

**HERITAGE IMPACT ASSESSMENT: PROPOSED URANIUM MINING AND
ASSOCIATED INFRASTRUCTURE ON PORTIONS OF THE FARMS
QUAGGASFONTEIN AND RYST KUIL* 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)

HWC Case Number: 15100705WD1009E

Prepared for:

Ferret Mining & Environmental Services (Pty) Ltd

November 2015



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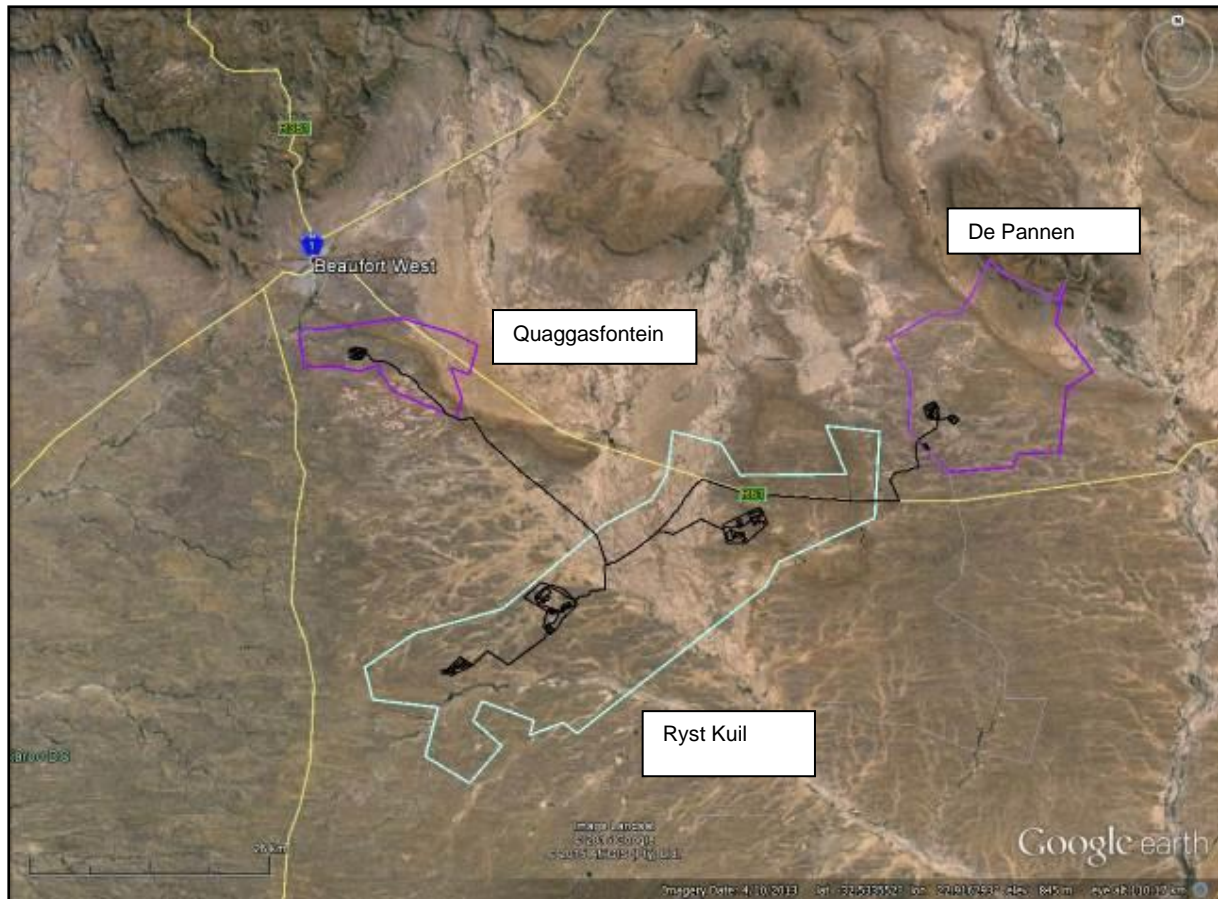
*Refers to farm numbers provided in Table 1

EXECUTIVE SUMMARY

Site Name: Proposed uranium mining on the Quaggasfontein and Ryst Kuil Blocks (Western Cape) and De Pannen (Eastern Cape)

Location: Quaggasfontein and Ryst Kuil Blocks are located to the west of Beaufort West, in the Western Cape Province and De Pannen is located in the Kareepoort Block near Aberdeen in the Eastern Cape. The list of farm names is provided in the body of the text.

Locality Plan



The Mining Blocks include Quaggasfontein and Ryst Kuil in the Western Cape and De Pannen in the Eastern Cape. The three mining blocks are connected by a haulage road and the processing plant and slimes dam will be on Ryst Kuil.

Description of the Proposed Development

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 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.



An example of the type of pits which will be excavated at Quaggasfontein, Ryst Kuil and De Pannen. Each mine pit is around 200m² in size. Each pit will be associated with a stockpile.

Legislative Issues

ACO Associates cc was appointed by Ferret Mining & Environmental Services (Pty) Ltd on behalf of the client, Peninsula Energy Ltd., to undertake the HIA.

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 Central and Eastern Blocks see below. The other blocks will be developed at a later stage.

Since the Kareepoort Block falls immediately inside the borders of 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 Mr S Mokhanya at ECPHRA. This is at the request of Mr S Mokhanya.

Heritage Resources Identified

The heritage resources identified include the following:

Palaeontology (Appendix 1)

The baseline palaeontological report was prepared by Prof B Rubidge of the Bernard Price Institute at the University of the Witwatersrand in 2008.

He notes that study area falls within the Karoo Supergroup, famous for its palaeontological wealth covering the period of almost 100 million years ago, from the Middle Permian to the Early Jurassic.

This rock succession has yielded a rich fossil flora and tetrapod fauna and is internationally known for providing a window on the life of the vertebrate groups.

Geological units correspond to the Teekloof Formation, which is represented by three lithostratigraphic members: Poortjie, Hoedemaker and Oukloof. Fossils from adjoining farms are housed in collections at the Bernard Price Institute and comprise mainly dicynodonts.

The area that will be mined in the southern Karoo is of particular palaeontological interest for several reasons.

- The rocks of the southern Beaufort Group host the oldest record of living fossil tetrapods in the southern hemisphere and provide one of very few records of Middle Permian continental biodiversity but have received very little research attention;
- Since the Karoo Supergroup records two of the “Big Five” mass extinction events since the Cambrian explosion of live 540 million years ago, it is an excellent place to study biological diversity patterns through time and specifically to periods prior to a mass extinction event and the recovery after it.

Archaeology (Appendix 2)

- A number of archaeological reports related to uranium prospecting have been conducted in this particular area over the last 10 years although not all the reports have been submitted to the heritage authorities because some were conducted as baseline studies;
- Surveys have identified scatters of ESA and MSA artefacts and occasional LSA material. 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”. The majority were manufactured on indurated shales (hornfels) although some artefacts were manufactured from a chert band which crosses Ryst Kuil;
- References by Kinahan (2008) to Howieson’s Poort material on open sites in the interior of the Karoo could not be verified;
- No significant archaeological resources were identified, with the exception of Site D009 on the farm Quaggasfontein. It is located on the banks of a dry river bed 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 (Field Grading: Grade IIIB), to warrant mitigation. Two fragments of Chinese porcelain (one with retouch), on the opposite bank from D009, suggest that the stream may have been the focus of limited pre-colonial settlement;
- The archaeological heritage of the area is considered to be of low significance.

Built Environment (Appendix 3)

The following farm buildings/farm complexes were identified:

- The farmhouse at Quaggasfontein is 6km west of the proposed mine. The haulage route will not run passed the house;
- The farmhouse of Water Gift (Haanekuil) is 2km north of the proposed mine. The haulage route will not run passed the house;
- The farmhouse of Ryst Kuil is 5km north-east of the proposed mine. It is the only farmhouse which will have a haulage route running next to the main house;
- The farmhouse of Kat Doorn Kuil is 2km north-east of the proposed mine. The haulage route will not run passed the house;
- The farmhouse of De Pannen (Eastern Cape) is 6km north-west of the proposed mine. The haulage route will not run passed the house.

