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An Archaeological and Historical Investigation of 20th Century European Mining Activities on the Farm Berkenrode in the Maremani Nature Reserve, Musina, Limpopo, South Africa.

by

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Declaration

I, Michelle Joubert, declare that this is my own original work. It has been submitted for a Master of Arts degree at the University of Pretoria. It has not been submitted to any other academic institution.

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Michelle Joubert

Dedication

I would like to dedicate this masters project to my father,

Willem Adriaan Joubert (1955 – 2014).

Thank you for introducing me to the wonderful world of archaeology and history.

Acknowledgements

I would like to thank both of my supervisors, Dr Alexander Antonites and Prof Ceri Ashley for their unwavering support. Dr Antonites thank you for all the coffee and talks, not just about my master's project but about life in general. I will never forget what I learned from you. Prof Ashley thank you for all the support and advice on my project, also thank you for your enthusiasm about archaeology, it made me continue on even when I thought all was lost.

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Abstract

Musina (Messina), is a small town in far northern South Africa known for its copper mining history. To date, historical narratives about South African industrialisation, especially with regards to the mining sector, have not paid adequate attention to small scale (artisanal) mining operations. Studies with regards to the life of the mining community itself have also received less attention. This dissertation attempts to tell the story of a small artisanal mining community located on the farm Berkenrode, which was active during the 20th century. Today this farm forms part of the Maremani Nature Reserve (MNR). The mining site is referred to as MNR211. Historical archaeology is used to provide information on social and historical processes of industrialisation at a local scale reconstructing the past mining settlements and their communities on the site. Material culture and architectural evidence is used to distinguish between elements of the domestic and/or the industrial sphere, and explore social distinctions that were present at the site. Studying these small-scale settlements will provide information on past industrial settlements and its activities. In turn the study will also provide a baseline for future work on industrial archaeologies with mining settlements being the main focus, which will add to South African archaeology and history.

Keywords: Artisanal (small-scale) mining, Berkenrode Farm, Diggings, Historical Archaeology, Limpopo, Maremani Nature Reserve, Mining, MNR211, Musina.

Table of Contents

List of Figures

List of Tables

Abbreviations

ASM: Artisanal (Small-scale) Mining.

CRM: Cultural Resource Manager.

DAACS: Digital Archaeological Archive of Comparative Slavery.

GPS: Global Positioning System.

MNI: Minimum Number of Individuals.

MNR: Maremani Nature Reserve.

MNV: Minimum Number of Vessels.

MoLAS: Museum of London Archaeological Service (MoLAS) Archaeological Site Manual.

MTD: Messina (Transvaal) Development Company Limited.

NAAIRS: National Automated Archival Information Retrieval System.

REW: Refined Earthenware.

RSA: All Archives Repositories and National Registers of non-public records.

SAB: National Archives Repository (Public Records of Central Government since 1910).

SAHRA: South African Heritage and Resources Agency.

TAB: National Archives Repository (Public Records of former Transvaal Province and its predecessors as well as of magistrates and local authorities).

Chapter 1 : Introduction

It can be argued that the South African economy was built on the mining industry: coal, copper, diamonds, gold, iron, uranium and many more still contribute to the economy to this day. South Africa overlies the Kaapvaal Craton (Fig 1.1) which is one of the oldest nuclei of continental crust, with an age of approximately 2500 million years (Cairncross & Dixon 1999: 2). The processes of magmatic intrusion, sedimentation, metamorphism, and deformation has resulted in the deposition of ore reserves which created a variety of mineral deposits (Davenport 2013: 2). This is the reason for the cornucopia of rich mineral resources present in South Africa.

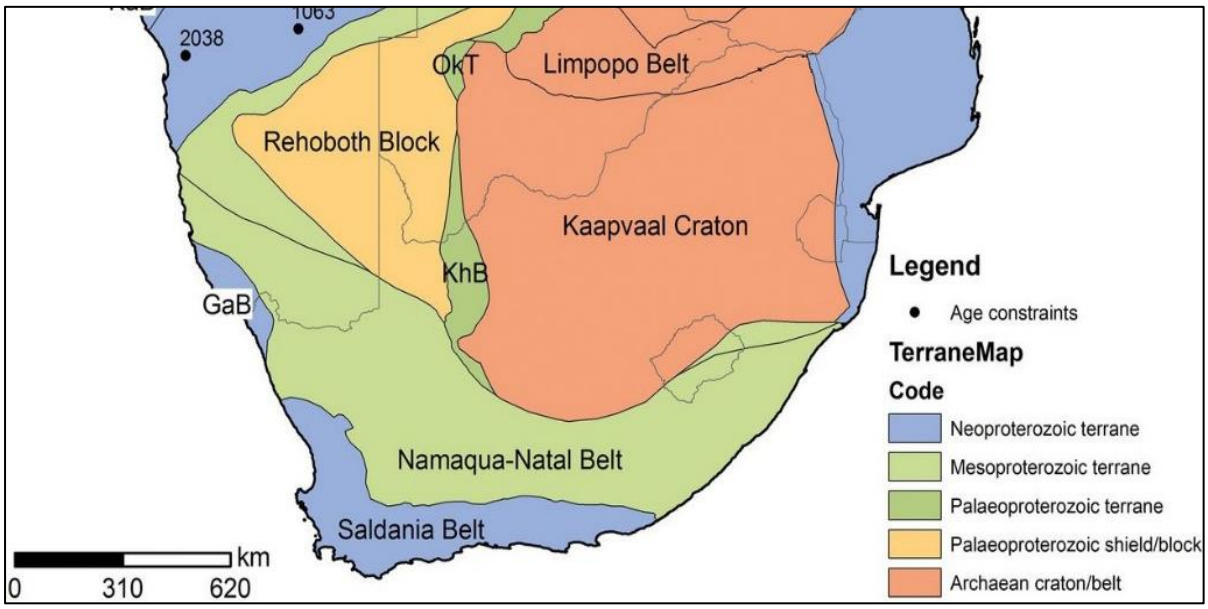


Figure 1.1: Geological map indicating the major geological area in Southern Africa.

There are many examples of pre-colonial mining activities all over South Africa, although very few sites were studied in-depth, due to destruction by modern mining operations. Sometimes the mining operations were extensive and, in some cases, mining was a specialised activity (Van Warmelo 1940: 81). The metals and minerals that were mined, which included copper, gold, iron, salt and tin among others, were transformed into items of personal adornment, utilitarian objects or goods to trade on a local and/or international scale (see Baumann 1919; Childs & Killick 1993; Chirikure 2007; Chirikure 2015; Evers & van den Berg 1974; Friede & Steel 1976; Friede 1980; Hammel et al 2000; Herbert 1984; Huffman 2007; Mason 1982; Miller 1995; Summers 1969; van der Merwe & Scully 1971).

In the 17th century, Europeans settled in South Africa and their attempts to find and exploit mineral resources began. A series of investigations and discoveries followed which included

the discovery of copper in the Namaqualand, and the subsequent establishment of the first commercial mining operation in South Africa (Smalberger 1969). Then the discovery of diamonds in Kimberly (Davenport 2013; Doughty 1963; Herbert 1971; Newbury 1989) and gold in Johannesburg (Bright 2013; Davenport 2013; Rosenthal 1970) in the latter half of the 19th century transformed South Africa into an industrial nation. One of the mining sectors that also contributed to the economy was the copper mines in Musina. The copper deposits were mined by both the historical Iron Age communities of the area and later the white settlers, who in turn established the large-scale mining company which provided jobs and revenue for the economy.

Narrative of the history of mining in South Africa however, focuses mostly on the large-scale mining operations (e.g. Davenport 2013; Newbury 1989; Bright 2013; SAIMM Journal) and rarely on the many artisanal (small-scale) mining (ASM) operations. In many cases these ASM sites go unnoticed and don't appear in historical records because of the small size, and temporary occupation. The focus of this dissertation is on ASM practices.

1.1 Artisanal (small-scale) Mining (ASM)

ASM is an operation where the miner(s) work independently with no affiliation to mining companies. Lawrence (1995) provides a good explanation of what artisanal mining is: According to her, artisanal mining is self-sufficient where miners were not inclined to work under someone else (Lawrence 1995: 59). These miners typically used their own resources, which range from hand tools to limited uses of mechanisation, in order to mine mineral deposits. This type of mining can range from gold-panning in the rivers and streams to underground workings to small-scale processing plants. They also have no preference to the types of metals and/or minerals which they mine, since ASM is mostly conducted as a means to gain an extra income. The mineral deposits were not rich enough to create a massive rush, to attract major external sources of capital, or to sustain a substantial permanent settlement, but it was sufficient to support a small number of people for a period (Lawrence 1995: 59). Women and children were also sometimes involved in the artisanal mining: fathers and sons usually worked at the mining claims, whereas the mothers and daughters were responsible for the daily farming activities and the maintenance of community life and its activities (Lawrence 1995: 66). According to Lawrence (1995) in some cases ASM miners had domestic animals and grew vegetables as a means to sustain themselves and generate an income from mining. Sometimes the people came to the mining fields seasonally or over different periods of time (Lawrence 1995: 59). For example, upon hearing of a new discovery they would leave their current mining

settlement and proceed to mine a new claim until it was finished, before returning to their previous settlement to continue that claim (Lawrence 1995: 59).

1.2 ASM in South Africa

It is estimated that around 20 000 people are directly involved in ASM in South Africa today (Global trends in artisanal and small-scale (ASM) mining 2018), this includes both women and children. In South Africa artisanal mining (without a suitable license and paperwork) is still considered illegal, although attempts are being made to rectify this and provide education and resources to these artisanal miners. In many instances these miners have been trained by companies and were later laid off. They train other miners to use chisels, hammers, spades, dynamite and other mining equipment. ASM are particularly widespread in poverty-stricken regions such as the Northern Cape, North West, Limpopo, and Eastern Cape provinces. These are provinces with high levels of unemployment (Ledwaba 2017). This type of mining is practised as a means to gain an extra income even if it means breaking the law. As a result, mining usually takes place during the night, both at abandoned and active mines in South Africa.

1.3 Aims

This study aims to better understand local ASM mining by investigating the activities at the site MNR211 (S 22.38265; E 030.10375) which is a small-scale mining site located on the farm Berkenrode, within the Maremani Nature Reserve. Maremani is located east of Musina (The current spelling of Musina is used throughout as opposed to “Messina”, which was used during colonial times), in the Limpopo province of South Africa. The main features of the site are 30 diggings, 13 low stone walls that encircle 21 of the diggings, and six structures. Other notable features at the site include three possible middens, a possible furnace, a possible crushing site, two faded metal claim boards, a clearly defined boundary line and a small activity area.

This dissertation uses both archival resources and material culture. Since MNR211 is located in close proximity to the larger copper mining industry in Musina, it adds a unique perspective to the mining history of the region. This includes answering questions about the mining community of the site, the mining operations and the period of active use. These questions and more will be answered by studying the material culture retrieved from excavations and site surveys, and also information retrieved from archival documents and historical maps. This information will shed light on how the use of domestic space versus industrial space was implemented. It will also bring about social distinctions within the community such as class,

gender and racial divide which needs to be understood within the context of South Africa and the specific time the mining site was active.

Chapter 2 : Overview of the History of Mining in the Musina Region

Musina is a small town located in far northern South Africa. It was established due to the copper mining industry which started in the early 20th century. The copper mining operations closed down in the early 1990s (Anhaeusser & Wilson 1998: 216).

2.1 History of Mining in Musina

2.1.1 Geology of Musina

Musina is located on the Limpopo Belt of Southern Africa. It comprises Archean and Palaeoproterozoic lithologic components, and is surrounded by the Zimbabwe (north) and Kaapvaal (south) Cratons (Millonig 2009: 7) (Fig 2.1). It contains high-grade metamorphic rocks (Cairncross & Dixon 1999: 45) and is divided into a central, north and south zones (Cairncross & Dixon 1999: 45) (Fig 2.1). The central zone (where Musina is located) with northerly striking fold axes, is flanked by marginal zones with sheared, reworked granite-green-stone assemblages located to the north and south (Cairncross & Dixon 1999: 45). The position of the copper ores is controlled by two brittle shear zones, the Messina and the Dowe-Tokwe Faults, along which copper-bearing fluids were able to penetrate the country rocks (Anhaeusser & Wilson 1998: 216; Cairncross & Dixon 1999: 47) (Fig 2.2). The Messina-Fault is a linear fault line, of about 16 km long, which runs through the town of Musina area in a north-easterly direction. This cuts through gneisses of the Limpopo Belt (Beale 1985: 116). The copper mineralisation is generally found in veins, lodes and pipe-like breccia bodies (Cairncross and Dixon 1995: 47) and occurs in the primary sulphide minerals chalcopyrite, bornite and chalcocite.

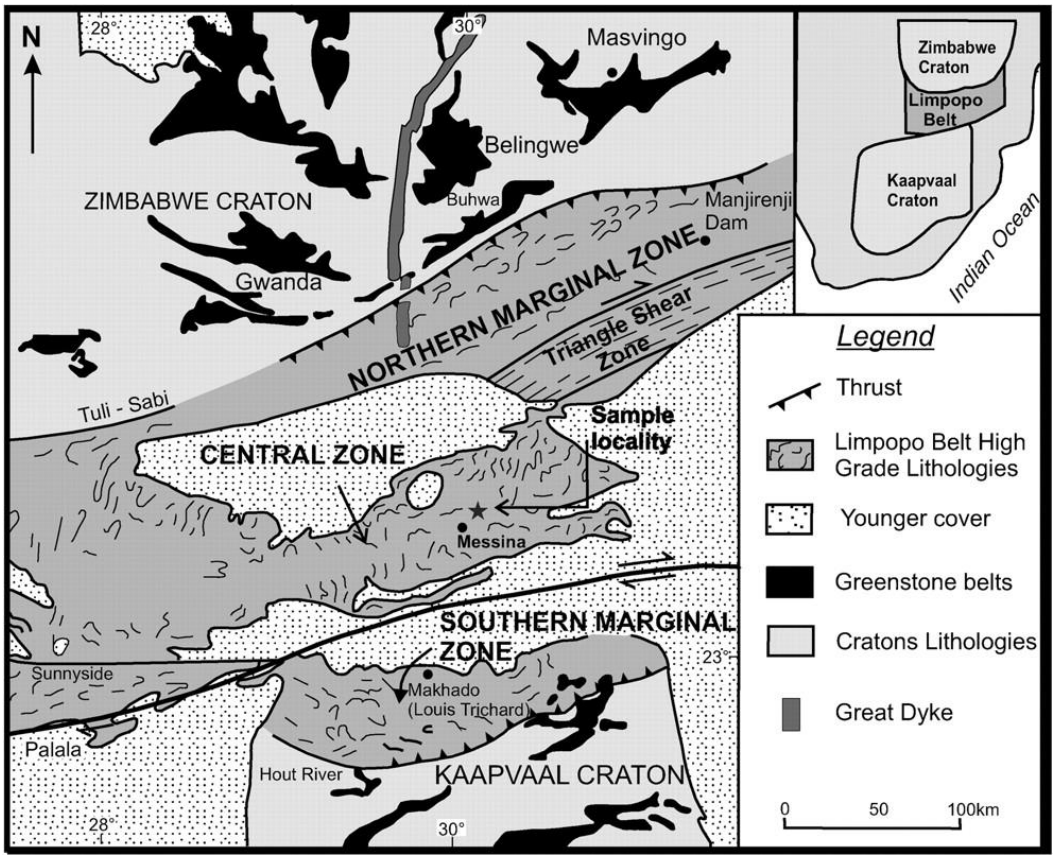


Figure 2.1: Geological map indicating the Limpopo Belt, the complexes comprising it and the major magnetic intrusions (Brandl et al 2009).

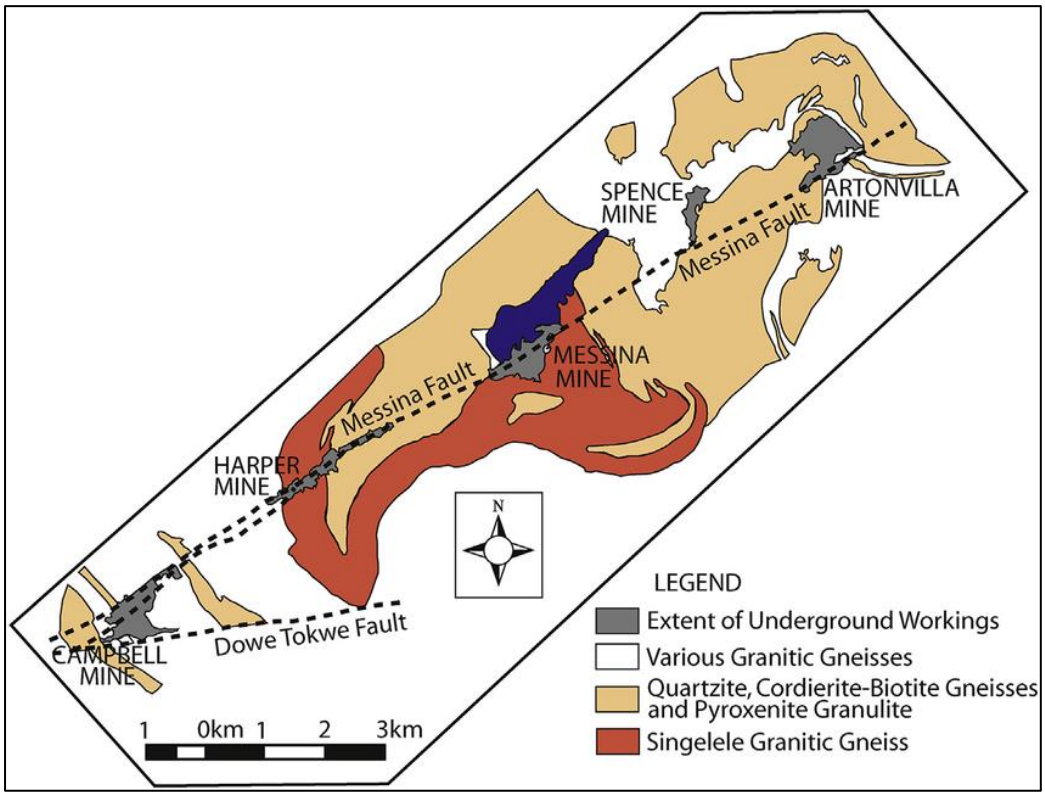


Figure 2.2: Indication of the Messina Fault and the Dowe-Tokwe Fault (Chaumba et al 2016).

Figure 2.3: Green copper mineralisation (malachite) at the Artonvilla mine in Musina (Artonvilla Mine, Musina, Limpopo. Photo by author, 2018).

Copper is the only economic metal won from the ore bodies (Fig 2.3), which resulted in both the pre-colonial miners in the Musina area, and later the white settlers to establish mining operations.

2.1.2 Pre-colonial Mining in Musina

Musina has a long history of pre-colonial mining (see Hanish 1974; Stayt 1931; Summers 1969; Van Warmelo 1940). Archaeological evidence of pre-colonial mining are the physical diggings as well as the different tools and equipment associated with pre-colonial mining. Unfortunately, very few examples exist due to destruction by modern mining operations, looting and illegal mining as well as the fragile nature of some of the tools and equipment. No dates are available for the Musina copper mines or smelting activities.

Oral histories of surrounding groups collected in the 20th century, have linked the mines to Late Iron Age communities ethnographically known as the Musina (Van Warmelo 1940). There are conflicting accounts regarding their origins. There are two main versions put forward by Stayt (1968) and Van Warmelo (1940) whose main source of information was oral historical accounts, provided by various informants from the Musina area.

Stayt's informants, states that the copper miners came from Zimbabwe, and they were presumed to be the same people who had worked on the pre-colonial gold mines in Zimbabwe. He speculates that they were from the Lemba group, who it is assumed to have worked under the guidance of the Venda chiefs. The copper miners are said to have worked under the Venda chief Ramabulana, but at some stage Ramabulana ordered all mining to stop and that all the

mines should be closed down because of the threat of Zulu plundering raids. According to Stayt's informants, the Lemba were feared because of their knowledge of the mining and smelting industry. While in search of iron ore, the copper miners discovered iron but found that there were copper inclusions within it. The copper was very soft and in essence 'spoiled' the iron. It is believed that the Venda later referred to copper as 'mesina' which means spoiler (Stayt 1968: 63, 66) as the copper inclusions in the iron reduced the iron's quality (Cairncross & Dixon 1999: 46).

Van Warmelo (1940) recorded the account by M. F. Mamadi, who said he was an old Musina copper miner. According to Mamadi, the copper miners were not called BaLemba but were from the Musina Clan who travelled north along the Moeketse (Sand River), and finally settled at a hill near Musina called 'Zwamokale'. This hill is located on the road to Pont Drift. The Musina Clan told their people to go out and search for copper to be mined, and after meticulous searching copper was found at the Zwamokale hill and great Musina. The mining commenced and it is possible that all manner of people assisted with the mining. With the death of the chief Dopokabatho the mining industry in Musina started to fall apart. It is possible that the monopoly of the copper mines by the Musina Clan was a threat to other groups, which led to the eventual demise of the Musina Clan. After the closing of the mines, the Musina scattered among the BaVenda groups of the Soutpansberg (Van Warmelo 1940: 81, 83).

Pre-historic copper working activities in and around Musina were first described by Trevor (1912) who remarked that these remains were extensive, and that they occur in an almost continuous line stretching for more than 29km from Musina in a south-westerly direction. All the workings had been filled up and appear as cup-like hollows varying in shape and extending for about one mile in length and sometimes running along three parallel lines. Approximately 120 of these mines occurred, all of which were centred on a lens of copper glance (chalcocite) or bornite. It was estimated that several tens of thousands of tons of copper were mined from these workings (Trevor 1912: 267). According to Summers (1969) evidence of copper mining was evident in Musina. His informant, Dr C. M. Schwellnus (a geologist), identified a digging while on an archaeological survey in Musina. One digging was identified as a shaft with underground stopes, "…one shaft with steps, 80ft deep. Small underground stope at foot, probably other shafts destroyed" (Summers 1969: 78). It was part of the Messina System Basement Complex, and had copper mineral properties. Summers mentions that chalcocite, malachite and azurite were all mined (Summers 1969: 102). Unfortunately, there are not many

examples left of pre-colonial mines at Musina as many have been destroyed by modern mining activities.

2.1.3 Historical (European) Mining in Musina (Messina)

During the second half of the 19th century the area north of the Soutpansberg was known to the white settlers only as an area for ivory and trophy hunting (Mills 1952: 7A). The area was completely devoid of whites except for a few farmers who lived in the area. During the South African War (Anglo-Boer War) a British soldier, Colonel Lieutenant John Pascoe Grenfell (Fig 2.4), was stationed in then Rhodesia (Zimbabwe) when he came across a man who informed him about abandoned copper mines located in Limpopo. In 1901 Grenfell crossed the Limpopo River on his journey to investigate the mines.

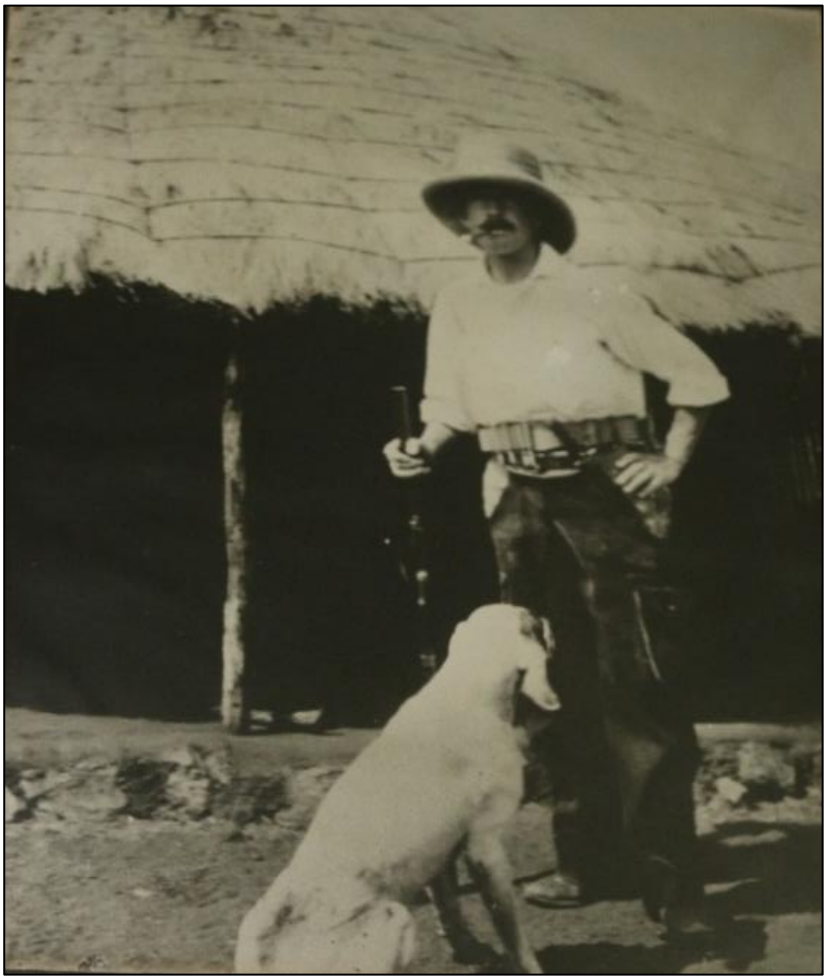


Figure 2.4: Lieutenant Colonel John Pascoe Grenfell in Musina (Messina (Transvaal) Development Company 1954: 3).[1]

[1] This source is used throughout the next section about the history of Musina. It is an information booklet that was printed to celebrate the 50 years of the MTD. The information in this booklet may be biased as it is not an academic source, but did provided additional information which others did not.

A man named Magush (Fig 2.5), an inhabitant of the area, informed Grenfell about the copper mines and showed him where some of the abandoned mines were located (Mills 1952: 9A). According to Magush, he himself was one of the last remaining members of the Musina Clan (Mills 1952: 8A).

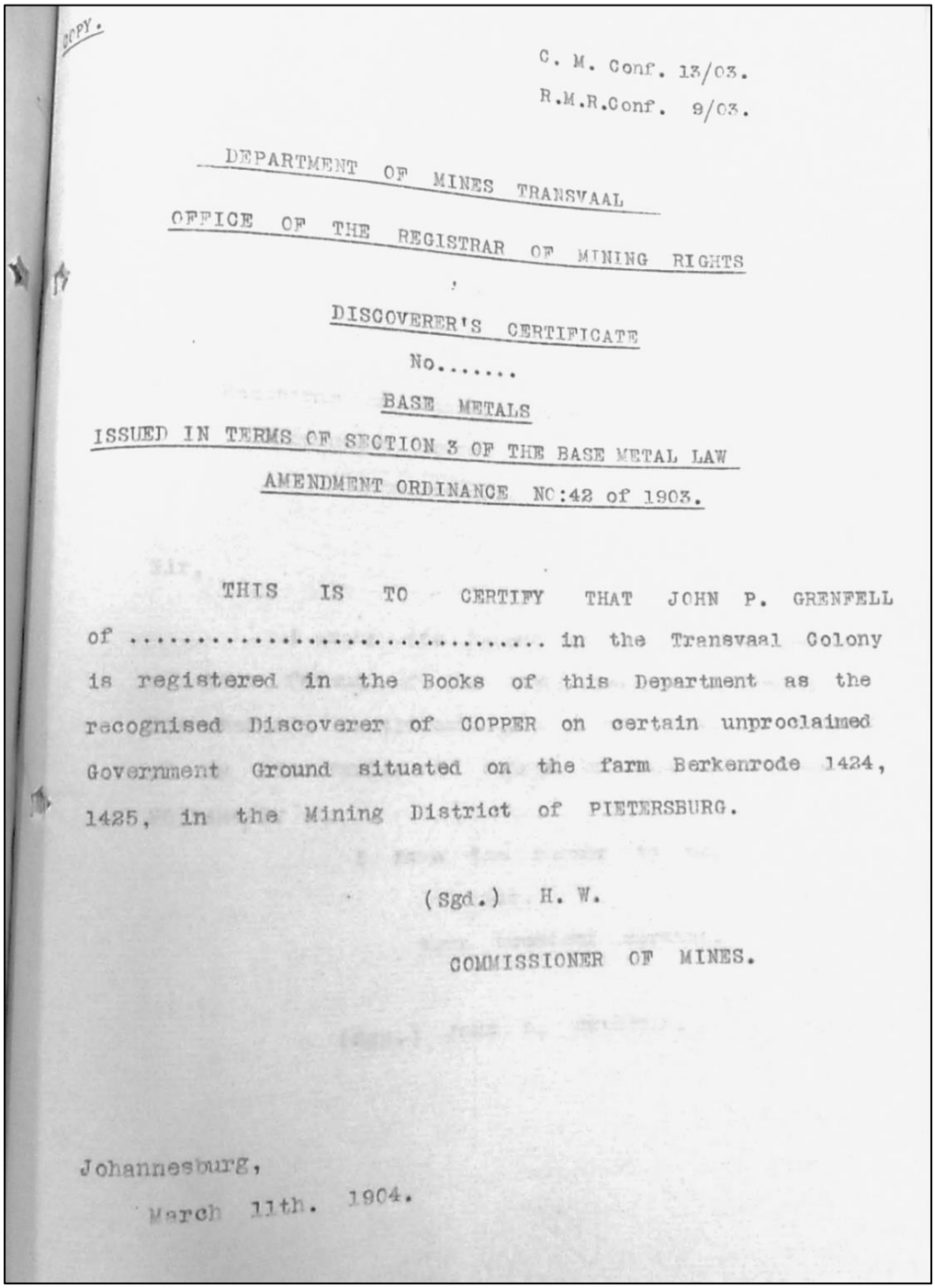
Figure 2.5: Image of Magush (Original in collection of Mr J. Klaff, Musina, photo taken with permission by author, 2018).

With the end of the war in 1902, Grenfell returned to the Musina area to continue prospecting. His prospecting team consisted of imperial soldiers, a surveyor and an engineer (Messina (Transvaal) Development Company 1954: 4). At the end of 1902 the prospecting team set out from Pietersburg (Polokwane) toward the north (Messina (Transvaal) Development Company 1954: 5; Bolt 2015: 80). On this journey, they took "2 wagons, 32 oxen, arms and ammunition, food for several months and six or seven horses" (Messina (Transvaal) Development Company 1954: 5). Close to the Sand River, on the farm called Berkenrode (which was situated on certain un-proclaimed parts of government land), they discovered several abandoned pre-colonial copper mines (Messina (Transvaal) Development Company 1954: 5).

The prospecting mission was a huge success as Grenfell wrote to his brother:

> "Webber, the surveyor, has come back dumbfounded with what he has seen and says the whole farm is a mass of copper, a verifiable Copper Rand. He says for miles the country is all copper and there must be millions of tons on the farm" (Messina (Transvaal) Development Company 1954: 5).

Grenfell acquired the discoverer's certificate (Fig 2.6) on 11 March 1904 and later that year the first prospect shaft (Fig 2.7) was sunk next to a baobab tree (which was located in the present town of Musina and most likely destroyed by further development of the mines). Thereafter he returned to London and registered the Messina (Transvaal) Development Company Ltd. (hereafter MTD) on the 30th of January 1905 with a capital of 100 000 pounds (Messina (Transvaal) Development Company 1954: 6).



COPY.

C. M. Conf. 13/03.
R.M.R.Conf. 9/03.

DEPARTMENT OF MINES TRANSVAAL

OFFICE OF THE REGISTRAR OF MINING RIGHTS

DISCOVERER'S CERTIFICATE

No.....

BASE METALS

ISSUED IN TERMS OF SECTION 3 OF THE BASE METAL LAW AMENDMENT ORDINANCE NO:42 of 1903.

THIS IS TO CERTIFY THAT JOHN P. GRENFELL of ..... in the Transvaal Colony is registered in the Books of this Department as the recognised Discoverer of COPPER on certain unproclaimed Government Ground situated on the farm Berkenrode 1424, 1425, in the Mining District of PIETERSBURG.

(Sgd.) H. W.

COMMISSIONER OF MINES.

Johannesburg,
March 11th. 1904.

Figure 2.6: Copy of the Discoverer's Certificate which was obtained by Grenfell in 1904 (National Archives, Pretoria, RSA, 3609/03, Copy of the Discoverers certificate, 1904).

Figure 2.7: The first prospect shaft sunk by in 1904 (Messina (Transvaal) Development Company 1954: 42).

Grenfell Camp (Fig 2.8) was the first European (white settlers) camp established (Mills 1952: 10A), which was located in the modern-day town of Musina. The miners' built huts made out of mud and straw, which were later replaced by houses made of wood with corrugated iron (Messina (Transvaal) Development Company 1954: 6 and 28). The miners sank their shafts in the veld and employed black labourers to help with the mining (Messina (Transvaal) Development Company 1954: 6). In 1906 there were six white families (Mills 1952: 11A) living at Grenfell Camp with the MTD employing 20 white labourers and 200 black labourers who hoisted 476 tons of copper (Messina (Transvaal) Development Company 1954: 8).

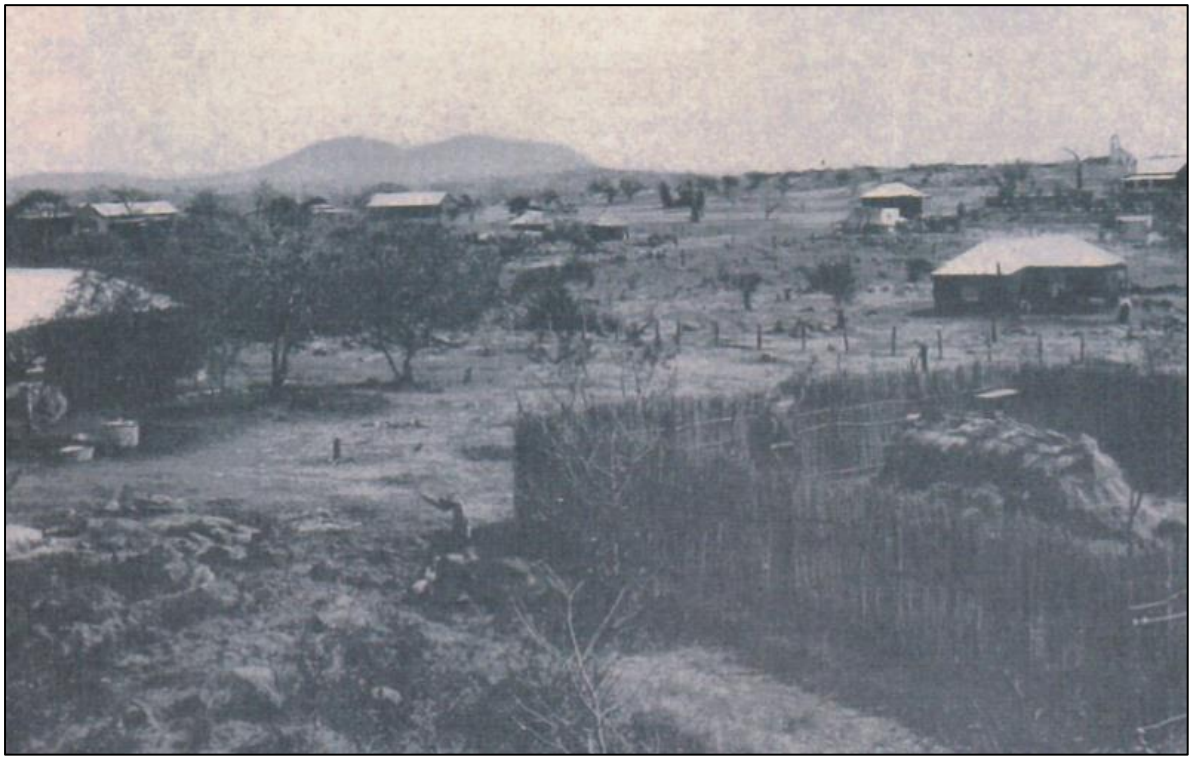


Figure 2.8: Grenfell Camp, in 1908 (Messina (Transvaal) Development Company 1954: 28).

The windlasses, to haul ore and miners to the surface, which were at first powered by the men and donkeys were replaced by steam hoists which sped up production from 476 tons to 1 000 tons (Messina (Transvaal) Development Company 1954: 8, 24). On 4 May 1914, the first railway line was built and this in turn caused the transportation of the amount and frequency of mineral deposits to increase (Messina (Transvaal) Development Company 1954: 9; Mills 1952: 12A). Proper mine architecture, for example a reduction mill was built. From 1917, most of the farms in the area have been in the hands of commercial family farmers (Pistorius 2016: 22). With the outbreak of World War 2 (1939 – 1945) the MTD, sold their copper to the British government since South Africa was still a British colony (Mills 1952: 15A).

By the 1950s the old Grenfell Camp had grown into a town of 10 000 people, and nearly half of them were employed by the company. The labour force on the mine consisted of over 500 white workers and 4 100 black workers (Messina (Transvaal) Development Company 1954: 14). In the 1950s infrastructure were replaced: the reduction mill was rebuilt and the way ingots (Fig 2.9) were shaped had changed from a labour-intensive manual method to a mechanically operated system (Messina (Transvaal) Development Company 1954: 22). New housing estates were built for white employees and compounds for the black labourers (Messina (Transvaal) Development Company 1954: 39). The black labourers had a separate hospital, school and recreational centre (Messina (Transvaal) Development Company 1954: 39). Racial segregation was very evident in the layout of the settlement. Musina was officially declared a town in 1957 because of the success and growth of the MTD's copper mining industry (Hammerbeck & Schoeman 1976: 143; Raper 2004: 238). In the early 1990's the mine was officially shut down (Anhaeusser & Wilson 1998: 216; Cairncross & Dixon 1999: 50) due to a large explosion and fire (pers comm. Harry Smith 2017).

Grenfell's Mine resulted in the first concentrated white settlement north of the Soutpansberg (Bolt 2015: 80). It created an economic hub of potential employment where migrant labourers sought work (Bolt 2015: 79).

Figure 2.9: Example of a copper ingot, manufactured by the MTD (In collection of Mr H. Smith, Musina, photo by author, 2018).

2.2 The History of Mining in the Maremani Nature Reserve

The Maremani Nature Reserve (MNR) is a large nature reserve (c. 40 000 ha.) which is located east of the town of Musina. The MNR consists of plains, undulating- and gravelly hills, rocky outcrops, high mountain ranges, rivers and streams. Along the Limpopo River the altitude is set at 427m and then heightens to an altitude of 833m at Mount Ga-Dowe. The environment is characterized as semi-arid tropical savannah. The vegetation of the area is known as Sweet Bushveld or Mopane Veld, and is dominated by Baobab and Mopane trees. The climate of the area consists of both rainy months (October to March) and dry months (June to August) (Maremani Nature Reserve 2019). The MNR is made up of different farms (Fig 2.11), and it was developed by the Aage V. Jensen Charity Foundation for nature conservation and wildlife protection since 1999 (Maremani Nature Reserve 2019).

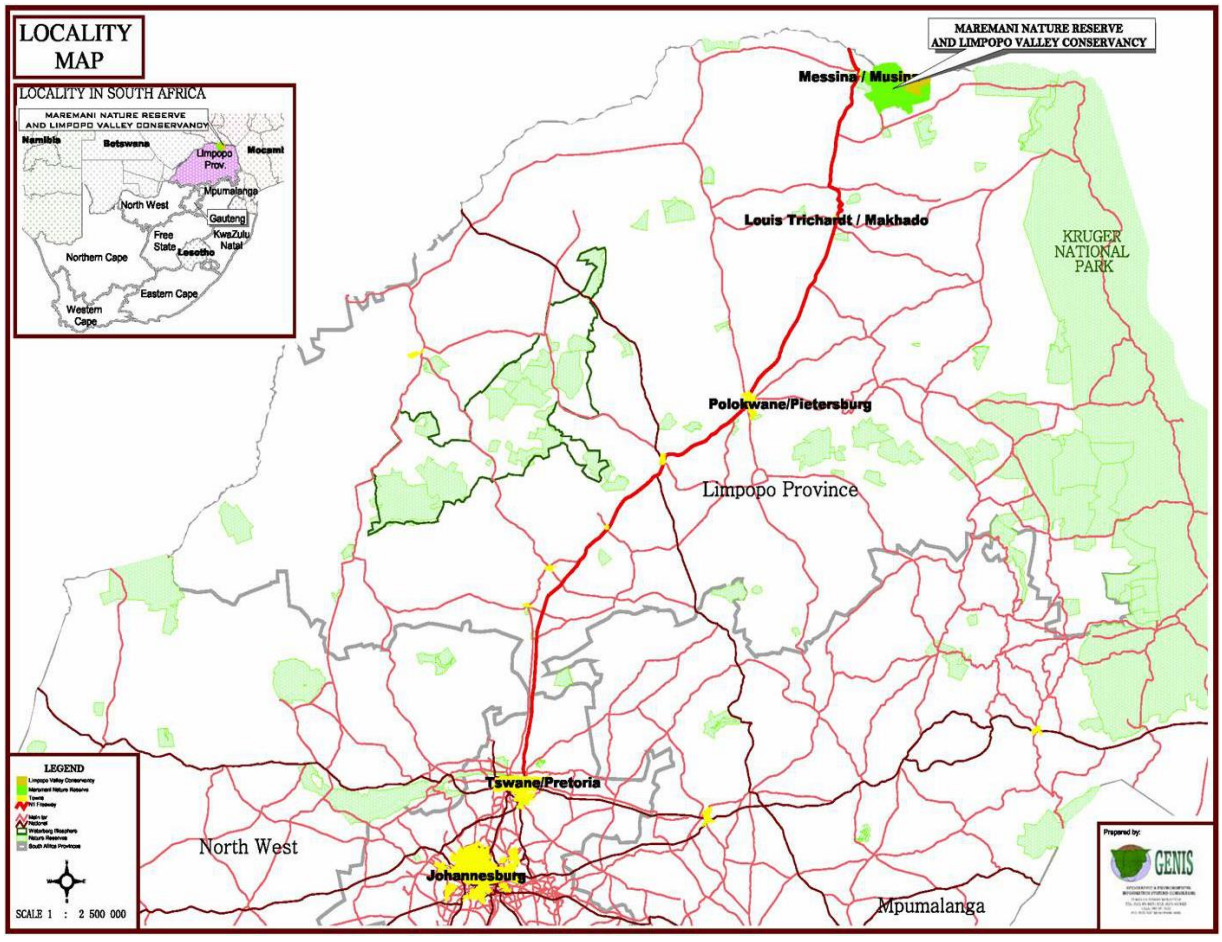


Figure 2.10: Locality map of the Maremani Nature Reserve located in Musina, Limpopo, South Africa (Maremani Nature Reserve 2019).

