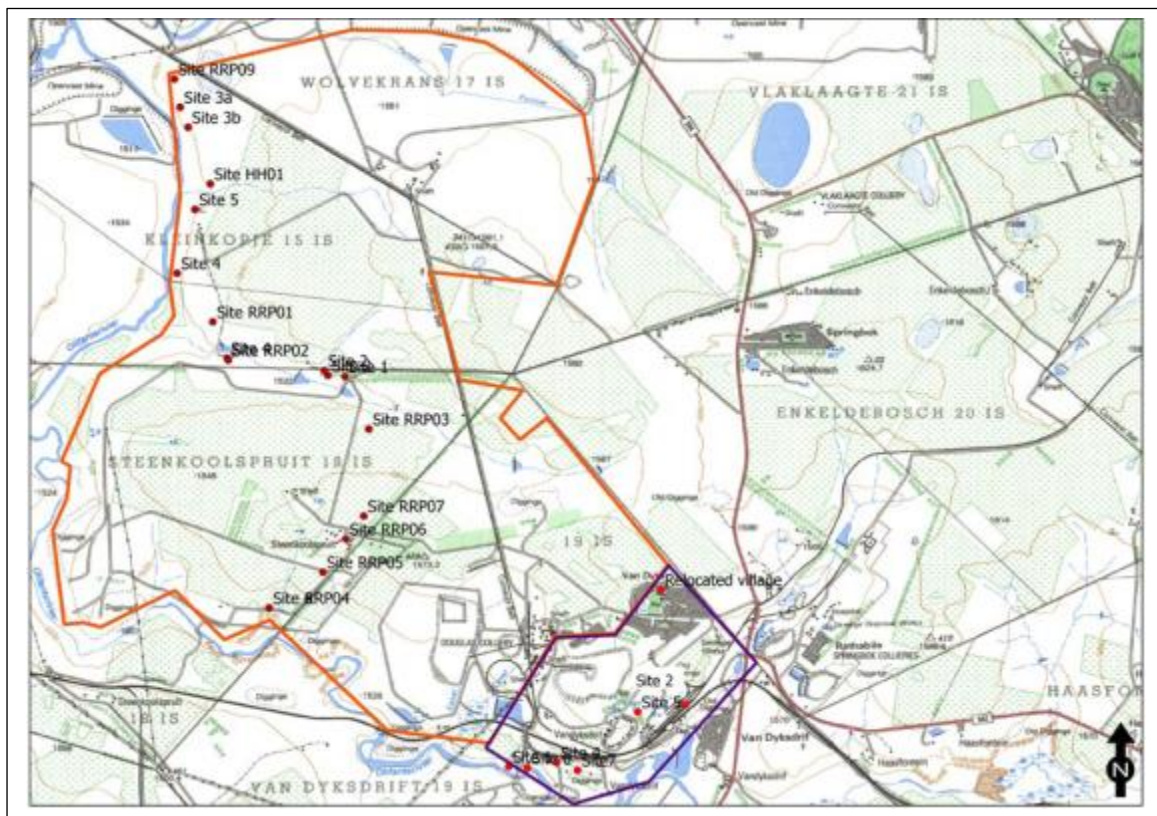
Heritage resources which are common on the Eastern Highveld near the project area are the following (see Part 11, 'Bibliography relating to earlier heritage studies'):

- Historical remains associated with farmstead complexes consisting of houses, associated outbuildings, cattle enclosures and graveyards.
- Abandoned graveyards left by farm workers who moved from farms to urban areas.
- Stone walled settlements dating from the Late Iron Age. However, these remains are confined to low dolerite outcrops or sandstone ridges and kopjes.

## **6.7 Earlier heritage surveys**

Several heritage surveys have been conducted by different heritage practitioners in the Vandyksdrift Central mine complex. These heritage investigations comprised Phase I surveys of the farms Wolvekrans 17 IS, Kleinkopje 15 IS, Steenkoolspruit 18 IS, Van

Dyksdrift 19 IS, Middeldrift 42 IS and Rietfontein 43 IS. These surveys revealed a historical sandstone farm building; farmhouses which were mostly destroyed some of which were associated with farm worker accommodation; a number of graves and graveyards and a number of sites with remains which date from the recent past (RRP) (Pistorius 2004).



