

HERITAGE SCREENER

		HERITAGE SCREENER
CTS Reference Number:	CTS22_253	
SAHRIS CaseID:		
Client:	Savannah	N14
Date:	December 2022	N3 N12
Title:	Proposed development of the Middelvlei Solar, 120MW Solar PV Project, Gauteng Province	Proposed Development 0 5 10 km
		Figure 1a. Satellite map indicating the location of the proposed development in the Gauteng Province.



1. Proposed Development Summary

The Applicant, Portion 132 Middelvlei (Pty) Ltd, a special purpose vehicle (SPV) of Sigma Solar Africa Pty Ltd, is proposing the construction of a photovoltaic (PV) solar energy facility (known as **Middelvlei Solar**) located on a site approximately 7km south-west of the town of Randfontein in the Gauteng Province. The Solar PV facility will be developed on Portion 132 (a portion of portion 6) of the Farm Middelvlei 255 IQ and will comprise several arrays of single axis tracking solar PV panels and associated infrastructure and will have a contracted capacity of up to 120MW. The development area is situated within the Rand West City Local Municipality within the West Rand District Municipality. The site is accessible via existing gravel roads which provide access to the development area.

The project infrastructure will include:

- Solar PV Plant comprising approximately 220000 PV panels on single axis tracking PV modules
- Inverters and transformers (up to 120MW)
- Cabling between the panels
- Onsite facility substation, including a Twin-Tern Conductor ~379 MVA. Substation capacity 2x 80 MVA, 132/33 kV substation ~ 50 x 70 m2 including Eskom metering site.
- Cabling from the onsite substation to the collector substation (either underground or overhead)
- Electrical and auxiliary equipment required at the collector substation that serves the solar energy facility, including switchyard/bay, control building, fences, etc.
- Battery Energy Storage System (BESS)
- Site and internal access roads (up to 8m wide)
- Temporary and permanent laydown area
- Operations Building of ~180 sqm

The property, Portion 132 of the Farm Middelvlei 255 IQ, has an extent of 204.44ha, of which 200ha will be developed for the project. The site is a vacant stand with sufficient space to construct the 120MW PV facility and associated infrastructure. The site will provide the opportunity for the optimal placement of the infrastructure, while ensuring avoidance of major identified environmental sensitivities. To avoid areas of potential sensitivity and to ensure that potential detrimental environmental impacts are minimised as far as possible, the full extent of the project site will be considered in the Scoping Phase, and a development footprint within which the infrastructure of the PV facility and associated infrastructures will be located will be fully assessed during the EIA Phase.

For the purposes of the EIA process, the following terms will be used:

- Project: Project includes the PV facility and all of the associated infrastructures.
- Project Site/Area: The Project Site/Area is the area with an extent of approx. 204.44ha, within which the Middelvlei Solar PV Facility development footprint will be located.
- Development area: The Development Area is that identified area (located within the Project Site) of ~200ha demarcated within the Affected properties for consideration in the EIA process where the Middelvlei Solar PV Facility and associated infrastructure is planned to be located.
- Development footprint: The development footprint is the defined area (located within the development area) where the PV array and other associated infrastructure for the Middelvlei Solar PV Facility and associated infrastructure is planned to be constructed. This is the actual footprint of the facility, and the area which would be disturbed.



2. Application References

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

3. Property Information

Latitude / Longitude	26°15'4.04"S 27°38'15.03"E
Erf number / Farm number	Portion 132 (a portion of portion 6) of the Farm Middelvlei 255 IQ
Local Municipality	Rand West City
District Municipality	West Rand
Province	Gauteng
Current Use	Agriculture
Current Zoning	Agriculture

4. Nature of the Proposed Development

Total Surface Area of development	204.44ha
Depth of excavation (m)	
Height of development (m)	

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
Х	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 ²
5. Other (state):