- The R61, which links Beaufort West and Aberdeen, cuts through the landscape. Quaggasfontein and Ryst Kuil Mines lies to the south of the R61, while De Pannen is located to the north. The road is not considered to carry high volumes of traffic nor is it a popular tourist route. It has not been graded by Winter & Oberholzer (2014).
- Although technically the land is zoned as agricultural, in real terms the Cultural Landscape has the character of a wilderness. Occasional stock posts, dry stone kraals, fences, wind pumps, boundary beacons and tracks are the only apparent elements of human modification on the landscape. It appears, even in prehistoric times, to have been marginally inhabited.

Visual (Appendix 4)

- The Baseline Visual study was undertaken by Steven Stead of the Ryst Kuil/De Pannen area in 2008;
- The area has a unique landscape character with endless plains on an arid plateau. The broad plains are broken by flat-topped mesas and kopjes. The built landscape is one of isolated farmsteads. The lack of development creates a strong wilderness sense of place;
- The R61, a regional road connecting Beaufort West and Aberdeen, bisects the Ryst Kuil/De Pannen blocks. The road therefore has a potential view corridor of the proposed mining area;
- The distance of the Ryst Kuil Block from the N1 is high and as a result of the undulating topography, visibility of potential mining impacts will be low;
- There are a number of Karoo farmsteads in the vicinity, and they are a unique feature of the Karoo vista. The receptors from these farmsteads would be highly sensitive to the landscape modifications posed by mining. Visual absorption capacity (VAC), in other words the ability of the landscape to conceal the proposed development, is moderate to low.

Anticipated Impacts on Heritage Resources

Palaeontology

- Due to the flat topography and the fact that the rocks of the Karoo Supergroup are covered in alluvium, very little opportunity exists for palaeontologists to examine the fossil potential of the area. Indeed, Rubidge (2008) stresses “because of the total lack of outcrops in the study area, these are not outcrops which would normally have been prospected for fossils by palaeontologists”;
- Because of poor outcrops, both palaeontological and lithological data is poorly known and any additional information is of importance;
- While mining activities will be intrusive from an environmental perspective, excavations will enhance possibilities for finding new fossil evidence in this poorly-known part of the Karoo Basin. Mining is considered to have a generally beneficial impact from the palaeontological perspective.

Archaeology

- The archaeological survey, and earlier surveys, confirms that archaeological material is present in the form of isolated flakes and cores and there are very few obvious archaeological “sites”;
- The only exception is Site D009 on the farm Quaggasfontein which will be destroyed when it is covered in stock pile material;
- It is anticipated that the impact of the proposed mining development on archaeological material will be very low.

Built Environment

- Beaufort West is at least 9km from the closest mining location, that of Quaggasfontein, and the mining activities will not be visible from the town;
- There is no listed conservation worthy buildings or places of celebrated heritage significance in the area;
- No demolition of farm buildings is proposed;

- While some of the existing farm houses contain 19th century fabric, very few have anything more than low heritage significance;
- Katdoornkuil, near Ryst Kuil Extension, has been given a field grading of Grade IIIC, although it is in a derelict condition. There will be no impacts on the farm house;
- The proposed haulage routes will not run near any farmhouses with the exception of the farmhouse of Ryst Kuil, which is not rated as conservation worthy. No impacts are expected;
- The proposed mining operations will not be visible from N1. Limited impacts will be experienced from the R61 which is not considered a scenic route;
- Due to the lack of screening in the context of wide open vistas, there is a potential for visual impact in the flat, arid Karoo landscape but farmsteads are sparse. Impacts to the Cultural Landscape are considered to be very limited.

Visual

Visual impacts occur when developments exceeds the visual capacity of the landscape to absorb the change and results in a radical change to the sense of place of the area or region.

- As a result of the flat horizontal landscape character visibility is high and the viewshed extends over a large area;
- Due to the inherent lack of available screening in the context with the flatter, wide open vistas, there is a high potential for visual impact in the flat arid Karoo landscapes.
- It is important that development is managed in such a way that does not detract from the elements which define significant landscape character, specifically relating to the tourism industry.

Comments from Conservation Bodies and I&APs

There are no conservation bodies in the vicinity of Beaufort West that are registered with Heritage Western Cape.

A series of Public Participation meetings were held in June and July 2015 and the minutes of these meetings are attached. There were no questions relating to heritage at any of the meetings.

Recommendations

Palaeontology

- The first phase of the mining operations at Quaggasfontein, Ryst Kuil and De Pannen will occur over a 17 year period, thus ongoing monitoring by a palaeontologist will not be possible;
- Rubidge (2008) recommends that a palaeontologist show the geologists from the mining company how to recognize fossils and that they monitor excavations for any possible fossil discoveries;
- Although not specifically requested by Rubidge, this report recommends that the Fossil Protocol is implemented;
- If any fossils are uncovered, they should be reported to a recognized South African Palaeontological Research Centre, so that they can be excavated with a Workplan and stored for future research purposes.

Archaeology

- It is recommended that Site D009 on Quaggasfontein is mitigated before destruction. A surface collection may be sufficient as there does not appear to be any depth to the site. 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.

- If there are any significant changes to the layout of the facilities, the new designs should be assessed by a heritage practitioner.

Built Environment

- No demolition of any farm buildings may be undertaken without an assessment of the significance of the buildings by the heritage authority;
- If any of the existing farm buildings is used for mining accommodation, then the approval of the relevant heritage compliance authority is necessary for any building alterations;
- Haulage routes should avoid passing in close proximity to farm buildings;
- In the event that unmarked graves are uncovered during mining, the ECO should have the area fenced off and contact HWC (Tel: 021 483 5959) immediately. Human remains must not be removed from the site and the area must be cordoned off until a formal exhumation and investigation can be put in place.

Visual

Stead (2008) makes no specific recommendations with respect visual mitigation in his Baseline Assessment and the following recommendations are extracted from his report:

- Avoid visual impacts to the R61 which will be bisected by the Ryst Kuil/De Pannen mining blocks. While the route will have a potential view corridor across the mining operations, it is important to note that the R61 is not rated as having scenic qualities and is commonly used as a short cut to the N1;
- Avoid visual impacts to Karoo farmsteads and Karoo landscapes that have outstanding rural qualities. However, only one farmstead (Katdoornkuil) was identified as having potential Grade IIIC significance and it is located at least 2km from the Ryst Kuil Extension mining area;
- Avoid impacts on visually prominent ridgelines and skylines on the property.

If there are any significant changes to the layout of the facility, the new design should be assessed by a heritage practitioner.

ECPHRA

No significant impacts are anticipated with respect heritage resources on De Pannen, in the Eastern Cape Province, and it is recommended that ECPHRA endorse the findings in this report.

Declaration of Independence:

I, Lita Webley, declare that

General declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing – any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

ACO Associates cc

Name of company (if applicable):

30 November 2015

Date:



Our Ref: HM/ CENTRAL KAROO/ BEAUFORT WEST/ URANIUM MINING
Case No.: 15100705WD1009E
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RESPONSE TO NOTIFICATION OF INTENT TO DEVELOP: HIA REQUIRED
In terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999) and the Western Cape Provincial Gazette 6061, Notice 298 of 2003

NOTIFICATION OF INTENT TO DEVELOP: DEVELOPMENT OF URANIUM MINING IN THE EASTERN, CENTRAL, WESTERN AND SOUTHERN BLOCKS IN THE KAROO, SUBMITTED IN TERMS OF SECTION 38(8) OF THE NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

CASE NUMBER: 15100705WD1009E
DEADP Reference: N/A

The matter above has reference.

Heritage Western Cape is in receipt of your application for the above matter received on 09 October 2015. This matter was discussed at the Heritage Officers meeting held on 19 October 2015.

You are hereby notified that, since there is reason to believe that the proposed development of uranium mining on the eastern, central, western and southern blocks in the Karoo will impact on heritage resources, HWC requires that a Heritage Impact Assessment (HIA) that satisfies the provisions of section 38(3) of the NHRA be submitted. This HIA must have specific reference to the following:

- 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

The required HIA must have an integrated set of recommendations.

