

HERITAGE IMPACT ASSESSMENT: PROPOSED GRANITE MINE, NAMAKWALAND MAGISTERIAL DISTRICT, NORTHERN CAPE PROVINCE

Required under Section 38(8) of the National Heritage Resources Act (No. 25 of 1999)
as part of a Heritage Impact Assessment.

HWC SAHRA Case No.: TBC

Report for:

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SUMMARY

ASHA Consulting (Pty) Ltd was appointed by N.J. van Zyl to assess the potential impacts to heritage resources that might occur through the proposed open-cast mining of granite on a 5 ha area on Plot 2100, Concordia. The application area lies alongside an existing granite mine and is located between about 0.9 and 1.3 km to the south of the southern edge of the town of Concordia. The approximate mid-point of the study area is at S29° 33' 31.5" E17° 57' 10.0".

A small granite koppie lies in the northwest corner of the study area, while to its south are a number of large, flat granite outcrops – these are the target for mining. Between them and also further to the south the surface is composed of coarse, granitic sand. Vegetation is minimal and two prospecting trenches had been excavated across the area in a north-south direction. They revealed that weathered granite bedrock tends to occur quite close to the surface.

On the south side of the small koppie a stone-walled kraal was found. A small number of historical glass and ceramic fragments were seen in it, along with copious quantities of modern beer bottle glass. A more substantial scatter of historical materials was seen to the east, largely just outside the study area. Neither of these finds are of much cultural significance and similar features occur widely in the local area along with many other features pertaining to the historical use of the landscape by the residents of Concordia. Aside from these finds, rare stone artefacts in quartz and occasional other historical artefacts were also seen; both of these are considered part of the background scatter. The cultural landscape comprises of the layer of historical (effectively archaeological) materials pertaining to the earlier use of the landscape as well as the aesthetically-pleasing natural landscape. Impacts to the latter are expected, largely due to the presence of the mine in the landscape and the visual contrast between fresh and weathered bedrock.

Due to its location, the kraal can be protected inside the mine area. The visual impacts to the landscape can only be mitigated at closure through effective rehabilitation of the mine faces and waste rock dumps. No significant impacts to heritage resources are foreseen and it is recommended that the project be authorised, but subject to the following recommendations:

- The small kraal in the north-western corner of the application area should be avoided and protected from harm by a small fence running 5 m from the stone walling;
- All exposed fresh bedrock (mine faces and rock dump) must be rehabilitated during mine closure so as to reduce the visual contrast between weathered and fresh rock; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Glossary

Background scatter: Artefacts whose spatial position is conditioned more by natural forces than by human agency.

Hominid: a group consisting of all modern and extinct great apes (i.e. gorillas, chimpanzees, orangutans and humans) and their ancestors.

Later Stone Age: Period of the Stone Age extending over the last approximately 20 000 years.

Abbreviations

APHP: Association of Professional Heritage Practitioners

ASAPA: Association of Southern African Professional Archaeologists

BA: Basic Assessment

CRM: Cultural Resources Management

DMR: Department of Mineral Resources

GP: General Protection

GPS: global positioning system

HIA: Heritage Impact Assessment

NBKB: Ngwao-Boswa Ya Kapa Bokoni

NEMA: National Environmental Management Act (No. 107 of 1998)

NHRA: National Heritage Resources Act (No. 25) of 1999

PPP: Public Participation Process

SAHRA: South African Heritage Resources Agency

SAHRIS: South African Heritage Resources Information System

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1. INTRODUCTION

ASHA Consulting (Pty) Ltd was appointed by N.J. van Zyl to conduct an assessment of the potential impacts to heritage resources that might occur through the proposed open-cast mining of granite on a 5 ha area on Plot 2100, Concordia (Figures 1 & 2). The application area lies alongside an existing granite mine and is located between about 0.9 and 1.3 km to the south of the southern edge of the town of Concordia. The approximate mid-point of the study area is at S29° 33' 31.5" E17° 57' 10.0".

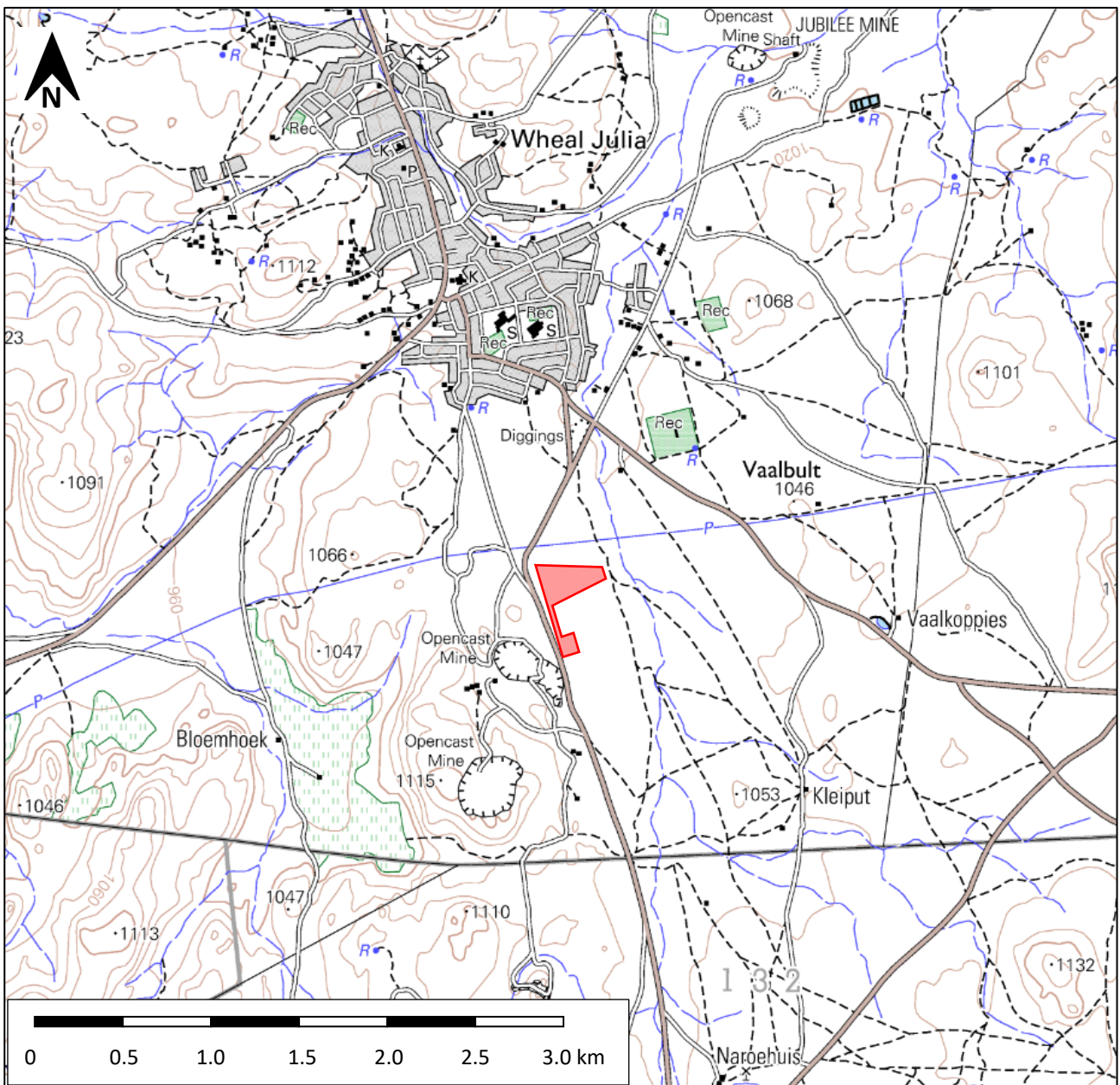


Figure 1: Extract from 1:50 000 topographic map 2917DB showing the location of the site to the south of Concordia (red shaded polygon). Source of basemap: Chief Directorate: National Geo-Spatial Information. Website: www.ngi.gov.za.



