

FOR ATTENTION: SAHRA Northern Cape OR PHRA: Northern Cape



SOUTH AFRICAN HERITAGE RESOURCES AGENCY
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Date of Comment: 20 September 2007

Sent to Peer Review:

Date to Peer Review:

SAHRA Contact Person: Roxsanne Dyssell

DME Ref No: NC 30/5/1/3/3/2/1/1340

REVIEW COMMENT ON ARCHAEOLOGICAL IMPACT ASSESSMENT

BY ARCHAEOLOGY/PALAEONTOLOGY UNIT OF THE HERITAGE RESOURCES AGENCY

South Africa has a unique and non-renewable archaeological and palaeontological heritage. Archaeological and palaeontological sites are protected in terms of the National Heritage Resources Act (Act No 25 of 1999) and may not be disturbed without a permit. Archaeological Impact Assessments (AIAs) and Palaeontological Impact Assessments (PIAs) identify and assess the significance of the sites, assess the potential impact of developments upon such sites, and make recommendations concerning mitigation and management of these sites. On the basis of satisfactory specialist reports SAHRA or the relevant heritage resources agency can assess whether or not it has objection to a development and indicate the conditions upon which such development might proceed and assess whether or not to issue permission to destroy such sites.

AIAs and PIAs often form part of the heritage component of an Environmental Impact Assessment or Environmental Management Plan. They may also form part of a Heritage Impact Assessment called for in terms of section 38 of the National Heritage Resources Act, Act No. 25, 1999. They may have other origins. In any event they should comply with basic minimum standards of reporting as indicated in SAHRA Regulations and Guidelines.

This form provides review comment from the Archaeologist of the relevant heritage resources authority for use by Heritage Managers, for example, when informing authorities that have applied to SAHRA for comment and for inclusion in documentation sent to environmental authorities. It may be used in conjunction with Form B, which provides relevant peer review comment.

- A. PROVINCIAL HERITAGE RESOURCES AUTHORITY: *Northern Cape: Joas Sinthumule*.....
- B. SAHRA PROVINCIAL MANAGER : *Northern Cape: c/o Andrew Timothy*
- C. AUTHOR(S) OF REPORT: *Lloyd Rossouw*
- D. ARCHAEOLOGY CONTRACT GROUP: *National Museum, Bloemfontein*
- E. CONTACT DETAILS: *P.O. Box 266, Bloemfontein, 9300, Tel: 051 447 9609, Fax: 051 447 6273, Cell: 084 871 1064, E-mail: lloyd@nasmus.co.za*
- F. DATE OF REPORT: *18 January 2007*
- G. TITLE OF REPORT: *Phase 1 AIA and PIA of 30 Gravel Quarries on the R354 between Calvinia and Sutherland, Northern Cape Province*
- H. Please circle as relevant: Archaeological component of EIA / EMP / HIA / CMP Other (Specify).....
- I. REPORT COMMISSIONED BY (CONSULTANT OR DEVELOPER): *Samuel Pauw, Terra Works*
- J. CONTACT DETAILS: *Samuel Pauw, Terra Works, PO Box 28242, Danhof, 9310, tel: (051) 436 8488, fax: (051) 436 8458*
- K. COMMENTS:

Please see comment on next page.....



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(PTY) Ltd T/A
Terra Works.**

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2000/020654/07.**

**VAT Reg No:
4700 197 405**

**Directors:
AC Pauw
(Managing)**

TERRA WORKS

21 June 2007

To Whom It May Concern:

The owner(s) of the farm could not be located in order to acquire his/her consent, however, a notice of the intention to enter the land to obtain road-building material was placed at the entrance of the farm, and an advertisement was placed in the local newspaper. There was no response. Copies of both these documents and a photograph of the on-site notice are attached.

I, Samuel Pauw, the environmental consultant assigned to the project declare that the above-mentioned is true and correct.

Singed at *Bloemfontein* on this *21st* day of *June* 2007.

Samuel Pauw
Environmental Management
084 700 9 700

★ Motoronderdele
 ★ Listerenjins en
 Hoffman
 opwekkers

almal daarby het hul dag ter
 deë geniet. Daar was die dag
 wenners en nog wenners.
 Lesse is aan albei kante gegee,
 maar ons sal maar sien wie sal
 sy sport opgee vir die ander.

HANTAM MUNISIPALITEIT VERHUURING VAN 'N GEDEELTE VAN MEENT JAKKALSKOPPE -- CALVINIA

KENNIS geskied hiermee dat Hantam Munisipaliteit van voor-
 name is om 'n gedeelte van Meent Jakkalskoppe (Noord
 Westelike gedeelte) -- Calvinia te verhuur aan die Hantam
 Quads vir die beoefening van die "quad bike" sport.

Verdere inligting is verkrygbaar by die ondergetekende gedu-
 rende normale kantoorure.

Besware teen die voorneme van die Munisipaliteit, indien enige,
 moet skriftelik ingedien word by die onderstaande adres voor
 of op 2 Julie 2007.

