ARCHAEOLOGICAL IMPACT ASSESSMENT: PROPOSED URANIUM MINING AND ASSOCIATED INFRASTRUCTURE ON PORTIONS OF THE FARMS QUAGGASFONTEIN AND RYSTKUIL* NEAR BEAUFORT WEST IN THE WESTERN CAPE AND DE PANNEN NEAR ABERDEEN IN THE EASTERN CAPE

(Assessment conducted under Section 38 (8) of the
National Heritage Resources Act No 25 of 1999)

Case Number: 15100705WD1009E

Prepared for:

Ferret Mining & Environmental Services (Pty) Ltd

ACO Associates cc
Archaeology and Heritage Specialists

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EXECUTIVE SUMMARY

ACO Associates cc was appointed by Ferret Mining & Environmental Services (Pty) Ltd on behalf of the client, Lukisa, to undertake an Archaeological Impact Assessment for the mining of uranium in a number of mining blocks in the Karoo.

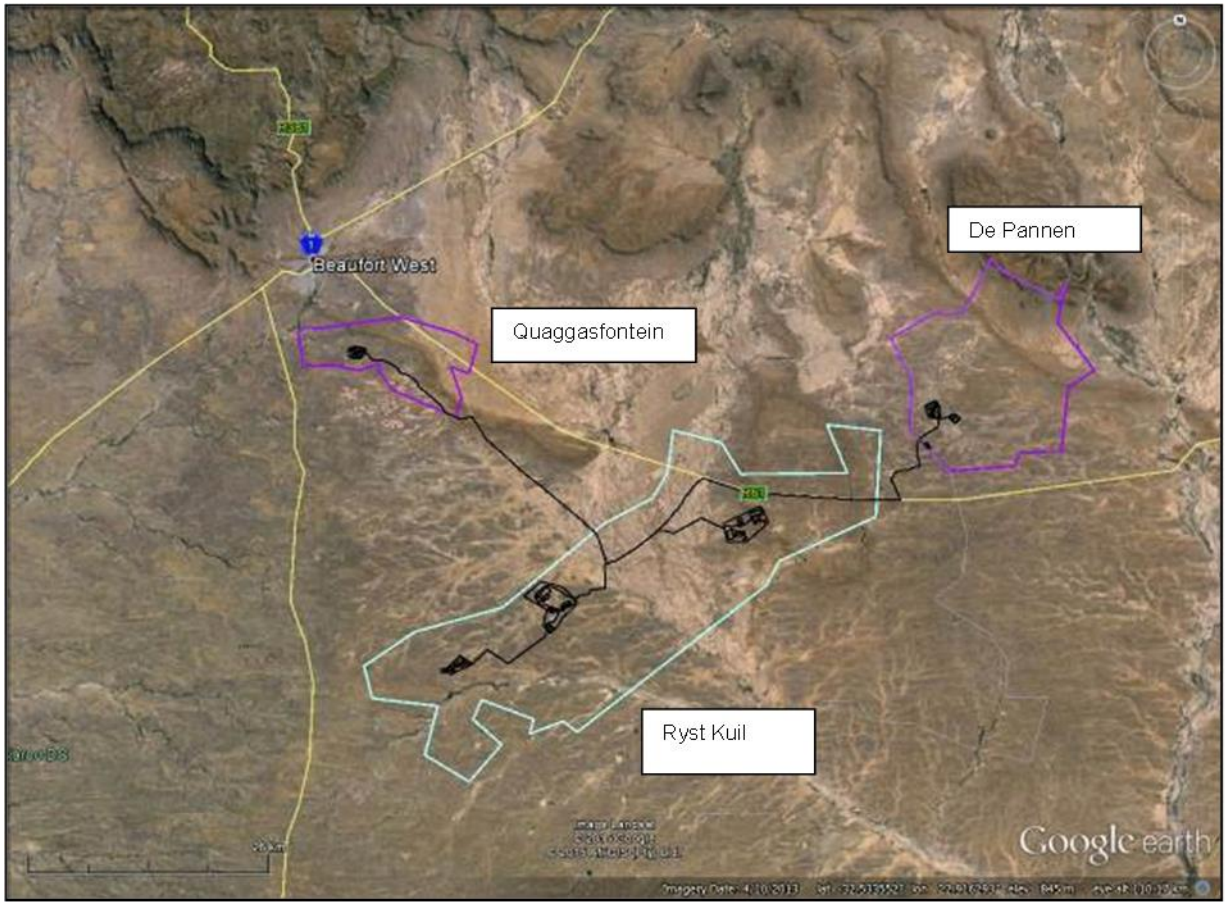
The NID application, submitted on the 09 October 2015, included the Eastern, Central, Western and Southern Blocks in the Karoo.

The NID response, dated 19 October 2015, required the following studies:

- Impacts to Archaeological heritage resources
- Impacts to Palaeontological heritage resources
- Visual impacts of the proposed development
- Impacts to the Built Environment including a detailed site development plan

However, after submission of the NID application, Ferret Mining & Environmental Services (Pty) Ltd indicated that the client was only considering mining certain sections of the Eastern, Central and Kareepoort Blocks.

This AIA submission is therefore only concerned with the following areas indicated in the figure below:



The Mining Blocks include Quaggasfontein and Ryst Kuil in the Western Cape and De Pannen in the Eastern Cape.

Since the Kareepoort Block falls in the Eastern Cape, the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) was contacted on 29th June 2015 at the start of the EIA process. A

single report, covering all three areas, will be submitted to both HWC and and Mr S Mokhanya at ECPHRA.

Uranium prospecting and mining has been actively pursued in this area of the Karoo for the last forty years and there is an existing mine on Ryst Kuil Main dating to 1978. The uranium deposits occur in discrete pods or lenses following ancient, meandering river channel courses. The open case surface mining will be a standard opencast to a depth of no more than 85 m. The average size of the open pits will be around 200m². Associated with each mining pit is a stockpile area, of varying size. The assessments are concerned with the open pit mines, stockpiles, the haulage roads and site offices. A single, Central Processing Plant and Slimes Dam will be constructed at Ryst Kuil Main, close to the existing mine.

It is important to emphasise, that although the blocks are large, relatively small areas within each block will be mined.

This archaeological assessment draws on a number of reports related to uranium prospecting in the area conducted over the last 10 years. In 2008, Dr John Kinahan was approached to undertake an archaeological survey the Ryst Kuil Section as part of a Baseline Assessment; in 2009, David Halkett and Tim Hart of ACO Associates conducted an archaeological survey of the Ryst Kuil Section prior to the initiation of prospecting on the property; in 2010, Lita Webley and Tim Hart of ACO Associates undertook an archaeological assessment of portions of the Quaggasfontein Section prior to prospecting. Fieldwork at Quaggasfontein, Ryst Kuil and De Pannen was undertaken by Webley and Halkett between 20-22 October 2015. This involved walking transects across the areas identified for mining as well as stockpile locations.

Generally, archaeological material comprised small numbers of ESA artefacts, scatters of MSA and occasional LSA. The majority were manufactured on indurated shales (hornfels) although some artefacts were manufactured from a chert band which crosses Ryst Kuil. Artefact numbers are very low and are of low significance. No significant archaeological resources were identified, with the exception of Site D009 on the farm Quaggasfontein which has been given a Grade IIIB grading. It will be buried under the stockpile which is planned for this area.

The following recommendations should be enforced:

- It is recommended that Site D009 on Quaggasfontein is mitigated before destruction. A surface collection may be sufficient. It is recommended that mitigation should involve setting up a grid across the site and collecting and recording the archaeological material. Some sieving of sub-surface material may be required;
- If any human remains are uncovered during construction, the ECO should have the area fenced off and contact HWC (Tel: 021 483 5959) immediately;
- If there are any significant changes to the layout of the facilities, the new designs should be assessed by a heritage practitioner.

Indications are that in terms of archaeological heritage the proposed activity is viable; impacts are expected to be very limited and controllable.

GLOSSARY

Archaeology: Remains resulting from human activity which is 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.

Early Stone Age: The archaeology of the Stone Age between 700 000 and 2500 000 years ago.

Fossil: Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.

Heritage Western Cape: The compliance authority which protects national heritage in the Western Cape.

Holocene: The most recent geological time period which commenced 10 000 years ago.

Late Stone Age: The archaeology of the last 20 000 years associated with fully modern people.

Middle Stone Age: The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.

National Estate: The collective heritage assets of the Nation

Palaeontology: 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.

Pleistocene: A geological time period (of 3 million – 20 000 years ago).

Structure (historic:) 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. Protected structures are those which are over 60 years old.

Acronyms

DEA	Department of Environmental Affairs
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

1. INTRODUCTION

ACO Associates cc was appointed by Ferret Mining & Environmental Services (Pty) Ltd on behalf of the client, Lukisa, to undertake an Archaeological Impact Assessment for the mining of uranium in the Northern Western and Eastern Cape Provinces (Figure 1). The applications are for consolidated blocks of properties contained in the original prospecting right areas, but clustered according to geographic location in order to simplify the application areas. They are shown in Figure 1 and are situated in different provinces and municipal areas.