Figure 2: Aerial view of the study area (red polygon) showing the surrounding context of the site.

1.1. The proposed project

1.1.1. Project description

The mine will be an open cast mine working from the surface into the buried granite outcrop. Blocks of granite will be cut from the outcrop which is located in the northern part of the application area and waste rock will be dumped in the southern part as an extension to the neighbouring rock dump to the west. A laydown and logistics area will be placed along the northern edge of the application area, while a product stockpile and dispatch yard will be established in the east, adjacent to the existing public road through the area (Figure 3).

The mining method is as follows:

- The establishment of a flat floor using diamond wire saws.
- The flat floor is then fitted with parallel rails which serve the rotary saws which cut blocks from the ore body. The saws have a cutting depth of about 1.7 m.
- The base of the blocks is separated from the bedrock by small diameter plug and feather technique.
- The raw cut block is lifted out of the hole and transported to the dressing area.

- At the dressing area, the block is neatened up through removal of any protuberances. The 1st grade blocks are then transported to the dispatch yard and the 2nd grade blocks to a separate stockpile area.
- Waste blocks and offcuts are transported to the waste rock dump. Excavators are used to keep the top of the waste dump level.

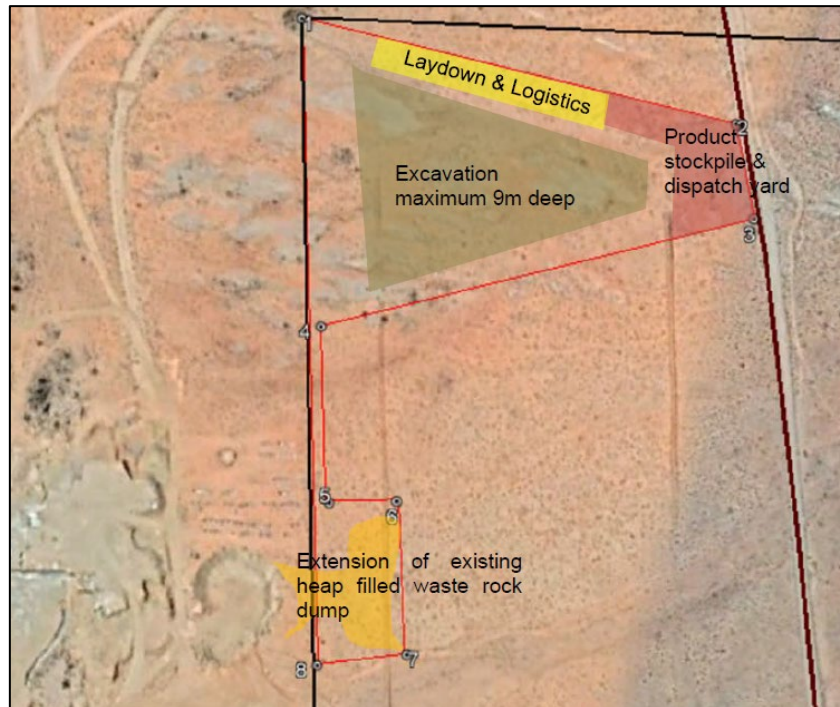


Figure 3: Plan of the proposed mine adjacent to the existing granite mine.

1.1.2. Identification of alternatives

No alternatives are being assessed aside from the No-Go alternative. This is because the applicant is only engaged in granite mining and the location is determined by the location of suitable rock for mining.

1.1.3. Aspects of the project relevant to the heritage study

All aspects of the proposed development are relevant since excavations for foundations and/or services may impact on archaeological and/or palaeontological remains, while all above-ground aspects create potential visual (contextual) impacts to the cultural landscape and any significant heritage sites that might be visually sensitive.

1.2. Terms of reference

ASHA Consulting was asked to assess the potential heritage impacts that the project might have. The assessment was to include both desktop research and a site visit. The results of the work should be used to compile a Heritage Impact Assessment (HIA).

1.3. Scope and purpose of the report

An HIA is a means of identifying any significant heritage resources before development begins so that these can be managed in such a way as to allow the development to proceed (if appropriate) without undue impacts to the fragile heritage of South Africa. This HIA report aims to fulfil the requirements of the heritage authorities such that a comment can be issued by them for consideration by the Department of Mineral Resources (DMR) who will review the Basic Assessment (BA) and grant or refuse authorisation. The HIA report will outline any management and/or mitigation requirements that will need to be complied with from a heritage point of view and that should be included in the conditions of authorisation should this be granted.

1.4. The author

Dr Jayson Orton has an MA (UCT, 2004) and a D.Phil (Oxford, UK, 2013), both in archaeology, and has been conducting Heritage Impact Assessments and archaeological specialist studies in South Africa (primarily in the Western Cape and Northern Cape provinces) since 2004 (please see curriculum vitae included as Appendix 1). He has also conducted research on aspects of the Later Stone Age in these provinces and published widely on the topic. He is an accredited heritage practitioner with the Association of Professional Heritage Practitioners (APHP; Member #43) and also holds archaeological accreditation with the Association of Southern African Professional Archaeologists (ASAPA) CRM section (Member #233) as follows:

- Principal Investigator: Stone Age, Shell Middens & Grave Relocation; and
- Field Director: Colonial Period & Rock Art.

1.5. Declaration of independence

ASHA Consulting (Pty) Ltd and its consultants have no financial or other interest in the proposed development and will derive no benefits other than fair remuneration for consulting services provided.

2. HERITAGE LEGISLATION

The National Heritage Resources Act (NHRA) No. 25 of 1999 protects a variety of heritage resources as follows:

- Section 34: structures older than 60 years;
- Section 35: prehistoric and historical material (including ruins) more than 100 years old as well as military remains more than 75 years old, palaeontological material and meteorites;
- Section 36: graves and human remains older than 60 years and located outside of a formal cemetery administered by a local authority; and
- Section 37: public monuments and memorials.

Following Section 2, the definitions applicable to the above protections are as follows:

- Structures: “any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith”;

- Palaeontological material: “any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace”;
- Archaeological material: a) “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”; b) “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”; c) “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 respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), 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”; and d) “features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found”;
- Grave: “means a place of interment and includes the contents, headstone or other marker of such a place and any other structure on or associated with such place”; and
- Public monuments and memorials: “all monuments and memorials a) “erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government”; or b) “which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.”

Section 3(3) describes the types of cultural significance that a place or object might have in order to be considered part of the national estate. These are as follows:

- a) its importance in the community, or pattern of South Africa’s history;
- b) its possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage;
- c) its potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage;
- d) its importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects;
- e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i) sites of significance relating to the history of slavery in South Africa.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural

significance” as part of the National Estate. Furthermore, some of the points in Section 3(3) speak directly to cultural landscapes.

