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**A PHASE 1 HERITAGE IMPACT ASSESSMENT & REPORT FOR
THE PROPOSED NAUDES BANK MINING DEVELOPMENT
ON PORTIONS OF THE FARMS VAALBULT 31IT, VAALWATER 173IS, TWYFELAAR 171IS
AND NAUDES BANK 172IS
LOCATED BETWEEN HENDRIN AND CAROLINA IN THE MPUMALANGA PROVINCE**

For:

Zyntha Consulting (Pty) Ltd
Midlands Office Park
Block A Unit 3
2 Walter Sisulu Street
Middelburg

REPORT: **APAC023/52**

by:

A.J. Pelser
Accredited member of ASAPA
Member Number: 106

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Amended June 2023

P.O.BOX 73703
LYNNWOOD RIDGE
0040
Tel: 083 459 3091
Fax: 086 695 7247
Email: apac.heritage@gmail.com

Member: AJ Pelser BA (UNISA), BA (Hons) (Archaeology), MA (Archaeology) [WITS]

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SUMMARY

APelser Archaeological Consulting (APAC) was appointed Zyntha Consulting (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment for the proposed Naudesbank Mining Development Project. The study & proposed development area is located on portions of the farms Vaalbult 31IT, Vaalwater 173IS, Twyfelaar 171IS and Naudesbank 172IS. The study and proposed mining area is located between the towns of Hendrina and Carolina in the Province of Mpumalanga.

The literature review indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls. A number of sites, features and material of cultural heritage (archaeological and/or historical) origin & significance were identified and recorded in the study and the proposed development area during the May & June 2023 field assessments. This report discusses the results of both the background literature research and physical assessment and provides recommendations on the way forward.

From a Cultural Heritage point of view, it was determined that the proposed Naudesbank Mining Development Project should be allowed to continue provided that the recommendations made in the report are implemented.

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1. INTRODUCTION

APelser Archaeological Consulting (APAC) was appointed Zyntha Consulting (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment for the proposed Naudesbank Mining Development Project. The study & proposed development area is located on portions of the farms Vaalbult 31IT, Vaalwater 173IS, Twyfelaar 171IS and Naudesbank 172IS. The study and proposed mining area is located between the towns of Hendrina and Carolina in the Province of Mpumalanga.

The literature review indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls. A number of sites, features and material of cultural heritage (archaeological and/or historical) origin & significance were identified and recorded in the study and the proposed development area during the May & June 2023 field assessments.

The client indicated the location and boundaries of the study and proposed development area and the fieldwork focused on this alignment.

2. TERMS OF REFERENCE

The Terms of Reference for the study was to:

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

3. LEGISLATIVE REQUIREMENTS

Aspects are dealt with mainly in the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998) are the two main legislations concerning the conservation of cultural resources, used as guidelines when conducting the Heritage Impact Assessment.

3.1. The National Heritage Resources Act (Act 25 of 1999)

According to the National Heritage Resources Act (Act 25 of 1999) (NHRA), the following is protected as cultural heritage resources:

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

The National Estate includes the following:

- a. Places, buildings, structures, and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Sites of Archaeological and paleontological importance
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)

The Heritage Impact Assessment (HIA) process is done to determine whether there are any heritage resources located within the area to be developed as well as to determine the possible impacts of the proposed development. An Archaeological Impact Assessment (AIA) only looks at archaeological resources, such as material remains of human life or activities which are at least 100 years of age, and which are of archaeological interest. A HIA must be done under the following circumstances:

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

Structures

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

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

To alter means any action taken that affects the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or the decoration or any other means.

Archaeology, palaeontology, and Meteorites

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

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

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

Human remains

Graves and burial grounds are divided into the following:

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

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

- i. destroy, damage, alter, exhume or remove from its original position of otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- ii. 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
- iii. bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

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

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

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

3.1. The National Environmental Management Act (No. 107 of 1998)

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

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

The specific requirements that specialist studies and reports must adhere to are contained in Appendix 6 of the EIA Regulations.

4. METHODOLOGY

4.1. Review of literature

A review of available literature was undertaken in order to place the development area in an archaeological and historical context. The sources utilized in this regard are indicated in the bibliography. These include Bergh (1999), Huffman (2007) & Lombard et.al (2012).

4.2. Field survey

The field assessment component of the study was conducted on the 26th of May & 13th of June 2023 according to generally accepted HIA practices and aimed at locating all possible objects, sites, and features of heritage significance in the area of the proposed development. The location/position of all sites, features and objects is determined by means of a Global Positioning System (GPS) where possible, while detail photographs are also taken where needed.

4.3. Oral histories

People from local communities are sometimes interviewed in order to obtain information relating to the surveyed area. This is not applicable under all circumstances. When applicable, the information is included in the text and referred to in the bibliography.

