

Archaeological Mitigation Report

Northam Zondereinde Shaft 3, Limpopo Province

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EXECUTIVE SUMMARY

HCAC conducted a Heritage Impact Assessment (Van der Walt 2019) for the proposed Northam Zondereinde Shaft 3 Development located on the portions 3 and 4 of the Farm Elandsfontein, 386 KQ, Northam, Limpopo Province. During the assessment a Late Iron Age site (Feature 1) was recorded, located along the base of a hill covering an extensive area next to the proposed development footprint. The section of the archaeological site relating to the development layout is divided into high and medium significance areas. Areas of high significance contain features (middens and stone walled enclosures) and is located **outside** of the development footprint and will not be directly impacted on.

No surface features were noted in the areas marked as of medium significance but was mapped as such due to the close proximity to the areas of high significance and marked by the change of vegetation that is a result of landscape use by the inhabitants of the Iron Age settlement. These areas could possibly contain subsurface cultural deposit and a small section of this area will be directly impacted by the proposed layout and mitigation measures were proposed. The mitigation measures consist of test excavations to confirm the lack of archaeological deposit in these areas. The biggest impact in the medium sensitive areas is a berm to mitigate against the influx of people, earth moving equipment and to ensure that development activities do not encroach into the heritage and ecologically sensitive area where surface features are located.

The report was submitted to the South African Heritage Resources Agency (SAHRA), case number 14035 who agreed with the recommendations made by the author. This document represents a final report on the results of the test excavations conducted in the medium significance area where the berm will be located. The site was mitigated under SAHRA permit ID 3235, high significance areas outside of the development footprint were avoided and archaeological features are retained *in-situ* preserving them for future generations.

This report outlines the work conducted during the fieldwork in fulfilment of the Permit Requirements, and the results achieved. It is believed that the archaeological mitigation work conducted was completed successfully and the proposed development within medium significant areas will not adversely affect archaeological resources and should be allowed to continue.

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1. INTRODUCTION

HCAC conducted a Heritage Impact Assessment for the Northam Zondereinde Shaft 3 development located on the portions 3 and 4 of the Farm Elandsfontein, 386 KQ, Northam, Waterberg District, Limpopo Province (Figure 1 and 2). The report was submitted to SAHRA (Case number 14035) and final comment obtained.

The survey recorded a Late Iron Age site (Feature 1) located at the base of a hill covering a large area. The section of the archaeological site relating to the development layout is divided into high and medium significance areas. Areas of high significance contain features (middens and stone walled enclosures) and is located **outside** of the development footprint and will not be directly impacted on.

The areas marked as of medium significance could possibly contain subsurface cultural deposit and a small section of this area will be directly impacted by the proposed layout and will have to be mitigated. Mitigation measures proposed consist of test excavations to mitigate against chance find in these areas. Additionally, a berm was proposed to mitigate against the influx of people, earth moving equipment and to ensure that development activities do not encroach into the heritage and ecologically sensitive area. These sites were mitigated by HCAC under SAHRA permit ID 3235

Excavations and documentation of the features was conducted from the 14 to 18 June 2021. Mitigation consisted of bush clearing and shovel pit tests to confirm the lack of archaeological deposits in these areas. The mitigation work was completed successfully, and no evidence of subsurface archaeological deposit was found in the areas earmarked for development.

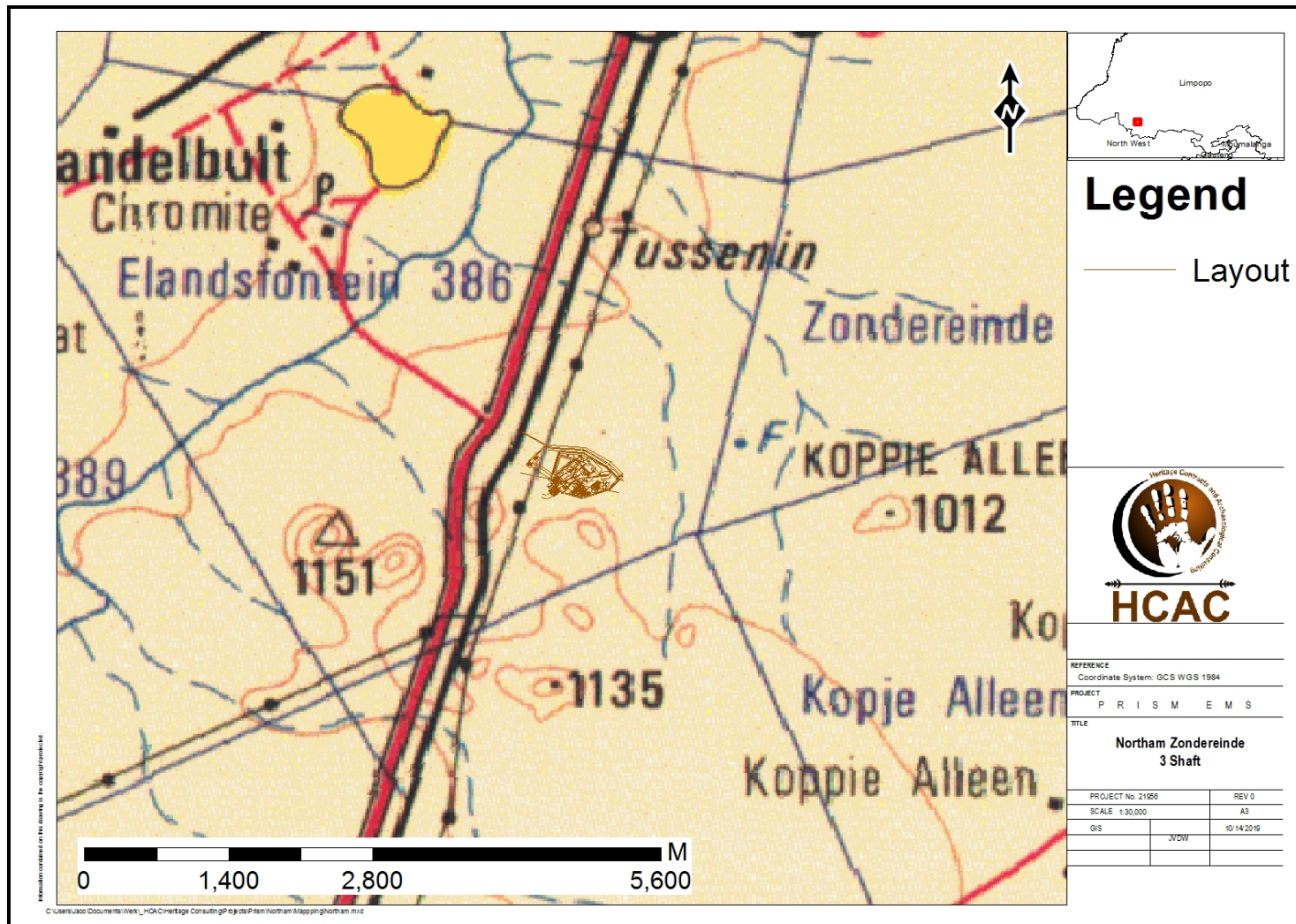


Figure 1. Regional Setting of the project.

