



HERITAGE & GRAVE RELOCATION CONSULTANTS

Heritage Impact Assessment

Proposed Lehating Mining (Pty) Ltd
underground manganese mine on Portions
of the Farm Lehating 714, approximately
20km northwest of Hotazel, Northern Cape
Province

Version 1.0

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- i. The results of the project;
- ii. The technology described in any report ; and,
- iii. The recommendations delivered to the Client.

EXECUTIVE SUMMARY

PGS Heritage & Grave Relocation Consultants was appointed by Lehating Mining (Pty) Ltd to undertake a Heritage Impact Assessment that forms part of the Environmental Management Programme for the proposed Lehating Manganese Mine on Portion 1 of the farm Lehating 714, approximately 20km northwest of Hotazel, Northern Cape Province.

During the survey one site of limited archaeological significance was identified.

The palaeontological potential scoping (**Annexure C**) has also indicated a very low potential for such finds.

LM01

The site is characterised by a very low density scatter of lithic artefacts. Two lithic artefacts (waste flakes from the LSA), eroding from a Hutton sand dune overlooking the Kuruman River were observed.

Monitoring by an archaeologist during construction around the crossing of the Kuruman river river and its banks is recommended.

From a heritage point of view there is no reason why the development cannot commence.

General

If during mining any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

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1. INTRODUCTION

PGS Heritage Solutions was appointed by Lehating Mining (Pty) Ltd to undertake a Heritage Impact Assessment that forms part of the Environmental Management Programme for proposed Lehating Manganese Mine on Portion 1 of the farm Lehating 714, approximately 20km northwest of Hotazel, Northern Cape Province.

The aim of the study is to identify all heritage sites, document, and assess their importance within Local, Provincial and National context. From this we aim to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

The report outlines the approach and methodology utilised before and during the survey, which includes in Phase 1: Information collection from various sources and public consultations; Phase 2: Physical surveying of the area on foot and by vehicle; and Phase 3: Reporting the outcome of the study.

During the survey two sites of heritage significance and one area of archaeological significance was identified.

General site conditions and features on site were recorded by means of photos, GPS location, and description. Possible impacts were identified and mitigation measures are proposed in the following report.

2. APPROACH AND METHODOLOGY

The aim of the study is to study data available to compile a background history of the study area; this was accomplished by means of the following phases.

2.1. PROJECT DESCRIPTION

The proposed Lehating Manganese mine is situated some twenty kilometres north west from the town of Hotazel in the Northern Cape (*Figure 1*). The main infrastructure impact will be on Portion 1 of the farm Lehating 714.

The mineral proposed to be mined is manganese by way of an underground shaft(s). The proposed operation will consist of:

- Mine portal infrastructure (mining and engineering support infrastructure. Offices, workshops, stores)
- Surface screening and product handling plant (no DMS and no sinter plant).
- Waste / fines rejects dump. (little waste rock is generated as mining is mostly on reef bord and pillar)

- -1mm fines storage (to tailings storage facility. This is typically only 4 – 5% of total RoM)
- Final products stockpiles and road transport based weighbridge dispatch facility (currently there are no plans for a rail siding at Lehating, but this is subject for review in the BFS)
- General administrative and services support buildings (Admin, laboratories, survey/geology offices etc.)
- Services will entail:
 - Potential potable water supply from the Gamagara pipeline, although this is up for review as it is certain now there is ample underground water supply on Lehating. The latter is however subject to permit approval to extract and use.
 - Tie in to Eskom (Black rock). Load for Lehating is by no way substantial, and a approx.7MW absorbed requirement is foreseen. Self sufficient power supply is being investigated.
 - Sewage will be managed by way of a dedicated sewage plant.