Section 38(8) of the NHRA states that if an impact assessment is required under any legislation other than the NHRA then it must include a heritage component that satisfies the requirements of S.38(3). Furthermore, the comments of the relevant heritage authority must be sought and considered by the consenting authority prior to the issuing of a decision. Under the National Environmental Management Act (No. 107 of 1998; NEMA), as amended, the project is subject to a BA. The present report provides the heritage component. Ngwao-Boswa Ya Kapa Bokoni (Heritage Northern Cape; for built environment and cultural landscapes) and the South African Heritage Resources Agency (SAHRA for archaeology and palaeontology) are required to provide comment on the proposed project in order to facilitate final decision making by the DMR.

3. METHODS

3.1. Literature survey and information sources

A survey of available literature was carried out to assess the general heritage context into which the development would be set. The information sources are presented in Table 1. Data were also collected via a field survey.

Table 1: Information sources used in this assessment.

Data / Information	Source	Date	Type	Description
Maps	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical and current 1:50 000 topographic maps of the study area and immediate surrounds
Aerial photographs	Chief Directorate: National Geo-Spatial Information	Various	Spatial	Historical aerial photography and of the study area and immediate surrounds
Cadastral data	Chief Directorate: National Geo-Spatial Information	Various	Survey diagrams	Historical and current survey diagrams, property survey and registration dates
Background data	South African Heritage Resources Information System (SAHRIS)	Various	Reports	Previous impact assessments for any developments in the vicinity of the study area
Palaeontological sensitivity	South African Heritage Resources Information System (SAHRIS)	Current	Spatial	Map showing palaeontological sensitivity and required actions based on the sensitivity.
Background data	Books, journals, websites	Various	Books, journals, websites	Historical and current literature describing the study area and any relevant aspects of cultural heritage.

3.2. Field survey

The site was subjected to a detailed foot survey on 4th February 2021. This was during summer but, in this very dry area, the season makes no difference to vegetation covering and hence the ground visibility for the archaeological survey. Other heritage resources are not affected by seasonality. During the survey the positions of finds and survey tracks were recorded on a hand-held Global Positioning System (GPS) receiver set to the WGS84 datum. Photographs were taken at times in order to capture representative samples of both the affected heritage and the landscape setting of the proposed development.

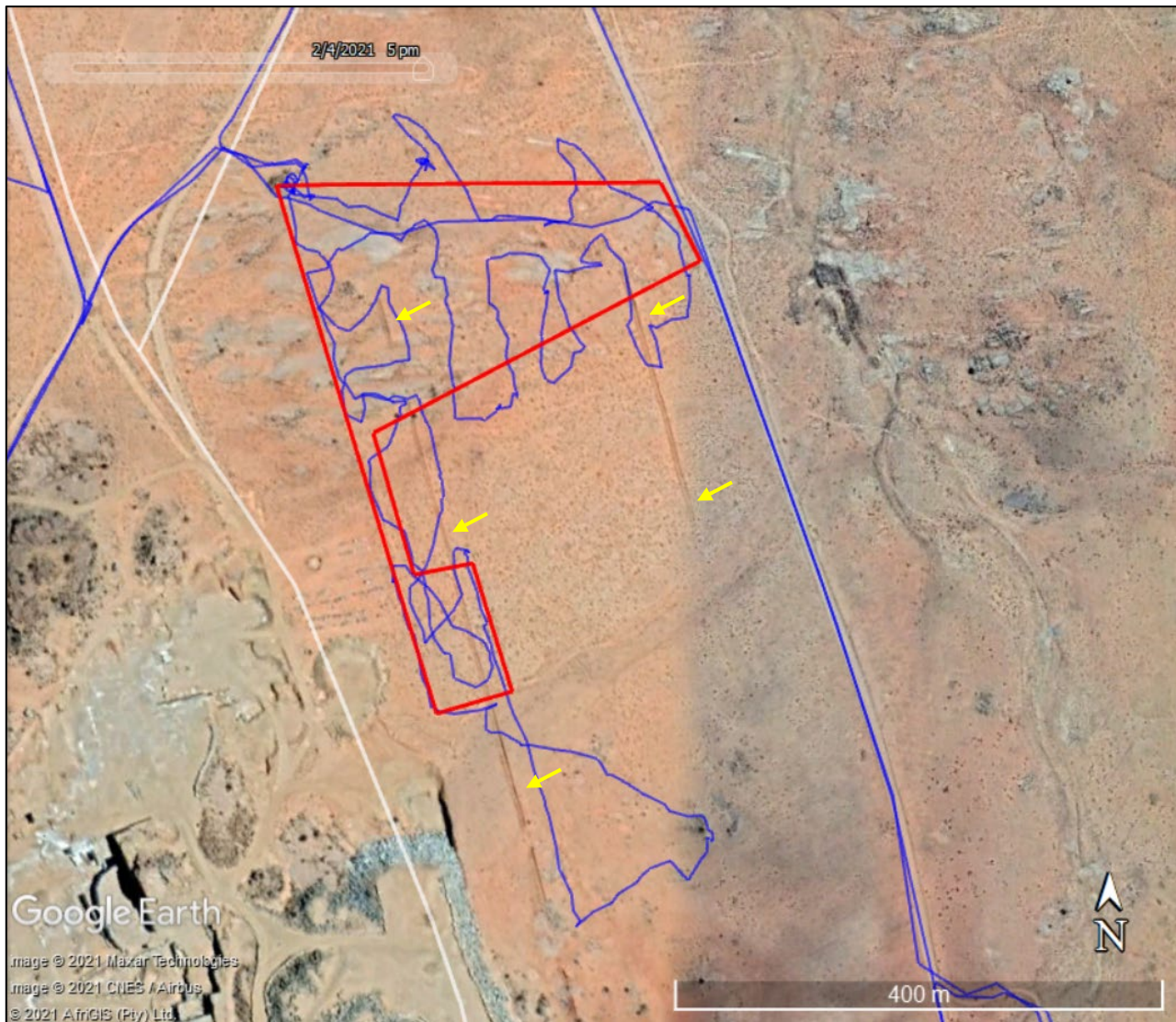


Figure 3: Aerial view of the study area showing the survey tracks (blue lines). Note the two shallow test trenches (yellow arrows). The north-eastern one continues towards the southeast but due to stitched images on Google Earth an older image in the east does not show the trench.

It should be noted that amount of time between the dates of the field inspection and final report do not materially affect the outcome of the report.

3.3. Specialist studies

No separate specialist studies were carried out for this HIA.

3.4. Grading

It is intended under S.7(2) that the various provincial authorities formulate a system for the further detailed grading of heritage resources of local significance but this is generally yet to happen. SAHRA (2007) has formulated its own system¹ for use in provinces where it has commenting authority. In this system sites of high local significance are given Grade IIIA (with the implication that the site should be preserved in its entirety) and Grade IIIB (with the implication that part of the site could be mitigated and part preserved as appropriate) while sites of lesser significance are referred to as having 'General Protection' (GP) and rated as GP A (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GP C (low significance, requires no further action).

3.5. Consultation

The NHRA requires consultation as part of an HIA but, since the present study falls within the context of an EIA which includes a public participation process (PPP), no dedicated consultation was undertaken as part of the HIA. Interested and affected parties would have the opportunity to provide comment on the heritage aspects of the project during the PPP.

3.6. Assumptions and limitations

The field study was carried out at the surface only and hence any completely buried archaeological sites would not be readily located. Similarly, it is not always possible to determine the depth of archaeological material visible at the surface. Considering the shallow bedrock and granitic soil, these limitations are not of concern to this assessment.