G.J. ENGELBRECHT
 Munisipale Bestuurder
 Tel: 027 341 8500
 Faks: 027 341 8501

Munisipale Kantore
 Hoopstraat
 Privaatsak X14
 Calvinia 8190

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

NOTICE is given in terms of Regulation 56(c)(i) of the regula-
 tion published in Government Notice No. R. 385 in Govern-
 ment Gazette No. 28573 of 21 April 2006 under the National
 Environmental Management Act, Act 107 of 1998 of intent to
 carry out the following activity:

THE CONSTRUCTION AND/OR UPGRADING OF A ROAD
 THAT IS WIDER THAN 4 METRES

LOCATION: Road MR 567 between Sutherland and
 Calvinia, Northern Cape Province.
PROPONENT: Northern Cape Provincial Government:
 Public Works, Roads & Transport
EXTENT: 150 Km
CONSULTANT: TERRA WORKS
 P.O. BOX 28242
 DANHOF
 9310
 TEL: 051 436 8488
 FAX: 051 436 8458

DATE OF ADVERTISEMENT: Friday, 8 June 2007
 In order to ensure that you are identified as an interested
 and/or affected party, please submit your name, contact
 information and interest in the matter to the consultant given
 above within 30 days of publication of this advertisement.

MOORD POGING

CALVINIA -- 'n Man het ern-
 stige meswonde opgedoen toe
 hy by 'n stryery betrokke ge-
 raak het.

Twee mans het aan huis van 'n
 vrou wat 'n mobiele snoep-
 winkel tuis bedryf, aan die stry
 geraak. Die stryery het handuit
 geruk. 'n Derde man is in die
 voorval met 'n mes gewond, so-
 veel so dat die staat 'n klag van
 poging tot moord aanhangig
 gemaak het. Die man is in die
 plaaslike hospitaal opgeneem.
 Drank en dwelms was vermoed-
 elik by die voorval betrokke,
 en die vrou is ook in die proses
 van sowat R480 beroof. -- R.S.

**NOORDWESTER
 UITGEWERS**
 Drukkers van Naam
 op Calvinia
TEL. (027) 3411026
FAKS (027) 3411686

KAROO HOOGLAND MUNISIPALITEIT UITREIK-AKSIE DEUR BURGEMEESTER *Take A Girl-Child tot Work*

Juliana Malho, Burgemeester van Karoo Hoogland
 Munisipaliteit, het die uitreikingsprogram *Take a
 Girl-child to Work* in Karoo Hoogland van stapel ge-
 stuur. Plaaslike dogters van Williston is vir 'n dag
 lank uit hul normale roetine onttrek om waar te neem
 presies wat by die kantore van staats- en plaaslike
 regeringsinstellings aangaan. Die dogters het onder
 andere besoek gebring aan die plaaslike SAPD stasie,
 skole, landdroskantore, hospitaal en die munisipali-
 teit.

Die doel van die program was om hierdie jong leiers
 van môre blootstelling te gee aan die grootmensewê-
 reld daarbuite en hopelik ook om hul belangstelling
 te prikkel in moontlike loopbaanvooruitsigte.

Die Burgemeester het die versekering gegee dat soort-
 gelyke programme eersdaags ook in Fraserburg en
 Sutherland geloods sal word.

normale kantoorure, tel nommer 027 341 8500 (kantoer-
 to. Vrydae).
 Kennisgewing nr. 16/2007
 Munisipale Bestuurder
G.J. BESSIES
 2007/06/08

UBUNTU MUNISIPALITEIT PUBLIEKE KENNISGEWING III UITNODIGING NA WERKSWINKEL VIR DIE OPSTEL VAN 'N RUIMTELIKE ONTWIKKELINGS PLAN EN GRONDGEBRUIKSPLAN

Munisipale Wetgewing verplig alle Munisipaliteite om 'n
 Ruimtelike Ontwikkelings Plan en Grondgebruiksplan
 op te stel vir sy munisipaliteit. Hierdie planne moet deel
 uitmaak van 'n Munisipaliteit se Geïntegreerde Ontwikke-
 lings Plan.

Let wel: Die opstel van 'n Ruimtelike Ontwikkelings
 Plan het 'n impak op die rigting van ekonomiese ontwik-
 keling van 'n bepaalde munisipaliteit. Daarom is dit van
 kardinale belang om hierdie werkswinkel by te woon.

Hiermee wens ons alle belangegroepes en belangstel-
 lendes vriendelik uit te nooi na 'n werkswinkel waar hierdie
 planne bespreek gaan word en waar die publiek sy
 insette kan maak. Wanneer hierdie plan klaar opgestel is
 sal dit 'n beleidsdokument van die Raad word en beteken
 dit dat dit die wet van mede en perse is.

U kan 'n afvaardiging van 2 per organisasie stuur.

Die volgende persone moet hierdie werkswinkel bywoon:
 Raadslede, Besighede (Formeel en Informeel), Georganise-
 eerde Landbouverenigings en Boereunies, Toerisme
 (Gastehuse en Toerisme atraksies), Munisipale Perso-
 neel, Gesondheidswerkers, Gemeenskaps gebaseerde
 organisasies (CBO'S en NGO'S) Staatsdepartemente,
 Sportsliggame (Sokker, rugby, en netbalklubs), Opko-
 mende Boere

TYD: 09:00
PLEK: Komitee Kamer (Victoria-Wes Stadsaal)
DATUM: Dinsdag, 19 Junie 2007

Persone of afvaardigings wat vanaf die naburige dorpe
 van Ubuntu kom sal per kilometer tarief van R2,00 ver-
 goed word. Saamry geleenthede kan gereël word met
 wyksraadslede.

Vir navrae skakel gerus Mnr. H. Jacobs van hierdie kan-
 toor by 053 621 0026

M.F. FILLIS
 Munisipale Bestuurder

**KENNISGEWING VAN VOORNEME OF GROND TE BETREE OM
PADBOU MATERIAAL TE BEKOM
NOTICE OF INTENTION TO ENTER LAND TO OBTAIN ROAD BUILDING
MATERIAL**

1. In terme van ordonansie 19 van 1976 van die Kaapprovinsie word hiermee kennis gegee dat die groef in die onmiddellike omgewing van hierdie advertensie betree gaan word vir die verkryging van materiaal vir padbou doeleindeis vir die opgradeering van paaie in die omgewing.