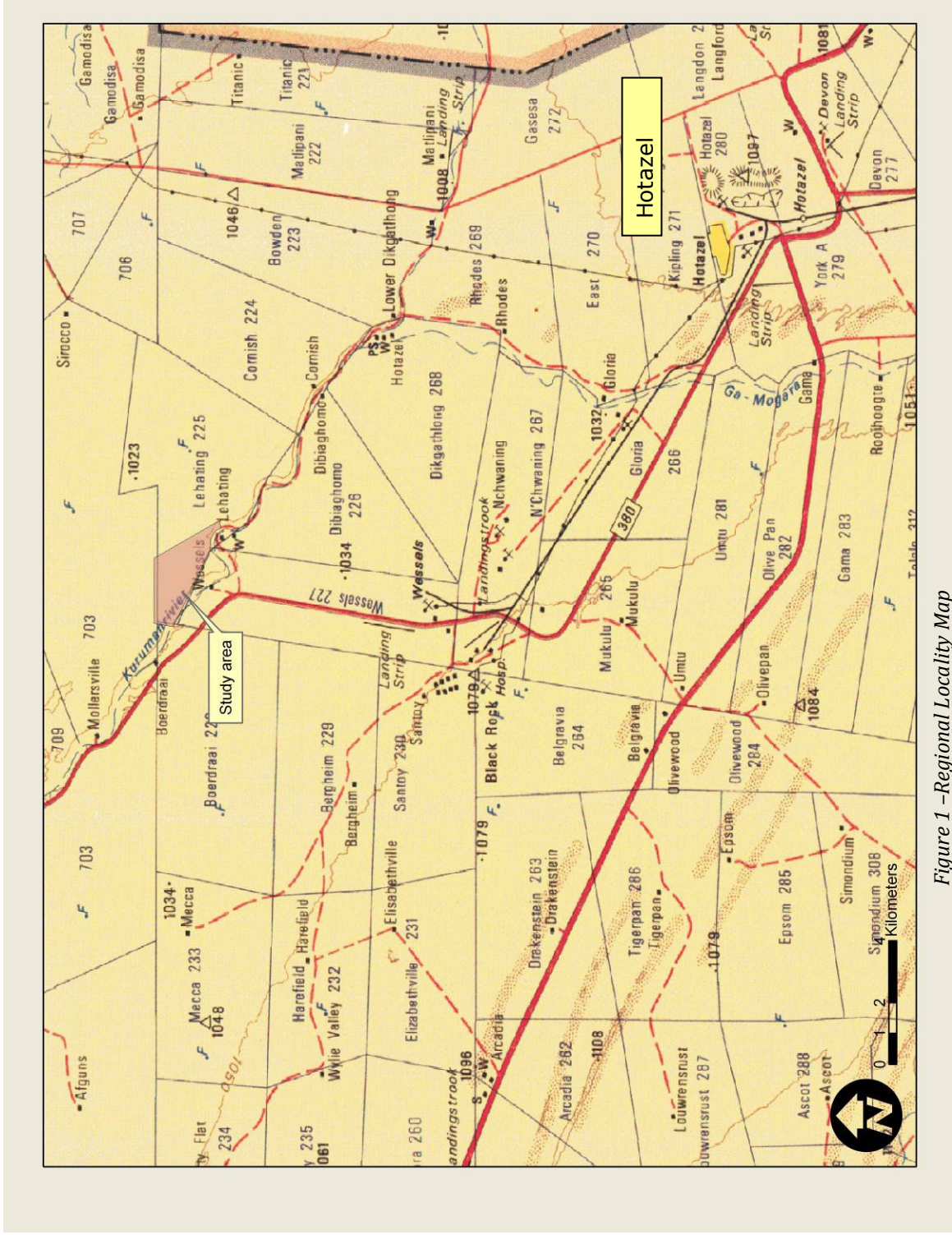


Figure 1 –Regional Locality Map

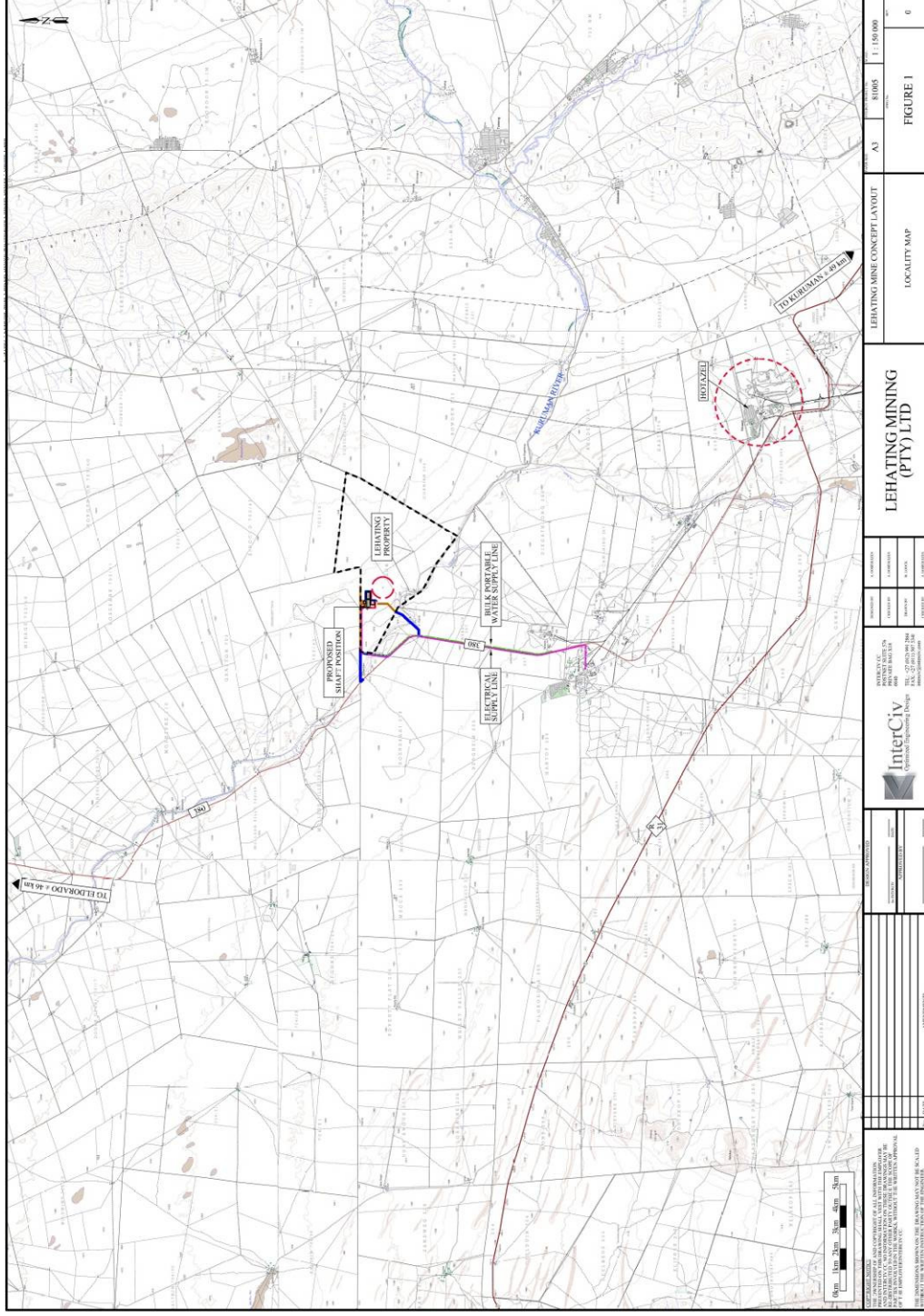


Figure 2 – Direct impact areas and layout of mining project

2.2 PHYSICAL SURVEYING

It is assumed that the property on which the proposed mine is to be located comprises approximately 350ha, with the area directly affected by mining activities approximately 100ha. It is assumed that surface disturbances will be confined to the smaller area. Although, due to the nature of cultural remains the majority that occur below surface, a physical walk through of the study area was conducted. A controlled-exclusive surface survey was conducted over a period of two days, by means of vehicle and extensive surveys on foot by an archaeologist and field assistant of PGS.

Aerial photographs and 1:50 000 maps of the area were consulted and literature of the area were studied before undertaking the survey. The purpose of this was to identify topographical areas of possible historic and pre-historic activity. All sites discovered both inside and bordering the proposed development area was plotted on 1:50 000 maps and their GPS co-ordinates noted. Digital photographs were taken at all the sites and of the general area.

2.3 METHODOLOGY

This Heritage Impact Assessment (HIA) report was compiled by PGS Heritage & Grave Relocation Consultants for the proposed manganese mine on the farm Lehating 714. This includes applicable maps, tables and figures, as stipulated in the NHRA (no 25 of 1999), the National Environmental Management Act (NEMA) (no 107 of 1998) and the Minerals and Petroleum Resources Development Act (MPRDA) (28 of 2002). The HIA process consisted of three steps:

- Step I – Literature Review: Accessing data from archives, published and unpublished sources
- Step II – Physical Survey: A physical survey was conducted on foot through the proposed project area by qualified archaeologists (21 January 2010), aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.
- Step III – The final step involved the recording and documentation of relevant archaeological resources, as well as the assessment of resources in terms of the archaeological impact assessment criteria (**Annexure A**) and report writing, as well as mapping and constructive recommendations.

2.4 PHYSICAL SURVEYING

The study area for the proposed projects covers approximately 350 hectares (whole property) and 100 hectares of plant and shaft areas. Due to the nature of cultural remains (with the majority of artefacts occurring below surface and therefore of limited visibility) an intensive foot-survey that covered the study area was conducted. A controlled-exclusive surface survey was conducted over a period of 2 days on foot by an archaeologists and field assistant of PGS.

All sites discovered both inside and bordering the proposed alignment was plotted on 1:50 000 maps and their GPS co-ordinates documented. In addition digital photographs were used to document all the sites.

3. LEGISLATIVE REQUIREMENTS

The NHRA stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34 (1) of the NHRA states that “no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...”. The NEMA (No 107 of 1998) states that an integrated environmental management plan should (23:2 (b)) “...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage...” In compliance with the MPRDA, the NHRA and NEMA. In accordance with legislative requirements and EIA rating criteria, the regulations of SAHRA and Association of Southern African Professional Archaeologists (ASAPA) have also been incorporated to ensure that a comprehensive legally compatible HIA report is compiled. The heritage impact assessment criteria are described in more detail in Annexure A.

4. BACKGROUND OF AREA

4.1 ARCHAEOLOGICAL BACKGROUND

The Stone Age is divided in Earlier; Middle and Later Stone Age and refers to the earliest people of South Africa who mainly relied on stone for their tools.

Earlier Stone Age: The period from \pm 2.5 million yrs - \pm 250 000 yrs ago. Acheulean stone tools are dominant.

Middle Stone Age: Various lithic industries in SA dating from \pm 250 000 yrs – 22 000 yrs before present.

Later Stone Age: The period from \pm 22 000-yrs before present to the period of contact with either Iron Age farmers or European colonists.

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. Similar to the Stone Age it can be divided into three periods:

The Early Iron Age: Most of the first millennium AD.

The Middle Iron Age: 10th to 13th centuries AD

The Late Iron Age: 14th century to colonial period.

4.2 ARCHIVAL/HISTORICAL MAPS

A number of maps depicting the study area were located. Enlarged sections of these maps are presented below. A short discussion on each of these maps is also made.

4.2.1 Merensky Map, 1887

(National Archives, Maps, 3/302)

The map depicted in **Figure 4** below is titled “*Original Map of South Africa*”. It was compiled by Reverend A. Merensky and dates from 1887. The map does not appear to be all that accurate, but provides some idea as to the characteristics of the study area at the time (refer **Figure 4**).

It is evident from the enlarged map component below that many of the settlements in the general vicinity of the study area were located on the existing rivers. See for example ‘*Ga Maperi*’, ‘*Batlaros*’, ‘*Old Lattaku*’ and so forth.



Figure 3 - Map depicting the study area and surrounding region. Note that almost all the towns are situated on or near the main rivers (National Archives, Maps, 3/302).

4.2.2 “Kuruman”, Undated

(National Archives, Maps, 3/533)

This map is simply titled “Kuruman”, with no further information depicted thereon..

An important observation to be made from this map, and something that is supported by the other data, is that the proclaimed farms at the time stretched only to the vicinity of the Kuruman River, with no proclaimed farms to the west of it. Although settlements are shown to the west of the said river, these are all located on the banks of the rivers.