4. PHYSICAL ENVIRONMENTAL CONTEXT

4.1. Site context

The site lies just south of the town of Concordia, about 900 m south of the nearest residential street. It is 4.5 m northwest of the N14. A large existing granite mine covering approximately 63 ha lies immediately to the west, while two smaller granite mines lie to the south and southeast, some 1.5 and 1.1 km distant respectively. The remainder of the surrounding landscape is disused, but a multitude of small vehicle tracks attest to a more intensive use of the landscape in the past.

4.2. Site description

The site is fairly flat with many areas of exposed bedrock (Figures 4 to 6). These areas are generally less than about 0.5 m high. A small granite hill occurs right at the north-western corner of the study area (Figure 7). Elsewhere the surface has a coarse granitic sand cover (Figures 8 & 9) but it was

¹ The system is intended for use on archaeological and palaeontological sites only.

clear from the two shallow trenches visible on Figure 3 that weathered granite lies just below the surface virtually throughout the site – hence the choice of the site for granite mining.



Figure 4: View towards the southeast (left) and south (right) from the small rocky hill at the northwest corner of the application area. The existing mine fence can be seen at the right hand side, while the exposed bedrock outcrops are visible running towards the back left of the photograph.



Figure 5: View towards the west through the northern part of the study area.



Figure 6: View towards the west through the northern part of the study area and showing one of the several large granite bedrock exposures there.



Figure 7: View towards the south through the southern part of the study area.



Figure 8: View towards the south through the southern part of the study area.



Figure 9: View towards the southwest through the northern part of the study area showing the existing mine alongside the present application area.

5. FINDINGS OF THE HERITAGE STUDY

This section describes the heritage resources recorded in the study area during the course of the project.

5.1. Palaeontology

Figure 10 shows an extract from the SAHRIS Palaeosensitivity map. The study area is shown as being of zero (grey shading) and low (blue shading) palaeontological sensitivity. The field survey showed the northern part of the study area to have much granite exposed at the surface, while two trenches excavated across the area showed that weathered bedrock was present just beneath the surface virtually everywhere. The entire area should thus be rated as being of zero sensitivity.



Figure 10: Extract from the SAHRIS Palaeosensitivity map showing the site to be rated as of zero (grey shading) and low (blue shading) palaeontological sensitivity.

5.2. Archaeology

5.2.1. Desktop study

Other studies in the area have revealed that Stone Age archaeological resources tend to be rare and comprised mainly of isolated artefacts from the Middle (MSA) and Later (LSA) Stone Ages (e.g. Kaplan 2008, 2010, 2016; Morris & Henderson 2018; Smith 2013; Orton 2019; Webley 2014). To the east of Springbok, Morris (2012) located a small rock shelter with artefacts, some fragments of an ostrich eggshell water flask, and possibly a small deposit. It was a low shelter that had been walled in (presumably during historical times) and the roof was blackened with soot. Kaplan (2010) reported a faded rock art site on the overhanging face of a large boulder. He saw four flakes and an ostrich eggshell fragment in the dripline, and a layer of dung at the foot of the wall. This is the only known painted site known from the vicinity of Okiep and Concordia. Orton (2019) revisited this site and found it to have at least seven geometric paintings, four lower grindstones, a walled enclosure and an extensive talus slope with probably thousands of stone artefacts, almost all in quartz. There was also a light scattering of historical glass and ceramics present. Whether the stone walling was historical or older was indeterminate, but the former seems more likely. Rock art is generally rare in the Kamiesberg Mountains, though a few painted sites are on record (Orton 2013).

Archaeological traces of historical occupation in the form of the remnants of structures, stone walling, threshing floors, scatters of glass and ceramics and occasional graves are also reported from the region (Kaplan 2010, 2016; Morris 2012; Morris & Henderson 2018; Orton 2018, 2019).

5.2.2. Site visit

A small historical kraal was seen on the south-eastern side of the small granite hill at Waypoint 961 (S29 33 25.9 E17 57 06.5; Figures 7 & 11). It was built up with granite blocks surrounding a space of about 9 m by 12 m although the north-eastern side di not have any walling present (Figure 11). The inside of the kraal had large numbers of broken modern beer bottles in it. However, a careful search amongst the debris showed that historical materials were also present (Figure 12). The ceramics included lined industrial slipware, transfer-printed ware and sponge-printed ware, all typical of the second half of the 19th century.



Figure 11: View towards the southwest of the kraal at waypoint 961. Walls are evident on the southwest and southeast but not along the north-eastern side which would be in the foreground. The existing mine fence is visible in the background.



Figure 12: Modern (left) and historical (right) glass and ceramic fragments in the kraal at waypoint 961. Scale in cm.

A scatter of historical glass and ceramics and one small piece of writing slate was seen at waypoint 960 (S29 33 25.3 E17 57 10.5; Figure 13). This was in an open area about 100 m east of the small kraal. There were no other features in this area. The scatter again included typical late 19th century materials such as lined industrial slipware and sponge-printed ware. Rare stone artefacts (all in quartz and all adiaagnostic) and other fragments of historical material (including one more piece of writing slate) were seen in various places (Figure 15).



Figure 13: Glass, ceramic and metal items from waypoint 960. A small fragment of writing slate is at the top left hand corner. Scale in cm.



Figure 14: The context of the finds at waypoint 960. This view is towards the northwest and the town of Concordia is visible in the background.



Figure 15: Isolated quartz stone artefacts, a writing slate fragment and the base of a pink glass bottle (probably a medicine bottle).

A brief visit to the area to the south of the site showed that similar historical kraals and glass and ceramic fragments occur widely in the area. Some house ruins were also noted, but these included materials that looked to date to around the mid-20th century. Two threshing floors were also seen in that area. All these materials relate to the earlier use of the area by inhabitants of Concordia. This was no doubt a time when water was more freely available and many families still kept flocks of sheep or goats.

A small cluster of granite rocks and slabs was seen at waypoint 960 (S29 33 25.3 E17 57 10.5). While they could be there naturally they were noted because the surrounding area tended to not have such pieces of stone on the surface. The rocks were far too small for gravestones and, given the fact

that weathered bedrock occurs just below the surface, this feature is not a grave. Given the extensive historical use of the area, these rocks could easily have been assembled for a multitude of purposes.



Figure 15: *The vague collection of small slabs at waypoint 960.*

5.3. Graves

No graves were seen in the study area or anywhere nearby. A large historical graveyard is known to occur on the north-eastern side of Concordia (Orton 2019, while an older one occurs to the west of the town (Orton 2018). It is likely that, this close to the town, most people were buried in the graveyards. The chances of unmarked graves being present on this site are virtually zero because of the very shallow depth at which weathered bedrock occurs.

5.4. Historical aspects and the Built environment

5.4.1. Desktop study

The beginnings of Concordia appear to be uncertain. JC Botha Hotel Group (n.d.) and Wikipedia (n.d.) consider it to have been founded as a Rhenish Mission Station in 1852², while SA History Online (2017) suggests 1863. Shaeffer (2008) notes that Concordia became a separate Rhenish Mission Station in 1863 but does not say what it became separate from. Examination of survey diagrams suggests that it was originally part of the Steinkopf Mission Station. The switch in name from Tweefontein to Concordia is obviously not connected to the mission, since Bain's comment indicates that the new name was already in use in about 1852.

Andrew Geddes Bain visited Concordia in about 1852. He wrote (quoted in Schaefer 2008:16):

² It is quite likely that one of these pages derived their information from the other and both are thus probably incorrect.