4.4. Documentation

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

5. PROJECT DESCRIPTION

The Naudesbank Mining Project is located between the towns of Hendrina & Carolina in the Province of Mpumalanga. The study and project area are situated on various portions of the farms Vaalbult 31IT, Vaalwater 173IS, Twyfelaar 171IS & Naudesbank 172IS. The proposed mining will comprise both Open-cast and Underground Mining, and the planned mining-related development will include the following:

- Topsoil Dumps/Overburden areas and berms
- ROM Yards and Stockpiles
- Pollution Control Dams
- Office and Workshop Area
- Various other related buildings and structures

- Haul & other Access roads
- Diesel Bays
- Security areas

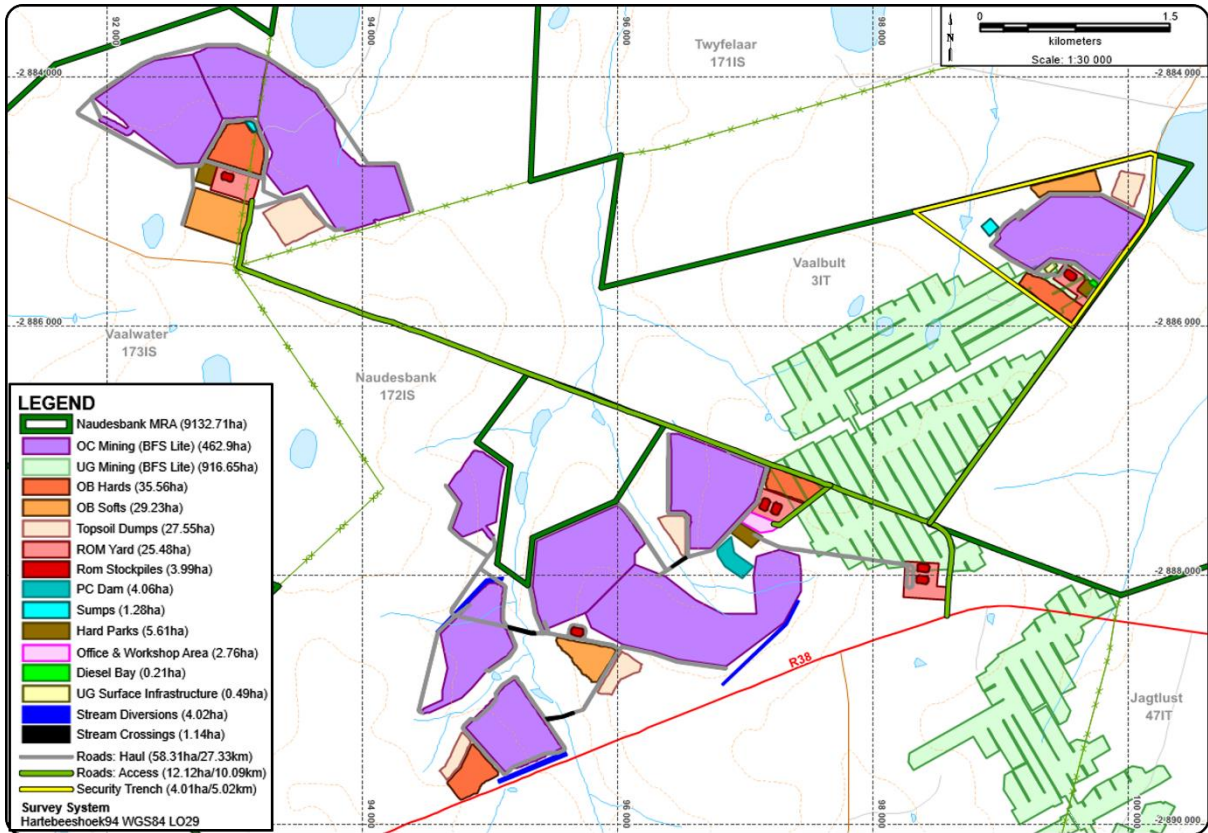


Figure 1: Naudesbank Project Infrastructure Plan (provided by Zyntha Consulting (Pty) Ltd).