6. Additional Infrastructure Required for this **Development**

TBA



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

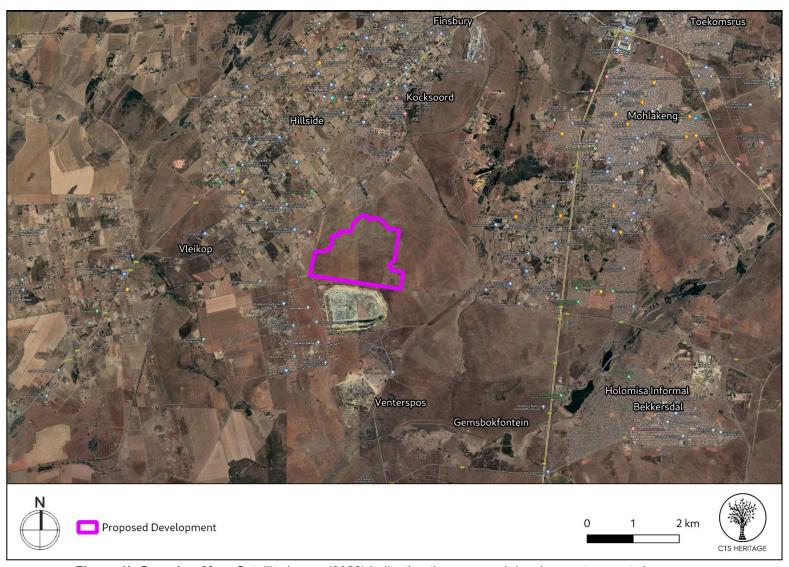


Figure 1b Overview Map. Satellite image (2022) indicating the proposed development area at closer range.



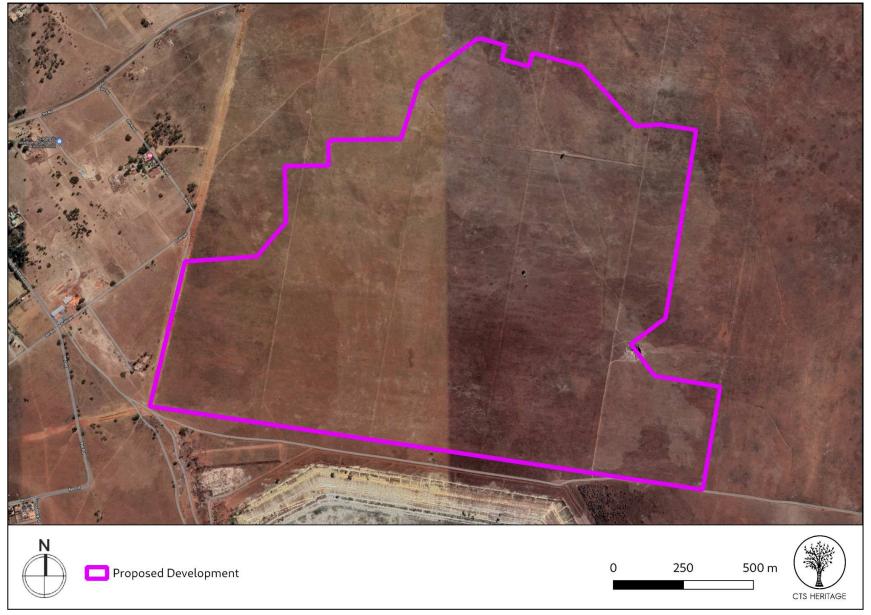


Figure 1c Overview Map. Satellite image (2022) indicating the proposed development area at closer range.