1. Notice is hereby given in terms of ordinance 19 of 1976 of the Cape Province that the borrowpit in the immediate vicinity of this advertisement will be accessed to obtain road-building material for the upgrading of roads in the area.

2. Ingevolge artikel 26 van die Onteieningswet, 1975 (Wet nommer 63 van 1975) soos gewysig, is die geregistreerde eienaar, 'n huurder en die houer van geregistreerde reg, met die uitsondering van geregistreerde regte op minerale, geregtig op vergoeding.

2. In accordance with section 26 of the Expropriation Act, 1975 (Act number 63 of 1975) as amended, the registered owner, a lessee and the holder of a registered right, with the exception of a registered right on minerals, has a right on compensation

3. 'n Skriftelike aanbod ooreenkomstig die voorskrifte van die genoemde Wet sal binnekort aan u gemaak word deur die kantoor van die Hoofdirekteur: Paaie, Kimberley sou die Department besluit om die huidige area van die bestaande groef uit te brei of 'n nuwe groef te open vir die doeleindes van die opgradering van die paaie.

3. An offer in writing in accordance with the regulations of the above mentioned Act will be sent to you in the near future by the office of the Chief Director: Roads, Kimberley 9300 should the Department intent to extent the existing quarry to obtain material to upgrade the roads.

4. Enige navrae kan gerig word aan die kantoor van die Direkteur: Landvervoer Beplanning, Afdeling Grondverkryging.

4. Any enquiries with respect to this notice can be directed to this office of the Director: Land Transport Planning, Division Land Acquisition

5. Om te verseker dat die wense van die grondeienaar, huurder of houer van geregistreeede reg in ag geneem word met die opstel van die Omgewingbestuursplan vir die groef, moet ons gekontak word voor of op 21 Mei 2007

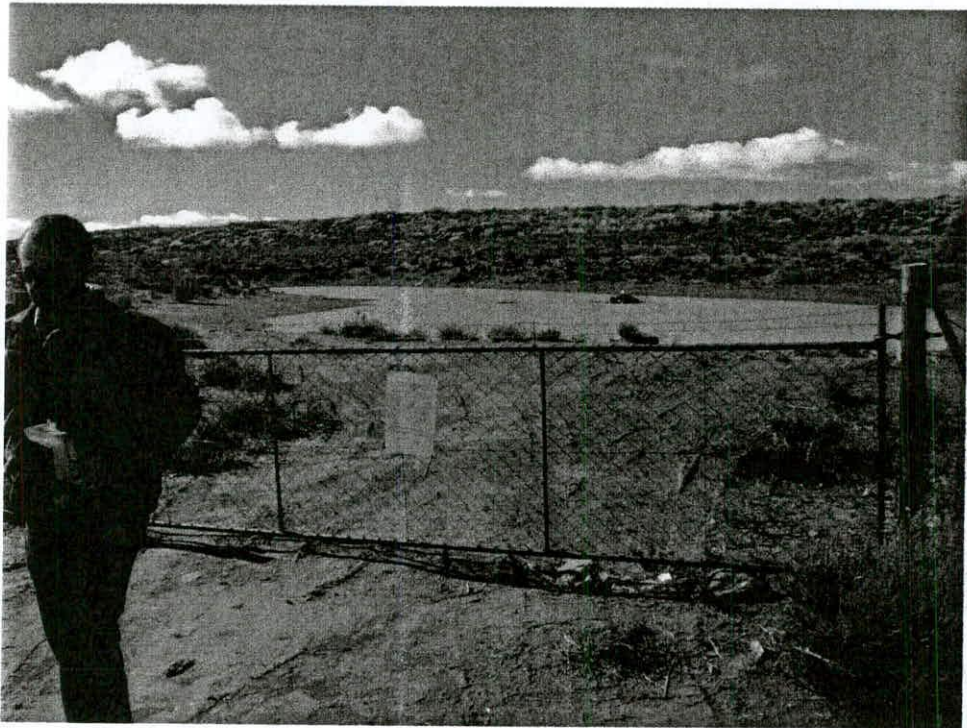
5. To ensure that the wishes of the owner, a lessee and the holder of a registered right be taken into account when the Environmental Management Plans are compiled, then we must be contacted on or before 21 May 2007.

