

# HERITAGE SCREENER

CTS22_155
Manyabe Consulting
August 2022
Tharisa Minerals EMPr EA and WML Amendments – for the proposed increase of TSF storage capacity via self-raising the walls of TSF2 & TSF 2 extension; and conversion of West Waste Rock Dump 1 Extension into TSF3 at west mine

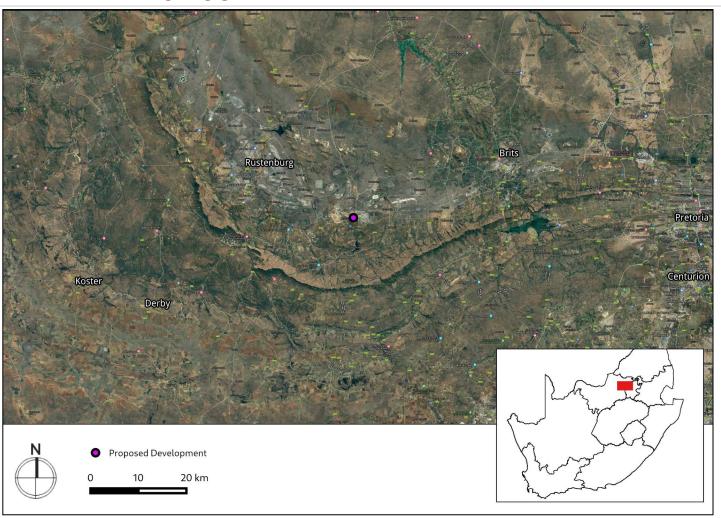


Figure 1a. Satellite map indicating the location of the proposed development in the North West Province

Recommendation:

**RECOMMENDATION** 

Based on the available information, the proposed development is not likely to impact on significant heritage resources and as such, it is recommended that no further heritage impact assessments are required in terms of section 38 of the NHRA.



## 1. Proposed Development Summary

Tharisa mine has been operational since 2008. Mining is undertaken in two mining sections, namely the East Mine and West Mine, using conventional open pit truck and shovel methods. Waste rock from the open pit areas is either stockpiled on WRDs or backfilled into the open pits as part of concurrent rehabilitation. The two mining sections are separated by the Sterkstroom River and Marikana Road. The following mine infrastructure exists at the mine.

- Haul roads;
- Run-of-mine;
- Concentrator complex;
- Product and topsoil stockpiles;
- WRDs:
- Dormant and active TSFs: and
- Offices, workshops, change house and access control facilities.

As part of its on-going mine planning, Tharisa has identified the need for an additional TSF on site i.e. TSF3. Tharisa mine is growing its mining output and as such, more tailings are being produced. The current facilities are nearing their full capacity, hence the need to develop a new TSF. The conversion of a portion of WWRD 1 into TSF3 will ensure that the Life of Mine (LoM) is extended by providing alternative waste storage when the current facilities reach their end of life. The proposed conversion will occur within the approved mining footprint, which will result in minimal negative impacts on the physical environment while contributing positively to the socio-economic environment. The proposed project entails the conversion of WWRD 1 - extension into TSF3 at west mine.

Assessed herein is also the proposed increase TSF storage capacity via self-raising the walls of TSF2 & TSF 2 extension.

### 2. Application References

Name of relevant heritage authority(s)	SAHRA
Name of decision making authority(s)	Department of Mineral Resources and Energy

### 3. Property Information

Latitude / Longitude 25°44'16.33"S 27°28'58.73"E	
Erf number / Farm number	Existing mining operations - 342 JQ and Elandsdrift 467 JQ. Proposed project - 342 JQ
Local Municipality	Rustenburg



District Municipality	Bojanala
Province	North West
Current Use	Mining
Current Zoning	Mining

# 4. Nature of the Proposed Development

Total Surface Area	1,171,928m2
Depth of excavation (m)	46m
Height of development (m)	55m

# **5. Category of Development**

x	Triggers: Section 38(8) of the National Heritage Resources Act
	Triggers: Section 38(1) of the National Heritage Resources Act
	1. Construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length.
	2. Construction of a bridge or similar structure exceeding 50m in length.
	3. Any development or activity that will change the character of a site-
	a) exceeding 5 000m² in extent
	b) involving three or more existing erven or subdivisions thereof
	c) involving three or more erven or divisions thereof which have been consolidated within the past five years
	4. Rezoning of a site exceeding 10 000m <sup>2</sup>
	5. Other (state):