I next visited the mines of Prince, Collison, Watson, and Co at a place near Tweefontein, now called Concordia. [...] For miles around this favoured spot, strong indications of copper everywhere appear; and a large village is in the course of construction, in which hundreds of happy families may yet reside. Much activity prevails here, as well as at Philips and King's mines, but more in the way of building than of mining, as transport to the coast is not at present to be obtained, even at very high prices.

John Blades Currey was appointed manager of the Namaqua Mining Company in 1854 and stationed at Concordia. He described the village as follows (quoted in Smallberger 1975:96):

The buildings occupied three sides of a quadrangle, my house being at one end while the other was left open. On one side were the quarters of the white miners and artizans, and on the other the officers' rooms, stores, blacksmith's shop and kitchen. The Hottentot labourers had their huts at the back on one side and the coloured workmen lived in the back on the other side.

Shaeffer (2008) says in a footnote that the village of Concordia was built mainly for the Cornish miners who were brought in by Albert von Schlich in 1872 (see text below on copper mining).

In 1877 an anonymous text (thought by Schaeffer [2008] to be written by a Mr Hardy) we find the following description of Concordia:

Concordia is but a very small village consisting chiefly of the houses and buildings belonging to the Copper Mining Company; at present (1877) the mine is not at work, it having been sold in England to a new company, which will commence its operations during December, 1877. The remaining buildings are soon told off on the fingers of one hand, being three shops and two houses – there is then but the church, parsonage, and school; the latter is considered one of the best managed in the country, the Government Inspector having very highly complimented the chief of the Mission – for Concordia is one of the stations of the Rhenish Mission Society. The church has just been built by the congregation, and is highly creditable to their industry and willingness to assist their pastor; it is built of stone, and is large enough to seat 300 persons.

Smallberger (1975) notes that little is known of the history of Concordia before the 20th century but he provides a photograph of the village dating from about 1880 (Figure 16).

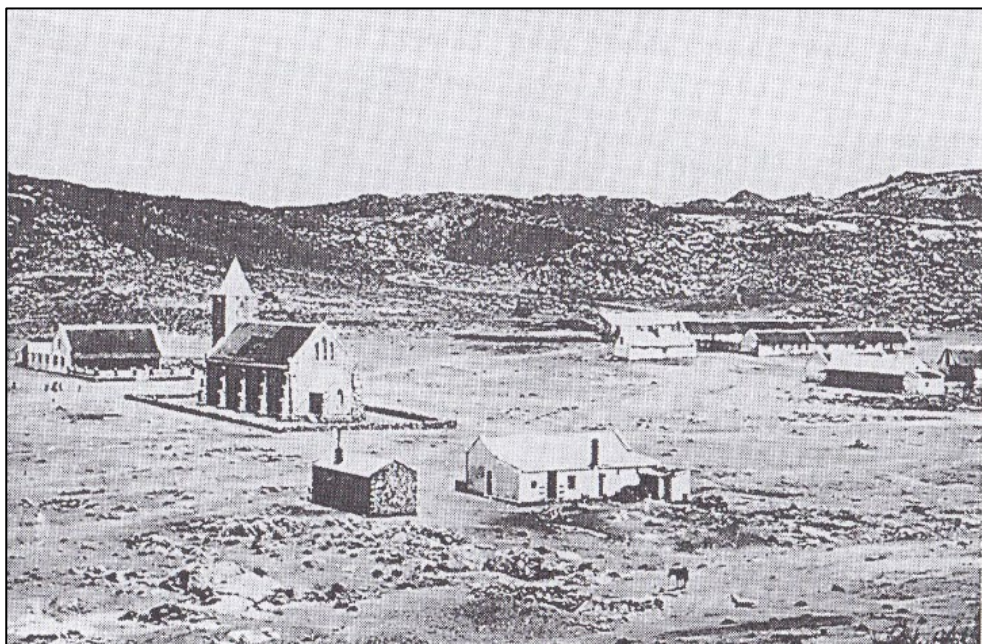


Figure 16: View of Concordia c. 1880 looking towards the northwest (Source: Smallberger 1975: fig. 29). The present study area lies down the valley to the left.

Webley (2014) has highlighted the importance of the historical copper mining landscape, although it is likely that many historical features have been lost due to the continued 20th century working of the mines. A key aspect of this mining history is the remnants of the historical railway that was built between the copper mines of the region and Port Nolloth. Originally using wagons drawn by mules, the service was upgraded to employ steam locomotives. The tracks have since been removed and the line is represented only by the raised berm on which the tracks once lay (Orton 2019). It ran through the same valley as the present access road to Concordia, about 1.5 km northwest of the study area. The remains of various structures associated with the line also occur in places. The importance of copper mining in the region is underscored by the inclusion of the Namaqualand Copper Mining Landscape on the South African list of tentative World Heritage Sites in 2009, although the site was withdrawn in 2015 (Stoltz 2015).

The Anglo-Boer War (aka Second South African War) played a large part in the history of this region with Okiep having been besieged by the Boers. The remnants of the War include fortifications, graves and artefacts. Concordia was very poorly fortified with just two blockhouses located on koppies (exact locations unknown) near the village (Von Zeil & Thomas 2011). Okiep, by contrast had fifteen (Grobler 2004). Because of this, British orders were that if Concordia was attacked the men were to move to Okiep. Concordia would then be abandoned. However, when Concordia was attacked by the Boers on 4th April 1902, Captain Phillips, manager of the Concordia mine, surrendered to General Smuts. The surrender was possibly because the men did not want to abandon their families to the mercy of the Boers (Von Zeil & Thomas 2011). The Boers made use of explosives stored at the copper mine to capture some of the Okiep blockhouses and to destroy sections of the railway line to Port Nolloth.

Figure 16 shows a map dating to the early 20th century. The map is not entirely accurate with the brown contour-like lines seemingly being more a schematic representation of where mountains lie and not a true reflection of their form. No significant features are marked in the vicinity of the study area, although 'native huts' are shown down the valley just to the south of the study area.