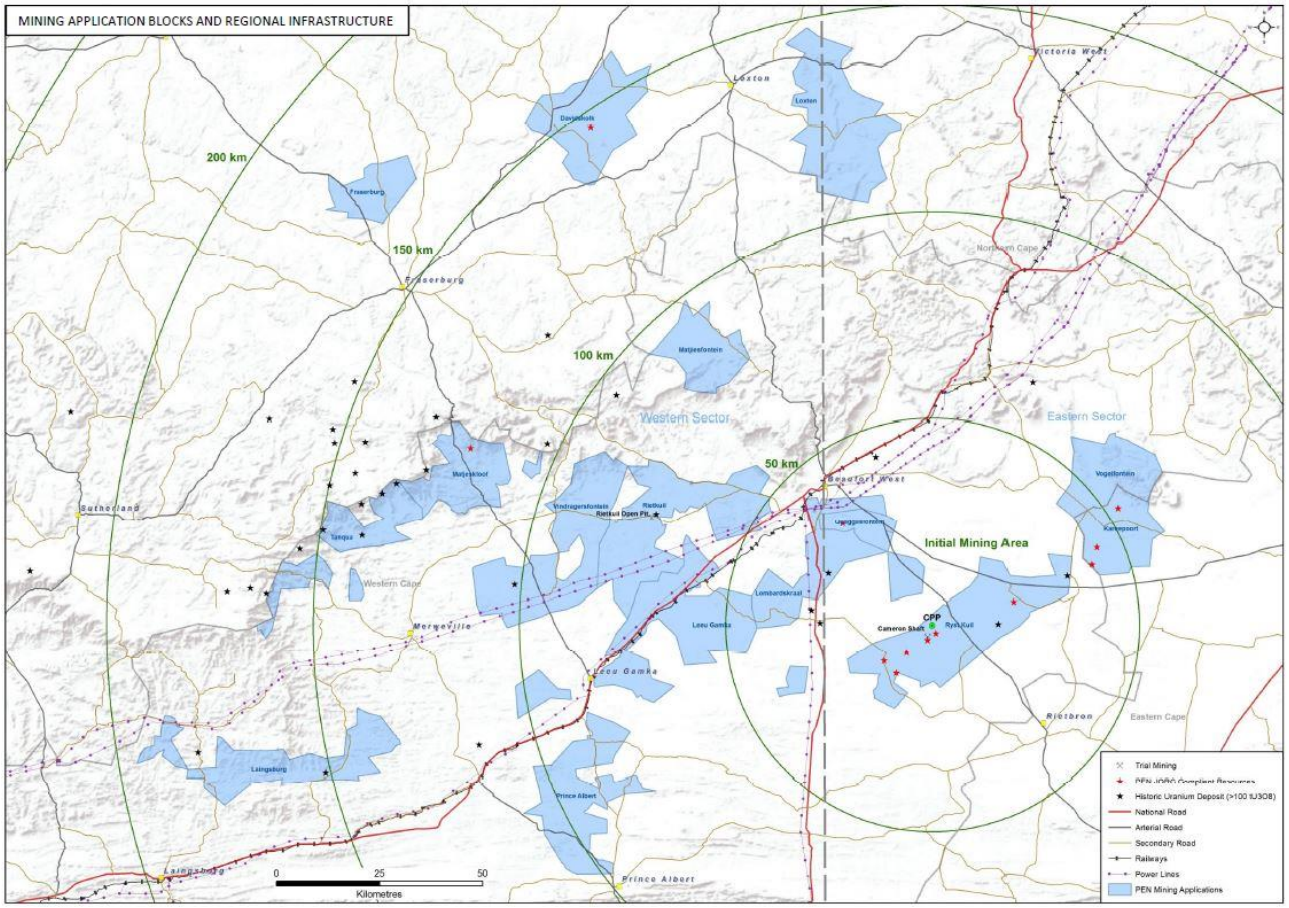


Figure 1: The location of the various mining blocks

The Karoo Mining Infrastructure map demonstrates the phased nature of the project with the construction of the Central Processing Plant (CPP) in the Ryst Kuil block and then production areas brought into active mining from the CPP in concentric circles (Figure 2).

The first 50km circle represents the first 17 years of production (Figure 1). The project is focussed on the Ryst Kuil channel, a mineralised zone extending over 90 km in a NE/SW direction and between 10 km and 40 km wide. It is the largest of the sandstone bodied and contains major clusters of uranium mineralization.

The initial mining area is concerned with those blocks within the central circle, and they include two (2) areas of the Western and one (1) area in the Eastern Cape (Figure 2):

Mining Block	Farm Portions
Quaggasfontein Section of the Central Block (Western Cape)	Oude Volks Kraal 164 Quaggas Fontein 166
Ryst Kuil Section of the Eastern Block (Western Cape)	Haane Kuil 335 Vlak Plaats 350

	Eerst Water 349 Farm 351 Kat Doorn Kuil 359 Kant Kraal 360
Kareepoort Block (Eastern Cape)	Karee Poort 80, De Pannen 79, Klein Tavel Kop 163

2. DEVELOPMENT PROPOSALS

Mining Rights applications have been submitted in terms of Section 22 of the Mineral and Petroleum Development Act, 2002 (MPRDA) by Tasman Pacific Minerals Limited (Tasman Pacific) and Lukisa JV Company (Pty) Ltd (Lukisa JVCo) for uranium (U) and molybdenum (Mo) mining in the Karoo (Figure 1).

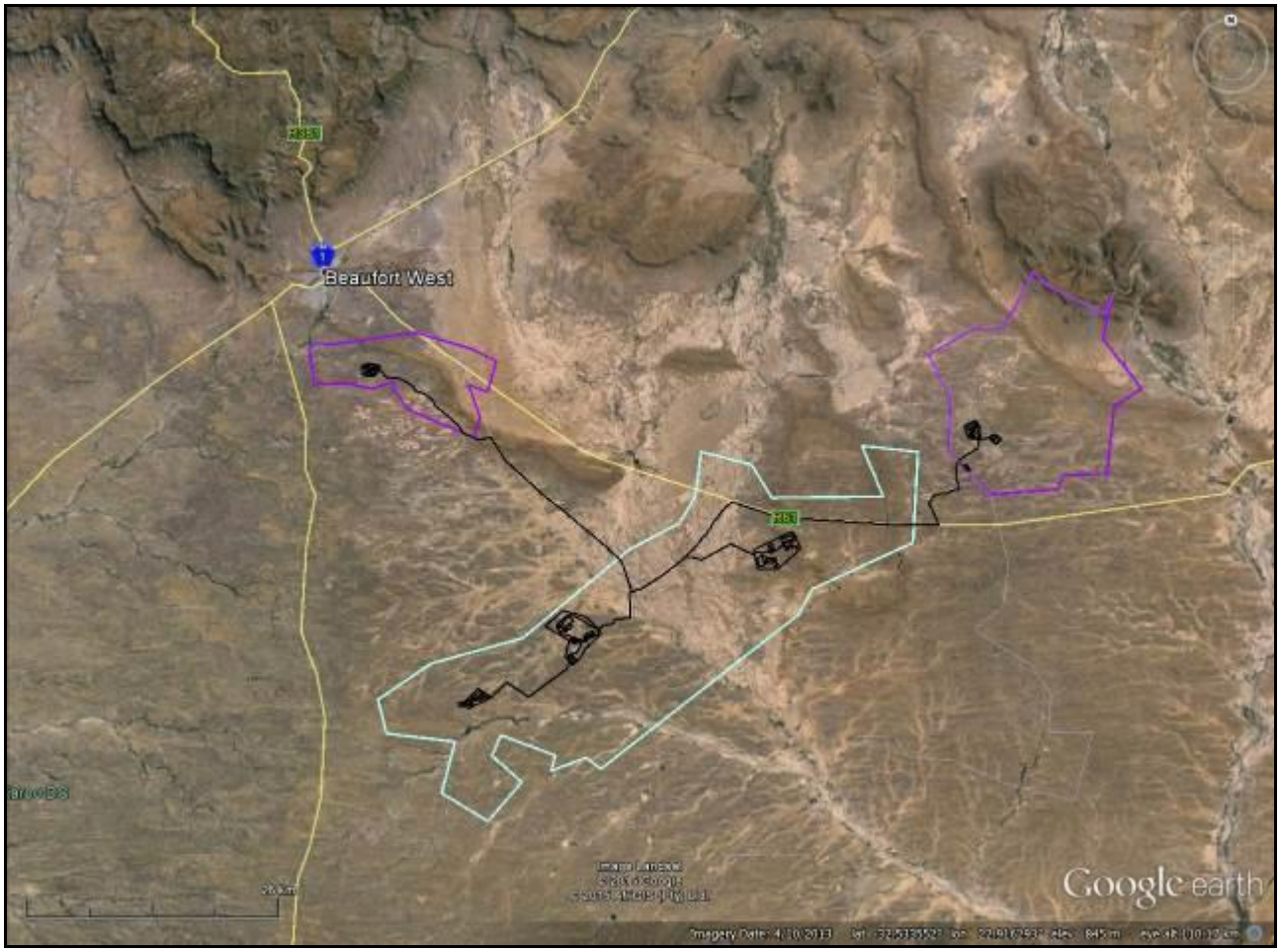


Figure 2: The location of the Kareepoort Block (in the Eastern Cape), the Ryst Kuil Section of the Eastern Block and the Quaggasfontein Section of the Central Block which will be mined during the next 17 years and form the focus of this AIA.

Traces of uranium occur throughout the Karoo Supergroup. Historically, uranium mineralisation in the Karoo Basin was first detected in the last 1960s. Subsequently, several international companies began showing interest in the Karoo sequences. Drilling has taken place on the farm Ryst Kuil since the 1970s (Figure 2). As a result of increases in the uranium price over the past few years, a new era of uranium prospecting is currently taking place in the southern Karoo.

The uranium deposits occur in discrete pods or lenses within sandstone units. Many of these lenses tend to follow mineralized trends which coincide with the elongate direction of palaeo-flow direction of the ancient, meandering river channel courses. These "Mineralisation" areas and the

"Palaeo channels" indicated in the attached maps follow this elongate pattern but do not need to be assessed. The assessments are concerned with the open pit mines, the roads and site offices.

The product will be mined using the surface (open pit) mining method. The open case surface mining will be a standard opencast to a depth of no more than 85 m. The mine pits vary in size but are approximately 200m². The mining method will be traditional drill, blast, load and haul using trucks to deliver the material to the processing plant. The topsoil will be removed and stored. There will be a waste stockpile, ore stockpile, slimes dam, access roads and Eskom powerlines. A single, Central Processing Plant and Slimes Dam will be constructed at Ryst Kuil Main, close to the existing mine (Figures 4 & 8). The main product will be road freighted to Beaufort West and then railed to Cape Town.