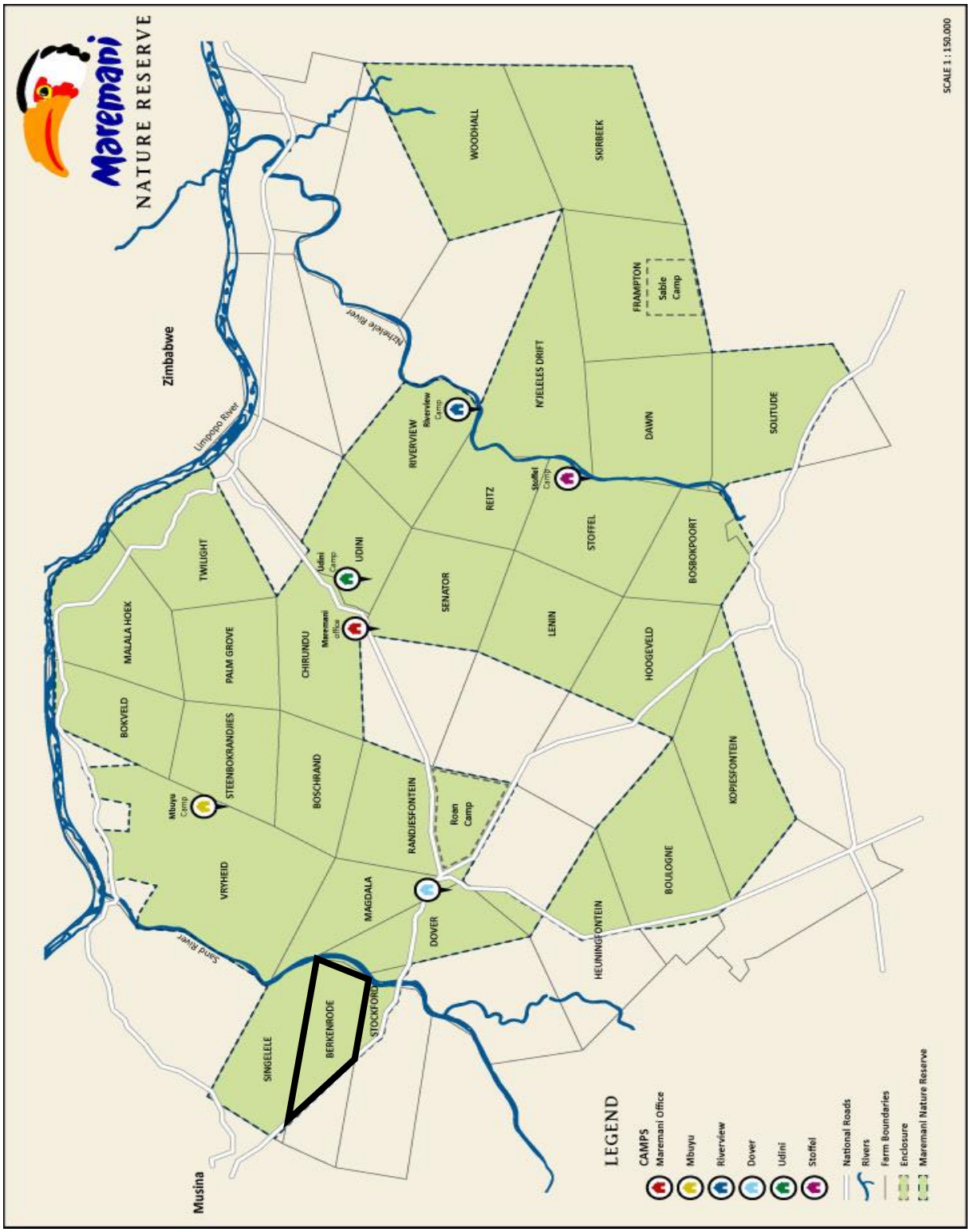


Figure 2.11: Map of all the farms located within the Maremani Nature Reserve. Highlighting the farm Berkenrode which is the allocated study area (Maremani Nature Reserve 2019).

2.2.1 Geology of the Maremani Nature Reserve

The western half of the MNR is dominated by granites and the south-eastern half by sandstone formations (Joubert 2002: 9) (Fig 2.12). Barton (n.d.) compiled a geological survey of the reserve and presented the following information: The 'Messina Layered Intrusion' runs through the Maremani Nature Reserve (Barton n.d.: 1, 5). It is associated with the Archean period (Barton n.d.: 2) which has an age of approximately 4 billion years. The Beit Bridge Group, which is classified as high-grade metasedimentary rock, underlies most of the reserve (Barton n.d.: 2). There are two main faults within the reserve; the Bosbokpoort Fault and the Dowe-Tokwe Fault (Barton n.d.: 3). The Bosbokpoort Fault is located on the farms Dawn, Frampton and Skirbeek (Barton n.d: 3) which are all located on the southern side of the reserve. The Dowe-Tokwe Fault is located on the farms Magdala, Palm Grove, Singelele, Steenbokrandjies, Twilight and Vryheid (Barton n.d.: 3) which are all located on the north and north-western side of the reserve. The Dowe-Tokwe Fault stretches from the Limpopo River almost to the Alldays area (Barton n.d.: 3). The Messina Fault (north-east trending faults) which is located in the western part of the reserve splays off the Dowe-Tokwe Fault (Barton n.d.: 3) and this is where the copper mineralisation occurs (Barton n.d.: 4). Mineralisation (Table 2.1) is particularly plentiful in the western portions (close to Musina) of the MNR (Barton n.d.: 4). The copper mineralisation is mostly quartz and copper sulfide minerals filling the breccia (Barton n.d.: 1).

Table 2:1: Farms in the MNR where mineralisation occurs (Barton n.d.).[2]

Mineralisation	Farms in the MNR Where Mineralisation Occurs
Alluvial Diamond	Vryheid
Chromite	Bokveld, Boschrand, Steenbokrandjes
Copper	Singelele, Steenbokrandjes, Ter Blanche Hoek, Vryheid
Corundum	Bokveld, Chirundu, Magdala, Palm Grove, Randjesfontein, Steenbokrandjes, Vryheid
Crisotile (asbestos)	Palm Grove
Graphite	Dawn, Woodhall
Iron	Bokveld, Leuwdraai, Magdala, Steenbokrandjes, Twilight, Woodhall
Magnesite	Dawn, Solitude, Twilight
Sillimanite	Randjesfontein
Vermiculite	Malala Hoek, Palm Grove, Randjesfontein, Udini

[2] Berkenrode is not include in this table, because when the study was done the farm was not yet part of the nature reserve.

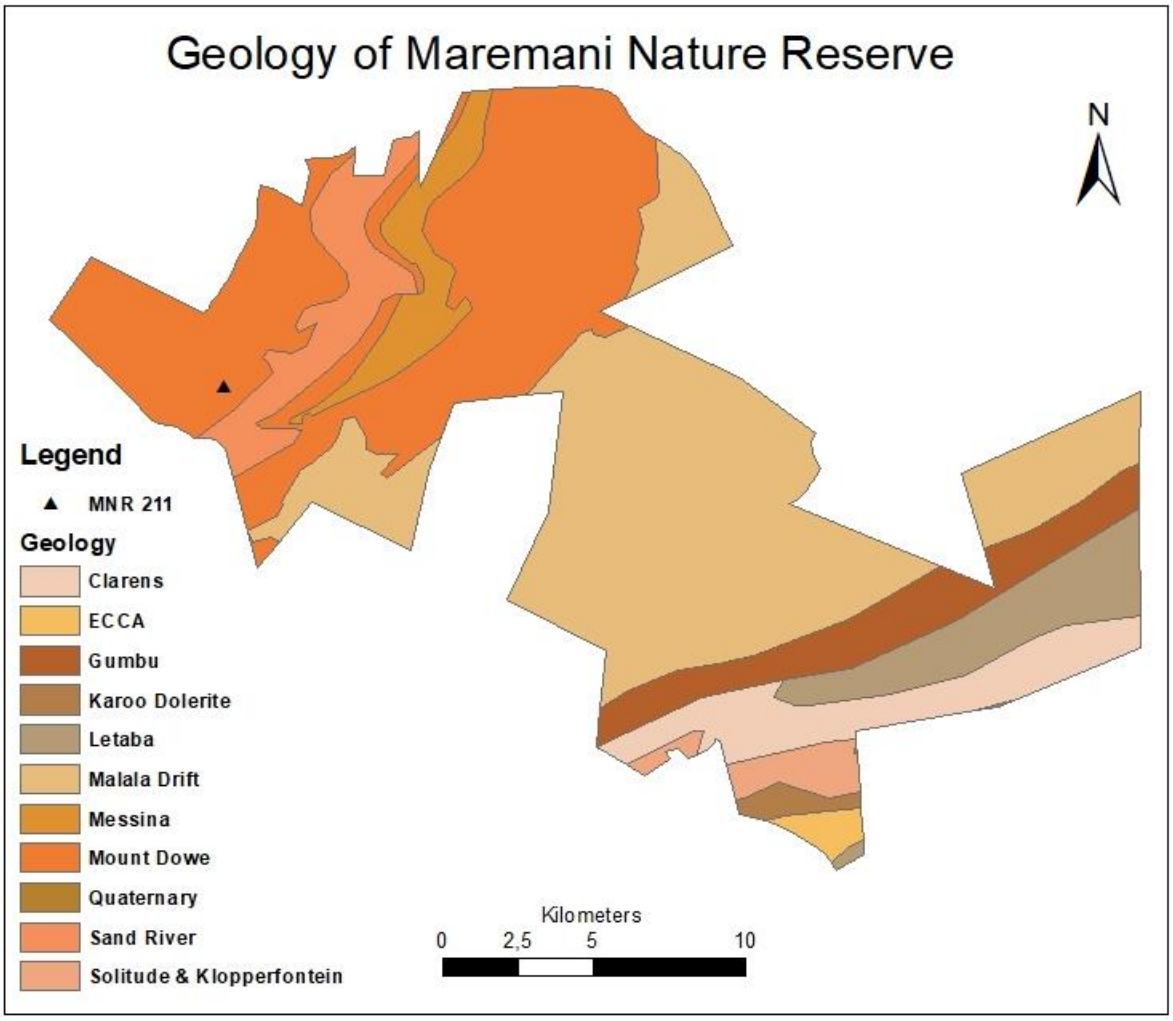


Figure 2.12: Geology of the Maremani Nature Reserve (Maremani Nature Reserve 2019).

2.2.2 Historical Mining in the Maremani Nature Reserve

MNR211 was identified by Antonites and Ashely while they were conducting surveys in the reserve as part of their archaeological research on the archaeology in the Maremani Nature Reserve and the Mapungubwe landscape. Other farms with historical mining activities in the MNR include Magdala (GPS co-ordinate: S22.232430 E30.071892) where iron ore was mined, and the farm Dawn (GPS co-ordinate: S22.281619 E3.170459) which had open cast graphite mines (Fig 2.11). These mines did not yield enough profit and were closed down during the 20th century (Joubert 2002: 9).

Musina's rich mineral deposit which resulted in mining activities became a lucrative opportunity and the town became a hub for potential employment. Studies in the Musina area focuses mainly on the large-scale mining operations of the MTD and on the Iron Age within the area, but leaves out possible small-scale artisanal mining operations. The focus of MNR211 is on small-scale (artisanal) mining settlements.

Chapter 3 : The Study of Historic Mining Settlements

Mining sites can be identified as geographical collections of building ruins, trash dumps, roads, and diggings (Hardesty 2010). MNR211 contains all of the above. Although these sites may not always contain all of the above as historic mining sites range from small-scale to large-scale or temporary to permanent settlements. A historical archaeology approach is best suited to this project because it uses multiple sources of information, and by focusing on elements such as the mining landscape, architecture, community and the material culture present at MNR211 it is possible to discern patterns and events from the sites mining history.

3.1 Historical Archaeology

In the literature, there are a few different definitions for historical archaeology and this can sometimes be problematic since they can be contradictory. Orser (2002), for example, sees Historical Archaeology as a broadly conceived discipline which studies any past culture that has developed a literate tradition; or, more pertinent to this study, it can be viewed as a study of the 'modern world', the historical and cultural conditions that have shaped our world since about 1500 AD. On the other hand, (Douglass 1998: 98) defines it as "the results of standard excavation with archival, journalistic, literary and oral historical accounts to reconstruct the lifeways of recently defunct human settlements".

Hall and Silliman (2006) summed up the different views of historical archaeology in the following paragraph:

> "Historical archaeology means different things to different people. For some, the field is the archaeology of European colonial expansion and subsequent post-Colombian peoples (Falk 1991; Leone 1995; Paynter 2000a). For others, it is the archaeology of capitalism (Leone and Potter 1988: 19). For yet others, historical archaeology is the outcome of the rich play between word and object, text and artefact (e.g. Andrén 1998). Many believe that this latter aspect defines historical archaeology by its method rather than its content (Orser 1996a: 23 -24; see also Schuyler 1978). Or by the uniqueness of the written word for inscribing history (Funari et al. 1999a:9-10)."

In this thesis, I will primarily approach historical archaeology, following Orser, in that I believe it to be distinguishable of other forms of archaeology in South Africa through the range of different literary, documentary and oral sources that can be combined and/or used interactively with other more traditional archaeological sources (Hardesty 2010: 1). Historical archaeology

in regions such as Africa, America and Australia, takes on an additional meaning since oral histories are employed as a valid and valuable source of historical information often in cases where written records are completely absent (Andren 1998: 79).

Mining activities and settlements are sometimes associated with large amounts of written records (with the exception of pre-colonial mining sites) as well as viable material remains that can be retrieved from site surveys and excavations. For example, documents concerning information about mining technologies exist in technical and scientific journals and/or textbooks. These sources tend to describe the basic industrial processes and equipment used (Hardesty 2010: 24). However, it leaves out information about locally adapted technologies, which the archaeological record can provide through the physical remains left behind (Hardesty 2010: 24). According to Hardesty (2010) the same argument can be made for mining settlements, since small, short-lived artisanal mining communities are generally left out of the documentary record. The archaeological record however, can identify these smaller 'overlooked' settlements and provide details about class, hierarchy, gender and ethnic identifiers that were present in the past mining settlements. Archaeology can thus add significant insight to the research where the archival records cannot, and can also provide a more personal explanation of the people and the community's daily life. It is important to note that historical records were mainly written by the people in charge (e.g. aristocracy, clergy and officials) which in turn provides a one-sided view of the mining settlement. By studying the archaeological remains, it tells the story of the labourers, which adds to the historical records to provide a more holistic insight of the mining community and daily life at past mining settlements.

3.2 The Study of Past Mining Settlements

Donald L. Hardesty who works on past mining communities (see Hardesty 1992, 1994, 1998, 2000, 2003, 2010) identified four primary sources for studying past mining settlements: documentary images, the mining landscape, the mining architecture and the archaeology of mining.

3.2.1 Historical Documents (documentary images)

Historical documents include all the written and pictorial documents concerned with a mining site (Hardesty 2010: 1).

Written documents can range from personal accounts (e.g. diaries) to official government and/or state records. All which provide different kinds of information on the history of past mining settlements:

- Identification Records (e.g. surveyors' field notes and plans containing information about topography, vegetation, and resources).
- Status Records (e.g. tract books or ledgers and status plans giving a legal description of public lands and resources and detailing their ownership, size, purchase price, and use).
- Case Records (land entry papers, especially related to homestead, desert land, and mineral claims, with information about dates, locations, and improvements to mining properties and settlements).
- Legal Records (e.g. land patents and deeds).
- Pictorial documents (maps, sketches and photographs both official and/or personal with regards to the mining site)

There are also secondary accounts that can provide additional information. These include newspapers and census records. In many instances mining settlements are so small and short lived that they do not appear in censuses which inevitably means these sites become invisible to the documentary record (Hardesty 2010: 7). The archaeological material identifies and provides interpretations where the absence of historical information cannot. For example, archaeological information can prove the existence of a mining settlement that was possibly not part of the census records and thought to have never existed.

3.2.2 Mining Landscape

The mining landscape is how the natural environment was affected and changed by cultural intervention which gives the landscape meaning through different signs and symbols. This includes patterns of spatial organisation (domestic versus industrial areas), cultural traditions and concepts of settlements (Hardesty 2003: 92). The archaeological deposit and/or features that are dispersed geographically over a broad area that is the product of specific human activity. These include the remains of structures, middens or trash dumps which are arranged geographically, rather than on top of one another and, if they are from different time periods (Hardesty 2010: 8 – 20).

Hardesty (2003) mentions 'landscape learning' and how this process changes nature into culture, and also how people assign meaning to different landscape elements (Hardesty 2003:

82). Prior knowledge and learning transforms landscapes into new environments. According to Hardesty (2003) this knowledge is divided into three different categories; geological, technological and social knowledge:

- Geological Knowledge

Involves knowledge about the mineral resources (ore bodies) that could be mined. It was collected by the miners as a result of prior experience in the other mining regions and existing scientific concepts (Hardesty 2003: 85).

- Technological Knowledge

Includes the different tools and techniques for extracting the ore from the rock surface (Hardesty 2003: 87). This knowledge was learned through the different stages of mining; exploration, mine development and mine production (Hardesty 2003: 87).

- Social Knowledge

Refers to the knowledge system that miners use to transform nature and assigned meaning to landscape elements. This knowledge is gained through prior experience in learning to adapt and live in new and unfamiliar environments (Hardesty 2003: 91).

In many cases, mining ventures are not always successful and they are sometimes abandoned for work elsewhere. A mining settlement goes through a series of destruction and deterioration events when it is abandoned. Two factors will affect change at the mining site: cultural and/or natural deterioration (Bell 1998: 36).

Cultural deterioration involves the disturbance of any human activity. According to Bell (1998) the structures are affected the most as the material is either sold for scrap or taken and used at a new location. This does not only happen right after the abandonment of the settlement but continues for several more years (Bell 1998: 36). Items typically removed from the mining sites include: building materials, machinery parts, drill steel, ore trucks and wire ropes as well as mining tools and household objects such as doors, plumbing, light fittings, etc.

Natural deterioration is caused by animal and/or environmental disturbance action. Building materials are affected in a range of ways: timber is usually affected by fungal decay, insect and fire attacks, and metal is affected by corrosion. These materials decay quicker than stone and brick as the latter are more robust and last longer (Bell 1998: 36).

3.2.3 Mining Architecture

Mining architecture includes features such as surviving buildings or structures that are relevant to past mining settlements. Buildings are the places where people lived and conducted their day-to-day life which left traces of the people, also buildings were built by people and gives a view into construction and sometimes cultural ideas and concepts (Orser et al 2002 :27).

Mining architecture falls into four categories (Hardesty 2010) as these are the most common found at historic mining sites. All, some or none of these might be present at past mining settlements – depending on the size and the type of mining site.

- Extraction

Structures and objects used for mineral or metal exploration and extraction (Hardesty 2010: 12). For example: hoisting houses, storage warehouses, machine shops, offices, air ventilation buildings, water drainage, and power houses for storing explosives.

- Beneficiation

Beneficiation is the process that improves the economic value of the ore by removing the gangue minerals, which results in a higher-grade product and a waste stream (tailings). For example: arrastras, stamp mills, ball mills and rod mills (associated with mechanical crushing of hard rock ores) (Hardesty 2010: 14). Cyanide and leaching vats, flotation tanks, Freiberg barrels, Washoe amalgamation pans, blast furnace smelters and patios (associated with chemical recovery of ores), assay houses, kilns, foundries and blacksmith shops are also associated with buildings used in the beneficiation and recovery activities (Hardesty 2010: 14).

- Infrastructure

Infrastructure includes buildings related to transportation, power and communication activities. For example: roads and railroads, tramways, water towers, bridges, warehouses, telephones and telegraph lines, radio towers (Hardesty 2010: 15).

- Residential and Social Architecture

Buildings associated with the domestic, commercial, government, civic or institutional activities (Hardesty 2010: 15). For example: residential architecture is associated with boarding houses, bunkhouses and single-household or multiple-household buildings but also hotels and lodging houses, government buildings, stores, saloons and bars, banks, recreational facilities, churches, schools and jails (Hardesty 2010: 15).

The mining settlement may go through many stages of abandonment and reoccupation. The miners built new dwellings or built upon the previous (older) structures or even took some of the material from previous periods of occupation to use as their own at other settlements. The structures of mining sites should be viewed as a discontinuous remnant of multiple occupations and activities, not as a continuous accumulation of historic debris (Hardesty 1990).

The archaeological record of architecture could reveal a lot about a mining settlement and could signify important aspects with regards to early social, economic or even technological innovations. Simmons (1998) mentions that the early tent residences and businesses are practically invisible in the archaeological record, but that they should not be overlooked as this was part of the initial settlement and could have considerable information of social changes on the mining frontier. Furthermore, the mining architecture could reveal information that assists in dating the mining settlement and what types of materials were used.

3.2.4 Mining Community

Information about the mining community is present in the documentary-, ethnographic- and archaeological records. When the archaeologist combines these three sources of information, it creates a 'synergistic' image of the past mining community (Hardesty 1990: 43). The archaeological record can identify and provide details about hierarchy (class/status), gender and issues of identity that were present in past mining settlements. Among other things community studies can identify the description of the geography of a settlement, its subsistence base, its material culture, the demography of its population, the social structures that it supported, and the relation of that place to the world around it (Lawrence 1998:40).

- Gender in the Mining Community

Mining is predominantly viewed as a male profession (as the words 'prospector' and 'miner' are inherently gendered) and it is generally assumed that women were not present at a mining settlement. However, they were often present both in the domestic and the industrial sphere, although fewer in number. Women fulfilled the role of wives, teachers, domestic servants, shopkeepers and were sometimes involved with agricultural activities (Lawrence 1998: 48). Women controlled and initiated community institutions as well as maintained the family's social identity (Lawrence 1998: 50). In some cases, the fathers and sons worked at the mines and the maintenance of the household and farming was left to the mothers and daughters. However, it was not always the case that families lived on the mining settlements. Sometimes

men would travel far to the mining frontier, and would send their earnings back to their families as support (Lawrence 1998: 43).

Dress, adornment and personal possessions are attributes directly related to gender identification and are the strongest archaeological indicators of the presence of men, women and children in the mining community (Lawrence 1995: 65). The role of women in the mining community can be studied within the context of the site through examination of material culture typically associated with females from the 19th or 20th century (e.g. Lawrence 1998; Simmons 1998).

- Hierarchy in the Mining Communities

On mining settlements, status, affiliation and class is often expressed through material culture (Simmons 1998: 71), architecture and the use of space. For example, the living quarters of officials and labourers differed dramatically and in many instances were located far from one another. With hierarchy visible in the mining architecture and material culture of the community it is not peculiar that there could be distinction among the faunal assemblages of different households as well, as there are differences in types of meat, type of meat cuts and quantity of bones (Schmitt & Zeier 1993). The hierarchy at mining settlements plays an important role in shaping the social organization within the mining community.

There was a clear distinction between the upper class (lords, company owners and officials) and the lower class (mine workers and domestic servants). This was reflected through the personal possessions of people, household composition as well as the location of a specific people's residences. The culture of dominance is expressed in the layout and landscaping of model company towns (Hardesty 1998: 88). For example, all mining settlements have evidence of architecture based on the extent of the mining operations. Building structures had hierarchical status among the communities that could be identifiers of class and/or racial divide (Behrens 2004: 352). The 'officials', typically lived in large and formal houses as opposed to the labourers who lived in rugged compounds some distance away from the officials (Behrens 2004: 361). Architectural evidence can be supported by associated material culture, which is also useful in understanding class distinctions and social status. For example, based on previous research conducted on mining communities in South Africa, fine earthenware is associated with the upper class and stoneware and coarse earthenware is associated with the lower class (Behrens 2004: 361). Behrens (2004) mentions that there was a physical expression of hierarchy in the design of the different dwellings. They ranged from the late Victorian style,

which was the general works manager's house, to the long back-to-back units of the artisan villages and the rudimentary compounds quartering the natives (Behrens 2004: 352 – 353).

- Ethnicity in the Mining Community

Sometimes a mining settlement is seen as a place where different types of people gather for a common goal, and in many instances, people feel the need to express their ethnicity or a piece of home amongst their new workplace. For example, on the Australian mining fields of the 19th century, Cornish and Chinese miners modified their housing according to their own ethnic identity within the settlement (Bell 1998: 32). These two groups of people outnumbered the local population which led to most of the architecture resembling Cornish and Chinese traits (Bell 1998: 32).

Ethnicity was also evident among the different labour positions which are sometimes reflected in artefact assemblages. According to Behrens (2004) her research at the Modderfontein dynamite factory in South Africa, indicated that people of European descent were usually the managers as well as the artisans. Whereas the labourers were of African descent: "Given the dearth of skilled, industrial labour in the Transvaal Republic during this period, the majority of artisans were recruited from noble factories in Europe and reinforced by labourers from across the African sub-continent…" (Behrens 2004: 350).

3.2.5 Archaeology of Mining Activities

In many instances the diggings tended to be reworked or in some cases people took material from abandoned mining settlements to build new housing and sell the material for scrap. This creates a sequential episode of occupation, abandonment and reoccupation (Hardesty 2010: 20). Hardesty (2010) states that the later components tends to destroy, in whole or in part, the earlier components of the mining sites, "…making mutilation one of the most common post-depositional processes" (Hardesty 1990: 48). Pre-existing features are partly destroyed, reworked or remain untouched, at least by human intervention, and in some cases new ones are created (Hardesty 210: 21). Newer and better mining methods and technologies were developed. New technologies were imported and used for a time until it was replaced with newer technologies or completely dismantled and abandoned along with the site (Hardesty 2010: 20). The archaeological record of mining technologies and tools are often lacking in information. The reason for this being that the scavenging techniques and scrap metal drives took almost everything available from the sites (Hardesty 2010: 24; Bell 1998: 36).

From the above one can assume that historical archaeology will provide much needed information on the history of MNR211. The presence of both documentary information and physical remains will shed light on different aspects of the site and its history.

Chapter 4 : Methodology with Regards to Studying Past Mining Settlements

MNR211 was identified by Antonites and Ashley in 2014 as part of their research on the archaeology in the Maremani Nature Reserve and the Mapungubwe landscape. The site was later research by the author as part of an honours project in 2015 (Joubert 2015).

In 2015 all significant features of the site were mapped, in particular the diggings and their attributes were recorded (e.g. location, shape, depth and the presence of stone walls and/or artefacts). Mapping of the structures was done using basic baseline offset mapping. Recording photographs were taken of all features. Geological samples were collected from each digging as well as abandoned drill cores. The samples were analysed, identified and photographed. No intrusive work was carried out as part of this initial study.

Additional detailed mapping and surveys were carried out in 2017. Research at the National Archives in Pretoria, as well as collection of new data from excavations and oral histories were carried out in 2017.

4.1 Documentary Information

4.1.1 The National Archives in Pretoria, Gauteng

The National Archives in Pretoria was consulted for historical documents relating to the general and mining histories of Musina, the MNR and more specifically the farm Berkenrode. The historical documents include identification, status, case and legal records, as well as historical maps and photographs that are relevant to the mining histories of the specified areas.

The National Automated Archival Information Retrieval System (NAAIRS) was used to access the following databases: TAB (National Archives Repository (Public Records of former Transvaal Province and its predecessors as well as of magistrates and local authorities)), SAB (National Archives Repository (Public Records of Central Government since 1910)) and RSA (All Archives Repositories and National Registers of non-public records). Notes and photographs were taken of relevant documents. These documents included maps, legal and government documents as well as personal documents (e.g. letters).

4.1.2. The Archives in Musina, Limpopo

There is no designated archival department in Musina. However, the office of Town Planning, at the municipal building in Musina does hold some historical documents. Most of these documents included old maps of the Musina area and plans of the development of the town

(housing, factories, plants, shopping centres, etc.). All the maps and documents were examined and those that presented important information were photographed.

4.1.3 The Deeds Office (Department of Rural Development and Reform)

The Deeds Office was consulted for information about the deeds of the farms, the previous owners of the farms, if the farms were renamed and when and if mineral rights were allocated to those farms.

4.2 Oral Historical Accounts

Interviews were conducted with two individuals currently living in Musina with links and knowledge to historical mining in the town. A questionnaire (Fig 4.1) was created for the individuals which included questions about the general and mining history of Musina. Each interview was recorded, with permission from the individuals. Notes were also taken during the interviews. Photographs were taken of historical photos, documents and objects (artefacts) that the individuals own which are relevant to the mining history of Musina and this project.

Questionnaire

1. How long have you lived in Musina?
2. What is your profession currently?
3. Do you know anything about the mining history of Musina? Both African and European in nature?
4. Do you know about any small-scale (artisanal) mining operations and/or settlements in and around Musina?
5. Do you know anything about prospecting in the area?
6. Were you involved in any type of mining activities while living in Musina?
7. What position did you hold at the MTD?
8. How long were you employed by the MTD?
9. What did you mine?
10. What type of mining techniques and equipment did you use to mine?
11. While working in the mines did you ever come across any archaeological/historic artefacts?
12. How was the town affected by the MTD over the years and eventually when the mining operations were shut down?
13. What happened to the diggings when the mining operations were shut down?
14. Is the mining history of the town being preserved?

Figure 4.1: Questionnaire for residents in Musina.

4.3 Geological Information

Geological samples from each digging was collected, analysed and identified in 2015. This information was correlated with the information gathered from the Council of Geoscience and the Department of Mineral Resources (which includes documents and maps). The information gathered established what types of metals and minerals are present at MNR211, and, in combination with research into the historical record, identified which of these metals and/or minerals were mined at MNR211 during the site's occupation.

4.4 Landscape Information

Mapping of the site was conducted using different methods. The mapping is divided into two categories: landscape level mapping of the site and its surrounds, and site level mapping documenting the use of space, archaeological excavations, architectural and other features.

4.4.1 Landscape level mapping

In July 2017 drone footage was taken of the entire site with a DJI Phantom 4. Drone Deploy software was used to plan flight paths and aerial imagery for mapping. Photos were taken with an 80% front lap and an 80% side lap at an altitude of 50m. Agisoft Photoscan (1.5.0 build 7492/31) was used to process the images and create an orthophoto of the site. A digital elevation map was created with this data in ArcGIS 10.6.

The detailed orthographic map imagery was ground truthed in 2017. During this process, the physical attributes of each digging was recorded in detail. Subsequent and ground truthing resulted in the location of two new diggings not previously identified.

Close-up aerial footage of all the excavation units and the structures were taken with the drone during excavations. The was done after these areas were cleaned and brushed up, to enhance the visibility of the features (e.g. cracks in the concrete floor and the outlines of the structures) that would otherwise be hidden by natural deposit like dirt, leaves, rocks, etc. These images were taken midday to minimise the effect of diagonal shadows.

4.4.2 Site level mapping

A site datum was established as the point from where all mapping was conducted, which include the different structures and the excavation units. This datum (DATUM I) was given arbitrary coordinates of 100N/100E/Z100. The GPS co-ordinates for the datum are: S 22.38265 E 030.10375.

Mapping of the structures and excavation units were done using basic baseline offset mapping. The six structures and all three excavation units were mapped in this manner. Building 1 was divided into three separate areas (A, B and C) and each space within these areas were given a number (see chapter 5). This was done to identify the different entryways, spaces and also to identify alteration and expansion of Building 1.

4.5 Archaeological Excavation

Excavations were conducted at selected features using the method outlined in Antonites (2012). A master grid system orientated to magnetic north was created for the site using a permanent datum point, DATUM I. DATUM I was given an arbitrary coordinate of N100; El00 and an elevation of 100m. A series of secondary datums were set up throughout the site to enable mapping of areas placed further away. All elevations and co-ordinates at MNR211 were orientated to DATUM I.

4.5.1 Excavation Procedures

Excavations followed the natural stratigraphy and were proceeded by a single locus at a time. Artefact recovery was done through conventional techniques: the deposit was excavated by methods of trowelling and brushing. A Harris Matrix was used to relate one locus to another according to their relative stratigraphic positions, which was later compiled to present a site matrix graphically (c.f. MoLAS 1994). The excavated deposit was placed in 10 litre buckets, to record the amount of soil that was removed from the excavated units, and then sieved with a hand sieve with a five-millimetre grid. Recovered artefacts were placed in plastic bags, along with their relevant tags, which included the following information: site name, date, excavators, datum-, locus-, and unit number, type of artefact collected and bag no.

Soil samples were taken at the start of each new locus and identified during the excavations, using the Museum of London Archaeological Service (MoLAS) Archaeological Site Manual (Fig 4.2). The texture together with the dry and wet colour of the soil was documented using a Munsell chart. This was done to establish a permanent record of the archaeological deposit present at the site MNR211.

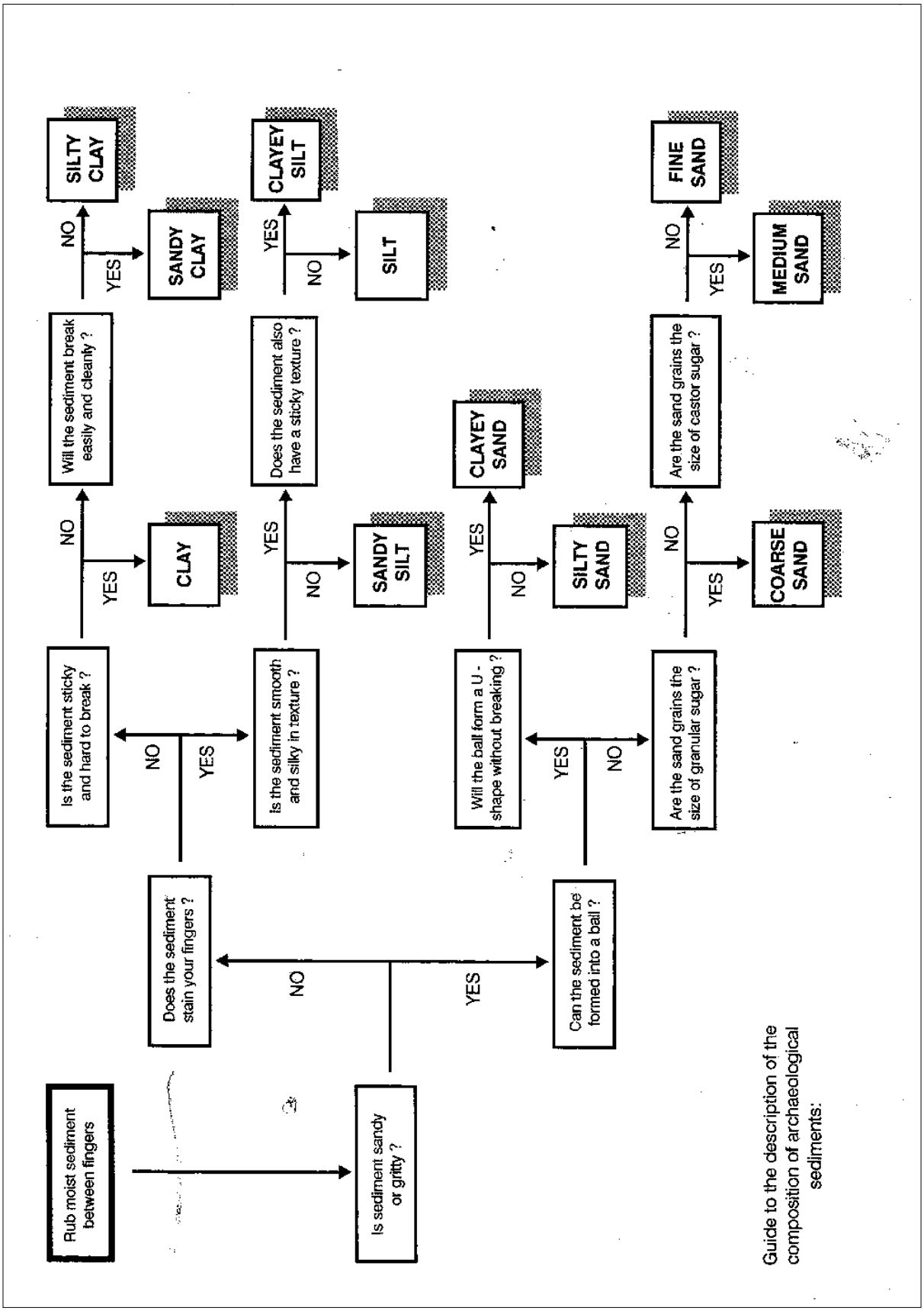


Figure 4.2: Guide to the description of the composition of archaeological sediments (Museum of London Archaeological Service (MoLAS) Archaeological Site Manual).

4.5.2 Recording Procedures

Surface material was recorded and collected for further analysis (Fig 4.3 and Fig 4.4). All the artefact's locations, both those collected and documented, were marked using a handheld GPS. Collected artefacts were given a brief description of location identifiers and GPS co-ordinates. Large and immovable artefacts, exceedingly fragile artefacts and non-diagnostic items were not collected but recorded.

Inventory of Surface Collection

Date	Feature	North	East	Type of Object	Camera #	Photo #	Remarks

Figure 4.3: Surface Collection sheet used at MNR211.

Inventory of Surface Documentation

Date	Feature	North	East	Type of Object	Camera #	Photo #	Remarks

Figure 4.4: Surface Documentation sheet used at MNR211.

Temporary datums were used to take elevations of all four corners and an elevation in the centre of the unit at the start-, every new locus and at the end of each excavation. Reason for taking elevations were to determine how the contexts were shaped (i.e. if it is higher in one corner than the other). In addition, important artefacts located within the excavation were point provenienced (north, east and height measurement) using the datum.

A new locus was assigned when the soil changed colour, or there was a feature located within an excavation unit (e.g. structures where a floor or wall was present).

Locus recording sheets (Fig 4.5 and Fig 4.6) were used to document the excavation of all the units for each individual locus, as archaeology in essence is destruction, and everything needs to be properly documented during excavations. The physical characteristics of the locus, included notes on important descriptions during the excavation and provided information relating to sketches and photographs of the excavated locus were all recorded during excavation.

Locus Form				Page#__of__
Date:	Datum:	Buckets:	Flot ☐	Soil ☐
			Flot Volume:	
Site:	North:	Excavators:	Texture:	
			Colour dry:	
Locus:	East:		Colour wet:	
Description: Why have you begun a new locus? What are your thoughts about the locus?				
Deposit ☐				
Compaction:				
Colour:				
Inclusions:				
Other:				
Cut ☐				
Shape: Rectangular / Oval / Circular / Irregular / Other:				
Sides Steepnes**s**: Very Steep / Steep / Moderate / Shallow				
Side Shape**:** Straight / Stepped / Convex / Concave / Irregular				
Base: Flat / Concave / Convex / Irregular				
Other:				
				Sketch
Feature ☐				
Type:				
Shape:				
Material:				
Other:				
				Sketch
Drawings				
Plan #	Section #	Description		

Figure 4.5: Locus recording sheet used for the MNR211 excavation (page 1).

# of Bags	
Bone	
Ceramics	
Fabric	
Glass	
Metal	
Plastic	
Wood	
Other	

Remarks

Special Finds				
#	North	East	Elev.	Description

Photos		
Camera #	Photo #	Description

Figure 4.6: Locus recording sheet used for the MNR211 excavation (page 2).

All the different structures were recorded based on the Museum of London Archaeological Service (MoLAS) Archaeological Site Manual (see Chapter 5). Samples were collected of the different structures' bricks, mortar and concrete. These were later analysed in the laboratory to provide information on the architecture, construction techniques and identifying what materials were used in the actual construction (MoLAS 1994: 55).