**Figure 3 – Heritage sites that were recorded during earlier heritage surveys in the VDDC project area which at the time was more pristine than today (Coetzee 2014)**

During a Phase 2 project the historical sandstone house was excavated and recorded (Pistorius 2005) whilst all the graves and graveyards were relocated (Pelsers 2005, 2006 & 2007; Pelsers & Van Vollenhoven 2008). Most of the remains from the recent past which had low significance have been destroyed during the last one and a half decade or have totally deteriorated and can no longer be recognised. During more recent surveys for the Vandyksdrift Central (VDDC) Project, the farm Van Dyksdrift 19 IS was subjected to at least two heritage surveys (Coetzee 2014; Pistorius 2019).



## 7 APPROACH AND METHODOLOGY

This heritage survey and impact assessment study was conducted by means of the following:

### 7.1 Field survey

A field survey was conducted on 31 July 2018 during which the author was accompanied by a representative of South32 who is well acquainted with the mine property where he has been working for longer than the last two decades. At least two previous heritage surveys for portions of the project area was undertaken by the author himself (Pistorius 2004, 2005) and during the more recent past (Coetzee 2017). A survey for the realignment of a new 132kV power line was also conducted in the more recent past (Pistorius 2019) (see Part 12, 'Bibliography relating to earlier heritage studies').



**Figure 4- GPS track log registered with a mounted GPS instrument on the infrastructure footprint of the project area. Pedestrian surveys were conducted from the main pathway. Not all tracks were recorded as a result of signal loss.**

Some of these surveys were conducted *prior* to SAHRA requesting GPS track logs to be registered for heritage studies. Consequently, only the GPS track log which was registered during the latest heritage survey is included in this report. The footprint of the project area changed several times. The track log registered in Figure 4 is on one of the earlier footprints of the mine. However, due to the intense disturbance which have occurred this has not had any influence on the results of the survey.

The field survey was conducted by means of following national, dirt and farm roads across the project area. Other accessible pathways such as ‘two spoor’ field tracks were also utilized to gain access to parts of the project area. The track log only outlines main routes that were travelled. Pedestrian surveys were undertaken from some of these primary routes and therefore were not recorded.

Ecological indicators such as alternations in vegetation patterns; open or bald spots in the veld; protrusions of boulders, low hills or patches with grass or extreme dense vegetation were searched as these could have harboured former dwellings of farm workers.

Google Earth imagery served as a supplementary source (*prior* and after fieldwork) to establish the possible presence of heritage resources such as farm homesteads or extended stone walled villages.

All coordinates for heritage resources recorded by the author were done with a Garmin Etrex hand set Global Positioning System (instrument) with an accuracy of < 15m.

The nature and character of the project area is further illuminated with descriptions and photographs (see Part 8.1 ‘The field survey’).

## **7.2 Databases, literature survey and maps**

Databases kept and maintained at institutions such as the PHRA, the Archaeological Data Recording Centre at the National Flagship Institute (Museum Africa) in Pretoria and SAHRA's national archive (referred to as the South African Heritage Resources Information System, SAHRIS) were consulted by the author and other heritage practitioners to determine whether any heritage resources of significance had been identified during earlier heritage surveys in or near the project area. Nevertheless heritage resources may have been missed as a result of various factors (Part 1.3, 'Assumptions and limitations').

### **7.3 Spokespersons consulted**

Employers well acquainted with the project area were consulted regarding the possible presence of graveyards in the project area (see Part 13, 'Spokespersons consulted').

### **7.4 Consultation process undertaken and comments received from stakeholders**

No specific consultation process was undertaken for the purposes of the heritage study as the stakeholder consultation for the project is being done by J&W.

### **7.5 Significance ratings**

The significance of possible impacts on the heritage resources was determined using a ranking scale based on the following:

- Occurrence
  - Probability of occurrence (how likely is it that the impact may/will occur?), and
  - Duration of occurrence (how long may/will it last?)
- Severity
  - Magnitude (severity) of impact (will the impact be of high, moderate or low severity?), and
  - Scale/extent of impact (will the impact affect the national, regional or local environment, or only that of the site?).