# 6. Additional Infrastructure Required for this Development

None



# **7. Mapping** (please see Appendix 3 and 4 for a full description of our methodology and map legends)

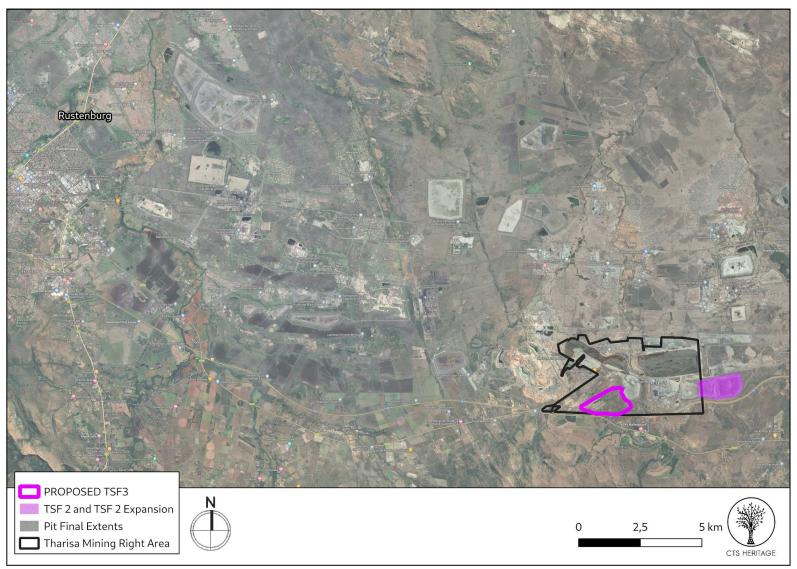


Figure 1b Overview Map. Satellite image (2022) indicating the proposed development area at closer range, relative to Rustenburg.



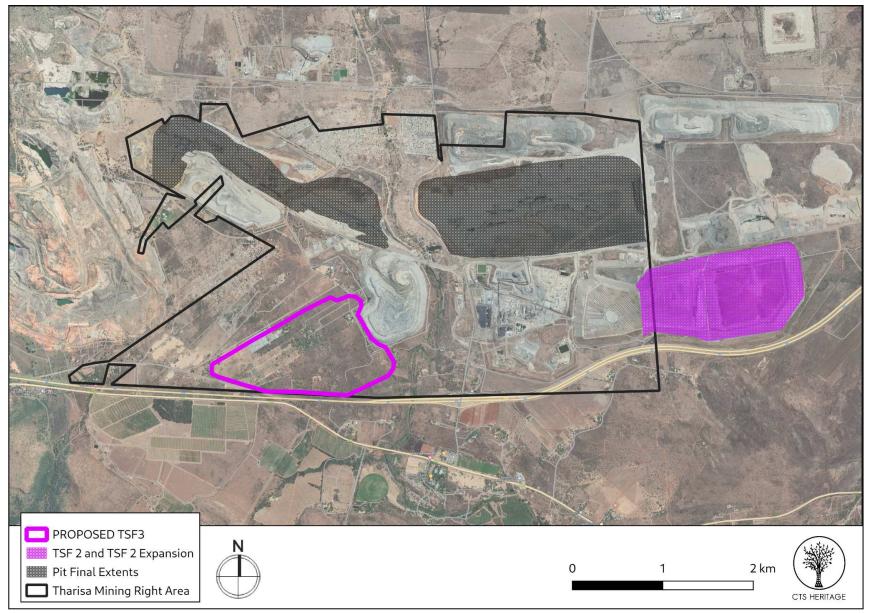


Figure 1c. Overview Map. Satellite image (2022) indicating the proposed development area at closer range.



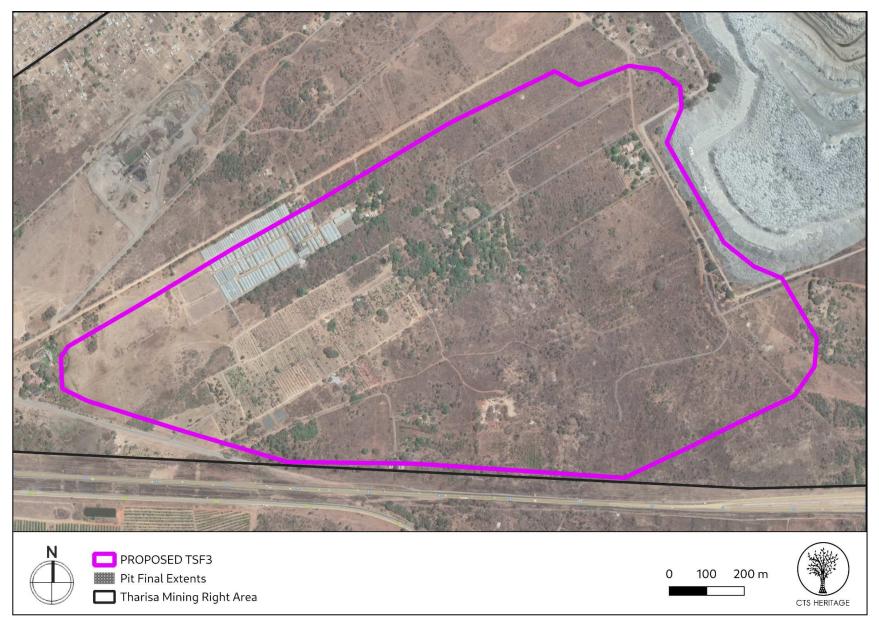


Figure 1d. Overview Map. Satellite image (2022) indicating the proposed development area at closer range.