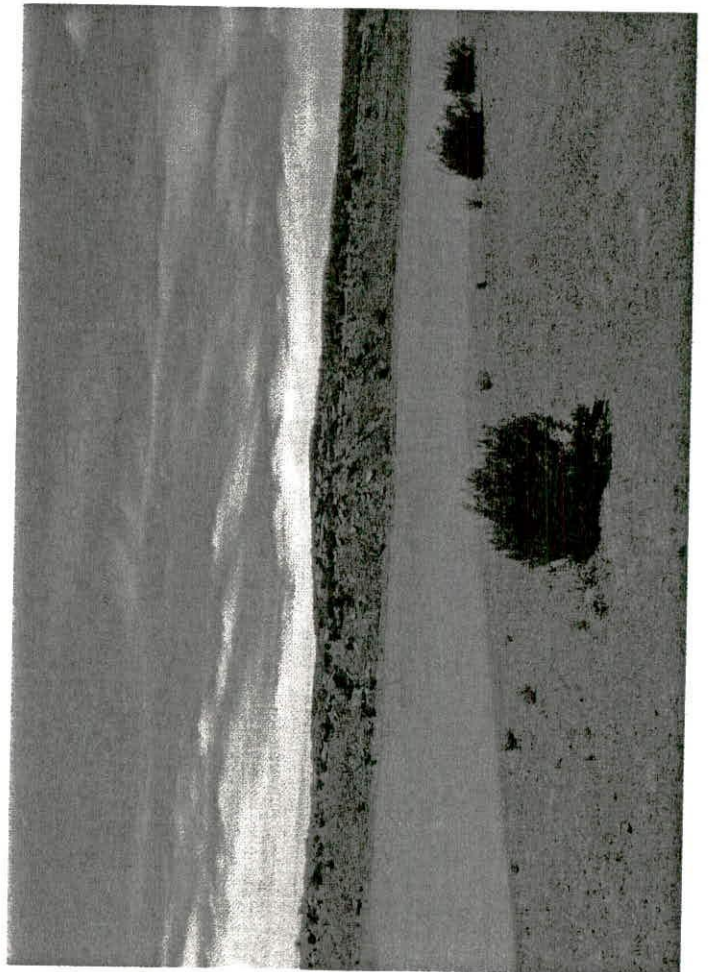
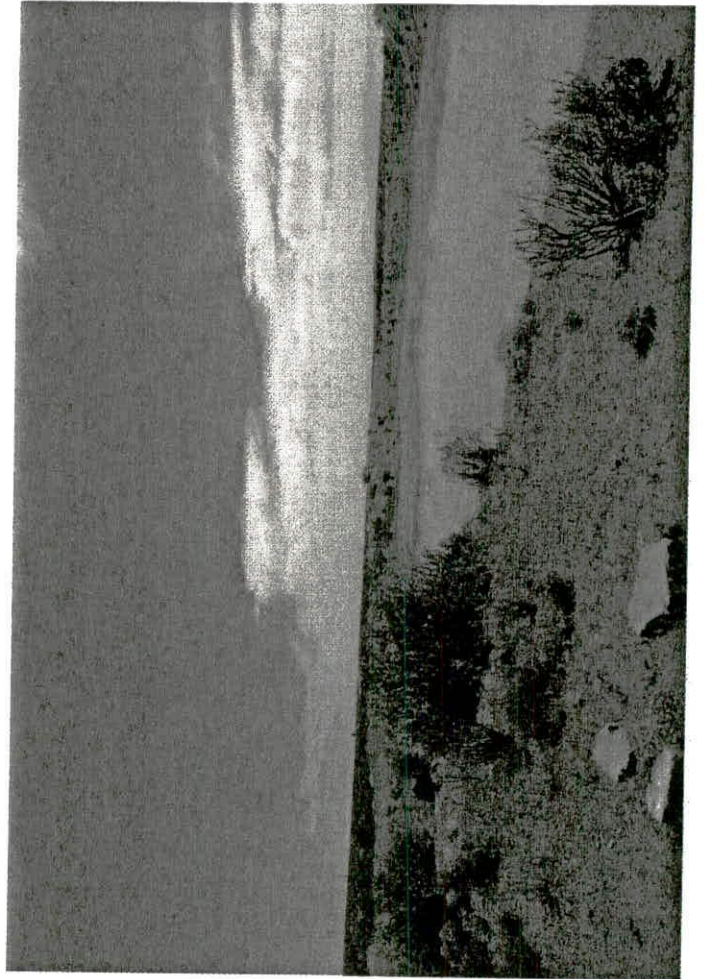
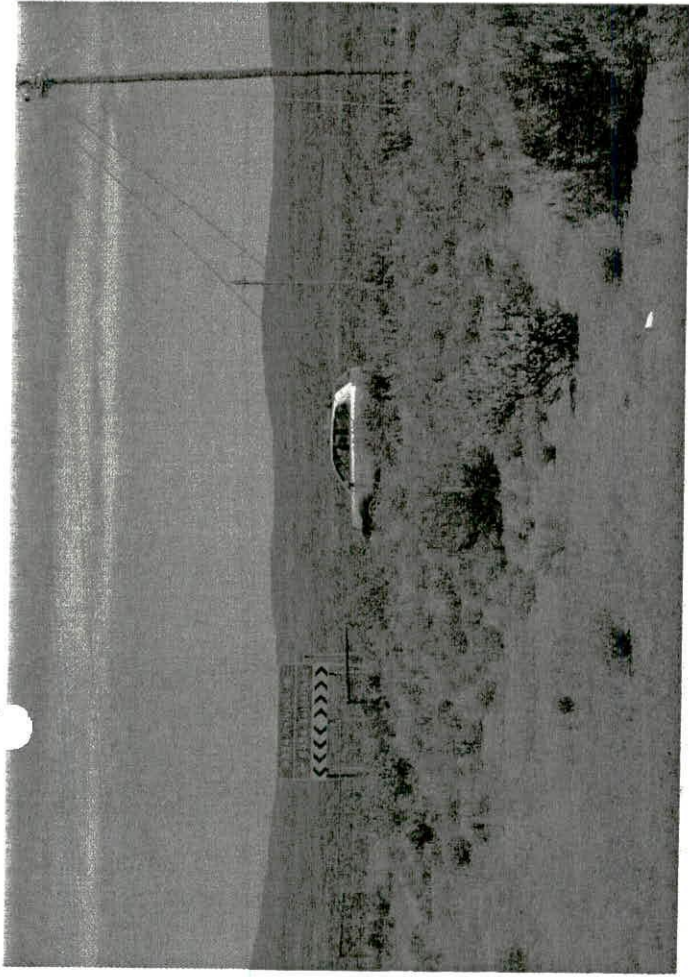
Terraworks

