CTS HERITAGE

HERITAGE SCREENER

CTS Reference Number:	**CTS24_119**
SAHRIS CaseID:	
Client:	**EnviroWorks**
Date:	**May 2024**
Title:	**Proposed prospecting application for 6 boreholes on various farms near Kroonstad in the Free State Province**

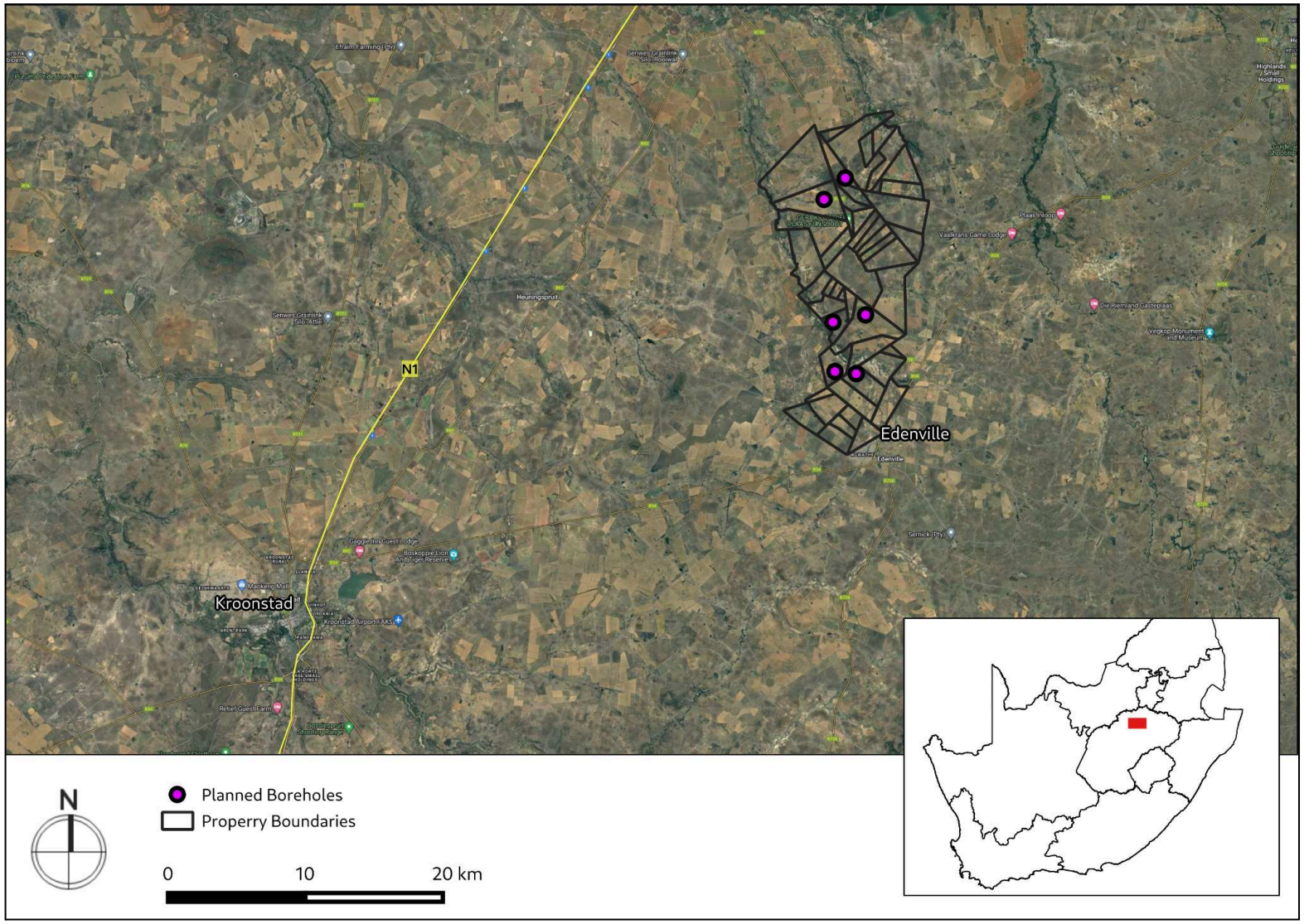

Figure 1a. Satellite map indicating the location of the proposed development in the Free State Province.

CTS Heritage
Bonne Esperance, 238 Queens Road, Simons Town
Email: info@ctsheritage.com **Web:** www.ctsheritage.com

1. Proposed Development Summary

Invasive prospecting will take the form of diamond drilling and will occur in Years 3 and 4. This information will then be integrated into the geological model to further define the orebodies, which when combined with the assay information will be utilised to define a resource.

4.1 Drilling of 3 Diamond Boreholes to a Depth of 700m [Year 3: 12 months]
Based on the initial geological model established, a diamond drilling programme comprising of four boreholes will be undertaken.

5.1 Drilling of 3 Diamond Boreholes to a Depth of 700m [Year 4: 12 months]

Should the drilling programme prove to be successful in Year 3, an additional four holes will be considered. It is imperative to note that the drilling in Year 4 is dependent on positive outcomes from the drilling in Year 3. Drilling will be conducted in a competent and environmentally responsible manner including rehabilitation of the drill sites to their original state. Plastic lining will be placed underneath the rig motors to prevent oil seepage. It is noted that no drilling fluids other than water for dust suppression, will be utilised in the case of diamond drilling. Environmental rehabilitation measures will be included in the contract with the drilling company and environmental rehabilitation costs will be included in the drilling costs.