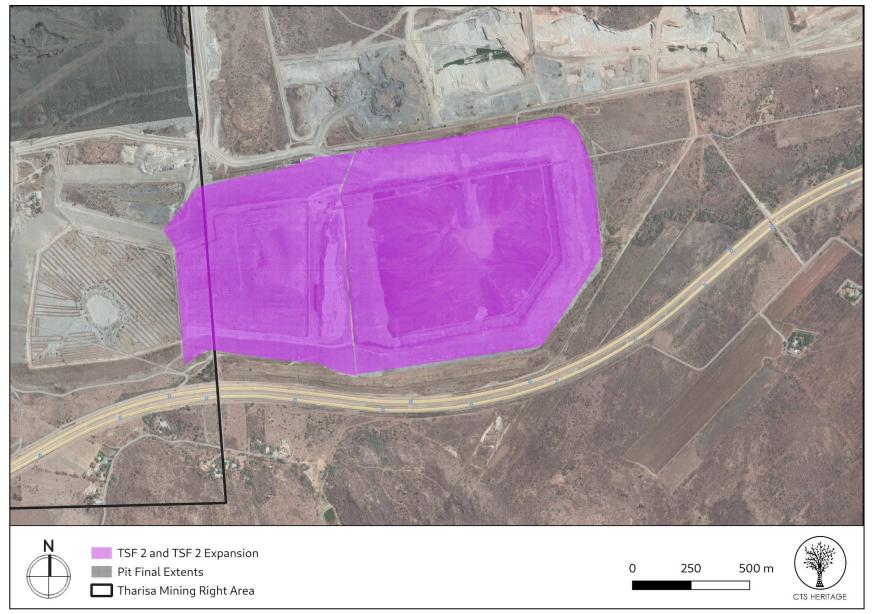


Figure 1e. Overview Map. Satellite image (2022) indicating the proposed development area for TSF 2 and TSF 2 Expansion at closer range.



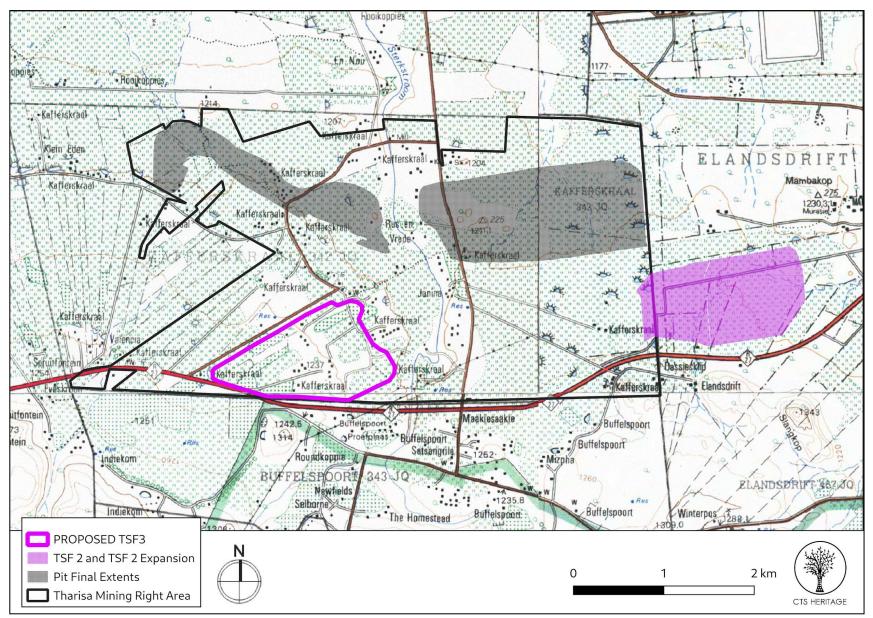
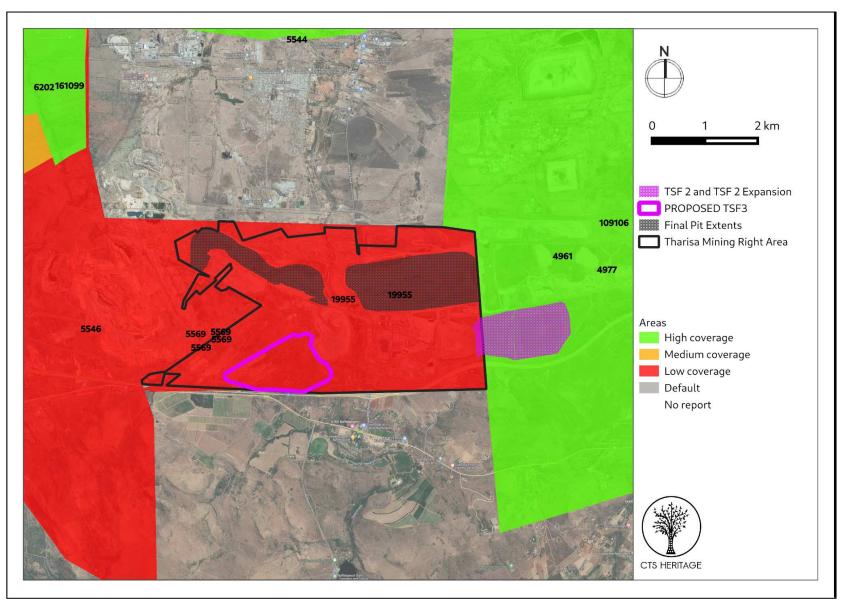


Figure 1f. Overview Map. Extract from the 1:50 000 Topo Map





**Figure 2. Previous HIAs Map.** Previous Heritage Impact Assessments surrounding the proposed development area within 10km, with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.