The comments of relevant registered conservation bodies and the relevant Municipality must be requested and included in the HIA where provided. Proof of these requests must be supplied.

HWC reserves the right to request additional information as required.

Should you have any further queries, please contact the official above and quote the case number.

Yours faithfully

.....
Dr. Erol Myburg
(Interim CEO: Heritage Western Cape)

www.westerncape.gov.za/cas

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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.

Eastern Cape Provincial Resources Authority: The provincial compliance authority which protects heritage in the Eastern Cape.

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 provincial compliance authority which protects heritage in the Western Cape.

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

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.

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

DMR	Department of Mineral Resources
ECPHRA	Eastern Cape Provincial Heritage Resources Agency
GPS	Global Positioning System
HWC	Heritage Western Cape
HIA	Heritage Impact Assessment
NHRA	National Heritage Resources Act

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Figure 1: Extract from 1:50 000 map showing the position of the Quaggasfontein mining block with respect the R61 which connects Beaufort West with Aberdeen. The position of the stockpiles with respect the mining pits were revised and are more accurately reflected in Figure 4 below. The position of the farmhouse of Quaggasfontein is off the map. The haulage road from Quaggasfontein to Ryst Kuil (indicated by the red line) runs in a south-easterly direction.

Figure 2: The revised map of the proposed mining activities on Quaggasfontein. The mining pits and haulage roads have remained unchanged, but the position of the stockpiles has been revised. The mining pits are roughly circular in shape, while the stockpiles are shown as rectangles. The tracks recorded by Webley & Hart (2010) are shown in pink, and the tracks of Webley & Halkett (2015) are in green. The red triangles indicate archaeological sites. The red circle shows the location of the Quaggasfontein farm house, some 6km to the west of the proposed mine. It will not be impacted.

Figure 3: The extent of mining and mining related infrastructure on Ryst Kuil (Eastern Block) to the south of the R61. It is 55 km in length and 14 km width. However, mining will only occur within three locations in this area, namely at Haanekuil East, Ryst Kuil Main and Ryst Kuil Extension.

Figure 4: The location of the mining pits (circular shapes) and stockpiles (rectangles) on Haanekuil East, the northern extension of Ryst Kuil.

Figure 5: The homestead of Water Gift (Haanekuil) is outlined in red. It is approximately 2km from the proposed mine. The infrastructure for the proposed mine is outlined in black and the green lines are survey tracks, the triangles represent archaeological sites. The access route to the mining area will be from the west, along the black line, and will not be passed the farmhouse.

Figure 6: The original design of the infrastructure on Ryst Kuil Main has been slightly modified (see below).

Figure 7: The position of the processing plant and the slimes dam are shown to the north-west, as two rectangles with some stockpile areas nearby. Tracks of field surveys are indicated as pink (2009) and green (2015) lines. The position of the Ryst Kuil homestead is circled in red.

Figure 8: Ryst Kuil Extension is located to the south of the Haanekuil East and Ryst Kuil Main mining areas. The Kat Doorn Kuil homestead will not be impacted by the haulage route which runs further to the east.

Figure 9: The Ryst Kuil Extension consists of 4 mining pits and 3 stockpile areas. The haulage route is shown as a black line, entering from the east, and not along the farm road, shown in pink. The farmhouse of Kat Doorn Kuil is outlined in red. It will not be impacted.

Figure 10: The De Pannen section of the Kareepoort Block lies just inside the borders of the Eastern Cape. There are three areas identified for mining on De Pannen: the main site, Kareepoort to the east and Klein Tavel Kop to the south. There have been small changes to the position of the stockpiles (see below).

Figure 11: The field assessment of De Pannen was only able to access the main site (see the green tracks). The farmhouse (outlined in red) is 6km north of the proposed mine. The haulage route is in black and runs to the south, avoiding the werf.

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Table 1: Farm names and portions

Table 2: Grading of Heritage Resources

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Plate 1: View of the landscape around Quaggasfontein with the Nuweveldberge in the background. The town of Beaufort West is located behind the ridge, and there is no direct line of sight between the town and the mining area, a distance of about 9km.

Plate 2: The view of the landscape at Ryst Kuil Extension showing the flat topography with little relief and good visibility.

Plate 3 & Plate 4: The existing mining infrastructure on Ryst Kuil Main dating to 1978.

Plate 5: De Pannen is characterised by numerous small pans. This is the largest pan on the property.

1. INTRODUCTION

ACO Associates cc was appointed by Ferret Mining & Environmental Services (Pty) Ltd on behalf of the client, Peninsula Energy Ltd (Tasman Pacific Minerals Limited (Tasman Pacific) and Lukisa JV Company (Pty) Ltd (Lukisa JVCo)), to undertake an Heritage 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.

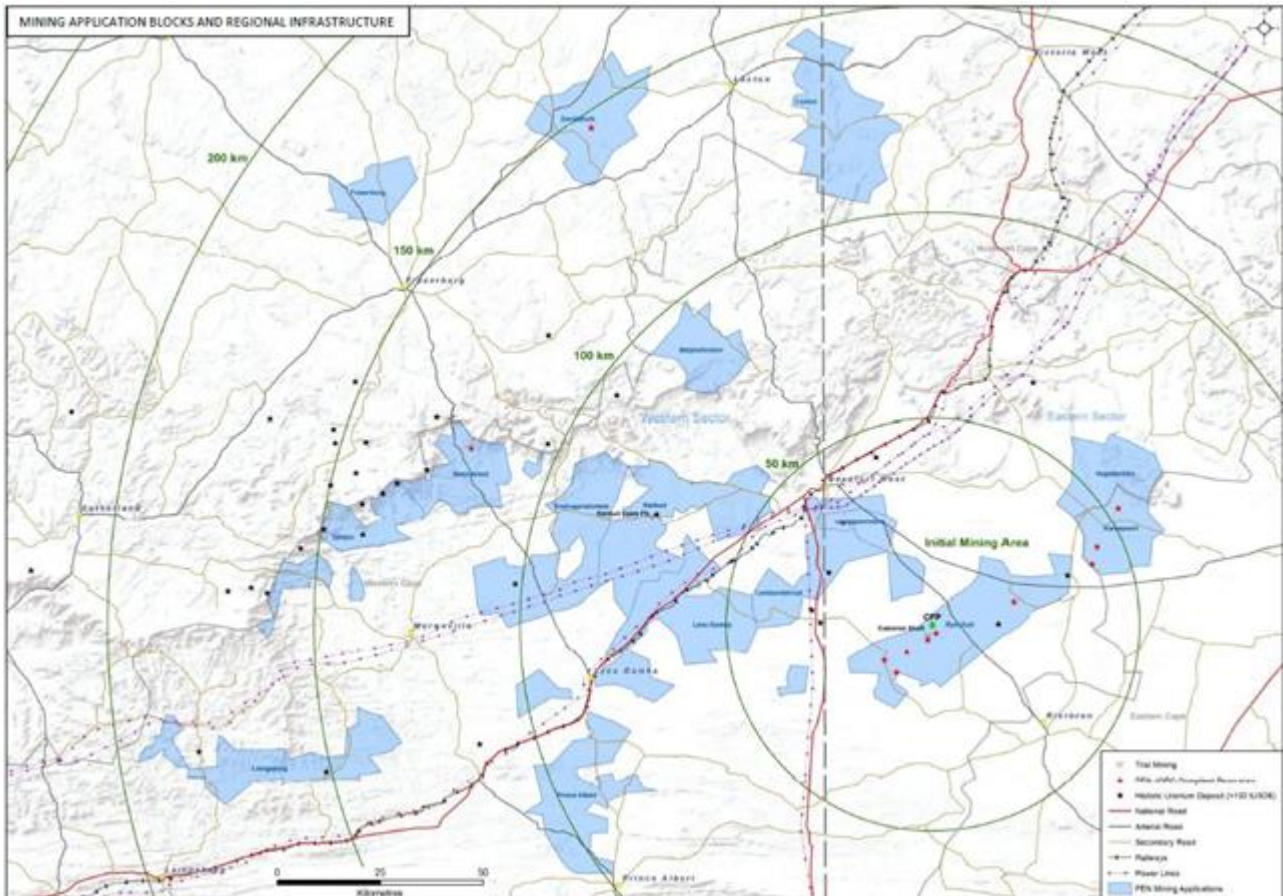


Figure 1: The location of the various mining blocks.