Each of these factors has been assessed for each potential impact using the following ranking scales:

<p>Probability:</p> <p>5 – Definite/don't know</p> <p>4 – Highly probable</p> <p>3 – Medium probability</p> <p>2 – Low probability</p> <p>1 – Improbable</p> <p>0 – None</p>	<p>Duration:</p> <p>5 – Permanent</p> <p>4 – Long-term (ceases with the operational life)</p> <p>3 - Medium-term (5-15 years)</p> <p>2 - Short-term (0-5 years)</p> <p>1 – Immediate</p>
<p>Scale:</p> <p>5 – International</p> <p>4 – National</p> <p>3 – Regional</p> <p>2 – Local</p> <p>1 – Site only</p> <p>0 – None</p>	<p>Magnitude:</p> <p>10 - Very high/don't know</p> <p>8 – High</p> <p>6 – Moderate</p> <p>4 – Low</p> <p>2 – Minor</p>

The heritage significance of each potential impact was assessed using the following formula:

$$\text{Significance Points (SP)} = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The maximum value is 100 Significance Points (SP). Potential environmental impacts are rated as very high, high, moderate, low or very low significance on the following basis:

- More than 80 significance points indicates VERY HIGH heritage significance.
- Between 60 and 80 significance points indicates HIGH heritage significance.
- Between 40 and 60 significance points indicates MODERATE heritage significance.
- Between 20 and 40 significance points indicates LOW heritage significance.
- Less than 20 significance points indicates VERY LOW heritage significance.

## 8 HERITAGE SURVEY FOR VANDYKSDRIFT CENTRAL (VDDC)

### 8.1 The field survey

The field survey was done by means of following two track roads across the project area in order to gain access to the footprint of developmental components of the VDDC Project. However, the largest part of the project area comprises former and current mining areas which have been severely disturbed. The footprints of developmental components which overlap with active mining areas were not surveyed due to the total absence of any possible heritage resources or remains in these areas.

As stated earlier the author was accompanied by a representative of South32 who has a work record close to two decades with current and former coal mining companies who mined and worked the project area whilst employees of South32's Environmental Department also accompanied the author during a more recent survey for the realignment of a 132kV power line (see Part 12, 'Spokespersons consulted').



**Figure 5- The largest part of the project area has been turned into a coal mining complex (background) with relatively little undisturbed land left mostly occurring along the Olifants River.**



**Figure 6 - The south- western part of the project area bordering on the Olifants River is still relatively pristine and will not be affected by the proposed VDDC Project.**



**Figure 7 – A few Blue Gum lots occur towards the central and northern part of the project area. A historical sandstone house in one of these plantations was subjected to a Phase 2 heritage study in the past (Pistorius 2005).**



**Figure 8 – The northern part of the project area has been scorched by veld fires thus revealing the sandstone and ferricrete outcrops across this part of the proposed new mining areas.**

## **8.2 Types and ranges of heritage resources**

The heritage survey revealed that the following heritage resources as outlines in Section 38 of the NHRA still occur in the project area, namely:

- Historical structures consisting of rail infrastructure and pump stations.
- Two graveyards.

The heritage resources were geo-referenced (Tables 1 & 2); their significance is indicated (Tables 3 & 4) whilst the significance of the impact of the development on these remains is also outlined (Tables 5 & 6).

The Phase I HIA study is now briefly discussed and illustrated with photographs.



**Figure 9- Footprint of the proposed open cast pit approaching heritage resources comprising two graveyards, historical structures (two pump stations and the Vandyksdrift Railway Station) that were recorded in the project area.**



## 8.2.1 Historical structures

Several building structures which may qualify as historical structures still occur in the project area. These include the following, namely (Figure 9):

- A pump station on the banks of the Olifants River which was used by the former Douglas Colliery.
- A second pump station on the banks of the Olifants River which the South African Railways (SAR) used for operations along the railway line which is situated in close proximity of the Olifants River.
- A small railway station located along the railway line.

### 8.2.1.1 The Douglas Colliery pump station

This pump station on the banks of the Olifants River comprises a double-story building which was constructed of reinforced concrete. It was fitted with a corrugated iron roof and steel fittings. It covers a footprint of approximately 10mx12m. It shows signs of deterioration as it is probably not in operation any longer.