The drilling process will be managed in a competent manner and will involve the following actions:
• Call for drill tenders
• Review the registration, incorporation, employment equity and BEE of the drilling company
• Confirm the good financial standing of the drilling company
• Establishment of confidentiality agreements and management of conflicts of interest that the drilling company may have
• Review the drilling company’s approach to Mines, Health and Safety issues
• Compile a preliminary analysis report
• Select drilling company
• Award of the drilling contract
• Obtain permission to access the property
• Submit information of planned drilling to Mines, Health and Safety at DMR
• Forward special instructions to the drilling company regarding power, water, environmental, safety and security
• Preliminary analysis report on notifications e.g. Eskom, Telkom, etc.
• Finalise the initial borehole positions
• Plan access roads, crew accommodation and site security
• Environmental assessment of drill sites

• Preparation of drilling sites
• Establish water source for drilling
• Plan health and safety issues and establish a safe working code specific to the area
• Perform the necessary risk assessments and Planned Task Observations (PTO)
• Monitor and control the drilling process
• Ensure secure core storage and sampling facilities
• Set QA/QC sampling procedures in place and insert proper reference material as samples
• Undertake site rehabilitation
• Take pictures before and after rehabilitation
• Compile preliminary analysis report on the start date of the drilling programme
• Plan additional infill borehole sites

A strict QA/QC programme will be conducted by the internal Qualified Person (QP)/Exploration Manager:
• Quality of drilling programme
• Survey of borehole collars utilising a GPS
• Sample management (weighing, splitting, transport)
• Logging and mineralisation/reef identification
• Sampling procedures
• Chain of custody of transport of samples to laboratory
• Laboratories utilised
• Quality control of standards, blanks and duplicates to ensure accurate assay methods and grades from laboratory
• Applicable assay method utilised for style of mineralisation
• QA/QC on lab results including check assaying at an umpire laboratory
• Database management
• External audits by Qualified Persons

2. Application References

Name of relevant heritage authority(s)	SAHRA
Name of decision making authority(s)	DMRE

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3. Property Information

Latitude / Longitude	-27.37228110,27.64411162 -27.3862990,27.6284337 -27.4667161,27.6350170 -27.461951287,27.659048653 -27.49906998,27.63644512 -27.50049884,27.65214802
Erf number / Farm number	Farm 326, Farm 267, Farm 397, Farm 282, Farm 158 and Farm 1453
Local Municipality	Matjhabeng
District Municipality	Lejweleputswa
Province	Free State
Current Use	Agriculture
Current Zoning	Agriculture

4. Nature of the Proposed Development

Total Surface Area of development	TBA
Depth of excavation (m)	TBA
Height of development (m)	TBA

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 000m^2 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^2
	5. Other (state):

6. Additional Infrastructure Required for this Development

NA

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

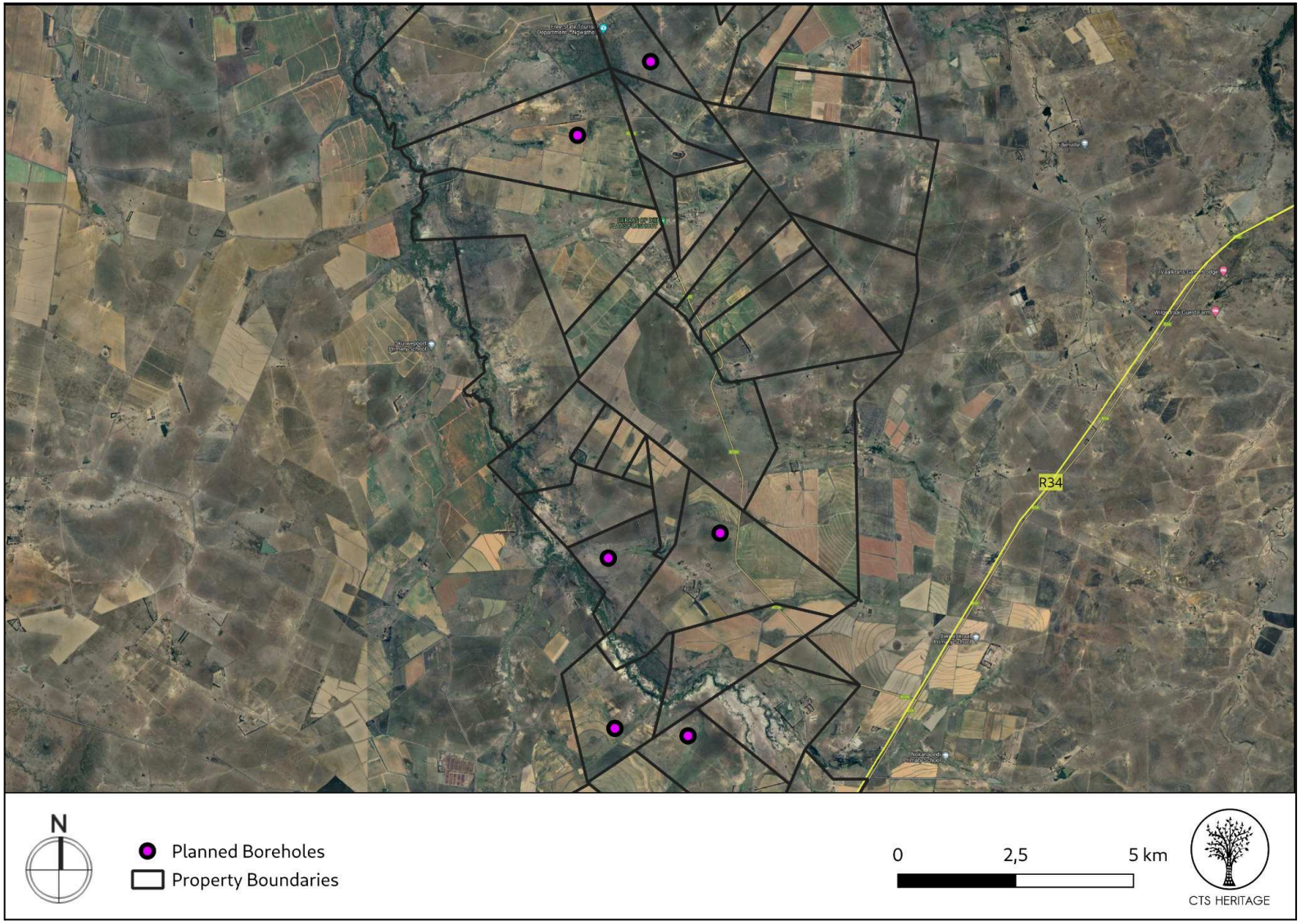

Figure 1b Overview Map. Satellite image (2024) indicating the proposed development area at closer range relative to the R34