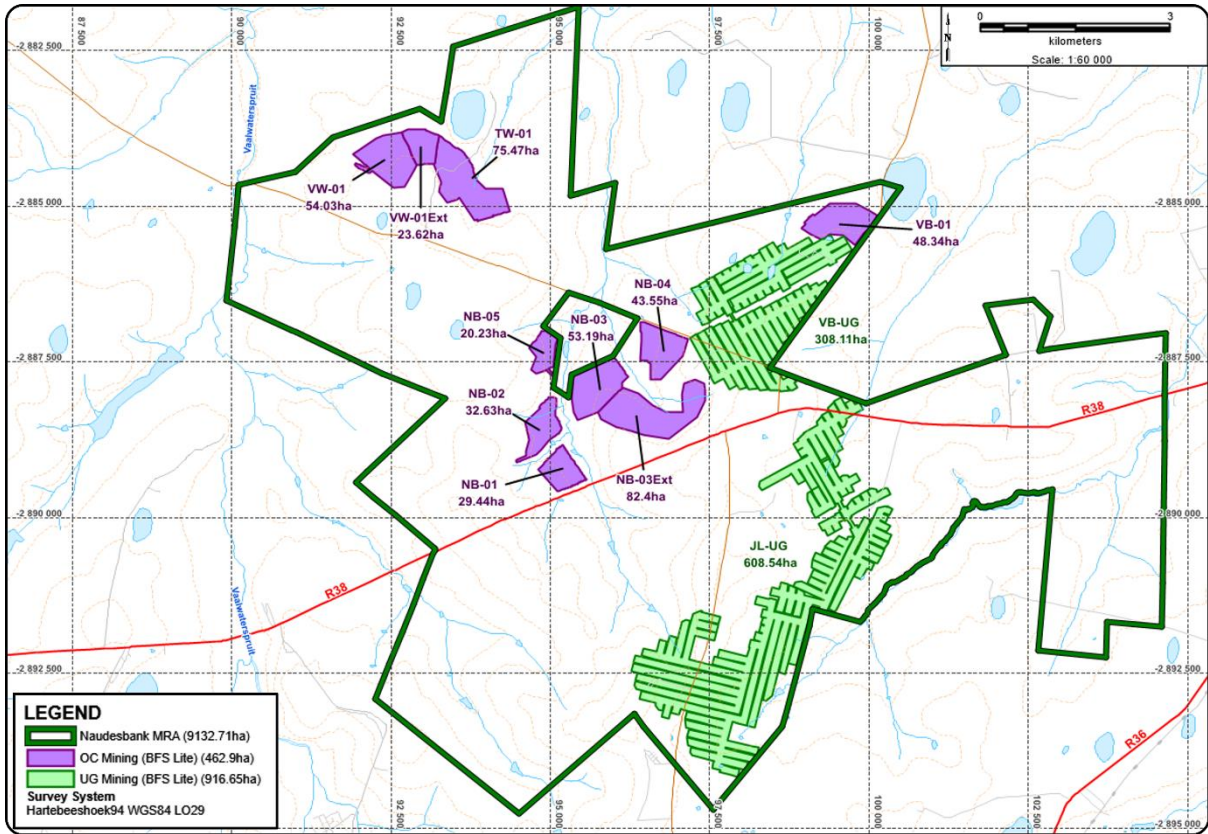


Figure 2: Project Area footprint and Layout Plan April 2023 (courtesy Zyntha Consulting (Pty) Ltd).

6. DESCRIPTION OF THE AREA

The topography of the area is typical of the Highveld, comprising of rolling hills and grassveld, with a few rocky ridges and outcrops present. The grass cover during the assessment was fairly dense in sections, but tree cover is sparse except for sections of bluegum and wattle groves close to farmsteads/homesteads that are located throughout the area. The largest part of the study and proposed mining development area has been extensively transformed by past and ongoing agricultural activities (ploughing/crop growing/livestock keeping & grazing), with the result that if any significant archaeological and historical sites and features were present in these portions it would have been extensively disturbed or even destroyed as a result. Other impacts include various roads, mining in the larger and areas neighbouring the study area, powerlines and farming-related infrastructure.

Some streams/rivers are also present in the area, with a few wetland sections found here as well. A number of pans are located in the study and proposed mining development footprint as well.

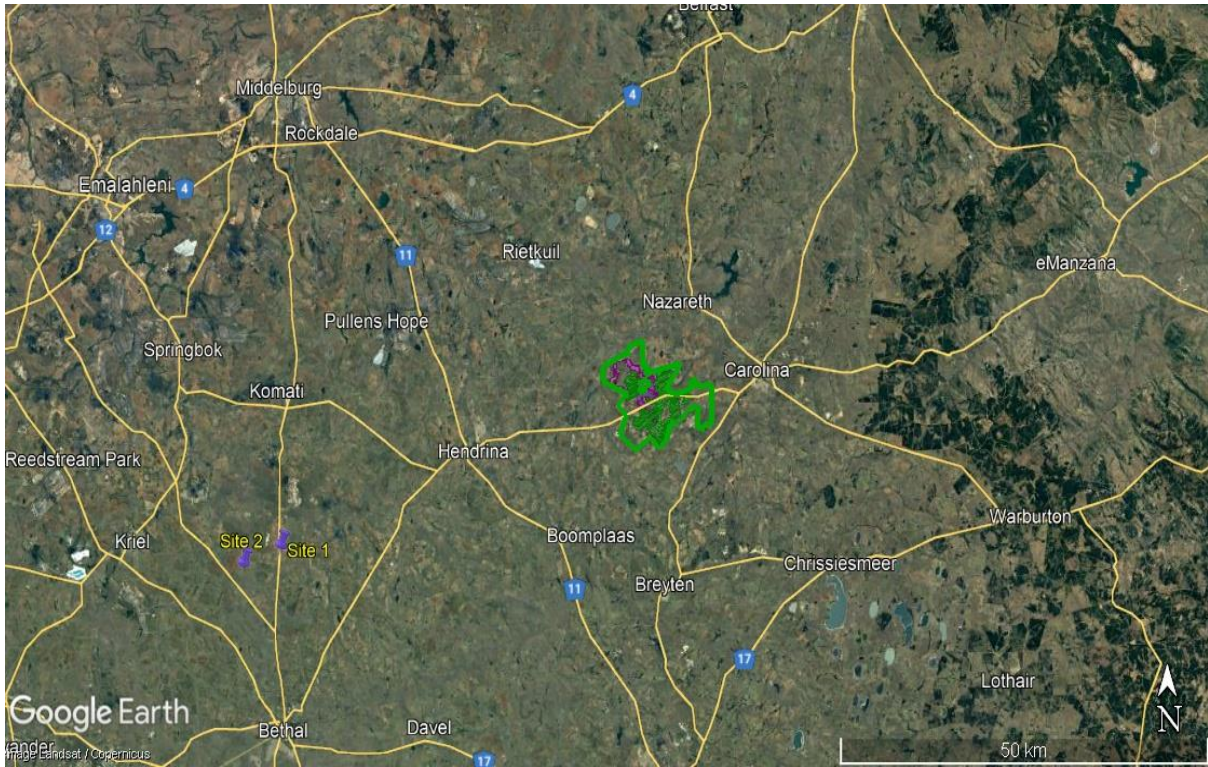


Figure 3: General location of the study & proposed Naudesbank Mining Project Area indicated by the green polygon (Google Earth 2023).