It is important to emphasise, that although the blocks are large, relatively small areas within each block will be mined.

The following areas within each block will be impacted and are subject to assessment:

2.1 Quaggasfontein (Western Cape)

Figure 3: The extent of mining and mining related infrastructure on Quaggasfontein, Central Block.

2.2 Ryst Kuil (Western Cape)

Figure 4: The extent of mining and mining related infrastructure on Ryst Kuil (Eastern Bloc)

2.3 De Pannen – Kareepoort Block (Eastern Cape)

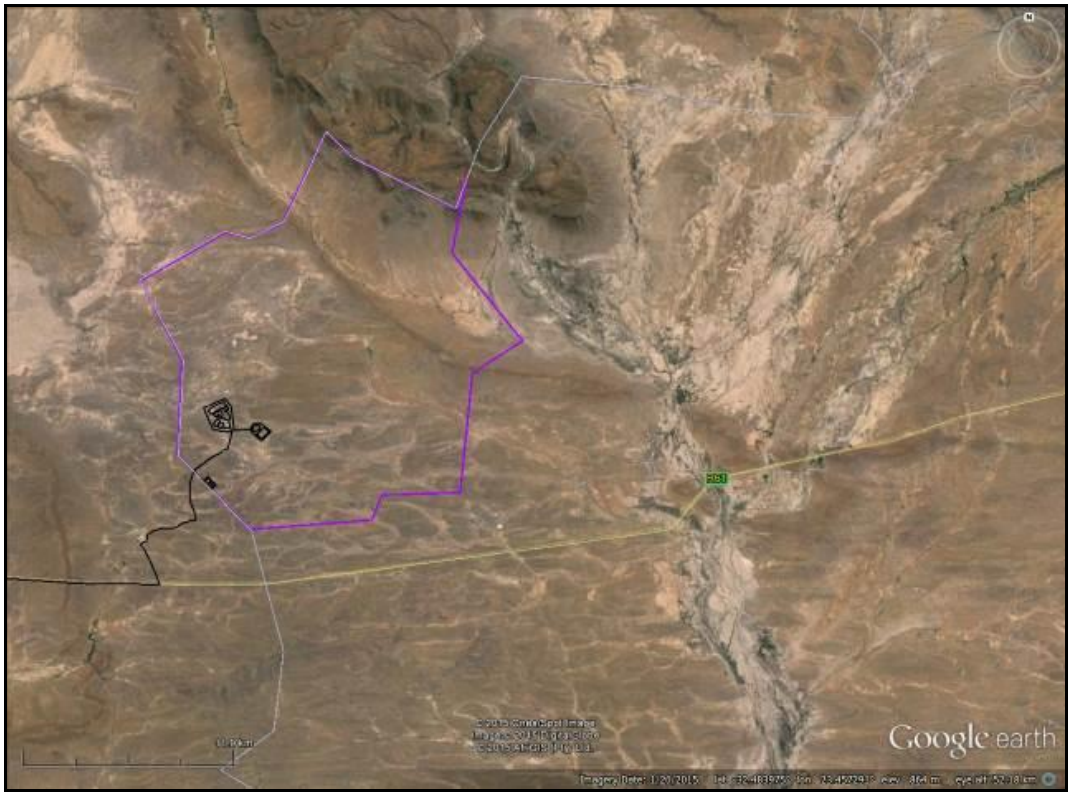


Figure 5: The De Pannen section of the Kareepoort Block lies just inside the borders of the Eastern Cape.

3. HERITAGE LEGISLATION

This report is conducted in terms of Section 38 (8) of the National Heritage Resources Act, No 25 of 1999.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological Sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

3.1 Structures (Section 34(1))

No person may alter or demolish any structure part of a structure which is older than 60 years without a permit issued by Heritage Western Cape (HWC), the responsible provincial heritage resources authority.

3.2 Archaeology & Palaeontology (Section 35(4))

No person may, without a permit issued by HWC, destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite.

Archaeological is defined as: “material remains resulting from human activity which is in a state of disuse and is in or on land and which is older than 100 years, including artefacts, human and hominid remains and artificial features and structures”.

Palaeontological is defined as: “any fossilised remains or fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossilierous rock intended for industrial use, and any site which contains such fossilised remains or trace”.

3.3 Burial grounds and graves (Section 36(3))

No person may, without a permit issued by the South African Heritage Resources Authority (SAHRA), destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority.

3.4 Grading

The South African heritage resources management system is based on grading, which provides for assigning the appropriate level of management responsibility to a heritage resource.

Table 1: Grading of Heritage Resources

Grade	Level of significance	Description
I	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1

		heritage resources.
II	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
IIIA	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3a heritage resources.
IIIB	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3b heritage resources.
IIIC	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3c heritage resources.

The grading of heritage sites, as prescribed in the NHRA, is only concerned with categories I, II and III. The subdivision of Grade III sites was introduced in the Western Cape and is used in this report.

Quaggasfontein (Central Block) and Ryst Kuil (Eastern Block) falls in the Western Cape and the responsible provincial heritage resources authority is Heritage Western Cape.

A Notice of Intent to Develop (NID) was submitted to Heritage Western Cape, **on the 09 October 2015. The NID also included the Eastern, Central, Western and Southern Blocks in the Karoo**.

The NID response, dated 19th October 2015, required the following studies:

- Impacts to archaeological heritage resources
- Impacts to palaeontological heritage resources
- Visual impacts of the proposed development
- Impacts to the built environment including a detailed site development plan

However, after submission of the NID application, Ferret Mining & Environmental Services (Pty) Ltd indicated that the client was initially only considering mining certain sections of the Eastern, Central and Kareepoort Blocks (Figure 2).

De Pannen, in the Kareepoort Block, falls within the Eastern Cape. In this case, the responsible provincial heritage resources authority is the Eastern Cape Provincial Heritage Resources Authority (ECPHRA). The CEO of ECPHRA, Mr Sello Mokhanya, has indicated that a copy of the report prepared for Heritage Western Cape must be submitted to his offices for comment.

All three areas (Quaggasfontein, Ryst Kuil and De Pannen) are considered together in this report, but the heritage resources of each area are dealt with separately.

4. METHODOLOGY

4.1 Background Literature study

Numerous impact assessments have been conducted in proximity to the proposed facility as reflected on the SAHRIS database.

This archaeological assessment also draws on a number of reports related to uranium prospecting in the area conducted over the last 10 years. In 2008, Dr John Kinahan was approached to undertake an archaeological survey the Ryst Kuil Section as part of a Baseline Assessment; in 2009, David Halkett and Tim Hart of ACO Associates conducted an archaeological survey of the

Ryst Kuil Section prior to the initiation of prospecting on the property; in 2010, Lita Webley and Tim Hart of ACO Associates undertook an archaeological assessment of portions of the Quaggasfontein Section prior to prospecting. While the Kinahan (2008) report is available on SAHRIS, none of the other reports have been submitted to heritage authorities for comment.

Reports available for this assessment include:

- An assessment of the Ryst Kuil Section of the Eastern Block by Kinahan (2008) which was included in the Environmental and Social Baseline report (Targus Mining Consultants 2008);
- An Archaeological Assessment of Uranium prospecting on Portions of the Farms Eerste Water 349 and Ryst Kuil 351 (Halkett 2009) on the Ryst Kuil Section;
- An Archaeological Assessment of Uranium Prospecting on Quaggasfontein 166 and Oude Volks Kraal 164 (Webley & Hart 2010) in the Quaggasfontein Section;
- A Heritage Impact Assessment conducted by Orton (2011) on Portion 1 of the farm Steenrots Fontein 168 for a proposed photo-voltaic facility, near Quaggasfontein;
- The Aberdeen – Droerivier 400 kV powerline (Hart & Schietecatte 2012) which will cross over the De Pannen (Kareepoort) and Quaggasfontein.

Background research included a review of the published material as well as unpublished reports on the SAHRIS database. The 1:50 000 maps of the area as well as Google Earth aerial images were consulted.

4.2 Field Survey

The polygon of the proposed development was provided to ACO Associates. The area was surveyed by Lita Webley and David Halkett on 20-22 October 2015.

Our tracks were recorded by means of Garmin GPS devices and all sites were digitally recorded.

We accessed the area by the local farm roads and drove along sections of the access roads where this was possible. We walked transects across the proposed mining pits, stockpile areas and haulage roads looking for archaeological remains.

4.3 Assumptions and Limitations

Visibility was good because of the sparse vegetation of the study area. We were able to cover most of the study area satisfactorily.

- The only limitations experienced were that the positions of some of the stockpile areas had been changed after we had already loaded their locations onto our GPS devices and were in the field. This meant we did not have the revised positions and had to calculate this in the field. However, we have been advised that the final stockpile positions still need to be confirmed and may change again;
- We were unable to access two areas on the farm De Pannen (see Section 6.5 below) as the farm gates were locked.

We are of the opinion that this is not a significant limitation.

5. RECEIVING ENVIRONMENT

The mountains and kopjes between Beaufort West and Aberdeen are comprised of horizontally bedded, fossiliferous shales and mudstones of the Beaufort Series in the Karoo system. They are

intersected at numerous locations by dolerite dykes and sills that are more resistant to erosion than the surrounding sedimentary rocks. While small overhangs do occur under the lintels of these siltstone caps, they are very rare. San (Bushmen) rock paintings may occur in shelters, but they are very scarce.

The dykes and sills have baked the surrounding shales resulting in patches of high quality hornfels. Hornfels (also known as indurated shales) are an attractive rock for stone tool makers because it flakes predictably and produces sharp edges. The majority of artefacts found in the study area are of hornfels. The igneous rocks erode into rounded spherical boulders which the San used for rock engravings. Ridges and lines of rocky hills strewn with these boulders are a characteristic feature of the Karoo. In addition, the dykes have the effect of damming up small streams resulting in small springs which often generate pans (or leegtes) of seasonal water – another feature of the landscape which attracted pre-colonial settlement.