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):

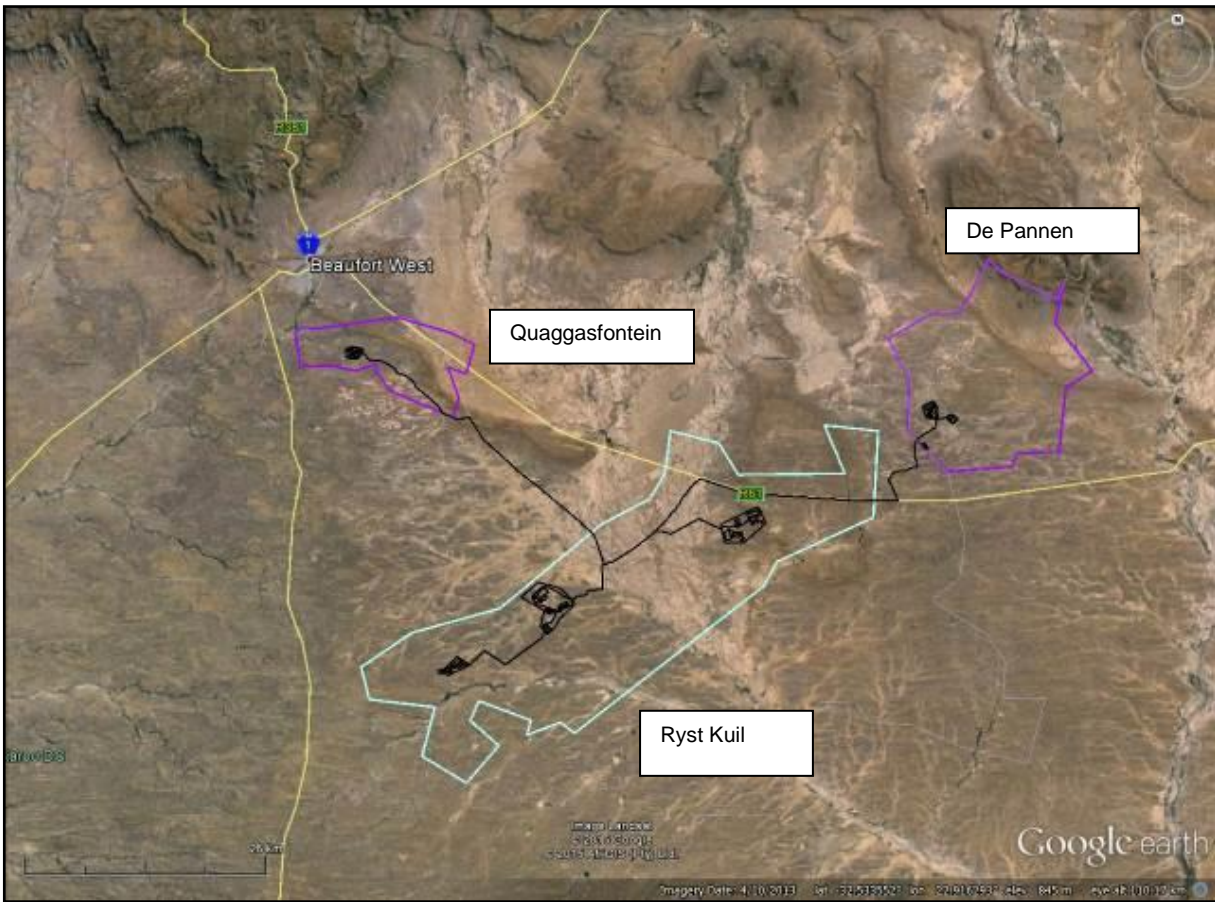


Figure 2: The first mining blocks to be mined include Quaggasfontein and Ryst Kuil in the Western Cape and De Pannen in the Eastern Cape. They are linked here by the proposed haulage road and the processing plant while slimes dam will be on Ryst Kuil.

The farm names and portions are listed below:

Table 1: Farm names and portions

Mining Block	Farm Portions
Quaggasfontein Section of the Central Block (Western Cape)	Oude Volks Kraal 164 Portion 3 & RE Quaggas Fontein 166 RE Steenrotsfontein 168 Portion 3 Blaauw Bosch Kuil 165 RE
*Ryst Kuil Section of the Eastern Block (Western Cape)	Haane Kuil 335 Ptns 1(RE), 4, 7, RE; Nieuw Jaars Fontein 340 Ptn 1; Eerste Water 349 Ptns 1(RE), 3(RE), 4; Vlak Plaats 350 Ptn 1; Ryst Kuil 351 Ptns 2, RE; Kat Doorn Kuil 359 RE; Kant Kraal 360 RE; Klip Stavels 361 Ptns 2, RE; Klipgat 362 RE; Vaal Kuil 368 RE; Farm 394 RE; Oude Volks Kraal 164 Ptn 2; Steenrotsfontein 168 Ptn 1(RE); Hans River 169 Ptns 4(RE), 5; Putfontein 320 Ptns 1(RE), 2(RE), 4, 5, 7, 8, 9, RE; Lombards Kraal 330 Ptns 2(RE), 5, 6, 7, 8, 12(RE), RE; Groot Pan 331 Ptns 1, RE; Saucys Kuil 353 Ptns 1, 2, RE;

	Palmiet Fontein 370 Ptns 1(RE), 2, 3, 4; Farm 423 RE, Farm 432 RE. Schiethokjes 140 Ptn 1; Jury Fontein 141 Ptns 1, 2, RE; Drie Bosch Kuil 142 Ptns 1, 2, 3, 4, 5, RE; Farm 144 RE; Vogel Fontein 149 Ptns 3, 10(RE), 12; Alexanders Kraal 150 RE, Farm 157 RE.
Kareepoort Block (Eastern Cape)	Karee Poort 80 Portions 1 and RE De Pannen 79 Portion 1 Klein Tavel Kop 163 RE

1.1 Project Description

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).

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 only with the open pit mines, stockpiles, processing plant, slimes dam, haulage 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 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. The underground mining method will use the board and pillar method. There will be a waste stockpile, construction area, 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. 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.