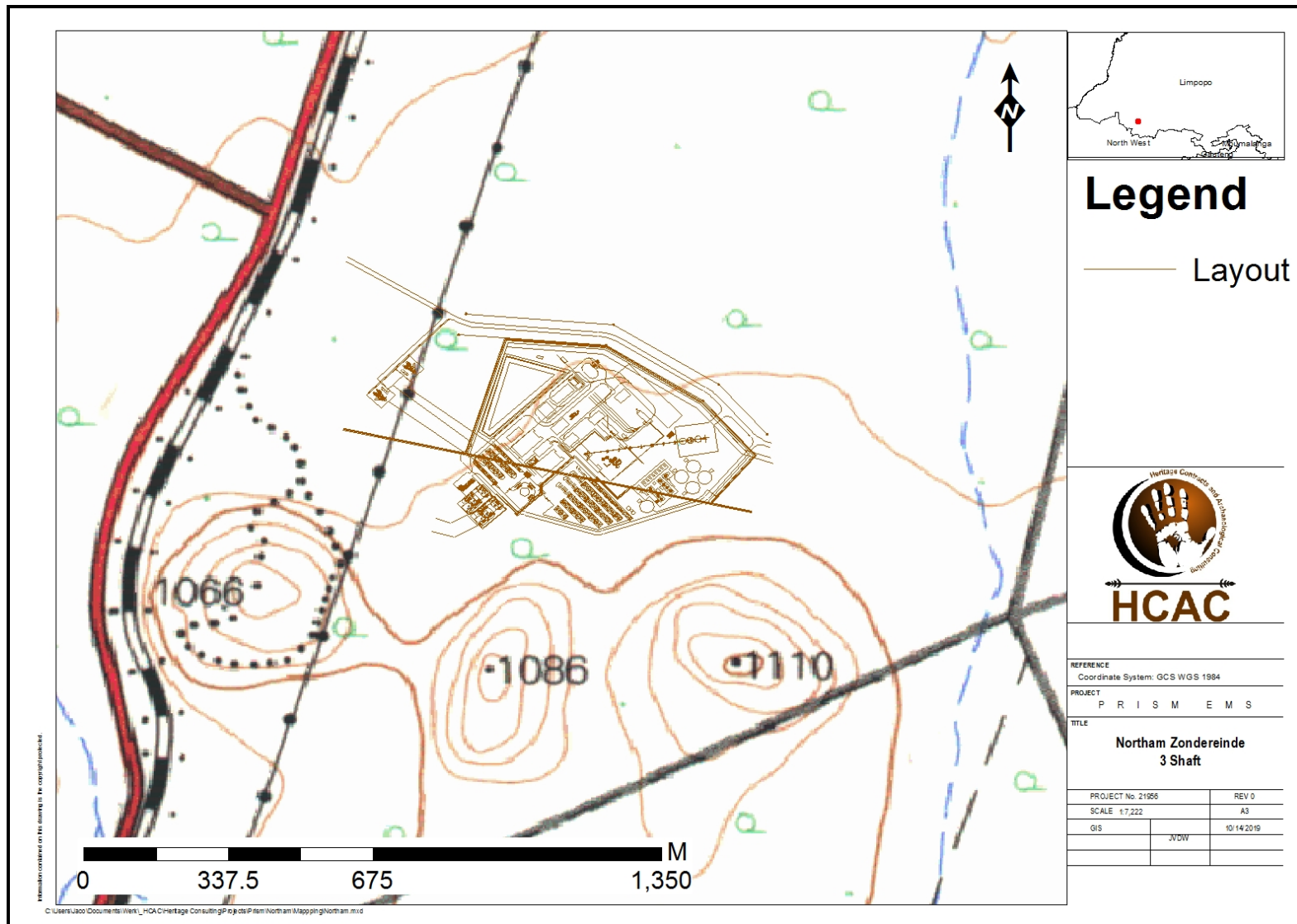


Figure 2. Local setting of the project.

2. BACKGROUND INFORMATION TO THE PROJECT

The following project background information is an excerpt from the Environmental Impact Assessment (EIA) report (Niehof and Botha 2020).

Northam Platinum Limited (Northam Platinum) plans to sustain its production from the Zondereinde Western Block that has been acquired and recently included in its mining right. The Zondereinde Western Block is situated to the west of the original mining right and adds approximately 4 km of strike to the Merensky and UG2 ore reserve of Zondereinde Mine.

Access will be via two raise bored shafts from surface to 5 level which is 1,520 m below collar. In addition, these new mining areas will require additional ventilation which will be provided by a downcast ventilation shaft and 2 up-cast ventilation shafts; five vertical shafts in total.

2.1. Desirability of the Proposed Activity

The proposed shaft complex will have several socio-economic benefits including, but not limited to:

- it will secure economic viability of the mine (300kozpa PGM and 9 200 current staff);
- it will further extend Zondereinde LoM with approximately 35 years;
- it will ensure that the current employment trend will be sustained; and
- it will ensure continuation of the social and economic contributions made by the mine to its employees and the local community.

2.2. Location of the Proposed Activity

The proposed shaft complex and locality is in line with the Spatial Development Frameworks and other plans for the area:

- In terms of the Waterberg EMF (2010), the study area falls within a mining focus area (Zone 4) and within a Lower Priority (0) protected and conservation planning priority area.
- In terms of the Waterberg SDF (2009), the study area falls within a mining area, specifically an area with platinum potential and not within any existing conservation or future conservation areas or transition and / or buffer zones of conservation areas.