Photographs were taken at the start of each new excavation, the start- and end of each new locus as well as the end of the excavation. All photographs included a 1 m or 50 cm scale depending on the size of the excavation unit together with a north arrow. A photo board containing information (site name, date, locus number and the unit number (e.g. north and east co-ordinates)) was also included in each photo.

Plan drawings were done of each locus throughout the excavation. Section drawings were drawn at the end of all the individual excavation units. All drawings, maps and plans were later digitised with the software Inkscape 0.92.2.

All data collected in this excavation was documented and handled according to the heritage legislation as outlined by South African Heritage and Resources Agency (SAHRA). The permit number is: 2509. All units were backfilled after excavation.

4.6 Laboratory Analysis

After the excavations were completed, all the surface material and excavated material were taken to the archaeology laboratory, at the University of Pretoria.

4.6.1 Cleaning of artefacts

The artefacts (e.g. ceramic, fauna, geological samples, glass, plastic and rubber) were cleaned using clean water and soft brushes. Other artefacts such as metals were merely dry brushed to remove excess soil, but in cases where the artefacts were too fragile it was left as is. Cleaning allowed for the identification of hidden names and symbols (makers marks) of the different types of artefacts.

4.6.2 Reconstruction of artefacts

An epoxy glue was made using a mixture of Paraloid B52 and acetone. In the case of MNR211's artefact assemblage, the ceramic and glass pieces were the only artefacts reconstructed.

4.6.3 Labelling of artefacts

All artefacts were labelled by means of waterproof archive ink on a thin film of Paraloid B52 mixed with acetone. All the ceramics and glass were labelled with the site's name: MNR211, the relevant locus number and in the case of ceramics the letter C (ceramic) followed by a number (e.g. 01) and so on. The same principle applied to glass, (labelled with the prefix G). The other artefacts (bone, metal and other miscellaneous artefacts) were not labelled on the artefact due to the fragile nature of the artefacts, the size of the artefact (too small) or an inadequate surface for labelling (e.g. metal which is too corroded to label).

4.6.4 Identification and Analysis

At MNR211 a range of different types of artefacts were discovered. Among these metals is the most abundant followed by glass and then ceramics. These three categories are the focus point of the artefact assemblage. Fauna, geological samples, plastic and rubber artefacts are discussed separately.

- Ceramics

Analysis of the ceramic material followed the methods outlined by Klose & Malan (2009: 24 - 28), UCT Ceramics Handbook (2014) and Zachariou (2017). After the ceramics were cleaned and labelled, they were counted separately (from each individual excavation unit, as well as the surface scatter collections) before being combined with the rest of the assemblage. They were then sorted by primary ware type, and then by decorative technique. Counts were made of every artefact within its decorative group. Rims, handles, lugs and foot-rings were separated to formulate the MNV (Minimum Number of Vessels) count. Small fragments with similar styles within a decorative category were grouped together, but could not contribute to additional counts and did provide cross-mends and refits in some cases. Once MNVs were counted, attempts were made to sort each vessel by form and function (tea-ware, tableware, utilitarian, etc.). Within these categories' ceramics were identified either as flatware or hollowware, where possible. Finally, makers' marks were identified where possible which were used to identify date and origins of manufacture, and to potentially identify original vessel form and decoration from the maker's own classification system (Zachariou 2017: 116 – 152).

- Glass

The methodology used in the glass analysis was based on the Digital Archaeological Archive of Comparative Slavery (DAACS) (2018), Lastovica (1990) and Van Vollenhoven & Pelser (2001) cataloguing and identification method. After the glass was cleaned and labelled it was

counted separately (from each individual excavation unit, as well as the surface scatter collections) before being combined with the rest of the assemblage. They were then sorted by glass colour. Small fragments within the same colour category were grouped together, but could not contribute to additional counts and did provide cross-mends and refits in some cases. Counts were made of every artefact within its colour group, and the base, body (including neck and shoulder) and rims (lip) were separated to formulate the MNV count. Lid liners, bottle seals and bottle stoppers that were still attached to glass vessels were counted as part of the glass analysis, because that object formed part of the vessel. Once MNVs were counted, attempts were made to sort each vessel by form and function. Within these categories glass was identified either as flatware or hollowware, where possible. Decoration was also documented. Finally, makers' marks were identified where possible which can provide date of manufacture, and suggest vessel form and decoration through the maker's own classification system.

- Metal

The methodology for metal artefacts followed a standard typological classification. After the metal artefacts were cleaned it was counted separately (from each individual excavation unit, as well as the surface scatter collections) before being combined with the rest of the assemblage. As the artefacts were not physically labelled a very detailed list was compiled on a database (Access). This analysis also includes all the foil and slag found at the site. The metal artefacts were then divided into a domestic, industrial or other use (architecture and ammunition) category, the other use category was created to include those artefacts that was not able to be include with domestic or industrial activities. Within each of these three categories the artefacts were further dived into sub-categories. Domestic: food, clothing or household objects. Industrial: equipment, tools or machinery. Finally, makers' marks were identified where possible which can provide a date of manufacture.

- Faunal Remains

The fauna, which includes both bones and shells, was cleaned and counted separately (from each individual excavation unit, as well as the surface scatter collections) before being combined with the rest of the assemblage. There is clear evidence that some of the bones were cut, (possible use of machinery). The fauna was not identified by a zoo archaeologist due to time restrictions, but will form part of future research on the site.

- Geological Samples

A list was compiled of all the different types of geological samples found at the site. The geological samples found in the excavation units were later compared with the geological samples found at all the individual diggings while doing surveys at MNR211.

- Plastic and Rubber

The artefacts were cleaned and counted separately (from each individual excavation unit, as well as the surface scatter collections) before being combined with the rest of the assemblage and assigned to a functional category where possible.

- Unidentifiable Artefacts

It was sometimes difficult to identify an artefact based on its condition and/or lack of information; thus, some artefacts were assigned to an unidentifiable category. The artefacts were cleaned and counted separately (from each individual excavation unit, as well as the surface scatter collections) before being combined with the rest of the assemblage.

4.6.5 Artefact Metadata

All artefacts were photographed. These and documentation of the excavation procedures and information gathered from the various excavations were filed along with all the maps and drawings of the site MNR211, and are stored at the archaeology lab located on South Campus at the University of Pretoria, Pretoria, Gauteng, South Africa.

The methods listed in this chapter were followed and presented information on different areas of the research for this project. The information retrieved is presented in the following chapters along with the final conclusion.

Chapter 5 : Description of Different Features Located at MNR211

The archaeological deposits of MNR211 covers an area of approximately 500x500m. It is located on the western bank of the Sand River (Fig 5.1). A dirt road runs west to east, both sides of the road include several diggings, however all the structures are located only on one side of the road (northern side). The main features located at the site are 30 diggings, 13 low stone walls that encircle 21 of the diggings, and six different structures. Other notable features at the site include: three possible middens (two of which were excavated), a possible furnace, a possible crushing site, two faded metal claim boards, and a small activity area and a clearly defined boundary line. A lookout point was built close to the site in 2009.

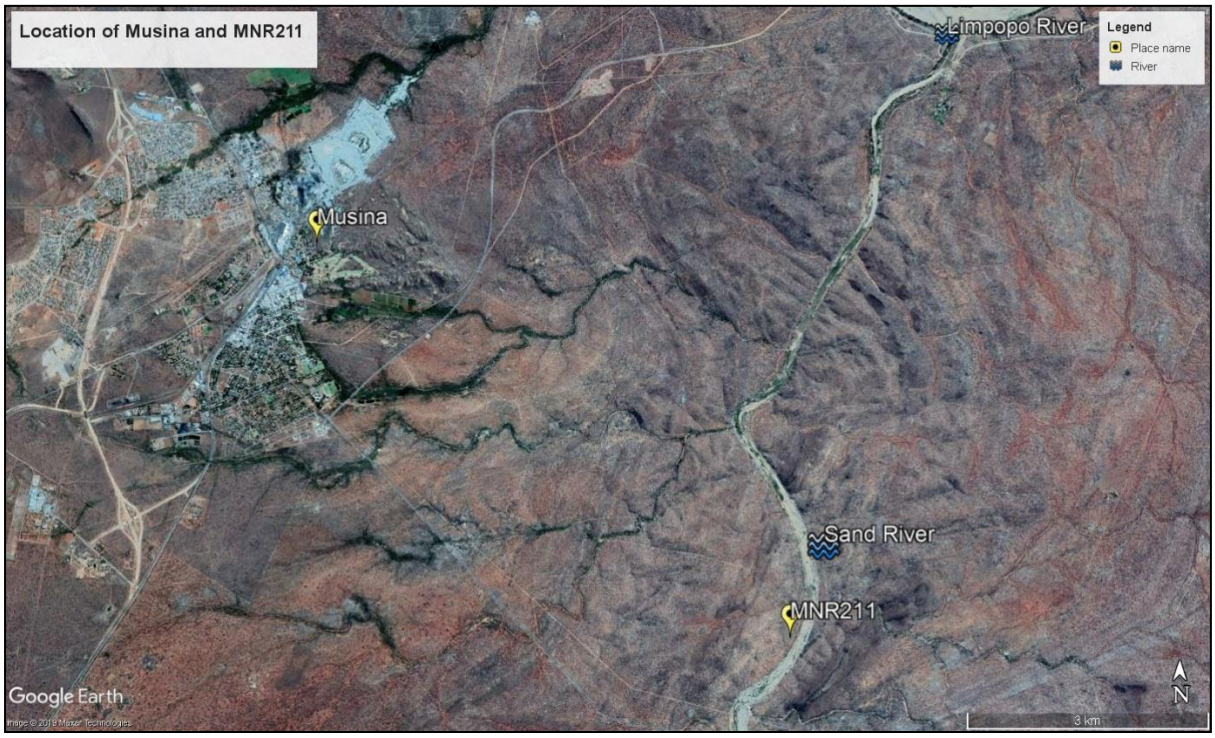


Figure 5.1: Location of Musina and MNR211.

5.1 The Mining Activities at MNR211

5.1.1. The Diggings

For the purpose of this project the whole site is referred to as a mining site whereas the use of the word ‘digging(s)’ refers to an individual shaft or trench.

All the diggings and spoil heaps show up as a light blue/grey discoloration (Fig 5.2) on Google Earth and aerial images. This discolouration is due to the mica and copper ores which the miners dug.

Figure 5.2: Aerial view of MNR211 showing the light blue/grey discolouration on the surface surrounding the diggings.

Many of the diggings have Mopani trees growing inside or next to it (Fig 5.6, Fig 5.7 and Fig 5.9). The diggings are also covered in loose soil, leaves, branches and twigs and some of the

diggings have burrows in them which suggests that the diggings have not been mined for many years (e.g. natural deterioration occurred). Some of the diggings contain material culture in or next to it, these include both metal and glass artefacts and represent both a domestic and industrial nature (Fig 5.11).

The diggings range from a depth of 0.1m to 2m, one digging had a depth of around 6m (see Table 5.1 for more detailed information of each individual digging). Some of the diggings appear to have been deliberately filled in.

The diggings at MNR211 were classified as either shafts or trenches:

- Shafts (Fig 5.3, Fig 5.6, Fig 5.8, Fig 5.10 and Fig 5.13) are those diggings shaped by excavating a vertical tunnel from the top down. There are 17 shafts located at MNR211.

Figure 5.3: Example of a shaft (211/15.1).

- Trenches are narrow, shallow cuts across a mineral deposit to obtain samples or to observe character (Fig 5.4, Fig 5.7 and Fig 5.9). Trenching is often a method of prospecting to expose the lode by cutting across it (Thrush, 1998: 1163). There are 13 trenched located at MNR211.

Figure 5.4: Example of a trench (211/4.2).

Table 5:1: All the diggings located at MNR211 and all the associated characteristics.

Digging No	GPS co-ordinates	Type of digging	Depth	Trees	Material culture	Filled-in
211/1.1	S22.225425 E30.62200	Shaft	6m	X	X	
211/2	S22.225558 E30.62187	Shaft	0.3m			X
211/3	S22.225558 E30.62187	Shaft	0.3m			X
211/4	Four diggings located within an enclosure (stone walling)					
211/4.1	S22.225576 E30.62136	Trench	1.5m	X		
211/4.2		Trench	1.5m	X		
211/4.3		Trench	1.5m	X		
211/4.4		Trench	1.5m	X		
211/5	Three diggings located within an enclosure (stone walling)					
211/5.1	S22.225682 E30.62049	Shaft	1.5m			
211/5.2		Trench	1.5m	X		
211/5.3		Trench	1.5m	X		
211/6	S22.225778 E30.62161	Shaft	2.5m	X	X	
211/7	S22.225809 E30.62130	Shaft	2m	X	X	
211/8	S22.225820 E30.62052	Shaft	0.3m			X
211/9	One digging located within an enclosure (stone walling)					
211/9.1	S22.225950 E30.61992	Shaft	2.5m	X		
211/10	Two diggings located within an enclosure (stone walling)					
211/10.1	S22.230.43 E30.61898	Trench	2m	X		
211/10.2		Trench	1.5m	X		
211/11	Two diggings located within an enclosure (stone walling)					
211/11.1	S22.23145 E30.61828	Shaft	2m			
211/11.2		Trench	1.5m	X		

211/12	S22.23253 E30.61816	Trench	0.3m	X		X
211/13	S22.23293 E30.61703	Shaft	0.3m			X
211/14	One digging located within in enclosure (stone walling)					
211/14.1	S22.23153 E30.61756	Shaft	1.5m	X		
211/15	Two diggings located within an enclosure (stone walling)					
211.15.1	S22.23182 E30.61733	Shaft	1m	X		
211/15.2		Shaft	1m			
211/16	One digging located within in enclosure (stone walling)					
211/16.1	S22.23548 E30.61790	Shaft	3m		X	
211/17	One digging located within in enclosure (stone walling)					
211/17.1	S22.23637 E30.61751	Trench	1.5m	X		
211/18	One digging located within in enclosure (stone walling)					
211/18.1	S22.23588 E30.61952	Trench	1m	X		
211/19	One digging located within in enclosure (stone walling)					
211/19.1	S22.23530 E30.61990	Trench	1.5m	X		
211/20	One digging located within in enclosure (stone walling)					
211/20.1	S22.23534 E30.61920	Shaft	2m	X		
211/21	S22.23363 E30.62157	Shaft	0.1m			X
211/22	S22.225762 E30.62347	Shaft	0.1m			X

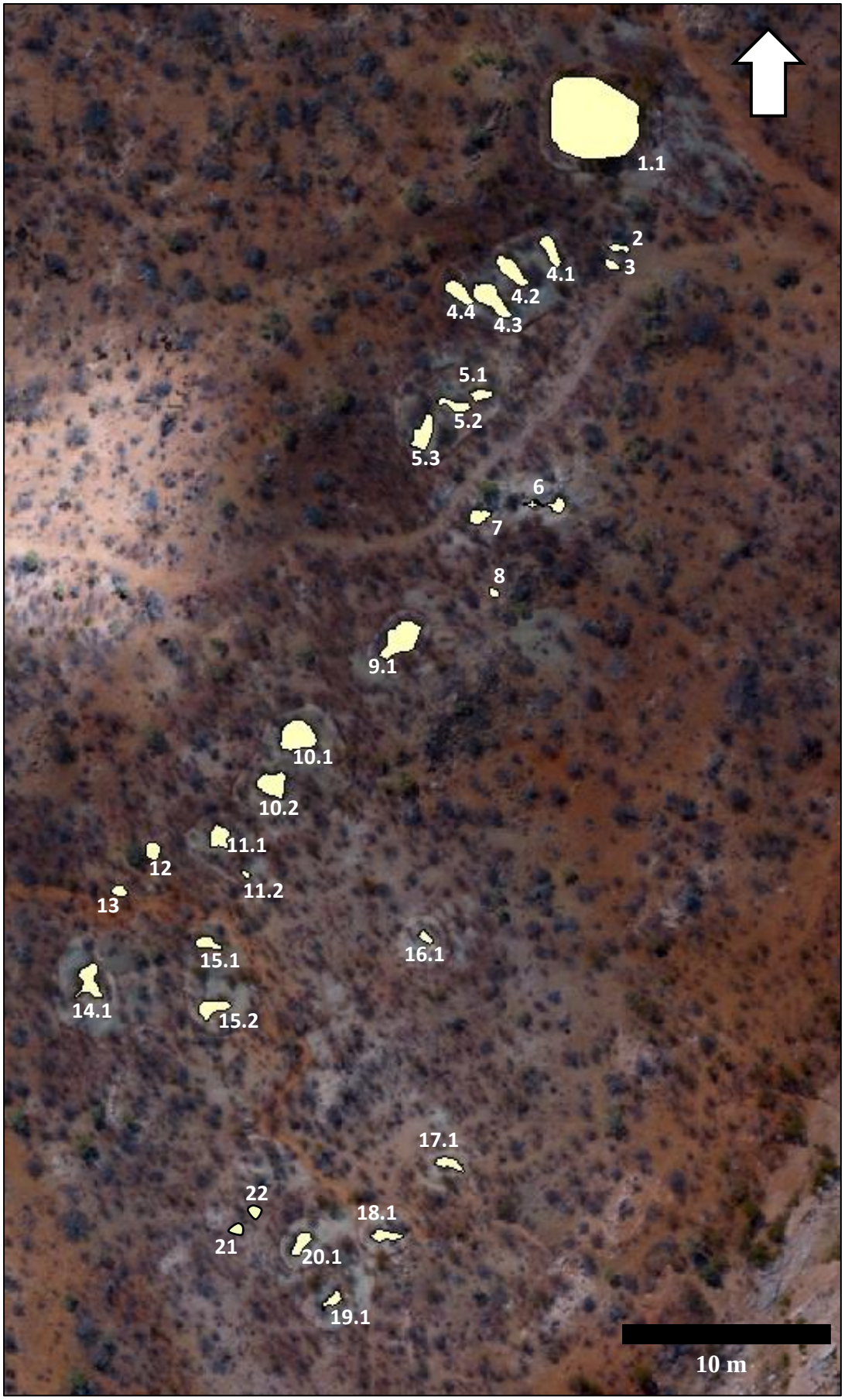


Figure 5.5: Map illustrating all the diggings located at MNR211.

Examples of the different diggings located at MNR211:

Figure 5.6: Two shafts located next to each other which have both been filled-in (211/12 (front) and 211/13 (back)).

Figure 5.7: Trench (211/4.2).

Figure 5.8: Shaft (211/6).

Figure 5.9: Two trenches located next to one another within stone walling (211/4.2 and 211/4.3).

Figure 5.10: A shaft with a person (1.84 m) to indicate depth (211/11.2).

The iron peg located at the bottom of the shaft 211/15.1 (Fig 5.11) appears to have been fastened at the bottom of the shaft. It is possible that it could have been used as an anchor of some sort which could have assisted with the mining

Figure 5.11: A piece of metal located inside a shaft (211/15.1).

Figure 5.12: Elevated view of a digging (211/15.1) with a stone wall surrounding it.

Digging MNR211/1.1 is the deepest and largest digging located at the site. This could be an indication that this digging provided the most mineral deposit across the entire mining site. Within this digging an adit was created probably to explore more deposits (Fig 5.14 and Fig 5.15). Within this digging a thick metal cable was discovered, which would likely have been used to haul ore to the surface. Digging MNR211/1.1 also contained the largest spoil heap (1.5m high mound) which was located right next to the digging (Fig 5.23).

Figure 5.13: Example of a shaft with a person (1.84 m) to indicate depth (211/1.1).

Figure 5.14: The adit located in the shaft (211/1.1).

Figure 5.15: Close-up of the adit located in the shaft (211/1.1).

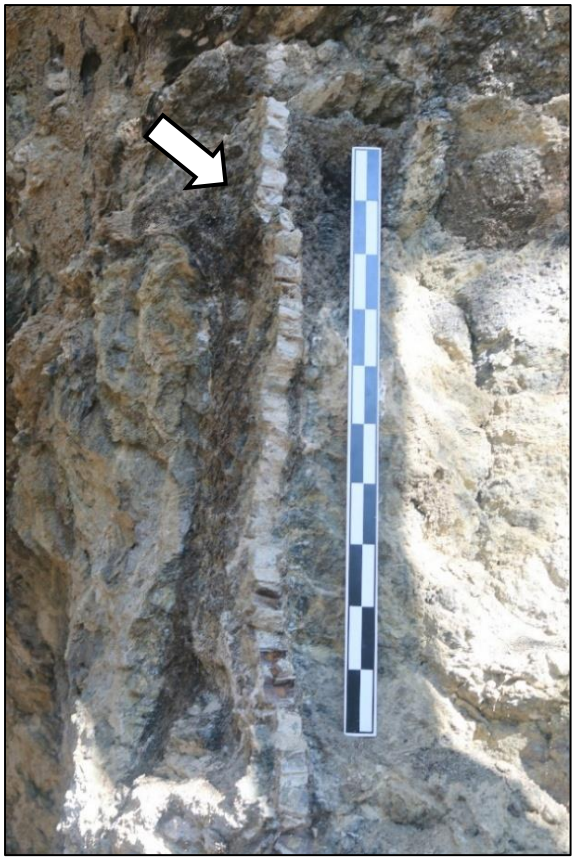


Figure 5.16: Quartz vein located next to adit (211/1.1).

Figure 5.17: Close-up of quartz vein, which has a deposit of iron oxide (211/1.1).

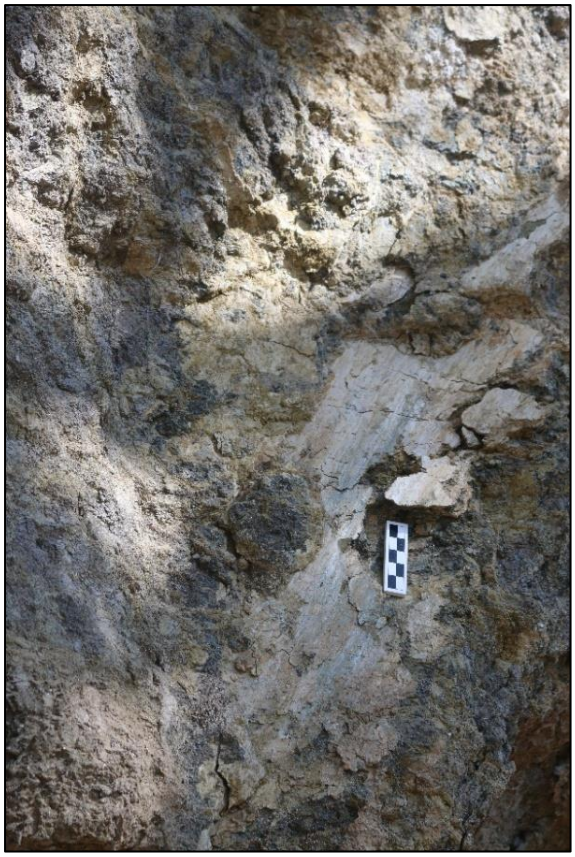


Figure 5.18: Deposit (mica) located in the shaft which was mined (211/1.1).

Figure 5.19: Close-up of the deposit (mica) in the shaft, which was mined (211/1.1).

Figure 5.20: Stratigraphy of a trench, showing three different layers, the bottom layer including the deposit (mica) that was mined (211/4.2).

Figure 5.21: Close-up of deposit (mica) of the above picture which was mined (211/4.2).

5.1.2 Spoil Heaps

The spoil heaps contain large rocks, soil and some of the mineral deposit removed from the diggings. There are only two clearly defined spoil heaps located at the site, although much of the deposit removed from the diggings can be seen lying just outside the diggings. The spoil heaps are located next to digging 211/1.1, and behind diggings 211/6 and 211/7. As the diggings are an average depth of 2m the spoil heaps are rather small, apart from the spoil heap located next to digging 211/1.1, which is the largest and deepest digging at the site.

Examples of the spoil heaps located next to some of the diggings:

Figure 5.22: Spoil heap located behind to diggings (211/6 and 211/7).

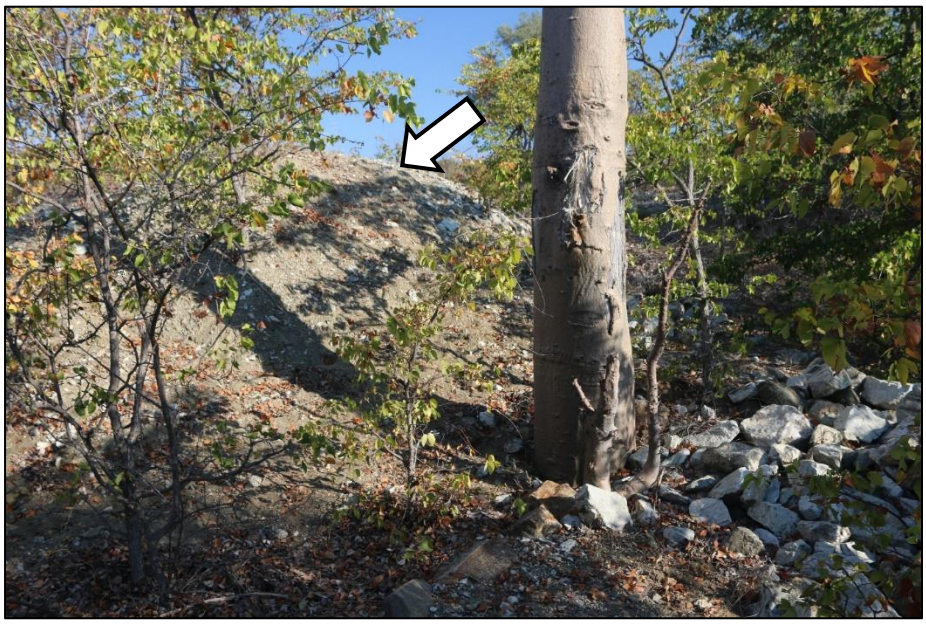


Figure 5.23: Spoil heap located next to digging (211/1.1).

Figure 5.24: Map illustrating all the diggings and the main spoil heaps (white circles) located at the site.

5.1.3 The Stonewalling

In some cases, the diggings have stone walling surrounding it, this includes both single diggings and multiple diggings within one stone walling. The stone walling is about 1m high and is made up of packed stones. Not all of the diggings (211/11, 211/16 and 211/17) have stonewalling but rather a single row of packed stones (Fig 5.26).

Examples of the stone walling, surrounding some of the diggings:

Figure 5.25: Diggings (211/4) with a stone wall surrounding it.

Figure 5.26: Packed stones surrounding digging (211/16).

Figure 5.27: Stone walling surrounding (211/9).

Figure 5.28: Stone walling surrounding (211/14).

Figure 5.29: Stone walling surrounding (211/10).

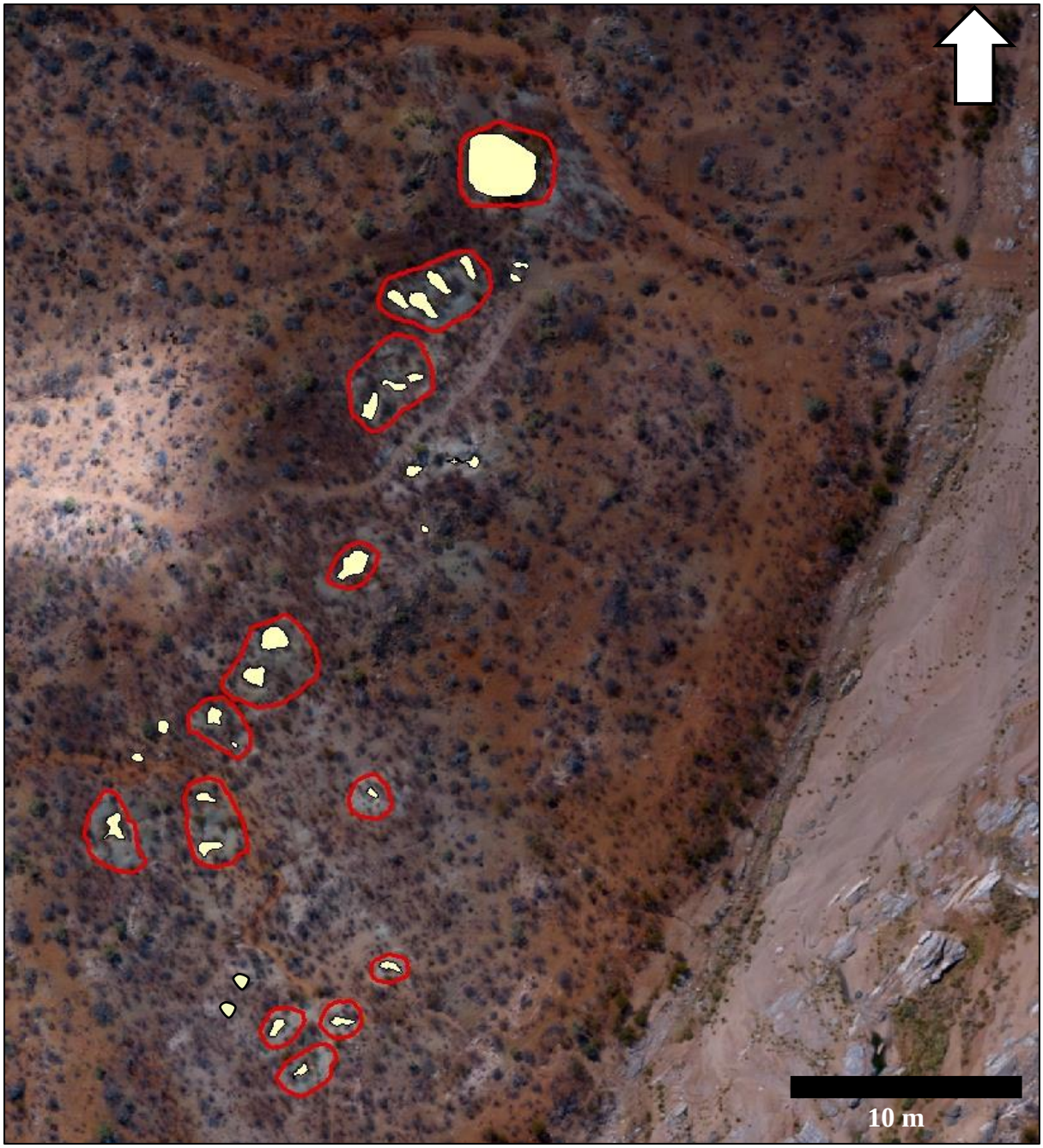


Figure 5.30: Map illustrating all the diggings located at the site with associated stone walls.

5.2 The Different Structures Located at MNR211

There are six different structures located at MNR211. These include a grey brick and stone building (Building 1), and a red brick building (Building 2). The two buildings are located adjacent to one another. There is an open platform which is located adjacent to Building 1, approximately 3m towards the west. These are all surrounded by a circular perimeter stone wall (which presumably once fully enclosed the area). There is also a stone wall enclosure which is located approximately 100m towards the north from the structures, with another small red brick structure located next to it.

The structures are identified on the map as the following:

A: Building 1 (grey brick)

B: Building 2 (red brick)

C: Open platform

D: Stone enclosure (there is a small platform within this structure)

E: Small brick structure

Figure 5.31: Map illustrating the location and general shape of the five different structures located at MNR211.

5.2.1 Building 1 (S 22.38257; E030.10385)

Building 1 is roughly rectangular in shape. However, evidence of alterations in some parts of the wall and floor suggests that it underwent separate building periods. Rooms (1.1 and 1.2) were possibly added to the building or were built onto the first phase of the building. The building has eight defined rooms (Fig 5.32). Some rooms are internal spaces (1.1, 1.2, 1.3, 1.5, 1.6 and 1.8) whereas others external spaces (1.4 and 1.7), for example a possible 'stoep' (veranda). There is natural debris (dirt, leaves, rocks, small bushes and twigs) across the building's surface, along with a few pieces of archaeological material (building material, glass and metal). Archaeological material is scattered around the building, fanning out several metres away from the building.

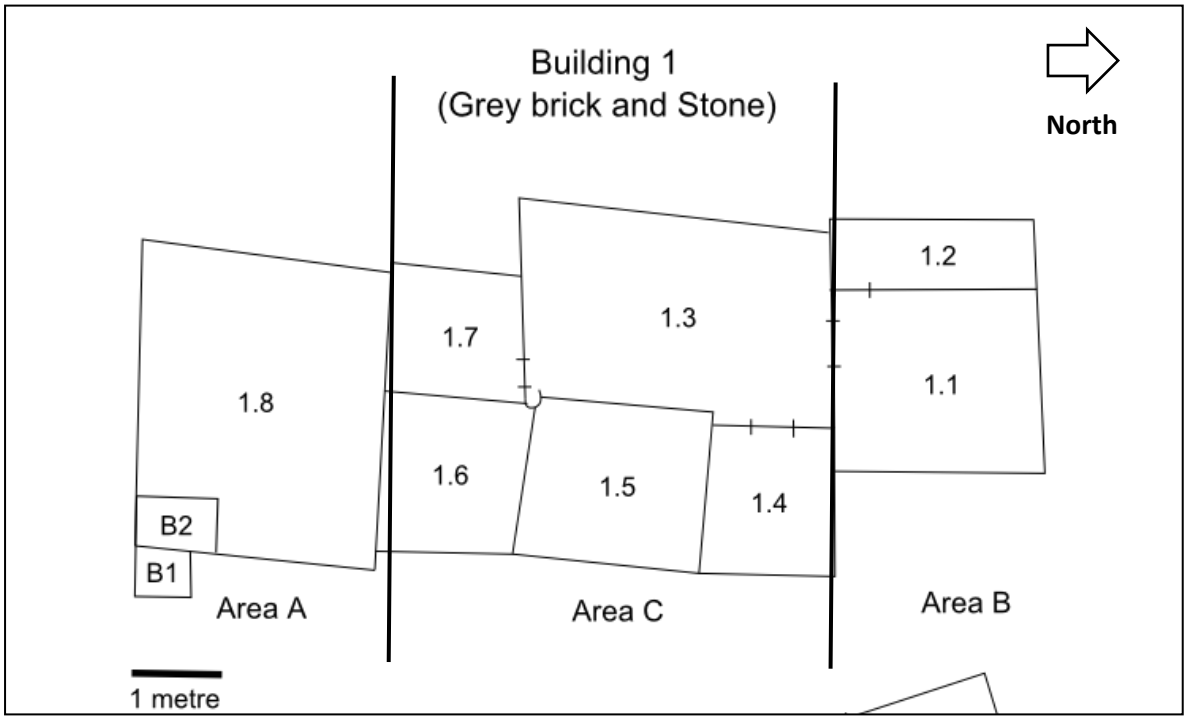


Figure 5.32: Sketch of Building 1 and the different rooms all with their identifying number, as well as the three different identifying areas of the building.

Figure 5.33: Building 1 (grey brick and stone building). Area A.

Figure 5.34: Building 1 (grey brick and stone building). Area C and B.

For discussion purposes Building 1 can be divided into three areas. The main features of the building are five central spaces designated as Area C. Area A is a large room to the south and Area B is two small rooms on the northern side. Each room was designated with a unique number.

B1 is a rectangular feature in the SW corner of room 1.8 (Fig 5.32, Fig 5.35 and Fig 5.36) is stone and thick mortar structure attached to the building, and located on the outside of the building. It is about 0.5m in length and 0.7m in height. At the middle of the northern face of the feature, there is a rough rectangular hole which opens into the feature. It appears that the top of the feature has been covered with concrete. It could have been a possible oven or fireplace.

B2 is a rectangular feature in the SW corner of room 1.8, and located inside the building. It is about 1m in length and 0.3m in height. It was built from grey concrete bricks and mortar and filled with soil and pebbles (Fig 5.32, Fig 5.35 and Fig 5.36). The grey bricks were plastered with concrete. There is a small piece of red brick in the structure as well as a piece of concrete floor, which was not part of Building 1's original floor.

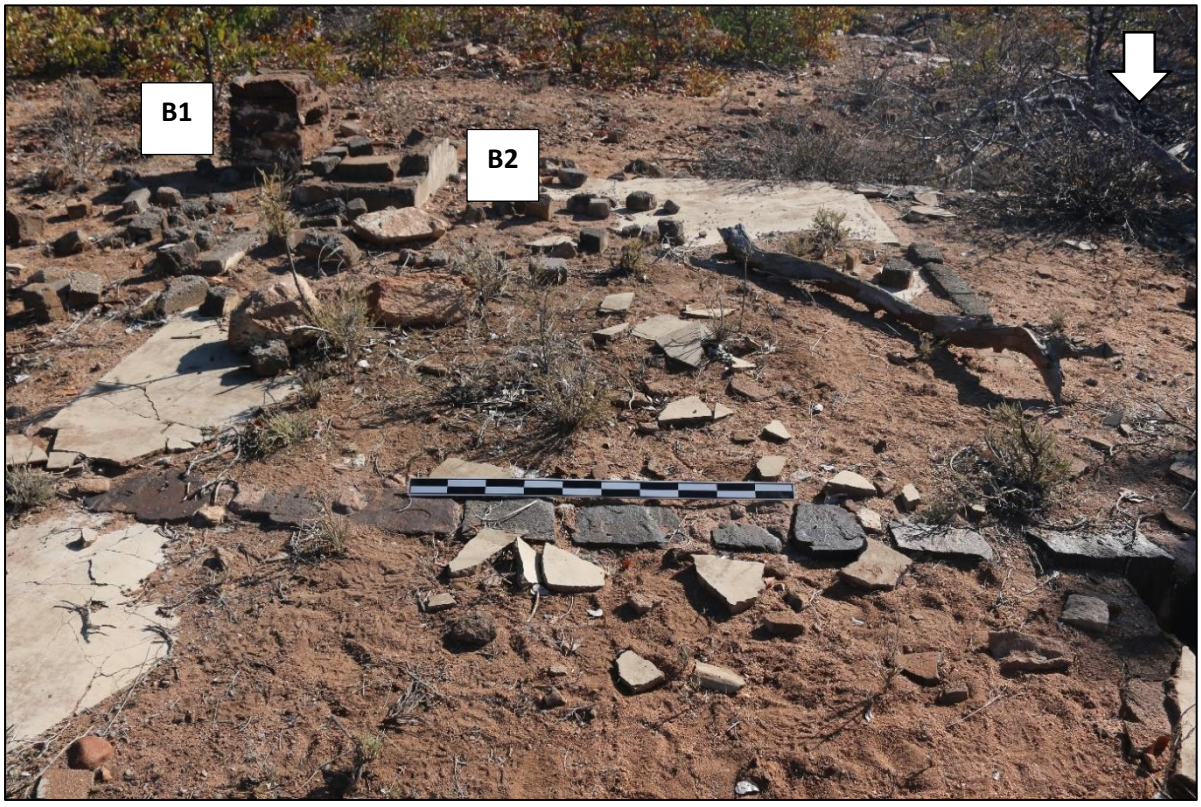


Figure 5.35: Feature B1 located outside and feature B2 located inside of the building in the south-west corner of Building 1, room 1.8.

Figure 5.36: Close-up of feature B1 located outside and feature B2 located inside of the building in the south-west corner of Building 1, room 1.8.

- *Building 1 foundation*

The base of the structure is made up of stone and mortar (Fig 5.37). The stones are exposed and not covered in plaster, except for the entryways (Fig 5.38 and Fig 5.39). The stone foundation of the building is visible throughout and measures 0.2m above the surface. The same stone foundation is used everywhere across the building as well as for the dividing sections of the different rooms. The stone dividing wall/foundation is visible in some areas; elsewhere is partly or fully covered with concrete plaster (Fig 5.39). The foundation of the building is made up of dirt and rock fill with concrete on top. In between there is only fill consisting of dirt and rocks, based on finds from excavations (see Chapter 6.4). The style of stone finish and coursing is regular courses and the stones are square (MoLAS 1994). This means that the stones were picked due to their natural square form.

Figure 5.37: Stone foundation of Building 1 with grey brick wall on top. Area B.