Tel 051 436 8488 / 084 700 9 700
Posbus 28242
Danhof, 9310

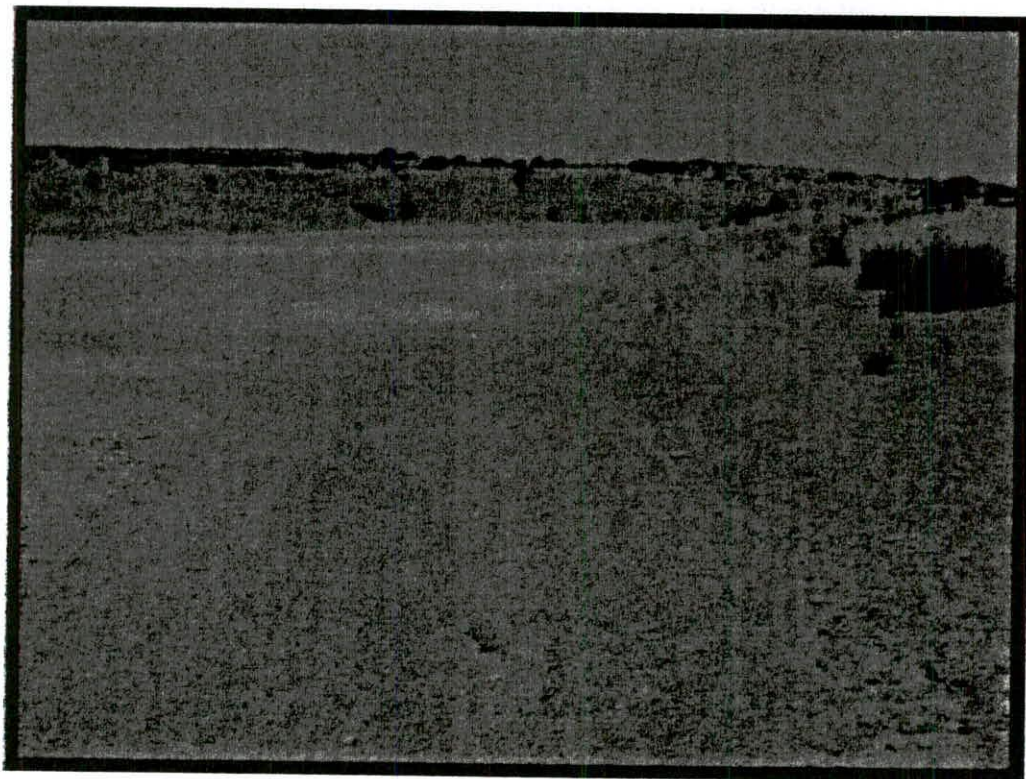
Fax 051 436 8458
PO Box 28242
Danhof, 9310

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**Phase 1 AIA and PIA of 30 gravel quarries on the
R354 between Calvinia and Sutherland,
Northern Cape Province.**



Report prepared for
Terraworks Environmental Consultants
by
Lloyd Rossouw
National Museum, Bloemfontein
18 January 2007

Executive Summary

- Investigation of the exposed sedimentological sections in the quarries and a foot survey of their boundaries indicate no potential archaeological impact. All thirty quarries are of low archaeological significance.
- Ten of the thirty quarries that were investigated are located on igneous bedrock (dolerite) and represent no palaeontological impact.
- Sedimentological deposits exposed in twenty of the thirty quarries that were investigated are derived from rocks belonging to the Late Permian, Ecca - Beaufort transition. Although no fossil evidence was found at these sites during the Phase 1 inspection, it is noted that the deposits may include fossil-bearing strata.
- The geological context of the region therefore suggests potential palaeontological impact for the shale and mudstone – bearing quarries.
- Considering the geological scale of the Ecca and Beaufort Groups of rocks in the region, the exposure of Late Permian rocks on the R354, is relatively low in intensity.
- However, for mitigation as part of the ongoing road construction process, regular monitoring by specialists is recommended.

Introduction

An Archaeological Impact Assessment (AIA) and a Palaeontological Impact Assessment (PIA) were conducted for thirty-two shallow gravel quarries on the R354 between the Downes-turnoff on the R63 and Sutherland.