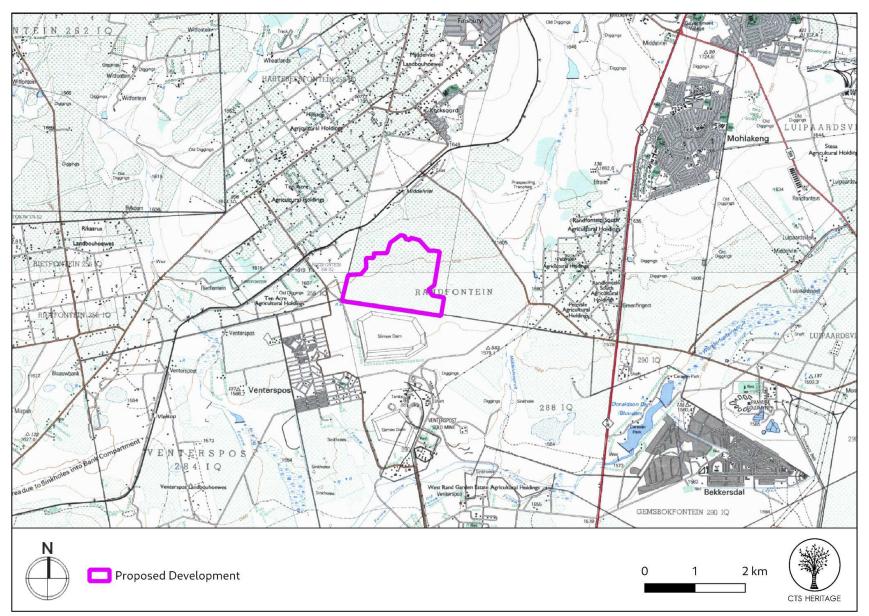


Figure 1d. Overview Map. 1:50 000 Topo Map for the development area



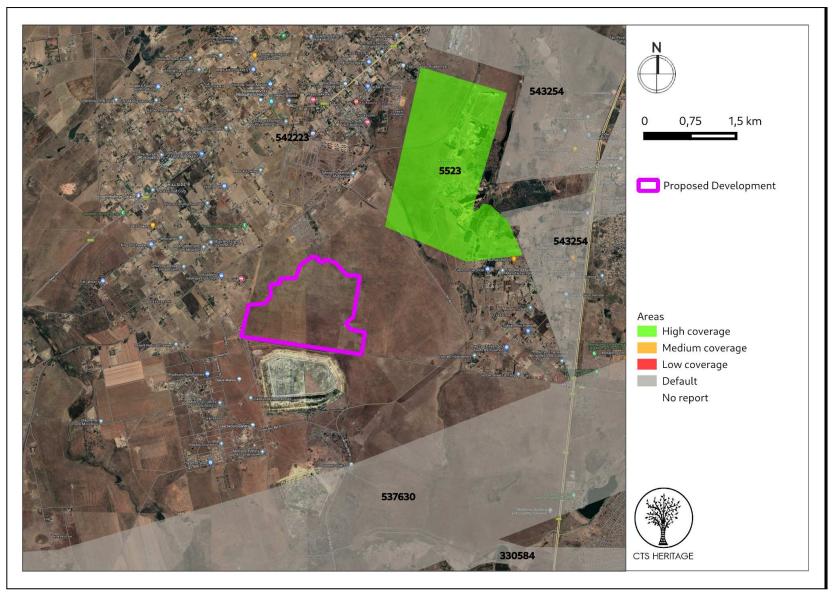


Figure 2a. Previous HIAs Map. Previous Heritage Impact Assessments surrounding the proposed development area, with SAHRIS NIDS indicated. Please see Appendix 2 for a full reference list.