**Figure 10- The former Douglas Colliers' pump station along the Olifants River.**

### 8.2.1.2 The South African Railway station pump station

The SAR pump station is not as impressive as that of the former Douglas Colliery. It also comprises a double-story building constructed with concrete and steel. It is smaller than the Douglas Colliery pump station and covers a footprint of roughly 5mx6m. It is also located on the eastern banks of the Olifants River.

F.P. Coetzee made the interesting observation that old railway bars were used in the construction of the pump station whilst he also observed the inscription 'KRUPP 1910' on one of the bars (Coetzee 2014). This date may give a relative indication of the age of the pump station. However, the pump station's general 'modern' appearance suggests that it may have been constructed some decades after the railway line was built.



**Figure 11- The pump station along the Olifants River which was used by the South African Railways.**

### **8.2.1.3 The Vandyksdrift Railway Station (siding)**

The Vandyksdrift Railway Station (siding) comprises several buildings and structures. It was part of the wider railway network that was connected to the Richards Bay harbour for the export of coal and other commodities.



**Figure 12- The rail way station along the railway line in close proximity of the Olifants River (Coetzee 2014).**

## **8.2.2 Graveyards**

Two graveyards were recorded in the project area, namely:

### **8.2.2.2 Graveyard 01**

This graveyard (GY01) comprises at least 31 graves with an east to west orientation. Most of the graves are marked by cement bases on which cement headstones were erected.

It is highly likely that most of the graves are older than sixty years.



**Figure 13- Graveyard 01 holds approximately 31 graves with no or indecipherable inscriptions on the cement head stones (Coetzee 2014).**

### **8.2.2.3 Graveyard 02**

This graveyard (GY02) holds at least 13 graves with an east to west orientation. The graves are marked by cement bases on which headstones were fitted.

One of the headstones bears an inscription date of '1957'. It can therefore be expected that the majority of the graves are sixty years or older.



**Figure 14- Graveyard 02 holds approximately 13 graves. A single headstone holds and inscription date of 1957 (Coetzee 2014).**



**Figure 15- Graveyard 02 was covered with grass during a second survey. A single headstone holds an inscription date of 1957.**

### 8.3 Tables with details of historical structures and graveyards

**Table 1- Coordinates for historical structures in the project area .**

<b>Historical structures</b>	<b>Coordinates</b>	<b>Significance</b>
Douglas Colliery pump house	26.100306'S 29.302130'E	<b>Medium</b>
South African Railways pump house	26.100458'S 29.304178'E	<b>Medium</b>
Vandyksdrift Rail way station	26.073630"S 29.321430E	<b>Medium</b>

**Table 2- Coordinates for graveyards and graves in and near the Project Area.**

<b>Graveyards</b>	<b>Coordinates</b>	<b>Significance</b>
GY01. Approximately 31 graves	26.099837'S 29.307367'E	<b>HIGH</b>
GY02. Approximately 13 graves	26.094363'S 29.316150' E	<b>HIGH</b>

## **9 THE HERITAGE ASSESSMENT FOR THE VDDC PROJECT**

### **9.1 The significance of the heritage resources**

The significance of the heritage resources is indicated in order to establish the significance of the impact on any of these remains. This will determine whether any mitigation measures may be required for heritage resources which may be negatively affected by the VDDC Project.

#### **9.1.1 The significance of the historical remains**

The historical structures comprise remains which are older than sixty years or which are approaching this age and which therefore are protected by the NHRA.

The historical remains are rated as of medium significance. This rating is based on the use of two rating (grading) schemes, namely:

- A scheme of criteria which outlines places and objects as part of the national estate as they have cultural-historical significance or other special value (outlined in Section 3 of the NHRA (see Box 1) (Table 3).
- A field rating scheme according to which heritage resources are graded in three tiers (levels) of significance based on the regional occurrence of heritage resources (Table 4) (Section 7 of the NHRA ).

##### **9.1.1.1 Criteria to be part of the national estate**

The NHRA distinguishes nine criteria for places and objects to be 'part of the national estate' if they have cultural significance or other special value, namely (also see Box 1):

- **Its importance in/to the community, or pattern of South Africa's history;**
- **Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;**
- **Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;**
- Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

- Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- **Its importance in demonstrating a high degree of creative or technical achievement at a particular period;**
- Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- **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
- Sites of significance relating to the history of slavery in South Africa.