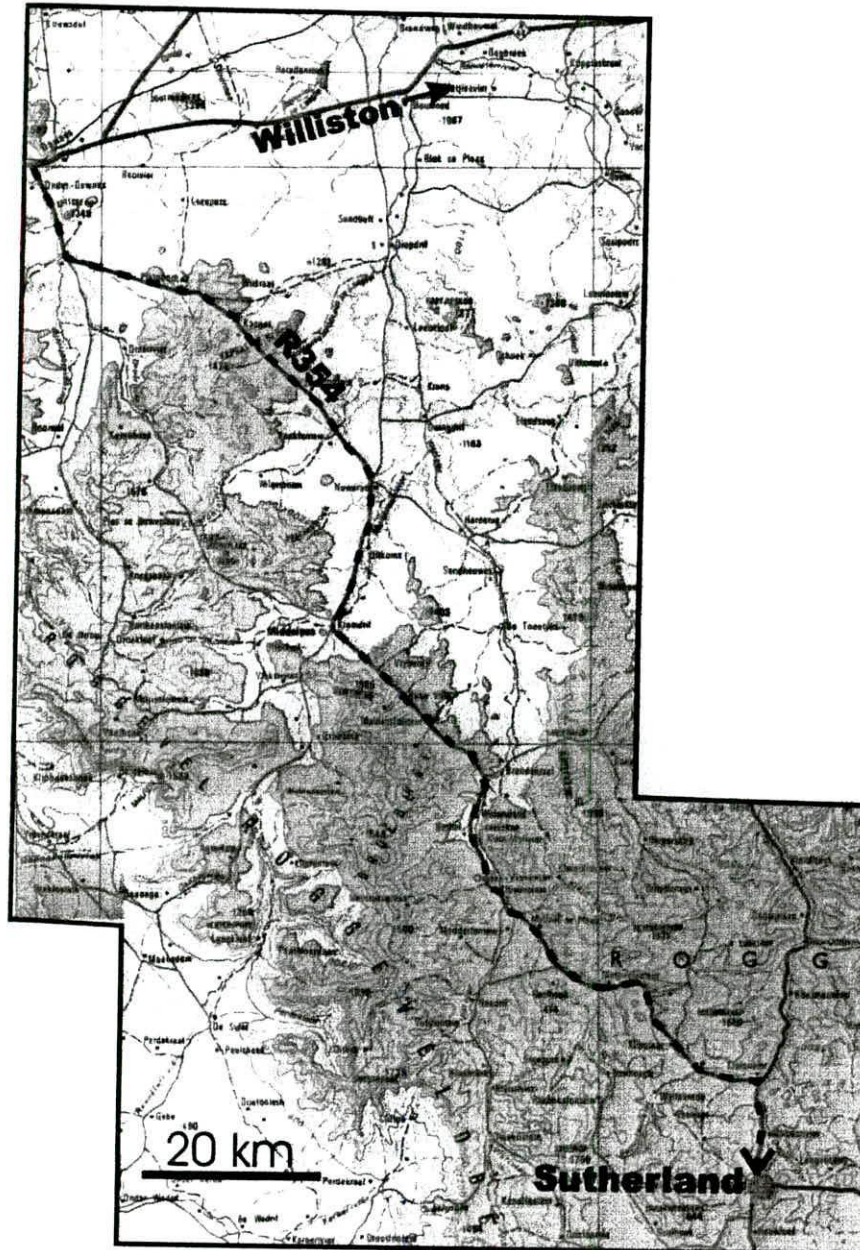


Figure 1. 1:500 000 topographical map of the R354 (dotted line). The quarries are located alongside the road (coordinates provided in Table 1).

The quarries will supply fresh gravel for the upgrade of the existing gravel road. The survey is required as a prerequisite for new development in terms of the National Environmental Management Act and is also called for in terms of the National Heritage Resources Act 25 of 1999. The task involved identification of archaeological and palaeontological sites or occurrences, an assessment of their significance, possible impact by the proposed development and recommendations for mitigation.

Description of the Affected Area

Locality data

The quarries are located next to the R354 between the Downes-turnoff on the R63 and Sutherland (Fig. 1). All the localities are visible from the road and are situated at variable intervals from each other. The quarries are relatively shallow - existing excavations do not exceed more than five meters in depth. Overall site dimensions range from a few hundred square meters to several thousand square meters. The majority of sites are accessible via vehicle paths from the main road (Table1).

Table 1. Details of quarries surveyed.

Quarry number	Coordinates		Geology	Potential Impact	
	South	East		Archaeology	Palaeontology
1	31.31.366	19.56.621	Shale	No	Yes
2	31.35.277	19.59.132	Shale	No	Yes
3	31.36.474	20.04.461	Dolerite	No	No
4	31.31.354	20.06.944	Dolerite	No	No
5	31.40.87	20.11.239	Dolerite	No	No
6	31.42.215	20.30.107	Dolerite	No	No
7	31.44.51	20.14.533	Dolerite	No	No
8	31.45.584	20.15.998	Dolerite	No	No
9	31.46.110	20.16.409	Sandstone	No	Yes
10	31.54.294	20.14.225	Dolerite	No	No
11	31.55.33	20.16.181	Shale & Dolerite	No	Yes
12	31.55.963	20.18.363	Sandstone, Shale & Dolerite	No	Yes

13	31.57.141	20.17.854	Sandstone, Shale	No	Yes
14	31.57.496	20.18.345	Mudstone	No	Yes
15	32.01.608	20.23.194	Shale	No	Yes
16	32.02.913	20.22.913	Dolerite	No	No
17	32.04.118	20.22.192	Shale, Siltstone	No	Yes
18	32.07.161	20.23.93	Shale	No	Yes
19	42.09.708	20.25.245	Dolerite	No	No
20	40.10.679	20.26.328	Dolerite	No	No
21	32.11.08	20.26.706	Shale, Siltstone	No	Yes
22	32.12.976	20.28.870	Sandstone, Shale	No	Yes
23	32.13.222	20.30.895	Shale	No	Yes
24	32.13.392	20.32.860	Sandstone, Shale	No	Yes
25	32.15.177	20.33.385	Sandstone, Shale	No	Yes
26	32.16.265	20.34.876	Sandstone, Shale	No	Yes
29	32.17.34	20.35.581	Shale	No	Yes
30	32.17.463	20.35.893	Sandstone, Shale	No	Yes
32	32.18.201	20.38.682	Sandstone, Shale	No	Yes
33	32.22.805	20.39.806	Mudstone, Shale	No	Yes

Geology

The survey area is mainly covered by sedimentary rocks of Late Permian age of the upper Ecca and lower Beaufort Groups of the Karoo Supergroup. The Ecca Group, which crops out in the northern part of the survey area is subdivided into several shale and siltstone-dominated formations. The lowermost beds of the Beaufort Group of rocks follow conformably on beds of the upper Ecca and are best exposed between 31° 40' and 32° 20' latitude and 20° and 20° 40' longitude of the survey area. The Beaufort Group (Subgroup Adelaide) can be subdivided into two formations consisting of shales and grey to red mudstones with fine to medium-grained, interbedded sandstones.