2. SITE DEVELOPMENT PLANS FOR EACH MINING BLOCK

2.1 Quaggasfontein (Western Cape)

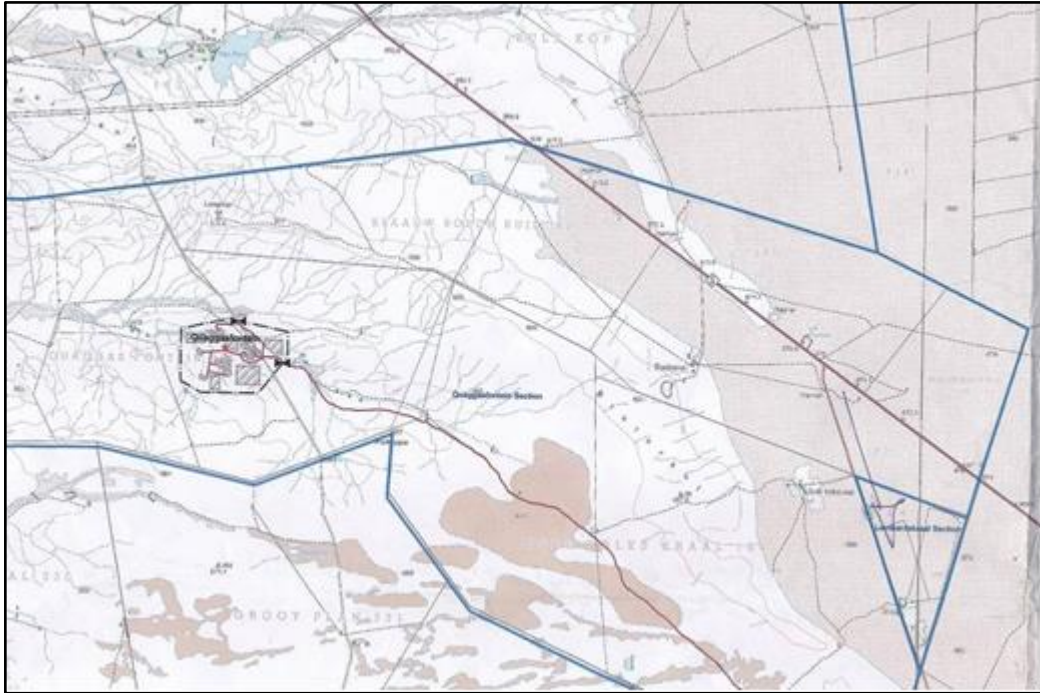


Figure 3: Extract from 1:50 000 map showing the position of the Quaggasfontein mining block with respect to the R61 which connects Beaufort West with Aberdeen. The position of the stockpiles with respect to the mining pits were revised and are more accurately reflected in Figure 4 below. The position of the farmhouse of Quaggasfontein is off the map. The haulage road from Quaggasfontein to Ryst Kuil (indicated by the red line) runs in a south-easterly direction.



Figure 4: The revised map of the proposed mining activities on Quaggasfontein. The mining pits and haulage roads have remained unchanged, but the position of the stockpiles has been revised. The mining pits are roughly circular in shape, while the stockpiles are shown as rectangles. The tracks recorded by Webley & Hart (2010) are shown in pink, and the tracks of Webley & Halkett (2015) are in green. The red triangles indicate archaeological sites. The red circle shows the location of the Quaggasfontein farm house, some 6km to the west of the proposed mine. It will not be impacted.

2.2 Ryst Kuil (Western Cape)



Figure 5: The extent of mining and mining related infrastructure on Ryst Kuil (Eastern Block) to the south of the R61. It is 55 km in length and 14 km width. However, mining will only occur within three locations in this area, namely at Haanekuil East, Ryst Kuil Main and Ryst Kuil Extension.

★	PEN JORC Compliant Resources
★	Historic Uranium Deposit (>100 tU3O8)
●	PlantPosition_Alt
×	Trial Mining
⚡	Cameron Decline (Esso)
⚡	Ventilation Raise (Esso)
⚡	Planned Decline
⚡	Planned Access Gates
—●—	Planned_Powerline_Alt
⬜	Fences_Alternate
—	Preliminary Haulage Routes
▨	CPP_Alternate
▨	Ore Stockpile
▨	Slimes Dam
▨	Waste Stockpile
■	Planned Open Pits
□	Planned Underground Mining
□	PEN Mining Applications

Key to Maps

Haanekuil East

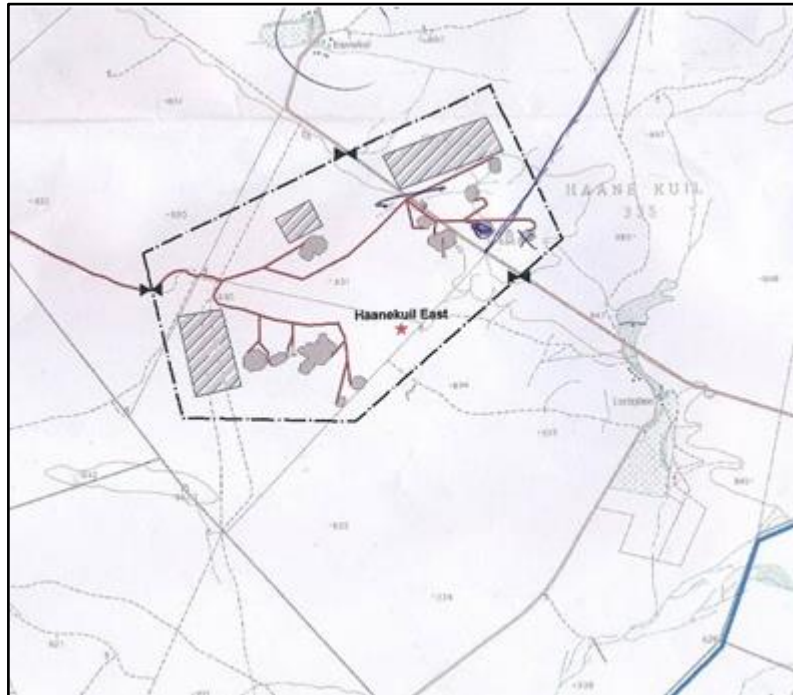


Figure 6: The location of the mining pits (circular shapes) and stockpiles (rectangles) on Haanekuil East, the northern extension of Ryst Kuil.

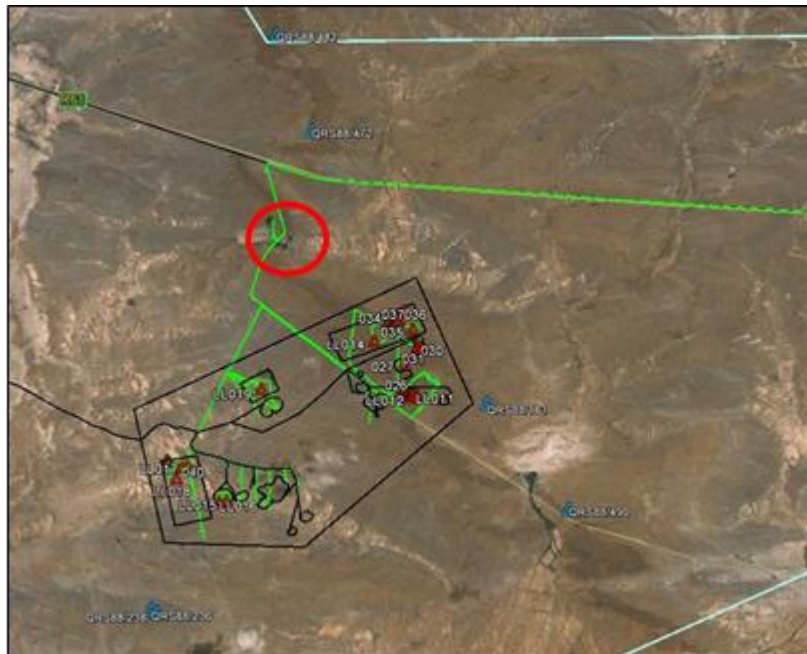


Figure 7: The homestead of Water Gift (Haanekuil) is outlined in red. It is approximately 2km from the proposed mine. The infrastructure for the proposed mine is outlined in black and the green lines are survey tracks, the triangles represent archaeological sites. The access route to the mining area will be from the west, along the black line, and will not be passed the farmhouse.

The most significant changes to the final layout were made at the Ryst Kuil Main Block, which is also the site of the mining undertaken in 1978. There is considerable mining infrastructure still on the site as well as the original mining shaft and old waste piles.

Ryst Kuil Main

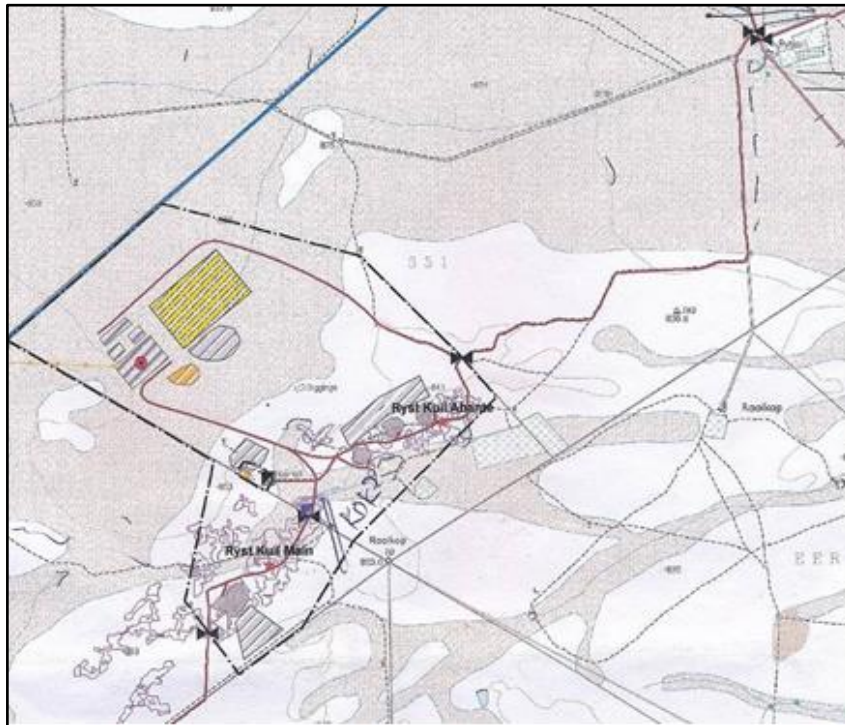


Figure 8: The original design of the infrastructure on Ryst Kuil Main has been slightly modified (see below).