Figure 4: Closer view of the study & project area location and footprint (Google Earth 2023).

7. DISCUSSION

7.1. Stone age

The Stone Age is the period in human history when lithic (stone) material was mainly used to produce tools. In South Africa the Stone Age can be divided into three periods as listed below. It is important to note that dates are relative and only provide a broad framework for interpretation. A basic sequence for the South African Stone Age (Lombard et.al 2012) is as follows:

- Earlier Stone Age (ESA) up to 2 million – more than 200 000 years ago
- Middle Stone Age (MSA) less than 300 000 – 20 000 years ago
- Later Stone Age (LSA) 40 000 years ago – 2000 years ago

It should also be noted that these dates are not a neat fit because of variability and overlapping ages between sites (Lombard et.al 2012: 125).

Heritage surveys have recorded few outstanding Stone Age sites, rock paintings and engravings in the Eastern Highveld - mainly as a result of limited extensive archaeological surveys. Stone tools have however been recorded around some of the pans which occur on the Eastern Highveld (Pistorius 2010:16). According to Bergh there are no known Stone Age sites in the area, with the closest near Ermelo, Carolina and Chrissiesmeer to the north-east of Standerton (Bergh 1999: 4 – 5).

Some Stone Age material were identified in the study area during the May & June 2023 field assessments. These finds are represented as individual stone tools and low-density scatters in open-air surface scatters close to dirt roads in the area. It is envisaged that similar finds might be located in the study and development area, but that these will likely be only individual tools scattered around the area in non-stratified deposits (open-air scatters).

7.2. Iron age

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artifacts. In South Africa it can be divided in two separate phases (Bergh1999: 96-98), namely:

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

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

- Early Iron Age (EIA) 250 – 900 A.D.
- Middle Iron Age (MIA) 900 – 1300 A.D.
- Late Iron Age (LIA) 1300 – 1840 A.D.

No Early or Middle Iron Age sites are known to occur in the study area (Bergh 1999: 6-7). According to Pistorius the Eastern Highveld had 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 stone walled settlement complexes. Seemingly 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 (Pistorius 2010:16-17). No Early Iron Age sites are known to occur in the Bethal area, although the occurrence of Late Iron Age sites is known (Berg 1999: 6-7). According to the research of Tom Huffman the following Iron Age traditions could be present in the larger area: (a) the Ntsuanatsatsi facies of the Urewe tradition dating to AD1450 – AD1650 (b) Uitkomst facies of Urewe AD1650 – AD1820 and (c) Buispoort facies of Urewe dating to around AD1700 - AD1840 (Huffman 2007: 127; 171; 191 & 203).

No Iron Age sites, features or material were identified in the area during the May & June 2023 assessments.

7.3. Historic age

The historical age started with the first recorded oral histories in the area. It includes people moving into the area that were able to read and write. The first European group to pass relatively close by the area was that of Scoon in 1836 (Bergh 1999: 13). During the Anglo-Boer War (or South-African War) of 1899-1902 the area also played a role, with a number of battles and small skirmishes taking place relatively close to study area. This included the Battles of Witkloof, Chrissiesmeer and Witkrans (Bergh 1999: 54)

Some recent historical sites and features were identified and recorded in the study & development area in May & June 2023.

Results of the May & June 2023 Field Assessments

A number of sites, features and remains of recent historical origin were identified in the area during the field assessment, as well as some individual Stone Age objects just outside and in the area.

The recent historical sites included some old farmsteads and related infrastructure (some of which are still in use and occupied), as well as a number of grave sites (informal cemeteries) in the area.

Stone Age finds

The first sites/finds that will be briefly discussed here are the Stone Age ones. Two (2) areas with individual tools and small scatters of MSA/LSA stone tools were identified during the assessment. The 1st is located outside (on the boundary) the area, with the 2nd one found inside. Both sites are situated next to the main dirt road that crosses through basically the central part of the area (north of the R38), and in areas where the underlying weathered

sandstone is eroding out of overlying soils. It is possible that more finds could be located in the area, but that they are not visible due to being covered by soils or grass cover.

The finds are however not deemed as significant from an archaeological point of view as the scatters are of low density and not in any stratified deposits. If any more are to be identified in the larger area it is envisaged that it would also be in the form of either single or low-density scatters of material. No mitigation measures are required for the Stone Age sites and finds.

GPS Coordinates: S26 04 04.50 E29 54 00.10 & S26 05 16.40 E29 58 01.90

Historical and recent farmsteads/related infrastructure and farmworkers dwellings

Site FS1 is an old farmstead and related infrastructure. It consists of a number of structures and foundations, including an old shed/kraal, farm dam and homestead. It is currently occupied by someone who assumedly are family members of farm workers in the area. The old lady present could not be interviewed as she cannot speak English or Afrikaans it seemed. A detailed assessment of the site was not undertaken. Some of the structures and foundations could be older than 60 years of age, and although in a largely dilapidated state should be assessed by an Architectural Historian to determine its cultural heritage significance and recommend on the way forward should the site be directly and negatively impacted by the proposed mining development.