Thabazimbi Local Municipality 2017/18 – 2021/22 Integrated Development Plan (IDP) and Waterberg District Municipality 2019/2020 Integrated Development Plan (Waterberg IDP)

The proposed project is aligned with the IDP's objective to promote access to mineral resources, and is also well-placed to redress the impact of the economic decline in recent years by providing socio-economic opportunities within the Thabazimbi Local Municipality due to the extension of the LoM that will result from the proposed project. It is therefore clear that the proposed project accords with the local and district IDPs.

In terms of the Waterberg SDF (2009), the study area falls within a mining area, specifically an area with platinum potential and prioritised for mining.

The Waterberg SDF is aligned with the Provincial Spatial Rationale and attempts to ensure alignment and integration between the six local municipalities, including Thabazimbi LM. The following proposal emanated from the District SDF that particularly affects the Thabazimbi municipal area: The south-eastern part of the LM, between Thabazimbi and Northam, was reserved for mining purposes (Draft Thabazimbi

SDF Report (2014). The Thabazimbi SDF Map (2008) indicates that the study area is located within an active mining area and not within any other priority development node.

The proposed project is also in line with the Local Economic Development (LED) Strategies of both the Waterberg District and the Thabazimbi Local Municipality. The strategies include unlocking the mineral resources including platinum, the proposed project will provide access to platinum ore, which will extend the LoM of the Zondereinde Mine and ensure sustained employment at the Mine.

The Thabazimbi Council adopted the LED Strategy 2015 with the intention to provide economic direction, growth and development, and to address issues of poverty and unemployment within its communities.

In summary, the proposed project is in line with the planning of the area.

As the project area is in parts impacted by previous activities and is located close to available services (roads, water, sanitation etc.), it is a good site for the proposed project, as it will not cause any additional impacts on renewable natural resources.

The Zondereinde Platinum Mine plans to increase its production by 100 ktpm from the Zondereinde Western Block, that was recently acquired. Production of an additional 100 ktpm of Merensky Ore (profile to 240 000 tonnes per month, split 120 MR, 120 UG2) is matched to the capacity of the existing Merensky concentrator (MR concentrator capacity is 150ktpm). Due to its distance from the existing No 1 and 2 Shaft which access the initial ore body it was decided to provide additional access as well as essential services including service water and ventilation to the ore body nearer to the mining operations.

Exploitation of the newly acquired Western block extends to close to 8 kilometres from current infrastructure and requires significant increase of electrical consumption to provide ventilation and cooling to production faces. Positioning the new infrastructure at the planned location limits the increase of energy consumption in comparison and significantly reduce underground health and safety risks. The planned location for positioning the new shafts provide a second egress closer to production areas in the case of emergency evacuation events.

Underground, the strike of the ore body as well as the direction of development of the mine also dictates the position of the surface infrastructure. On surface the topography and infrastructure influence the decision of the shaft position. Hills to the south and southwest precludes any shaft development in the area. The Eskom servitude to the west of the site limits the extension to the shaft complex to the west. The mine boundary to the North also impacts the available area for the shaft complex.

Based on the findings of the specialist studies and impact assessment and considering the successful implementation of the EMP, a recommendation as to the preferred alternative was made (current layout). The layout is the preferred alternative based on the fact that a part of the area is already disturbed. The layout does not encroach onto any high sensitive areas. All effort was made by the project team to develop the proposed alternative which will only encroach onto the medium sensitivity heritage areas and low sensitive ecological areas. All of which can be mitigated to satisfactory levels.

2.3. Orebody Access Options

Underground, the strike of the ore body as well as the direction of development of the mine also dictates the position of the surface infrastructure.

Various main access options and sub-options were investigated to arrive at the recommendations. These main options that were investigated were:

- Access via the existing shaft complex and westerly footwall haulages;
- A new bratticed downcast and upcast vertical shaft for men and material;
- New downcast vertical shaft for men, material and rock with upcast raisebore shafts;
- Modification to the existing No 2 Shaft to utilise the upcast bratticed area for additional hoisting;
- A combination of raisebored vertical shafts incorporating hoisting facilities from surface and a decline system to working levels.

•

Ten positions for the placement of new vertical main and raisebore shafts were investigated. Underground access, surface features and other land considerations indicated the current position as the only feasible raiseboring site.

Two layouts were assessed, namely:

The proposed layout; and

Alternative 1.

The following was considered during the alternative assessment the:

- findings of the specialist studies undertaken;
- results of the impact assessment; and
- need for the project.

Based on the findings of the specialist studies and impact assessment and considering the successful implementation of the EMP, a recommendation as to the preferred alternative was made. The approved layout is the preferred alternative since a part of the area is already disturbed. All effort was made by the project team to develop the proposed layout to only encroach onto the medium sensitivity heritage areas and low sensitive ecological areas. Other alternatives as described above were all rated higher on the impact scale in terms of the impact on the environmental, natural and heritage/archaeological resources.

2.4. Socio-Economic aspects of the Proposed Project

The proposed project will sustain employment during construction and operation, which will result in sustaining of economic multiplier effects and social upliftment in the local community as a result of the Zondereinde Mine. The establishment of the Shaft Complex will provide access to the Western Block of the Zondereinde Mine, which will result in the extension of the LoM of the Zondereinde Mine to approximately 35 Years. This extended LoM will sustain the current associated socio-economic benefits of the Zondereinde Mine and its Social and Labour Plan (SLP).

Northam Platinum have invested heavily in the conversion and upgrading of hostels through a structured Hostel Refurbishment Programme. In addition, several home ownership initiatives have been implemented to the benefit of the employees. Northam Platinum will comply fully with the Mining Charter scorecard element of housing and living conditions on completion of the final single person accommodation units.

A high-quality nutrition plan in conjunction with a consulting dietician has been developed, implemented and monitored. The plan includes three well balanced meals in a 24-hour cycle for employees residing at the Zondereinde Mine's hostels and is fully subsidised.