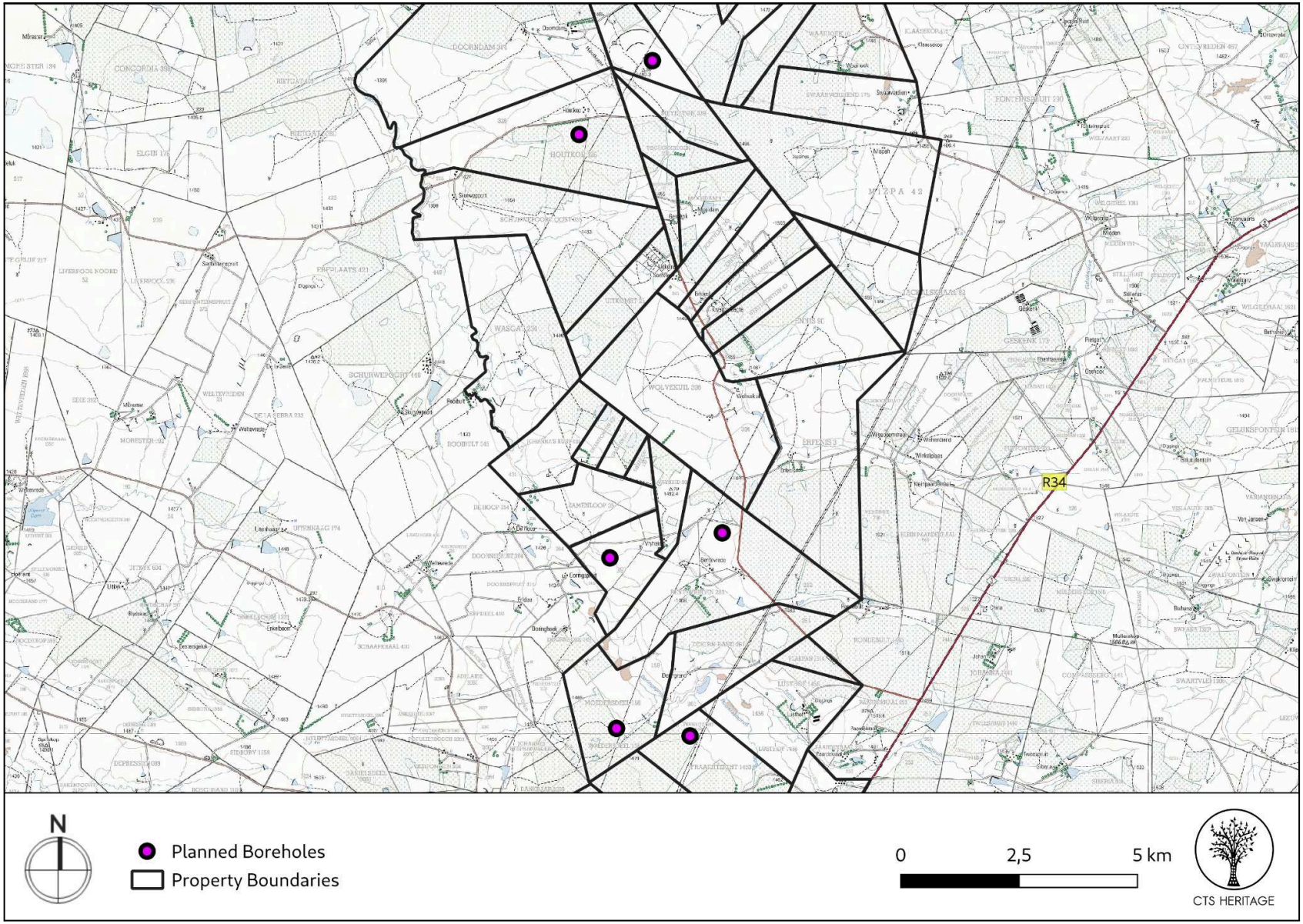

Figure 1d. Overview Map. 1:50 000 Topo Map for the development area

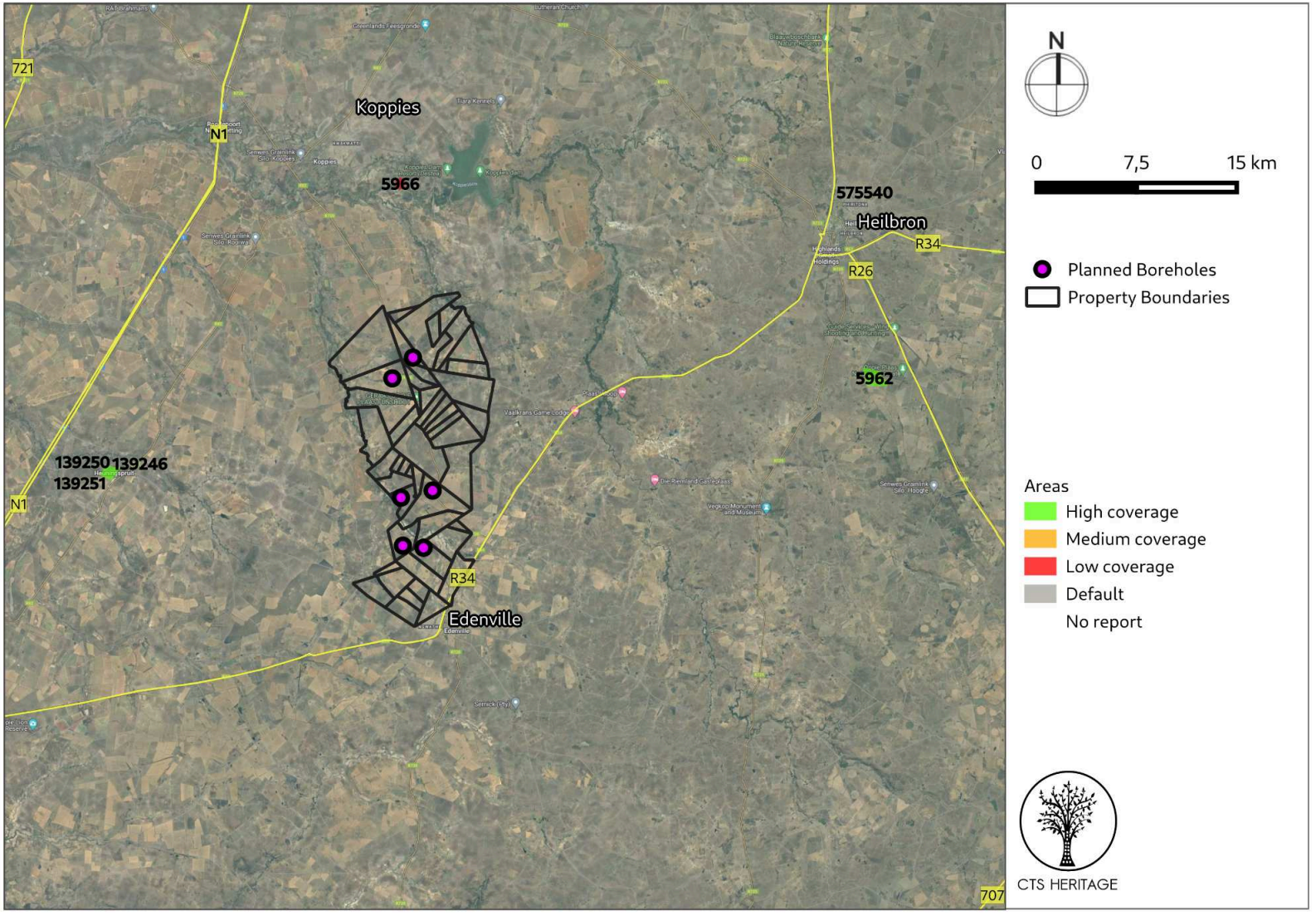

Figure 2. Previous HIAs Map. Previous Heritage Impact Assessments surrounding the proposed development