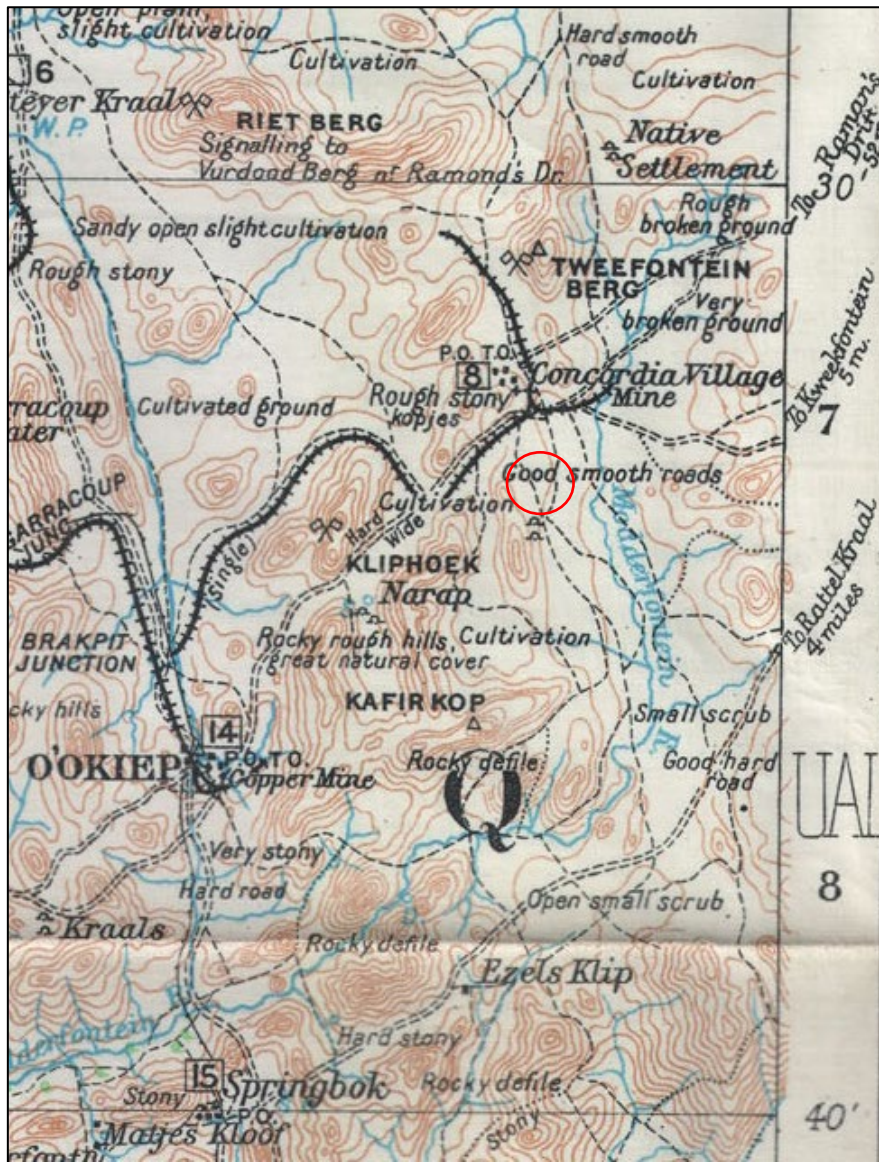


Figure 16: Extract of a 1907 topographic map of the area showing no significant features. “Good smooth roads” are shown through the wider study area (red circle).

Figures 17 and 18 show historical aerial views from 1958 and 1964. There was cultivation in the area around then and the far greater clarity of the river to the east shows that far more water was available. The agriculture has long since been abandoned.

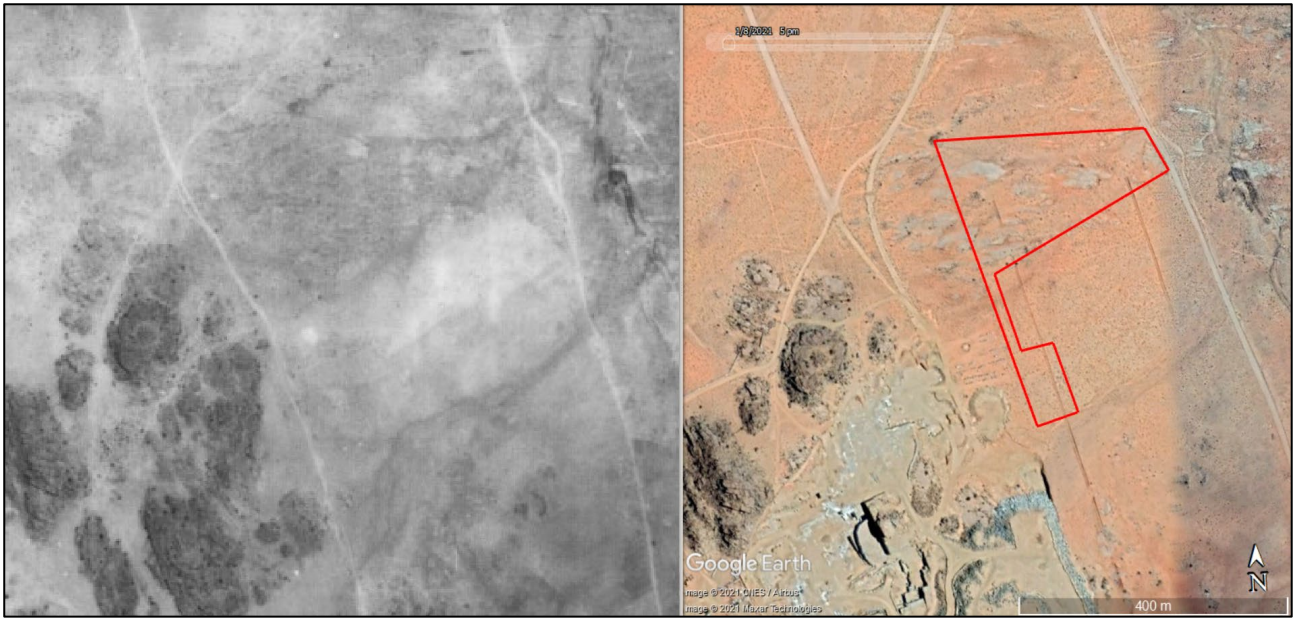


Figure 17: 1958 (Job 408_009_08649) and modern (Google Earth) aerial photographs showing the study area to have been vacant in 1958.

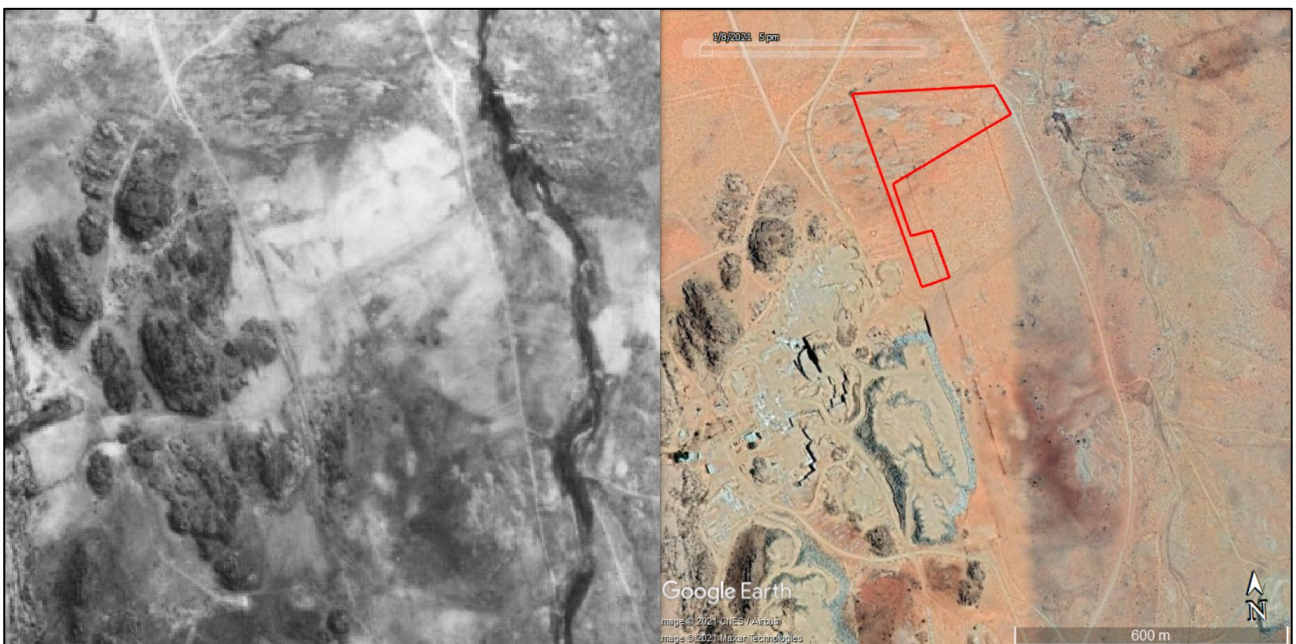


Figure 18: 1964 (Job 525_028_03062) and modern (Google Earth) aerial photographs clearly showing the southern part of the study area to have been cultivated in 1964. Note how clear the river was in 1964, a sign of far more rainfall.