2.5. Archaeological Context

No major topographical features exist within the development footprint that would have attracted human occupation in antiquity however a set of hills that contain Late Iron Age (LIA) settlements occur adjacent and to the south of the study area. This area is highly overgrown and it is not possible to accurately determine the site extent or all the site features. The area is mostly void of trees with different grass cover than the surrounding area and is characteristic of vegetation on an Iron Age archaeological site in this area. The change in vegetation marking the site extent is clearly visible on google earth imagery of the area and the area is divided into high and medium significance areas. During the field survey these areas of medium and high significance was visited, and the division proved to be accurate with features (middens and stone walled enclosures) mostly found in areas with high sensitivity with few visible surface features found in the medium sensitivity areas. Outside of the areas marked as sensitive, lower grinding stones and undecorated ceramics were recorded, relating to the wider landscape use by the Iron Age settlement.

Although no diagnostic ceramics was recorded during the HIA, other sites in the area with decorated ceramics represent stamped ware and could possibly be related to the Rooiberg ceramic facies, although a bigger ceramic sample is needed to confirm this (van der Walt 2010). These stone walled settlements are important because of the alternative stone walled settlement layout observed at these sites. These sites consist of several kraals clustered together without an outer wall. These sites have research potential that could clarify the new stone walled arrangement represented in the area that has not yet been identified and could hold clues to the interaction between the Uitkoms ceramic facies and Madikwe that formed Rooiberg. The recorded LIA settlement is assumed to conform to this pattern.

3. METHODOLOGY

3.1 Cultural Historical Background

A brief survey of available literature was conducted to extract data and information on the area in question to provide general heritage context of the study area. This literature search included published material, unpublished commercial reports and online material, including reports sourced from the South African Heritage Resources Information System (SAHRIS). Several HIA's were conducted in the area and consulted for this report (Table 1).

Table 1. Studies conducted in the area include the following:

Author	Year	Project
Van Schalkwyk, J.	1994	A Survey of Archaeological and Cultural Historical Resources in the Amandelbult Mining Lease Area
Van Schalkwyk, J, Teichert, F, Pelser, A.	2003	A Survey of Archaeological Sites for the Amandelbult Platinum Mine Seismic Exploration Program
Huffman, T. N.	2006	Archaeological Assessment for the Rhino Andalusite Mine Second Report
Huffman, T.N.	2007	Further Reconnaissance for the Rhino Andalusite Mine, Thabazimbi, Limpopo Province
Van Schalkwyk, J.	2007	Heritage Impact Assessment: Portion 6 Aapieskraal
Kusel, U.	2008	Cultural Heritage Resources Impact Assessment for Portions 1, 4, 5, 6, 7, 18, 19, 27 and 28 of the Farm Maroeloesfontein 366 KQ, Limpopo Province
Murimbika, M	2010	Phase 1 Archaeological and Heritage Impact Assessment Specialist Study Report for Proposed Installation of New Antennae and Associated Infrastructure at Farm Hartebeesthoek 502 JQ, Gauteng Province
Van der Walt, J.	2009	Archaeological Impact Assessment Chronimet Opencast/Underground Mine and Process Plant, Amandelbult, Limpopo Province.
Van Vollenhoven, A. C.	2013	A report on a cultural heritage impact assessment for the proposed photovoltaic power plant and emp amendment for the Northam Platinum Zondereinde mine close to Northam, Northwest Province
Van der Walt, J.	2014	Archaeological Impact Assessment For the proposed Zwartkop Industrial Development, Amandelbult, Limpopo Province.
Van der Walt, J.	2016	AIA For the proposed additional underground and opencast mining, associated infrastructure and processing facilities at Thaba Cronimet Chrome Mine, Limpopo Province.
Van der Walt, J.	2018	Heritage Impact Assessment Northam Ext 20
Van der Walt, J.	2019	Heritage Impact Assessment for the proposed Northam Zondereinde Platinum Mine 3 Shaft, Thabazimbi Local Municipality

3.2. Test Excavations

The potential impact to sub surface heritage resources cannot be removed or avoided through amendment of the Project development footprint. Shovel pit tests were conducted and were exploratory, aimed to determine whether if any subsurface deposits occur in the area where the Berm will be located in the medium sensitive areas in line with the permit conditions.

The shovel test pits were completed manually in control spits for recording purposes to record and collect chronologically informative material culture that will assist with interpretation of the site. Excavated material was sieved through 3- and 1.5-mm mesh to recover artefacts.

To summarise, the methodology for the excavations of the area impacted on by the proposed Berm, comprise the following:

- A number of shovel test pits (STPs) were excavated across the location of the Berm in three main areas. These STPs were used to establish whether any subsurface archaeological deposit occur, and if so, what the depth of the cultural material located here is. Excavations were done manually in 10 cm spits. All material excavated from the STP's was archaeologically screened (Figure 3).
- All excavations and features were recorded on a site layout plan, mapped by using a Total Station.
- At the conclusion of the work at the site, all excavated pits were backfilled.
- Undecorated undiagnostic ceramics were counted and left at site.



Figure 3. Screening of artefacts.

3.3 Analysis & Dating

The ceramics recovered from the excavations were limited in number and undiagnostic and no further analysis of form, function and style was necessary because this would have been statistically meaningless. No datable material or any other cultural material was found during the excavations.

4. IRON AGE BACKGROUND

This section will only focus on the Late Iron Age period in line with the sites mitigated under the Section 35 permit.

For the area in question the history and archaeology of the Sotho Tswana are of interest. The ceramic sequence for the Sotho Tswana is referred to as Moloko and consists of different facies with origins in either the Icon facies or a different branch associated with Nguni speakers. Several sites belonging to the Madikwe and Olifantspoort facies (from Icon) have been recorded close to the project area. These sites date to between AD 1500 and 1700 and predate stone walling ascribed to Sotho-Tswana speakers. Sotho Tswana stonewalled sites with Uitkomst pottery have been found close to the study area and dates to the seventeenth to nineteenth centuries. Stone walled sites belonging to the LIA have also been identified next to the study area but so far have not been linked to a cultural group.