5.1 Quaggasfontein

Plate 1: View of the landscape around Quaggasfontein with the Nuweveldberge in the background.

Plates 2 & 3: The study area is bisected by a shallow stream which becomes more incised towards the north-west, forming a small kloof.

5.2 Ryst Kuil

The Ryst Kuil Block (Figure 4) comprises the 3 portions termed as Haanekuil East, Ryst Kuil Main and Ryst Kuil Extension.

Plate 4: The view of the landscape at Ryst Kuil Extension showing good visibility.

Plates 5 & 6: The existing mining infrastructure on Ryst Kuil Main dates to 1978.

5.3 De Pannen (Kareepoort – Eastern Cape)

Plate 7: View looking eastward, at De Pannen

Plate 8: De Pannen in characterised by a number of small, shallow pans. This is the largest pan and located on the margin of the drilling area.

5.4 Archaeological Background

Because of the scarcity of caves and shelters in the Karoo, more than 90% of archaeological sites are open sites. The artefacts are generally not in primary location and organic remains are rarely preserved. This limits their information value and therefore their significance.

Early and Middle Stone Age

Isolated Early Stone Age artefacts, including occasional handaxes have been reported from the Beaufort West area but are generally quite ephemeral. Kinahan (2008) noted with respect the archaeology of Ryst Kuil, a total of only seven (7) ESA sites, with isolated finds of quartzite artefacts and he commented "none of the ESA material was considered to be in primary context and therefore of little research value". The earlier Pleistocene assemblages are primarily made on coarse-grained quartzites.

Middle Stone Age artefacts are widespread, occurring in isolated as well as relatively dense concentrations over large areas. They do not occur with any associated archaeological material or organic remains. They have been reported by the Kinahan (Turgis Baseline Report 2008) who noted that 126 or 50% of the total sites he recorded were Middle Stone Age but that they "probably formed part of a continuous surface scatter almost without focal points". He noted that the MSA artefacts were dominated by quartzite and hornfels. He also notes, interestingly: "There was some evidence of Levallois core production and *examples of Howieson's poort segments and allied forms were found at a number of sites" (*Turgis Baseline Report 2008: 225)*.*

This reference to the Howieson's Poort is this particular context, is highly significant. The Howieson's Poort is a name given to a particular expression (or subdivision) of the Middle Stone Age dating to between 80 000 and 60 000 years ago and characterised by backed tools including segments often on fine-grained raw material. Recognized mainly from cave sites along the coastal margins of South Africa, it has not been recorded from open sites in the interior of South Africa.

Halkett (2009) and Webley & Hart (2010) support Kinahan's observations on the widespread distribution of MSA material in the Ryst Kuil and Quaggasfontein blocks.

Late Stone Age

While ESA and MSA stone artefacts are ubiquitous, LSA artefacts are scarcer. They tend to be manufactured on hornfels, but of interest is a patchy occurrence of a chert horizon that forms a capping on some low hills. Halkett (2009) noted that LSA material was located close to dry river courses, typically marked by dense acacia growth. The pre-colonial inhabitants were probably restrained by the need for water and shelter, of which the latter is almost completely absent and acacia stands are the only possibility of respite from wind and sun.

Kinahan (2008) reported on a more focused distribution of LSA sites (97 sites) across the entire Ryst Kuil property. This is supported by Halkett (2009) who found LSA sites along dry river beds. The LSA included a number of suspected hut circles and short lengths of stone walling as well as possible burial cairns. The hut circles/stone kraals have been interpreted to represent pre-colonial pastoralist groups. Kinahan also observed that the occurrence of a minor chert horizon on the Ryst Kuil property provided a raw material of high quality for stone artefact manufacture.

Rock engravings, on dolerite boulders, may occur throughout the mining area although none were recorded by Kinahan (2008) or Halkett (2009).

6. FINDINGS

In general, artefact distributions were low and very few discrete "sites" were identified. Our survey tracks and recorded sites are reflected in the figures below:

6.1 Quaggasfontein Section of Central Block

The proposed mining and related infrastructure consists of at least five open cast mine pits (indicated as irregular shapes) and five stockpile areas with an associated haulage road which links to the Central Processing Plant on Ryst Kuil (Figure 2). The total foot print is 1.7km by 1.1km in size (Figure 6) and the maximum size of the mining pits will be 400m². Stockpile areas (shown as rectangles below in Figure 6) range between 200m² and 400m².

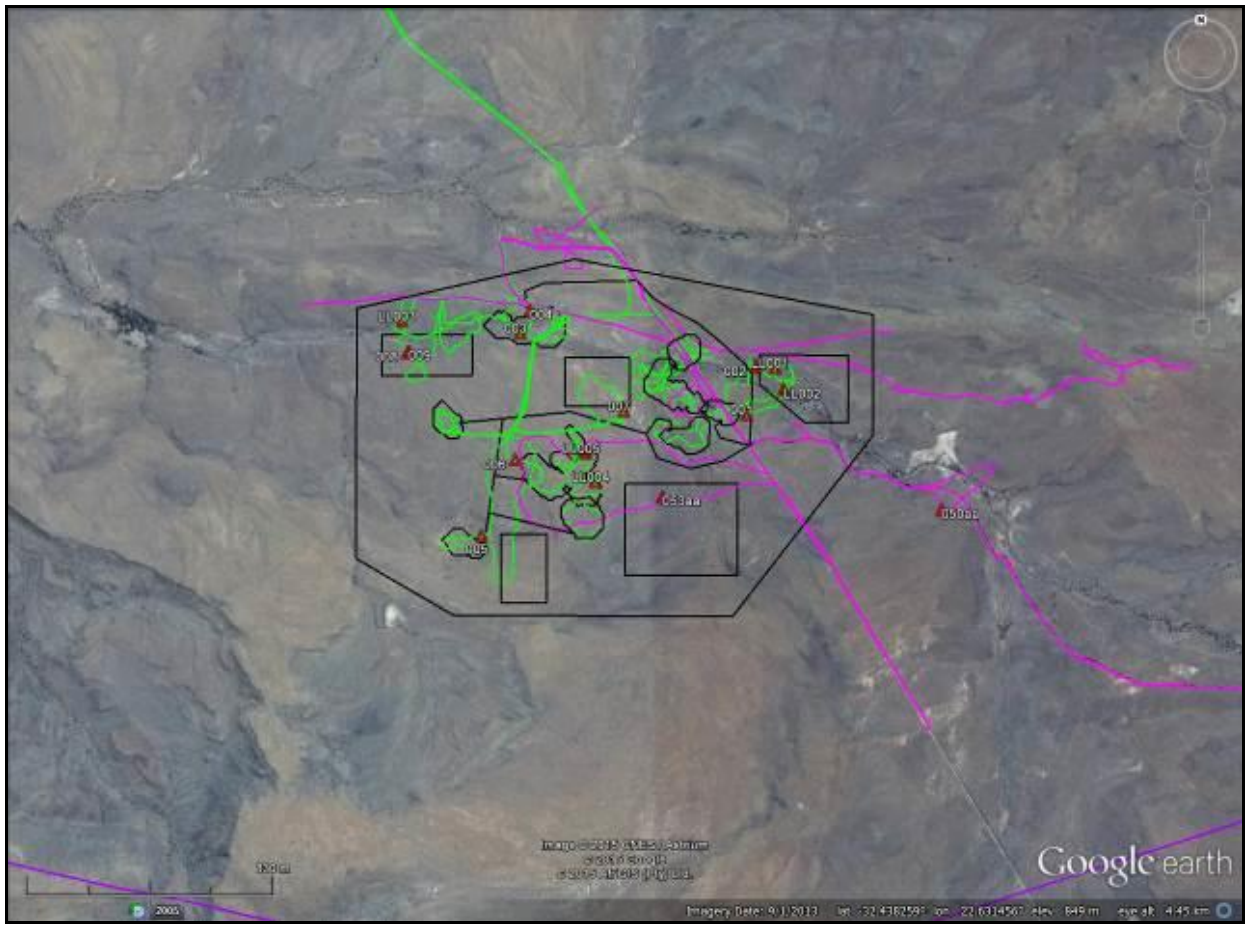


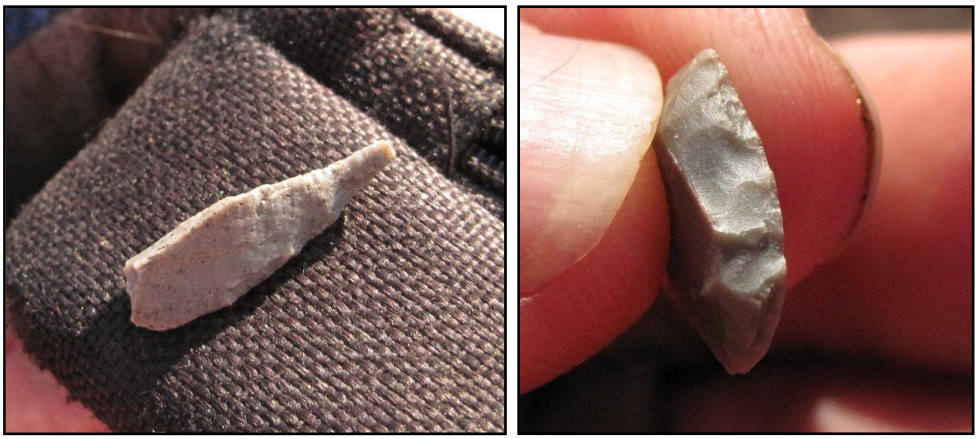
Figure 6: The mining pits are shown as irregular shapes and the stockpile areas as rectangles. Our tracks from 2015 are shown in green, while the Webley & Hart (2010) tracks are shown in pink. The archaeological sites are indicated as red triangles.