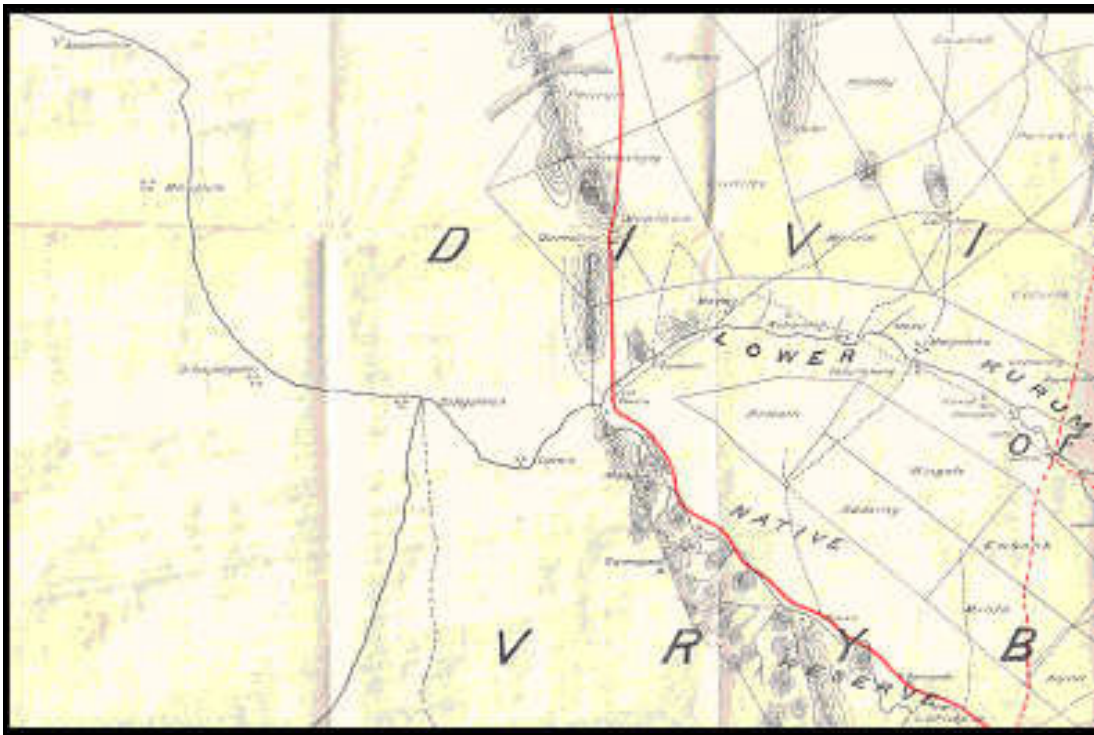


Figure 4 - Depiction of the wider landscape surrounding the study area (National Archives, Maps, 3/533).
The so-called Lower Kuruman Native Reserve is shown on the right.

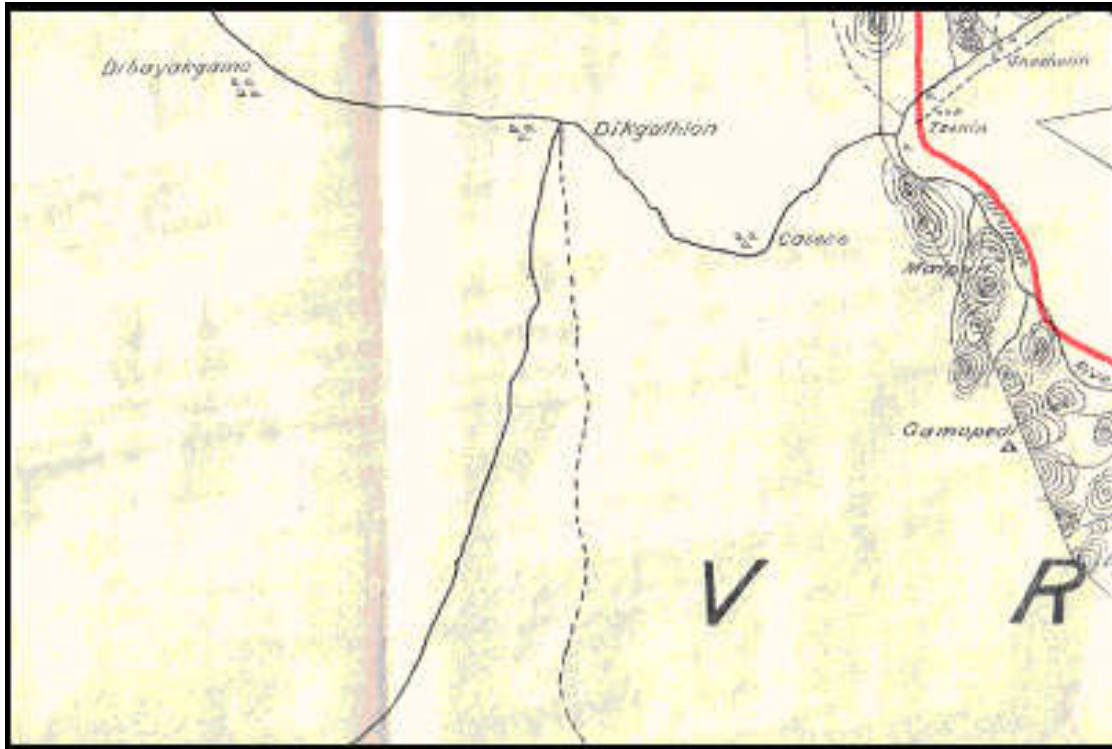


Figure 5 -Closer view on the study area and surroundings. Note the location of the towns close to river courses (demarcated in black line). (National Archives, Maps, 3/533).

4.2.3 Geological Map, 1925

(National Archives, Maps, 2/304)

This map was made in 1925, and is titled the “*Geological Map of the Union of South Africa*”. It was produced by the Geological Survey of the Department of Mines and Industries.

No settlement features or human activity centres are shown for the areas in which the farms under discussion are located. In the wider region, note that all the indicated settlements are located adjacent to the rivers. These include settlements such as Dikgatlon, Batlaros and Gamopedi. Another interesting aspects shown on the map is the indication of the Lower Kuruman Native Reserve.