Figure 19 shows the situation graphically. Concordia has expanded massively and, while the local copper mines are marked, there is no evidence of the granite mine. Agriculture is still shown as having been practiced in the vicinity of the study area. Although no longer visible today, the plough lines were still visible from the air eighteen years ago (Figure 20). The presence of agriculture is despite the very shallow soil observed during the site inspection. The signs of ploughing are not visible on the surface when physically walking over the site.

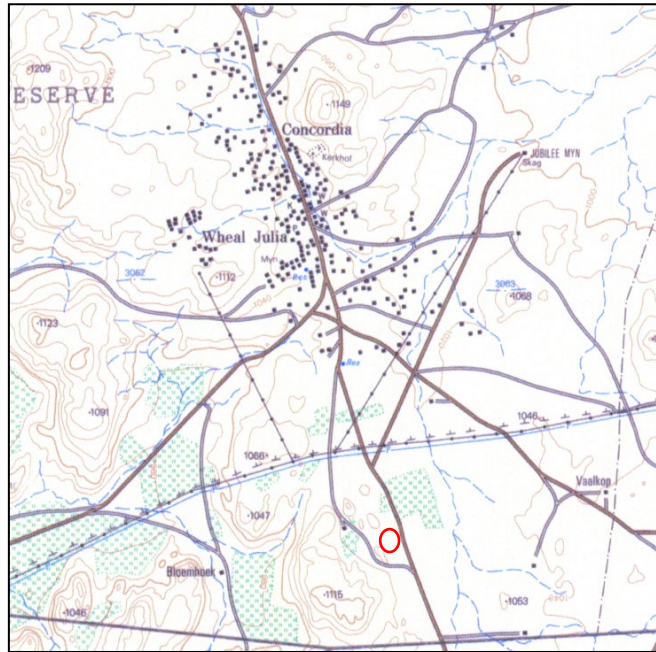


Figure 19: Extract from topographic mapsheet 2917DB Edition 1 dated 1973. The approximate location of the study area is shown by the red circle.



Figure 20: October 2002 aerial photograph showing lines on the ground which show that, despite the shallow soil, much of the southern part of the area was cultivated in the past.

5.4.2. Site visit

No historical features were seen, aside from the archaeological ones already reported.

5.5. Cultural landscapes and scenic routes

The Concordia area has many historical archaeological resources scattered throughout the surrounding countryside. These include small kraals and scatters of historical artefacts, as reported above, as well as house foundations and ruins, water wells, graves and other evidence of the historical use of the landscape. Together these items give a cultural layer to the landscape. The site forms part of this layer but, visually, has been severely compromised by the existing granite mines.

Likewise, the natural landscape, which has aesthetic value, has been compromised at the local level through the exposure of unweathered bedrock which increases the visual contrast between the mine and the natural landscape. However, at the far broader level of the Kamiesberg Mountains, the landscape is highly appreciated by many, especially during the famous Namaqualand flower season. The present site is, however, well away from the commonly frequented areas and mining will not be visible except from the local gravel roads adjacent to the site. The site is not visible from the N7 but is theoretically visible from the N14 located 4.3 km to the southeast. However, distance mitigates the visual impacts to the landscape.

5.6. Statement of significance and provisional grading

Section 38(3)(b) of the NHRA requires an assessment of the significance of all heritage resources. In terms of Section 2(vi), “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. The reasons that a place may have cultural significance are outlined in Section 3(3) of the NHRA (see Section 2 above).

Palaeontology, graves, and built heritage are of no relevance to this application.

The archaeological resources are deemed to have low cultural significance for their scientific, historical and social value and can be graded GP C. Similar resources are widely represented in the broader area.

The broader cultural landscape has high cultural significance for its aesthetic, historical, social and spiritual values. At the site-specific level, however, the cultural significance is deemed to be low.

5.7. Summary of heritage indicators

Archaeological resources are sensitive to disturbance by all sorts of activities.

- **Indicator:** Archaeological resources must not be damaged or disturbed without examination by an archaeologist and mitigation (if required).

The cultural landscape tells the story of the people of Concordia and is sensitive to change from inappropriate activities that disturb or destroy cultural features. The landscape also has value from a tourism point of view.

- **Indicator:** The cultural landscape should not be visually dominated by the proposed mining.

6. ASSESSMENT OF IMPACTS

Given that impacts to palaeontology, graves and the built environment are not relevant to this project, the only impacts formally assessed are impacts to archaeology and the cultural landscape.

6.1. Impacts to archaeological resources

Direct impacts to archaeological resources would occur during the construction phase when the area is set out for the commencement of mining. Given the low cultural significance of the materials found on site, the impacts would be of low intensity and are rated **low negative** (Table 2). Given the low cultural significance of the archaeological materials, their relatively recent age, and the many similar sites that occur on the landscape, no mitigation is warranted. Although other activities in the area will slowly but surely reduce the number of such sites on the landscape, the cumulative impacts are not yet of concern. Given that mitigation is not needed, the post mitigation significance remains **low negative**. There are no fatal flaws in terms of archaeology.

Table 2: Assessment of archaeological impacts.

Potential impacts on palaeontological resources	
Nature of impact:	Direct negative
Extent and duration of impact:	Local, permanent
Intensity	Low
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	High
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	High
Proposed mitigation:	None, since the cultural significance of the materials does not warrant mitigation.
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

6.2. Impacts to the cultural landscape

Discuss: project phase, fatal flaws, direct impacts, indirect impacts, cumulative impacts

Direct impacts to the physical cultural features (the stone kraal) of the cultural landscape are considered under archaeology above. Visual impacts to the cultural landscape would occur throughout the lifetime of the project since all mining activities could be seen as incompatible with the surrounding landscape character. The mine and especially the rock dump may be quite prominently visible in the landscape when viewed from the north but, given that granite and copper mining are well established in the landscape (the former since the 19th century), the intensity of the impacts for this new mine is rated as medium. The overall significance is rated as **medium negative** (Table 2). There is little that can be done to reduce the visibility of the mine in the landscape, especially during the operation phase when new rock is constantly added to the rock dump. However, during the closure phase it should be ensured that effective rehabilitation takes place in

order to cover the exposed fresh rock (mine face and rock dumps) as these differ in colour from the rest of the landscape and would thus result in long term visual impacts. With such mitigation effectively implemented, the significance drops to **low negative**.

Table 2: Assessment of impacts to the cultural landscape.

Potential impacts on the cultural landscape	
Nature of impact:	Direct negative
Extent and duration of impact:	Local, long term
Intensity	Medium
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Medium
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	Effective rehabilitation of exposed fresh rock (both the mine faces and the rock dump)
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

6.3. The No-Go alternative

Implementation of the No-Go alternative would result in the status quo being maintained. There would be no new impacts to heritage resources and the significance would thus be rated as neutral.

6.4. Existing impacts to heritage resources

There are currently no obvious threats to heritage resources on the site. However, natural degradation, weathering and erosion will very slowly affect archaeological materials. Vehicles driving through the landscape can damage artefacts and the integrity of the kraal feature will continue to be minimally impacted by the extensive littering that occurs there (alcohol bottles).