The archaeology of the area is characterised by isolated scatters of Middle Stone Age flakes and cores on weathered hornfels/chert (Table 2). There are also some unpatinated hornfels flakes which may indicate Later Stone Age occupation but they generally have no distinctive characteristics.

The only exception is a LSA site (D009) on the banks of the little stream discussed above. It lies on the boundary of an area set aside for a stockpile.

On the opposite bank of the river from Site D009, just outside the stock pile, we recovered two fragments of Chinese porcelain, about 5 m apart. One fragment was shaped into a large segment, and appeared to have some retouch along one margin (Plates 11 & 12).

Plate 9: Artefacts from Site D009.



Plates 10: A characteristic LSA drill and thumbnail scraper from the Site D009.

Plates 11 & 12: Two sherds of Chinese porcelain, the second appears to have some retouch along the one margin (Site L003).

6.2 Ryst Kuil (Haanekuil East)

The Ryst Kuil Block (Figure 4) comprises the three portions termed as **Haanekuil East**, **Rystkuil Main** and **Rystkuil Extension** which are subject to impacts. These areas are discussed separately, from north to south.

The mining block “Haanekuil East”, on the farm Haane Kuil 335, is about 4 km x 6 km in size and consists of about 10 open pits of varying size, the largest being 400m x 200m while the smallest are 150m x 100m. There will be three stockpile areas with the largest, 900m x 500m. The mining area will be connected to the CCP at Ryst Kuil Main via a haulage road.

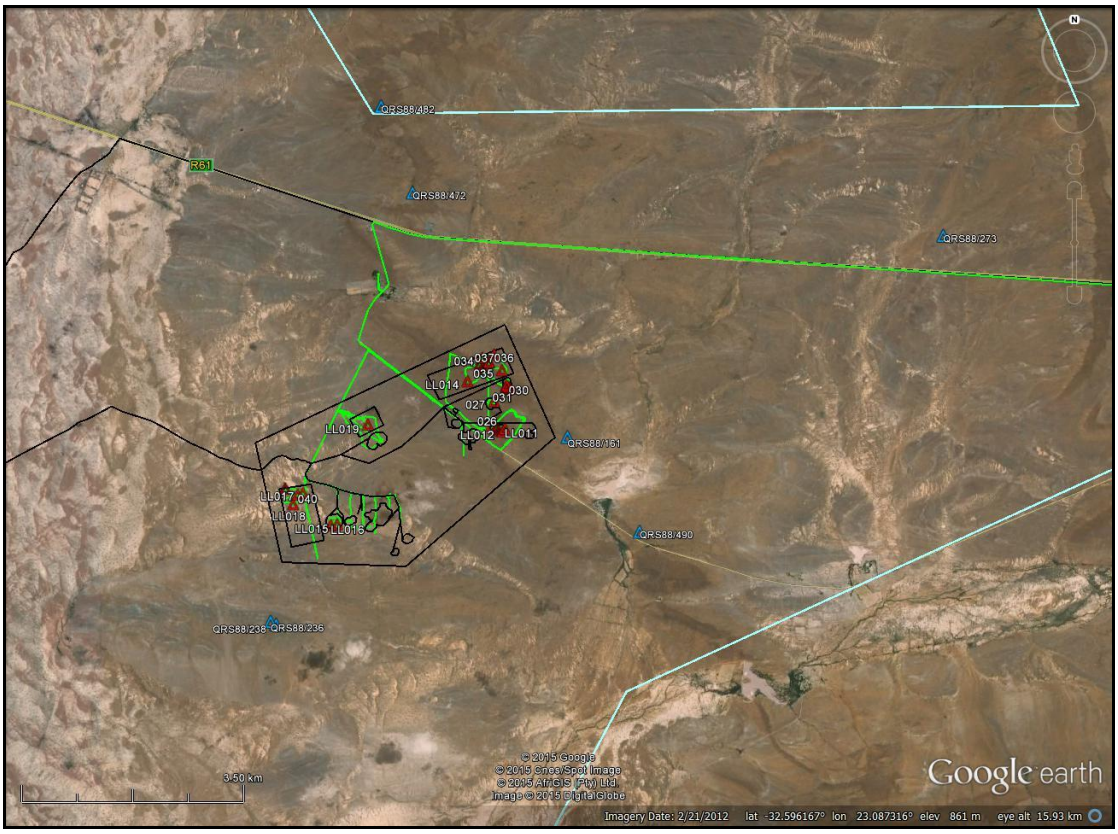


Figure 7: The northern or **Haanekuil East** portion of Ryst Kuil. Our tracks are shown in green. The red triangles indicate sites recorded in 2015, while the blue triangles indicate sites recorded by Kinahan (2008).

It is important to emphasise that many of the “sites” (red triangles) reflected in Figure 7 above, consist of a single flake or core (see Table 2). There are very few discrete archaeological sites with more than 3 artefacts. The archaeology consists of ephemeral scatters of hornfels flakes, some clearly LSA but others difficult to ascribe to any time period. There is a single MSA snapped blade on very weathered hornfels. Artefact densities are low and of very low significance.

Plate 13: An isolated large, chert core

6.3 Ryst Kuil Main

Ryst Kuil Main has been the focus of mining activities since the 1970s. There is an existing underground mine (Plates 5 & 6) and associated infrastructure within the area. The large rectangle (900m x 600m) to the north-west in Figure 8, represents the proposed slimes dam, the new plant position, the ore and waste stockpiles. We were unable to assess these areas because we did not have their positions prior to fieldwork. Each of the four mine pits (the circular shapes in Figure 8) are about 200m in diameter and three of the mines are associated with a stockpile (the rectangular shape) which measures 1km x 200m.

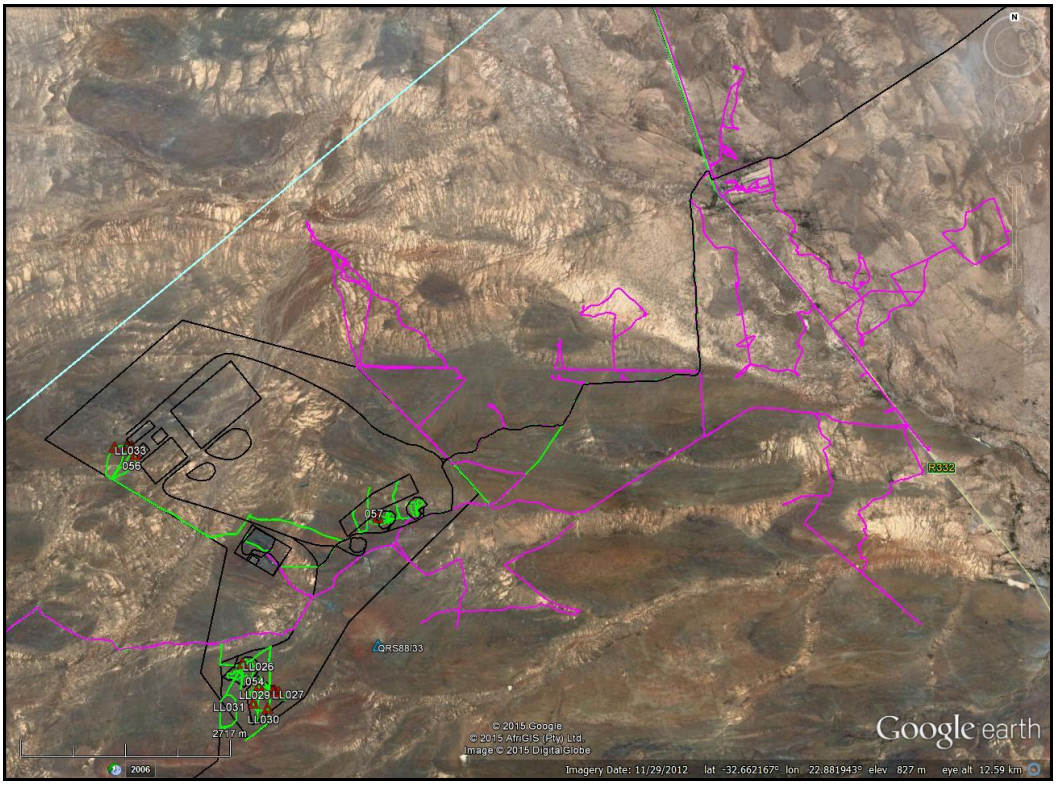


Figure 8: The central or Ryst Kuil Main portion of Ryst Kuil. The green lines indicate the tracks of Webley & Halkett (2015) and the pink lines the tracks of Halkett & Hart (2009). The red triangles indicate sites recorded in 2015, while the blue triangles indicate sites recorded by Kinahan (2008).

Coverage of the area by Kinahan (2008), Halkett & Hart (2009) and Webley & Halkett (2015), while not comprehensive, has been sufficiently extensive to assess the archaeological potential in the proposed mining areas (Figure 8). There is some evidence for recent mining activities nearby, with occasional glass bottles, tin cans etc found in the veld.

For example, Plate 14 consists of a roughly circular collection of cobbles, some flaked artefacts and the handle of a pocket knife – suggesting that this may represent a recent campsite.

Plate 14: Site 029 is a roughly circular pile of stones, associated with a pocket knife handle and some nearby hornfels flakes.