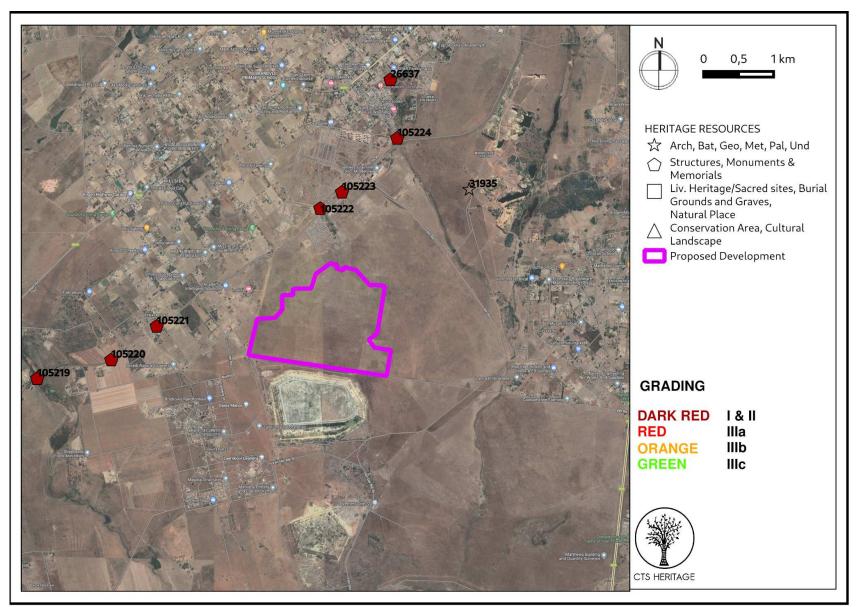


Figure 3. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated. Please See Appendix 4 for a full description of heritage resource types.



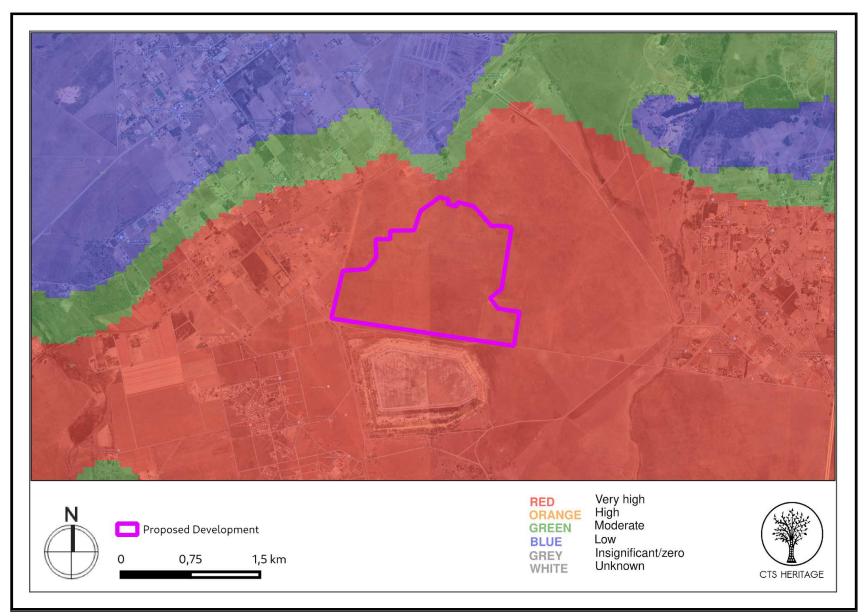


Figure 4. Palaeosensitivity Map. Indicating Low to Very High fossil sensitivity underlying the study area. Please See Appendix 3 for a full guide to the legend.



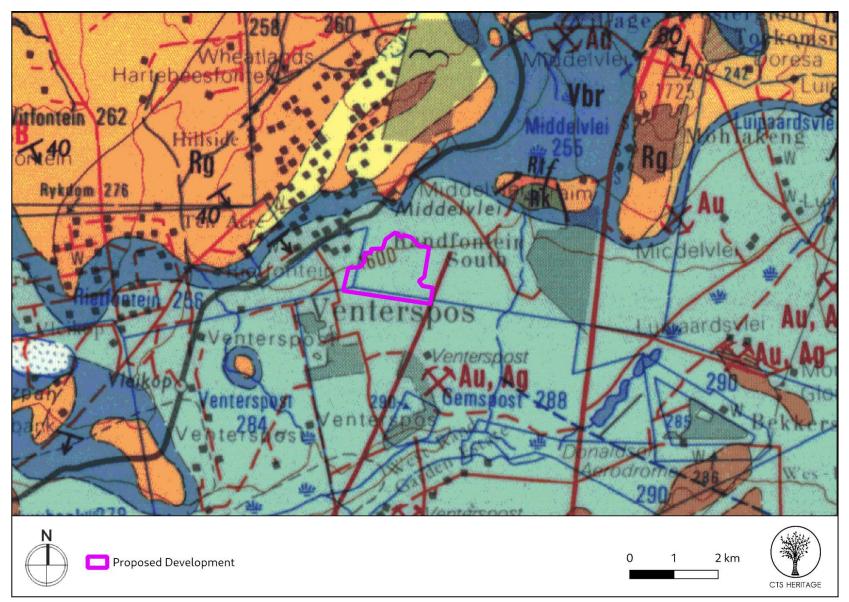


Figure 5. Geology Map. Extract from the CGS 2626 West Rand Geology Map indicating that the development area is underlain by Vmd - Malmani Subgroup of the Chuniespoort Group