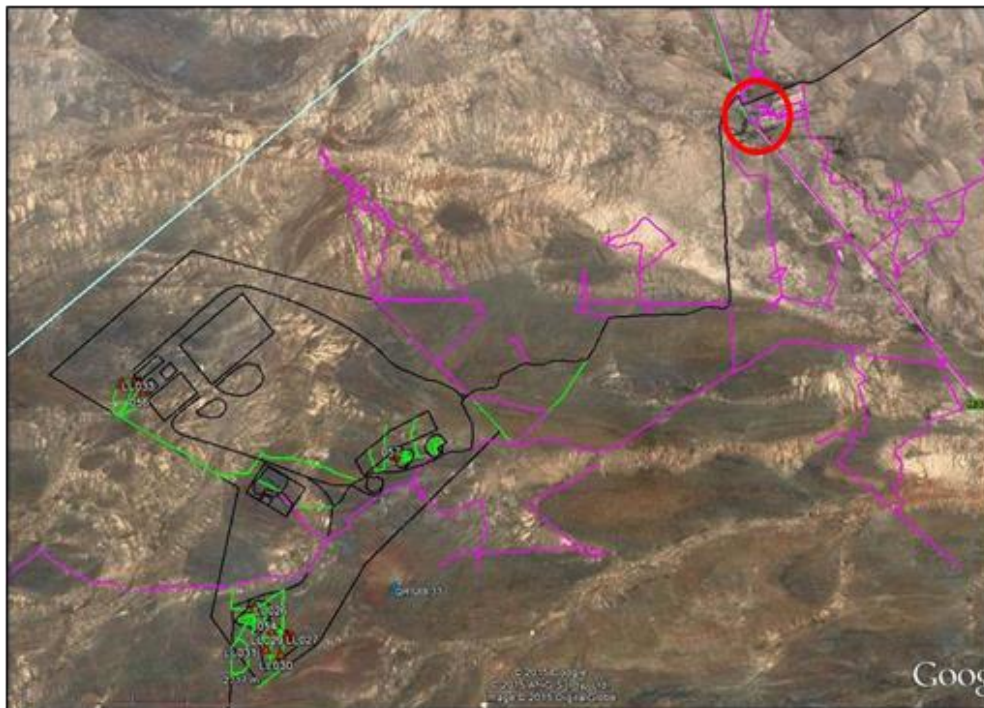


Figure 12: The position of the processing plant and the slimes dam are shown to the north-west, as two rectangles with some stockpile areas nearby. Tracks of field surveys are indicated as pink (2009) and green (2015) lines. The position of the Ryst Kuil homestead is circled in red.

Ryst Kuil Extension

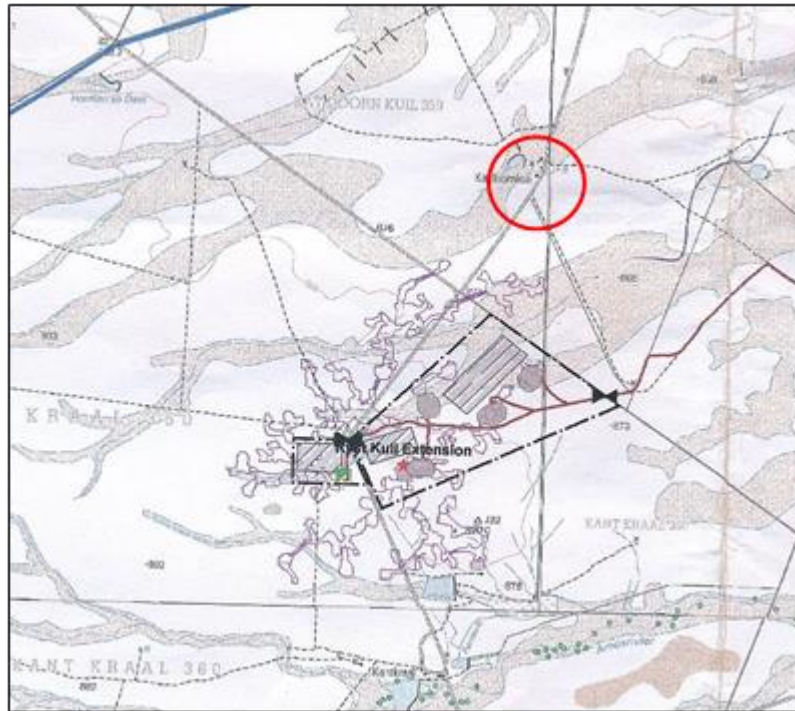


Figure 130: Ryst Kuil Extension is located to the south of the Haanekuil East and Ryst Kuil Main mining areas. The Kat Doorn Kuil homestead will not be impacted by the haulage route which runs further to the east.

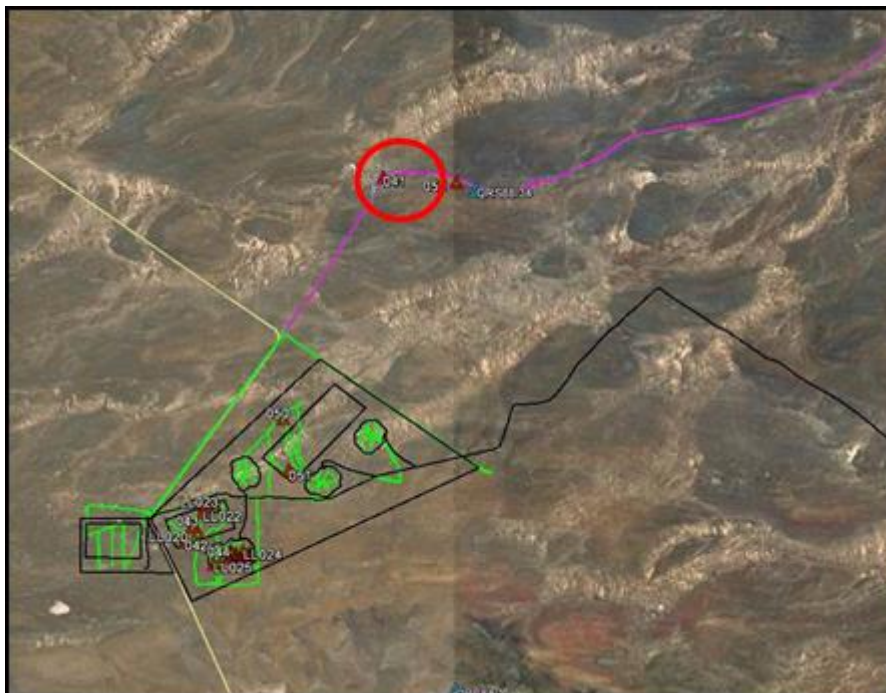


Figure 11: The Ryst Kuil Extension consists of 4 mining pits and 3 stockpile areas. The haulage route is shown as a black line, entering from the east, and not along the farm road, shown in pink. The farmhouse of Kat Doorn Kuil is outlined in red. It will not be impacted.