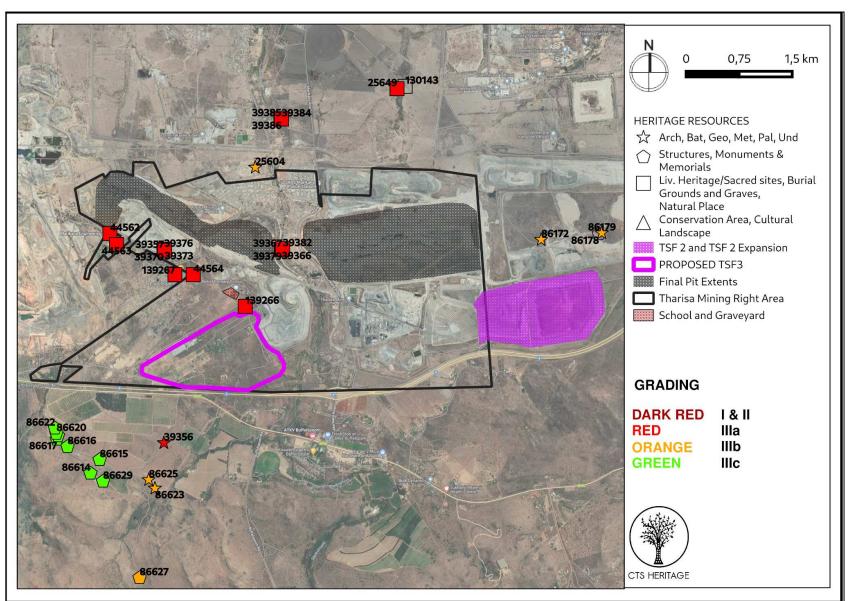


Figure 3. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated. Please See Appendix 4 for full description of heritage resource types.