6.4 Ryst Kuil Extension

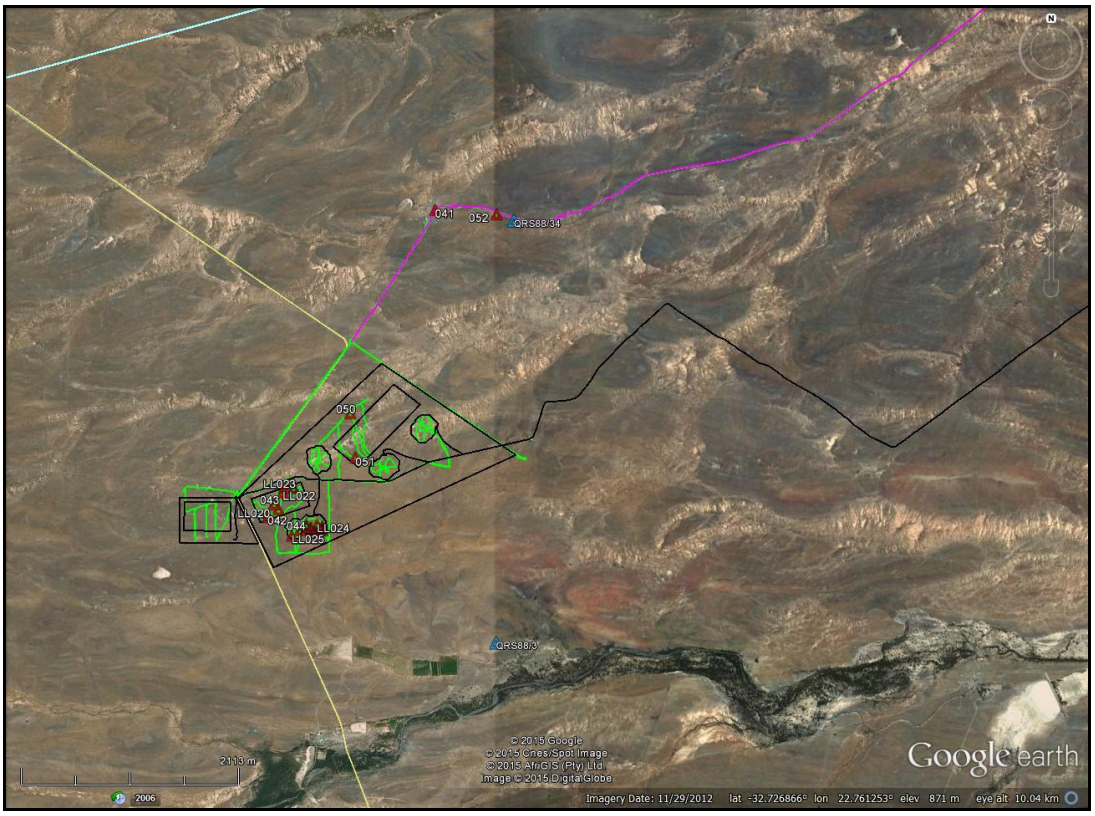


Figure 8: The mining pits are indicated as irregular circles and the stockpile areas with rectangles. The green lines indicate the 2015 tracks and the red triangles are archaeological sites. There are two red

triangles on the track leading to Ryst Kuil extension; they include the farm house of Katdoornkuil (Site 41) while Site 52 is the proper location for Kinahan's Site QRS88/34 (see discussion below).

Ryst Kuil Extension is located in the southern portion of the mining area (Figure 4) on portions of the farm Kant Kraal 360. The mining polygon is 2 km x 1 km in size and comprises 4 mine pits (each around 200m in diameter) and 3 stockpile areas (rectangles in Figure 8) vary in size but are around 800m x 200m each

There is a widespread 'presence" of stone artefacts, both MSA and LSA in the Ryst Kuil Extension, in the south of the Block (Figure 4). Site L021 consists of a small pan with a scatter of hornfels flakes, there does not appear to be any retouch on any of the artefacts. Site L023 comprises a very weathered (MSA?) collection of cores and flakes, also on a small pan. In addition to the hornfels, there are numerous chert nodules which have been weathered red on the outside, they too have been utilised for stone artefacts.


Plates 15 & 16: Site L021 (left) and L)23 (right) represent two types of stone artefact scatters on Ryst Kuil Extension.

Kinahan (2008) reported on a site QRS88/34 in his report. The site avoids the haulage route between Ryst Kuil Extension and Ryst Kuil Main and will not be impacted. The site was revisited and is recorded as D054. It comprises two semi-circular stone foundations and probably represents a late 19th century or early 20th century stockpost. The nearby midden includes burnt bone, ostrich eggshell fragment, some refined earthen ware (including some transferware Willow Pattern) and spongeware designs, tin cans, glass and one patinated MSA blade with retouch.


Plates 17 & 18: Site QRS88/34 or D054 is the remains of a small stockpost.

6.5 De Pannen (Kareepoort) - Eastern Cape

Three separate areas have been identified for mining in an area termed “De Pannen”. They include portions of the farm De Pannen 79, Klein Tavel Kop 163 and Kareepoort 80.

Surveys of proposed mining areas immediately east and south of De Pannen (Kareepoort and Klein Tavel Kop) was not possible as we did not have access to the properties (Figure 9). These mining areas are of lower priority and their layout may still change.

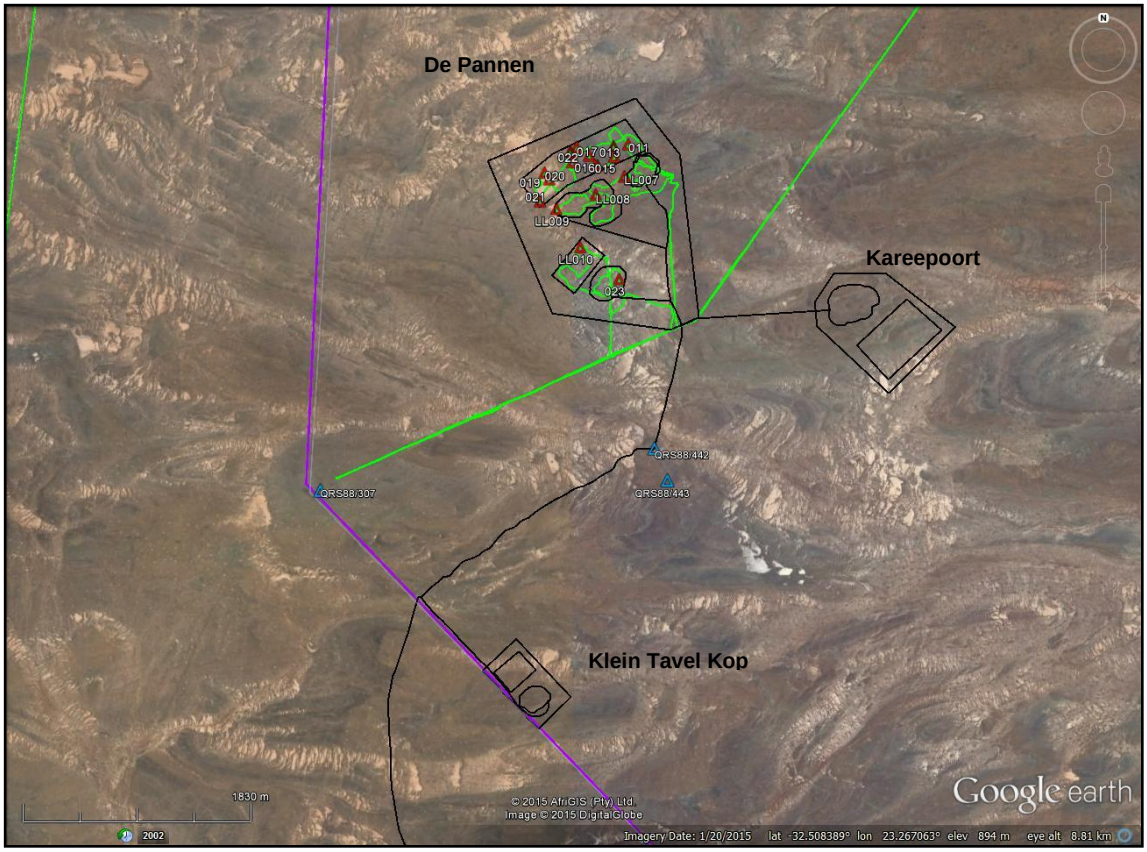


Figure 9: The mining pits are indicated as irregular circles and the stockpile areas with rectangles. The green lines indicate the 2015 tracks and the red triangles are archaeological sites. The blue triangles indicate archaeological sites recorded by Kinahan in 2008.

Extremely low densities of stone artefacts were recovered on De Pannen (Table 2). No discrete collections of artefacts were found together, suggesting an archaeological site. Isolated artefacts were recovered in the veld. De Pannen is characterised by numerous small and large pans, but they did not appear to form the focus of prehistoric settlement.

Plate 19: An example of an isolated Miscellaneous Retouch Piece (MRP) recovered from a large pan on De Pannen.

7. IMPACT ASSESSMENT

Since archaeological sites, are non-renewable, it is important that they are identified and their significance assessed prior to development.

The main cause of impacts to archaeological sites is direct, physical disturbance of the material itself and its context. The significance of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from the area in which they were found. The impacts are likely to be most severe during the construction period although indirect impacts may occur during the operational phase of the project.

The excavation of open pit mines may result in the destruction of surface and sub-surface archaeological material, while the stockpiling of ore on the soil surface adjacent to the mine pits may cover any surface archaeological material. The removal of the stock pile may result in direct or indirect damage to the surface archaeological material although sub-surface archaeological material will remain unaffected. Damage can also result to archaeological material through the construction of the central processing plant and slimes dam at Ryst Kuil Main. Less impact is expected to archaeological material through the construction of haulage roads, which will, in the main, following existing farm tracks.

7.1 Pre-colonial Archaeology

However, our survey confirmed the findings of Kinahan (2008) and Halkett & Hart (2009) who have already undertaken extensive surveys in the Ryst Kuil area. Archaeological material is predominantly present in the form of isolated flakes and cores, which are difficult to ascribe to a particular time period and which do not occur in sufficient quantities to be termed a “site” (Table 2). There are ephemeral traces of ESA material in the form of large, patinated cores but no distinctive bifacial artefacts were recorded. The ESA is of very low significance.