GPS Coordinates: S26 04 39.65 E29 56 37.79

Site FS2 is an old sandstone homestead/farming-related structure on Naudesbank. The structure is typical of the late 19th/early 20th century sandstone-built homesteads in the Highveld of the old Eastern Transvaal and is therefore fairly significant from a Cultural Heritage point of view. The site was not assessed in detail during the recent fieldwork, and it is recommended that an Architectural Historian undertake a detailed assessment of it should it be impacted by the mining development, and before it is either earmarked for demolition, re-purposing or alteration.

GPS Coordinates: S26 07 00.64 E29 58 28.41

FS3 contains an old sandstone enclosure and the remains of an old sandstone-built farmstead that probably originally dated to the late 19th/early 20th century. It had been altered and changed over the years as evident from the assessment, and as a result a large section could be less than 60 years of age, diminishing its cultural heritage significance. The structure is in a bad state of preservation, with it being largely vandalized for its roof sheeting, doors and window frames. What remains of the structure is largely foundations and some sections of walling. From this point of view its heritage significance is seen as Low and no further mitigation is required.

GPS Coordinates: S26 03 56.30 E29 55 55.92

FS4 is located not far from FS3, on the same farmstead portion, and consists of a number of structural remains and also dwellings used by former farm workers on Twyfelaar (owned by the Van Rensburg's of Portion 7 of Vaalwater 173IS). The structures are most likely less than 60 years of age and of Low Heritage Significance. Care should be taken if these are to be demolished should the proposed mining activities impact on the site, as there is always the possibility of unmarked burials (of still-born infants or young children) in or close to the houses.

GPS Coordinates: S26 03 59.02 E29 55 52.03

Site FWD1 (Farm Workers Dwellings 1) is located close to the homestead and farmstead of C. van Rensburg on Vaalbult. It is currently occupied by workers and their families. It is mud/clay brick, cement and brick-built structures and more than likely younger than 60 years of age. As such its cultural heritage significance is Low, but as with the other Farm Worker Dwellings the possibility of the close proximity of burials should be kept in mind if the possibility exists that these structures have to be demolished as a result of the impact of proposed mining activities.

GPS Coordinates: S26 05 16.56 E29 58 11.33

Site FS5 consists of various structures and farming-related infrastructure, including the homestead of C. van Rensburg's Vaalbult farm portion. The homestead and related structures are mostly modern brick constructions, and seemingly less than 60 years of age. The cultural heritage significance of the site is deemed as Low.

GPS Coordinates: S26 05 19.60 E29 58 17.11

Site FWD2 consists of a number of farmworker dwellings similar in nature and construction to those at FWD2. Again, these are more than likely less than 60 years of age and not of any cultural heritage significance, except for the possibility of unmarked burials located in close proximity. Furthermore, an informal cemetery (C4 on the map) located close by makes this settlement slightly more significant and should the proposed mining development impact on the site and specific area, then detailed public participation that will include the relocation of the community and their related graves will have to be thoroughly undertaken.

GPS Coordinates: S26 05 31.70 E29 58 25.80

Site FS6 consists of a number of farming-related structures and homestead located not far from the farm workers settlement (FWD2) on this farm portion. Many of the structures (including the homestead) are fairly modern brick constructions, although there are some earlier (early to mid-20th century) structures that have been altered and changed over the years. Although this diminishes their heritage significance, it is however recommended that should the proposed mining development negatively impact on this site and it needs to be demolished, that an Architectural Historian conduct a more detailed assessment. This will help determine the sites significance and provide recommendations on the required mitigation measures if needed.

GPS Coordinates: S26 05 37.78 E29 58 16.19

Site FWD3 is another farm workers settlement, related to Site FS7 on the map. Access to the site could not be gained during the June assessment, but it is assumed that it is similar in nature to the other farm worker settlements and the related dwellings in the study area. Again, if the mining development are to negatively impact on the site, then the possibility of unmarked burials in and close to the dwellings should be kept in mind.

GPS Coordinates: S26 06 16.78 E29 57 43.22

Site FS7 consists of a number of farming-related structures including homestead. Access to the farmstead could not be obtained during the assessment. Although many of the related structures are more modern constructions, there is some (including the original homestead) that are older than 60 years of age. The homestead seems to be have been originally constructed of the typical sandstone – reminiscent of the late 19th/early 20th century homesteads on the Highveld. As such its significance is fairly High from a cultural heritage perspective, and being in a good state of preservation it should be preserved if possible. If the proposed mining development is going to impact negatively on it, then it is again recommended that an Architectural Historical conduct a detailed assessment to determine its significance and the way forward before it is demolished or re-purposed.

GPS Coordinates: S26 06 26.93 E29 57 33.70

Site FS8 is another farmstead that consists of a homestead and other related farming-related structures. The site is located on the Gebhardt's portion of Naudesbank. Some of the structures (including the homestead) could be older than 60 years of age and of some heritage significance. If the proposed mining development is going to impact negatively on it, then it is again recommended that an Architectural Historical conduct a detailed assessment to determine its significance and the way forward before it is demolished or re-purposed.