Late Iron Age peoples were attracted to the area because of the relatively fertile soils around the hills and valleys, and because of the iron ore and red ochre. Mining techniques associated with the ancient mine workings are the same as those found in the Rooiberg area some 30km from Thabazimbi (Huffman 2006). Three groups are found in the Rooiberg area, specifically Madikwe, Melora and Rooiberg groups. Stratigraphically, the relationship between Madikwe and Rooiberg is evident where the Madikwe site 20/85 lies underneath the Rooiberg site 11/85, suggesting that Rooiberg is the more recent (Mason 1986). Ceramic evidence suggests then that Sotho-Tswana people were mining at Rooiberg. The ceramic evidence from the Rhino Andalusite Mine shows that the Sotho-Tswana people living there were directly related to the miners at Rooiberg: both belonged to the Western Sotho-Tswana cluster. Therefore, the relationship, between the ochre mine and Madikwe settlements, is of importance. Associated with the Madikwe settlements, in addition to the ochre mine is the several maize grindstones found.

Trade connections for ochre and tin have a bearing on the presence of maize. Trade networks spanned a wide area, up to the Zimbabwe culture area in the north, and as far as Maputo in the east before the arrival of the Dutch (Friede & Steel 1976). Maize came to Maputo sometime after the early 16th century through Portuguese trade with the New World. The grindstones found at the site CB14 in the Rhino Andalusite Mine indicate that maize was grown in the Thabazimbi area during the 17th century (Huffman 2006). If one accepts the grindstone as diagnostic, then maize was cultivated some 150 years earlier than in Kwazulu-Natal. Evidence for Iron Age activity will most likely be concentrated along water courses and rocky outcrops marked by ceramic clusters or dry-stone walling.

Several sites dating to this period is on record for the larger geographical area (van Schalkwyk 2004; van der Walt & du Piesanie 2009; van der Walt 2010; van der Walt 2019 & Lavin 2021) with several located on Northam owned property (Table 2).

Table 2. Sites identified in the larger area.

Site Details	Coordinates	Grading	Mitigation	Source
Northam Site 4 Complex - LIA Site complex identified by Van Vollenhoven (2013)	-24.841944 27.348333	IIIA	The site must be conserved and no impact is permitted. The site must be noted for scientific excavation.	Van Vollenhoven, A.C. 2013
Northam Site 5 Complex - View of ruined kraal, vertical branch still remains, stonewalling, quartz & quartzite flakes, undecorated pottery, LIA	-24.85241 27.33583	IIIA	The site must be conserved and no impact is permitted. The site must be noted for scientific excavation.	Lavin, J. 2021
Northam Site 5 Complex Large circular kraal wall, less than half a metre high, completely grass covered, LIA	-24.85241714 27.33527552	IIIA	The site must be conserved and no impact is permitted. The site must be noted for scientific excavation.	Lavin, J. 2021
Northam Site 5 Complex Small stonewalled kraals, grass cover thick, LIA	-24.8524287 27.33583603	IIIA	The site must be conserved and no impact is permitted. The site must be noted for scientific excavation	Lavin, J. 2021

5. DOCUMENTATION AND EXCAVATION OF SITES

5.1. Description of mitigation

This section of the report refers to the area that was mitigated and includes a discussion on the results of the mitigation, the study area was divided in three arbitrary areas for description purposes being Area 1 -3 (Figure 5). According to the SAHRA permit, excavations are only allowed along the Berm and the mitigation focussed on shovel pit tests to determine subsurface deposits. The shovel pit tests conducted in relation to the Berm are indicated in Figure 6. The lack of archaeological deposit did not necessitate test excavation.

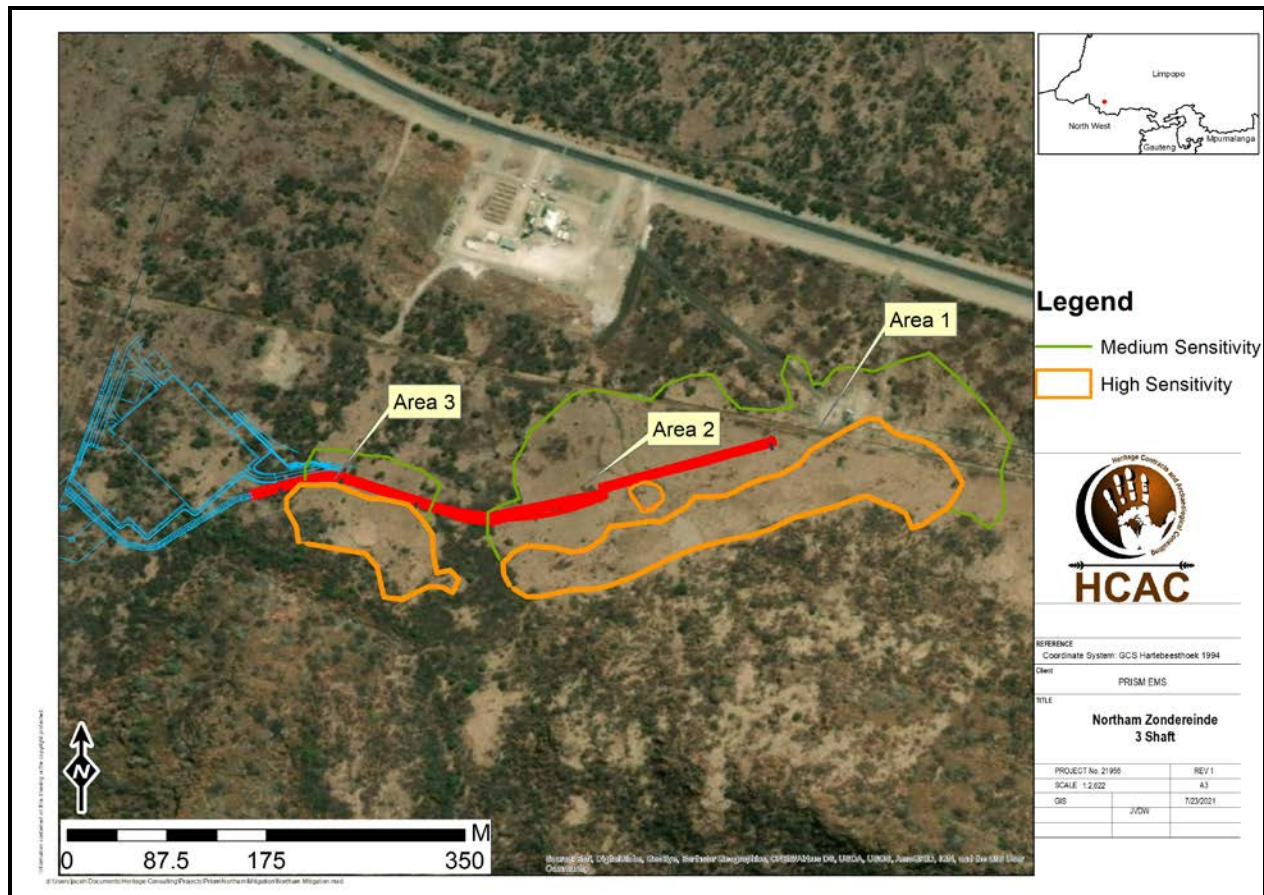


Figure 4: Development layout (blue – Eskom footprint, red – Berm) in relation to high and medium sensitive areas.