**Table 3- Rating the historical remains' significance according to criteria outlined in the NHRA.**

<b>Criteria</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
Historical significance	X	X	
Social significance	X	X	
Technical significance	X	X	
Scientific significance (research, use, application, e.g. in tourism industry)	X	X	

The highlighted criteria reflect aspects of the historical, social, technical or scientific significance (research, use and application, e.g. in tourism industry) of the historical remains. According to these criteria the significance of the historical remains is graded as of low to medium significance (Table 3).

#### **9.1.1.2 Field rating scheme for heritage resources**

Grading of heritage resources remains the responsibility of heritage resources authorities. However, in terms of minimum standards SAHRA requires that heritage reports include field ratings in order to comply with Section 38 of the NHRA. Section 7 of the NHRA) provides for a three-tier grading system for heritage resources. The field rating process is designed to provide a qualitative and quantitative rating of heritage resources. The rating system distinguishes three categories of heritage resources:



- Grade I Heritage resources hold qualities so exceptional that they are of special national significance.
- Grade II Heritage resources hold qualities which make them significant within the context of a province or a region.
- Grade III heritage resources are worthy of conservation, i.e. are generally protected in terms of Sections 33 to 37 of the NHRA.

**Table 4- Field rating (grading) for archaeological remains in the project area**

<b>Field rating</b>	<b>Grade</b>	<b>Significance</b>	<b>Recommended mitigation</b>
National significance	Grade 1	High significance	Nominate national site. Conservation
Provincial significance	Grade 2	High significance	Nominate provincial site. Conservation
Local significance	Grade 3A	High significance	Conservation. Mitigation not advised.
Local significance	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected (GP.A)	-	Medium to High significance	Mitigation before destruction
<b>Generally Protected (GP.B)</b>	-	<b>Medium significance</b>	<b>Recording before destruction</b>
Generally Protected (GP.C)	-	Low significance	Destruction

According to the highlighted field rating scheme, the historical remains can be rated as of medium significance and can be destroyed after the remains have been recorded and a permit allowing for the destruction of the remains have been obtained from SAHRA (Table 4).

### **9.1.2 The significance of the graveyards**

All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 1). Legislation with regard to graves includes Section 36 of the NHRA in instances where graves are older than sixty years. Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended). Municipal laws with regard to graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must adhere to these laws.

## **9.2 Possible impact on the heritage resources**

According to the layout plan for the VDDC Project the following can be noted (Figure 9):

- The historical structures consisting of pump stations and a railway siding will not be affected by the proposed VDDC Project.
- GY02 will be affected when the open cast pit is expanded beyond the current approved area.

## **9.3 The significance of the impact on the heritage resources**

### **9.3.1 The significance of the impact on the historical remains**

None of the historical remains will be affected by the proposed VDDC Project. The significance of the impact on these remains therefore is very low (Table 5).

**Table 5- The significance of the impact on the historical structures is very low.**

Historical Structures	Probability of impact	Magnitude of impact	Duration of impact	Scale	Significance points	Significance rating	Significance after management
Douglas Pump Station	1	2	1	1	4	Very low	Very low
SAR Pump Station	1	2	1	1	4	Very low	Very low
Vandyksdrift Railway	1	2	1	1	4	Very low	Very low

### 9.3.2 The significance of the impact on the graveyards

GY01 will not be affected by the VDDC Project. The significance of the impact on GY01 therefore is very low and will remain very low if management measures as outlined in the report are implemented.

GY02 will be affected by open cast mining activities. The significance of the impact on GY02 therefore is high but will be low if mitigation measures as outlined in the report be implemented (Table 6).

**Table 6- The significance of the impact on the graveyards.**

	Probability of impact	Magnitude of impact	Duration of impact	Scale	Significance points	Significance rating	Significance after management
GY01	1	2	1	1	4	Very low	Very low
GY02	5	10	5	1	90	High	Low

### 9.4 Mitigating the graveyard (GY02) that will be affected

GY02 must be exhumed and relocated. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed

undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police. Municipal laws with regard to graves and graveyards may differ and professionals involved with the exhumation and relocation of graves and graveyards must adhere to these laws.