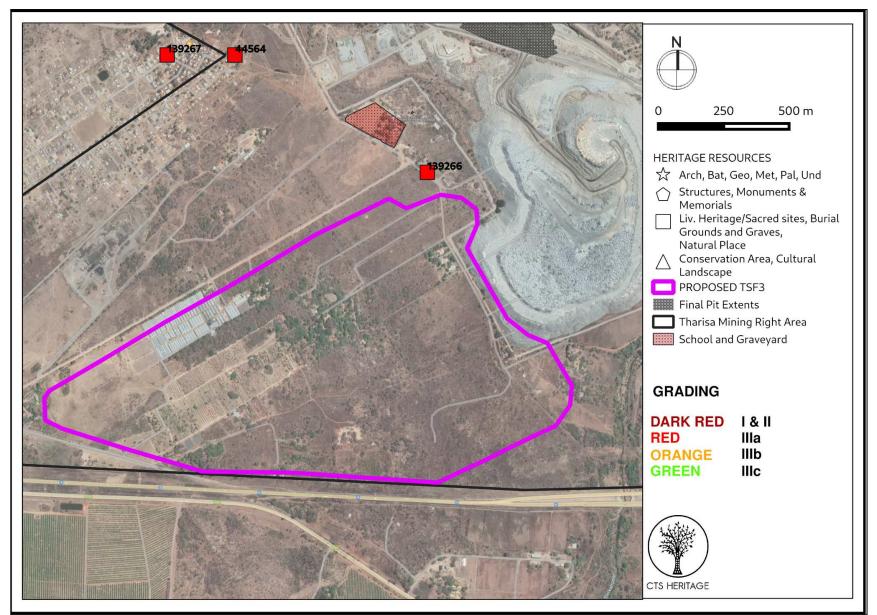


Figure 3a. Heritage Resources Map. Inset A



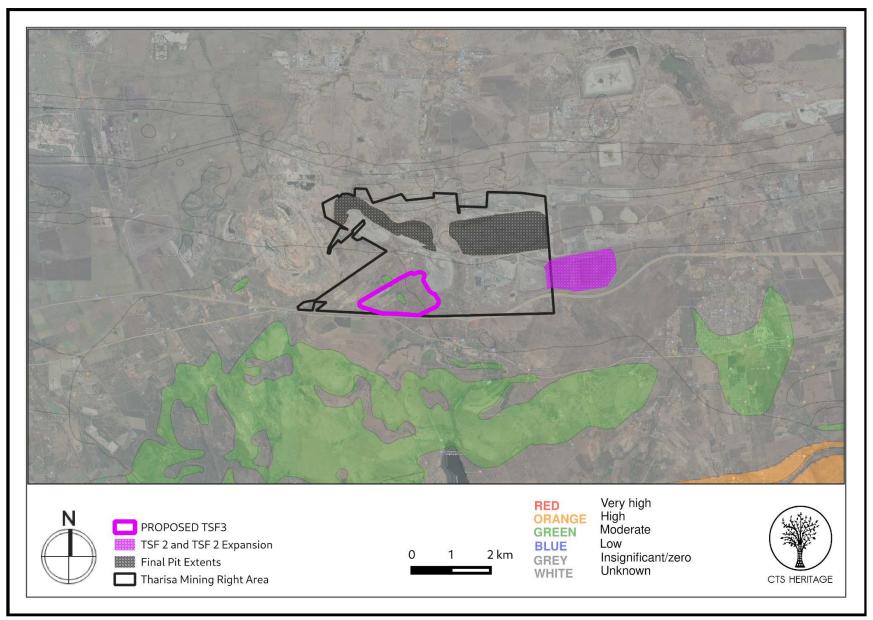
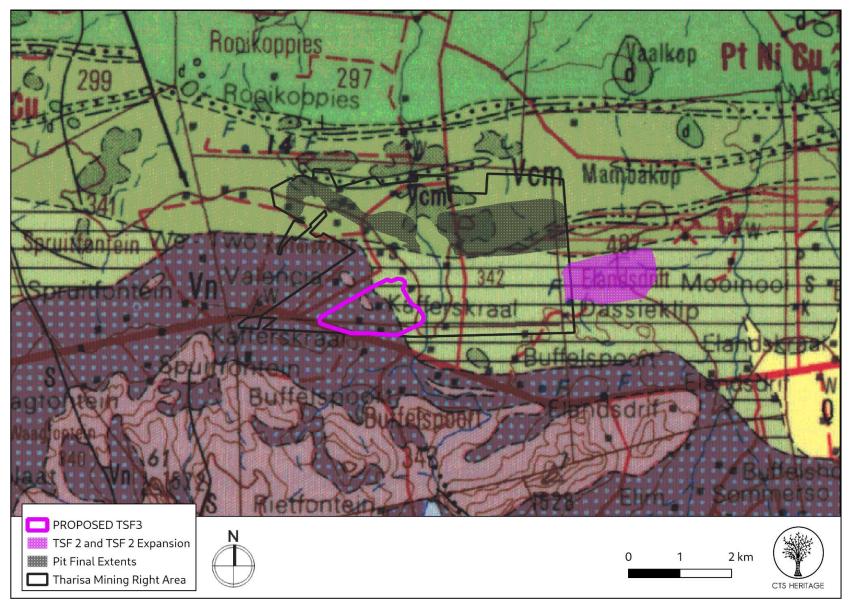


Figure 4. Palaeosensitivity Map. Indicating zero fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.





**Figure 5. Geology Map**. Extract from the Council for GeoScience Rustenburg Map 2526 indicating that the area proposed for development is underlain by Vn (Kolobeng Norite) and Vcm (Mathlagame Norite-anthrosite)



### 8. Heritage statement and character of the area

This application is for the proposed establishment of an additional tailings storage facility (TSF) to be located within the existing and approved mining area, as well as the expansion of an existing TSF (TSF 2). The existing Tharisa Mine is located approximately 3km south of the town of Marikana. The town was laid out in 1870 on the farm Rooikoppes, and the settlement later expanded into seven white-owned farms. In 1933, the Buffelspoort Dam was built, allowing the local farmers to irrigate their crops. The farming community grew in the 1960s on the back of lucrative tobacco farming, but other diversified farming practices i.e. cattle, maize, chillies, paprika, soya, lusern and sunflower amongst the main groups was the main economic driver of the area. In the 1970s mining was introduced and grew to become the main industry in the region. As the application is for the creation of an additional TSF within an existing mine and the expansion of an existing TSF within the mine area (Figure 1b to 1f), the proposed development is *unlikely to change the character of the area*.

As indicated in Figure 2, the area proposed for the creation of the TSF has been subject to heritage impact assessments in the past. In the assessment completed by Pistorius (2009) for the Tharisa Mine, he notes the following heritage resources that exist within the mine area: Stone walled settlements which date from the Late Iron Age; Historical structures such as farm houses with outbuildings, agricultural infrastructure and the van Rensburg School (now called the Retief Primary School); At least six graveyards as well as Objects with heritage significance such as outdated and discarded agricultural implements. All of the significant heritage resources identified by Pistorius (2009) have been extracted and are mapped in Figures 3a, b and c and are listed in Appendix 1. None of these known sites is anticipated to be impacted by the proposed creation of waste rock storage areas. Pistorius conducted an additional field assessment in 2014 for the proposed north-eastern waste rock dump area which identified no heritage resources of significance. A subsequent heritage field assessment was conducted by Pelser (2018) for the proposed north-eastern waste rock dump which included the Lapologang Village. Pelser (2018) identified a number of sites and structures, with only 2 (cemeteries) of any significance recorded. The others were the remains/ruins of fairly recent buildings and not deemed of any significance. Neither of the cemeteries identified by Pelser (2018) are likely to be impacted by the establishment of the additional TSF proposed in this application.