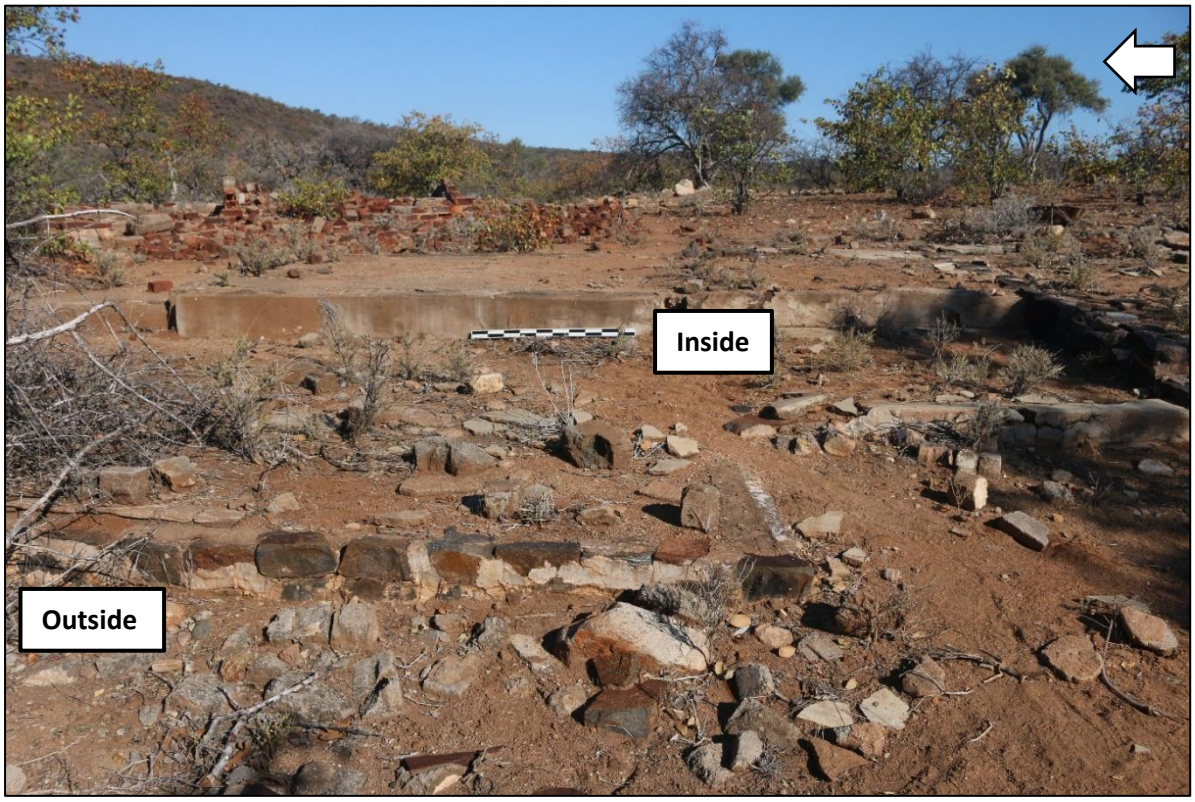


Figure 5.38: Illustrating outside stone foundation and inside stone foundation covered in concrete. Building 1. Area C.

Figure 5.39: Close-up of inside stone foundation covered in concrete of Building 1. Area C.

- *Building 1 walls*

The walls are made up of grey bricks, mortar and plaster (plaster only on the inside walls of the building). The wall plaster would have originally been white based on freshly exposed patches of wall but is now stained yellow/orange due to exposure to the elements.

The north-west corner of Area B is the best surviving feature of Building 1 (Fig 5.40). Here, a section of intact wall – approximately 2m in height and over 2m in length – is preserved (Fig 5.41). On the inside of this wall there are two holes in the wall that may have served as anchor points for something that was possibly fastened there (Fig 5.42). The shape and coursing suggest the possible location of a window (Fig 5.41 and Fig 5.42). Fragments of an iron window pane was discovered at the site along with all the surface scatter material (see Chapter 7). The walls are mostly broken down and the bricks are scattered both inside and outside the building.

Figure 5.40: Best surviving feature (north-west corner/wall) of Building 1. Area B.

Figure 5.41: Eastern room (1.2) and inside wall, including the plaster on the wall, yellow/orange tinge from sun damage, is visible. Area B.

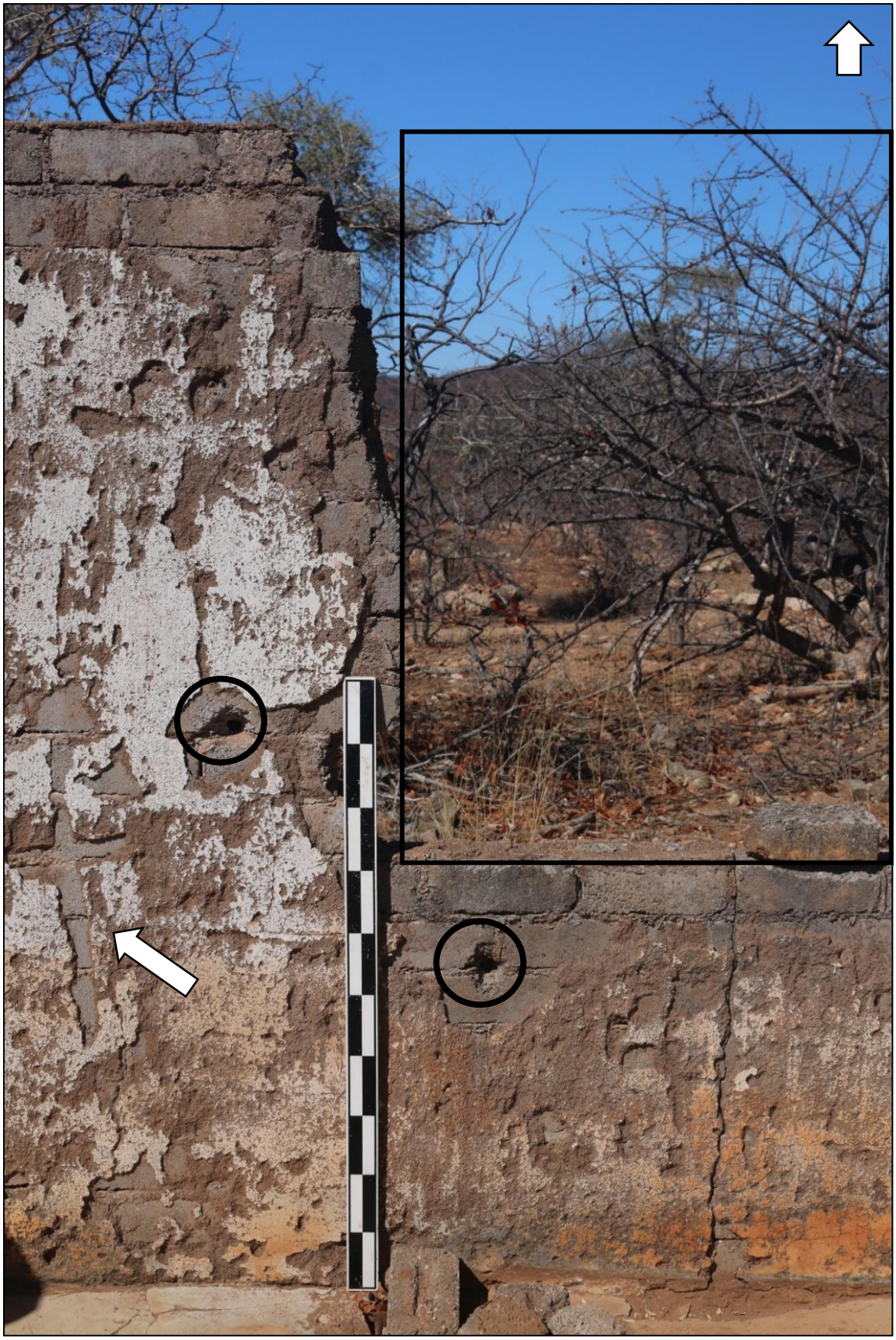


Figure 5.42: Eastern wall where possible window could have been. Also holes in the wall and an indentation in the wall of something that was possibly fastened there. Area B, room 1.2.

- *Building 1 brickwork*

The bricks are squared and grey in colour (Fig 5.43) and are 0.23m long and 0.11m wide. The bricks are very course all over with a lot of small gravel inclusions. All the bricks have a frog (indentation) in the middle of the brick. The frog is 0.15m long and slightly rounded at the edges (Fig 5.44). The coursing/bonding pattern of the bricks are stretcher (Fig 5.45).

Figure 5.43: Broken down wall located outside of Building 1.

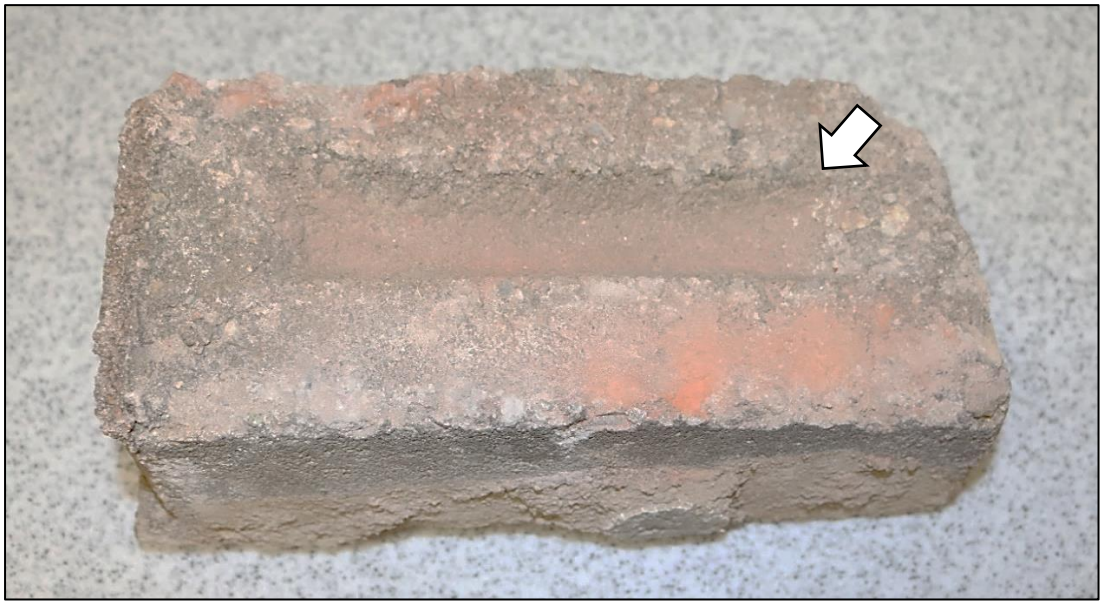


Figure 5.44: Image of a grey brick, with a frog in the brick, collected from Building 1.

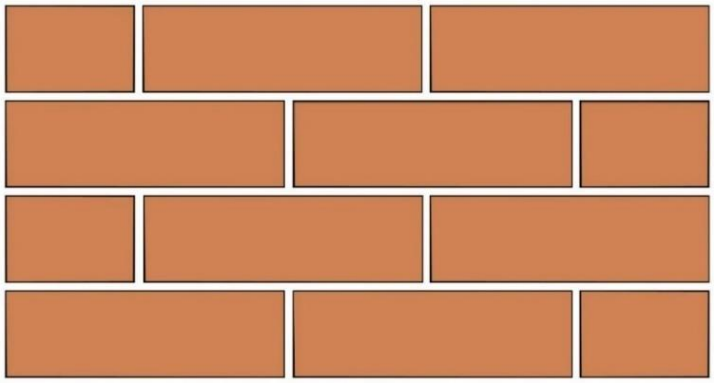


Figure 5.45: Example of a brick stretcher pattern.

The bonding material used for the bricks is a grey, rough and a sandy mortar. There are inclusions of gravel (small/fine rocks). The mortar between the bricks is about 0.1m thick (Fig 5.46) and consistent throughout Building 1.

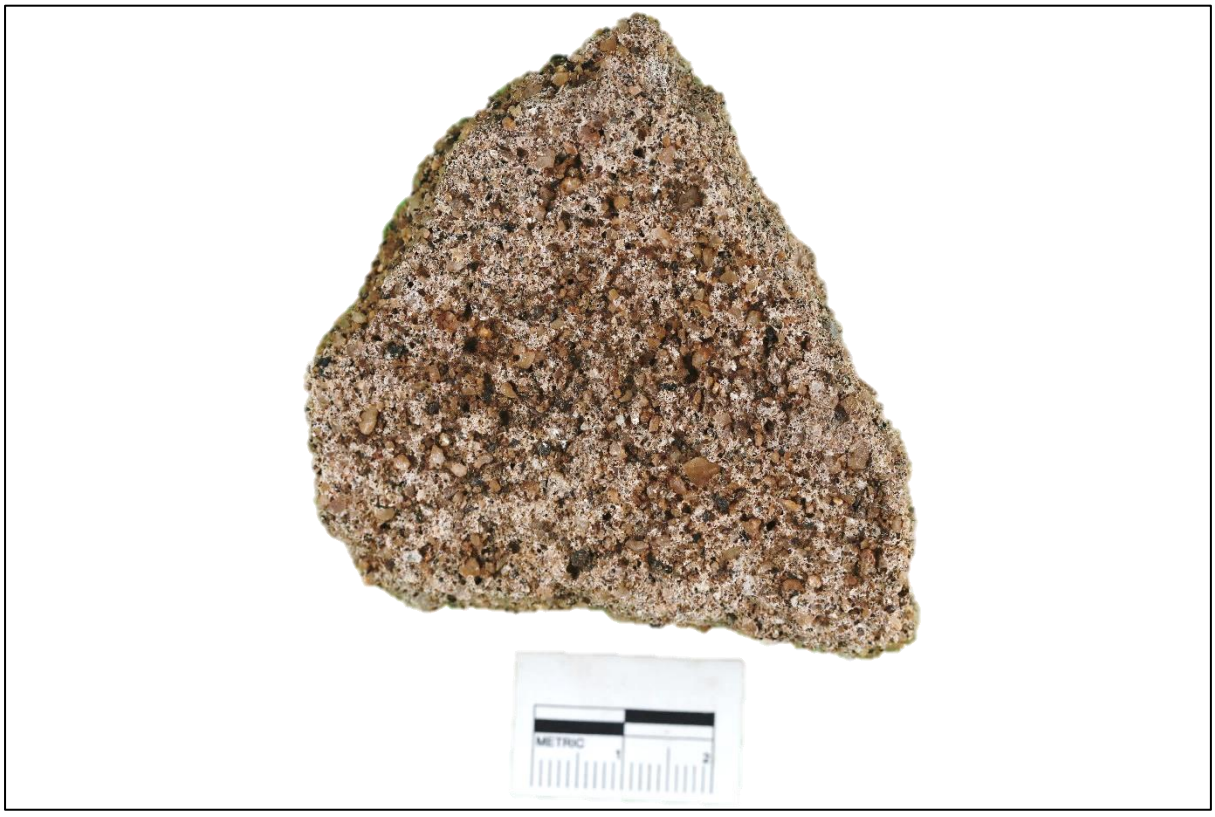


Figure 5.46: Image of sample of mortar collected from Building 1.

The surface of the building was cleared and cleaned to investigate the surface of the building for any possible irregularities. All the building material (bricks, concrete and mortar) were left in its original location. The floor of the building was most likely covered in concrete throughout but is now only preserved in a few areas. Where it is broken or absent, the underlying dirt fill is exposed (Fig 5.47).

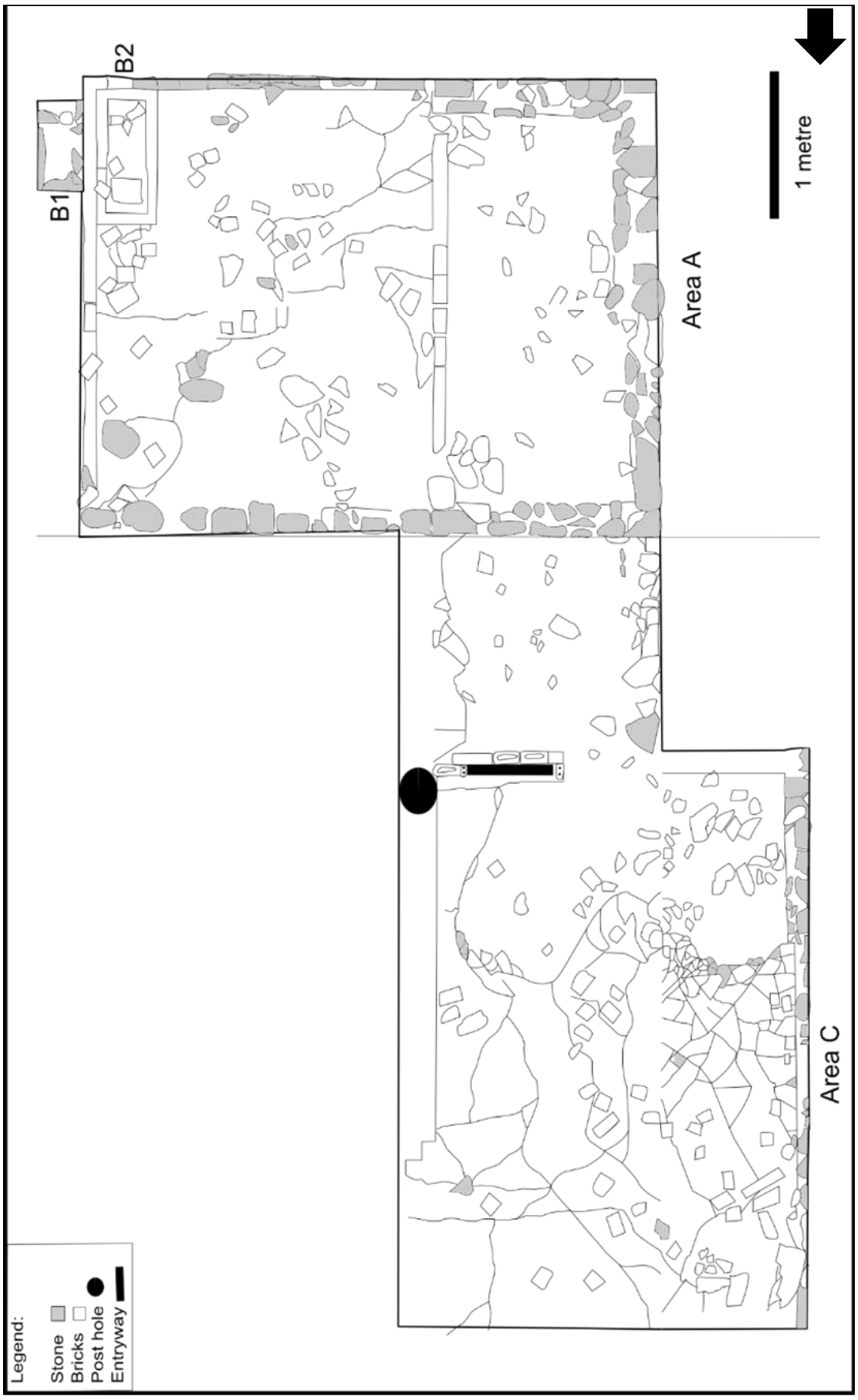


Figure 5.47: Sketch of the surface of Building 1 (Area A and C).

While cleaning the surface of the building a few unique features were exposed:

- *Indications of entryways/doorways*

Possible entryways leading into different rooms were identified as well as steps and doorways (room 1.1, 1.2, 1.3, 1.4 and 1.7). There are indentations on the flat smooth piece of concrete floor which suggests that something was possibly broken out (e.g. bricks or section of a doorframe), and there could possibly have been walls with a doorway located in between the indentations.

- *Stoep (veranda)*

Room 1.4 is interpreted as a possible stoep (veranda) with stepped entrance leading into room 1.3 (Fig 5.48 and Fig 5.49). This space is clearly an outside area, as there are no evidence of walls surrounding this space.

Figure 5.48: Stoep with entryway into room 1.3. View of the entryway from inside of the building (Area C and room 1.4).

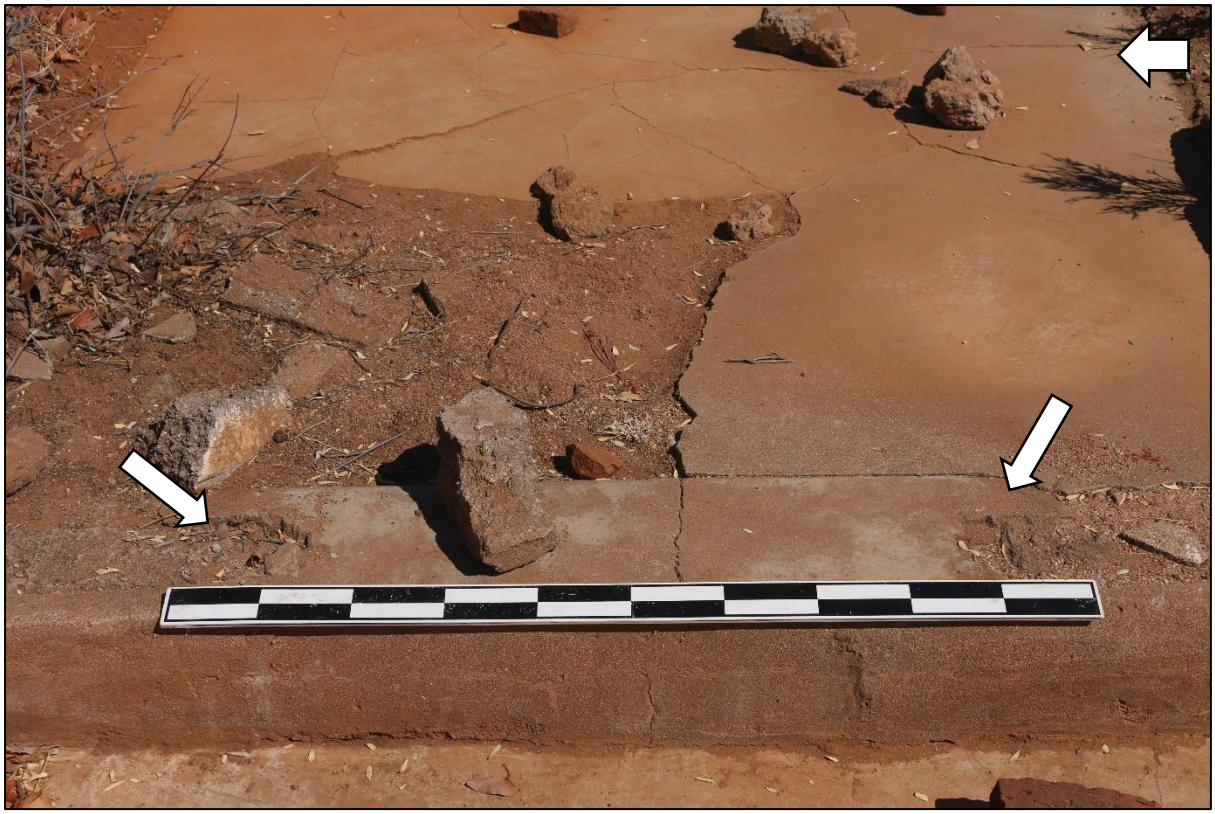


Figure 5.49: Close-up of outside space with the entryway. Entryway from inside of the building. Area C and room 1.4). Note indentations of possible door hinges.

- *Indications of inside entryways/doorways*

There are possible entryways inside of the Building 1 (room 1.1 and room 1.2) (Fig 5.50 and Fig 5.51). There are two different entryways located in one room, although one is significantly narrower than the other. Again, there is a flat smooth surface of concrete that covers the floor and also the step that leads into room 1.2. This step has a clear indication of a section of a possible doorframe/hinges, whereas room 1.1 is just an opening but there is a clear line, with brick indentations, as an indicator of where a wall could have been.

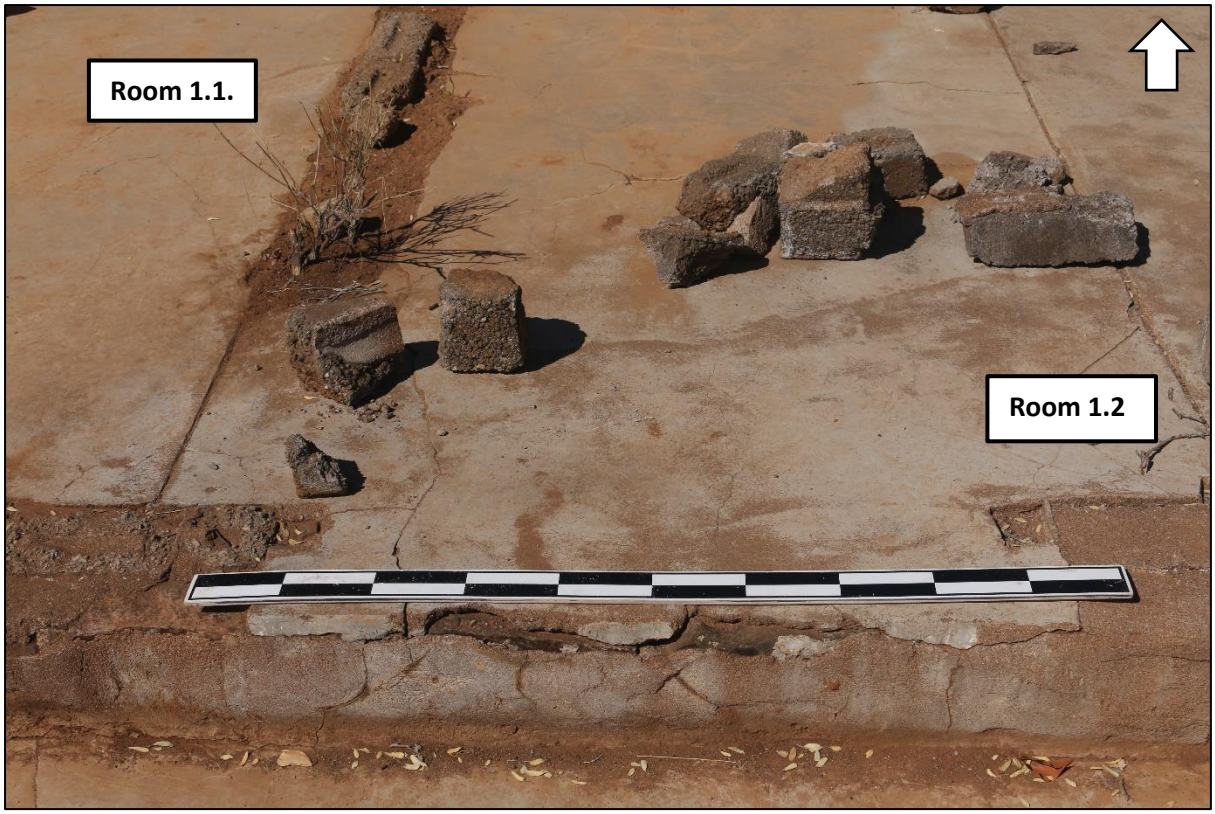


Figure 5.50: Entryway, with indentations of possible doorway room 1.2 in Building 1(Area B).

Figure 5.51: Two different entryways located in one room of Building 1. (Area B, room 1.1 and room 1.2).

- *Burnt patches on the floor*

Both room 1.1 and 1.3 have clearly defined burnt portions of floor (Fig 5.52 and Fig 5.53). The burnt patches are black-grey in colour and almost resembles that of scorch marks. Possibly a fire on the floor within the confines of the building. The larger burnt patch's concrete floor is broken and cracked all over it is almost as if that patch has sunk in. The cracks and broken floor could be a result of the heat of the fire damaging the floor. These burning events likely took place after abandonment.

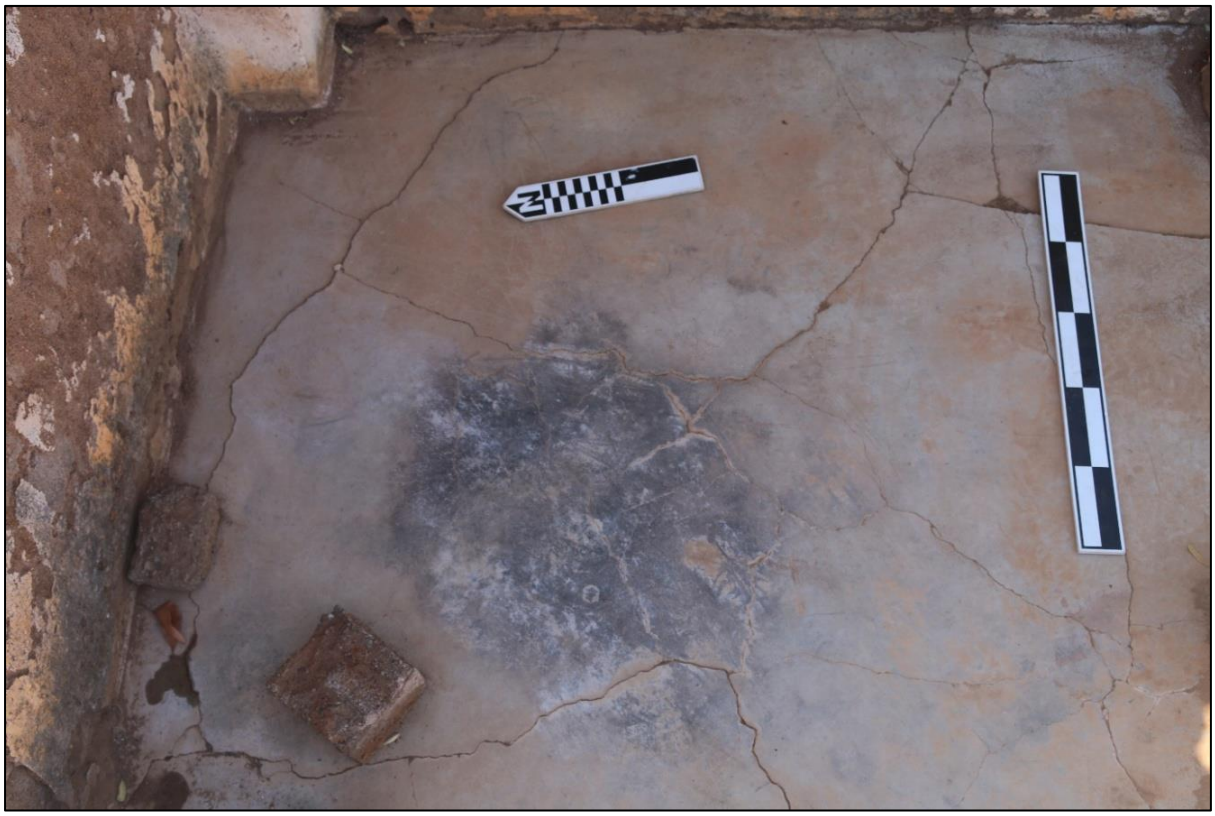


Figure 5.52: Burnt patch on the floor on the inside of Building 1 in room 1.1. (Area B).

Figure 5.53: Burnt patch on the floor on the inside of Building 1 in room 1.3. (Area B).

- *A posthole*

A single posthole was found in the floor of the SE corner of room 1.3 in Area C (Fig 5.54 and Fig 5.55). The post hole is 0.15m in diameter. The original post likely provided roof support over a possible veranda.

Figure 5.54: Posthole located in the corner of room 1.3 of Building 1. (Area C).

Figure 5.55: Posthole located in the corner of room 1.3 of Building 1. (Area C).

- *Possible alterations to the building*

There is evidence of a doorway/entryway (a section of a doorframe and door scratches on the floor) in room 1.3 and adjacent to room 1.7 which may have been closed off during later alterations to the building (Fig 5.56). The door frame was built into the floor and the direction of scratches indicates that the door opened towards the interior of the building. Brick indentations (likely grey concrete bricks given the frog shape) indicate a wall around 0.2m away from the door frame (Fig 5.57). This suggest that the door was closed up at some later stage and/or that it was removed completely and possibly turned into a built-in cupboard.

Figure 5.56: Illustration of door scratches and indentation where door frame was placed in the floor in room 1.3 of Building 1 (Area C).

Figure 5.57: Brick indentations in relation to scratch marks in room 1.3 of Building 1 (Area C).

- *Impressions of shoeprints*

There are impressions of human shoeprints on the floor of room 1.1 of the building (Fig 5.58). This type of shoe is known as a hobnail boot or a doughboy shoe (trench boot). The 'circles', of the shoe are the imprints of the nails on the sole of the shoe. The nails were put in the sole of the shoe to provide better grip for the wearer, an anti-slipping element. The shoeprint at MNR211 is small (a heel of around 0.05cm), which could mean that is was possibly a woman or child's shoe.

Figure 5.58: Imprints of hobnail boot on the floor of room 1.1 of Building 1 (Area B).

- *Impressions of animal paw prints on the floor*

There are impressions of small paw prints on some parts of the buildings floor (room 1.4 (Fig 5.59) and room 1.5 (Fig 5.60 and Fig 5.61)). This speaks to the presence of a domestic pet such as a dog or possibly wild animal that walked across the wet concrete. The footprint is about 0.03m in length.

Figure 5.59: Paw print on floor of room 1.5 of Building 1. Area C.

Figure 5.60: Paw print on floor of room 1.4 of Building 1. Area C.

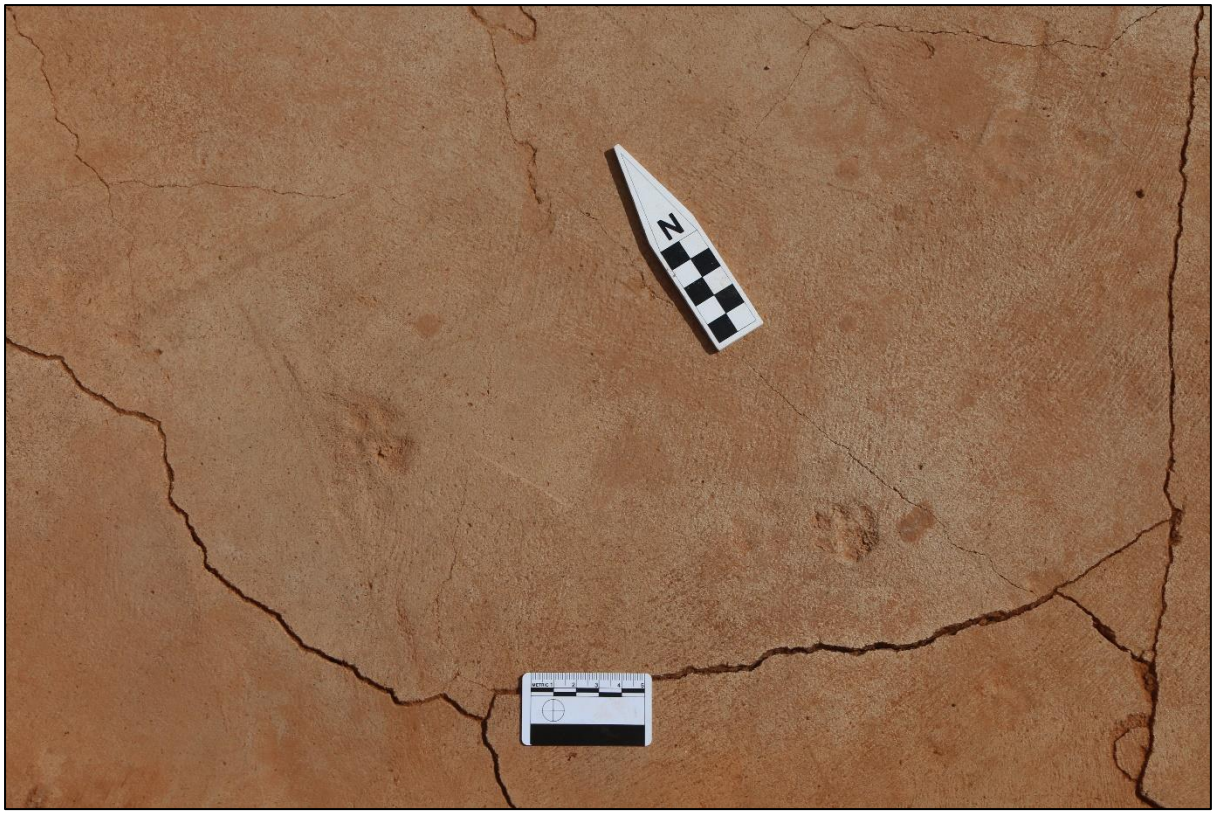


Figure 5.61: Multiple paw prints on floor of room 1.4 of Building 1 (Area C).

5.2.2 Building 2 (S 22.38266; E030.10390)

Building 2 is a rectangular building divided into two rooms (2.1 and 2.2) both in the shape of a square which are both the same size (Fig 5.62 - Fig 5.65). The building faces north-west. The building is in ruins and a lot of the rubble/building materials are located both inside, and scattered around the building. The rubble includes red bricks, mortar, concrete and a few pieces of metal building material such nails and possible door or window frames. There is no evidence of other archaeological material within the building's two individual rooms.

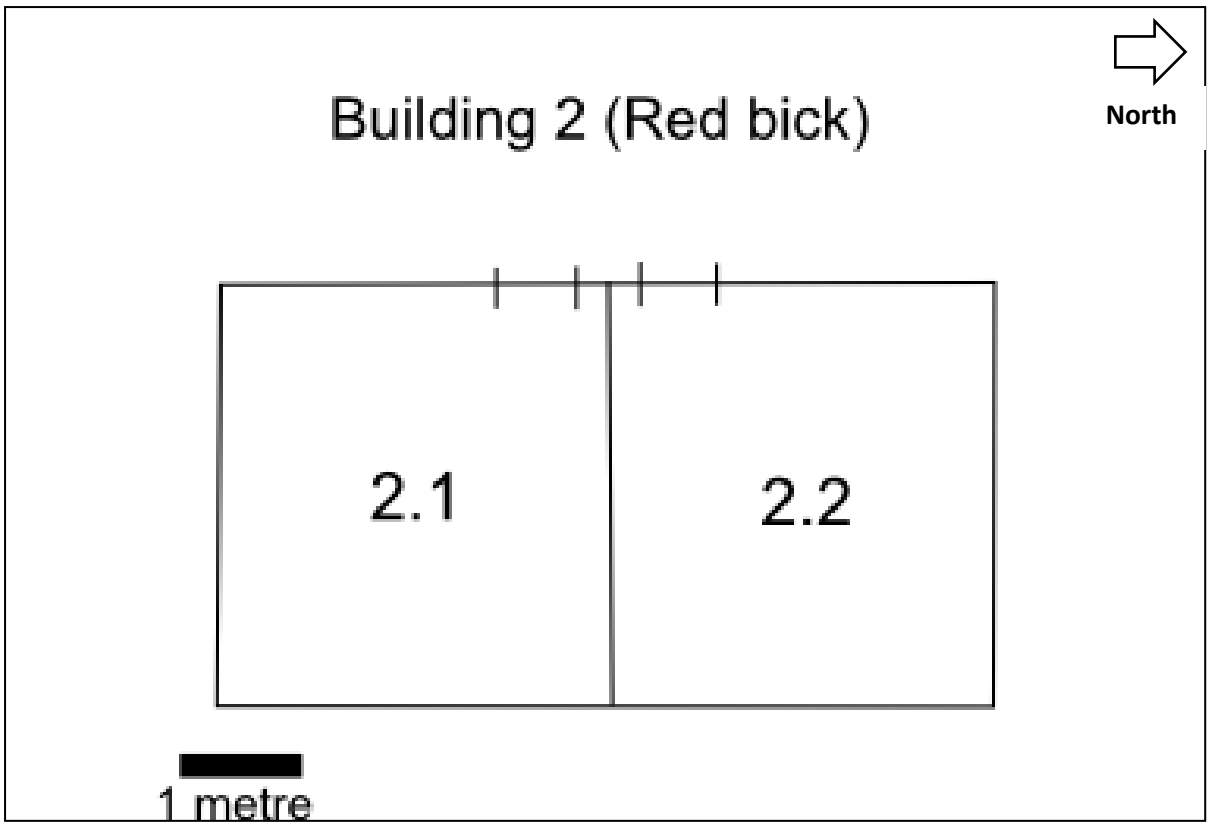


Figure 5.62: Sketch of Building 2 and both its rooms and entryways.

Figure 5.63: Building 2 (red brick).

Figure 5.64: Room 2.1 of Building 2.

Figure 5.65: Room 2.2 of Building 2.

There are entryways visible for each room which lead in and out of each room individually (Fig 5.66). There is no doorway which connected the two rooms.

Figure 5.66: Entryway (room 2.2) located at Building 2.

- *Building 2 foundations*

The base of the structure is made-up of stone and mortar. The stones are exposed and not covered in mortar, except for the entryways. The style of stone finish and coursing is regular courses and the stones are squared (MoLAS 1994). The stones measure about 0.1m in height and it appears to be only a single course (there are no other stones packed on top of one another). The foundation of the building is made up of dirt and rock fill with concrete surface (Fig 5.67). The eastern room's concrete floor is almost completely intact except for a break/crack in the south-west corner. Room 2.2's floor is mostly broken up and the sub-surface soil fill is visible.

Figure 5.67: Foundation of Building 2 with red brick wall built on top.

- *Building 2 walls*

The walls are made up of red brick and mortar and plaster on the inside walls (in some places) (Fig 5.68). The outline of the walls still survives but the highest surviving piece of wall is only 0.4m. The dividing wall between the two rooms is the best surviving feature of Building 2 (Fig 5.69).

Figure 5.68: Collapsed wall (room 2.2) of Building 2.

Figure 5.69: Dividing wall of Building 2, which includes plaster on inside of the wall.

- *Building 2 brickwork*

The bricks are squared and red in colour (Fig 5.70) and are 0.23m long and 0.11m wide. All the bricks have three small holes in them and a thin straight line going across the bricks (Fig 5.70). These bricks were possibly picked up with a three-pronged fork and moved to a place where they were dried and backed. The bricks are course with a large amount of fine gravel inclusions. The three holes (use of fork) suggests to rudimentary and possibly older manufacturing methods, as opposed to mechanical methods of modern brick making. The coursing/bonding pattern of the bricks are stretcher.

Figure 5.70: Brick from Building 2, indicating the lines and the three prong holes.

The mortar used for the bricks is a grey, rough and sandy substance. There are inclusions of grain (small/fine rocks). It is strong/tough and can't break easily. The mortar between the bricks are about 0.1m thick (Fig 5.71).