8. Heritage statement and character of the area

Background

This application is for the proposed development of a PV Facility located west of Johannesburg, and directly north of Westonaria, north of the N12 and south of Randfontein. Westonaria was formed in 1948 by the amalgamation of the townships Venterspost, proclaimed in 1937, and Westonaria, proclaimed in 1938. According to Van der Walt (2017), "Westonaria was proclaimed in 1938 as a result of all the mining activities that took place in this area since 1910 when the first shaft – Pullinger Shaft was sunken. Venterspost town was proclaimed in 1937; Hillshaven, Glenharvie, Waterpan and Libanon were established as mining residential areas. Bekkersdal was established in 1945 and administered under Westonaria Town Council." In 1958, Lenasia was established as the "group area" for people of Indian descent living in Johannesburg at the onset of the Group Areas Act (1950). Many of its early residents were forcibly removed under the Group Areas Act from Pageview and the portion of Vrededorp populated by non-whites (jointly known as Fietas) and Fordsburg, areas close to the Johannesburg city centre, to Lenasia. As segregation grew it became the largest place where people of Indian extraction could legally live in the Transvaal Province.

Randfontein was established in 1890 to serve the new mine and was administered by Krugersdorp until it became a municipality in 1929. Apart from having the largest stamp mill in the world, Randfontein, like many of the other outlying areas of Johannesburg, is essentially a rural collection of farms and small holdings in a particularly beautiful part of Gauteng. There are a number of privately owned gold-mining township villages and contractor labour quarters established by the mining companies on land owned by the mines within the broader area. The area surrounding the proposed development is dominated by a cultural landscape that is shaped and defined by the historic and on-going mining activities associated with the Witwatersrand. A detailed archaeological background of the area is provided by Du Pisanie and Nel (2012, SAHRIS NID 104305) and is therefore not repeated here. In general, for the development of PV infrastructure and its associated grid connection infrastructure, it is preferred for such development to be clustered with existing development, such as mining or residential development, in order to reduce the perception of urban and infrastructure sprawl across an otherwise agricultural landscape.

There is a long history of gold and uranium mining in the broader West Rand area with an estimated 1.3 billion tonnes of surface tailings, containing in excess of 170 million pounds of uranium and 11 million ounces of gold. The origins of the South Deep Gold Mine extend to the 1950's when gold-producing conglomerates of the Ventersdorp Contact Reef and the Upper Elsburg were identified near Westonaria. This area has been subject to active mining since that time. As such, the immediate context of the proposed PV development is dominated by mining activities and agriculture. The proposed PV facility can provide a new layer on this complex cultural landscape.

Built Environment & Cultural Landscapes

According to Du Pisanie and Nel (2016, SAHRIS NID 356134), "With the onset of the Transvaal and South African Wars, Gatsrand became a strategic location for British troops who occupied Potchefstroom. This region was located in close proximity to the Western Railway, which provided a tactical advantage. To exploit and protect this advantage, three blockhouses were constructed on the farms Driefontein 113 IQ and Driefontein 355 IQ. These structures were not identified during the pre-disturbance survey and it is assumed that they no longer exist. The next major event to take place on this region was the discovery of gold, which facilitated the establishment of several towns from the 1920s, an increase in population and an increase in services. Early mines established include Venterspost (1934), Libanon (1936), West Driefontein (1945), East Driefontein (1968) and later Kloof (1968). Shaped by these events and activities the study area has through time transformed into a historic mining landscape." In their Heritage Impact Assessment located in an area that somewhat overlaps with the proposed development areas, Du Pisanie and Nel (2016, SAHRIS NID 356134) identified a number of heritage resources, the majority of which were determined to be not conservation-worthy. The nature of the resources identified include burials and burial grounds (graded IIIA) as well as historic and modern farm structures. Similar resources are likely to be present within the proposed development areas.