area, with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.

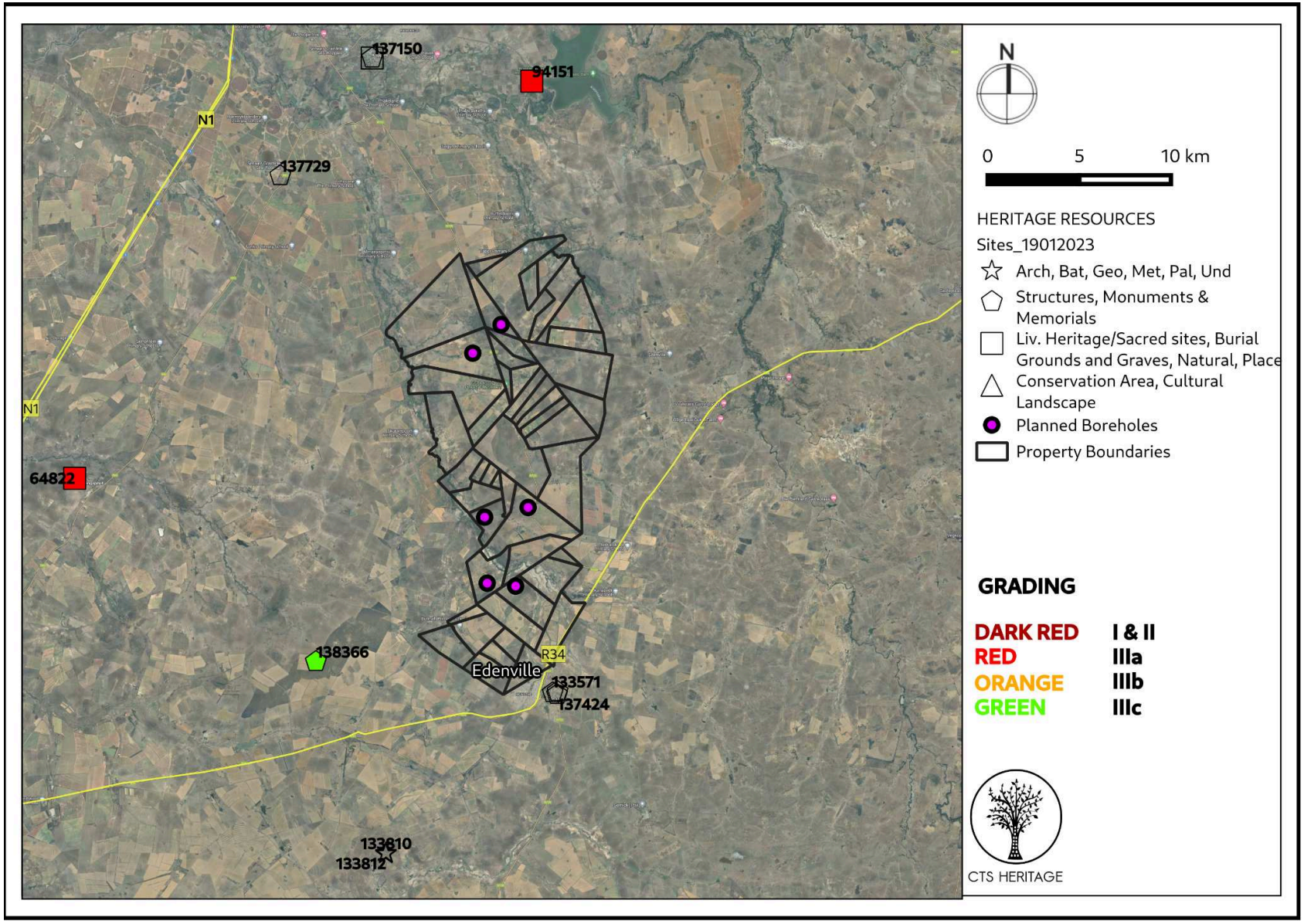

Figure 3a. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated. Please See Appendix 4 for a full description of heritage resource types.