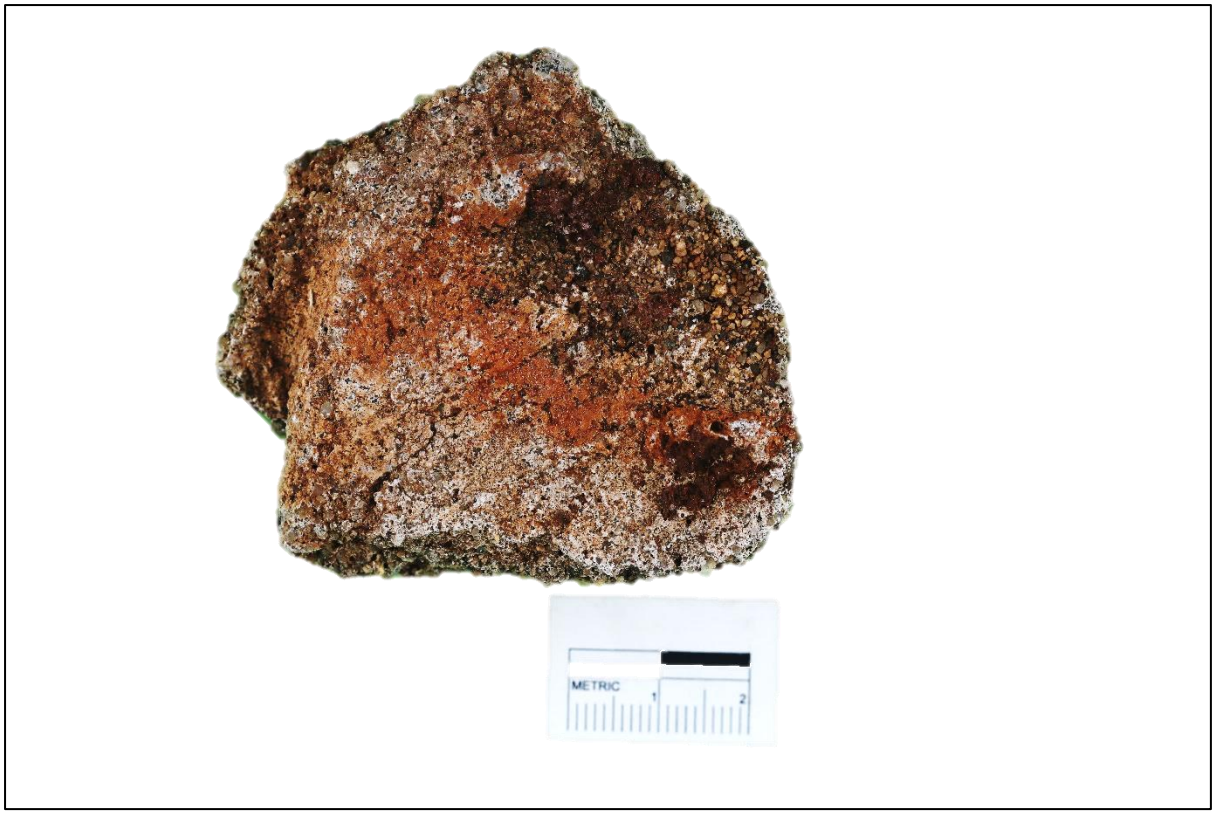


Figure 5.71: Sample of the mortar collected from Building 2.

5.2.3 Open platform (S 22.38251; E030.10375)

This is a flat open square platform made up of a square concrete floor (Fig 5.72 and Fig 5.73). The platform measures approximately 2x2m. The concrete floor is cracked and broken in a few places. The platform is surrounded by stones packed around its perimeter except for an opening in the south-east corner (entryway facing east). These perimeter stones are all around 0.1m in height. The stones are large and placed next to one another in a single row. It is possible that a superstructure of either perishable or reclaimed material was located on top of this open platform.

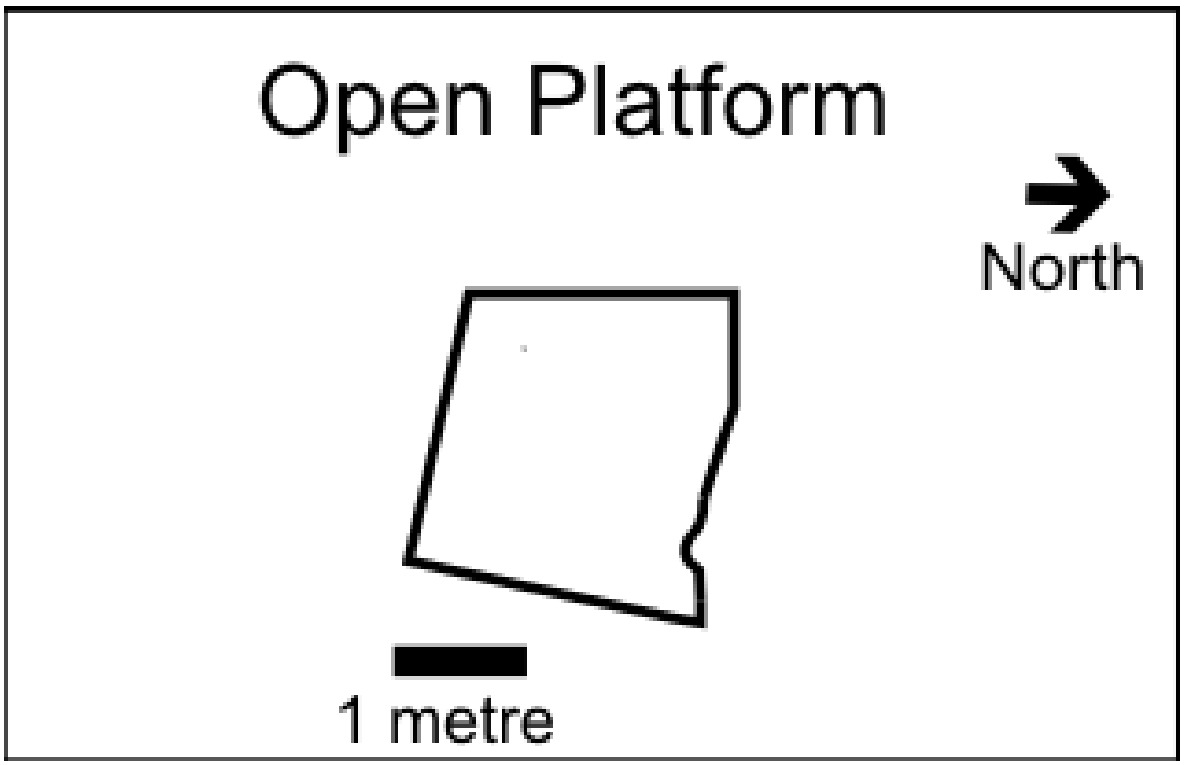


Figure 5.72 Sketch of open platform.

Figure 5.73 Open platform with stone wall perimeter.

5.2.4 Stone enclosure (S 22.38256; E030.10490)

The stone enclosure is square (Fig 5.74 and Fig 5.75) and closed all the way around except for an opening located in the north-west corner (opening facing west). This opening is a clearly defined entryway (Fig 5.76). The stone enclosure faces north. In the centre of the structure there is a small square platform (Fig 5.78 and Fig 5.79), which will be discussed separately.

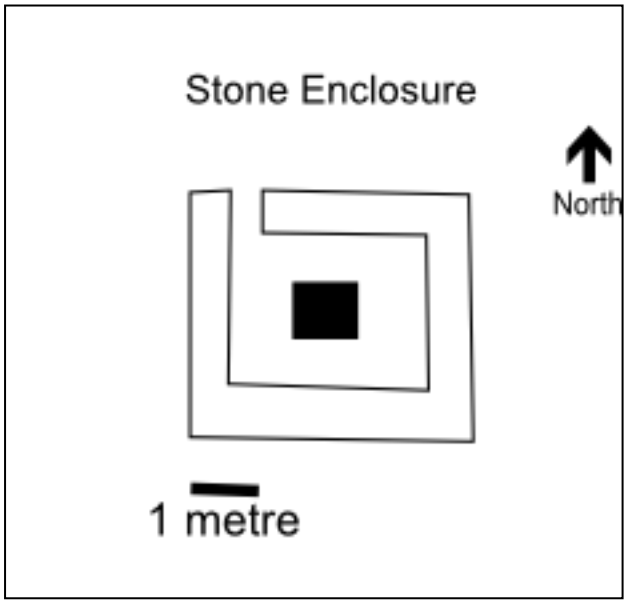


Figure 5.74: Sketch of the stone enclosure.

Figure 5.75: Stone enclosure.

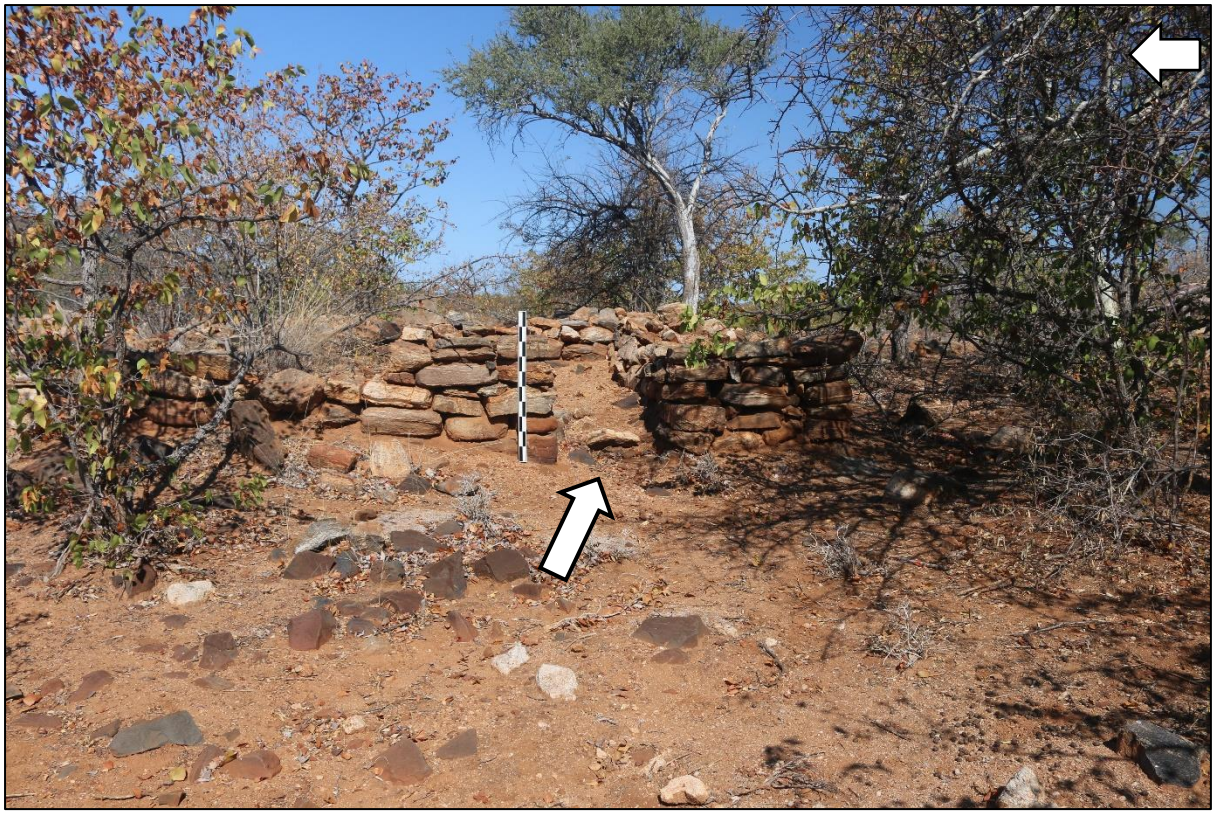


Figure 5.76: Entryway in north-west corner of the stone enclosure.

- *Stone enclosure foundation*

The structure has no foundation; the stone walling was built directly on the ground. There is also no evidence of a foundation inside the stone enclosure.

- *Stone enclosure walls*

The stone walls are all mostly intact except for small piece located in the middle of the south wall; one of the bottom stones has fallen out and the stone on top is now at an angle but the wall and soil fill are still intact (Fig 5.77). The walls are made-up of rubble fill in between the walls which measures about 0.3m in width and 1m height. The style of stone finishing and coursing is a rough face (MoLAS 1994). The stones are packed on top of each other there is no evidence of a binding agent between the stones, thus it is called dry walling.

Figure 5.77: Evidence of a break in east wall of the stone enclosure.

5.2.5 The platform in the middle of the stone enclosure (S 22.38256; E030.10490)

The platform in the middle of the stone enclosure is 1x1m in diameter and around 10cm in height (Fig 5.78 and Fig 5.79). It has a stone foundation and concrete covering surface. The concrete is mostly broken-up, crumbled or even absent completely, but there is clear evidence that it covered the entire foundation (southern side of the platform). There is also some evidence of grey bricks (Building 1) on the platform. There is one grey brick covered in concrete located on the platform and several without concrete scattered around it. It is possible that a structure was built on the platform made from grey bricks which were later reclaimed.

Figure 5.78: Platform in the centre of the stone enclosure.

Figure 5.79: Close-up of platform in the centre of the stone enclosure.

5.2.6 Small brick structure (S 22.38263; E030.10492)

A small brick structure is located approximately 3m east of the stone enclosure (Fig 5.80 and Fig 5.81). It is square in shape and has walls on three of the four sides, except at the east side (it is completely open from top to bottom). The structure consists of red bricks, mortar and plaster which resembles the building materials used for Building 2.

Figure 5.80: Small red brick structure located east of the stone enclosure.

Figure 5.81: Southern side of the red brick structure, located east of the stone enclosure.

- *Small brick structure foundation*

The small brick structure has a stone foundation; these are the same stones used for the stone enclosure and the foundation used for Building 1 and Building 2. The foundation is just under 1m in diameter. The foundation was also covered in plaster, although most of the concrete cover at the south side is absent and, in the west, it is still intact.

- *Small brick structure brickwork*

The bricks resemble the red bricks of Building 2. The bonding material used for the bricks is a grey, rough and sandy concrete. The coursing/bonding pattern of the bricks are stretcher (MoLAS 1994). The bricks are covered in a grey substance (possibly plaster). There is a flat, weathered metal plate attached between the first and second row of bricks at the top of the small brick structure. At the back of the small brick structure (west) there is a hole, with an orange smudge, located just under the top row of bricks. This orange tinge is likely staining from an iron object that was inserted into it. The concrete covering at the top of the small brick structure appears to be the extent of the structure, there is no evidence that it was higher in the past. There are only a few bricks missing on both the south and north walls of the small brick structure (the north wall is more broken down and damaged than the south wall).

Other archaeological evidence at the small brick structure include small pieces of slag which point to possible smelting or firing of ores. The structure may therefore have been a rudimentary furnace.

5.3 Other Significant Features

Other significant features located at MNR211 include two faded metal claim boards, a geological core scatter, a small midden, a possible furnace, a possible crushing site, a small activity area and a clearly defined boundary line (stone walling) surrounding some of the structures.

The other significant features are identified on the map (Fig 5.82) as the following:

A: Claim boards

B: Scatter of geological cores

C: Possible midden

D: Possible furnace

E: Possible crushing site

F: Small activity area

G: Boundary Line

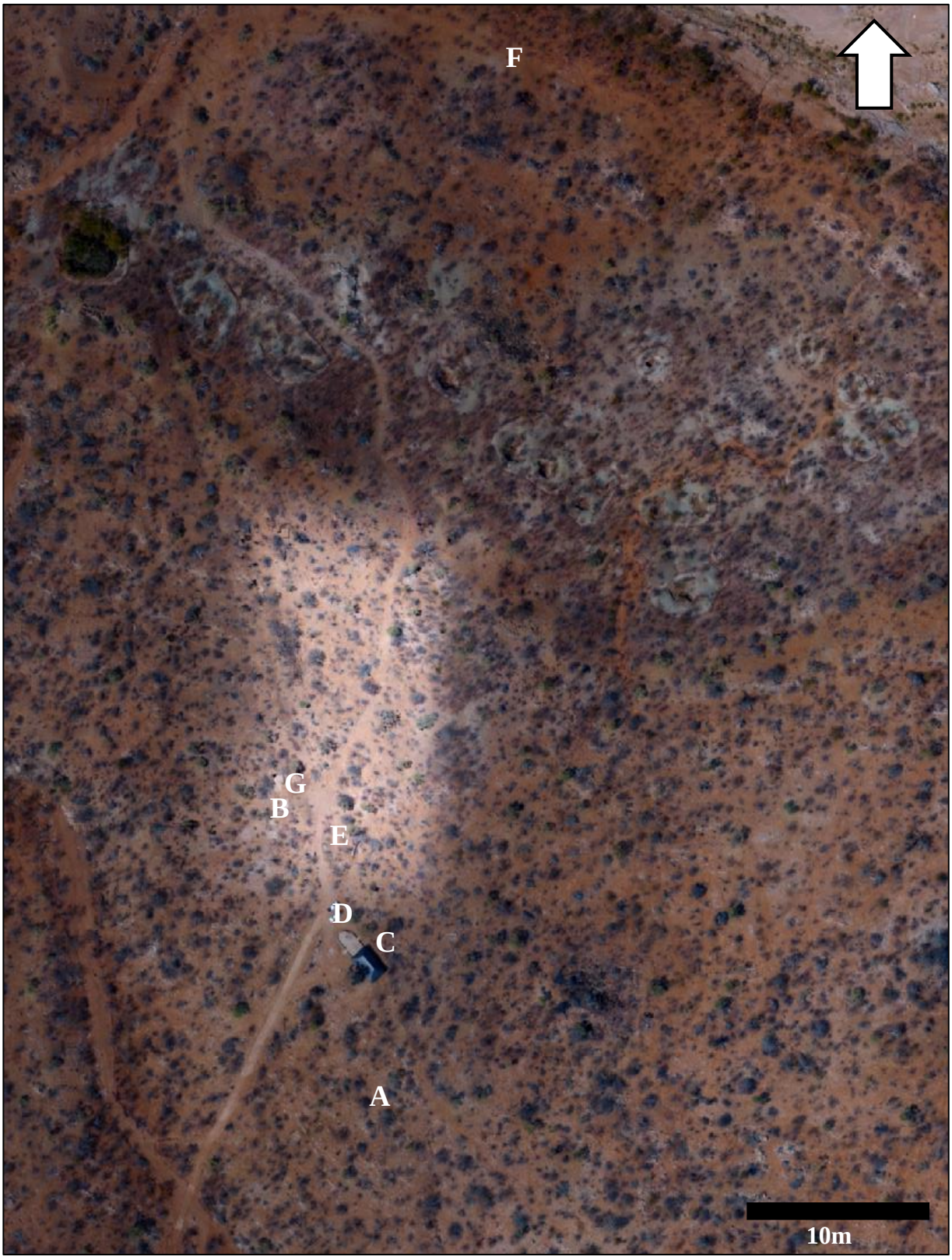


Figure 5.82: Map indicating the locations of all the other significant features located at MNR211.

5.3.1 Claim boards (S 22.225866; E30.6841)

Two claim boards (Fig 5.83 and Fig 5.84), approximately 300m west of the structures has been identified. Each claim board is a square zinc plate, which has been galvanised, with black paint writing on it and attached to two iron poles. Both claim boards contain the same information, although not in the same order.

Text on Plate 1 (front) (Figure 5.83):

D.A. KRUGER

CORNER BEACON

LIC NO 37348

50 BM _ _ _ _ MS

PEC 21 – 1_ – 76

Text on Plate 2 (back) (Figure 5.83):

D. A. KRUGER

50 B_ Claims

LIC _ _ 37947

CORNER BEACON

_ _ _ _ _ _ _ _ _ 78

Figure 5.83: Close-up of the two claim boards located at MNR211.

Figure 5.84: Two claim boards with information located at MNR211.

5.3.2 Scatter of geological cores (S 22.225702; E 30.61345)

Located adjacent to Building 1, about 1 m to the north-west, there is a geological core scatter (most of the cores are broken) (Fig 5.85 - Fig 5.87). During prospecting activities drills were used to drill into the ground to produce these geological cores, which are used to identify the metals and minerals within the ground. These geological cores were typically used during the later 20th century. The cores are typically stored in containers known as drilling boxes or core trays, but all of these seem to have been discarded as they have just been thrown onto a pile. None of the other structures presented any evidence of geological cores, however some of the diggings did contain a few geological cores.

Figure 5.85: Geological core scatter located next to Building 1.

Figure 5.86: Close-up of geological core scatter located next to Building 1.

Figure 5.87: Geological core collected from the mine core scatter area.

5.3.3 Possible midden (S 22.225855; E 30.61214)

On a slight slope on the eastern edge of the site, an area is covered in an ashy midden deposit (Fig 5.88). It contained ceramic, glass and metal artefacts which were collected during surface collection survey but it was not excavated.

Figure 5.88: Possible small midden.

5.3.4 Possible furnace (S 22.225829; E 30.61197)

A circular stones feature located close to the small midden (Fig 5.89) likely acted as a furnace given that it contained numerous pieces of slag. It is about 0.5m across. A metal pipe found inserted into the structure could have been used to pump air into the furnace.

Figure 5.89: Possible furnace.

5.3.5 Possible crushing site (S 22.225797; E 30.6'1323)

Across from the structures, on the other side of the road, a possible crushing site was discovered (Fig 5.90). The area is more than 1m across and contains a small patch of ashy soil (which could be a midden) (Fig 5.91), and a stone which is more than 0.5m in length (Fig 5.92). It is possible that the rock could have been used as an anvil to break up ore since numerous pieces of iron ore is scattered around it, and the rock itself has clear marks where it has been hit (Fig 5.93).

Figure 5.90: Midden area with worked stone, with debris scattered around it, located to the right. The possible crushing site.

Figure 5.91: Midden area that is located next to the anvil and crushed ore.

Figure 5.92: Anvil stone and iron ore.

Figure 5.93: Close-up of the anvil stone indicating fracture marks.

3.5.6 Possible small activity area (S 22.225999; E 30.62433)

On the bank of the Sand River, a level area with grey soil, building material and small artefacts were discovered (Fig 5.94). This area is located 310m from the other structures and was possibly the living quarters of African labourers working on the mine.

Figure 5.94: Image of possible small activity area located adjacent to the Sand River.

3.5.7 Boundary line (S 22.225708; E 30.61378)

There is a clearly defined perimeter wall arching around Building 1, Building 2 and the Open Platform (Fig 5.95 and Fig 5.96). The perimeter wall is made-up of white rocks packed in a double row. In some places the rocks have been moved and the line is broken. The double row of rocks could suggest that it was the base for a fence line. However, no fencing material (e.g. poles or wire) were found, although these may have been reclaimed after abandonment of the site.

Figure 5.95: Image of stone walling boundary line surrounding Building 1, Building 2 and the Open Platform.

Figure 5.96: Aerial view of the boundary line surround the structures.

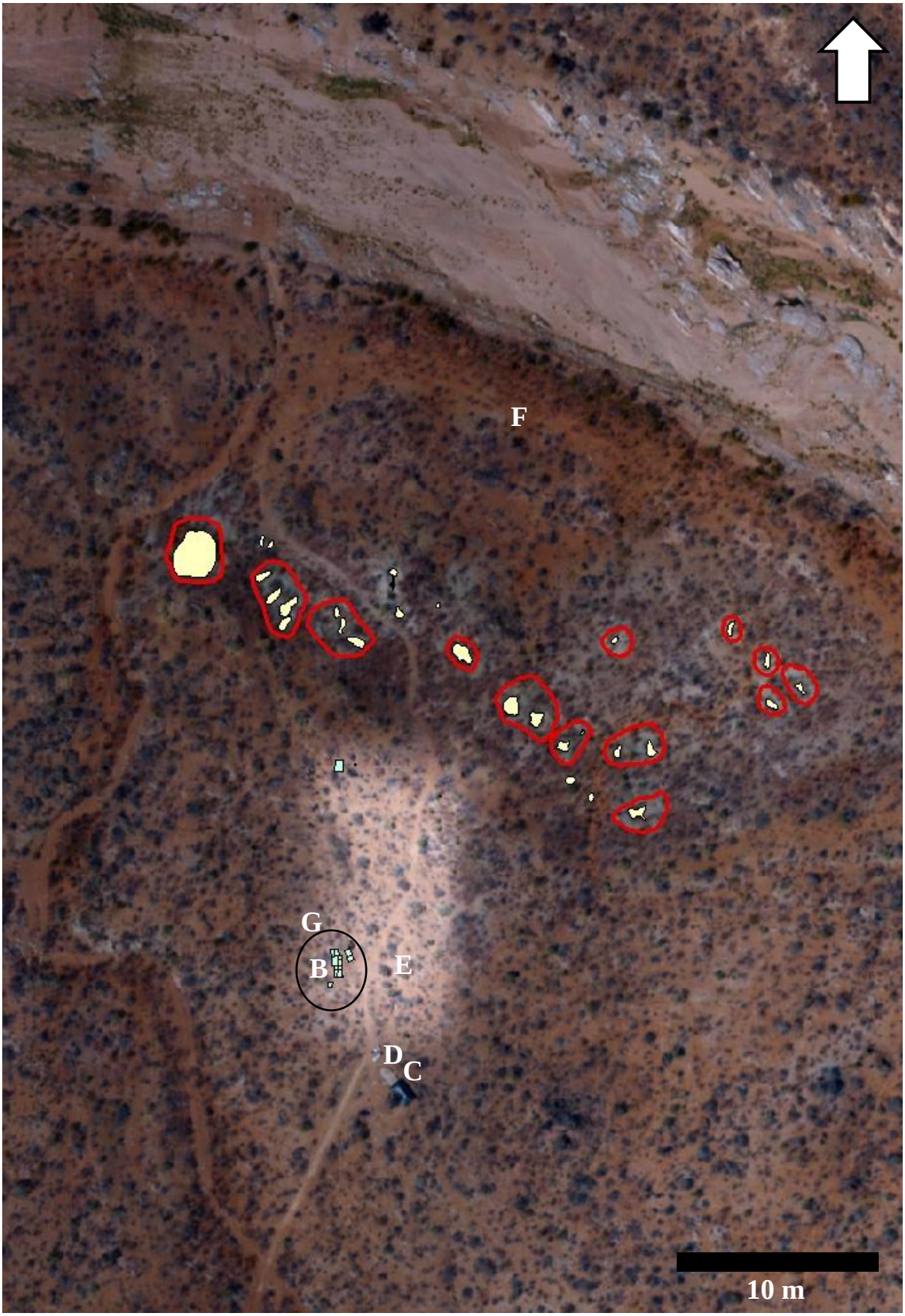


Figure 5.97: MNR211 with all its associated features

Chapter 6 : Report on the Excavations of MNR211

This chapter provides a report of the excavations of MNR211 conducted between, 29 August 2017 and 4 September 2017. Excavations concentrated on two middens and the interior of Building 1 (Fig 6.1).

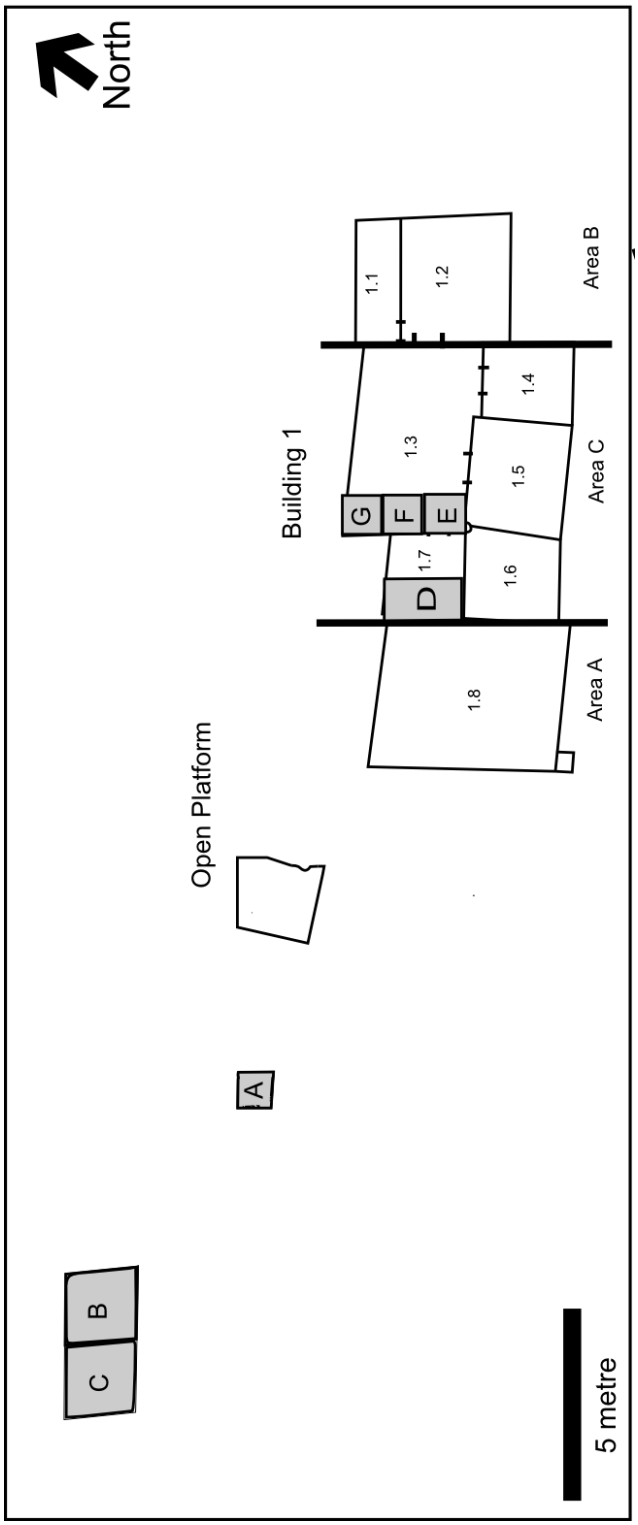


Figure 6.1 : Site plan highlighting the excavation units at MNR211.

6.1 Excavation Unit A (1x1m)

Location (GPS co-ordinates): S22.38253 and E030.10369

Site grid coordinates: N1015 and E994.35

Datum number: 100

Datum location (GPS co-ordinates): S22.225719 E30.6'1327

This 1x1m unit was placed over a grey ashy deposit visible on the surface in the central area of the site. Archaeological material visible on the surface before excavation began included glass and metal fragments. The unit contained two layers (including loose surface deposits) and ended on sterile soil approximately 0.14cm below datum (Fig 6.5 - Fig 6.7). The area was interpreted to be a small midden.

Table 6:1: Locus descriptions of excavation of Unit A.

Locus	**Elevation (cm) Below Datum**	**Buckets (Litre)**	**Description**	**Fig no**
Surface	9 cm	22	Very ashy (grey) deposit not covering a large area.	Fig 6.2
301	14 cm	30	Grey ashy deposit. Soon patches of red-brown soil appeared. Ended on a red-brown gravel layer.	Fig 6.3
304	14 cm	35	Sterile soil (red-brown soil). Soil hard/rough and contained lots of gravel and rocks.	Fig 6.4

Figure 6.2: Surface of Unit A.

Figure 6.3: Locus 301 exposed in Unit A.

Figure 6.4: Locus 304 exposed in Unit A.

Figure 6.5: End of excavation of Unit A.

Figure 6.6: Unit A end of excavation plan.

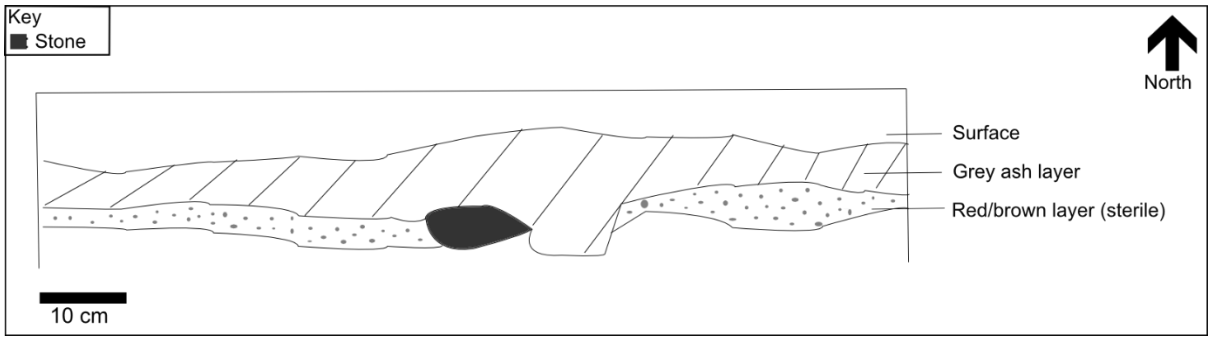


Figure 6.7: Section drawing of south wall (wall facing north) of Unit A.

6.2 Excavation Unit B (2x2m)

Location (GPS co-ordinates): S 22.38251 and E030.10362

Site grid coordinates: N1018.5 and E988

Datum number: 101

Datum location (GPS co-ordinates): S22.225714 E30.61296

This excavation unit was placed over an area of grey and dark brown ashy deposit. Archaeological material visible on the surface before excavation began include metal, glass, ceramic, concrete and red bricks.

After the surface locus was cleared there was clear discontinuation of three different soil colours: dark brown, light grey ash and light brown (Fig 6.9 and Fig 6.10). Each colour was assigned its own locus number: dark brown (300), light grey ash (302) and light brown (303) and excavated separately as they were clearly related to three different depositional events. The material and deposits suggest that this area was a midden.

Table 6:2: Locus descriptions of Unit B.

Locus	Elevation (cm) Below Datum	Buckets (Litre)	Description	Fig no
Surface	42,5 cm	30	Very grey and dark brown ashy deposit.	Fig 6.8
300	45,5 cm	12	Continuation of surface layer. Loose dark brown soil. Adjacent to locus 302 (ashy layer). Locus 300 was removed to expose the rest of locus 302.	Fig 6.9, Fig 6.10. Fig 6.11
302	49 cm	170	Loose light grey ash layer. This locus continues beneath locus 303. This locus marks the end of the excavation.	Fig 6.9 Fig 6.10, Fig 6.11
303	49 cm	45	Red-brown sterile soil. This locus was removed to expose the continuation of locus 302 in a northerly direction.	Fig 6.9, Fig 6.10, Fig 6.11

Figure 6.8: Surface of excavation Unit B.

Figure 6.9: Excavation Unit B with locus 300, 302 and 303 exposed.

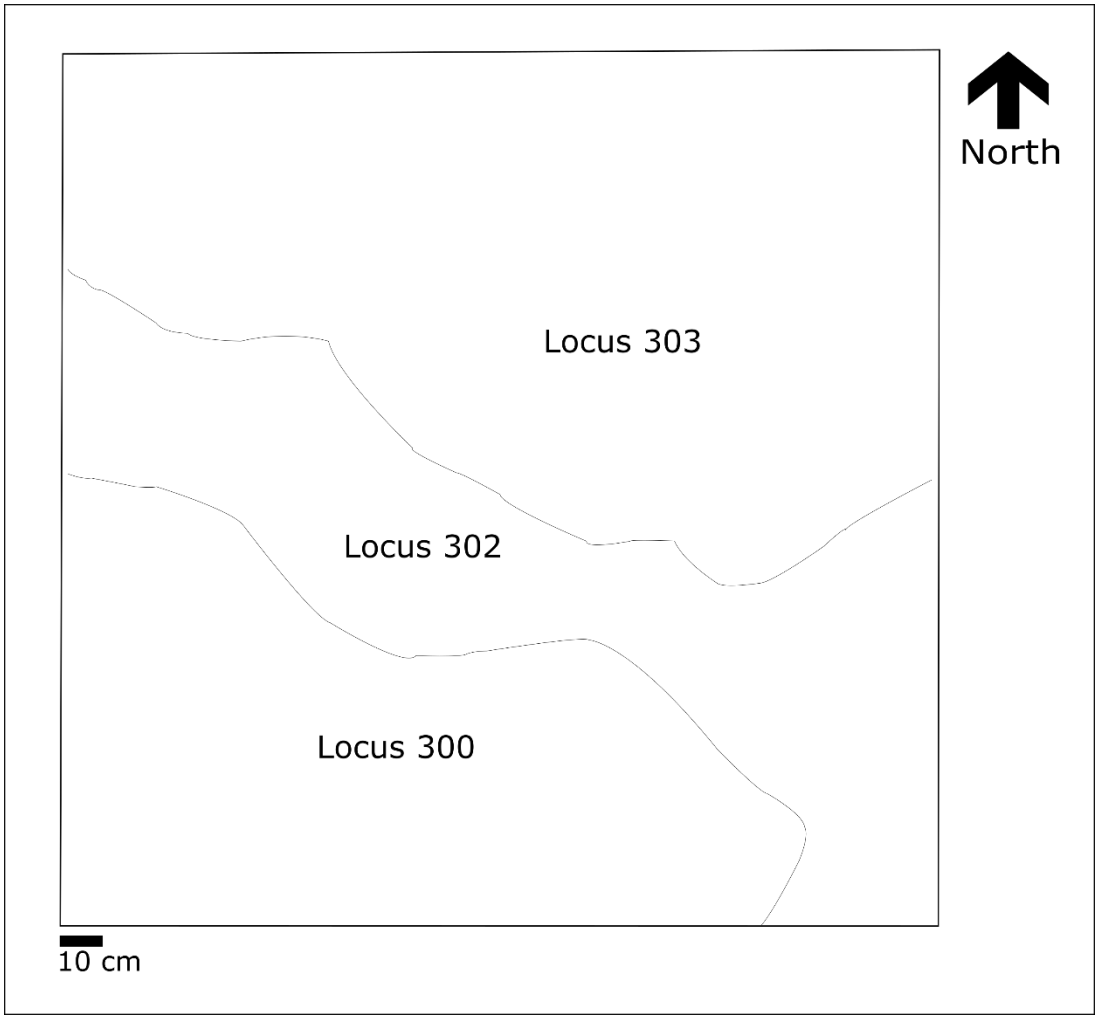


Figure 6.10: Plan of Unit B indicating Locus 300, 301 and 302.

Figure 6.11: Mid-excavation image of Locus 302 in Unit B.

Figure 6.12: Unit B end of excavation.

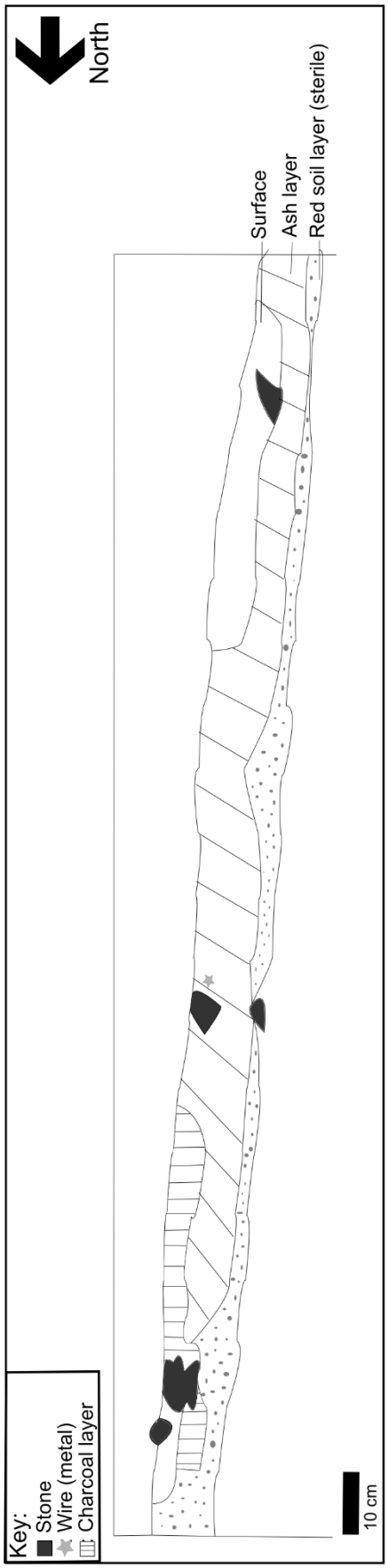


Figure 6.13: Section drawing of west wall (wall facing east) of Unit B.

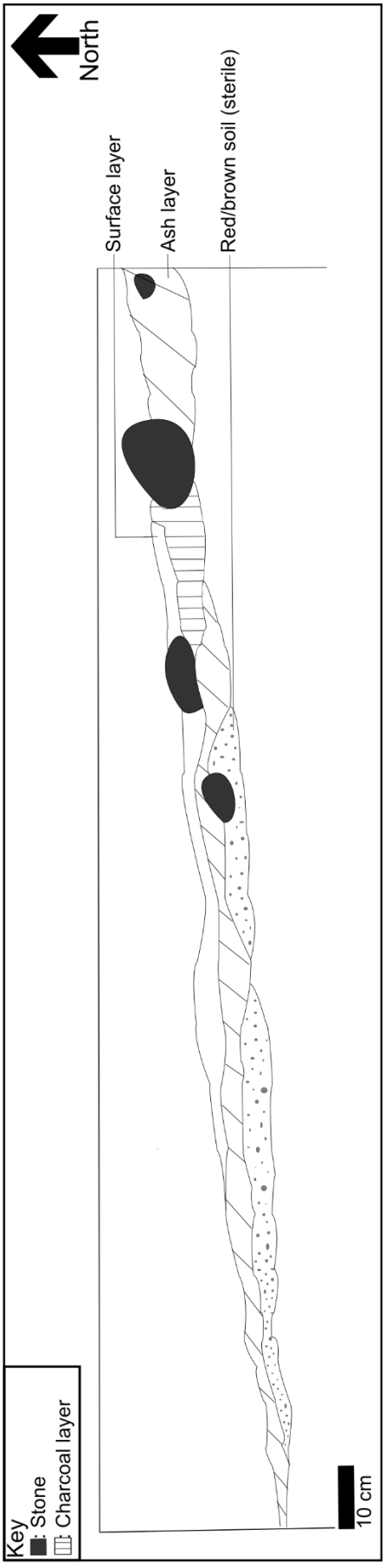


Figure 6.14: Section drawing of south wall (wall facing north) of Unit B.