The broader area has significance resulting from its position along the South-Western Railway line developed to link the Southern Railway Line (1886) to the Rand Tram (1888) and lucrative mines to the east. A built heritage inventory of the infrastructure associated with railway development was completed in 2016 and through this process, a number of significant features were identified. Much of the infrastructure associated with this railway development remains present to the west of the development area and is mapped in Figure 3 above. While this infrastructure clearly has significance for the mining and industrial heritage of South Africa, it is unlikely that each identified feature is a Grade II heritage resource.



Rather, all of the railway infrastructure identified through this inventory process may well have sufficient significance as a grouping to warrant Grade II significance. That being understood, it is unlikely that the proposed development of the PV facility will have a negative impact on any significant built environment resources associated with the railway line.

As such, it is not anticipated that any significant built environment or cultural landscape resources will be negatively impacted by the proposed development.

Archaeology

Archaeological sites spanning the Earlier, Middle and Later Stone Age, as well as sites pertaining to Iron Age farming communities have been found in the region despite the extensive agricultural transformation of the area. Archaeological resources from these technological periods have been identified in the vicinity of the project area by Huffman et al (1991), Schoeman and Barry (2004), Du Pisanie (2015), Van der Walt (2017) and De Bruyn (2020). Du Pisanie (2015) notes that, in the broader area, "Stone Age lithics recorded have been found as surface scatters outside of any discernible context thereby limiting the information potential and overall significance of these resources. Late Farming Community sites within the region have primarily been identified as stone walled settlements classified as Type N and Klipriviersberg." This finding is reiterated by Van der Walt (2017) who notes that "widely dispersed isolated lithics was recorded. These are made entirely from quartzite and consist of cores and flakes with faceted platforms characteristic of the Middle Stone Age. These artefacts are not in-situ and are scattered too sparsely to be of any significance..."

All of the known heritage resources located within the assessment area have been mapped in Figure 3. Despite the extensive past disturbance of the development area from historic cultivation and grazing, a number of burial ground sare known from the broader area. No known heritage resources are located within the area proposed for development, however, as it is known that significant heritage resources are located in this area, it is likely that there are more heritage resources located here that have not yet been identified. It is therefore likely that these resources will be impacted by the proposed development and further assessment of these potential impacts is recommended.

Palaeontology

According to the SAHRIS Palaeosensitivity Map, the Proposed Development Areas are located within areas that have variable palaeontological sensitivity but all areas have sediments that have high and very high palaeontological sensitivity. According to the extract from the Council of GeoScience Map for West Rand 2626, the very highly sensitive formation that may be impacted include the Malmani Formation and the highly sensitive formations that may be impacted include the Ecca Group formations and the Timeball Hill formations. The Malmani Subgroup is known to preserve a range of shallow marine to intertidal stromatolites (domes, columns *etc*), organic-walled microfossils and includes FOSSILIFEROUS LATE CAENOZOIC CAVE BRECCIAS such as in the Cradle of Humankind. Similar concerns exist for the Timeball Hill formation sediments. The Ecca Group formations are known to preserve non-marine trace fossils, vascular plants (including petrified wood) and palynomorphs of *Glossopteris* flora, mesosaurid reptiles, fish (including microvertebrate remains, coprolites), crustaceans, sparse marine shelly invertebrates (molluscs, brachiopods), microfossils (radiolarians *etc*) and insects.

Based on the information available, there are no "fatal flaws" in terms of potential impacts to heritage resources associated with the Proposed Development Areas. It is, however, recommended that the final development area selected for the proposed development be subject to a Heritage Impact Assessment to assess impacts to archaeological and palaeontological resources, as well as potentially historically significant structures and burials or burial grounds.



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, Iron age sites and historical artefacts through destruction during the development phase is likely.
- Impacts to palaeontological resources are likely.
- Due to the nature of the development and its context, cumulative impact and negative impact to the cultural landscape is likely

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 cultural landscape, 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.