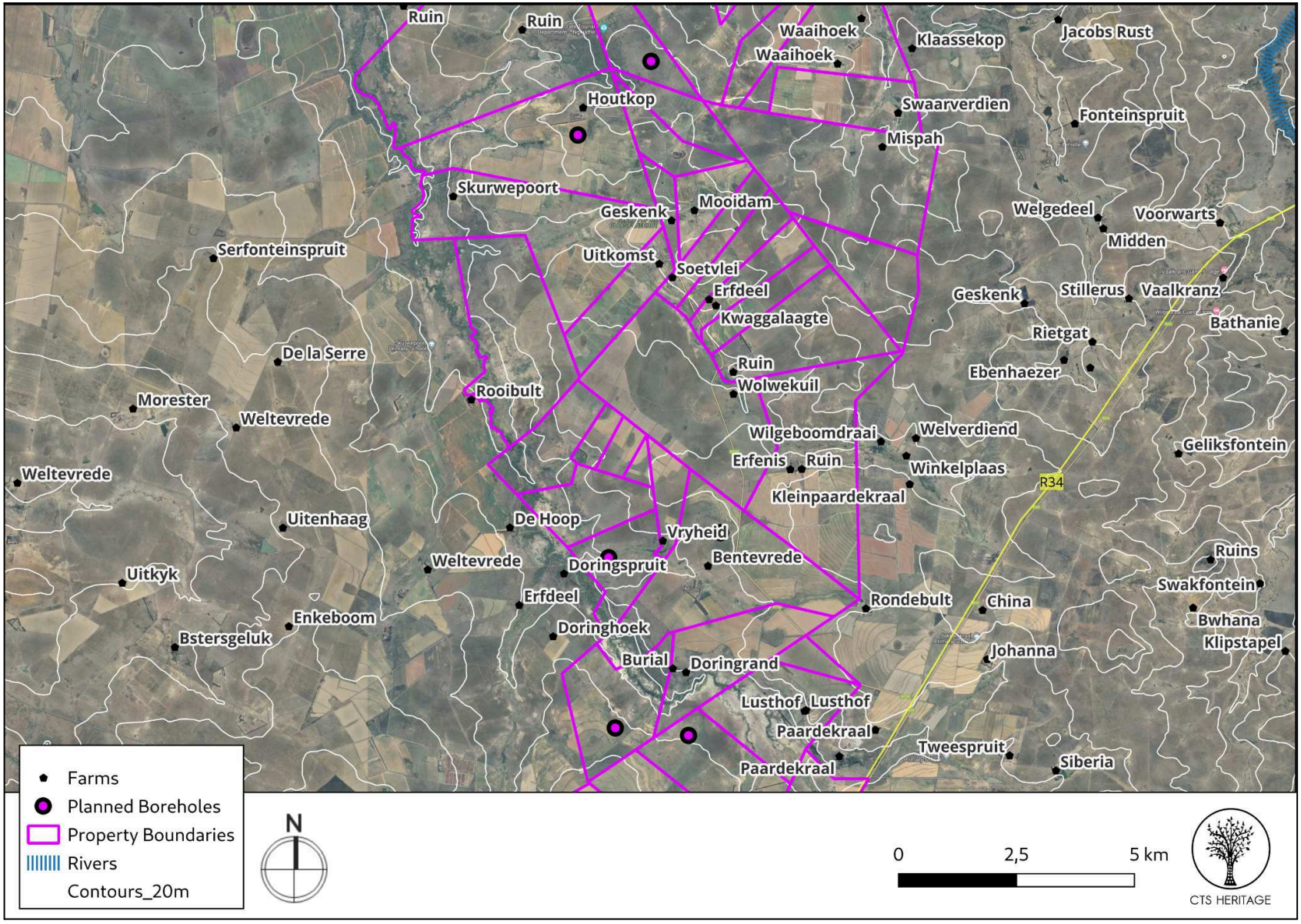

Figure 3b. Heritage Resources Map. Cultural Landscape elements identified from the Topo map