2.3 De Pannen – Kareepoort (Eastern Cape)



Figure 12: The De Pannen section of the Kareepoort Block lies just inside the borders of the Eastern Cape. There are three areas identified for mining on De Pannen: the main site, Kareepoort to the east and Klein Tavel Kop to the south. There have been small changes to the position of the stockpiles (see below).



Figure 13: The field assessment of De Pannen was only able to access the main site (see the green tracks). The farmhouse (outlined in red) is 6km north of the proposed mine. The haulage route is in black and runs to the south, avoiding the werf.

3. HERITAGE LEGISLATION

This report is conducted in terms of Section 38 (8) of the National Heritage Resources Act, No 25 of 1999. Since the project is subject to an Environmental Impact Assessment, the Western Cape provincial heritage resources authority, Heritage Western Cape (HWC) is required to provide comment on the proposed project in order to facilitate final decision making by the Department of Environmental Affairs.

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)).

Following Section 38(3) of the National Heritage Resources Act (No 25 of 1999), even though certain specialist studies may be specifically requested, all heritage resources should be identified and assessed.

3.1 Grading of Heritage and Scenic Resources

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. Heritage resources were assessed according to criteria specified in the NHRA and HWC Policy & Guidelines (2015). Grading, according to Winter & Oberholzer (2014) is “generally based on the intactness, rarity and representivity of the resource, as well as its role in the larger landscape or cultural context”.

Section 3 of the NHRA suggests the following criteria for assigning heritage significance. The heritage significance of a place is based on its:

- Importance in the community or pattern in South Africa’s history;
- Possession of uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage;
- Potential to yield information that will contribute to an understanding of South Africa’s natural or cultural heritage;
- Importance in demonstrating the principal characteristics of a particular class of South Africa’s natural or cultural places or objects;
- Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- Importance in demonstrating a high degree of creative or technical achievement during a particular period;
- Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- Strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- Significance in relating to the history of slavery in South Africa.

Table 2: 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.

3.2 Winter & Oberholzer: Grading of Heritage Resources

The Western Cape Provincial Government: Heritage and Scenic resources: Inventory and Policy Framework for the Western Cape, September 2014 Version 5 by Winter & Oberholzer, identifies and grades the scenic resources within the Western Cape. The aim of the framework study was so that cultural and scenic resources of significance could be identified and rated so that they could be included in all Spatial Development Frameworks (SDF's) in order to avoid inappropriate planning applications. However, the Winter & Oberholzer (2014) study focuses on the regional level, rather than the local landscape level and is therefore of limited value to this study.

4. METHODOLOGY

4.1 Background Literature Survey

Numerous impact assessments have been conducted in and around the proposed facility. The majority have not been submitted to HWC or SAHRA because they were prepared during initial phases of the mining proposals.

Archaeological 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). This report has been lodged on the SAHRIS database;
- An Archaeological Assessment of Uranium prospecting on Portions of the Farms Eerste Water 349 and Ryst Kuil 351 (Halkett & Hart 2009) on the Ryst Kuil Section;
- An Scoping 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 – Droërivier 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 mining development in Quaggasfontein, Ryst Kuil and De Pannen, 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. Transects were walked across affected areas.

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 need final changes;
- We were unable to access two areas on the farm De Pannen (see Section below) as the farm gates were locked.

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

5. RECEIVING ENVIRONMENT

The immediate environs of the proposed mining areas are further illustrated in the Baseline Visual Assessment by Steven Stead (Appendix 4).



Plate 1: View of the landscape around Quaggasfontein with the Nuweveldberge in the background. The town of Beaufort West is located behind the ridge, and there is no direct line of sight between the town and the mining area, a distance of about 9km.



Plate 2: The view of the landscape at Ryst Kuil Extension showing the flat topography with little relief and good visibility.



Plate 3 & Plate 4: The existing mining infrastructure on Ryst Kuil Main dating to 1978.



Plate 5: De Pannen is characterised by numerous small pans. This is the largest pan on the property.

6. IDENTIFICATION OF HERITAGE RESOURCES

The heritage resources described and assessed in this report include palaeontology (Appendix 1), archaeology (Appendix 2), Built Environment (Appendix 3) and Visual (Appendix 4).

6.1 Palaeontological Resources

A palaeontological baseline study of the Ryst Kuil Channel was undertaken by Prof S Rubidge of the Bernard Price Institute at the University of Witwatersrand in 2008 and is attached as Appendix 1.

The study area falls within the Karoo Supergroup, famous for its palaeontological wealth covering the period of almost 100 million years ago, from the Middle Permian to the Early Jurassic. This rock succession has yielded a rich fossil flora and tetrapod fauna and is internationally known for providing a window on the life of the vertebrate groups such as: fish, amphibians, herbivorous reptiles of large size known as pareia-saurids, many groups of “mammal-like reptiles” or therapsids, small lizard like animals, dinosaurs and primitive mammals.

The area that will be mined in the southern Karoo is of particular palaeontological interest for several reasons.

- Numerous authors have linked dated periods of compressional deformation in the Cape Fold Belt to sedimentary responses in the Karoo Basin. At present there is no consensus as to the cause-and-effect relationships and one of the main problems hindering development of these models is a lack of good time resolution. In this regard fossils are very useful;
- The rocks of the southern Beaufort Group host the oldest record of living fossil tetrapods in the southern hemisphere and provide one of very few records of Middle Permian continental biodiversity but have received very little research attention;
- Since the Karoo Supergroup records two of the “Big Five” mass extinction events since the Cambrian explosion of live 540 million years ago, it is an excellent place to study biological diversity patterns through time and specifically to periods prior to a mass extinction event and the recovery after it. The only place where rocks are preserved which were deposited in the continental realm during the Middle-Late Permian transition is in the Karoo and fall in the *Tapinocephalus* Assemblage Zone. These rocks could provide the key to understanding the

floral and faunal changes which took place during the Permian and it is these rocks which are being targeted for uranium mining.

Geological units correspond to the Teekloof Formation, which is represented by three lithostratigraphic members: Poortjie, Hoedemaker and Oukloof. Fossils from adjoining farms are housed in collections at the Bernard Price Institute and comprise mainly dicynodonts.

Since the topography is flat and covered in alluvium, very few rock outcrops were present to examine for fossils. Despite the flat topography, Rubidge identified a number of fossils on portions of the farms within the Ryst Kuil block, pointing to the potential of the underlying deposits.

6.2 Archaeological Resources

The AIA was undertaken by Lita Webley and is attached as Appendix 2.

Webley points out that a number of archaeological reports related to uranium prospecting have been conducted in the area over the last 10 years. Surveys of these areas have been conducted by John Kinahan (2008), David Halkett and Tim Hart (2009), Lita Webley and Tim Hart (2010) and Lita Webley and David Halkett (2015). Kinahan (2009) suggested the presence of surface Howieson's Poort assemblages but this could not be substantiated by Webley & Halkett (2015).

In summary, archaeological material comprises small numbers of ESA artefacts, scatters of MSA and occasional LSA. 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". The majority were manufactured on indurated shales (hornfels) although some artefacts were manufactured from a chert band which crosses Ryst Kuil. There are no concentrations of archaeological material at the pans on De Pannen.

No significant archaeological resources were identified, with the exception of Site D009 on the farm Quaggasfontein. It 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 (Field Grading: Grade IIIB), to warrant mitigation. Two fragments of Chinese porcelain, on the opposite bank from D009, suggest that the stream may have been the focus of pre-colonial settlement.

6.3 Built Environment Resources

The Built Environment assessment was undertaken by Lita Webley and is attached as Appendix 3.

The heritage resources identified include the following farm buildings/farm complexes:

- The farmhouse at Quaggasfontein is 6km west of the proposed mine. The haulage route will not run passed the house;
- The farmhouse of Water Gift (Haanekuil) is 2km north of the proposed mine. The haulage route will not run passed the house;
- The farmhouse of Rystkuil is 5km north-east of the proposed mine. It is the only farmhouse which will have a haulage route running next to the main house;
- The farmhouse of Katdoornkuil is 2km north-east of the proposed mine. The haulage route will not run passed the house;
- The farmhouse of De Pannen (Eastern Cape) is 6km north-west of the proposed mine. The haulage route will not run passed the house.
- The R61, which links Beaufort West and Aberdeen, cuts through the landscape. Quaggasfontein and Ryst Kuil Mines lies to the south of the R61, while De Pannen is located

to the north. The road is not considered to carry high volumes of traffic nor is it a popular tourist route. It has not been graded by Winter & Oberholzer (2014).