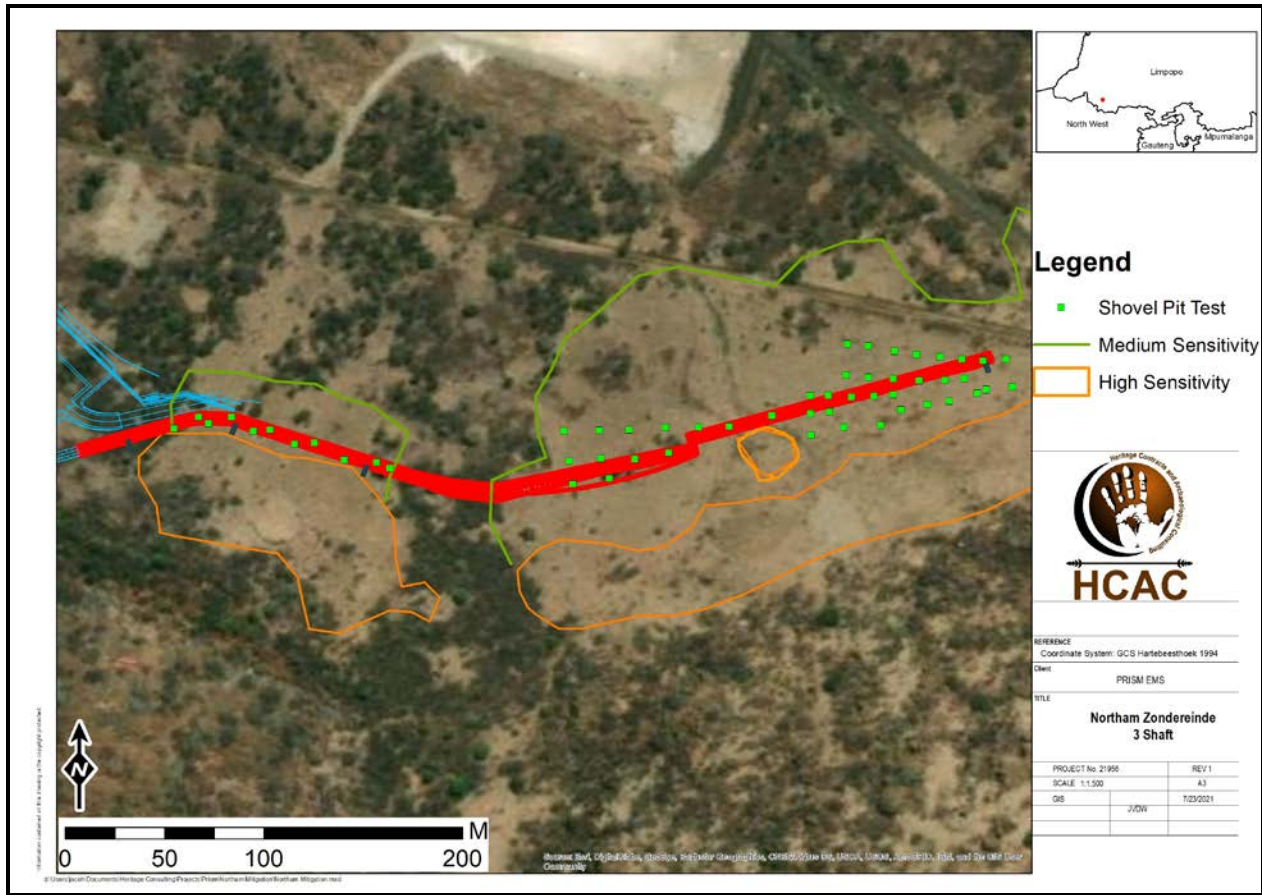


Figure 5. Shovel pit tests in relation to the Berm and archaeological sensitive areas.

5.1.1. Area 1

Area 1 is located on the side of a servitude road along a powerline outside of the impact areas. Archaeological material was identified within the side profile of the road cutting. A surface collection of ceramics was documented to establish a time period for the site. Only one identifiable sherd was located (Figure 7).



Figure 6. Decorated ceramic from Area 1 surface collection.

5.1.2. Area 2

This area extends along the foot of the hill within the Medium sensitivity area, that is entirely covered by dense vegetation (Figure 8). Care was taken not to move into the High sensitivity area due to the extensive series of stone walled features that are located here. The area extends towards the west up to a small gravel road that runs up the hill towards a modern braai area that was constructed against the side of the hill.

A surface collection as well as a series of shovel test pits (Figure 9) were excavated across this area to find any sign of archaeological deposit. Some identifiable ceramics were found on the surface of the area and only a few of the STPs contained undiagnostic ceramic material. No deposits were identified.

STP 5 – 37 were located within Area 2 .



Figure 7. Area 2 with tall grass cover on top of a dark clayey topsoil.

Table 3. Shovel test results in Area 2.

Shovel Test Pit (STP #)	Waypoint:	Description:	Depth excavated. (cm)
5	426	No Deposit	32
6	427	5 x Undiagnostic ceramics No Deposit	36
7	428	No Deposit	32
8	429/430	. No Deposit	40
9	431	1 x Undiagnostic ceramic No Deposit	32
10	432	No Deposit	49
11	433	No Deposit	40
12	434	No Deposit	30
13	435	1 x Undiagnostic ceramic No Deposit	33
14	436	No Deposit	36
15	437	No Deposit	40
16	438	No Deposit	33
17	439	No Deposit	36
18	440	No Deposit	43
19	441	No Deposit	43
20	442	No Deposit	40

21	443	No Deposit	35
22	444	No Deposit	40
23	445	No Deposit	40
24	446	No Deposit	35
25	447	No Deposit	34
26	448	No Deposit	37
27	449	No Deposit	34
28	450	No Deposit	31
29	451	No Deposit	30
30	452	No Deposit	33
31	453	No Deposit	30
32	454	No Deposit	37
33	455	No Deposit	32
34	456	No Deposit	38
35	457	No Deposit	30
36	458	No Deposit	37
37	459	No Deposit	35



Figure 8. Examples of STPs, All STPs ended on dark sterile clayey soil.