6.3 Excavation Unit C (2x2m)

Location (GPS co-ordinates): S 22.38250 and E030.10361

Site grid coordinates: N1018.5 and E986

Datum: 101

Datum location (GPS co-ordinates): S22.225727 E30.6136

Because of the rich archaeological material and the grey ash in Unit B, it was decided to extend the grid with 2x2m in western direction (Fig 7.15 – Fig 7.21). This extension was referred to as Unit C.

The surface deposit was an ashy dark to light brown. Archaeological material on the surface before excavation began include metal, glass, ceramics, red bricks and pieces of concrete.

Table 6:3: Locus descriptions of Unit C.

Locus	**Elevation (cm) Below Datum**	**Buckets (Litre)**	**Description**	**Fig no**
Surface	28 cm	40	Very grey and dark brown ashy deposit.	Fig 6.15, Fig 6.16
305	28 cm	105	Dark ashy layer and is located in the south-east corner. It seems to be charred root remains and not necessarily a different event.	Fig 6.17, Fig 6.18
306	48 cm	405	Continuation of locus 302 in the adjacent unit, the same light grey ash deposit. In the northern half of the square there was a lens of surface wash which was dug through to reach ash again. Large charcoal deposits were present in this locus.	Fig 6.17, Fig 6.18

Excavation of the 2x2m unit was ended on the red-brown sterile soil (Fig 6.19). Based on evidence retrieved from excavation of the 2x2m unit and the 2x2m extension unit it is clear that it was a midden (Fig 6.20).

Figure 6.15: Surface of Unit C.

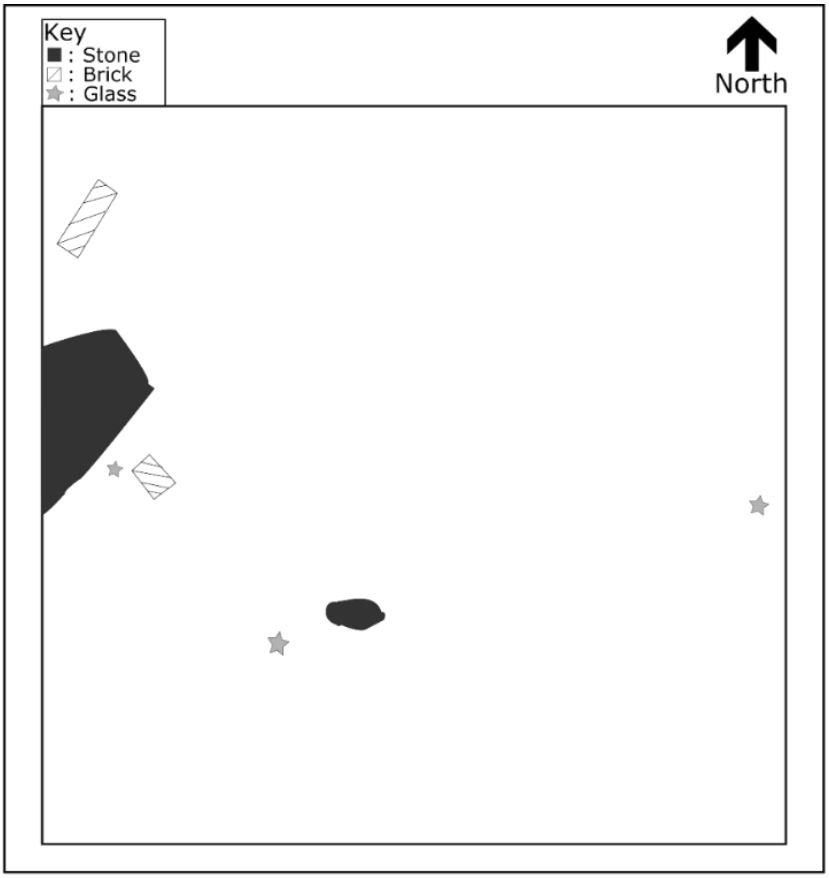


Figure 6.16: Plan of Unit C surface.

Figure 6.17: Locus 305 and 306 in Unit C.

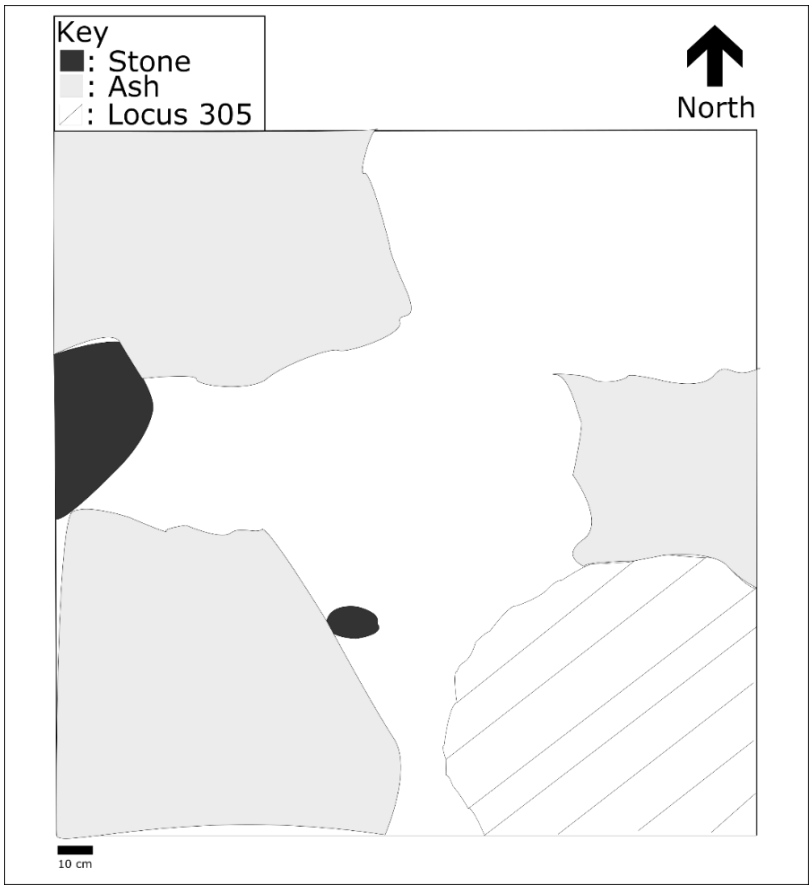


Figure 6.18: Plan of Locus 305 in Unit C.

Figure 6.19: Unit C end of excavation.

Figure 6.20: Both Unit B and Unit C at the end of excavation.

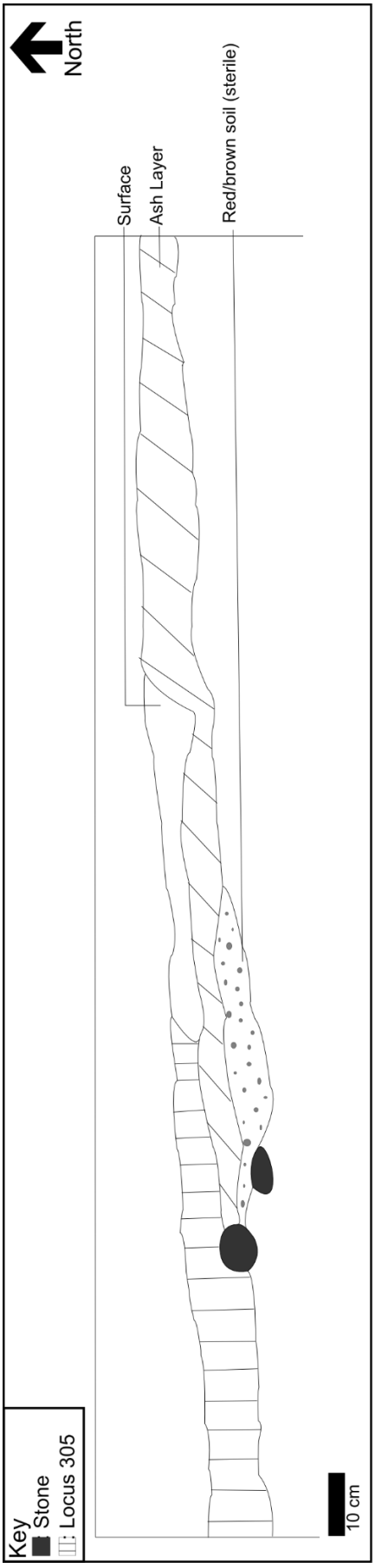


Figure 6.21: Section drawing of south wall (wall facing north) of Unit C.

6.4 Excavations in Building 1's Floor

It was decided to excavate a section of Building 1's floor (Area C) to investigate the architecture and the sequence of the building events.

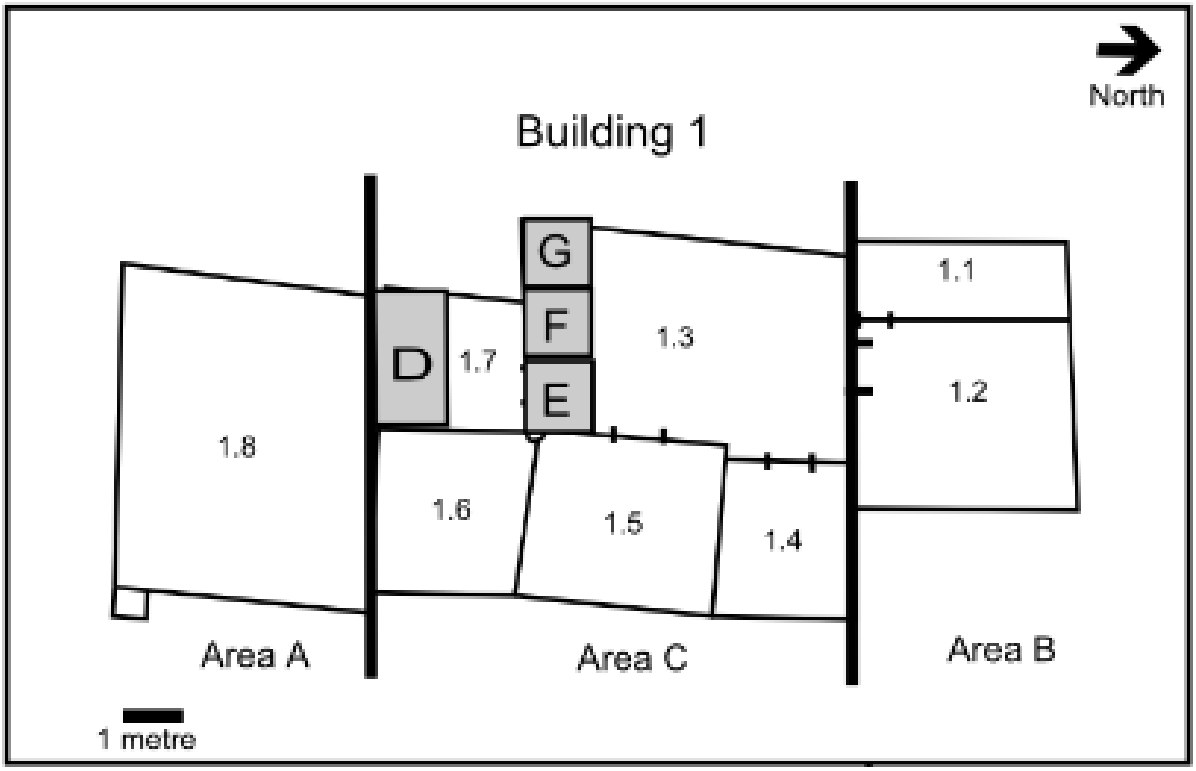


Figure 6.22: Image illustrating all the excavations located within Building 1's floor (Excavation Unit D, E, F and G.

6.4.1 Excavation Unit D (2x1m)

Location (GPS co-ordinates): S22.225718 E30.61386

Site grid coordinate: N1010.1 and E1007

Datum: 102

Datum location (GPS co-ordinates): S22.225726 E30.61384

Description of the excavation:

Unit D is a 2x1m excavation placed inside Building 1. (Fig 7.23 – Fig 7.34). This unit was opened to investigate the architecture of the Building 1 and to identify possible traces of alterations to the structure.

Table 6:4: Locus descriptions of Unit D.

Locus	Elevation (cm) Below Datum	Description	Feature	Fig no
Surface	22 cm	The surface was cleared. Surface contents included: rocks, leaves, small bushes and pieces of broken concrete.	Floor/ fill	Fig 6.24
307	26 cm	Yellow-red soil and was very compact. Includes rocks, concrete pieces and roots.	Floor/ fill	Fig 6.25
310	51 cm	High concentration of compacted rocks between 0.05 and 0.2m in size as well as several large rocks. Difficult to excavate because of compacted dirt and rocks.	Floor/ fill	Fig 6.26
320	62 cm	Large rocks and gravel. Ended on a natural layer, which was also the continuation of the soil on the outside of the building (west wall).	Floor/ fill	Fig 6.27
312	No elevation taken	Rectangular and made out of stone and mortar. The northern and eastern walls.	Wall	Fig 6.28 –Fig 6.32
314	No elevation taken	Rectangular and made out of brick and mortar. The northern wall.	Wall	Fig 6.33, Fig 6.34

The excavation ended on the natural layer which is a continuation of the soil from outside the wall on the northern side. Excavation of unit D was ended on the red-brown sterile soil (Fig 6.27).

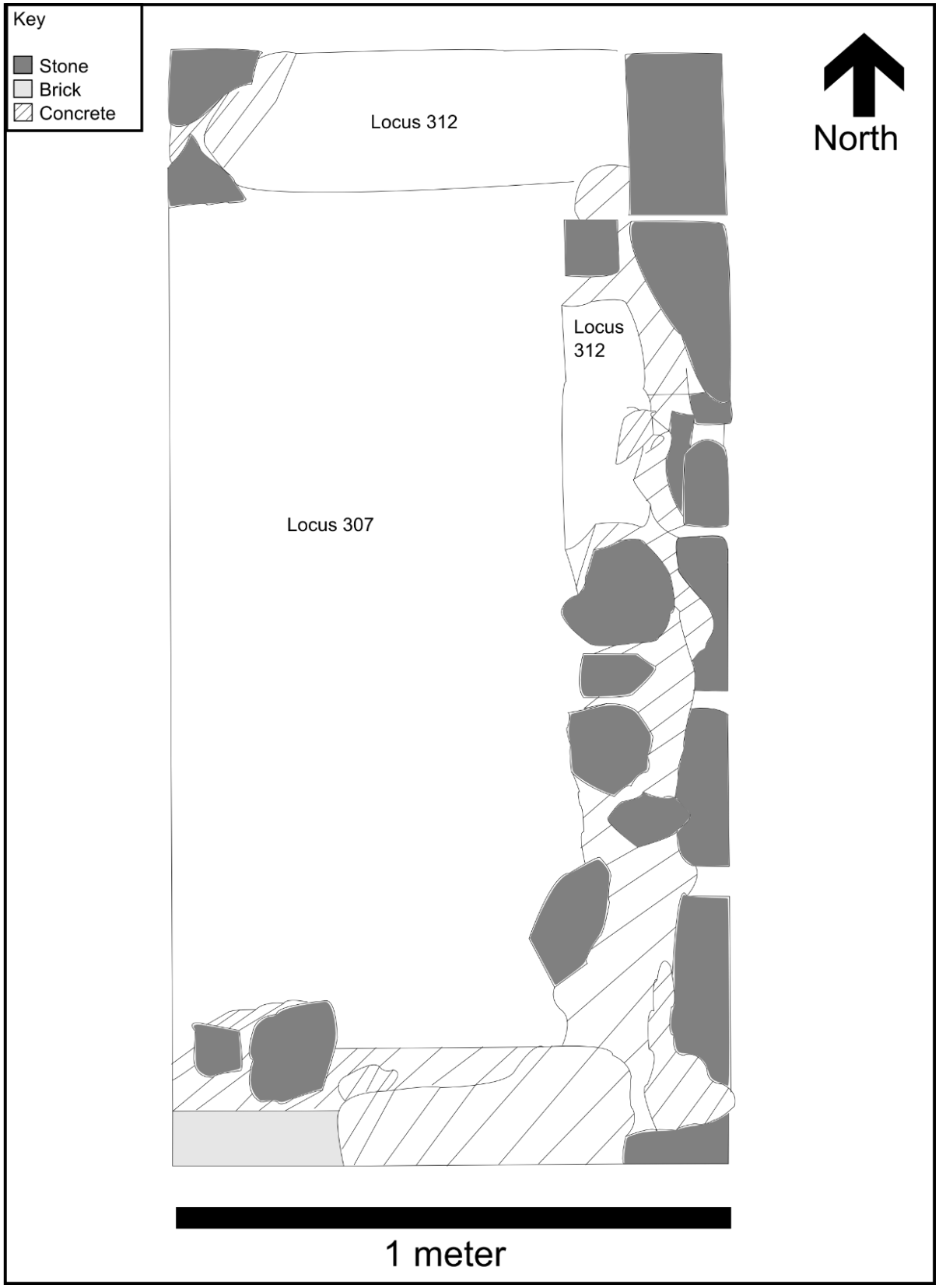


Figure 6.23: Plan of Unit D floor.

Figure 6.24: Unit D surface

Figure 6.25: Locus 307 in Unit D.

Figure 6.26: Locus 310 in Unit D.

Figure 6.27: End of excavation in Unit D.

Figure 6.28: Excavation of Unit D, eastern Wall (wall facing west).

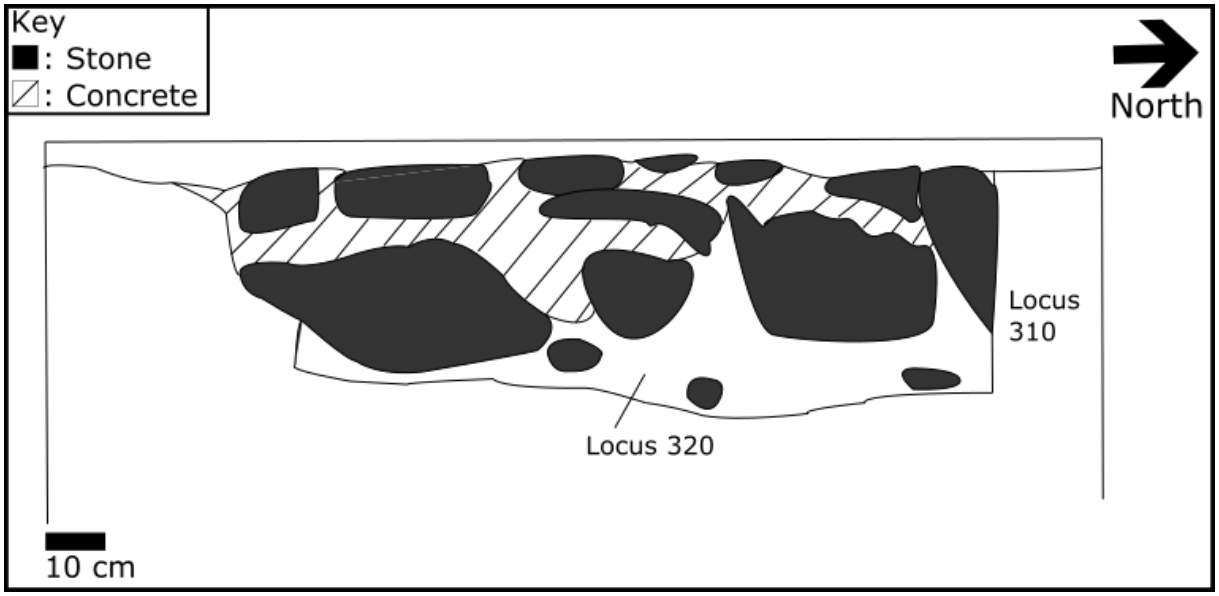


Figure 6.29: Section drawing of eastern wall (wall facing west) of excavation Unit D.

Figure 6.30: Unit D, southern wall (wall facing north).

Figure 6.31: Unit D, western wall (wall facing east).

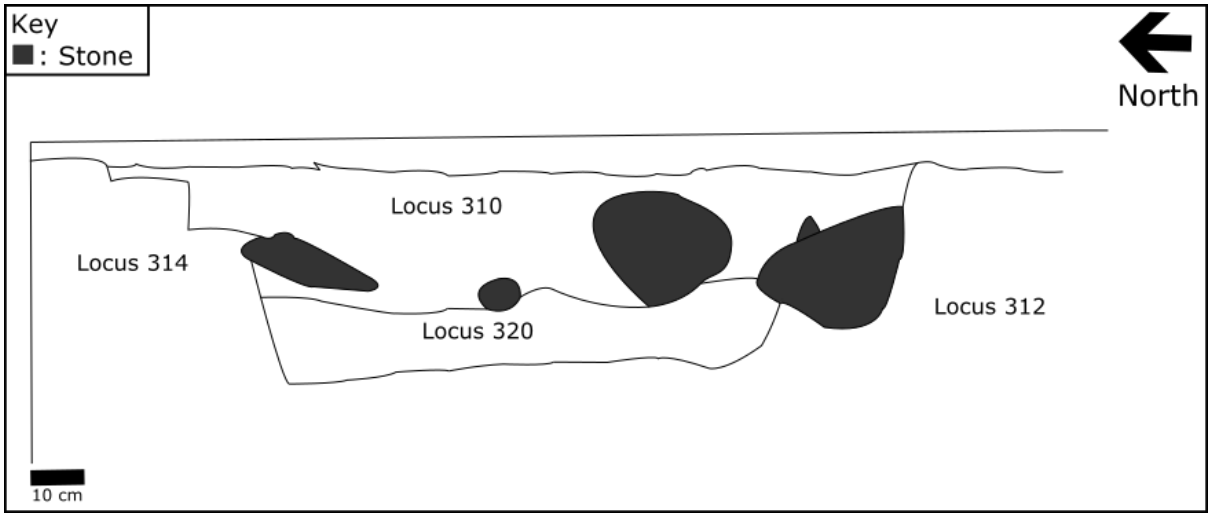


Figure 6.32: Section drawing of western wall (wall facing east) of excavation Unit D.

Figure 6.33: Unit D, northern wall (wall facing south).

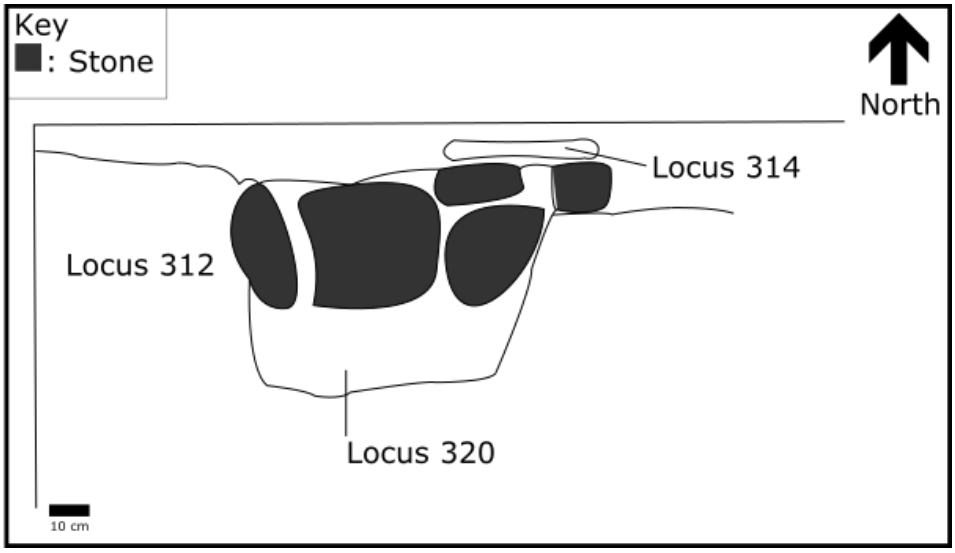


Figure 6.34: Section drawing of Northern Wall (wall facing south) of Unit D.

6.4.2 Excavation Unit E (1x1m)

Location (GPS co-ordinates): S22.225714 E30.61388

Unit: N: 1010.25 and E: 1009.1

Datum: 102

Datum location (GPS co-ordinates): S22.225726 E30.61384

Description of excavation:

This unit was opened to further investigate the architecture of the Building 1 and to see if there are any other traces of alterations to the structure.

Table 6:5: Locus descriptions of Unit E.

Locus	Elevation (cm) Below Datum	Description	Feature	Fig no
Surface	53 cm	The surface was cleared. Surface contents included: rocks, leaves, small bushes and pieces of broken concrete.	Floor/ fill	Fig 6.35
309	63 cm	Yellow-red soil deposit; loose but not as compacted as Unit A	Floor/ fill	Fig 6.42. Fig 6.43
316	56 cm	The northern wall is rectangular and made out of stone and mortar. The top of the wall is completely covered in mortar which could be a possible indication of concrete floor.	Wall	Fig 6.42. Fig 6.43

Unit E was extended towards the west to further investigate the architecture and sequence of the building structure. Thus, extending unit E towards/into Unit F.

Figure 6.35: Unit E surface.

6.4.3 Excavation Unit F (1x1m)

Location (GPS co-ordinates): S22.225712 E30.61401

Unit: N: 1009.25 and E: 1009.1

Datum: 102

Datum location (GPS co-ordinates): S22.225726 E30.61384

Description of excavation:

This unit was opened to further investigate the architecture of the Building 1 and to see if there are any other traces of alterations to the structure.

Table 6:6: Locus descriptions of Unit F.

Locus	Elevation (cm) Below Datum	Description	Feature	Fig no
Surface	48 cm	The surface was cleared. Surface contents included: rocks, leaves, small bushes and pieces of broken concrete.	Floor/ fill	Fig 6.36
311	60 cm	Same yellow-red soil as unit E. Locus 311 can be regarded the same as locus 309 due to no change in the loci.	Floor/ fill	Fig 6.37
313	47 cm	concrete floor in the south of the excavation grid. The floor is made out of concrete and its shape is irregular because it is cracked and broken in some areas	Floor/ fill	Fig 6.42. Fig 6.43
321	No elevation taken	Eastern side of the grid there is concrete with imprint of bricks (the frogs of the brick).	Floor/ fill	Fig 6.42. Fig 6.43
322	No elevation taken	The southern wall is rectangular and made out of stone and mortar.	Wall	Fig 6.42. Fig 6.43

The excavation was ended on sterile soil (red-brown) with a lot of rocks and pebbles visable (Fig 6.37).

Figure 6.36: Unit F surface.

Figure 6.37: Unit F end of excavation.

6.4.4 Excavation Unit G (1x1m)

Location (GPS co-ordinates): S22.225713 E30.61403

Unit: N: 1011.2 and E: 1009.2

Datum: 102

Datum location (GPS co-ordinates): S22.225726 E30.61384

Description of the excavation:

Unit G is located outside and adjacent to Building 1. Material on the surface before excavation began include wall plaster and other building materials such as grey bricks, concrete and mortar. This excavation unit was opened to investigate whether there are any differences with regards to the inside and outside architecture of the building.

Table 6:7: Locus descriptions of Unit G.

Locus	Elevation (cm) Below Datum	Description	Feature	Fig no
Surface	60 cm	The surface was cleared. Surface contents included: rocks, leaves, small bushes and pieces of broken concrete.	Floor/ fill	Fig 6.38
308	64 cm	Loose soil and has a brown-grey ash discolouration.	Floor/ fill	Fig 6.39
315	68,5 cm	New locus opened due to change in soil colour; changed from brown-grey ash to red-brown soil. More rocks appeared in this locus as went deeper, appeared to be a natural rock layer. Discovered a large flat metal plate. End of excavation.	Floor/ fill	Fig 6.40, Fig 6.41
317	60 cm	Pieces of concrete located on the southern wall.	Floor	Fig 6.42, Fig 6.43
318	57 cm	The east wall is rectangular and made out of grey brick and mortar.	Wall	Fig 6.42, Fig 6.43
319	63 cm	Fragment of concrete within the locus, they differ in consistency from those located in locus 317.	Floor	Fig 6.42, Fig 6.43

Figure 6.38: Unit G surface.

Figure 6.39: Unit G showing the large flat metal plate.

Figure 6.40: Locus 315 in Unit G (bottom unit).

Figure 6.41: Unit G end of excavation (bottom unit).

Figure 6.42: Unit E, F and G at the end of excavation.

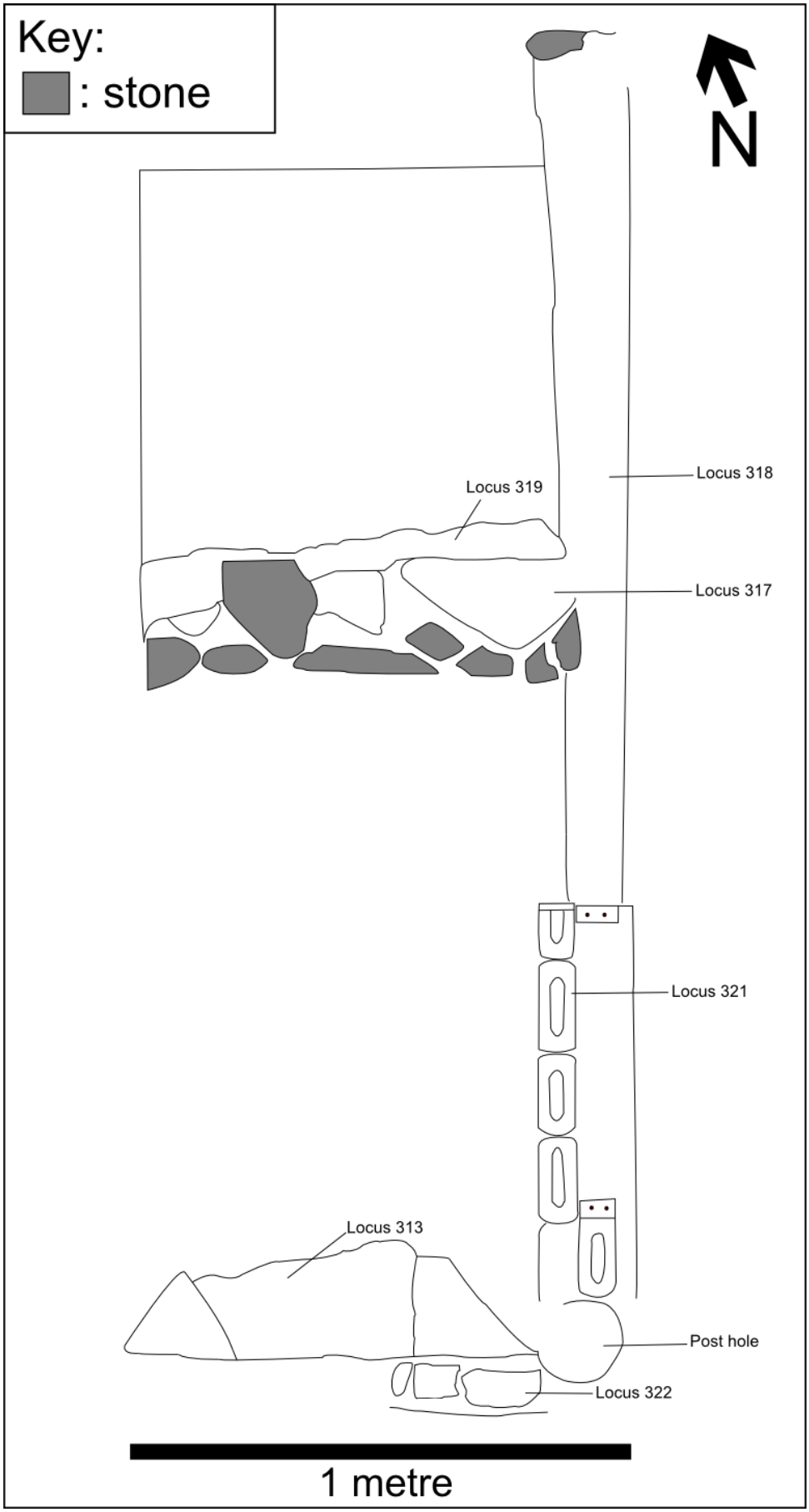


Figure 6.43: Plan of Units E, F and G at the end of the excavation.

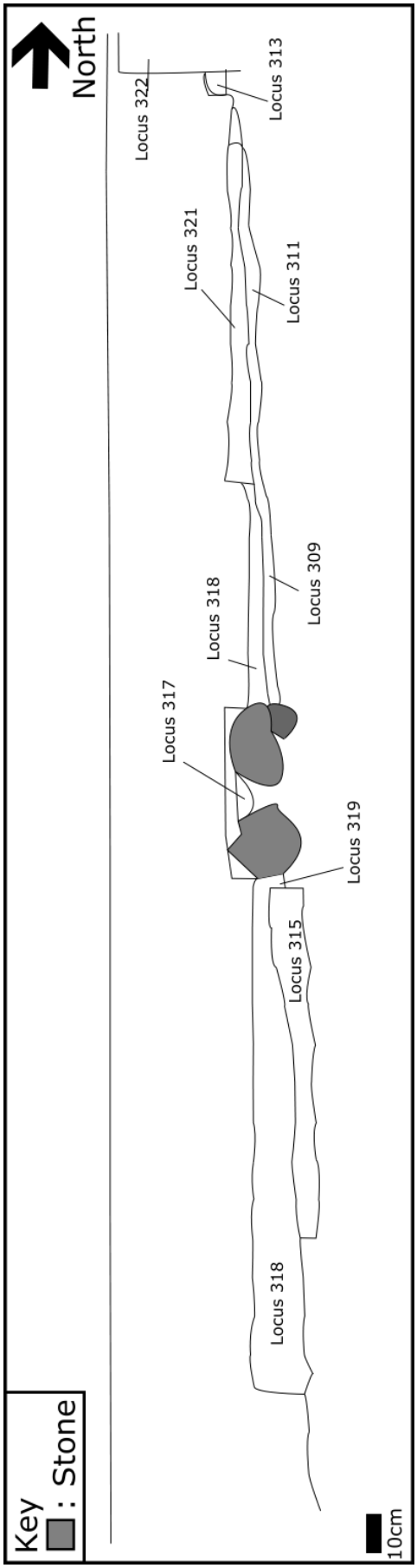


Figure 6.44: Section drawing of Unit- E, F and G. East wall (west facing section).

Chapter 7 : Analysis of Artefact Assemblage at MNR211

Description of the artefact assemblages will focus on quantifying types, assigning forms and function, and identifying chronological makers of types (c.f. Zachariou 2017). Minimum number of individuals (MNI) and minimum number of vessels (MNV) will be presented for ceramics and glass, and only MNI will be presented for metal. This was done due to the nature of the artefacts and the type of classification system that was created by the author.

7.1 Assemblages from Surface Collections and Excavations

Initial surveys identified a dense scatter of material on the surface, primarily at and around the structures, becoming less and less moving further away. The densest area of surface material was associated with the excavated middens. Among all the material located on the surface, metal artefacts are the most common followed by glass and then ceramic artefacts. Many of the glass artefacts recovered across the site were almost complete in vessel form, this is especially true for glass bottles. Just a few of these artefacts were located on the surface of Building 1 and Building 2, in addition to building rubble. Due to the nature of the concrete floors it is possible that the artefacts could have been washed away more rapidly than other floors made from dung or soil, thus explaining the absence of contemporary artefacts.

Table 7:1: Summary of artefact assemblage from surface collection (MNI).

Surface Collection Artefact Assemblage	
Type (material) of Artefact	**MNI**
Ceramics	17
Glass	90
Metal	57

The excavations presented a range of different artefacts, among which metal was the most abundant. Both middens and the excavations within Building 1's floor points to the domestic and industrial activities. The artefact assemblage suggests that excavation units A, B and C were possible middens, due to the broken and discarded nature of the artefacts and the presence of fire damage to some of the artefacts, as well as the grey and loose (ashy) nature of the soil.

The artefact assemblage retrieved from the excavations in Buildings 1's floor is very limited, although it contains a variety of artefacts (e.g. glass and metal). These artefacts likely postdate

the abandonment of the site. These items, as well as the evidence of fires being made on the floor of Building 1, is suggestive of activities in the structure well after abandonment.

Table 7:2: Summary of artefact assemblage from excavations (MNI).

Artefact Assemblage from Excavations	
Type (material) of Artefact	**MNI**
Ceramics	60
Glass	226
Metal	356
Plastic	3
Rubber	24
Unidentified	200+

As ceramic, glass and metal are the most abundant artefacts from MNR211 and easily categorised, focus will be on these three artefact types. All other artefacts will be discussed within the miscellaneous category. Although all the artefacts retrieved from MNR211 is not included in the analysis as they were either unidentified or could not be include in the tables representing information.

7.2 Ceramic Artefact Analysis

A total of 77 ceramic fragments were recovered from the middens and surface collections. The majority, 60 were recovered from excavations. The ceramic analysis will present information on the ware type and decoration on the ceramics, followed by vessel form and function (Klose & Malan (2009: 24 - 28), UCT Ceramics Handbook (2014) and Zachariou (2017).

7.2.1. Ware type

There are two primary ware types of ceramics present at MNR211, earthenware and porcelain, and within these ware types sub-categories were created.

Table 7:3: Ware type of ceramics at MNR211.

Ware type	MNI	MNV
Course Earthenware:		
African	1	1
Red ware	2	1
Refined Earthenware (REW):		
White-bodied REW	71	11
Porcelain:		
European porcelain	3	1

- *Course Earthenware*

Porous clay bodies with visible inclusions usually characterize coarse earthenware. Most are grey-to-red-to-brown in colour, with some exceptions (DAACS 2015: 11). Three course earthenware sherds were identified (Fig 7.1 and Fig 7.2).

A single Iron Age ceramic (Fig 7.1), was collected from the surface while doing surveys. No other artefacts associated with the Iron Age were discovered.

Figure 7.1: Course earthenware ceramic (Iron Age time period).

Figure 7.2: Course earthenware ceramic which is classified as red ware (terracotta).

- *Refined Earthenware (REW)*

REW is harder and denser than coarse earthenware, and mostly have only a few inclusions in their paste. The body is generally cream-colored to white and lead glazed (DAACS 2015: 11). 71 REW sherds were identified (Fig 7.3 and Fig 7.4).

Figure 7.3: Refined earthenware ceramic (rim-sherd).

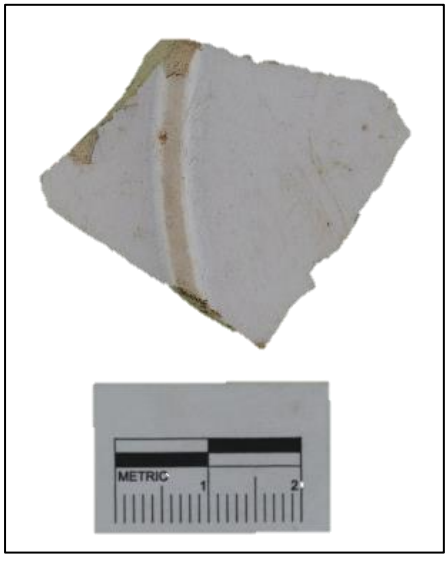


Figure 7.4: White-bodied refined earthenware ceramic (part of a foot-ring).

- *Porcelain*

Porcelain is a hard, dense, high fired, non-porous ceramic. White to white-grey in colour, fine texture body, and translucent in thin section and usually glazed (Klose and Malan 2009: 4). Three porcelain sherds were identified (Fig 7.5).

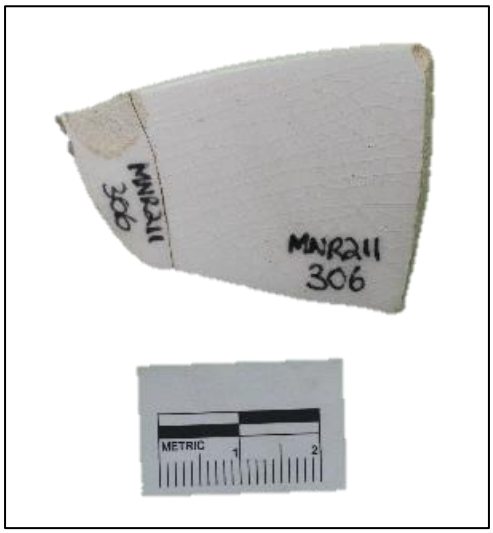


Figure 7.5: Porcelain ceramic which is classified as European porcelain (rim-sherd).