- Although technically the land is zoned as agricultural, in real terms the Cultural Landscape has the character of a wilderness. Occasional stock posts, dry stone kraals, fences, wind pumps, boundary beacons and tracks are the only apparent elements of human modification on the landscape. It appears, even in prehistoric times, to have been marginally inhabited.

6.4 Visual Resources

The Baseline Visual study was undertaken by Steven Stead of the Ryst Kuil/De Pannen area and is attached as Appendix 4. No specific visual studies have been undertaken of Quaggasfontein. His study is concerned with the inventory stage of the VIA which involves the identification of visual resources and assigns them to an inventory class.

The area has a unique landscape character with endless plains on an arid plateau. The broad plains are broken by flat-topped mesas and kopjes. The built landscape is one of isolated farmsteads and small country towns. The lack of development creates a strong wilderness sense of place.

The Ryst Kuil area is located about 50km to the east of the town of Beaufort West. This region incorporates the western part of a large, flat basin between the escarpment in the north and the Cape Fold Belt Mountains in the south.

He has identified the R61, a regional road connecting Beaufort West and Aberdeen, as bisecting the Ryst Kuil/De Pannen blocks. The road therefore has view corridor potential. The distance of the Ryst Kuil Block from the N1 is high and as a result of the undulating topography, visibility of potential mining impacts will be limited. There are a number of Karoo farmsteads in the vicinity, and they are a unique feature of the Karoo vista. He indicates that as a result of their history and isolation, the receptors from these farmsteads would be highly sensitive to the landscape modifications posed by mining. Visual absorption capacity (VAC), in other words the ability of the landscape to conceal the proposed development is moderate to low.

7. ASSESSMENT OF IMPACTS

7.1 Impacts to Palaeontology

Due to the flat topography and the fact that the rocks of the Karoo Supergroup are covered in alluvium, very little opportunity exists for palaeontologists to examine the fossil potential of the area. Indeed, Rubidge (2008) stresses “because of the total lack of outcrops in the study area, these are not outcrops which would normally have been prospected for fossils by palaeontologists”.

The area is of importance as it covers the contact area between the southeastern and southwestern portions of the Beaufort Basin and covers the Willowmore palaeo-topographic high.

Because of poor outcrops, both palaeontological and lithological data is poorly known and any additional information is of importance.

While mining activities will be intrusive from an environmental perspective, excavations will enhance possibilities for finding new fossil evidence in this poorly-known part of the Karoo Basin.

7.2 Impacts to Archaeology

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 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.

However, our archaeological survey, and those earlier surveys summarized in the archaeological reports, confirms that archaeological material is present in the form of isolated flakes and cores and there are no obvious archaeological “sites” with the exception of Site D009 on the farm Quaggasfontein which will be destroyed when it is covered in stock pile material. It is anticipated that the impact of the proposed mining development on archaeological material will be very low.

7.3 Impacts to Built Environment

- Beaufort West is at least 9km from the closest mining location, that of Quaggasfontein, and the mining activities will not be visible from the town;
- There is no listed conservation worthy buildings or places of celebrated heritage significance in the area;
- No demolition of farm buildings is proposed;
- While some of the existing farm houses contain 19th century fabric, very few have anything more than low heritage significance;
- Katdoornkuil, near Ryst Kuil Extension, has been given a field grading of Grade IIIC, but it is in a derelict condition. There will be no impacts on the farm house;
- The proposed haulage routes will not run passed any farmhouses with the exception of the farmhouse of Ryst Kuil, which is not rated as conservation worthy, and no impacts are expected;
- The proposed mining operations will not be visible from any major transport routes (N1) or R61;
- Due to the lack of screening in the context of wide open vistas, there is a potential for visual impact in the flat, arid Karoo landscape but farmsteads are sparse. Impacts to the Cultural Landscape are considered to be very limited.

7.4 Visual Impacts

Visual impacts occur when developments exceeds the visual capacity of the landscape to absorb the change and results in a radical change to the sense of place of the area or region. As a result of the flat horizontal landscape character visibility is high and the viewshed extends over a large area.

Due to the inherent lack of available screening in the context with the flatter, wide open vistas, there is a high potential for visual impact in the flat arid Karoo landscapes. Thus it is important that development is managed in such a way that does not detract from the elements which define significant landscape character, specifically relating to the tourism industry.

Stead recognises the following Visual Triggers:

Areas with proclaimed heritage sites or scenic routes;	The R61 is a regional road which links Beaufort West with Aberdeen and the N9 and bisects the property centrally. This route has view corridor potential. Tourist related traffic on this route would be limited.
Areas with intact wilderness qualities, or pristine ecosystems;	As a result of large size of the property and the limited cultural modifications, the potential for the property to have intact wilderness qualities is good.
Areas with intact or outstanding rural or townscape qualities;	The Karoo farmsteads and openness of the great karoo landscape have outstanding rural qualities.
Areas with a recognized special character or sense of place;	The Great Karoo landscape and especially vistas associated with the great escarpment (Pienaarsrante and Nuweveld Mountains) have a heritage value.
Areas lying outside a defined urban edge line;	The proposed area is located in agricultural areas.
Areas with sites of cultural or religious significance;	The history of the Karoo settlements has a cultural value.
Areas of important tourism or recreation value;	The Karoo farmsteads and openness of the Great Karoo landscape have tourism and recreation value.
Areas with important vistas or scenic corridors;	The landscape character of the property is significant.
Areas with visually prominent ridgelines or skylines	There are visually prominent ridgelines and skylines featured on the property.

8. COMMENTS FROM INTERESTED AND AFFECTED PARTIES

There are no conservation bodies in the vicinity of Beaufort West who are registered with Heritage Western Cape.

Stead attended a Public Consultation meeting on the 12 September 2007 and made a preliminary visual mapping presentation to the I&APs.

A series of Public Participation meetings were held in June and July 2015 and the minutes of these meetings are attached. There were no questions relating to heritage at any of the meetings.

9. RECOMMENDATIONS AND CONCLUSIONS

9.1 Palaeontological Recommendations

- Rubidge (2008) recommends that a palaeontologist show the geologists from the mining companies how to recognize fossils and that they monitor excavations for any possible fossil discoveries;
- Although not specifically requested by Rubidge, it is recommended that the Fossil Protocol is implemented;
- If any fossils are uncovered, they should be reported to a recognized South African Palaeontological Research Centre, so that they can be excavated and stored for future research purposes.

9.2 Archaeological Recommendations

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

9.3 Built Environment Recommendations

- No demolition of any farm buildings may be undertaken without an assessment of the significance of the buildings by the heritage authority;
- If any of the existing farm buildings is used for mining accommodation, then the approval of the relevant heritage compliance authority is necessary if any building alterations;
- Haulage routes should avoid passing in close proximity to farm buildings;
- In the event that unmarked graves are uncovered during mining, work in the immediate area should cease and the find reported to the heritage authority and an archaeologist. Human remains must not be removed from the site and the area must be cordoned off until a formal exhumation and investigation can be put in place.

9.4 Visual Recommendations

Stead (2008) makes no specific recommendations with respect visual mitigation in his Baseline Assessment and the following recommendations are extracted from his report:

- Avoid visual impacts to the R61 which will be bisected by the Ryst Kuil/De Pannen mining blocks. While the route will have a potential view corridor across the mining operations, it is important to note that the R61 is not rated as having scenic qualities and is commonly used as a short cut to the N1;
- Avoid visual impacts to Karoo farmsteads and Karoo landscapes that have outstanding rural qualities. However, only one farmstead (Kat Doorn Kuil) was identified as having potential Grade IIIC significance and it is located at least 2km from the Ryst Kuil Extension mining area;
- Avoid impacts on visually prominent ridgelines and skylines on the property.

If there are any significant changes to the layout of the facility, the new design should be assessed by a heritage practitioner.

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