5.1.2. Area 3

Area 3 extends from the small gravel road running up the hill towards the braai area in a western direction following the open area at the foot of the hill. The area moves towards an existing construction site southwest of the mine construction office. Area 3 is on the same landscape as area 2 and was separated for recording purposes.

STP 38 – 49 is situated within this area.

Table 4. Shovel Test Pit results in Area 3

Shovel Test Pit (STP #)	Waypoint:	Description:	Depth excavated. (cm)
38	460	No Deposit	32
39	461	No Deposit	34
40	462	No Deposit	35
41	463	No Deposit	40
42	464	No Deposit	36
43	465	No Deposit	32
44	466	No Deposit	40
45	467	No Deposit	38
46	468	No Deposit	40
47	469	No Deposit	36
48	470	No Deposit	38
49	471	No Deposit	33

STP 38 – 49 ended on dark clayey sterile soil.

A surface collection was also done as part of the surface collection of area 2.

5.2. Site Surface Collection

Due to the total lack of archaeological material in the areas excavated a surface sample was taken of decorated ceramics. These were recorded in the field and left where it was found and briefly described below.

AREA 1:

Surface Collection: 1 x Diagnostic Ceramic

AREA 2:

Ceramic x 61 Undiagnostic

These ceramics are from the surface and seems to be out of context with a large number of fresh breaks.

AREA 3:

Ceramics x 56 Undiagnostic

Ceramics x 4 Diagnostic (Figure 10)

These ceramics have many fresh breaks.



Figure 9. Diagnostic ceramics identified within surface collection at area 3.



Figure 10. Area 3 general view.

6. DISCUSSION

Mitigation conducted in the greater area by the National Cultural History Museum on the farm Elandsfontein 386 KQ, for the Amandelbult Platinum Mine (van Schalkwyk 2004) included the survey and mapping of sites in and around the Madeleine Robinson Nature Reserve of the Amandelbult Platinum Mine as part of the proposed extension of the mines' operations into the area. From the survey, several stone walled sites conforming to the CCP were identified along the base and between the saddles of the hills. Sites contained central kraals, smaller livestock enclosures, lower grindstones and ceramic scatters. These sites form part of a larger settlement complex dating to the Later Iron Age and site location and conditions conform to the high significance area the sites recorded for the Zondereinde Mine. These sites area similar to the sites recorded at the Cronimet Underground Mine and Process Plant (van der Walt & du Piesanie 2009) and now at Northam (van der Walt 2019 & Lavin 2021). This LIA community occupied a large area marked by stone walled kraals surrounding hills in the area away from the vertic soils in between these hills. The stone walled sites in proximity to the proposed development were mapped where access was available and the rest was mapped from old areal imagery (Figure 12). Despite the extent of the IA settlement no archaeological deposit was encountered in the areas test excavated with a limited number of decorated ceramics (Table 5).

Table 5. Summary of mitigation conducted.

Area	Test Excavation Finds	Surface Sample Finds
Area 1	NA	1 x Diagnostic Ceramic
Area 2	STP06: Ceramic x 5 Undiagnostic STP09: Ceramic x 1 Undiagnostic STP13: Ceramic x 1 Undiagnostic	Ceramic x 61 Undiagnostic These ceramics are from the surface and seems to be out of context with a large amount of fresh breaks
Area 3	No Finds	Ceramics x 56 Undiagnostic Ceramics x 4 Diagnostic These ceramics have a large amount of fresh breaks.