GPS Coordinates: S26 06 18.31 E29 58 46.27

Site FS9 is represented by a single structure (homestead), similar to that of FS2. It is of sandstone and likely dates to between the late 19th and mid-20th centuries. Although it is fairly overgrown and abandoned, it is in a fair state of preservation. It is recommended that the structure be assessed in detail by an Architectural Historian should the proposed mining development negatively impact on it and it needs to be demolished as a result.

GPS Coordinates: S26 05 56.37 E29 58 34.16

Grave Sites/Informal cemeteries

A number of grave sites/informal cemeteries were identified during the assessment. These sites are marked as C1-C5 on the sites map.

Site C1 is located on a portion of the farm Twyfelaar, close to a large pan in the area. It consists of around 8 graves, most of which are stone-packed without headstones. Two of the graves are marked with headstones (1 cement with illegible inscription and one with a large granite headstone). On the cement headstone the date 1967 (assumedly date of death) is visible. The grave with the granite headstone is that of one Johana Bhono Mthimunye who passed away in 1959.

GPS Coordinates: S26 03 34.80 E29 55 59.50

Site C2 contains 3 graves. Two of these are stone-packed with no headstones, while the 3rd has a slate headstone with inscription. This grave belongs to one J.F. Lombard, who passed away in 1917.

GPS Coordinates: S26 04 02.50 E29 55 54.60

Site C3 is a fairly large informal cemetery containing more than 30 graves. The site is located in a Bluegum grove, and is fairly overgrown making recording and identifying all the graves at the site difficult. There could therefore be more unrecorded graves here. Most of the graves are stone-packed with no headstones, while there are some graves demarcated with cement and bricks. A few have metal name plaques at their heads, but none had any legible inscriptions. These graves are seen as older than 60 years of age until proven otherwise. The informal cemetery is most likely associated with farm workers who used to work and live in the area.

GPS Coordinates: S26 04 34.80 E29 55 18.50

Site C4 is an informal cemetery located close to an informal farmworker settlement (FWD2) in the area. The site contains approximately 30 graves, with most of them stone-packed without formal headstones. Four (4) of the graves have metal plaques as markers. Only three of these had legible inscriptions, identifying them as members of the Mthimunye family who had passed away between 2018 & 2021. The ages and identity of the other graves are not known. Three (3) other graves are demarcated with cement borders and crosses without any inscriptions. The similarity of these 3 graves indicated that they could be related to one family.

GPS Coordinates: S26 05 26.10 E29 58 22.00

Site 5 is located close to Site FS6, and contains at least 20 graves. Most of the graves here are stone-packed with no headstones, while one contains a granite headstone (it had fallen over and could not be lifted to read the inscription). According to one Bongani (not sure of his surname) who works on the farm, these graves belong to former farmworker's and that it would be possible to trace some of the descendants of the individuals buried here. He also mentioned other possible grave sites in the area but was unsure of precise locations and access to these sites.

GPS Coordinates: S26 05 41.90 E29 58 18.50

Graves always carry a High Rating from a Cultural Heritage point of view, and care should be taken to avoid negatively impacting on them through any development actions. If possible grave sites and the graves on them should be left intact and protected. However, if this is not possible then the graves can be exhumed and relocated after all due processes had been followed. Two options related to mitigating the impacts of development on grave sites are available:

Option 1: Leaving the sites and the graves in situ. This will entail fencing the sites properly, with an access gate to provide entry to descendants to visit the graves. The sites should be cleaned under supervision, each grave should be numbered and a Grave Site Register be drafted and kept. A Grave Sites Management Plan needs to be drafted and implemented as part of the Development Plan.

Option 2: Exhuming and relocating the graves if it cannot be left in situ. This will entail detailed Public Participation/Social Consultation to identify the descendants of the deceased individuals buried there in order to obtain their consent for the exhumation and relocation work to be undertaken. Permits also need to be applied for and obtained from various authorities including COGTA, Provincial Department of Health, Local Municipality and the SAP. For all graves unknown in age and older than 60 years of age a permit from SAHRA is also required.