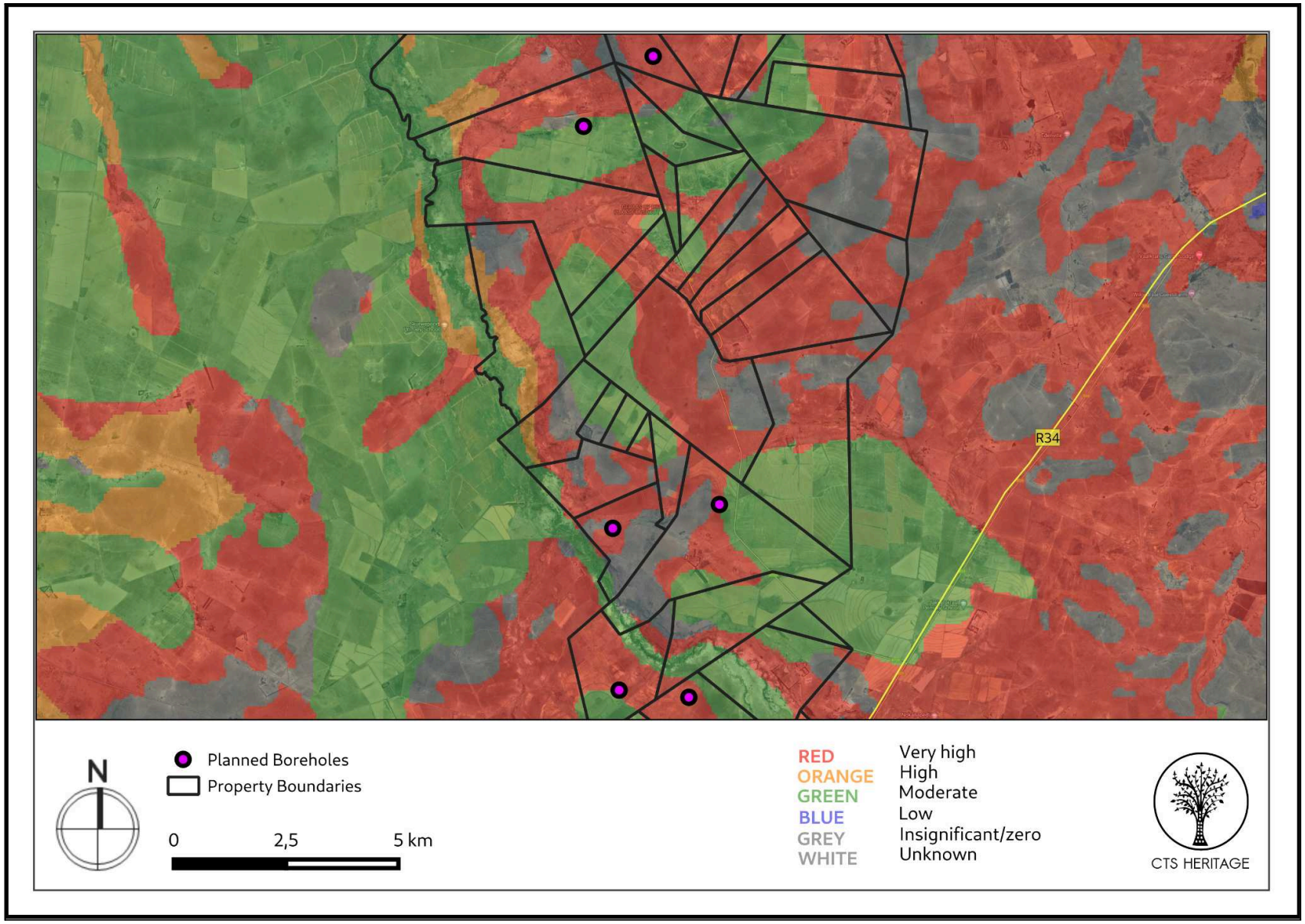

Figure 4. Palaeosensitivity Map. Indicating Low to Very High fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.