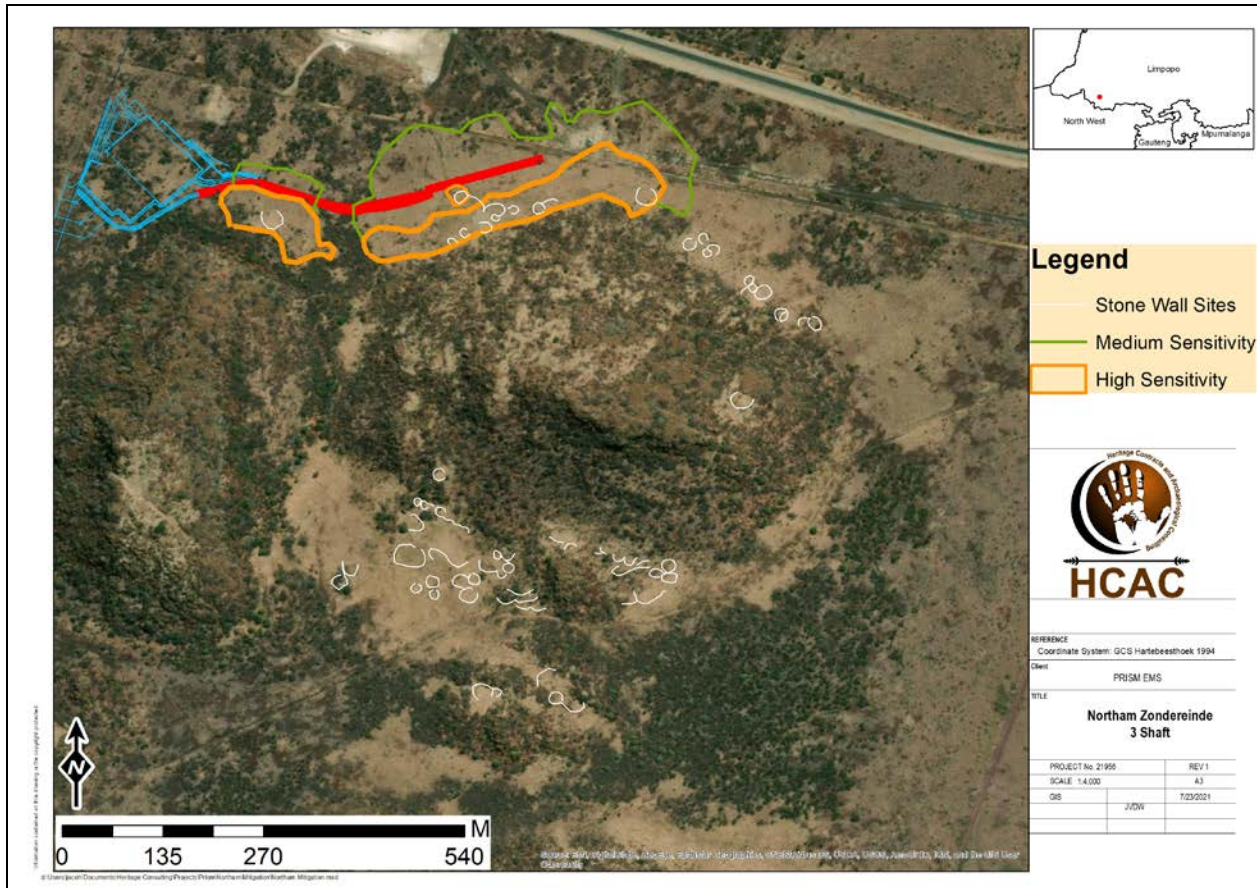


Figure 11. Stone walled enclosures in relation to the development activities.

7. CONCLUSION

The study area was divided in three arbitrary areas for description purposes being Area 1 -3. According to the SAHRA permit, excavations are only allowed along the Berm and the mitigation conducted focussed on shovel pit tests to determine subsurface deposits in the Berm area and the lack of archaeological deposit did not necessitate test excavations. Due to the total lack of archaeological material in the areas excavated a surface sample was taken of decorated ceramics. These were recorded in the field and left where it was found and briefly described below.

The few diagnostic ceramics observed on the surface outside of the impact areas represent stamped ware and could possibly be related to the Rooiberg ceramic facies, although a bigger ceramic sample is needed to confirm this (van der Walt 2010). The mapped stone walled settlements are important because of the alternative stone walled settlement layout observed at these sites. These sites consist of several kraals clustered together without an outer wall. These sites have research potential that could clarify the new stone walled arrangement represented in the area that has not yet been identified and could hold clues to the interaction between the Uitkoms ceramic facies and Madikwe that formed Rooiberg.

8. RECOMMENDATION

It must be kept in mind that sites like these might still yield subsurface cultural material and the sites must be monitored during construction as part of the management plan for the project. It is therefore recommended that the development can proceed due to the lack of archaeological deposit in the development areas based on approval from SAHRA.

9. REFERENCES

- Archaeological Database. University of the Witwatersrand
- Bergh, J.S. (red.) 1998. Geskiedenisatlas van Suid Afrika. Die viernoordelike provinsies. J.L. van Schaik: Pretoria.
- Breutz, P. L. 1953. Union of South Africa. Department of Native Affairs. Ethnological Publications No. 28. The Tribes of Rustenburg and Pilansberg Districts. Pretoria: The Government Printer.
- Friede, H. & Steel, R.H. 1986. Traditional smithing and forging of South African bloomery iron. South African Archaeological Bulletin **41**: 81-86.
- Huffman, T.N. 2006. Archaeological Mitigation of the Rhino Mine. Unpublished report.
- Huffman, T.N. 2007. Further Reconnaissance for the Rhino Andalusite Mine, Thabazimbi, Limpopo Province
- Huffman, T.N. 2007. A Handbook to the Iron Age: The Archaeology of Precolonial Farming Societies in Southern Africa. Pietermaritzburg: Kwazulu-Natal University Press
- Kusel, U. 2008. Cultural Heritage Resources Impact Assessment for Portions 1, 4, 5, 6, 7, 18, 19, 27 and 28 of the Farm Maroeloesfontein 366 KQ, Limpopo Province
- Mason, R.J. 1986. Origins of Black People of Johannesburg and the Southern Western Central Transvaal AD 350-1880. (Occasional Paper **16**) Johannesburg: University of the Witwatersrand Archaeological Research unit.
- Murimbika, M. 2010. Phase 1 Archaeological and Heritage Impact Assessment Specialist Study Report for Proposed Installation of New Antennae and Associated Infrastructure at Farm Hartebeesthoek 502 JQ, Gauteng Province
- Niehof, M. & Botha, D. 2020. Environmental Impact Assessment Report and Environmental Management Programme Northam Zondereinde Platinum Mine 3 Shaft Thabazimbi City Local Municipality, Limpopo Province. Unpublished report.
- Van der Walt, J. 2009. Archaeological Impact Assessment Chronimet Opencast/Underground Mine and Process Plant, Amandelbult, Limpopo Province.
- Van der Walt, J. 2014. Archaeological Impact Assessment For the proposed Zwartkop Industrial Development, Amandelbult, Limpopo Province.
- Van der Walt, J. 2016. AIA For the proposed additional underground and opencast mining, associated
- Van der Walt, J. 2018. Heritage Impact Assessment Northam Ext 20 infrastructure and processing facilities at Thaba Cronimet Chrome Mine, Limpopo Province.
- Van der Walt, J. 2019. Heritage Impact Assessment for the proposed Northam Zondereinde Platinum Mine 3 Shaft, Thabazimbi Local Municipality
- Van Schalkwyk, J. 2004. . Unpublished report on The Surveying And Mapping Of Archaeological Sites On The Farm Elandsfontein 386 KQ, Amandelbult Platinum Mine Thabazimbi District, Limpopo Province.
- Van Schalkwyk, J. 2007. Heritage Impact Assessment: Portion 6 Aapieskraal
- Van Schalkwyk, J. 1994. A Survey of Archaeological and Cultural Historical Resources in the Amandelbult Mining Lease Area
- Van Schalkwyk, J, Teichert, F, Pelser, A. 2003. A Survey of Archaeological Sites for the Amandelbult Platinum Mine Seismic Exploration Program
- Van Vollenhoven, A. C. 2013 .A report on a cultural heritage impact assessment for the proposed photovoltaic power plant and emp amendment for the Northam Platinum Zondereinde mine close to Northam, Northwest Province