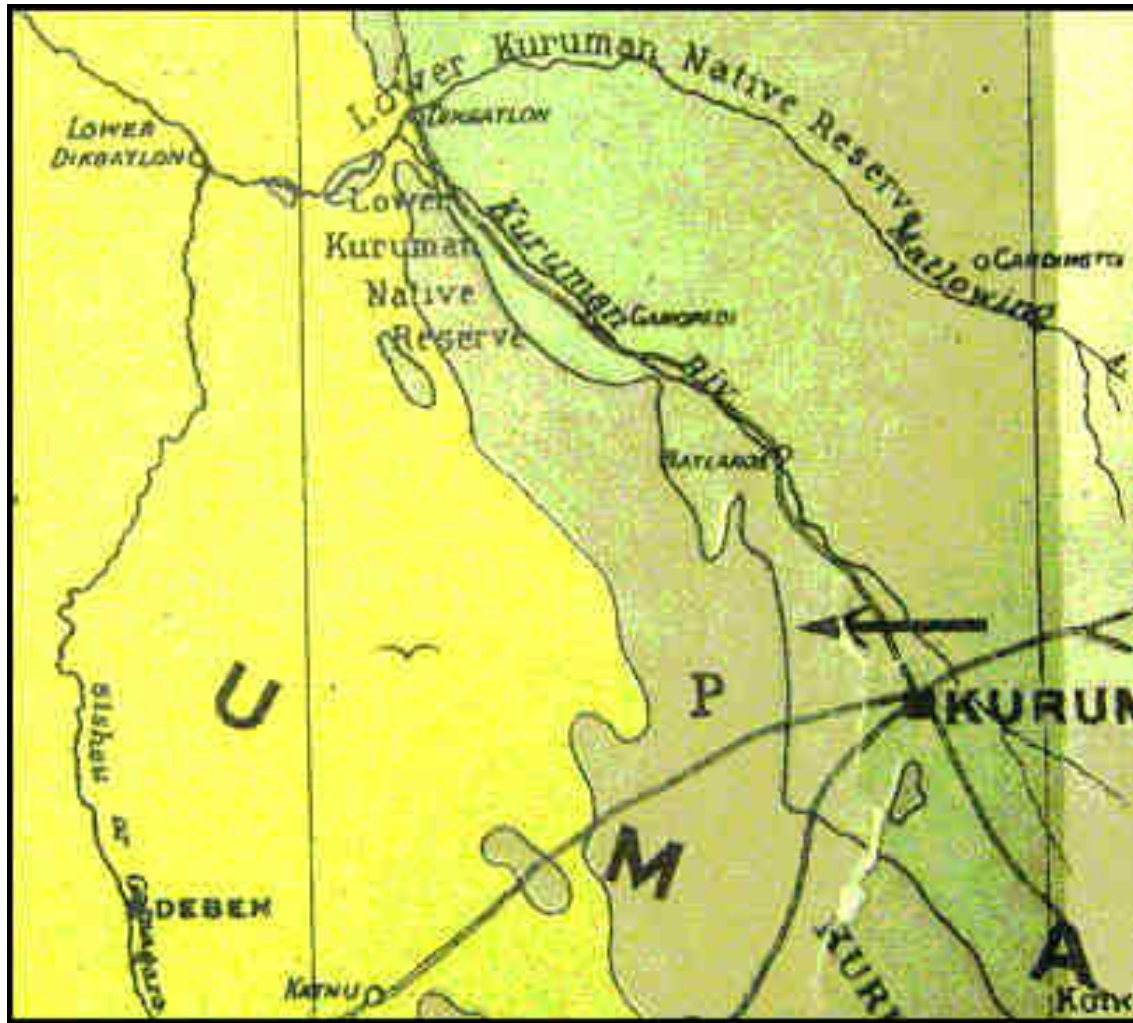


Figure 6 - Geological map of the study area and surrounding region (National Archives, Maps, 2/304).

4.2.4 Orange River Sheet 3, 1945

(National Archives, Maps, 2/1085)

This map is titled "Orange River Sheet 3", and dates from 1945. It was produced by the Union Defence Force (U.D.F.), and although the edition looked at is dated 1945, it appears to have been drawn during 1942. The map provides a general view on the study area and surrounding region.

No settlement features or human activity centres are shown for the areas in which the farms under discussion are located. Note the way in which the secondary road (thin brown line) follows the rivers. Only the smaller roads (brown stippled line) cross over the waterless areas. Furthermore, three Post Offices are shown, all located on the rivers. Although three mines are shown, these are all situated closer to Kuruman. No mines are shown for the areas under discussion.

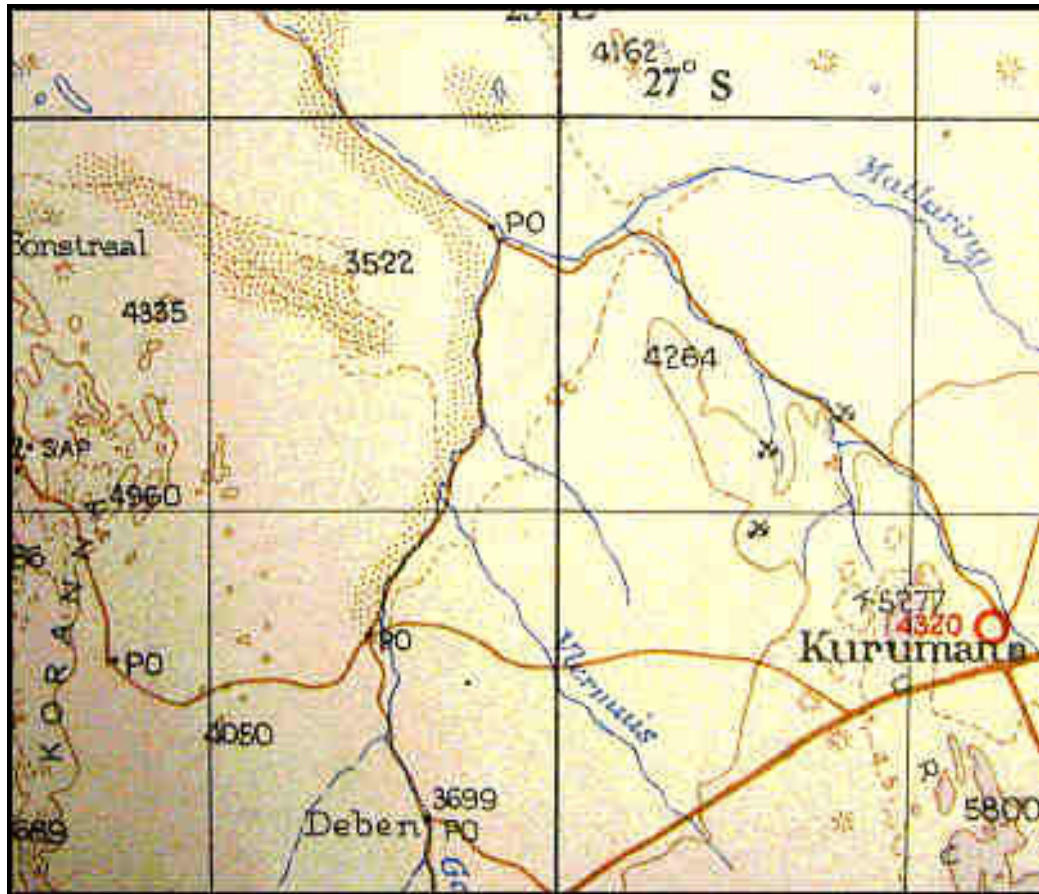


Figure 7 - Map depicting the study area and surrounding region (National Archives, Maps, 2/1085).

4.3 ASPECTS OF THE AREA'S HISTORY AS REVEALED BY THE ARCHIVAL/DESKTOP STUDY

4.3.1 Settlement during the Later Stone Age

A number of Stone Age sites are known for the area surrounding Kuruman as well as along the Kuruman River. Some of these sites contain rock engravings as well, such as Nchwaneng and Tsineng.

As the wider landscape became increasingly inhabited, the San were forced to move further west and northwest to remain in the vicinity of wild game (Snyman, 1992).

4.3.2 Early Black Settlement during the Late Iron Age and Historic Period

The Tlharo seems to have been the first Tswana group to enter the Kuruman area. They originated from the Hurutshe further to the north-east, and after splitting from this group during the end of the 17th century, moved in a southern direction down the Molopo River. Their early settlements included Khuis, Madibeng, Heuningvlei, Langeberg and Tsineng (Snyman, 1992). As mentioned earlier, the town of Tsineng (Tsenin) is located in the general vicinity of the present study area.

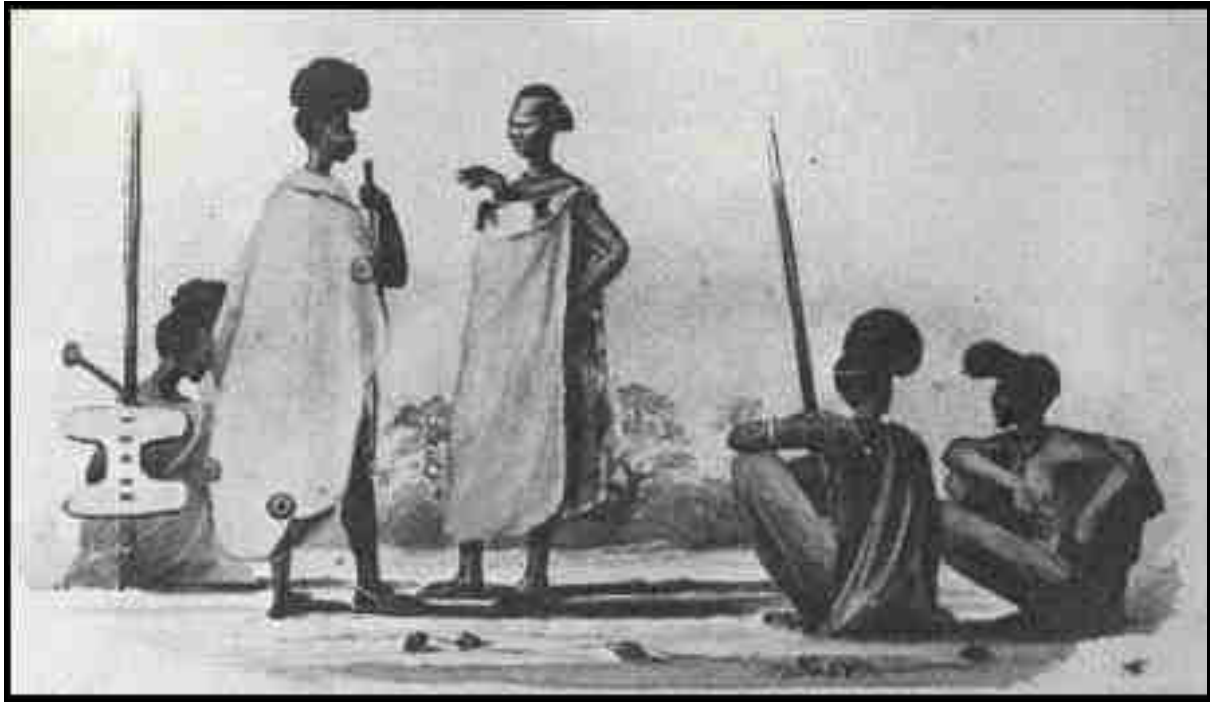


Figure 8 - "Tlharo of the Kalahari Desert" A sketch that appeared in Dr. Andrew Smith's travel journal (Lye, 1975:171).