6.5. Cumulative impacts

There are several mines in the area. Two granite mines occur, one immediately adjacent to the study area to its west and another a short distance to the south. The main issue in terms of cumulative impacts is landscape scarring since the freshly exposed rock differs in colour from the weathered bedrock thus creating visual impacts. Visibility of these mines is relatively limited but, nonetheless, there is the possibility of a **medium negative** impact significance. This rating would apply to the operation phase but, with effective rehabilitation aimed at reducing the visual contrast of fresh and weathered bedrock, the significance would reduce to **low negative**.

6.6. Levels of acceptable change

Any impact to an archaeological or palaeontological resource or a grave is deemed unacceptable until such time as the resource has been inspected and studied further if necessary. Given the nature of the

site, further archaeological resources are not expected. Impacts to the landscape are difficult to quantify but in general a development that visually dominates the landscape from many vantage points is undesirable. The mine will not be widely visible and it is certainly not expected to dominate views in the area.

7. EVALUATION OF IMPACTS RELATIVE TO SUSTAINABLE SOCIAL AND ECONOMIC BENEFITS

Section 38(3)(d) of the NHRA requires an evaluation of the impacts on heritage resources relative to the sustainable social and economic benefits to be derived from the development. The existing mines provide employment to local residents and expanding the productivity of the mining operation will result in improved job security.

8. CONCLUSIONS

There are no significant heritage issues for this project. Table 3 lists the responses to the heritage indicators proposed above.

Table 3: Heritage indicators and project responses.

Indicator	Project Response
Archaeological resources must not be damaged or disturbed without examination by an archaeologist and mitigation (if required).	There is almost no chance of finding further archaeological materials on the site and this issue is thus of no further concern.
The cultural landscape should not be visually dominated by the proposed mining.	The mine is not expected to dominate the landscape other than when viewed from very close to the site. Rehabilitation will ensure that this impact is reduced after closure.

Although it is not essential, it is preferred that the small historical kraal in the north-western corner of the study area be avoided and protected. On the current layout plan (Figure 3) the site is completely avoided. It is best that the site be fenced into the mining area (this will reduce the ongoing littering) and a small fence be erected around the kraal to indicate its presence and preclude accidental damage to the walling. A buffer of 5 m from the walling is sufficient.

8.1. Reasoned opinion of the specialist

Given the low significant impacts to known heritage resources and the virtually zero chance of further resources being present, it is suggested by the heritage specialist that the proposed mine should be authorised in full.

9. RECOMMENDATIONS

Impacts to heritage resources are minimal. As such, it is recommended that the project be authorised, but subject to the following recommendations:

- The small kraal in the north-western corner of the application area should be avoided and protected from harm by a small fence running 5 m from the stone walling;
- All exposed fresh bedrock (mine faces and rock dump) must be rehabilitated during mine closure so as to reduce the visual contrast between weathered and fresh rock; and
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

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APPENDIX 1 – Curriculum Vitae



Curriculum Vitae

Jayson David John Orton

ARCHAEOLOGIST AND HERITAGE CONSULTANT

Contact Details and personal information:

Address: 40 Brassie Street, Lakeside, 7945
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Cell Phone: 083 272 3225
Email: jayson@asha-consulting.co.za

Birth date and place: 22 June 1976, Cape Town, South Africa
Citizenship: South African
ID no: 760622 522 4085
Driver's License: Code 08
Marital Status: Married to Carol Orton
Languages spoken: English and Afrikaans

Education:

SA College High School	Matric	1994
University of Cape Town	B.A. (Archaeology, Environmental & Geographical Science) 1997	
University of Cape Town	B.A. (Honours) (Archaeology)*	1998
University of Cape Town	M.A. (Archaeology)	2004
University of Oxford	D.Phil. (Archaeology)	2013

*Frank Schweitzer memorial book prize for an outstanding student and the degree in the First Class.

Employment History:

Spatial Archaeology Research Unit, UCT	Research assistant	Jan 1996 – Dec 1998
Department of Archaeology, UCT	Field archaeologist	Jan 1998 – Dec 1998
UCT Archaeology Contracts Office	Field archaeologist	Jan 1999 – May 2004
UCT Archaeology Contracts Office	Heritage & archaeological consultant	Jun 2004 – May 2012
School of Archaeology, University of Oxford	Undergraduate Tutor	Oct 2008 – Dec 2008
ACO Associates cc	Associate, Heritage & archaeological consultant	Jan 2011 – Dec 2013
ASHA Consulting (Pty) Ltd	Director, Heritage & archaeological consultant	Jan 2014 –

Professional Accreditation:

Association of Southern African Professional Archaeologists (ASAPA) membership number: 233

CRM Section member with the following accreditation:

- Principal Investigator: Coastal shell middens (awarded 2007)
Stone Age archaeology (awarded 2007)
Grave relocation (awarded 2014)
- Field Director: Rock art (awarded 2007)
Colonial period archaeology (awarded 2007)

Association of Professional Heritage Practitioners (APHP) membership number: 43

- Accredited Professional Heritage Practitioner

➤ **Memberships and affiliations:**

South African Archaeological Society Council member	2004 – 2016
Assoc. Southern African Professional Archaeologists (ASAPA) member	2006 –
UCT Department of Archaeology Research Associate	2013 –
Heritage Western Cape APM Committee member	2013 –
UNISA Department of Archaeology and Anthropology Research Fellow	2014 –
Fish Hoek Valley Historical Association	2014 –
Kalk Bay Historical Association	2016 –
Association of Professional Heritage Practitioners member	2016 –

Fieldwork and project experience:

Extensive fieldwork and experience as both Field Director and Principle Investigator throughout the Western and Northern Cape, and also in the western parts of the Free State and Eastern Cape as follows:

Feasibility studies:

- Heritage feasibility studies examining all aspects of heritage from the desktop

Phase 1 surveys and impact assessments:

- Project types
 - Notification of Intent to Develop applications (for Heritage Western Cape)
 - Desktop-based Letter of Exemption (for the South African Heritage Resources Agency)
 - Heritage Impact Assessments (largely in the Environmental Impact Assessment or Basic Assessment context under NEMA and Section 38(8) of the NHRA, but also self-standing assessments under Section 38(1) of the NHRA)
 - Archaeological specialist studies
 - Phase 1 archaeological test excavations in historical and prehistoric sites
 - Archaeological research projects
- Development types
 - Mining and borrow pits
 - Roads (new and upgrades)
 - Residential, commercial and industrial development
 - Dams and pipe lines
 - Power lines and substations
 - Renewable energy facilities (wind energy, solar energy and hydro-electric facilities)

Phase 2 mitigation and research excavations:

- ESA open sites
 - Duinefontein, Gouda, Namaqualand
- MSA rock shelters
 - Fish Hoek, Yzerfontein, Cederberg, Namaqualand
- MSA open sites
 - Swartland, Bushmanland, Namaqualand
- LSA rock shelters
 - Cederberg, Namaqualand, Bushmanland
- LSA open sites (inland)
 - Swartland, Franschhoek, Namaqualand, Bushmanland
- LSA coastal shell middens
 - Melkbosstrand, Yzerfontein, Saldanha Bay, Paternoster, Dwarskersbos, Infanta, Knysna, Namaqualand
- LSA burials
 - Melkbosstrand, Saldanha Bay, Namaqualand, Knysna
- Historical sites
 - Franschhoek (farmstead and well), Waterfront (fort, dump and well), Noordhoek (cottage), variety of small excavations in central Cape Town and surrounding suburbs
- Historic burial grounds
 - Green Point (Prestwich Street), V&A Waterfront (Marina Residential), Paarl

Awards:

Western Cape Government Cultural Affairs Awards 2015/2016: Best Heritage Project.