It is clear that all of the area proposed for development has been either previously surveyed for heritage resources (Figure 2) or impacted by the existing mine (Figure 1c, d and e) and as such, it is very unlikely that the proposed development will impact negatively on any significant archaeological heritage resources. No further assessment of impact to archaeological heritage is recommended.

According to the SAHRIS Palaeosensitivity Map (Figure 4), the area proposed for development is underlain by sediments of zero palaeontological sensitivity. According to the extract from the Council of GeoScience Map for Rustenburg (Figure 5), the geology of the area consists of norite and norite-anthrocite which does not contain any fossil material. As such, it is very unlikely that the proposed establishment of an additional TSF here will impact on significant palaeontological heritage and no further assessment of impacts to palaeontological heritage is recommended.

#### **RECOMMENDATION**

Based on the available information, the proposed development is not likely to impact on significant heritage resources and as such, it is recommended that no further heritage impact assessments are required in terms of section 38 of the NHRA.



# APPENDIX 1: List of heritage resources in proximity to the development area

Site ID	Site no	Full Site Name	Site Type	Grading
86614	BUFFE343/001	Buffelspoort 343/ 001	Building	Grade IIIc
86615	BUFFE343/002	Buffelspoort 343/ 002	Building	Grade IIIc
86616	BUFFE343/003	Buffelspoort 343/ 003	Building	Grade IIIc
86617	BUFFE343/004	Buffelspoort 343/ 004	Building	Grade IIIc
86619	BUFFE343/005	Buffelspoort 343/ 005	Building	Grade IIIc
86620	BUFFE343/006	Buffelspoort 343/ 006	Structures	Grade IIIc
86621	BUFFE343/008	Buffelspoort 343/ 008	Structures	Grade IIIc
86622	BUFFE343/007	Buffelspoort 343/ 007	Building	Grade IIIc
86623	BUFFE343/009	Buffelspoort 343/ 009	Stone walling	Grade IIIb
86625	BUFFE343/010	Buffelspoort 343/ 010	Stone walling	Grade IIIb
86629	BUFFE343/012	Buffelspoort 343/ 012	Building	Grade IIIc
86172	ELANDS003	ELANDSDRIFT OPENCAST 003	Stone walling	Grade IIIb
86173	ELANDS004	ELANDSDRIFT OPENCAST 004	Stone walling	Grade IIIb
86174	ELANDS005	ELANDSDRIFT OPENCAST 005	Structures	Grade IIIb
86175	ELANDS006	ELANDSDRIFT OPENCAST 006	Building	Grade IIIc
86178	ELANDS009	ELANDSDRIFT OPENCAST 009	Structures	Ungraded
86179	ELANDS010	ELANDSDRIFT OPENCAST 010	Stone walling	Grade IIIb



25604	Lonmin	Lonmin	Settlement	Grade IIIb
25649	Rooikoppies	erf 297JQ, Rooikoppies	Burial Grounds & Graves	Grade IIIa
44553	SPRUI-KAF02	Spruitfontein to Kafferskraal 03	Building	Grade IIIc
44555	SPRUI-KAF03	Spruitfontein to Kafferskraal 03	Artefacts	Grade IIIc
44561	SPRUI-KAF05	Spruitfontein to Kafferskraal 05	Stone walling	Grade IIIb
39356	KAFF001	Kafferskraal 001	Stone walling	Grade IIIa
39357	KAFF002	Kafferskraal 002	Stone walling	Grade IIIa
39358	KAFF003	Kafferskraal 003	Stone walling	Grade IIIa
39359	KAFF004	Kafferskraal 004	Building	Grade IIIa
39360	KAFF005	Kafferskraal 005	Building	Grade IIIa
39362	KAFF006	Kafferskraal 006	Building	Grade IIIa
39363	KAFF007	Kafferskraal 007	Building	Grade IIIa
39364	KAFF008	Kafferskraal 008	Structures	Grade IIIa
39365	KAFF009	Kafferskraal 009	Building	Grade IIIa
39366	KAFF010	Kafferskraal 010	Building	Grade IIIa
39367	KAFF011	Kafferskraal 011	Structures	Grade IIIa
39368	KAFF012	Kafferskraal 012	Structures	Grade IIIa
39369	KAFF013	Kafferskraal 013	Structures	Grade IIIa
39370	KAFF014	Kafferskraal 014	Structures	Grade IIIa