There are low density scatters of MSA material in the areas. Some of these scatters occur in association with a chert band which may have provided the raw material for stone tool production. The MSA artefacts are not distinctive. There are very few blades present and no evidence of the “Howiesons Poort” artefacts recorded by Kinahan (2008). The MSA material is of low significance.

There are a few scatters of LSA material in all three mining areas, generally on hornfels but also occasionally on chert and quartz. The most interesting site was that of D009 in Quggasfontein, which is located on the banks of a river and will be covered by the stockpile material as a result of mining. This LSA stone scatter consists of a large quantity of chert, hornfels and some quartz artefacts, including cores, chips and chunks. Most significantly, it also includes two thumb nail scrapers, one drill, and one MRP/Scraper. There are also possible bone fragments. This site has been identified as being of sufficient significance (Grade IIIB), to warrant mitigation.

Apart from Site D009 on Quaggasfontein, it is anticipated that the impact of the proposed development on Later Stone Age archaeological sites will be very low.

7.2 Colonial Period Archaeology

Kinahan (2008) recorded a number of late 19th/early 20th century stockposts and stone kraal features during his survey of Ryst Kraal. One site in particular, QRS88/34 or D052, on the farm road between Ryst Kuil Main and Ryst Kuil extension, was re-visited to assess its significance. The site has been given a Grade IIIC grading. It does not appear to contain any Later Stone Age contact material (indicating early contact) and is of low significance. This site will not be impacted by mining (or the construction of the haulage road) as an alternative route will be used.

Of interest were the two fragments of Chinese porcelain recovered from Site L003, opposite the river from Site D009 on Quaggasfontein. One fragment appears to have been retouched. This is interesting as similar examples of the modification of European material culture by indigenous peoples have been recorded elsewhere in the country. Often it is bottle glass which is manufactured into artefacts which resemble stone tools. It is possible that a more intensive survey in the vicinity of L003 may reveal more fragments of ceramic. While the "site" comprises only two sherds, it has been given a Grade IIIC grading because of its potential information value.

Table 3: Potential impact to Archaeology at Quaggasfontein (Western Cape)

	Extent	**Intensity**	**Duration**	**Consequence**	**Probability**	**Significance**	**Status**	**Confidence**
Without Mitigation	1 Local	1 Local	3 Irreversible	5 Low	Improbable	Very Low	Negative	High
Essential Mitigation Measures: • Avoid placing stockpiled material on site D009. Alternatively, the site should be mitigated before destruction; • If any significant concentrations of archaeological material area uncovered, then work in that area should stop, and Heritage Western Cape (Telephone: 021 483 5959) should be contacted. Best Practice Mitigation Measures: • Archaeological remains are best left *in situ*, and conserved for the future. If this is not possible then mitigation in the form of excavation with a permit will be required.								
With mitigation	1 Low	1 Low	3 Irreversible	5 Low	Improbable	Very Low	Neutral	High

Table 4: Potential Impacts to Archaeology at Ryst Kuil (Western Cape)

	Extent	**Intensity**	**Duration**	**Consequence**	**Probability**	**Significance**	**Status**	**Confidence**
Without Mitigation	1 Local	1 High	3 Irreversible	5 Low	Probable	High	Negative	High
Essential Mitigation Measures: • If any significant concentrations of archaeological material area uncovered, then work in that area should stop, and Heritage Western Cape (Telephone: 021 483 5959) should be contacted. Best Practice Mitigation Measures: • Archaeological remains are best left in situ, and conserved for the future. If this is not possible then mitigation in the form of excavation with a permit will be required.								
With mitigation	1 Low	1 Low	3 Irreversible	5 Low	Improbable	High	Neutral	High

Table 5: Potential impact to Archaeology at De Pannen (Eastern Cape)

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without Mitigation	1 Local	1 Local	3 Irreversible	5 Low	Improbable	Very Low	Negative	High
Essential Mitigation Measures: • If any significant concentrations of archaeological material area uncovered, then work in that area should stop, and Heritage Western Cape (Telephone: 021 483 5959) should be contacted. Best Practice Mitigation Measures: • Archaeological remains are best left *in situ*, and conserved for the future. If this is not possible then mitigation in the form of excavation with a permit will be required.								
With mitigation	1 Low	1 Low	3 Irreversible	5 Low	Improbable	Very Low	Neutral	High

7.3 Impacts from Powerline and Access Roads

Potential impacts caused by the construction of haulage roads are likely to be limited and local. In the majority of cases, use will be made of existing farm tracks.

8. MITIGATION

The site of D009 on Quaggasfontein has been identified as being of sufficient significance (Grade IIIB), to warrant mitigation. It is recommended that mitigation should involve setting up a grid across the site and collecting and recording the archaeological material. Some sieving of sub-surface material may be required.

No mitigation is required for any of the other isolated artefact scatters on the Quaggasfontein, Ryst Kuil and De Pannen Blocks.

9. CONCLUSION

Archaeological field assessments were conducted in the mining blocks of Quaggasfontein, Ryst Kuil (Western Cape) and De Pannen (Eastern Cape). This involved walking transects across the areas identified for mining as well as stockpile locations.

Generally, archaeological material comprised small numbers of ESA artefacts, scatters of MSA and occasional LSA. The majority were manufactured on indurated shales (hornfels) although some artefacts were manufactured from a chert band which crosses Ryst Kuil.

Artefact numbers are very low and are of low significance. No significant archaeological resources were identified, with the exception of Site D009 on the farm Quaggasfontein which has been given a Grade IIIB grading. It will be buried under the stockpile which is planned for this area.

The following recommendations should be enforced:

- It is recommended that Site D009 is mitigated before destruction. A surface collection may be sufficient. It is recommended that mitigation should involve setting up a grid across the site and collecting and recording the archaeological material. Some sieving of sub-surface material may be required;
- If any human remains are uncovered during construction, the ECO should have the area fenced off and contact HWC (Tel: 021 483 5959) immediately;
- if there are any significant changes to the layout of the facilities, the new designs should be assessed by a heritage practitioner.

Indications are that in terms of archaeological heritage the proposed activity is viable; impacts are expected to be very limited and controllable.

10. REFERENCES

Halkett, D. 2009. An Archaeological Assessment of Uranium Prospecting on Portions 1, 3 and 4 of the Farm Eerste Water 349 and Remainder of the Farm Ryst Kuil 351, Beaufort West. Unpublished report for Ferret Mining & Environmental Services (Pty) Ltd.

Hart, T. & L. Schietecatte. 2012. Heritage Impact Assessment (Scoping level) of the proposed Aberdeen to Droerivier 400 kV transmission line Western Cape Province (Central Karoo District) Eastern Cape Province (Cacadu District). Unpublished report for Envirolution (Pty) Ltd.

Orton, J. 2011. Heritage Impact Assessment for a proposed photo-voltaic facility on Steenrots Fontein 168/1, Beaufort West Magisterial District, Western Cape. Unpublished report for CSIR.

Kaplan, J. 2005. Archaeological and Heritage Scoping Propsed upgrading and construction of new roads Karoo National Park. Unpublished report for Ecobound Environmental.

Kaplan, J. 2006. Phase 1 Archaeological Impact Assessment Proposed Klavervlei Powerline Karoo National Park. Unpublished report for EnviroAfrica.

Public Consultation. 2015. Ferret Mining & Environmental Services (Pty) Ltd.

Turgis Mining Consultants. 2008. Proposed Ryst Kuil Uranium Project Environmental Impact Assessment. Environmental and Social Baseline Report.

Webley, L. & Hart, T. 2010. Scoping Archaeological Impact Assessment: Proposed Prospecting on Quaggasfontein 166 and Oude Volks Kraal 164 (Site 29), Beaufort West District, Western Cape. Unpublished report for Tasman Pacific Limited.

Webley, L. 2015a. A Scoping Heritage Impact Assessment for Uranium Mining in the Kareepoort Block near Aberdeen, Eastern Cape. Unpublished report for Ferret Mining & Environmental Services (Pty) Ltd

Webley, L.2015c. A Scoping Heritage Impact Assessment for Uranium Prospecting in the Quaggasfontein Section (Central Block) near Beaufort West, Western Cape Province. Unpublished report for Ferret Mining & Environmental Services (Pty) Ltd

Winter, S. & Oberholzer, B. 2014. Heritage and Scenic Resources: Inventory and Policy Framework for the Western Cape.

MAP 242 OP. General Plan of Crown Land, situated in the Field Cornetcy of Gouph, Division of Beaufort, Divided into Suitable Lots of Farms. 27 August 1868.

Table 2: Archaeological sites

*IHS Insufficient Heritage Significance: The archaeologist proposes that the heritage resource does not have enough heritage significance to be included in the National Estate. OES = Ostrich eggshell fragments.