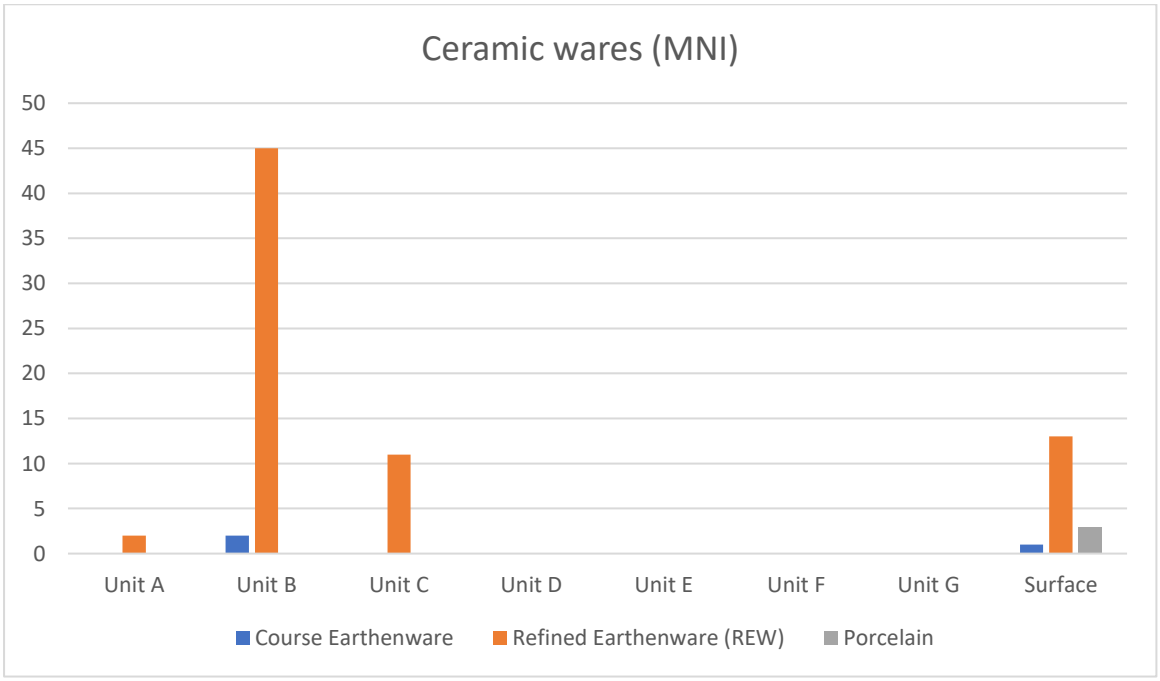


Figure 7.6: Graph illustrating the different ceramics wares from MNR211.

7.2.2. Decoration

There are four different types of decoration recorded at MNR211. The decorations are present on different types of ware type sherds and vessel forms.

Table 7:4: Decoration on ceramics at MNR211.

Decoration	MNI	MNV
Enamelled	6	4
Lined	3	2
Moulded	4	1
Transfer-printed	7	3
Undecorated	51	4

- *Enamelled decoration*

Enamelled ceramics are decorated with coloured enamels applied on top of a fired glaze. Most enamels are coloured, low-fired lead glazes and thickly painted enamels can be seen or felt on top of the glaze (Klose and Malan 2014: 24) (Fig 7.7 and Fig 7.8).

Figure 7.7: Example of overglaze enamel decoration on a REW ceramic.

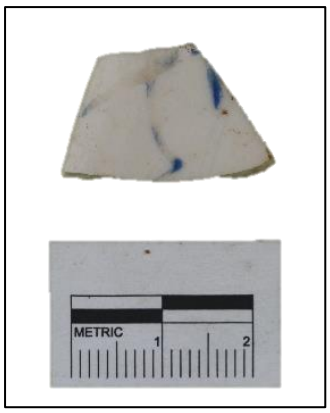


Figure 7.8: Example of overglaze enamel decoration on a REW ceramic (rim-sherd).

- *Lined decoration*

These terms describe ceramics decorated around or on the rim with wide lines (bands) and / or narrow lines; either painted (underglaze) or enamelled or printed (overglaze) (Klose and Malan 2014: 27) (Fig 7.9 and Fig 7.10).

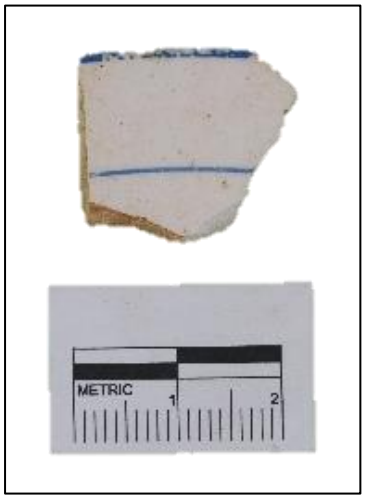


Figure 7.9: Example of a lined decoration on a REW ceramic (rim-sherd).

Figure 7.10: Example of a lined decoration on a REW ceramic (rim-sherd).

- *Moulded decoration*

Moulded decoration was formed by pressing clay into moulds with decorated edges (Klose and Malan 2014: 26) (Fig 7.11).

Figure 7.11: Example of a moulded porcelain ceramic (rim-sherd).

- *Transfer-printed decoration*

Ceramics are printed by the transfer of preformed decoration or pattern onto the surface of a ceramic using a ceramic pigment. Several distinct techniques are used for printing (Klose and Malan 2014: 24) (Fig 7.12 – Fig 7.14).

Figure 7.12: Example of black and green transfer-printed decoration on a REW ceramic (rim-sherd).

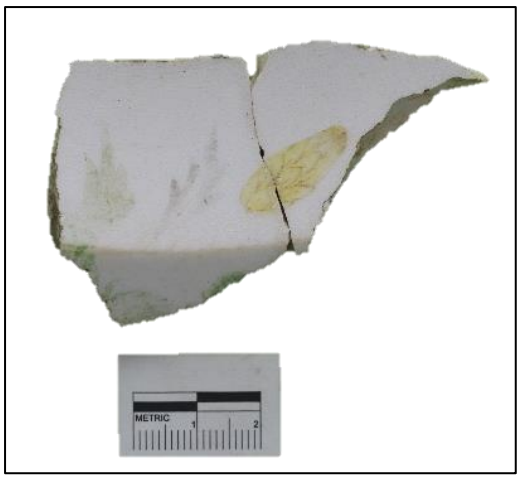


Figure 7.13: Example of a black, green and yellow transfer-printed decoration on a REW ceramic.

Figure 7.14: Example of black transfer-printed decoration on REW ceramic (possibly part of a lug).

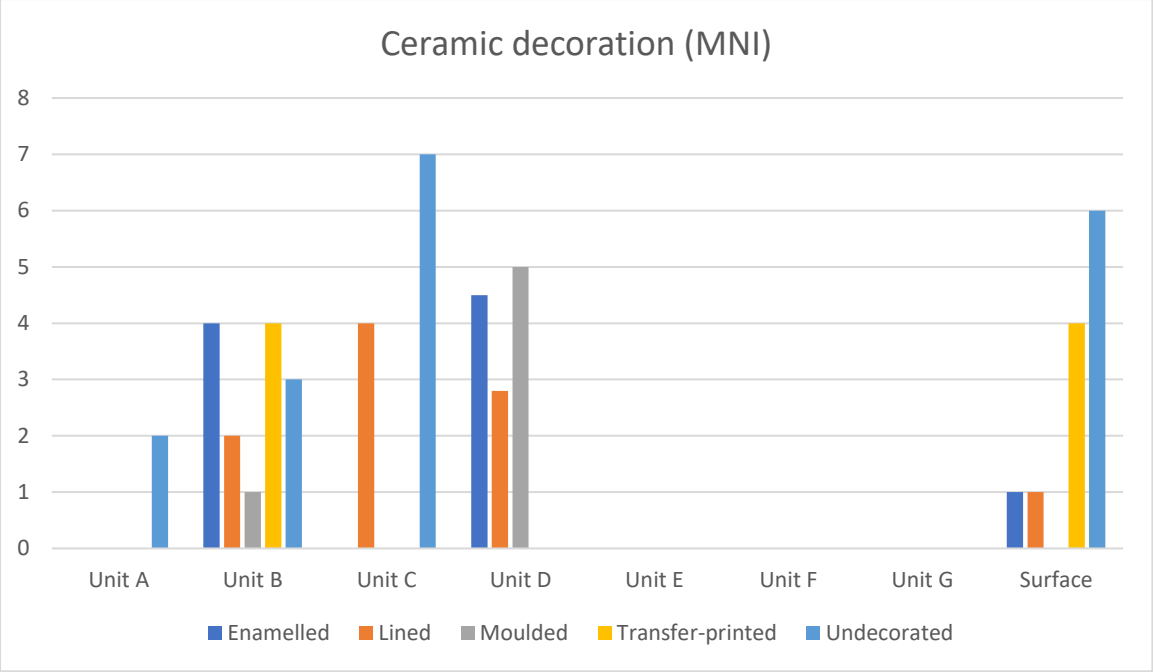


Figure 7.15: Graph illustrating the different decoration found on ceramics from MNR211.

7.2.3. Vessel form

Vessel form can be identified broadly as either flatware (which includes plates or saucers) or hollowware (which include cups or bowls (Fig 7.16).

Table 7:5: Vessel form of ceramics at MNR211.

Vessel Form	MNI	MNV
Flatware:		
Plates	6	4
Saucers	7	1
Hollowware:		
Bowls	3	1
Cups	11	4
Jugs	2	1

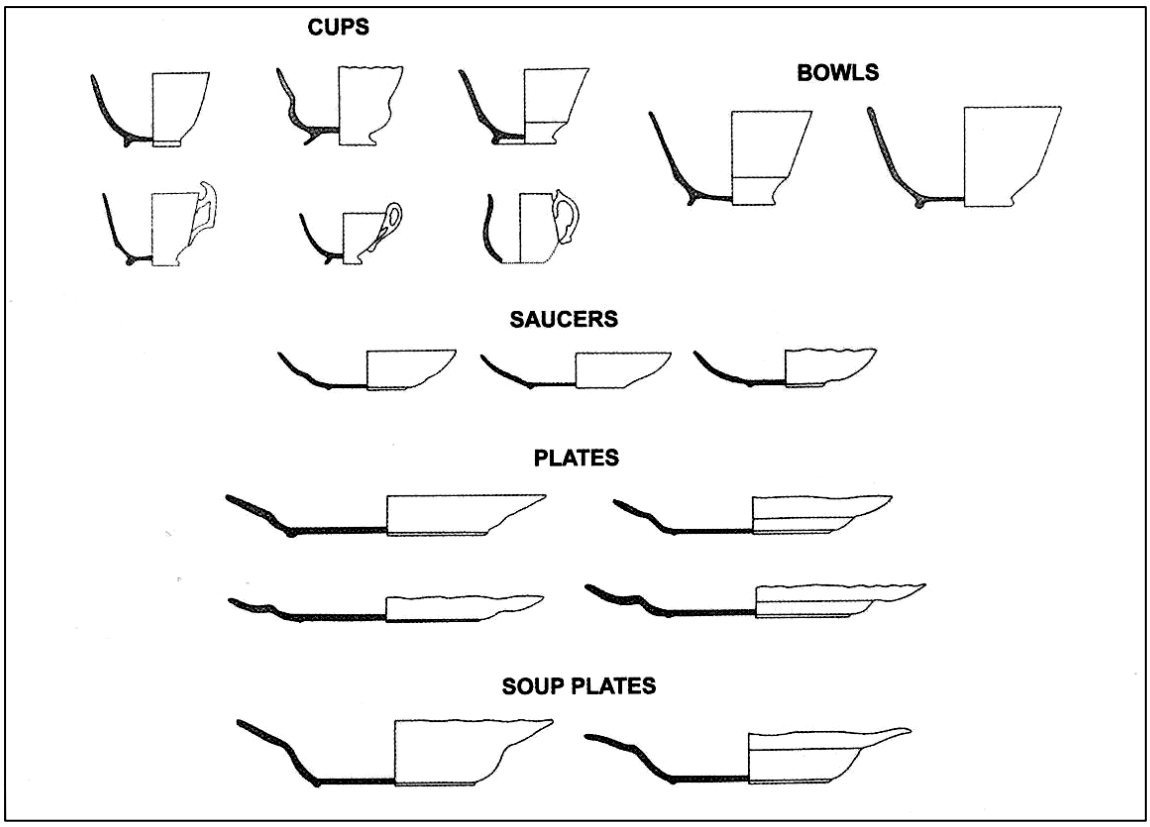


Figure 7.16: Examples of different vessel forms (Klose and Malan 2009).

- *Flatware*

Ceramic flatware vessels include plates and saucers. Four plates and one saucer were identified (Fig 7.17 – Fig 7.19).

Figure 7.17: Example of REW flatware ceramic with no decoration (saucer).

Figure 7.18: Example of REW flatware ceramic, no decoration (small plate).

Figure 7.19: Example of REW flatware ceramic, no decoration (small plate).

- *Hollowware*

Ceramic hollowware vessels include bowls, cups and jugs. One bowl, four cups and one jug were identified (Fig 7.20 and Fig 7.21).

Figure 7.20: Example of a bowl (REW ceramic with no decoration).

Figure 7.21: Example of the handle of a small cup, possibly a teacup (porcelain ceramics with green-lined decoration on the handle).

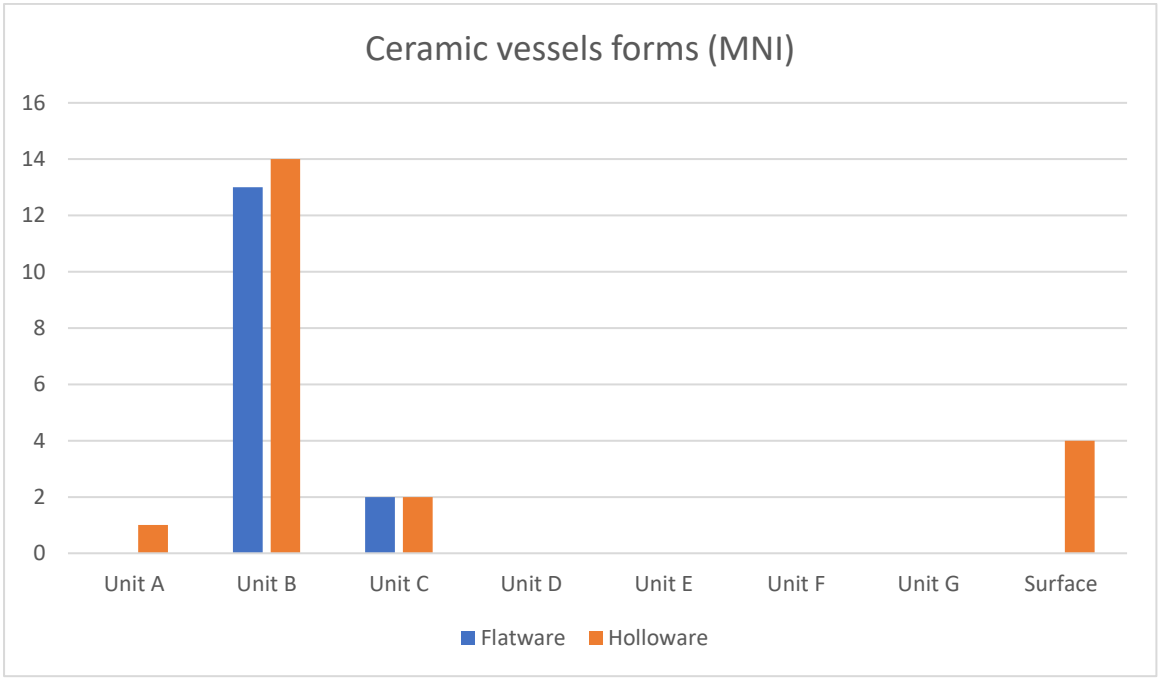


Figure 7.22: Graph illustrating the different ceramics vessel forms from MNR211.

7.2.4. Vessel function

Vessel function for items from MNR211 includes tableware or tea ware.

Table 7:6: Vessel function of ceramics at MNR211.

Vessel Function	MNI	MNV
Tableware	16	6
Tea ware	18	5

7.2.5. Makers marks (ceramics)

There are five different ceramics all with different makers marks, which are all located on the base of the ceramics. This includes ceramics of course earthenware, REW and porcelain. Only the redware (terracotta) ceramic's makers mark was identified, '…ADE IN…', possibly 'MADE IN CHINA'. It was not possible to identify the other makers marks on the ceramic vessels. All the ceramics with makers marks were discovered on the surface, except for the terracotta ceramic (Fig 7.27) which was retrieved from Unit B's excavations.

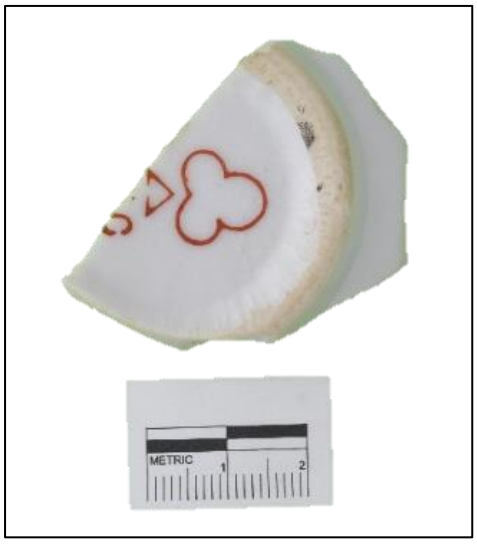


Figure 7.23: Makers mark on a porcelain ceramic (a stylised clover (club) symbols and letters on the base of the ceramic). Retrieved from the surface near Unit A.

Figure 7.24: Makers mark on a REW ceramic (red ship with sails and mast visible on the base of the ceramic). Retrieved from the surface near Unit A.

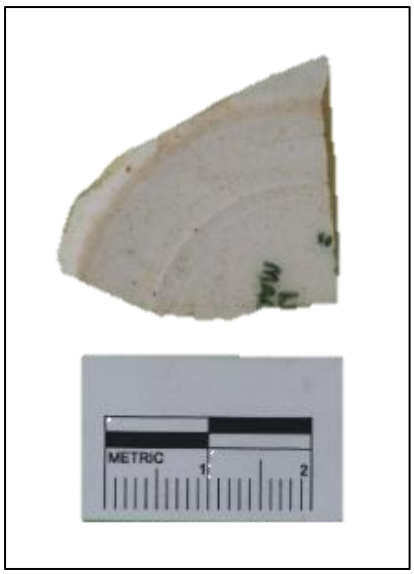


Figure 7.25: Makers mark on a REW ceramic (green letters on the base of the ceramic). Retrieved from surface of Building 1.

Figure 7.26: Makers mark on a REW ceramic (green letters and a possible crest on the base of the ceramic). Retrieved from surface of Building 1.

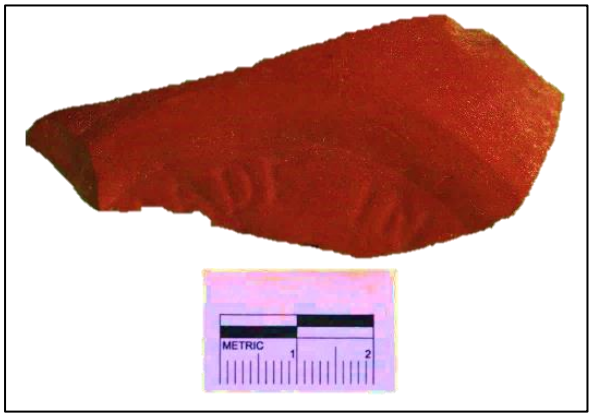


Figure 7.27: Makers mark on a course earthenware/redware (terracotta) ceramic with the words 'ADE IN' on the base of the ceramic.

The most common ware type of the ceramics from MNR211 is REW (n= 71), followed by coarse earthenware (n= 3) and porcelain (n= 3). Although there are different types of decoration the most common is transfer-printed decoration (n = 7). The flatware (plates and saucers) and hollowware (bowl, cups and jug) points to domestic activities at MNR211.

7.3. Glass Artefact Analysis

A total of 316 glass pieces were retrieved from surveys and excavations. The glass artefact analysis will present information on the colour of the glass and decoration on the glass, followed by vessel form and function (Digital Archaeological Archive of Comparative Slavery (DAACS) (2018), Lastovica (1990) and Van Vollenhoven & Pelser (2001)). Other pieces of glass (e.g. beads, marbles, phials and window glass) will be discussed separately.

7.3.1. Colour

Seven different colours of glass were retrieved from MNR211's excavations and surface collections.

Table 7:7: Colours of glass at MNR211.

Glass Identifying Category	MNI	MNV
Colour		
Amethyst (light purple)	12	1
Clear/Colourless	147	11
Brown	28	5
Blue (cobalt)	2	1
Blue (medium)	14	2
Opaque (milk-glass)	14	2
Yellow	1	1

- *Amethyst glass (light purple)*

Figure 7.28: Example of an amethyst (light purple) glass piece.

- *Colourless/clear glass*

Figure 7.29: Example of a colourless/clear glass piece.

- *Brown glass*

Figure 7.30: Example of a brown glass piece.

- *Blue (cobalt) glass*

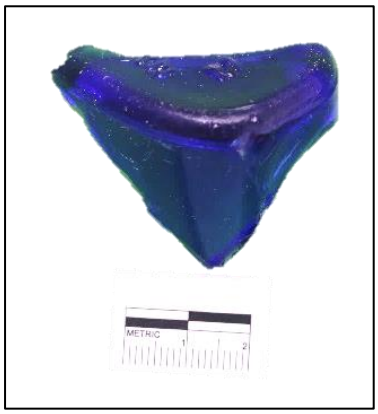


Figure 7.31: Example of a blue (cobalt) glass piece.

- *Blue (medium) glass*

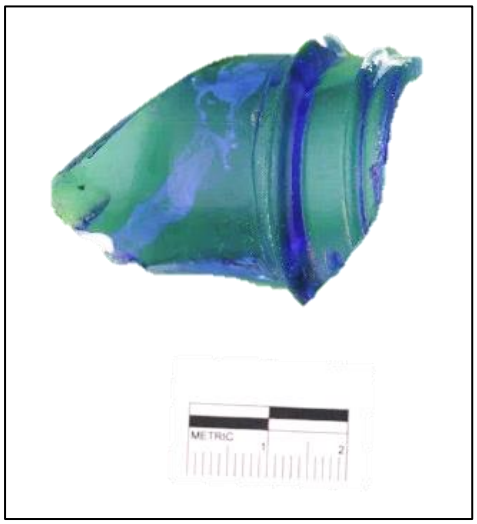


Figure 7.32: Example of a blue (medium) glass piece.

- *Opaque (milk-glass)*

Figure 7.33: Example of an opaque (white milk-glass) piece.

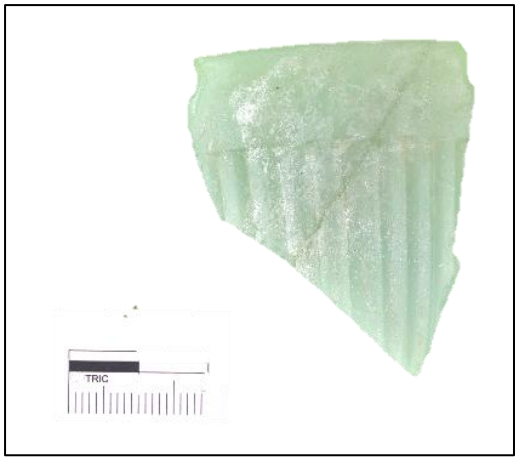


Figure 7.34: Example of an opaque (green milk-glass) piece.

- *Yellow glass*

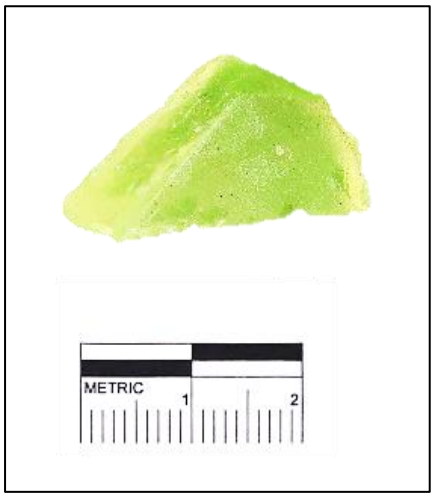


Figure 7.35: Example of a yellow glass piece.

7.3.2. Decoration

There are four different types of decoration on different glass pieces, which includes different colour glass and vessel forms.

Table 7:8: Decoration on glass at MNR211.

Decoration	MNI	MNV
Enamelled	1	1
Feathering	2	1
Moulded	27	4
Rock inclusions	4	1

- *Enamelled*

Enamelled decoration on glass (Fig 7.36).

Figure 7.36: A clear/colourless glass bottle with makers mark (Sparletta) in enamel and complete in vessel form.

- *Feathering*

Feathering decoration usually occurs on the rim of glass vessels (Fig 7.37).

Figure 7.37: Example of a white opaque/milk-glass piece with feathering decoration.

- *Moulded*

Moulded decoration on glass is referred to glass vessels pressed into moulds (Fig 7.38 and Fig 7.39).

Figure 7.38: Example of a green opaque/milk-glass piece with moulded decoration.

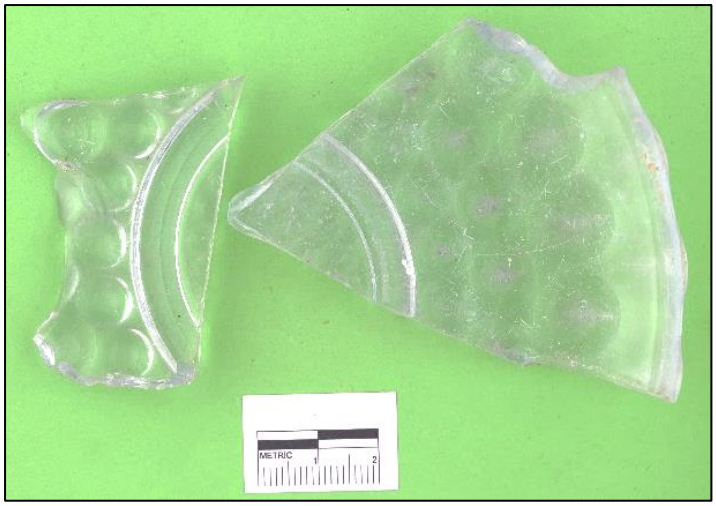


Figure 7.39: Example of a clear/colourless glass piece with moulded decoration.

- *Rock inclusions*

Rock inclusion decoration on glass is referred to glass pieces with small inclusions of rock within the glass (Fig 7.40).

Figure 7.40: Example of an amethyst glass piece with rock inclusions decoration.

7.3.3. Vessel form

Vessel form can be identified broadly as either flatware (which includes plates or saucers) or hollowware (which include cups or bowls).

Table 7:9: Vessel forms of glass at MNR211.

Vessel Form	MNI	MNV
Flatware:		
Plates	26	3

Hollowware:		
Bottles	20	9
Containers/Condiments	16	5
Pots	11	1

- *Flatware*

Glass flatware vessels include plates and saucers that were identifiable (Fig 741 – Fig 7.43).

Figure 7.41: Example of an opaque/milk-glass flatware glass piece (plate) with feathering decoration.

Figure 7.42: Example of an amethyst flatware glass piece (plate).

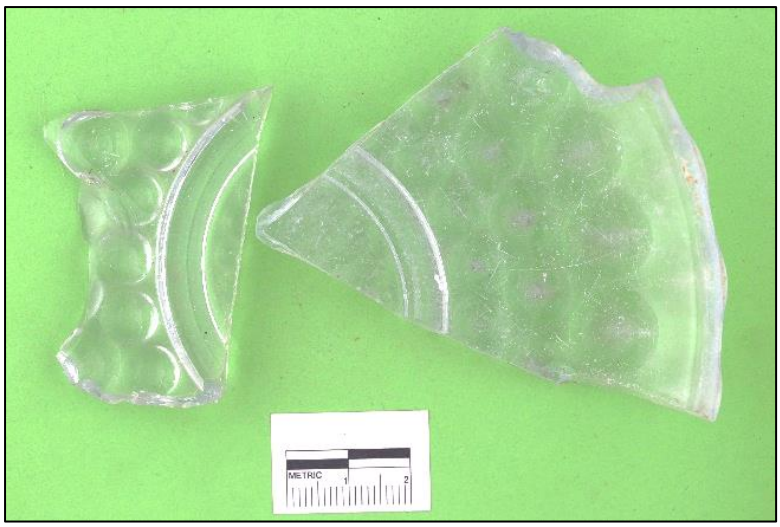


Figure 7.43: Example of a clear/colourless flatware glass piece (saucer) with moulded decoration.

- *Hollowware*

Glass flatware vessels include bottles, containers and pots that were identifiable (Fig 7.44 – Fig 7.48).

Figure 7.44: Example of a green opaque/milk-glass hollowware glass piece (possible small flower pot or decorative pot).

Figure 7.45: Example of a clear/colourless hollowware glass piece (possible condiments container).

Figure 7.46: Example of a clear/colourless hollowware glass piece (possible medicine or poison bottle) complete in vessel form.

Figure 7.47: Example of a brown hollowware glass bottle complete in vessel form (Castle Beer bottle from the 1970/1980 and manufactured by SA Brewery).

Figure 7.48: Example of a clear/colourless hollowware glass piece (part of the top and neck of the bottle), there is still residue left of the metal bottle cap. The screw top indicates 20th century origin.

7.3.4. Vessel function

The vessel function includes consumption, containers, pharmaceutical and tableware.

Table 7:10: Vessel function of glass at MNR211.

Vessel Function	MNI	MNV
Consumption (food and drink)	62	17
Decorative	23	2
Pharmaceutical/Medical	17	3
Tableware	26	3

7.3.5. Makers marks (glass)

There are 17 different glass pieces all with different makers marks, some are located on the base of the glass others on the body of the glass. Some of the makers marks were identified and some were not. The most common makers mark is 'Talana' (Fig 7.49 – Fig 7.51). Talana was a glass manufacturing factory that was active during the 20th century. The factory was opened in 1906 in Dundee in KwaZulu-Natal, South Africa and was at first called Union Glass, then Talana and eventually Consol Glass. The factory is no longer operational but a museum still exists today, presenting exhibits of historic glass. Other makers marks include 'MADE IN USA' (Fig 7.52), 'PROPERTY…PTY LTD' (Fig 7.53), 'PRETORIA' (Fig 7.54), 'CHESEBOROUGH' (Fig 7.55), 'MONIS' (Fig 7.56) and 'SPARLETTA' (Fig 7.57). All of these makers marks date to the early to mid-20th century.

Figure 7.49: Clear/colourless glass bottle base with makers mark (Talana).

Figure 7.50: Clear/colourless glass bottle base with makers mark (Talana).

Figure 7.51: Brown glass bottle base with makers mark (Talana and date: 1995).

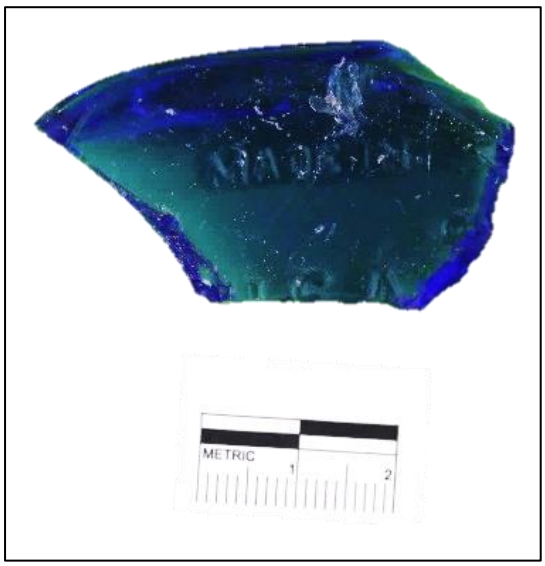


Figure 7.52: Blue (cobalt) glass bottle base with makers mark (made in USA).

Figure 7.53: Clear/colourless glass piece with makers mark.

Figure 7.54: Clear/colourless glass bottle base with makers mark (Pretoria).

Figure 7.55: Clear/colourless glass piece with makers mark.

Figure 7.56: Clear/colourless glass bottle with makers mark (Monis).

Figure 7.57: Clear/colourless glass, front and back, of the bottle with makers mark (Sparletta) in enamelled decoration on the body of the glass bottle.

7.3.6. Glass beads

There are nine different types and colours of beads retrieved from surveys and excavation at MNR211. The colours of the beads include: blue, clear/colourless, green, opaque (milk-glass), orange and red. The beads date to both the Iron Age and historical period (Fig 7.58 and Fig 7.58), and all have varying degrees of perforation through them.

Table 7:11: Glass beads from MNR211

Bead No	Colour	Shape	Historical Period	Iron Age Period
Bead MNR01	Green	Multiple facets	X	
Bead MNR02	Red	Multiple facets	X	
Bead MNR03	Orange	Multiple facets	X	
Bead MNR04	Blue	Round/circular	X	
Bead MNR05	White (milk-glass)	Six-point star	X	
Bead MNR06	Colourless/Clear	Annular	X	
Bead MNR07	Red	Oval	X	
Bead MNR08	Blue	Oval		X
Bead MNR09	Blue	Tube		X
Bead MNR10	Red	Tube		X

Only a photo of one bead (Fig 7.58 and Fig 7.58) was included due to the difficult nature of photographing the smaller and more fragile beads.

Figure 7.58: Example of an orange glass bead (broken into four pieces, evidence of line of perforation in the middle of the bead).

Figure 7.59: Example of an orange glass bead (glued back together).

7.3.7. Other glass objects

The other examples of glass retrieved from MNR211 include a small glass phial (Fig 7.61) which could have been used for medicinal purposes. A small glass ball (Fig 7.62) which could possibly be a marble was retrieved from excavations. It could represent children at the site or even that the miners played a game with glass marble balls as a means of entertainment. But the glass ball could also have been part of a Codd-neck bottle that was used in old carbonated drinks soda bottles to keep the pressure in place (Munsey 2010). Some straight flat window glass (Fig 7.63) measuring 2.14mm thickness was also retrieved from the excavations. A metal window pane (this will be discussed with the metal analysis) was also discovered on the surface near Building 1 which would tie into the presence of the window glass.

Figure 7.60: Small clear/colourless glass tube, possibly part of a phial.

Figure 7.61: Example of a possible marble or a Codd-neck bottle ball that was used in old carbonated drinks soda bottles to keep the pressure in place.

Figure 7.62: Examples of possible flat window glass.

Among the glass clear/colourless was the most common (n = 147) and moulded the most common decoration (n = 27). It appears that all the glass was machine made, as all the different types of decoration points to a mechanical rather than a manmade nature. Both flatware (plates and saucers) and hollowware (bottles, containers and pots) points to domestic activities at MNR211. None of the glass represent any type of industrial use, all are of a domestic (household) nature.

7.4 Metal Artefact Analysis

Metal artefacts are the most abundant among all the artefacts. The metal artefacts are divided into a domestic or industrial use, and there is an 'other' use category included to represent other metal artefacts (e.g. ammunition and architecture) that does not strictly fall into the domestic or industrial uses.

7.4.1. Domestic Use

Any metals of a domestic nature include, clothing items, food/consumption, containers for personal or household use, furniture and any utilitarian artefacts. This represent life in the household and how life was lived day-to-day. 38 metal artefacts were identified as domestic items.

Table 7:12: Metal artefacts and their different domestic uses

Domestic Use	MNI
Clothing items:	
Buttons	3
Buckles	2
Food/consumption:	
Can	11
Lids	9
Containers:	
Personal or household use	5
Furniture:	
Bed matrass or sofa base	1
Utilitarian objects:	9

Clothing items:

Metal objects that relate to clothing includes buttons (Fig 7.64 and Fig 7.65) that were fastened to shirts or jackets and buckles (Fig 7.66) that were part of belt or shoes.

- *Buttons*

Figure 7.63: Metal button with crest, which could have been part of a uniform, front and back.

- *Buckles*

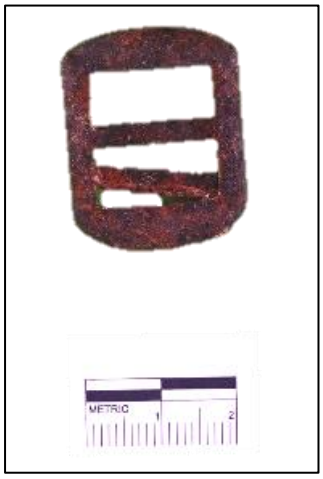


Figure 7.64: Small metal buckle (possibly a shoe buckle).

Food/consumption:

Tin cans (Fig 7.67 – Fig 7.69) were the best way to transport food and keep the content sealed and fresh, especially since the mining settlement was so far from the closest town. The cans of food could possibly have contained fish, meat, beans, etc. The lids (Fig 7.70 and Fig 7.71) were possibly the lids of beverage or condiment bottles.

- *Cans*

Figure 7.65: Round tin can with the lid still attached.

Figure 7.66: Oval shaped tin can and lid (possibly contained sardines).

Figure 7.67: Square tin can with rolled-up lid.

- *Lids*

Figure 7.70: Lid of soda or beer bottle.

Figure 7.71: Lid of soda or beer bottle.

Containers:

These containers (Fig 7.72 – Fig 7.75) possibly served the purpose of personal use (shoe polish, powder, snuff box, etc.) or household use (oil, musical object, etc.) or could have been used as a storage space for personal objects.

Figure 7.72: Metal box with a lid that could flip open, the hinge is still intact.

Figure 7.73: Small metal lid of a box that possibly contained needles for record players (His Masters Voice), or it could have been the lid of a snuff box.

Figure 7.74: Metal container for shoe polish (Nugget brand).

Figure 7.75: Large metal oil can.

A total of 22 pieces of foil were collected from excavation at MNR211. Two different types of texture and colours (pink and silver) of foil was identified (Fig 7.76 and Fig 7.77). These pieces of foil could possibly have covered the lids of carbonated sodas or alcoholic bottles.

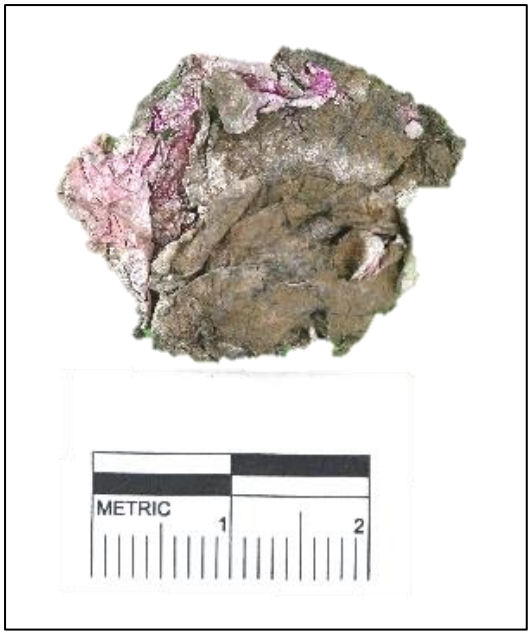


Figure 7.68: Crumpled up shiny pink foil piece.

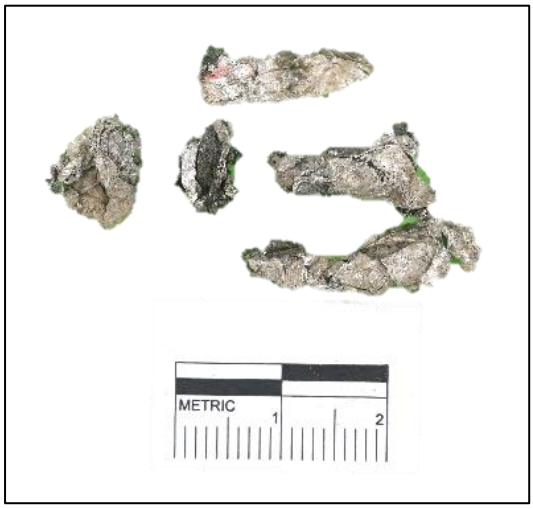


Figure 7.69: Crumpled up silver/grey foil pieces.

- *Furniture*

The availability of furniture suggests a manner of comfort, especially with the presence of springs (Fig 7.78). No material (e.g. fabric) was left on the possible bed or sofa springs.

Figure 7.70: Metal bed or chair frame, contains springs.

- *Utilitarian*

Metal artefacts of a utilitarian nature (Fig 7.79 – Fig 7.84) includes any useful and practical items that made domestic life easier and more comfortable.

Figure 7.71: Flashlight (Eveready).