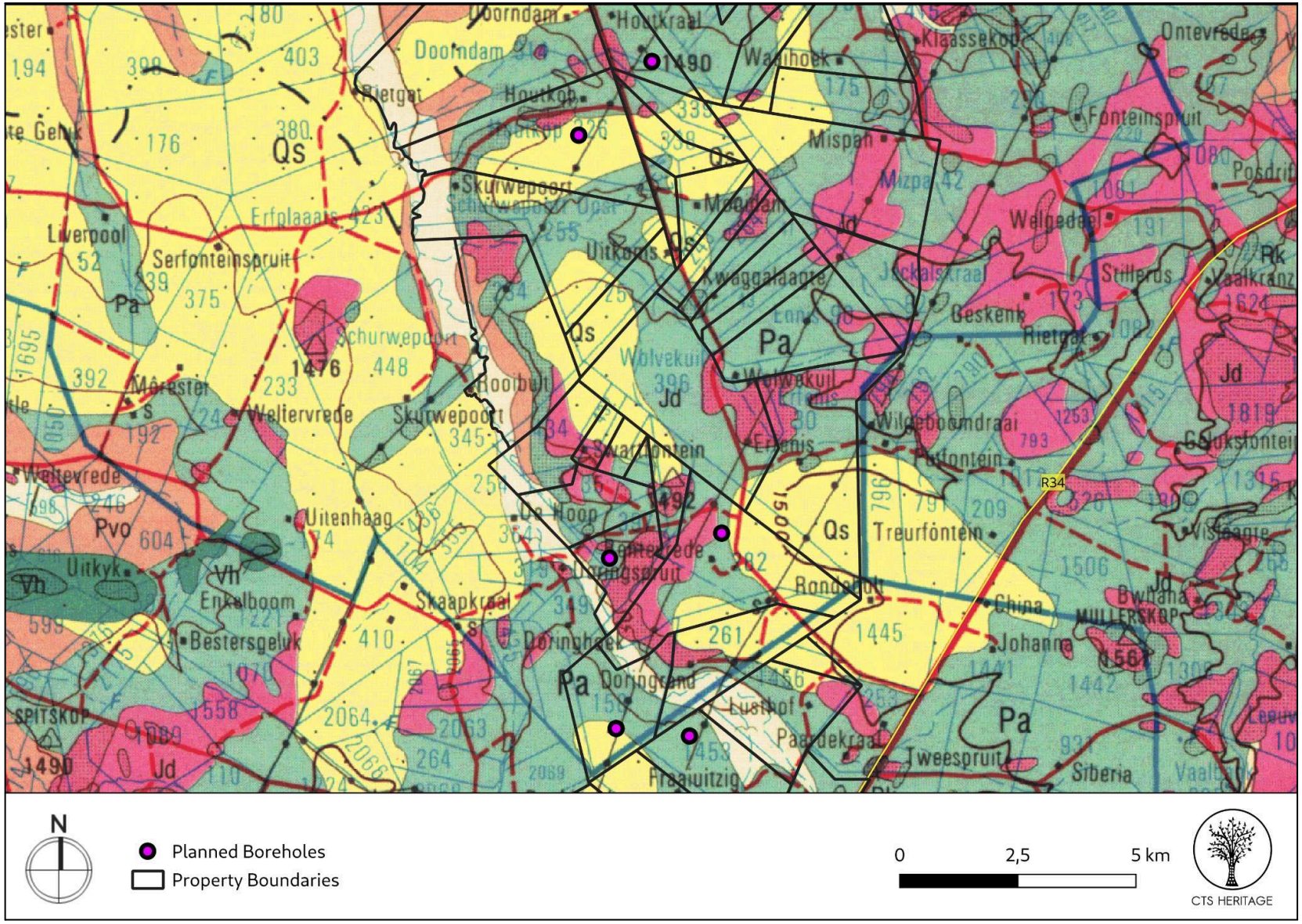

Figure 5. Geology Map. Extract from the CGS 2726 Kroonstad Geology Map indicating that the development area is underlain by sediments of the Adelaide Subgroup of the Beaufort Group (Pa) and Quaternary Sands

8. Heritage statement and character of the area

Welkom, the largest town in the Free State Goldfield, is situated about 270 km towards the southwest of Johannesburg, about 1 370 m above mean sea level. The area is typically flat, represented by treeless grassland, where farming is prominent. Annual rainfall is around 550 mm and drainage occurs into small Karoo pans. Infra-structure is well developed. The Free State Goldfield is generally overlain by 500 m of Karoo Supergroup strata (Figure 1a), predominantly horizontally bedded sandstones and shales of the Ecca Group. The Ecca Group contains coal at shallow depths which might be exploitable and will be evaluated during exploration.

The Welkom Goldfield hosted eleven mines in the triangle between Allanridge, Welkom and Virginia, 270 km southwest of Johannesburg. Historically, these mines have collectively produced in excess of 9.6 million kg Au (gold). In addition to gold, the primary exploration target, silver, uranium, sulphur, diamonds, rare earths, and platinum group metals have been historically extracted as by-products of gold.Pretorius (1986) published a map showing the distribution of Witwatersrand rocks below the Karoo cover rocks. The Free State Goldfield was discovered by geophysical means during the 1930's, when Dr. R Krahmann delineated the edge of the Witwatersrand Basin by mapping magnetic shales of the West Rand Group with a magnetometer. This was followed by extensive diamond exploration drilling, which intersected the auriferous conglomerates of the Central Rand Group. As a result, one of the major goldfields on Earth was developed.

Mining in the Free State Goldfield concentrated on the extraction of the Basal, Steyn, Saaiplaas and Leader Reefs of the Central Rand Group. Several other ore bodies were extracted, also belonging to the Kimberley and Elsburg Formations. Formations are generally marked by angular, erosional unconformities, which are onlapping towards the edge of the Witwatersrand Basin.

This application is for proposed prospecting activities located approximately northeast of Kroonstad along the R76 in the Free State Province. Kroonstad was established as a town in 1855. During the Second Boer War, from 13 March to 11 May 1900, the city became the capital of the Orange Free State, and subsequently the site of a British concentration camp to contain Boer women and children. Kroonstad still boasts much of the inherent rugged beauty which led the Voortrekkers to establish the town where they did and it is situated in an area characterised by open spaces and an abundant variety of vegetation that makes it particularly beautiful. According to Van Schalkwyk (2013), "Most farmsteads were burned down during the Anglo-Boer War, with the result that very little of the built environment dates to the 19th century." According to Matenga (2019), the Black and Coloured townships are significant as landscapes of segregation occupying the north-western fringe of the CBD, while the exclusive white suburbs were located northeast of the town and south of the Valsch River.

According to Van Schalkwyk (2013), "The cultural landscape qualities of the region essentially consist of a rural setup. In this the human occupation is made up of a pre-colonial element consisting of limited Stone Age and Iron Age occupation, as well as a much later colonial (farmer) component. This was soon followed by the development of a number of urban centres or towns. Originally these mostly served the surrounding farming communities, but with the discovery of the Free State Gold Fields, they expanded rapidly in order to serve this industry as well." The proposed Solar Energy Facility and its associated grid connections are located some distance from the historic core of Kroonstad town. Furthermore, the areas proposed for development are located more than 10km away from the site of the Boer War concentration camps and associated burial grounds.

Prior to colonial settlement in 1855, the area proposed for prospecting formed part of a landscape that was occupied by indigenous Khoe herders and San hunter-gatherers. These indigenous communities were displaced by Bantu-speaking people who began to occupy the area in the Iron Age. According to Van Schalkwyk (2013), "Sites dating to the Late Iron Age are known to occur in the region, especially... in the vicinity of the Sandrivier, whereas some are known to occur to the northwest of Ventersburg, These are typical stone walled sites that are linked with Sothospeakers and date to the period after 1600." As such, it is possible that Early, Middle or Later Stone Age artefacts may be located within the proposed development footprint. Furthermore, it is possible that evidence of Iron Age settlement may also be located within the proposed development areas. Recent archaeological field assessment conducted for the Vrede and Rondawel PV Facilities located approximately 10km from the proposed development area identified some cultural remains but with varied value and preservation. The isolated and scattered lithic artefacts identified are typical of a deflated landscape and have very limited cultural value given that they have been

accumulated and modified by various natural processes to their current *ex situ* state. The stone piles found in the south west of the property are more noteworthy (Grade IIIA) and require sensitive treatment. It is likely that similar heritage resources may be present within this development area. As such, it is recommended that an archaeological assessment of the areas proposed for development is completed and anticipated impacts to such resources assessed.