The Ecca-Beaufort transition is interpreted as a change from subaqueous to subaerial conditions. The geological environment of the Beaufort Group was terrestrial with rock deposition as a result of large, meandering rivers, overbank floodplains and lacustrine conditions. Intrusions of Jurassic age Karoo dolerite, in the form of sills and dykes, occur extensively throughout the survey area. Calcrete occasionally covers weathered dolerite sills (Fig. 2). Surface deposits of Quaternary age cover the Karoo rocks in places, especially along river courses. These deposits consist mainly of river terrace gravels and alluvium, including both sheet-wash and channel-transported deposits.

Methodology

All the sites were surveyed on foot using a Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a SonyW17 digital camera.

Archaeological Background

Potential archaeological features in the region include historical dwellings, rock art as well as Stone Age archaeological remains particularly in the form of stone tool kits. As a result of the relatively thin mantle of Quaternary surface deposits, Stone Age archaeological remains in the region are generally represented as uncapped surface scatters, but near the vicinity of large river courses archaeological material may be located within river terrace or alluvium deposits.

The amount of archaeological data from this region is limited. Available archaeological evidence suggests that the southwestern Karoo region was marginal in terms of human occupation, especially during the late Pleistocene when conditions deteriorated with progressively colder and drier climates culminating in the Last Glacial Maximum 18 000 years ago.

Palaeontological Background

The Ecca group of rocks contains plant impressions, silicified wood and trace fossils, but reptile fossils from the Upper Ecca have also been reported in the southern Karoo. The Beaufort Group of rocks contains vertebrate fossils, which are divided into three vertebrate biozones; the *Dinocephalia*, *Pristerognathus-Diictodon* and *Tropidostom-Endothiodon* Assemblage zones. Vertebrate fossil localities from the Lower Beaufort beds have been recorded south and east of Sutherland and particularly between Sutherland and Fraserburg.

There is currently no record of Quaternary fossil localities present in the survey area. Recently, fossil material of a giant alcelaphine antelope, *Megalotragus priscus*, were reported from erosional gullies on the Ongers River near Britstown in the central Karoo, which suggests much wetter environmental conditions during pre-Holocene times compared to the modern semi-arid conditions of the Karoo. This species is one of several extinct species known from a variety of late Quaternary sites in the interior of South Africa, which define the Florisian Land Mammal Age.

Results of Survey

Archaeology

A single dolerite core was recorded at Quarry # 6. (Fig. 3). The artefact was uncapped, isolated and is most likely out of context. There is no indication of additional surface scatters at Quarry # 6. There is also no indication of Stone Age archaeological material, distributed as surface scatters, in or in the immediate vicinity of the remaining quarries.

Palaeontology

There are no large river courses, (a major source of Quaternary fossil localities) in the vicinity of the quarries.

Out of the thirty quarries that were surveyed, nine are located in igneous bedrock (dolerite). The sedimentary deposits exposed in the other twenty-one quarries are derived from the sequence of fossil-bearing strata from the upper Eccca / lower Beaufort transition (Fig. 4). However, no fossil material was observed or located in these exposures at the time of inspection.

Statement of Significance

1. All thirty quarries are of low archaeological significance.
2. No fossil material was observed or located, but the geological context of the region suggests potential palaeontological impact for the shale and mudstone – bearing quarries.

Recommendations

Considering the geological scale of the Eccca and Beaufort Groups of rocks in the region, the exposure of Late Permian rocks on the R354, is relatively low in intensity. However, for mitigation as part of the ongoing road construction process, regular monitoring by specialists is recommended.