Field Name	Lat S Dec Deg	Lon E Dec Deg	Description	Significance/ Grading
L001	32.43535096	22.63685502	**Quaggasfontein**: 1 possible lower grindstone, 1 large quartzite flake and 1 very weathered MSA blade.	IHS
L002	32.43598002	22.63714604	Near site 001, on the same rocky plain, a quartzite radial core, an irregular chert core, a chert flake and a MSA blade on chert. Stone artefact density is generally very low.	IHS
L003	32.43389100	22.62347298	To the north of the Mine Pit, two fragments of thick blue and white Chinese porcelain, about 20 m apart, one piece has clear evidence of retouch along one margin	IIIC
L004	32.43877002	22.63040003	A single flaking episode with 7 reasonably unpatinated hornfels flakes, all in close proximity in the veld	IHS
L005 L006	32.43791004 32.43779596	22.63007398 22.63004003	Dense scatter of unpatinated hornfels over an area of 5m x 5m, in the gravel wash/slope of a little stream (i.e. on soft soils). About 100 flakes and cores. No obvious signs of retouch and probably LSA	IIIC
L007	32.49035200	23.27132100	**Die Pannen**: A single clear/gritty (clear silcrete?) core	IHS
L008	32.49167299	23.26887902	A line of round cobbles, possibly either related to the drill holes nearby, or natural. No associated artefacts	IHS
L009	32.49271603	23.26551603	In the middle of a large pan, a single rectangular shaped, retouched flake. Retouch only along one margin, and some patination	IHS
L010	32.49546899	23.26756901	A single lead slug	IHS
L011	32.59784404	23.07831704	**Haanekuil:** A single very large chert core	IHS
L012	32.59824403	23.07795100	Two hornfels flakes	IHS
L013	32.59194503	23.07849700	A single hornfels flake	IHS
L014	32.59114003	23.07207604	1 LSA hornfels flake	IHS
L015 L016	32.61138903 32.61152398	23.05019097 23.04910703	2 isolated hornfels flakes	IHS
L017	32.60694997	23.04441903	1 sidestruck hornfels flake	IHS
L018	32.60856701	23.04279000	1 MSA snapped flake/blade on very weathered hornfels	IHS
L019	32.59727198	23.05533201	A very dense scatter of OES in a small area, no associated artefacts.	IHS
L020	32.73575904	22.73331899	**Rystkuil**: Single small chert flake with scraper retouch along one margin	IHS
L021	32.73388803	22.73490099	A small pan with a scatter of hornfels artefacts, Very coarse hornfels, no retouch, one artefact has MSA appearance. About 20 artefacts in proximity to each other, over an area of 10 m x 10 m.	IHS
L022	32.73427402	22.73374798	Near a little pan, a chert core with crushing along striking platform. Single platform core.	IHS
L023	32.73387898	22.73386499	On a small pan, a number of very weathered (ESA or MSA?) flakes and cores. The cores are discoid and the flakes are almost circular. Probably weathered hornfels, as they have	IHS

			a red patination but they could be chert	
L024	32.73710400	22.73733300	One flaked chert core and one hornfels chunk	IHS
L025	32.73806800	22.73469396	A distribution of red chert nodules with widespread, but ephemeral evidence of flaking. No distinguishing characteristics	IHS
L026	32.69370200	22.84245104	Single large grey hornfels flake with patinated cortex.	IHS
L027	32.69697203	22.84662598	On a very slight ridge line, a scatter of OES fragments and one hornfels flake	IHS
L028	32.69680004	22.84685397	On a ridge, a very large pile of round cobbles. Perhaps related to mining or the construction of the gravel track? No associated artefacts	IHS
L029	32.69701503	22.84743198	A small (70cm x 70 cm) stone packed circle, perhaps the base of a hearth, associated with a handle of a metal knife and some clear bottle glass. Probably related to the drill holes nearby	IHS
L030	32.69891102	22.84591603	Scatter of OES	IHS
L031	32.69829897	22.84395400	Single large hornfels core with red patinated cortex	IHS
L032	32.66831104	22.82642500	A single chert flake	IHS
L033	32.66851002	22.82474502	A dense spread of OES on a cleared space, with a large hornfels core and 1 hornfels flake	IHS
D001	32.43675803	22.63582899	**Quaggasfontein:** Isolated MSA patinated hornfels chunk	IHS
D002	32.43530402	22.63615396	Flat gravel area next to big watercourse. Including 2 x quartz chunks, 1 fresh small hornfels flake, 1 x small fresh grey chert side scraper, 1 x small grey chert bladelet, 1 x hornfels chunk/core. Few OES fragments. Very low density	IIIC
D003	32.43427103	22.62772503	3-4 patinated flakes/chunks probably MSA near water course	IHS
D004	32.43359696	22.62807003	Occasional patinated hornfels. MSA. On flat gravel pavement	IHS
D005	32.44038697	22.62632098	Tortoise	
D006	32.43809503	22.62752797	Isolated small grey chert bladelet, LSA	IHS
D007	32.43664102	22.63142003	2 x patinated hornfels flakes. MSA. Isolated	IHS
D008	32.43486397	22.62368202	Isolated chert flake. MSA	IHS
D009	32.43481896	22.62370901	LSA stone scatter on bank above river (gravel terrace). Lots of chert and hornfels, some quartz artefacts. Cores, chips, chunks. 2 x thumb nail scrapers, 1 x drill, 1 x MRP/Scraper? Possible bone fragments. It will be necessary to grid and collect surface material.	IIIB
D010	32.45969301	23.22493002	Tortoise	
D011	32.48802803	23.27165502	**De Pannen:** Small pan with track through it. Ephemeral archaeology. 3 x patinated MSA flakes (1 hornfels and 2 chert)	IHS
D012	32.48815997	23.27039396	Isolated hornfels core	IHS
D013	32.48892699	23.27044702	2 x small polished hornfels cores on edge of small pan. 1 x hornfels flake (polished?)	IHS
D014	32.48955497	23.26902503	2 x hornfels flakes (fresh) in small pan. 1 flake off a core. 1 flattened Martini Henry cartridge case [2722]	IHS
D015	32.48953099	23.26878497	Cartridge case	IHS
D016	32.48884401	23.26830000	Small pan with 2 x hornfels flakes. MSA	IHS
D017	32.48823901	23.26723298	Isolated medium core, not heavily pantinated	IHS
D018	32.48854796	23.26669503	1 x small core, 1 small MSA flake in small pan. All pantinated	IHS

D019	32.49056499	23.26489200	Very large pan, no artefacts!	
D020	32.49009300	23.26449897	Isolated pebble, radial core. Some patination. Edge of pan 019	IHS
D021	32.49215797	23.26410402	Martini Henry cartridge case	IHS
D022	32.48930200	23.26686401	Isolated hornfels chunk, mild patination in small pan	IHS
D023	32.49776403	23.27090803	Isolated large flake. Quartzite like material near small pan	
D024	32.59804797	23.07729696	**Ryst Kuil (Haanekuil):** Isolated hornfels items, 1 x core, 1 x flake and 1 x chunk	IHS
D025	32.59764799	23.07684400		
D026	32.59737700	23.07608401		
D027	32.59395802	23.07652398	Isolated core. Large. Patinated	IHS
D028	32.59224401	23.07886697	2 x isolated hornfels chunks. Very patinated	IHS
D029	32.59213001	23.07927098	1 x patinated disk core	IHS
D030	32.59191502	23.07898197	Medium pebble, quartzite, grey material. Scars look fresh	IHS
D031	32.59172500	23.07866799	Isolated MSA flake, patinated hornfels	IHS
D032	32.58919903	23.07454803	Isolated silcrete MSA flake	IHS
D033	32.58866703	23.07412399	Large core (ESA?) patinated and 1 hornfels flake, heavily patinated	IHS
D034	32.58782004	23.07456899	Another big core, patinated chert. Quite a few chert artefacts in the area, there is a chert lens in the area which could be the source of the artefacts.	IHS
D035	32.58956498	23.07787699	Large flake with some core damage – ESA?	IHS
D036	32.58734303	23.07652096	Isolated core, edge. Chert cobble	IHS
D037	32.58840996	23.07565402	Chert core and few flakes	IHS
D038	32.58848699	23.07564598	Quite a few chert flakes	IHS
D039	32.60630004	23.04144404	Remains of a small dry stone structure, lots of refuse scattered around. Modern glass, metal also blue glass. Tin cans, carteidge cases, green “Codd” bottle type glass, some earthenware and ceramics but these appear recent. No obvious graves nearby	IHS
D040	32.60718198	23.04354002	2 x patinated hornfels, MSA	IHS
D041	32.70952703	22.74966697	Old gabled house with verandah, at Katdoringkuil?	
D042	32.73642004	22.73215902	**Ryst Kuil Extension**: Isolated small stone scatter mostly on chert (in distinctive red outer patina). Lots of it on the veld surface: 5 chert flakes, 1 chert bladelet core, 1 heavily patinated core (MSA?) [2735-2736]. There are a few more flakes in the vicinity. The scatter is more widespread and more cores seen. Not dense so difficult to assess area. Possibly LSA?	IIIC
D043	32.73529300	22.73282697	Another area where chert has been worked. Few cores and flakes	IHS
D044	32.73755796	22.73559099	Stone scatter of moderate density. Using chert (grey with red patina), also a darker material also with red patina (hornfels?) and some chert. Chips, chunks, flakes and cores could be ESA/MSA or LSA?	IHS
D045	32.73736099	22.73668198	Odd finds of grey chert artefacts, probably MSA	IHS
D046	32.73774203	22.73714902		
D047	32.73757196	22.73786098		
D048	32.73727298	22.73786400		
D049	32.73712403	22.73620103		

D050	32.72733204	22.74078500	tented tortoise	
D051	32.73120004	22.74132304	Stone scatter. MSA. Patinated, grey quartzite material also some chert with red patina, not dense on small pan, flakes, chunks, cores	IHS
D052	32.70990900	22.75610402	Kinahan's site QRS88/34. Two lobed stone hut? With mid to late 19th century material. "Small stockpost, two circular rock outlines. Midden with burnt bone, OES, refined earthenware (transfer willow pattern), spongeware. 1 patinated MSA blade with retouch. Tin. Probably later 19th or early 20th century.	IIIC
D054	32.69625303	22.84470703	**Ryst Kuil Main:** A small area (10m²) with a few heavily patinated large flakes (around 11) and 3 large flakes that show traces of flake scars on dorsal surface, possibly all ESA? [2748-2754]	IHS
D055	32.66835697	22.82709598	2 x large isolated flakes (ESA?). Nearby core on edge of pebble	IHS
D056	32.66935199	22.82764600	Area of flake production, quite a few cores and flakes with moderate patination. Large cores – end cobble type. Big crude flakes. On dusty flat gravel pan. Grey siltstone with reddish cortex. [2759-2765].	IHS
D057	32.67673703	22.86122801	Isolated chert (red patina), 1 x large chert flake, 5 MSA-like chert pieces, 1 flate core.	IHS