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
31935	Farm Hatherley 331 JR	Farm Hatherley 331 JR	Archaeological	
105219	NZASM_SWL_055	Bridge east of Vleikop Station	Bridge	Grade II
105220	NZASM_SWL_056	Culvert at Harveston AH	Transport infrastructure	Grade II
105221	NZASM_SWL_057	Culvert at Harveston AH Transport infras		Grade II
105222	NZASM_SWL_058	Culvert at 3rd Road Kocksoord	Transport infrastructure	Grade II
105223	NZASM_SWL_059	Culvert at 7th Road Kocksoord	Transport infrastructure	Grade II



APPENDIX 2

Reference List from SAHRIS

NID	Author(s)	Date	Туре	Title
330584	Heritage Scoping	Justin du Piesanie	29/05/2015	Sibanye Gold Limited's West Rand Tailings Retreatment Project Heritage Scoping Report
356134	Heritage Impact Assessment Specialist Reports	Justin du Piesanie, Johan Nel	13/01/2016	Environmental Impact Assessment for Sibanye Gold Limited's West Rand Tailings Retreatment Project - Heritage Impact Assessment
374660	AIA Phase 1	Jaco van der Walt	13/10/2016	ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED MOHLAKENG X16 - TOWNSHIP DEVELOPMENT, GAUTENG PROVINCE
537630	HIA Phase 1	Wouter Fourie et al.	31/01/2019	Heritage Impact Assessment (HIA) for the new 400-kV Transmission line from the Pluto Substation to the Westgate Substation and for the loop ins/outs connecting the Hera-Westgate 400-kV line. West Rand District Municipality, Gauteng
590003	PIA Phase 2	Marion Bamford	11/09/2021	Palaeontological Impact Assessment for the proposed Eskom West Rand Strengthening Project Phase 2 Pluto Substation to Westgate Substation, Gauteng Province
543254	HIA Phase 1	Shannon Hardwick, Justin du Pisanie	26/10/2020	Heritage Impact Assessment: Basic Assessment Process for the Closure of the Cooke Underground Operations
5523	AIA Phase 1	Polke Birkholtz	08/04/2003	Cultural Heritage Assessment as Part of the EMP Report for the Proposed Impafa/Pamodzi OpenCape Archaeological Survey CCt Gold Mine on the Farm Middelvlei 255 IQ
407548	Jaco van der Walt	14/08/2017	HIA Phase 1	HERITAGE IMPACT ASSESSMENT (REQUIRED UNDER SECTION 38(8) OF THE NHRA (No. 25 OF 1999) FOR THE PROPOSED SOUTH DEEP SOLAR PV PROJECT, WESTONARIA, GAUTENG PROVINCE



APPENDIX 3 - Keys/Guides

Key/Guide to Acronyms

Archaeological Impact Assessment		
Department of Agriculture and Rural Development (KwaZulu-Natal)		
Department of Environmental Affairs (National)		
Department of Environmental Affairs and Development Planning (Western Cape)		
Department of Economic Development, Environmental Affairs and Tourism (Eastern Cape)		
Department of Economic Development, Environment, Conservation and Tourism (North West)		
Department of Economic Development and Tourism (Mpumalanga)		
Department of economic Development, Tourism and Environmental Affairs (Free State)		
Department of Environment and Nature Conservation (Northern Cape)		
Department of Mineral Resources (National)		
Gauteng Department of Agriculture and Rural Development (Gauteng)		
Heritage Impact Assessment		
Department of Economic Development, Environment and Tourism (Limpopo)		
Mineral and Petroleum Resources Development Act, no 28 of 2002		
National Environmental Management Act, no 107 of 1998		
National Heritage Resources Act, no 25 of 1999		
Palaeontological Impact Assessment		
South African Heritage Resources Agency		
South African Heritage Resources Information System		
Visual Impact Assessment		

Full guide to Palaeosensitivity Map legend

RED:	VERY HIGH - field assessment and protocol for finds is required
ORANGE/YE	ELLOW: 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/PURP	LE: 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.