The second important Tswana group from the wider area is the Tlhaping. They originated from the Rolong and during the mid-1700s moved southward along the Harts and Vaal Rivers to the vicinity of Campbell from where they travelled westwards into the area falling between Tsantsabane and Majeng on the edge of the Kalahari Desert. The Tlhaping established a capital on a perennial river known as Nokaneng. Their ruler during this time was king Maswe. Although the exact locality of Nokaneng is not known, one possibility is that the present non-perennial river Ga-Mogara used to be the Nokaneng River. This possibility was supported by the missionary John Campbell who in 1820 referred to the Ga-Mogara River as the Nokaneng (Snyman, 1992). Interestingly, Robert Moffat indicated Nokaneng to have been situated to the east of the Langeberg. This said, it is important to note that Breutz (1992) stresses the point that the actual capital Nokaneng was in fact located in the direct vicinity of Postmasburg.

During the reign of Molehabangwe, who had succeeded his father Maswe in 1775, a confederation was formed which consisted of a stratified society comprised of the Tlhaping, Rolong, Tlharo, Kgalagadi and San. While the Tlhaping was seen as the ruler class, the Kgalagadi and San were viewed as vassals (Snyman, 1992).

The Tlhaping conducted extensive trading activities with the Korana to the south and the Tswana to the north. During 1770 some of the Korana groups crossed the Orange River and came to the land of the Tlhaping. Although the initial contact was peaceful, conflict soon erupted. The better-armed Korana managed to force the Tlhaping out of the area in approximately 1790. This move was further augmented by the fact that the Nokaneng River had dried up. The Tlhaping first moved to Kathu and then to Ga-

Mopedi on the Kuruman River. The Tlhaping eventually established themselves at Dithakong on the Moshaweng River (Snyman, 1992).

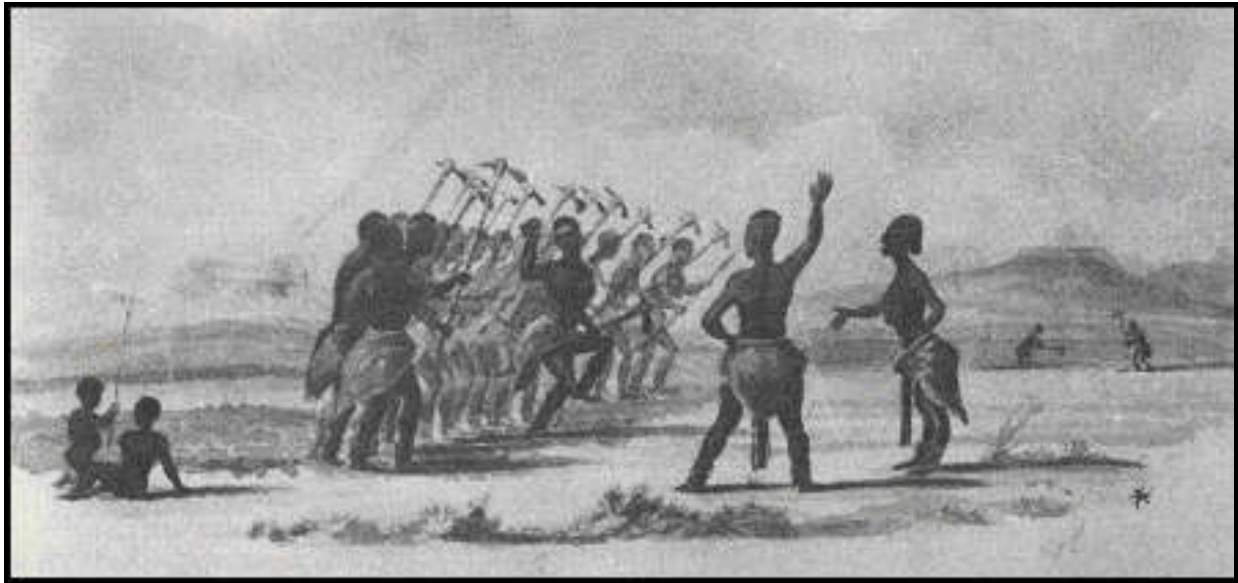


Figure 9 - "Tlhaping women cultivating gardens and singing" One of the sketches appearing in Dr. Andrew Smith's journal (Lye, 1975:171).

4.3.3 European Explorers and Visitors

Two of the more well known early European explorers to these areas were Dr. Hinrich Lichtenstein in 1805 and Dr. Andrew Smith during 1835.

4.3.3.1 The journey of Lichtenstein (1805)

After crossing the Orange River in the vicinity of present-day Prieska, Lichtenstein's party visited present-day Danielskuil, and by June 1805 they were at Blinkklip (Potsmasburg). From here they travelled further north and reached the Kuruman River where they met Tswana-speaking people. They followed the river downstream for three days, after which they followed a tributary to reach Lattakoe. From here they turned south and reached the Orange River on 11 July 1805.

While on their way to the Kuruman River (and to the south thereof), Lichtenstein and his fellow travellers visited a small settlement consisting of "...about thirty flat spherical huts." Although the people who stayed here were herdsmen who looked after the cattle of richer people living on the Kuruman River, they indicated that San (Bushmen) were also present in the area.

Lichtenstein's party subsequently travelled further north to visit the capital of King Mulihawang located on a plain in the vicinity of the Kuruman River. He described the town as consisting of six hundred houses with 5000 inhabitants. The individual dwellings were described as follows: "*The houses were all of a circular form, with the roof running up to a point; the roof rests on a circle of poles, which are united together below by thin walls of loam; above, for a little way below the roof, they are left open to admit light*

and air." (Lichtenstein, 1930:373). Lichtenstein also indicated that hedges were used as cattle enclosures.

4.3.3.2 Andrew Smith's journey (1835)

Dr. Andrew Smith's expedition into the interior of Southern Africa can be seen as one of the highlights of the era of exploration and travel into these regions of Africa. After some travelling, which included a visit to Mosjesj, Smith's party crossed over the Vaal River and after reaching this river's confluence with the Harts, followed it to Boetsap and subsequently reached Kuruman (Bergh, 1999).

Smith met Robert Moffat at Kuruman, and during this time made a journey all along the Kuruman River to Tsineng from where he travelled south to the Langeberg. Returning to Tsineng, Smith travelled north to Heuningvlei before returning back to Kuruman (Bergh, 1999).

For the aims of the present study, it is especially Smith's journey from Tsineng to the Langeberg and back which is most interesting. The route followed by Smith seems to have been the Ga-Mogara River, and as such his route crossed over portions of the present study area.

In the vicinity of Tsineng Smith found a number of springs which the local people called Malichana. He observed a small group of Tswanas (*Bituanas*) as well as a Griqua family staying near the springs, and indicated that the Tswana group conducted agricultural activities in gardens laid out near the springs.

From Tsineng Smith's party travelled all along the bank of the Kuruman River, presumably to the confluence of the Ga-Mogara River. On this stretch of the journey Smith observed "*...a number of almost naked natives in the distance carrying ostrich shells and something resembling leather sacks upon their shoulders...*" (Lye, 1975:181). These people were on their way to a water hole, which had been excavated some seven meters deep. Anyone wishing to obtain water had to climb down the hole making use of footholds along the sides.