39373	KAFF016	Kafferskraal 016	Building	Grade IIIa
39374	KAFF015	Kafferskraal 015	Building	Grade IIIa
39375	KAFF017	Kafferskraal 017	Building	Grade IIIa
44552	SPRUI-KAF01	Spruitfontein to Kafferskraal 01	Burial Grounds & Graves	Grade IIIa
44562	SPRUI-KAF06	Spruitfontein to Kafferskraal 06	Burial Grounds & Graves	Grade IIIa
44563	SPRUI-KAF07	Spruitfontein to Kafferskraal 07	Burial Grounds & Graves	Grade IIIa
44564	SPRUI-KAF08	Spruitfontein to Kafferskraal 08	Burial Grounds & Graves	Grade IIIa
44560	SPRUI-KAF04	Spruitfontein to Kafferskraal 04	Burial Grounds & Graves	Grade IIIa
39376	KAFF018	Kafferskraal 018	Burial Grounds & Graves	Grade IIIa
39378	KAFF020	Kafferskraal 020	Burial Grounds & Graves	Grade IIIa
39379	KAFF021	Kafferskraal 021	Burial Grounds & Graves	Grade IIIa
39381	KAFF022	Kafferskraal 022	Burial Grounds & Graves	Grade IIIa
39382	KAFF023	Kafferskraal 023	Burial Grounds & Graves	Grade IIIa
39384	KAFF024	Kafferskraal 024	Burial Grounds & Graves	Grade IIIa
39385	KAFF025	Kafferskraal 025	Burial Grounds & Graves	Grade IIIa
39386	KAFF026	Kafferskraal 026	Burial Grounds & Graves	Grade IIIa
130200	2527DA/ RDP/ farm Elandsdrift 467 JQ/ Site 1	Stone wall	Archaeological	Ungraded
130143	Rooikoppies 297JQ	Grave SIte on Rooikoppies 297JQ	Burial Grounds & Graves	Grade IIIa



## **APPENDIX 2:** Reference List

	Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title	
4959	AIA Phase 1	Julius CC Pistorius	01/10/2002	A Cultural Heritage Impact Assessment of Two Alternative Railway Line Corridors for the Transvaal Ferrochrome Smelter on the Mooinooi//Marikana Area	
4961	AIA Phase 1	Julius CC Pistorius	01/11/2002	A Heritage Impact Assessment for Eskom's New Proposed 88 kV Powerline From the Middelkraal Substation to the Big Horn/Wonderkoppies Power Stations on the Farm Elandsdrif 467 JQ and Middelkraal 466 JQ Near Marikana and Mooinooi in the North West Province	
4977	AIA Phase 1	Anton van Vollenhoven, Anton Pelser	01/08/2008	A Report on a Cultural Heritage Impact Assessment for the Proposed Elandsdrift EMPR, near Mooinooi, Northwest Province	
5546	HIA Phase 1	Julius CC Pistorius	01/09/2003	A Heritage Impact Assessment (HIA) for Eskom's New Proposed Ikaros Integration Scheme in the Rustenburg District of the North-West Province of South Africa	
5569	AIA Phase 1	Johnny Van Schalkwyk, Anton Pelser	01/12/1999	A Survey of Cultural Resources on the Farms Spruitfontein 341 JQ and Kafferskraal 342 JQ, Rustenberg District	
6202	AIA Phase 1	Thomas Huffman	01/02/2005	The Archaeology of the Anglo Platinum Lease Area, Rustenburg	
19955	HIA Phase 1	Julius CC Pistorius	01/09/2009	A PHASE I HERITAGE IMPACT ASSESSMENT STUDY FOR THE PROPOSED NEW THARISA MINE ON THE FARMS KAFFERSKRAAL 342 AND ELANDSDRIFT 467 NEAR MARIKANA IN THE NORTH-WEST PROVINCE OF SOUTH AFRICA	
109106	Archaeologic al Specialist Reports	Anton Pelser	01/03/2012	A report on an Archaeological Impact Assessment for the proposed Mooinooi Development on Portion 34 and the Remaining Extent of Portion 1 of the farm Elandsdrift 467-JQ, near Mooinooi, North West	
161099	AIA Phase 1	Anton van Vollenhoven	01/02/2014	A REPORT ON THE UPDATING OF A PREVIOUS CULTURAL HERITAGE IMPACT ASSESSMENT FOR THE EMPR ALIGNMENT AND CONSOLIDATION PROCESS AT ANGLO AMERICAN PLATINUM: RUSTENBURG	



|--|



# **APPENDIX 3 - Keys/Guides**

### **Key/Guide to Acronyms**

AIA	Archaeological Impact Assessment		
DARD	Department of Agriculture and Rural Development (KwaZulu-Natal)		
DEA	Department of Environmental Affairs (National)		
DEADP	Department of Environmental Affairs and Development Planning (Western Cape)		
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism (Eastern Cape)		
DEDECT	Department of Economic Development, Environment, Conservation and Tourism (North West)		
DEDT	Department of Economic Development and Tourism (Mpumalanga)		
DEDTEA	Department of economic Development, Tourism and Environmental Affairs (Free State)		
DENC	Department of Environment and Nature Conservation (Northern Cape)		
DMR	Department of Mineral Resources (National)		
GDARD	Gauteng Department of Agriculture and Rural Development (Gauteng)		
HIA	Heritage Impact Assessment		
LEDET	Department of Economic Development, Environment and Tourism (Limpopo)		
MPRDA	Mineral and Petroleum Resources Development Act, no 28 of 2002		
NEMA	National Environmental Management Act, no 107 of 1998		
NHRA	National Heritage Resources Act, no 25 of 1999		
PIA	Palaeontological Impact Assessment		
SAHRA	South African Heritage Resources Agency		
SAHRIS	South African Heritage Resources Information System		
VIA	Visual Impact Assessment		

## Full guide to Palaeosensitivity Map legend

RED:	VERY HIGH - field assessment and protocol for finds is required
ORANGE/YELLOW:	HIGH - desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN:	MODERATE - desktop study is required
BLUE/PURPLE:	LOW - no palaeontological studies are required however a protocol for chance finds is required
GREY:	INSIGNIFICANT/ZERO - no palaeontological studies are required
WHITE/CLEAR:	UNKNOWN - these areas will require a minimum of a desktop study.