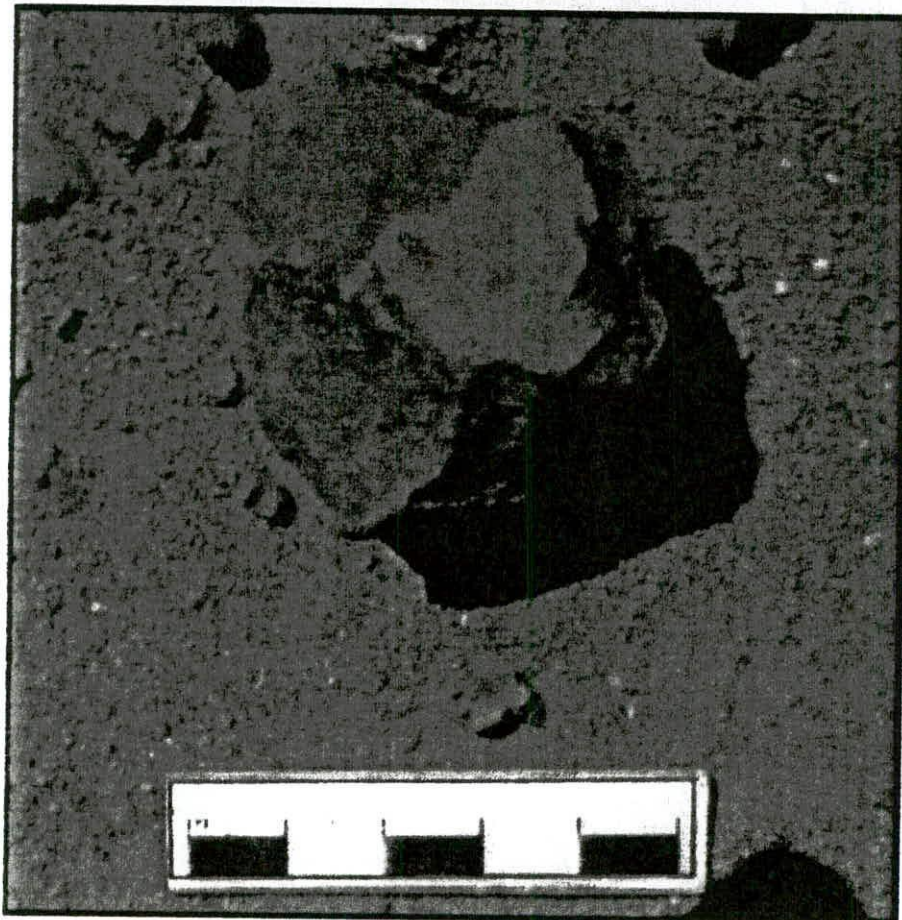
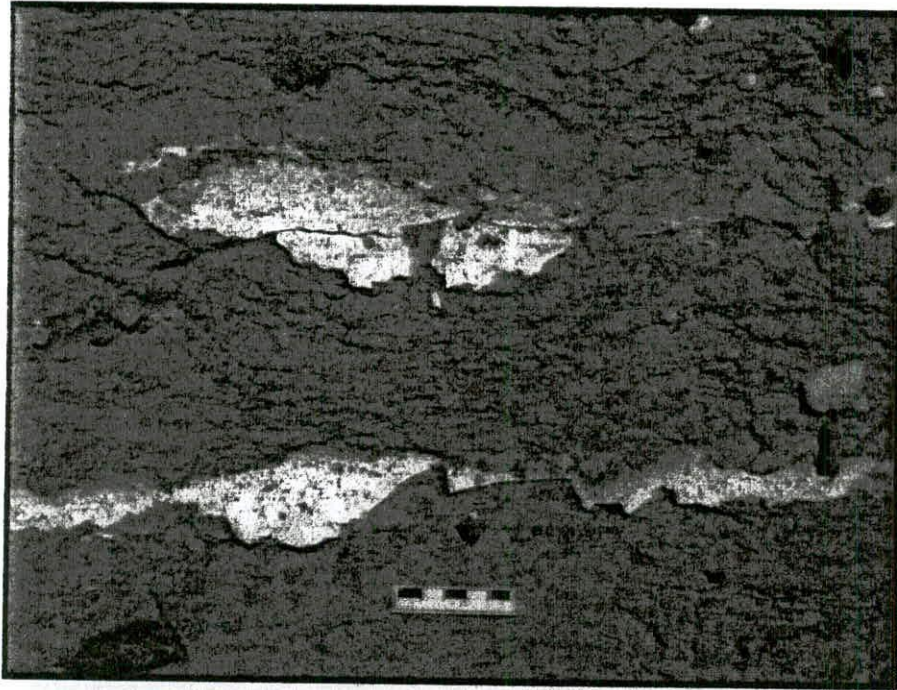


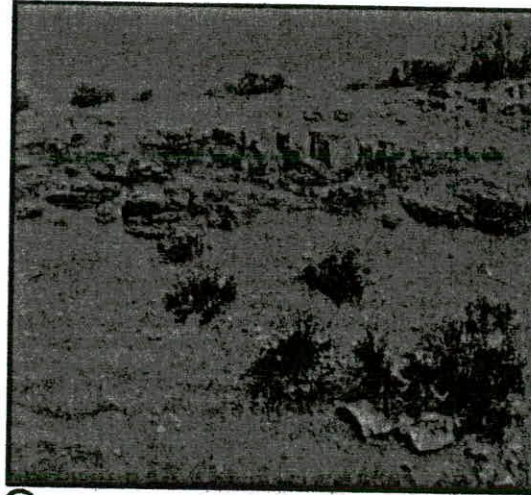
Figure 2 (above). Calcrite lens covering weathered dolerite.
Figure 3 (below). Single, isolated dolerite core from Quarry # 6.



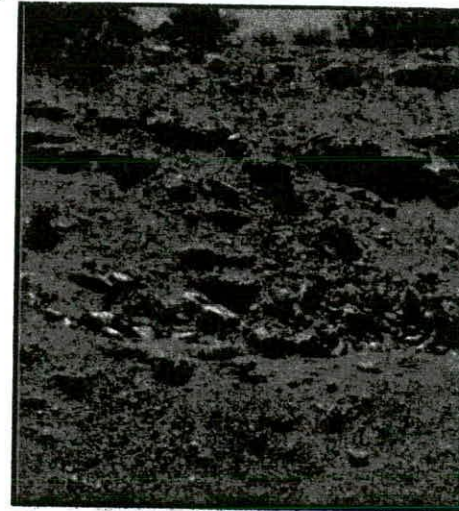
A



B



C



D

Figure 4. Late Permian fossil-bearing strata. Dark-grey shales capped by yellowish, medium-grained sandstones (A); purple shales (B); argillaceous mudstones (C); and a sequence of weathered, purple-grey shales underlying dark-coloured, blocky-weathering mudstones (D).

References

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- Deacon, J. & Lancaster, N. 1986. *Late Quaternary palaeoenvironments of Southern Africa*. Oxford University Press. Oxford.
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- Partridge, T.C. & Maud, R.R. 2000. *The Cenozoic of Southern Africa*. Oxford Monographs on Geology and Geophysics No. 40.
- Rubidge, B.S. 1987. South Africa's oldest land-living reptiles from the Ecca-Beaufort transition in the southern Karoo. *South African Journal of Science* 83: 165 – 166.