4.3.4 British Protectorate

On 23 March 1885 Britain declared a Protectorate over Bechuanaland and the Kalahari. On 30 September 1885 the Protectorate was divided into two parts. The area north of the Molopo River remained the Bechuanaland Protectorate and up to 1895 was administered from Vryburg, after which the capital was moved to Mafeking. The area south of the Molopo became the Crown Colony of British Bechuanaland with its capital at Vryburg (Tlou & Campbell, 1997). This area included the present study area as well as Kuruman.

In accordance to Act 31 of 1895 the area south of the Molopo River, namely British Bechuanaland, was included in the Cape Colony. This took place during November 1895 (Smit, 1966).

4.3.5 Historic Black Settlement

5.3.5.1 Situation at the beginning of the 19th century

When Reverend Robert Moffat first arrived in the Kuruman area in 1819 he found the Tlhaping settled at Maropin in the Kuruman Valley under their ruler Mothibi. They subsequently moved upstream to the vicinity of present-day Kuruman.

During the same time Moffat found the BaTlharo established at Tsening.

In a document written by the Superintendent of Natives on 3 November 1921, it is indicated that before the farms to the west of the Lower Kuruman Native Reserve were surveyed and ceded to different white farmers, the black people of the area “...had the run of the whole country to the Moshewing River on the one side and the Gamagara River on the other...” and grazed their livestock and conducted agricultural activities over these vast tracts of land. In an associated petition document drawn up by the Thlaro people of Bathlaros, they indicated that their agricultural lands and cattle posts used to stretch in a westward direction all the way to the “*Dibeng*” River, which appears to be the present-day Ga-Mogara River (NTS, 7752, 22/335).

4.3.5.2 Lower Kuruman Native Reserve

On 4 May 1895 the Lower Kuruman Native Reserve as well as a number of other so-called native reserves was established by virtue of Bechuanaland Proclamation No. 220 of 1895. These reserves were demarcated as part of a commission which investigated land claims and land settlement in British Bechuanaland. A subsequent report titled “*Report of the Commissioners appointed to determine land claims and to the effect of a land settlement in British Bechuanaland*” and published in 1896, contained all the findings of the commission (Breutz, 1963).



Figure 10 - Map showing the original demarcation of the Lower Kuruman Native Reserve.

At the time of its establishment, the Lower Kuruman Native Reserve had a population of 5425, and being 225 square miles in extent, had a population density of 26.5 acres per individual. With time, the population density increased. Livestock numbers also increased drastically. As a result of these pressures the size of the reserve was subsequently extended.

During negotiations and discussions on such an expansion of the reserve, it was indicated that a number of black people were residing outside the boundaries of the reserve. In a police report dated 22 January 1908 a list is provided of all the people, white and black, residing "...on the banks of the Kuruman River north of the surveyed farms in the Sishen Valley." This document provides an indication of human habitation in the direct vicinity of the study area during the early 1900s. One interesting observation to be made from the document is that some of the persons who acted as borehole watchmen were black. For example, Hans Gaboerkwe had been living at Dibiachomo since 1899 and was tasked with keeping the well open (NTS, 7752, 22/335).

4.4.6 The Langeberg Rebellion

During 1897 conflict broke out between the authorities and a Thlaping leader from Taung, Galeshiwe. The conflict arose after some of Galeshiwe's cattle that were infected by Rinderpest had to be destroyed. After killing an officer, Galishewe fled to the Thlaro leader Toto of the Langeberg. A full-scale rebellion broke out that was eventually suppressed (Breutz, 1963).



Figure 11 - Galeshiwe (National Archives, TAB, 36277).

Although most of the activities associated with the rebellion took place away from the study area and surrounding region, it is evident from the historical records documenting the rebellion that some activities did take place in the vicinity. On 13 June 1897, for example, a battle took place between Inspector Berrangé's Cape Police and a large force under Galishewe at Tsineng (Dalgerty, 1898). Another incident which took place in the area was the killing of J.P. and Edward Drotskie in the vicinity of Boeredraai (Snyman, 1992). It can be expected that the movement of military units must have taken place a number of times in the area as well. From the British records, for example, it is known that military patrols traversed the area between Kuruman and Tsineng, as well as along the Ga-Mogara river. Furthermore, on 20 June 1897 a large force of "rebels reinforcements" were observed between Upper and Lower Dikgathlong on their way to the Langeberg.

4.3.7 Settlement of White Farmers

4.3.7.1 Background information on the settlement of white farmers in the area

According to Smit (1966) the farm Boerdraai 228, which is adjacent and to the west of the farm Wessels 227, was always seen as situated on the edge of the real desert.

Although some white farmers did travel down the Kuruman River to settle in the vicinity of Boeredraai during the latter part of the 19th century, by 1897 most of them had moved away again.

The first white people to settle on a permanent basis in the area were the Le Roux family who established themselves at Dikgathlon. More families followed and subsequently also settled in the area. During a period of great drought between 1907 and 1908 many farmers of the then Cape Colony moved into these areas along the edge of the Kalahari Desert in search of better grazing for their cattle (Smit, 1966).

Schedule of persons living on banks of the Kuruman River north of surveyed farms in Sishen Valley.				
Name of spot	Name of occupier	Nation-ality	Resident since what date	Authority
Gasese	F.von Krudenberg	E	Sept. 1907	Grazing licence
"	J. Thomas	E	Sept. 1907	"
"	J. Drotaki	E	March 1904	"
Ruchea	E.L.Drotaki	E	1893	"
Upper Dikgathlon	Z.P.le Roux	E	March 1905	"
"	J. le Roux	E	Aug. 1906	"
"	D. Korsens	E	Aug. 1907	"
"	P. Jacobs	E	Dec. 1907	In charge of Z.P. le Roux's stock, Z.P. le Roux (Grazing licensee) absent temporarily
"	40 Natives		1894	Occupying 10 huts. Pay hut tax.
Dibeakgomo	Hans Gabeerwe	N	1899	Permission to live there to keep wells open.
Boerdraai	Hans Goliath	N	May 1906	
Mphhepha	Poleal and 59 others	N	1894	Permission to live there to keep water open
Lower Dikgathlon (Latlhakane)	Kanyan and 69 others	N	1894	Permission to reside there pending the surveying of a Native Reserve. Pay hut tax.
Matlapaning	30 persons	N		Squat there during rainy season, 3 to 4 months in each year. Pay hut tax.

Figure 12 - Police document listing all the people who resided on the banks of the Kuruman River at the time of an inspection in 1908. The names of a number of the early white pioneers in the area are also listed here.

When the First World War (1914-1918) broke out, and the South African Union Government decided to attack German South West Africa, the Union troops needed water to sustain them along the way. As a result a number of boreholes were dug all along the banks of the Kuruman River. These boreholes were erected at places such as Eensaam, Kameelrus, Murray, Springputs and Van Zylsrus (Smit, 1966; Van der Merwe, 1949).

After the war, farmers established themselves at these localities as borehole watchmen, and in exchange for these duties were allowed free grazing rights on the surrounding land. Subsequently, even more boreholes were sunk by the Department of Lands (Smit, 1966; Van der Merwe, 1949).

Since the formulation of the Land Settlement Act No. 12 of 1912 as amended by Act No. 23 of 1917, numerous farms in the vicinity of the study area had been allocated to white farmers. By 1921 almost all of the land surrounding the *Lower Kuruman Native Reserve* had become occupied.

At the end of the First World War the Department of Lands started distributing the farms on application under very lenient conditions. Many of the people who was already established as borehole watchmen and tenants were given first choice to apply for the farms on which they were residing (Smit, 1966).

Many farms were distributed during this time, so much so that by 1929 all the farm up to Vanzylsrust was already handed out (Smit, 1966).

4.3.7.2 Farm Surveys

During the 1910s a full scale survey of large portions of the region was undertaken by Dirk Roos and Hendrik Wessels. While Wessels was concerned with the surveying of the farms from Dingle and Sishen up to Cobham and Shirley, Dirk Roos was responsible for the surveying of the farms from Mamatwan in the south to areas further north of the Kuruman River (Samangan, 1977).

Many stories are told about these two pioneering characters. As they were allowed to name the farms they surveyed, most of the farms names appearing on maps of the area were created or thought of by them. The farm Wessels, for example, was named by Dirk Roos in honour of his colleague Hendrik Wessels.