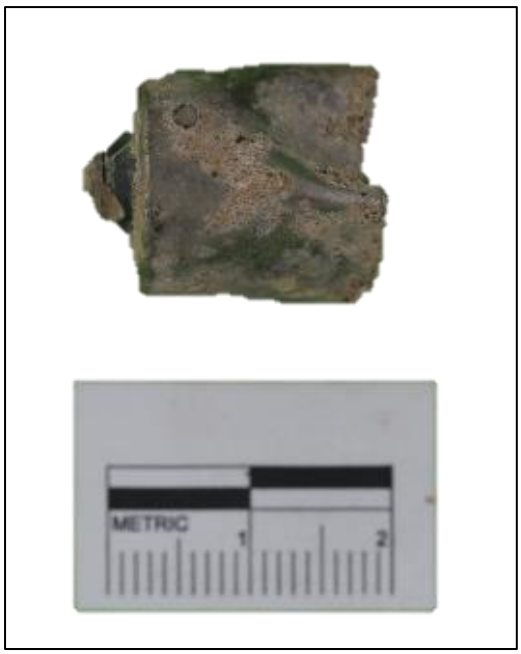


Figure 7.72: Bottom of a lithium battery.

Figure 7.73: Small metal tube that could have possibly contained a paste or glue.

Figure 7.74: Pocket knife.

Figure 7.75: Pocket knife view from above showing the hole where the knife would have been.

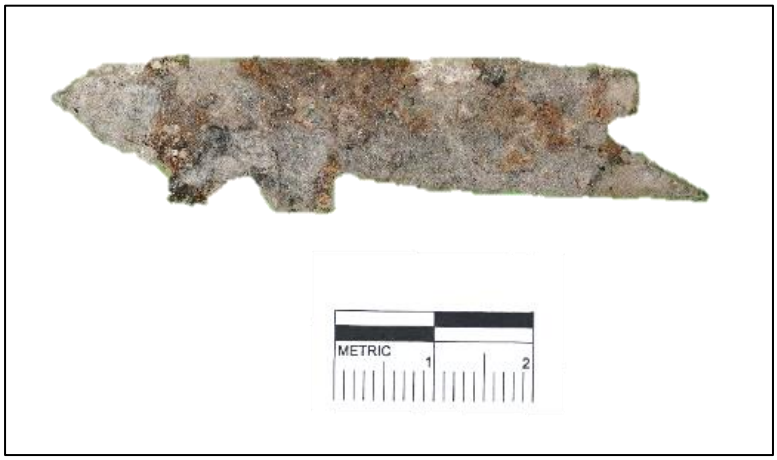


Figure 7.76: Small blade which possibly belonged to the pocket knife.

7.4.2. Industrial Use

These artefacts relate to all activities associated with industrial activities at MNR211, which primarily involve mining. These artefacts were part of infrastructure, machinery, equipment, tools or processes to work metals (smelting or smiting). A total of 296 metal artefacts were identified as industrial items.

Table 7:13: Metal artefacts and their different industrial uses

Industrial Use	MNI
Bolts	3
Cables	1
Mechanical parts	32
Nails	138
Screws	4
Slag	14

Tools	4
Wires	100

- *Bolts*

Figure 7.77 Long thick bolt broken off at the end.

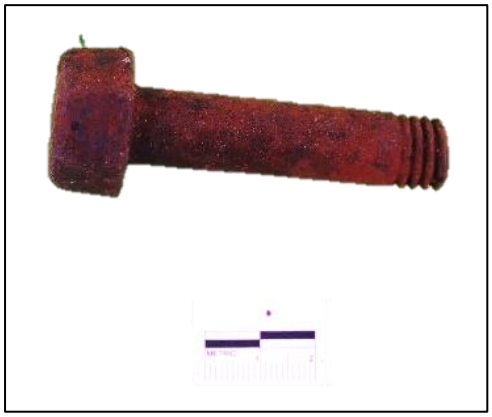


Figure 7.78 Short thick bolt with screw end.

- *Cables*

Figure 7.79: Large thick cable found at digging 211/1.1 which is the largest digging at the site.

- *Mechanical parts*

Mechanical parts are the elementary components of a machine or mechanism. There are three basic types of mechanical parts: structural components such as frame members, bearings, axles, splines, fasteners, seals, and lubricants. Mechanisms that control movement in various ways such as gear trains, belt or chain drives, linkages, cam and follower systems, including brakes and clutches. Control components such as buttons, switches, indicators, sensors, actuators and computer controllers (Norton 2010).

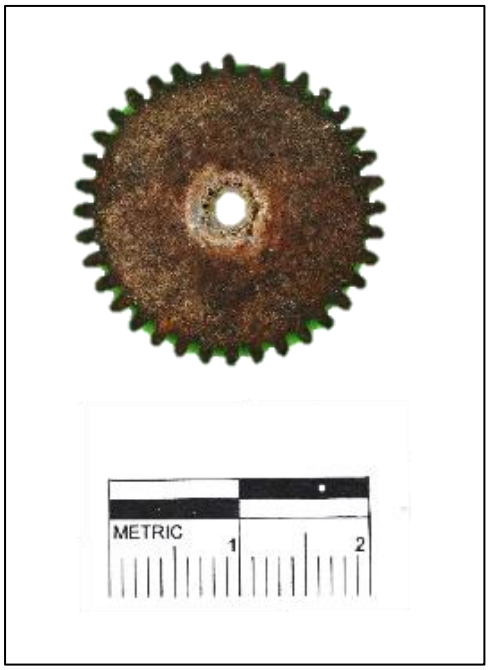


Figure 7.80: Small, thin gear.

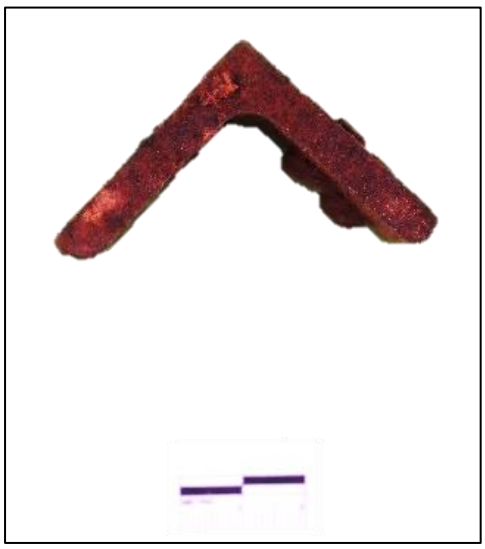


Figure 7.81: Angle iron.

Figure 7.82: Thick metal pipe that is hollow inside and has broken edges.

Figure 7.83: Large flat metal plate.

Figure 7.84: Pulley.

Figure 7.85: Cable clamp.

Figure 7.86: Washer.

- *Nails*

A range of different types and sizes of nails (Fig 7.95 – Fig 7.97) were retrieved from excavations at MNR211. The presence of a wood-nail (fig 7.97) suggests that the roof or structure of the buildings could possibly have been made out of wooded material

Figure 7.87: Example of different types and sizes of different nails.

Figure 7.88: Examples of larger and longer nails all with flat-heads.

Figure 7.89: Wood nail with a star-head.

- *Screws*

A range of different types and sizes of screws (Fig 7.98 – Fig 7.99) were retrieved from excavations at MNR211.

Figure 7.90: Screw with a flat-head.

Figure 7.91: Screw with a star-head.

- *Slag*

Slag is defined as stony waste matter separated from metals during the smelting or refining of ore. It is included with the metal analysis and industrial use category as it is an industrial process, which works with metals. Evidence of slag (Fig 7.100 – Fig 7.102) was retrieved from the excavations and from the small brick structure. The slag suggests that there were reduction activities at MNR211.

Figure 7.92: Piece of iron slag.

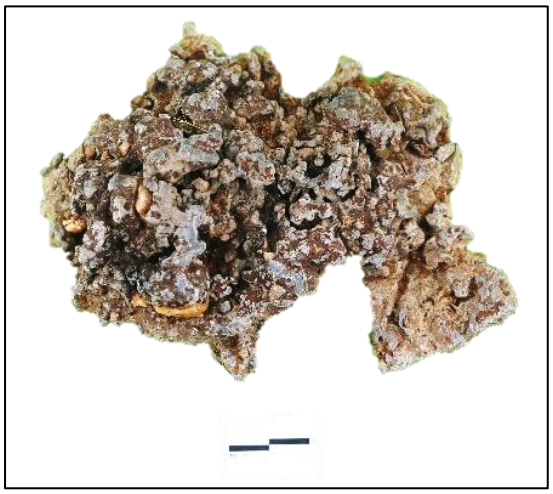


Figure 7.93: Piece of slag.

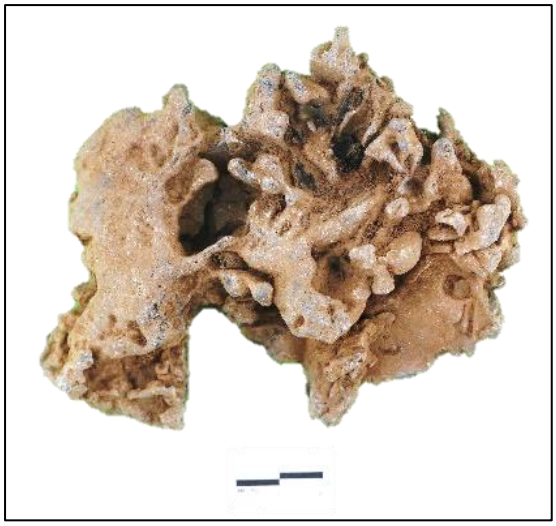


Figure 7.94: Piece of slag.

- *Tools*

A range of different tools/or parts of tools were retrieved from surveys and excavations at MNR211. The tools would have assisted in the mining processes.

Figure 7.95: Possible fire stoker.

Figure 7.96: Part of a monkey wrench

Figure 7.97: Part of a hack saw blade.

Figure 7.98: Part of a wheelbarrow, a square lid of a metal container, springs and a metal plate with two holes in it found adjacent to Building 1.

- *Wires*

A range of different types and size of wires (Fig 7.107 – Fig 7.109) were retrieved from excavations at MR211.

Figure 7.99: Thin twisted wire with a loop at the end.

Figure 7.100: Helix.

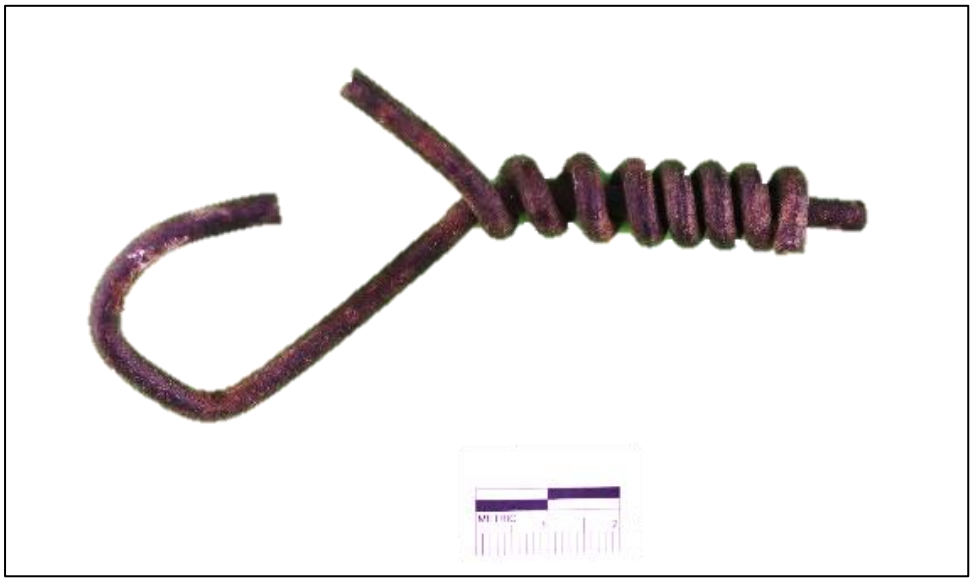


Figure 7.101: Twisted wire with a hook end which is possibly broken.

7.4.3. Other Use

This category was created to include two categories (ammunition and architecture) which was not able to be included with domestic or industrial use.

Table 7:14: Metal artefacts and their other uses.

Other Use of Metal Artefacts	MNI
Ammunition	13
Architecture	3

- *Ammunition*

It is not surprising that there is evidence of ammunition at the site. It is, to this day, a hostile environment and the miners had to be able to protect themselves against wild animals or other threats. There is no evidence of handheld weapons, only rifles (Fig 7.110 – Fig 7.113) and shot guns (Fig 7.114). All of the ammunition collected had been fired based on the condition of the shell casings. The .303 rifle (Lee Enfield) was a standard issue weapon to the army troops during the early 20th century.

Figure 7.102: A few .22 shell casings.

Figure 7.103: Headstamp of one of the .22 shell casings. Makers mark: Hi Speed.

Figure 7.104: Shell casing of a .303 rifle.

Figure 7.105: Head stamp of .303 rifle. Makers mark U 49, M.K. 7 (mark 7).


Figure 7.106: Head stamp of a shot gun shell. Makers mark: REM-UMC, No 12, Shurshot.

- *Architecture*

This architectural evidence of a door or window pane (Fig 7.115) complements the evidence of a location of a possible window in Building 1. Also, the large flat metal plate (Fig 7.116) found in the excavation of the floor of Building 1, which could have been part of the roof.

Figure 7.107: Possible door or window pane.

Figure 7.108: Flat metal plate, possibly related to Building 1 architecture.

7.4.4. Makers marks (metal)

There are seven different metal object all with different makers marks (Fig 7.117 – Fig 7.121) (which were able to be identified), some are located on the base and others on the body of the metal object.

Figure 7.109: Bully beef tin can. Makers mark on the base of the tin can.

Figure 7.110: ‘BALL’ makers mark on the lid. Usually came with a glass container.

Figure 7.111: ‘EVEREADY’ (case no 3744) makers mark on the body of the flashlight.

Figure 7.112: ‘NUGGET’ makers mark on the lid of the shoe polish container.

Figure 7.113: ‘GENIUNE’ makers mark on the body of a part of a monkey wrench.

The metal artefacts all represent both the domestic and the industrial nature present at the past mining settlement of MNR211. The tin cans provide information as to what people ate and what types of containers were most practical and useful in this environment. The buttons and buckles identify what cloths people wore and provided information on gender as well. The presence of furniture suggests a manner of comfort available in the household. Although there is no evidence of actual mining machinery at the site, the presence of mechanical parts, tools and other utilitarian objects suggest a form of mining that was very rudimentary and which could indicate that the diggings were mostly dug by hand.

7.5. Plastic

Three pieces of plastic was retrieved from excavation at MNR211.The presence of plastic at MNR211 speaks to the modern nature of the site. A few different buttons were retrieved from excavation all made from plastic (Fig 7.122).

Figure 7.122: White plastic button with four holes.

7.6. Rubber

A total of 24 pieces of rubber were collected from excavations. These rubber artefacts which were discovered includes possible partsshoes (Fig 7.123).

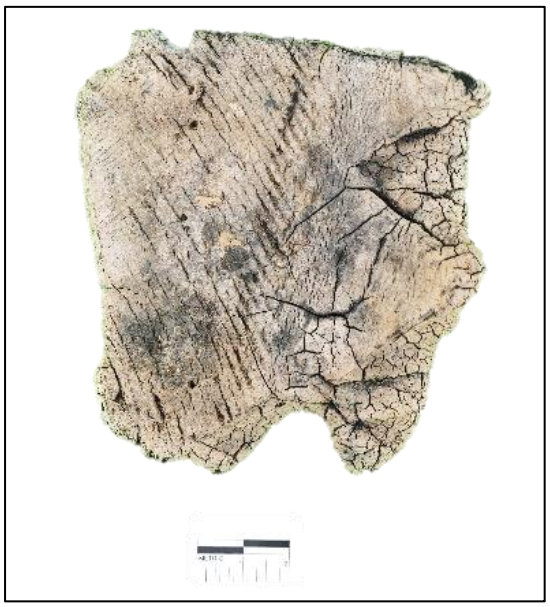


Figure 7.123: Possible burned rubber from a shoe.

The miscellaneous artefacts provided more information on the site and the availability of other types of material to the miners. Plastic and rubber especially chronologically at a later stage in the 20th century.

7.7. Unidentifiable Artefacts

Some of the artefacts were unidentifiable due to the damaged nature of the artefacts. Although the type of artefact could not be identified the type of material could sometimes still be identified. Among the unidentifiable artefacts are materials like glass, metal, plastic and rubber. Further analysis is needed to identify these artefacts.

The artefact assemblage of MNR211 provided very useful information on the history of the mining settlement. It identified both elements of a domestic and an industrial nature present at the site, and provided chronological markers which possibly indicate that the mining site was active during the early to mid-20th century.

Chapter 8 : Interpretation of the Mining History at MNR211

The geology of the area (Berkenrode) will be discussed to provide information on the mining that took place at MNR211. Then the historical documents and maps that provided vital information on the mining history of Berkenrode and MNR211 will be interpreted and discussed. Thereafter a discussion on the landscape and architecture of the site will be provided to identify any spatial and hierarchical differences at the site, and also how the miners changed the landscape to their benefit. Finally, the past mining community will be discussed, along with the material culture retrieved from surveys and excavations, to identify difference in the community and to assess what daily life might have been like at MNR211.

8.1 The Geology of MNR211

Based on the geological evidence it seems that copper and mica was the primary deposit mined at MNR211. However, the geological map for the area (Fig 8.1) indicates that copper (Cu), iron (Fe) and vermiculite (Vm) are also present in the area. These metals and minerals were all present among the geological samples collected from different diggings at MNR211 (Joubert 2015).

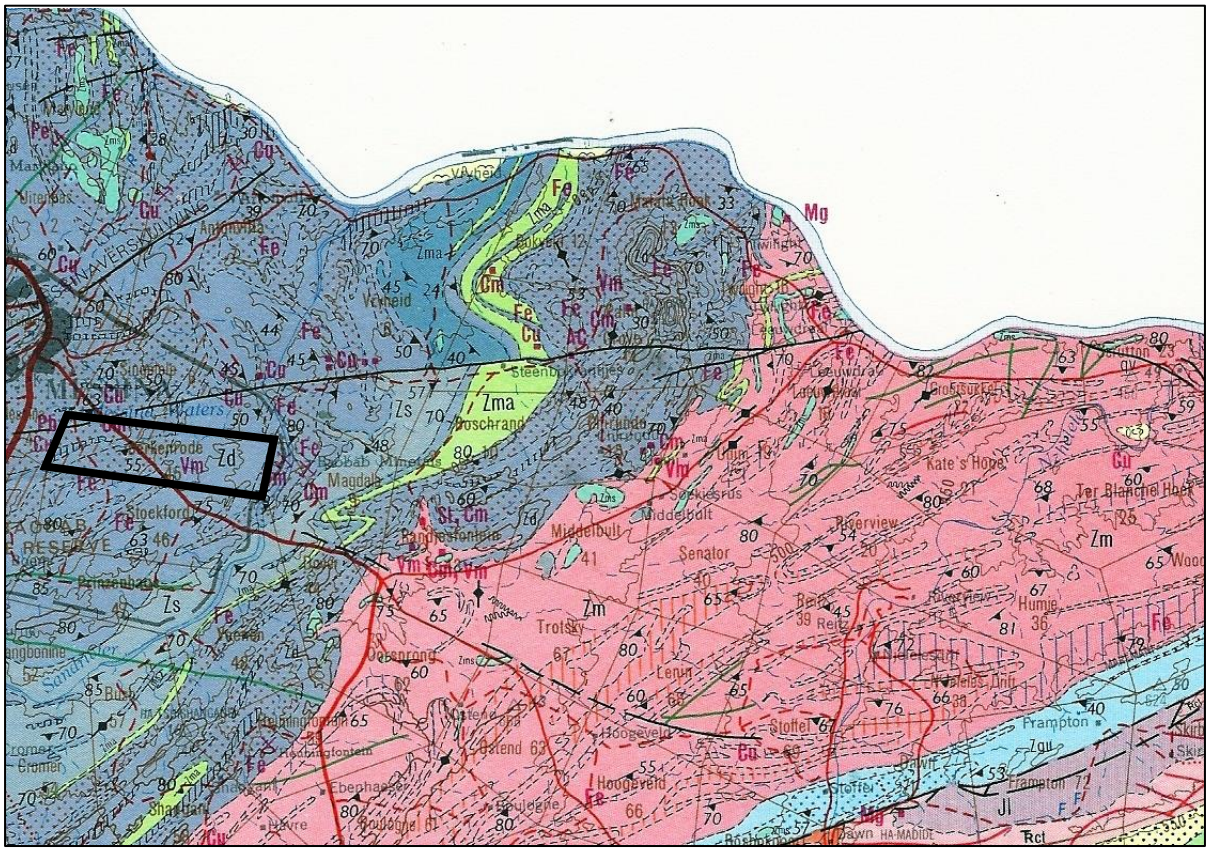


Figure 8.1: Geological map of the MNR, highlighting the farm Berkenrode.

Other geological samples collected from the diggings includes copper (Fig 8.3 and Fig 8.4), iron (Fig 8.2) and variety mica (Fig 8.5, Fig 8.6 and Fig 8.7). Although most of the diggings and their associative spoil heaps contain residual deposit of mica, it is likely that copper was the primary ore mined at MNR211 given its proximity to Musina and taking into account its large copper mining industry during the 20th century. However, from the tailings, the geological cores and ore on the surface of the site, it seems that the copper mining operation was supplemented with extraction of other minerals.

Examples of geological samples collected from MNR211's diggings:

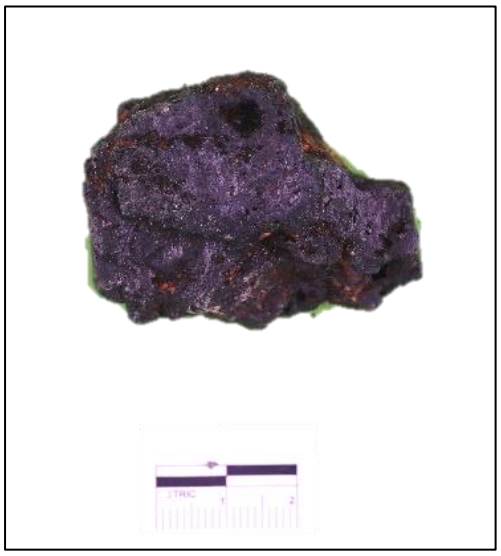


Figure 8.2: Iron ore, from digging 211/9.

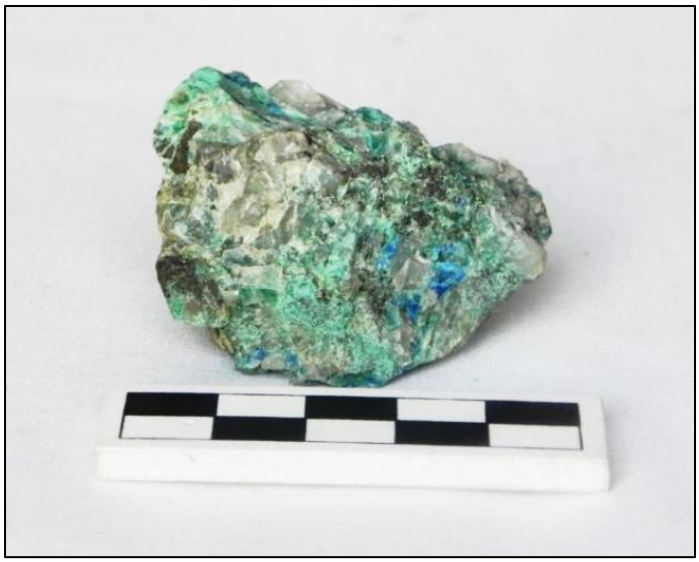


Figure 8.3: Copper - azurite (blue) and malachite (green), from digging 211/4.1

Figure 8.4: Quartz with copper (malachite) inclusions, from digging 211/17.1

Figure 8.5: Muscovite (white mica), from digging 211/1

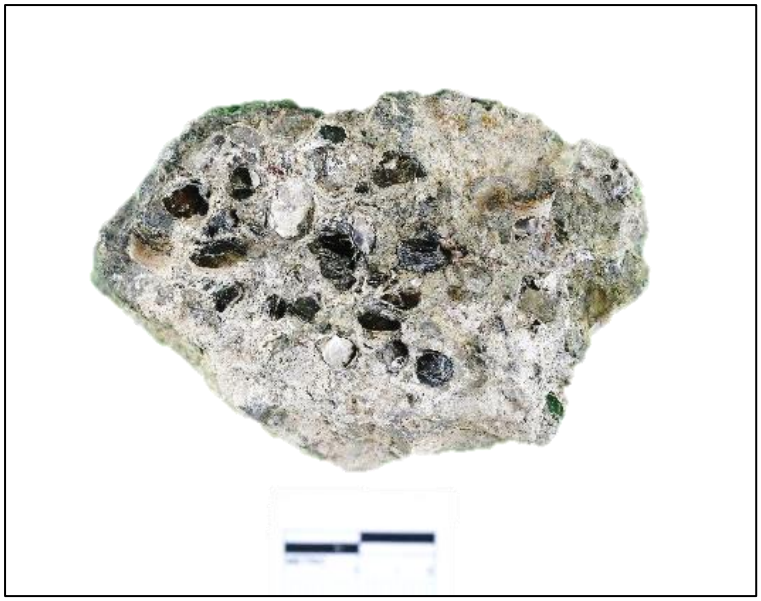


Figure 8.6: Rock with small piece of biotite (black mica), from digging 211/5.3

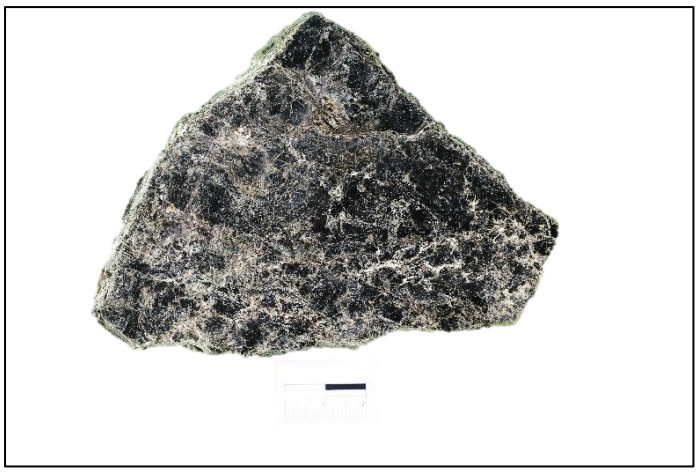


Figure 8.7: Biotite (black mica), from digging 211/9.1

8.2 Mining activities at MNR211

As discussed in Chapter 2, Lieutenant Colonel John Pascoe Grenfell's prospection team discovered the abandoned pre-colonial copper diggings close to the Sand River, on a farm called Berkenrode, Limpopo (Messina (Transvaal) Development Company 1954: 5). This information, about the prospection activities and their location, is re-affirmed by oral historical accounts from Mr Harry Smith, who mentioned that "there are a lot of old workings outside the town of Musina, these are all prospects, for example those located at Berkenrode and Uitenpas. The farm Berkenrode, close to the Tshpiese road has the old MTD's". Mr Harry Smith is a retired miner who used to work for the MTD. His father and his grandfather were also employed by the company, providing more than a generation worth of information on the MTD and the history of the town of Musina.

When Grenfell did his prospection work in 1902, Berkenrode consisted of three different portions: 1424, 1425 and 1426 (Fig 8.8), according to the historical map retrieved from the National Archives. The circular shapes on the map are hills or 'koppies' which are landscape indicators. The river that runs along the eastern side of the farm Berkenrode is named 'Dorps River' but is today the Sand River. Two camps are visible on the map, within area A and area B, these were destroyed as the modern-day town of Musina is located where those camps once were.

The discoverers certificate was issued to Grenfell, stating that he could mine on portion 1425 and 1426 (see Chapter 2, Fig 2.6). Today portion 1426 is the only part still referred to as the farm Berkenrode and is also where MNR211 is located. The town of Musina and a portion of the mine (Messina shaft no 5) is located on portion 1424. Portion 1425 is part of the Singelele farm.

The farm Berkenrode that exists today is not the same as the farm Berkenrode of a 100 years ago. The location of the camp on the map (Fig 8.8) does not match the location of the structures located at MNR211, especially since it is on a different portion of Berkenrode and therefore date to a later period.

The Messina (Transvaal) Development Company (1954) mentions that, "the company gave suitable candidates farms to work in the Musina area" (Messina (Transvaal) Development Company 1954). The claim boards naming, D. A. Kruger (see Chapter 5, Fig 5.85 and Fig 5.86) could potentially be such an individual.

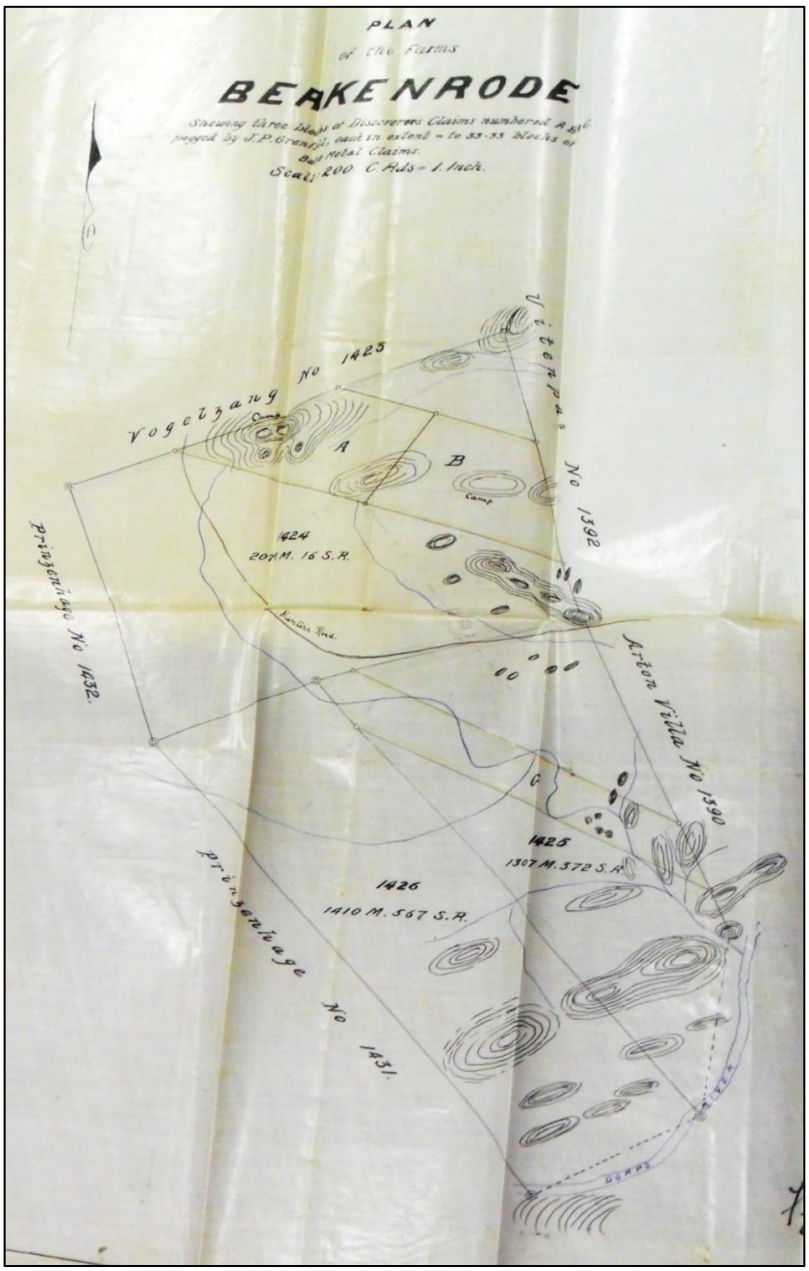


Figure 8.8: Historical map showing the different portions of the farm Berkenrode (National Archives, Pretoria, RSA, 3609/03, Plan of Farms: Berkenrode).

8.3 The Archaeological Evidence of Mining at MNR211

Through artefacts and architectural data, it is possible to identify both domestic- and an industrial activity at MNR211.

8.3.1 Domestic Activities at MNR211

Domestic areas include spaces where people lived and conducted their day-to-day lives (ate, slept, cleaned and relaxed). There are two possible areas at the site that contain domestic activities: Area A and Area B (Fig 8.9).

Area A includes the structures: Building 1, Building 2, the Open Platform and the two middens (which were excavated) but of these only Building 1 and the middens contained evidence of everyday domestic activities. Building 1 has eight rooms within the building, which likely serving different purposes (e.g. bedroom, dining room, kitchen, living room). There is no evidence of plumbing or irrigation within Building 1 or Building 2, which suggests that any hygienic tasks were conducted outside. Another possibility is that Building 1 could have been used as offices for administrative purposes.

Area B is the possible small activity/living area next to the Sand River, and while there are no standing structures left at the site, there are a few pieces of building rubble. Given the distance from the main house, it is likely that this was the living quarters of the mine labourers while the top house were the quarters of the mine official and his family. This type of spatial organization of living areas speaks to the social/hierarchical and racial divide that was present at this specific mining settlements, but also in South African society as a whole at the time.

The absence of formal structures means that the workers could have possibly slept in tents or build rugged shacks (a rough shelter made of scraps of wood, cardboard, or corrugated iron). These very rudimentary structures could have decayed or have been taken with them when they left the site.

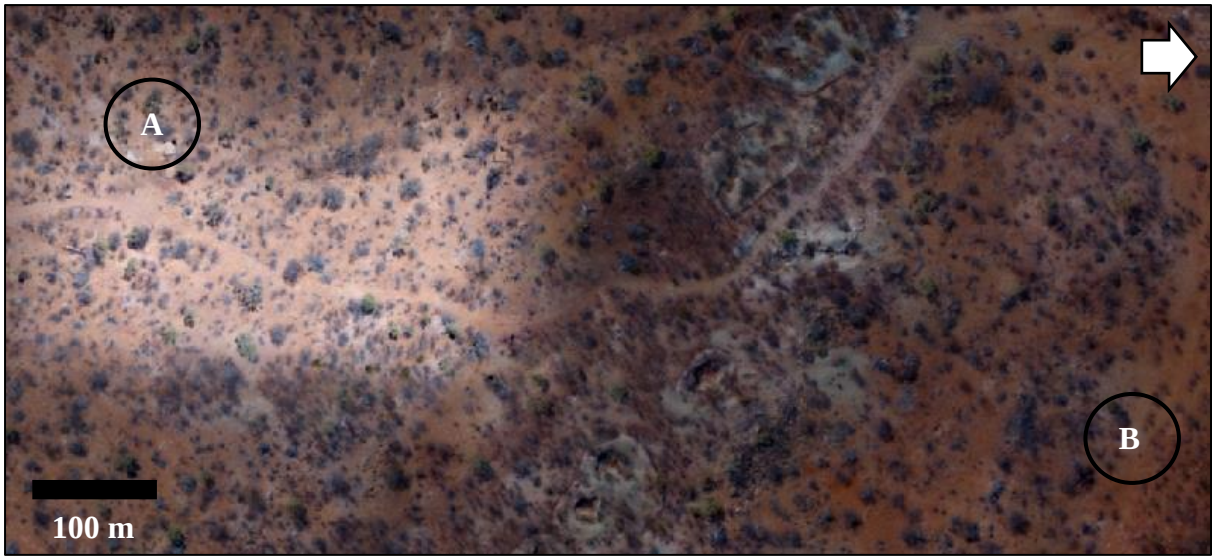


Figure 8.9: Aerial view of the landscape of MNR211, identifying all the areas which had possible domestic characteristics.

8.3.2 Industrial Activities at MNR211

There are two possible areas across the site that contain evidence of industrial activities (other than the diggings): Area C, Area D, Area E and Area F (Fig 8.10).

The diggings are the most prominent evidence of a mining site and of industrial activities across MNR211's landscape. Of the 30 diggings, 21 are surrounded by 13 different stone walling. Some of these diggings surrounded by the stone walling includes only one individual digging whereas others include two to four diggings. The reason for the stone walling could be to designate the digging areas or to prevent people and animals from falling into the diggings.

There is no evidence of any mining architecture or machinery located at the site. As this is an ASM site and no mining architecture is present, it is possible that the type of mechanisation employed at the site was rudimentary and that the diggings were mostly dug by hand. Given the irregular shape of most of the diggings, the latter seems likely. The thick iron cable located at digging 211/1.1 (which is the largest and deepest digging at MNR211) does suggest that some degree of mechanisation was present. However, it seems like this was limited to digging 211/1.1 – the deepest of the excavations.

Area C includes Building 2 and the Open Platform. Although these structures are located in the proximity of Area A (domestic space) they show possible industrial related characteristics. It is possible that Building 2 could have been used a store room for tools and mining related equipment.

Area D includes the worked stone (possible crushing site) across from Building 1 and Building 2 and the Open Platform. There is a large rock which was used as an anvil. It is possible that after the deposit was mined it was brought to this area to be crushed possibly for reduction and testing on one of the furnaces identified at the site.

Area E includes the circular stone furnace with the metal pipe found in-situ which could have been used for smelting activities, since bit of slag was also discovered among the debris.

Area F is the area that contains the stone enclosure with the platform inside, as well as the small brick structure located a 1.5m to the east. Both of these structures could possibly have served an industrial purpose. The stone enclosure with the platform possibly contained a structure of perishable nature or which was reclaimed after abandonment of the site. The small red brick structure resembles a type of rudimentary furnace and also contained pieces of slag, which in turn could indicate more smelting activities.

Figure 8.10: Aerial view of the landscape of MNR211, identifying all the areas which had possible industrial characteristics.

8.4.3 The past mining community of MNR211

The material culture retrieved from surveys and excavations were able to provide information on consumer products such as food and drink, dress and personal adornment (which in turn provided information on gender available at MNR211), as well as the type of mechanisation that was used at the diggings. It is possible that the MNR211 mining community was very small.

Based on the artefact analysis it is clear that tin-canned food was a very prominent food source, as these are easy to store and can last a long time. There are a few alcohol related glass bottles

as well as carbonated beverage bottles retrieved from the diggings (211/1.1), the surface near Building 1 and Building 2 and the middens.

Although mining is considered a male profession the presence of women should not be over-looked at the site as some of the artefacts point to their presence. A pearl/lustre button, different types of glass beads (for bracelets or necklaces) and some ceramic and glass vessels (mostly tableware). The women at MNR211 could have been in charge of domestic activities, while the men worked at the diggings. The small hobnailed footprint in the floor of Building 1 (room 1.1) also hints at the presence of either a woman or child when the building was constructed.

The metal artefacts from MNR211 represent a larger number of industrial uses than domestic uses. Whereas the domestic metal artefacts represent more information on consumer products and utilitarian objects that were possibly used every day. The industrial metal artefacts relay information about mining at the site and the type of mechanisation.

The miners at MNR211 mined copper and mica on a small-scale. The type of mechanisation employed at the site was very rudimentary as the diggings were mostly dug by hand. A social hierarchy is present at the site in the form of different domestic areas and location for different people (officials versus the labourers). It is possible that women were present at the site based on different types of ceramic and glass artefacts. There is no evidence that clearly suggests the presence of children at the site during its occupation. It is difficult to identify ethnicity among artefact assemblages, but as MNR211 was active during the middle of the 20th century, and taking into account South Africa's political situation at the time, one can assume that there were black labourers who did most of the manual labour and were separated from the white miner/foreman by means of living space. Mining at MNR211 had no connection with the larger mining industry. The site was abandoned and deteriorated due to many years of animal and weather decay.

Conclusion

The mineral revolution (the quick rise and establishment of many different mining operations) brought about major socio-economic changes in South Africa. On the economic front South Africa changed from agrarian societies to an industrial nation, and on the social front South Africa became a diversified but also a divided nation. The movement of people towards mining activities resulted in new settlements in the surrounding areas (urbanisation), which later evolved into towns. According to Davenport (2013) it was the exploitation of copper, gold, diamonds and coal during the latter half of the 19th century that ultimately catapulted South

Africa's economy into the modern industrialised era. The country became a hub of mineral commodities available to the global population. Due to the diamond and gold rushes during the latter half of the 19th century, people from all over the world came to South Africa in search of fame and fortune. Soon, though, a hierarchy was established, and it resulted in racial discrimination and class distinctions which would evidently shape the future of South Africa.

Although it was the large-scale mining operations that fundamentally shaped the mining industry of the country, the artisanal (small-scale) mining operations also played an important role in shaping the south African mining history and industry. As is the case many of these small-scale artisanal mining sites are frequently over-looked or do not appear in the historical record at all.

Future studies should consider educating the public and especially the archaeology sector about small-scale mining settlements. Historical documents along with geological maps and information should be consulted and followed up with surveys in order to try and identified other ASM settlements in South Africa. This could also potentially identify other pre-colonial mining sites as well as smelting sites that were not destroyed by modern mining activities and add valuable information to the archaeological record. The site significance can be assessed by CRM (cultural resource manager) archaeologists and based on the CRM assessment further research or preservation can take place. The reason why ASM is important to study in South Africa is because it contributes information to the mining history and how this industry shaped South Africa. It involves answering questions about adaptive technologies, how the landscape was transformed in order to benefit the miners and their settlement, also about community life in ASM settlements.

To discuss and illuminate an understudied field of archaeology in South Africa, this masters project tells the story of a small-scale (artisanal) mining settlement located in Musina, Limpopo, South Africa. This small settlement was almost invisible in the historical record, which made relying on other sources of information, to understand the sites history and its significance to the South African mining history, very important.

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