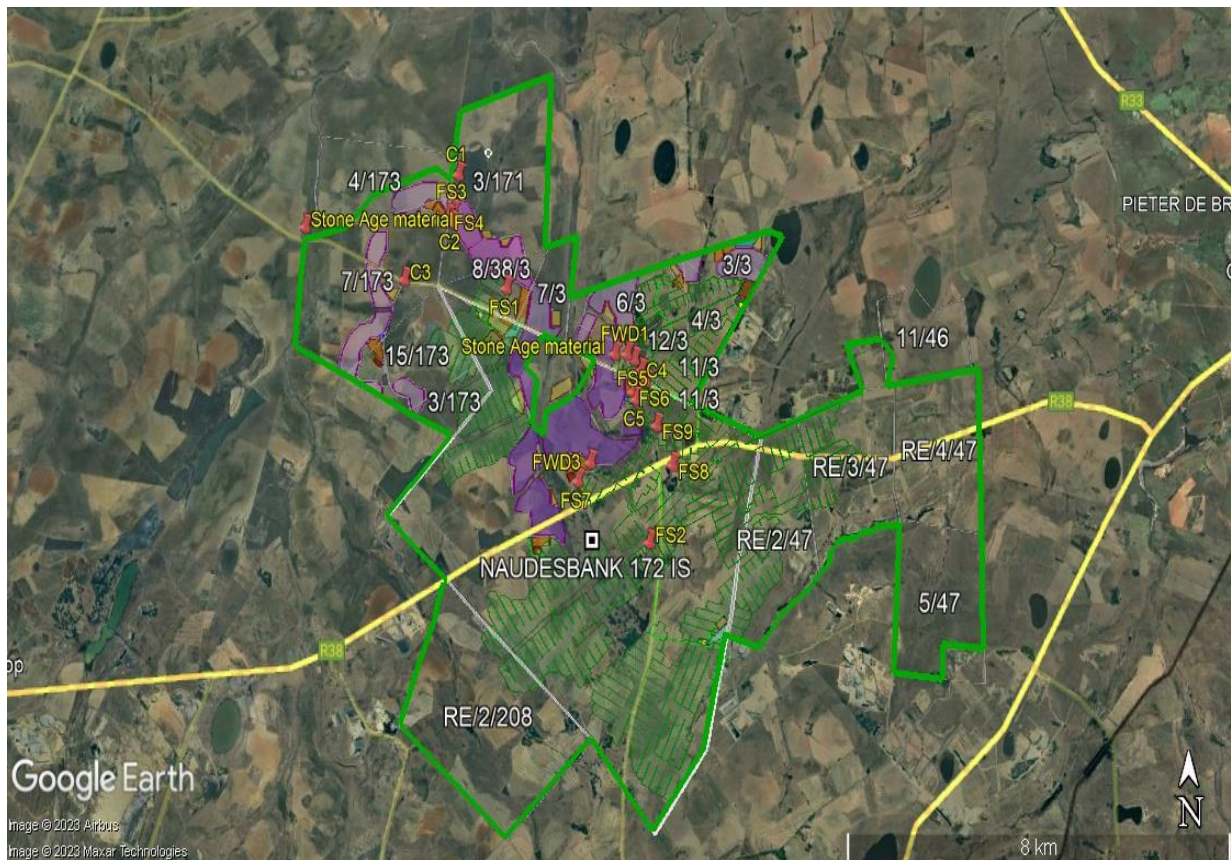


Figure 5: Aerial map showing the location of sites recorded and identified in the study and proposed Mining development area (Google Earth 2023).



Figure 6: General view of a section of the area. Large portions have been ploughed and are currently utilized for agricultural purposes.



Figure 7: Another general view showing the typical landscape of the study and proposed mining area.



Figure 8: Newly ploughed fields. A large pan is also visible here.



Figure 9: An old farmstead/homestead (FS1) with the remnants of related infrastructure recorded in the area.



Figure 10: Small scatter of MSA/LSA tools found just outside of the area.



Figure 11: A single MSA/LSA flake-tool recorded in the area.



Figure 12: A view of one of the informal cemeteries (C1) recorded in the area.



Figure 13: Most of the graves on C1 are only stone-packed.



Figure 14: Three Mthimunye family graves are marked by metal plaques.



Figure 15: These three graves at C1 are demarcated by cement borders and crosses.



Figure 16: A general view of a section of the area with some rocky ridges.



Figure 17: More ploughed fields in the area, with the impact of mining in the larger area also evident.



Figure 18: Late 19th/early 20th century farmstead building of sandstone identified in the Naudesbank area (Site FS2).



Figure 19: Old mining impacts in the area.



Figure 20: Another general view showing the impacts of agricultural activities.



Figure 21: Grave Site C1.



Figure 22: Grave with cement headstone at C1.



Figure 23: The grave of Johana Bhono Mthimunye at C1.



Figure 24: Sandstone enclosure at FS3.



Figure 25: The sandstone homestead structure at Site FS3.



Figure 26: Site FWD1.



Figure 27: One of the stone-packed graves at Site C2.



Figure 28: The headstone on the grave of J.F. Lombard at Site C2.



Figure 29: A view of the cemetery at Site C3.



Figure 30: Another view of Site C3.



Figure 31: Site FWD1.



Figure 32: Homestead at Site FS5.



Figure 33: Another related structure at FS5.



Figure 34: Site FWD2.



Figure 35: Another view of some of the structures at Site FWD2.



Figure 36: The main homestead at Site FS6.



Figure 37: Another structure at Site FS6. Parts of this could be older than 60 years of age.



Figure 38: Another view of some structures at FS6.



Figure 39: View of the grave site at C5.



Figure 40: The grave with the collapsed granite headstone at C5.



Figure 41: A view of Site FWD3.



Figure 43: Partial view of Site FS7.



Figure 44: Partial view of Site FS8.



Figure 45: The sandstone structure at Site FS9.

Impact Assessment and Mitigation Measures

The significance of impacts is determined using the following criteria:

Probability: describes the likelihood of the impact actually occurring

- **Improbable:** the possibility of the impact occurring is very low, due to the circumstances, design or experience.
- **Probable:** there is a probability that the impact will occur to the extent that provision must be made therefore.
- **Highly probable:** it is most likely that the impact will occur at some stage of the development.
- **Definite:** the impact will take place regardless of any prevention plans and there can only be relied on mitigation measures or contingency plans to contain the effect.

Duration: the lifetime of the impact

- **Short Term:** the impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.
- **Medium Term:** the impact will last up to the end of the phases, where after it will be negated.
- **Long Term:** the impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.