One of the more well-known stories relates to the naming of the farm Hotazel. Dirk Roos was assisted at the time by Veldcornet J.U. Waldeck. One evening, after a long day's work in the hot Kalahari sun Roos sat down at the camp and remarked: "*What about a name for the farm? Phew! What a day! What a place! Hot as hell.*" Waldeck replied with the words "*That's it. The perfect name for it – hot as hell*" (Samangan, 1977:19 & 20). The wording was slightly changed and "*Hotazel*" was written as the farm name on the survey diagram.

4.3.8 Mining

The study area and surrounding region is today well known for its manganese mines. The importance of manganese lies in the fact that it is used in the manufacture of carbon steel.

The history of modern manganese mining in the area can be traced back to Dr. A.W. Rogers who published a record of the geology of present-day Botswana and Griqualand West as part of the annual report of the Geological Commission of the Cape Colony in 1906. What is significant about his publication is that Rogers found that the well-known hill from the area known as Black Rock consisted largely of manganese, a mineral ore previously undiscovered in the Cape Colony.

The next important person to appear on the scene was Dr. L.G. Boardman. While employed by the Government Geological Survey as a geologist, Dr. Boardman investigated the manganese deposits at Black Rock during or directly after 1940. He was very excited by the extent of the manganese, and published his findings in a paper he wrote for the Geological Society of South Africa.

Even before the visit by Dr. Boardman, a prospector by the name of A.T. Fincham had felt that the area surrounding the Black Rock outcrop may also contain manganese. As a result he obtained options on a number of farms surrounding Black Rock. He approached the mining company S.A. Manganese with these farm options, but they felt that the Black Rock area was too isolated at the time. Fincham approached Ammosal as well, who took over his options on three farms and after a further assessment by geophysicist Oscar Weiss, decided to mine the Black Rock area during mid-1940.

During 1950 S.A. Manganese was again approached by Fincham regarding new options on farms surrounding Black Rock. Although the mining company was not interested, Dr. Boardman who had joined their ranks earlier convinced the board to at least investigate the Black Rock area. Boardman subsequently surveyed large tract of land, including the farms Wessels, Mamatwan, Dikgathlong, Dibiaghomo. He found very promising results over large sections of land, and a drilling rig soon arrived. The first borehole was drilled on Wessels, and after disappointing results it was moved to Dibiaghomo. Here, at a depth of 280 meters, ore containing a very high manganese percentage was reached. Other boreholes in the area found similar results and the freehold to a number of farms were obtained. When information about these discoveries leaked out and reached Ammosal, a tussle broke out between the two companies to obtain freeholds to as many farms in the mineral-rich area as possible.

Although mining operations started in earnest on Smartt, S.A. Manganese's attention was soon drawn to the farm Hotazel where very promising results were also found. A whole village was constructed on the farm, and the Hotazel mine was officially opened on 19 November 1959.

During the early 1960s S.A. Manganese Limited (Samangan) at the time had options over 18 farms, including the farms Mamatwan and Goold on the southern edge of the ore body. Although Mamatawan

had been prospected only low grade manganese ore could be found. However, the ratio between iron and manganese from Mamatwan was believed to be excellent. During this time Ammosal had started mining on the adjacent farms of Devon and Adams, and it was not long before the decision was made to commence mining operations on Mamatwan as well.

After a crushing and screening plant was erected at Mamatwan the mine began producing in November 1963. During the 1970s the mine reached a production output of more than one million tons a year (Samangan, 1977).

Although the mining rights of the farm Wessels had been acquired by S.A. Manganese in 1952, and even though some prospecting work had taken place, it was not until 1965 that the farm was again looked at with interest.

By January 1969 20 boreholes had been sunk on the farm Wessels, Dibiaghomo and Dikgathlong, which revealed three bands of manganese ore, of which the top and bottom bands were considered mineable.

The official opening of Wessels mine took place on 2 May 1973. By 1976 the mine was producing 750 000 tonnes a year (Samangan, 1977).

4.4 POSSIBLE HERITAGE SITES

No possible heritage sites could be discerned from the archival study.



Figure 13 - Historic photograph of an early farmer's dwelling along the Kuruman River (Van der Merwe, 1949).

4.5 CONCLUSIONS

This archival study has revealed important aspects about the history of the area. Certainly some of the key things that came out of the study is firstly the relative low human presence for the dry regions surrounding the study area and secondly the tendency for human settlements in these areas to be located on or near the water courses.

5. SITES OF SIGNIFICANCE

The study area is located on topographical sheet 2722BB. The proposed mining area covers an area of approximately 350 hectares, of which a large part is bordered to the south by the Kuruman River. The proposed site consisted of woodlands and sand veldt intermingled with red dunes.

As with previous surveys in the Hotazel area, the only archaeological sensitive areas occurred where the site is characterised by a dry riverbed that exposed limestone and pebble deposits. The area is however restricted to a zone of approximately 50 meters from the centre of the river bed in which the Kuruman perennial river runs.



Figure 14 – View of general conditions in area



Figure 15 – Vegetation cover in study area. The dry bed of the Kuruman River is central to the photograph.

One single site of low heritage significance was identified within the study area.

5.1 LM01

GPS: 27,03961 S 22,86738 E

Two lithic artefacts were identified at this location. They were found in a small clearing on the edge of a sandy rise or sand dune which was overlooking the lower land along the banks of the Kuruman River. The artifacts were found on the surface and approximately 15m from each other. The identified artefacts were low quality waste flakes and were possibly from the LSA. No other artefacts or features were identified in the area.



Figure 16 – General view of site



Figure 17 – Lithic artefacts from LM01

Impact	Impact Significance	Heritage Significance	Certainty	Duration
Negative	Low	GP.A	Probable	Short term

Mitigation:

No mitigation is necessary as the site is of very low significance.

6. ASSUMPTIONS AND LIMITATIONS

Not subtracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover in some areas. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted. Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time as the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. In the event that any graves or burial places are located

during the development the procedures and requirements pertaining to graves and burials will apply as set out below.

7. ASSESSMENT AND RECOMMENDATIONS

*A locality map is provided in **Annexure A***

During the survey one site of archaeological significance was identified.

LM01

The site is characterised by a very low density scatter of lithic artefacts. Two lithic artefacts (waste flakes from the LSA), eroding from a Hutton sand dune overlooking the Kuruman River were observed.

The palaeontological potential scoping (**Annexure C**) has also indicated a very low potential for such finds.

General

If during mining any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

8. LIST OF PREPARES

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**ANNEXURE A:
Legislation , Terminology and Assessment Criteria**

LEGISLATIVE REQUIREMENTS – TERMINOLOGY AND ASSESSMENT CRITERIA

1.1 LEGISLATION

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

- i. National Environmental Management Act (NEMA) Act 107 of 1998
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999
- iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- iv. Development Facilitation Act (DFA) Act 67 of 1995

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

- i. National Environmental Management Act (NEMA) Act 107 of 1998
 - a. Basic Environmental Assessment (BEA) – Section (23)(2)(d)
 - b. Environmental Scoping Report (ESR) – Section (29)(1)(d)
 - c. Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
 - d. Environmental Management Plan (EMP) – Section (34)(b)
- ii. National Heritage Resources Act (NHRA) Act 25 of 1999
 - a. Protection of Heritage resources – Sections 34 to 36; and
 - b. Heritage Resources Management – Section 38
- iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
 - a. Section 39(3)
- iv. Development Facilitation Act (DFA) Act 67 of 1995
 - a. The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

1.2 TERMINOLOGY

Table 1: Acronyms and descriptions

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
AWD	Archaeological Walk Down
CRM	Cultural Resource Management
DEAT	Department of Environmental Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape

I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
PSSA	Palaeontological Society of South Africa
ROD	Record of Decision
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

Archaeological resources

This includes:

- i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
- ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in the change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- ii. carrying out any works on or over or under a place;
- iii. subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- iv. constructing or putting up for display signs or boards;
- v. any change to the natural or existing condition or topography of land; and
- vi. any removal or destruction of trees, or removal of vegetation or topsoil.

Heritage resources

This means any place or object of cultural significance

2. ASSESSMENT CRITERIA

This chapter describes the evaluation criteria used for the sites listed below.