### **APPENDIX 4 - Methodology**

The Heritage Screener summarises the heritage impact assessments and studies previously undertaken within the area of the proposed development and its surroundings. Heritage resources identified in these reports are assessed by our team during the screening process.

The heritage resources will be described both in terms of **type**:

- Group 1: Archaeological, Underwater, Palaeontological and Geological sites, Meteorites, and Battlefields
- Group 2: Structures, Monuments and Memorials
- Group 3: Burial Grounds and Graves, Living Heritage, Sacred and Natural sites
- Group 4: Cultural Landscapes, Conservation Areas and Scenic routes

and **significance** (Grade I, II, IIIa, b or c, ungraded), as determined by the author of the original heritage impact assessment report or by formal grading and/or protection by the heritage authorities.

Sites identified and mapped during research projects will also be considered.

#### DETERMINATION OF THE EXTENT OF THE INCLUSION ZONE TO BE TAKEN INTO CONSIDERATION

The extent of the inclusion zone to be considered for the Heritage Screener will be determined by CTS based on:

- the size of the development,
- the number and outcome of previous surveys existing in the area
- the potential cumulative impact of the application.

The inclusion zone will be considered as the region within a maximum distance of 50 km from the boundary of the proposed development.

#### **DETERMINATION OF THE PALAEONTOLOGICAL SENSITIVITY**

The possible impact of the proposed development on palaeontological resources is gauged by:

- reviewing the fossil sensitivity maps available on the South African Heritage Resources Information System (SAHRIS)
- considering the nature of the proposed development
- when available, taking information provided by the applicant related to the geological background of the area into account

### DETERMINATION OF THE COVERAGE RATING ASCRIBED TO A REPORT POLYGON

Each report assessed for the compilation of the Heritage Screener is colour-coded according to the level of coverage accomplished. The extent of the surveyed coverage is labeled in three categories, namely low, medium and high. In most instances the extent of the map corresponds to the extent of the development for which the specific report was undertaken.



### Low coverage will be used for:

- desktop studies where no field assessment of the area was undertaken;
- reports where the sites are listed and described but no GPS coordinates were provided.
- older reports with GPS coordinates with low accuracy ratings;
- reports where the entire property was mapped, but only a small/limited area was surveyed.
- uploads on the National Inventory which are not properly mapped.

### Medium coverage will be used for

- reports for which a field survey was undertaken but the area was not extensively covered. This may apply to instances where some impediments did not allow for full coverage such as thick vegetation, etc.
- reports for which the entire property was mapped, but only a specific area was surveyed thoroughly. This is differentiated from low ratings listed above when these surveys cover up to around 50% of the property.

### High coverage will be used for

• reports where the area highlighted in the map was extensively surveyed as shown by the GPS track coordinates. This category will also apply to permit reports.

#### **RECOMMENDATION GUIDE**

The Heritage Screener includes a set of recommendations to the applicant based on whether an impact on heritage resources is anticipated. One of three possible recommendations is formulated:

(1) The heritage resources in the area proposed for development are sufficiently recorded - The surveys undertaken in the area adequately captured the heritage resources. There are no known sites which require mitigation or management plans. No further heritage work is recommended for the proposed development.

This recommendation is made when:

- enough work has been undertaken in the area
- it is the professional opinion of CTS that the area has already been assessed adequately from a heritage perspective for the type of development proposed

(2) The heritage resources and the area proposed for development are only partially recorded - The surveys undertaken in the area have not adequately captured the heritage resources and/or there are sites which require mitigation or management plans. Further specific heritage work is recommended for the proposed development.

This recommendation is made in instances in which there are already some studies undertaken in the area and/or in the adjacent area for the proposed development. Further studies in a limited HIA may include:

- improvement on some components of the heritage assessments already undertaken, for instance with a renewed field survey and/or with a specific specialist for the type of heritage resources expected in the area
  - compilation of a report for a component of a heritage impact assessment not already undertaken in the area



- undertaking mitigation measures requested in previous assessments/records of decision.
- (3) The heritage resources within the area proposed for the development have not been adequately surveyed yet Few or no surveys have been undertaken in the area proposed for development. A full Heritage Impact Assessment with a detailed field component is recommended for the proposed development.

#### Note:

The responsibility for generating a response detailing the requirements for the development lies with the heritage authority. However, since the methodology utilised for the compilation of the Heritage Screeners is thorough and consistent, contradictory outcomes to the recommendations made by CTS should rarely occur. Should a discrepancy arise, CTS will immediately take up the matter with the heritage authority to clarify the dispute.