- **Permanent:** the impact is non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

Scale: the physical and spatial size of the impact

- **Local:** the impacted area extends only as far as the activity, e.g., footprint.
- **Site:** the impact could affect the whole or measurable portion of the abovementioned property.
- **Regional:** the impact could affect the area including the neighboring residential areas.

Magnitude/Severity: Does the impact destroy the environment, or alter its function

- **Low:** the impact alters the affected environment in such a way that natural processes are not affected.
- **Medium:** the affected environment is altered, but functions and processes continue in a modified way.
- **High:** function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Significance: This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

- **Negligible:** the impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.
- **Low:** the impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.
- **Moderate:** the impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.
- **High:** The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

The significance is calculated by combining the criteria in the following formula:

Sum (Duration, Scale, Magnitude) x Probability

S = Significance weighting; Sc = Scale; D = Duration; M = Magnitude; P = Probability

With a number of sites, features and material of cultural heritage origin and significance found in the area during the assessment, the current site layout provided will have an impact.

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short Term	1
	Medium Term	3
	Long Term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8
Significance	Sum (Duration, Scale, Magnitude)	x Probability
	Negligible	≤20
	Low	>20≤40
	Moderate	>40≤60
	High	>60

Results: $4+1+6\times4= 44$ i.e., $>40\leq60$

The impact of the proposed development on the recorded and known cultural heritage sites in the area is therefore deemed as Moderate based on the Impact Assessment criteria used. However, there is also a possibility of sites, features and material being missed as a result of various factors such as vegetation cover hampering visibility on the ground, as well as the often-subterranean nature of cultural heritage resources (including low stone-packed or unmarked graves). These factors need to be taken into consideration and it is therefore also recommended that a Chance Finds Protocol be drafted and implemented for the proposed Naudesbank Mining Project.

8. CONCLUSIONS AND RECOMMENDATIONS

APelser Archaeological Consulting (APAC) was appointed Zyntha Consulting (Pty) Ltd to conduct a Phase 1 Heritage Impact Assessment for the proposed Naudesbank Mining Development Project. The study & proposed development area is located on portions of the

farms Vaalbult 31IT, Vaalwater 173IS, Twyfelaar 171IS and Naudesbank 172IS. The study and proposed mining area is located between the towns of Hendrina and Carolina in the Province of Mpumalanga.

The literature review indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls. A number of sites, features and material of cultural heritage (archaeological and/or historical) origin & significance were identified and recorded in the study and the proposed development area during the May & June 2023 field assessments.

A number of sites, features and remains of recent historical origin were identified in the area during the field assessment, as well as some individual Stone Age objects just outside and in the area. The recent historical sites included some old farmsteads and related infrastructure (some of which are still in use and occupied), as well as a number of grave sites (informal cemeteries) in the area. Mitigation measures to negate the potential impacts of the mining development on the sites have been provided.

The impact of the proposed development on the recorded and known cultural heritage sites in the area is seen as Moderate based on the Impact Assessment criteria used. There is always a possibility of sites, features and material being missed as a result of various factors such as vegetation cover hampering visibility on the ground, as well as the often-subterranean nature of cultural heritage resources, including low stone-packed or unmarked graves. The drafting and implementation of a Chance Finds Protocol for the proposed Naudesbank Mining Project is therefore also recommended.

Finally, from a Cultural Heritage point of view, it is recommended that the proposed Naudesbank Mining Project Development should be allowed to continue taking into consideration the recommended mitigation measures.

9. REFERENCES

General and Closer views of study & Mining Project Area location & footprint: Google Earth 2023.

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APPENDIX A: DEFINITION OF TERMS:

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

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

Feature: A coincidental find of movable cultural objects.

Object: Artifact (cultural object).

(Also see Knudson 1978: 20).

APPENDIX B: DEFINITION/ STATEMENT OF HERITAGE SIGNIFICANCE

Historic value: Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.

Aesthetic value: Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.

Scientific value: Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period.

Social value: Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.

Rarity: Does it possess uncommon, rare or endangered aspects of natural or cultural heritage.

Representivity: Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province region or locality.

APPENDIX C: SIGNIFICANCE AND FIELD RATING:

Cultural significance:

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

Heritage significance:

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

Field ratings:

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

APPENDIX D: PROTECTION OF HERITAGE RESOURCES:

Formal protection:

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

Protected areas - An area surrounding a heritage site

Provisional protection – For a maximum period of two years

Heritage registers – Listing Grades II and III

Heritage areas – Areas with more than one heritage site included

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

General protection:

Objects protected by the laws of foreign states

Structures – Older than 60 years

Archaeology, paleontology and meteorites

Burial grounds and graves

Public monuments and memorials

APPENDIX E: HERITAGE IMPACT ASSESSMENT PHASES

1. Pre-assessment or Scoping Phase – Establishment of the scope of the project and terms of reference.
2. Baseline Assessment – Establishment of a broad framework of the potential heritage of an area.
3. Phase I Impact Assessment – Identifying sites, assess their significance, make comments on the impact of the development and makes recommendations for mitigation or conservation.
4. Letter of recommendation for exemption – If there is no likelihood that any sites will be impacted.
5. Phase II Mitigation or Rescue – Planning for the protection of significant sites or sampling through excavation or collection (after receiving a permit) of sites that may be lost.
6. Phase III Management Plan – For rare cases where sites are so important that development cannot be allowed.