According to the SAHRIS Palaeosensitivity Map (Figure 4), the areas proposed for development are underlain by sediments of moderate to very high palaeontological sensitivity. According to the Council of GeoScience 2726 Kroonstad Map (Figure 5), the development area is underlain by sediments of the Karoo Supergroup including the Adelaide Subgroup (Pa) which have very high palaeontological sensitivity. This formation forms part of the Dicynodon and Lystrosaurus assemblage zones and is known to include fossils of fish, amphibians, reptiles, therapsids and vertebrate burrows. Diverse terrestrial and freshwater tetrapods of *Pristerognathus* to *Dicynodon* Assemblage Zones (amphibians, true reptiles, synapsids – especially therapsids) have been found in this formation, as well as, palaeoniscoid fish, freshwater bivalves, trace fossils (including tetrapod trackways), sparse to rich assemblages of vascular plants (*Glossopteris* Flora, including spectacular petrified logs) and insects.

Due to the limited nature and scale of the proposed borehole excavations, it is very unlikely that the proposed boreholes will impact on significant palaeontological heritage. However, it is recommended that the Chance Finds Protocol is implemented for the duration of prospecting activities. Should mining proceed, a full HIA including a full PIA is required.

RECOMMENDATION

Based on the information available, it is unlikely that the proposed prospecting will negatively impact on significant heritage resources due to the limited footprint of the activity and as such, no further specialist assessments are recommended at this stage. Should mining proceed, a full HIA will be required. It is recommended that Chance Fossil Finds Procedure (attached) be implemented for the duration of prospecting activities.

9. Scoping Assessment Impact Table

Impact

- Impact to archaeological resources
- Impact to palaeontological resources
- Impact to Cultural Landscape
- Cumulative Impact

Desktop Sensitivity Analysis of the Site

- Impact to significant archaeological resources such as Stone Age artefact scatters, burial grounds and graves, historical artefacts, historical structures and rock art engravings through destruction during the development phase and disturbance during the operational phase is possible.
- Impacts to palaeontological resources are possible.
- Due to the nature of the development and its context, cumulative impact and negative impact to the cultural landscape is possible

Issue	Nature of Impact	Extent of Impact	No-Go Areas
Impact to significant heritage resources through destruction during the development phase.	Destruction of significant heritage resources	Local scale with broader impacts to scientific knowledge	None known at present

Gaps in knowledge & recommendations for further study

- It is likely that the proposed development will impact significant archaeological and palaeontological heritage and as such, it is recommended that a heritage impact assessment be completed that assesses these impacts as per section 38(3) of the NHRA.

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APPENDIX 1

List of heritage resources within close proximity to the development area from SAHRIS

Site ID	Site no	Full Site Name	Site Type	Grading
26453	9/2/324/0005	Old Market Square Post Office and prison-cells, 66 Murray Street, Kroonstad	Building	Grade II
26455	9/2/324/0008	Town Hall and Leaping Fountain, Church Street, Kroonstad	Building	Grade II
26451	9/2/324/0014	Old Magistrate's Office, Murray Street, Kroonstad	Building	Grade II
26454	9/2/324/0006	Old market building, Market and Murray Streets, Kroonstad	Building	Grade II
32460	Kroonstad Quarry	Kroonstad Quarry Q42.5	Palaeontological	Grade IIIb
91014	Kroonstad N1	Kroonstad National Road 1 Widening	Burial Grounds & Graves	
138258	RSE-003	Rondavel Solar Energy	Artefacts	
138256	RSE-001	Rondavel Solar Energy	Artefacts	Grade IIIc
138259	RSE-004	Rondavel Solar Energy	Artefacts	Grade IIIc
138257	RSE-002	Rondavel Solar Energy	Burial Grounds & Graves	Grade IIIa
108132	Kroonstad Concentration Camp Cemetery	Kroonstad Concentration Camp Cemetery	Burial Grounds & Graves	
26452	9/2/324/0016	Nederduitse Gereformeerde Mother Church and Sarel Cilliers Statue, Church Square, Kroonstad	Building	Grade II
136204	Kroonstad	Kroonstad	Monuments & Memorials	
136206	DC20/NAMM/0012	World War Memorials, Moqhaka Local Municipality Office, Kroonstad	Monuments & Memorials	
136221	DC20/NAMM/0003	Anglo-Boer War Memorial, NG Moedergemeente, Kroonstad	Monuments & Memorials	

136222	DC20/NAMM/0004	Sarel Cilliers Monument, NG Moedergemeente, Kroonstad	Monuments & Memorials	
137613	Kroonstad	Kroonstad	Monuments & Memorials	
137776	Kroonstad old Market	Kroonstad old Market	Monuments & Memorials	

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APPENDIX 2

Reference List from SAHRIS

NID	Author(s)	Date	Type	Title
5968	Cobus Dreyer	20/06/2005	AIA Phase 1	Archaeological and Historical Investigation of the Proposed New Filling Station at Kroonstad, Free State
5969	Cobus Dreyer	25/08/2005	AIA Phase 1	Historical Investigation of the Existing Outbuildings at the Farm Smaldeel 202, Kroonstad, Free State
5970	Cobus Dreyer	29/05/2006	AIA Phase 1	First Phase Archaeological and Cultural Heritage Assessment of the Proposed Residential Developments at the Farm Middenspruit 151, Kroonstad, Free State
5971	Cobus Dreyer	12/07/2006	AIA Phase 1	Archaeological and Historical Investigation of the Proposed Township Developments at Maokeng, Kroonstad, Free State
5972	Cobus Dreyer	26/10/2006	AIA Phase 1	First Phase Archaeological and Cultural Heritage Assessment of the Proposed Residential Developments at the Farm Boschpunt 2218 Kroonstad, Free State

Lavin and Wiltshire. November 2020. ARCHAEOLOGICAL SPECIALIST STUDY In terms of Section 38(8) of the NHRA for a Proposed development of the Vrede and Rondavel Solar Energy Facilities near Kroonstad, Free State Province. Unpublished. Section 38(8) Heritage Impact assessment process.

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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.

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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

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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.