The significance of archaeological sites was based on four main criteria:

- **site integrity** (i.e. primary vs. secondary context),
- **amount of deposit, range of features** (e.g., stonewalling, stone tools and enclosures),
 - Density of scatter (dispersed scatter)
 - Low - <10/50m²
 - Medium - 10-50/50m²
 - High - >50/50m²
- **uniqueness** and
- **potential** to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

A - No further action necessary;

B - Mapping of the site and controlled sampling required;

C - No-go or relocate pylon position

D - Preserve site, or extensive data collection and mapping of the site; and

E - Preserve site

Impacts on these sites by the development will be evaluated as follows

2.1 Impact

The potential environmental impacts that may result from the proposed development activities.

2.1.1 Nature and existing mitigation

Natural conditions and conditions inherent in the project design that alleviate (control, moderate, curb) impacts. All management actions, which are presently implemented, are considered part of the project design and therefore mitigate impacts.

2.2 Evaluation**2.2.1 Site Significance**

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report.

Table 2: Site significance classification standards as prescribed by SAHRA

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	-	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium Significance	Recording before destruction
Generally Protected C (GP.A)	-	Low Significance	Destruction

2.2.2 Impact Rating

VERY HIGH

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment, and usually result in **severe** or **very severe** effects, or **beneficial** or **very beneficial** effects.

Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with a VERY HIGH significance.

HIGH

These impacts will usually result in long term effects on the social and/or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.

Example: The change to soil conditions will impact the natural system, and the impact on affected parties (in this case people growing crops on the soil) would be HIGH.

MODERATE

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are real but not substantial.

Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.

Example: The provision of a clinic in a rural area would result in a benefit of MODERATE significance.

LOW

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

Example: The temporary change in the water table of a wetland habitat, as these systems is adapted to fluctuating water levels.

Example: The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people who live some distance away.

NO SIGNIFICANCE

There are no primary or secondary effects at all that are important to scientists or the public.

Example: A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.

2.2.3 Certainty

DEFINITE: More than 90% sure of a particular fact. Substantial supportive data exists to verify the assessment.

PROBABLE: Over 70% certainty of a particular fact, or of the likelihood of an impact occurring.

POSSIBLE: Only over 40% certainty of a particular fact or of the likelihood of an impact occurring.

UNSURE: Less than 40% certainty of a particular fact or likelihood of an impact occurring.

2.2.4 Duration

SHORT TERM: 0 to 5 years

MEDIUM: 6 to 20 years

LONG TERM: more than 20 years

DEMOLISHED: site will be demolished or is already demolished

Example

Evaluation

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	Moderate	Grade GP.B	Possible	Short term	B

3. LEGAL AND POLICY REQUIREMENTS

3.1 GENERAL PRINCIPLES

In areas where there has not yet been a systematic survey to identify conservation worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been done and identified heritage resources are formally protected.

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In the new legislation, permits are required to damage, destroy, alter, or disturb them. People who already possess material are required to register it. The management of heritage resources are integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued.

In addition to the formal protection of culturally significant graves, all graves, which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas), are protected. The legislation protects the interests of communities that have interest in the graves: they may be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle will be identified, cared for, protected and memorials erected in their honour.

Anyone who intends to undertake a development must notify the heritage resource authority and if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the developer's cost. Thus, developers will be able to proceed without uncertainty about whether work will have to be stopped if an archaeological or heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:

An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1 (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

Under the National Heritage Resources Act (Act No. 25 of 1999), provisions are made that deal with, and offer protection, to all historic and pre-historic cultural remains, including graves and human remains.

3.1 GRAVES AND CEMETERIES

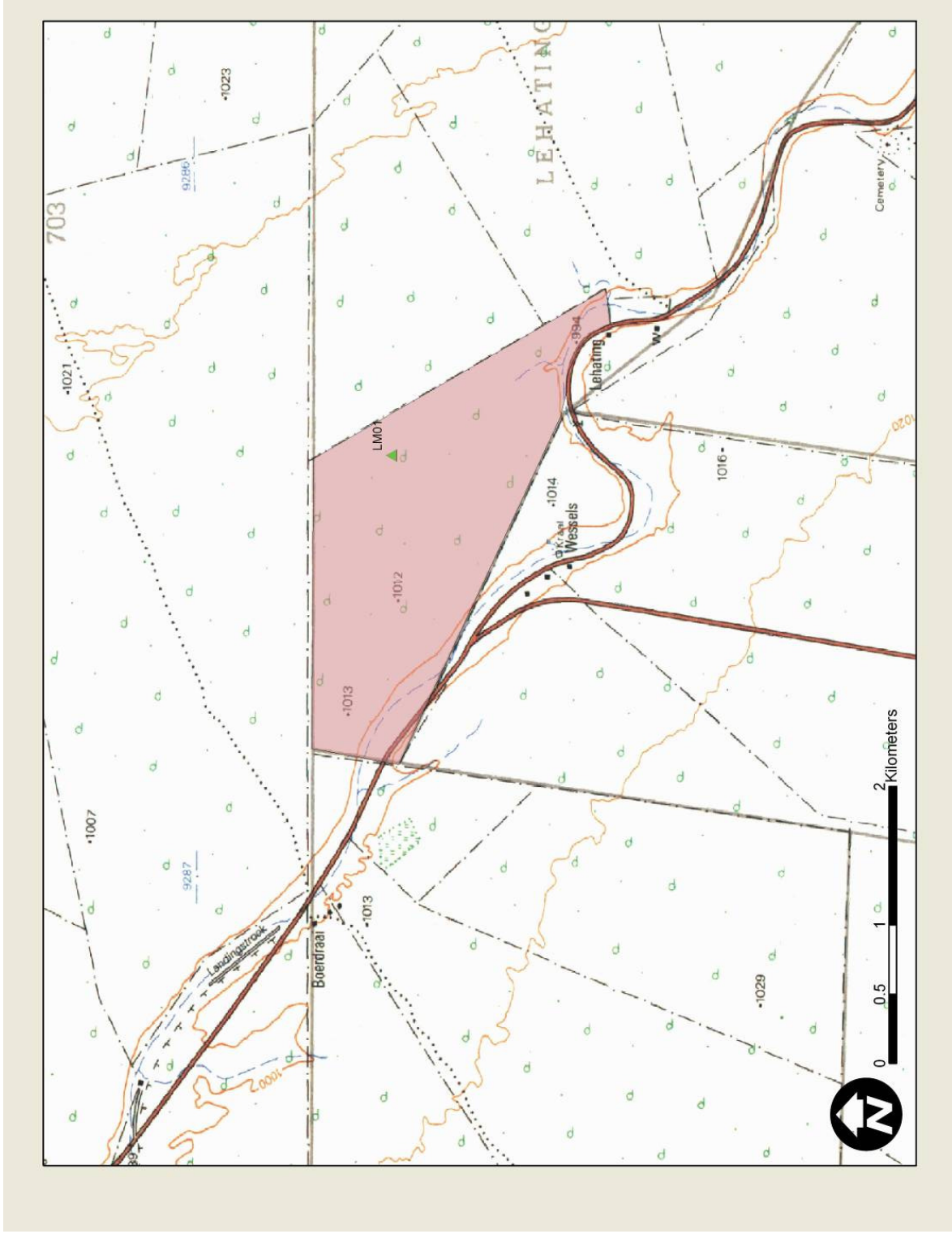
Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning, or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the

relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the South African Heritage Resource Agency (SAHRA). The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.

**ANNEXURE B:
Heritage Map**



**ANNEXURE C :
Palaeontological Potential Report**



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8 May 2010

Mr Wouter Fourie
Heritage Unit
Professional Grave Solution Pty. Ltd.

Dear Mr Fourie

Palaeontological Impact Analysis, Lehating Mining (Pty) Ltd, Hotazel

I have undertaken a desk top palaeontological impact analysis for the area which will be affected by the proposed mining activities of Lehating Mining (Pty) Ltd on the farm Lehating 225 north-east of Hotazel.

The entire area is underlain by rocks of the Precambrian Griquatown Group which are not exposed. These in turn are covered by Quaternary sands which are of aeolian origin. The Precambrian rocks are not known to contain any fossils. There is a slight, but unlikely, possibility of Quaternary fossils being present in the overlying sand deposits. It is unlikely that the proposed mining development will have an impact on palaeontological heritage, but it is essential that if fossils are uncovered in the process of mining activities that a professional palaeontologist be bought in to access the situation.

Yours sincerely

A handwritten signature in black ink, appearing to read 'B. Rubidge', written over a light grey dotted background.

Professor Bruce Rubidge