### **9.5 Managing the graveyard (GY01) that remains unaffected**

GY01 in the VDDC project area must be managed in order to ensure its future unaffected existence in the project area, namely:

- The graveyard must be demarcated with a fence or with walls and should be fitted with an access gate. Relatives of the deceased must be located by means of social consultation and to obtain permission for fencing or walling the cemetery.
- Regulated visitor hours must be implemented that is compatible with safety rules. This will not be necessary if the graveyard is located next to a public or national road which can provide direct access to the graveyard.
- Corridors of at least 100m should be maintained between the graveyard's border fences and any developmental components such as roads or other infrastructure that may be developed in the future. This buffer zone must be maintained at all times.
- The graveyard should be inspected every three months. Inspections should be noted in an inspection register. The register should outline the state of the graveyard during each inspection. Reports on damages to any of the graves or to the graveyards (fences, walls, gates) should be followed with the necessary maintenance work. Maintenance work should be recorded in the inspection register.
- The graveyards should be kept tidy from any invader weeds and any other refuse.

## **9.6 Chance-find procedures**

Chance Find Procedures are applicable during the construction, operation or closure phases of the VDDC Project and apply to all contractors, subcontractors, subsidiaries or service providers. If any of these institutions' employees find any heritage resources during any developmental activity all work at the site must be stopped and kept on hold. Chance finds must be reported to supervisors and through supervisors to the senior manager on site. Chance find procedures are summarized for heritage resources and graveyards.

### **9.6.1 Chance-find procedures for heritage resources**

The initial procedure to follow whenever heritage resources are uncovered during development is aimed at avoiding any further possible damage to the heritage resources, namely:

- The person or group (identifier) who identified or exposed the heritage resource or burial ground must cease all activity in the immediate vicinity of the site.
- The identifier must immediately inform the senior on-site manager of the discovery.
- The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured and that controlled access is implemented.
- The senior on-site manager will inform the Environmental Officer (EO) and Health and Safety (HS) officers of the chance find and its immediate impact on the VDDC Project. The EO will then contact the project archaeologist.
- The project archaeologist will do a site inspection and confirm the significance of the discovery, recommend appropriate mitigation measures to the mine and notify the relevant authorities.
- Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of Reference and associated costs if mitigation measures have to be implemented.

### **9.6.2 Chance-find Procedures for burials and graves**

In the event that unidentified burial grounds or graves are identified and/or exposed during any of the developmental phases of the VDDC Project the following steps must be implemented subsequent to those outlined above:

- The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures.
- Inform the local South African Police Service (SAPS) and traditional authority.
- The project archaeologist in conjunction with the SAPS and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or archaeological significance.
- Should it be concluded that the find is of heritage significance and therefore protected in terms of heritage legislation the project archaeologist will notify the relevant authorities.
- The project archaeologist will provide advice with regard to mitigation measures for the burial grounds and graves.

## 10 CONCLUSION AND RECOMMENDATIONS

The heritage survey revealed that the following heritage resources as outlined in Section 38 of the NHRA still occur in the project area, namely (Figure 9):

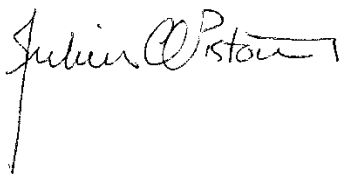
- Historical structures consisting of rail infrastructure and pump stations.
- Two graveyards.

The historical remains are rated as of medium significance. None of the historical remains will be affected by the proposed VDDC Project and the significance of the impact on these remains therefore is very low. All graveyards and graves can be considered to be of high significance and are protected by various laws (Table 1).

GY01 will not be affected by the VDDC Project. The significance of the impact on GY01 therefore is very low and will remain very low if management measures as outlined in the report are implemented.

GY02 will be affected by open cast mining activities. The significance of the impact on GY02 therefore is very high but will be low if mitigation measures as outlined in the report be implemented, i.e. GY02 must be exhumed and relocated.

Chance-find Procedures are applicable during the construction, operation or closure phases of the VDDC Project and apply to all contractors, subcontractors, subsidiaries or service providers. If any of these institutions' employees find any heritage resources during any developmental activity all work at the site must be stopped and kept on hold. Chance finds must be reported to supervisors and through supervisors to the senior manager on site. Chance find procedures for heritage resources and graveyards are outlined in the report.



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