

HERITAGE IMPACT ASSESSMENT

submitted in terms of section 38(8) of the National Heritage Resources Act

prepared for

AURECON South Africa (Pty) Ltd

25 April 2012

vidamemoria heritage consultants

3rd Floor · Guarantee House · 37 Burg Street · Greenmarket Square

P O Box 50605 Waterfront · 8002 · Cape Town

021 424 vida (8432) cell: 082 330 4066 · quahnita@vidamemoria.co.za

CK 2006/049087/23



DR 2308 Central Karoo

Beaufort West – Central Karoo District Municipality, Western Cape

Executive summary

Aurecon South Africa (Pty) Ltd appointed *vidamemoria* to conduct a heritage impact assessment for a proposed borrow pit located along DR 2308 approximately 40 km southwest of Beaufort West in the Central Karoo District Municipality, Western Cape. *vidamemoria* appointed Dr John Almond (Natura Viva CC) to conduct necessary palaeontological specialist study and Madelon Tusenius (Natura Viva CC) to conduct necessary archaeological impact assessment. Heritage impact assessment is submitted for comment in terms of Section 38(8) of the NHRAct as a component of an Environmental Management Programme (EMProg in terms of Mineral and Petroleum Resources Development Act 49 of 2008) to be submitted to the Department of Mineral Resources (DMR).

Palaeontological sensitivity of this site is rated as moderate and it is likely that further vertebrate remains may be exposed during further excavation of the pit area. However, the anticipated low density of fossil material subsurface does not warrant special mitigation measures or further studies. Proposed intervention would not result in a detrimental heritage impact, yielding social and economic benefits without a negative impact on heritage resources. No further specialist palaeontological or archaeological studies or mitigation is recommended and expansion be allowed to proceed.

1. Introduction

Aurecon South Africa (Pty) Ltd on behalf of the WCPA: Department of Transport and Public Works appointed Quahnita Samie (*vidamemoria*) to conduct a Notification of Intent to Develop (NID) application in terms of Section 38(1) of the National Heritage Resources Act (Act 25 of 1999) for a proposed borrow pit at km 36.6 along DR 2308 near Beaufort West, in the Central Karoo District Municipality. NID dated 14 September 2011 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 3 October 2011 (case ref 110928JB27) requested 'a heritage impact assessment limited an archaeological scoping report and a palaeontological scoping report with an integrated set of recommendations is required' (Refer Annexure A). *vidamemoria* appointed Dr John Almond (Natura Viva CC) to conduct the necessary palaeontological specialist study (dated March 2012) and Madelon Tusenius (Natura Viva CC) to conduct necessary archaeological impact assessment (dated March 2012) under supervision of Dr Lita Webley (ACO Associates) as incorporated within this assessment.

The proposed action triggers Section 38(1) (c)(a) activity that will change the character of a site exceeding 5 000 m². This assessment report is submitted for comment in terms of Section 38(8) of the NHRAct as a component of an Environmental Management Programme (EMProg) in terms of the Mineral and Petroleum Resources Development Act (49 of 2008) to be submitted to the Department of Mineral Resources (DMR). Notification as previously submitted to HWC (dated 31 May 2011) and response (dated 20 June 2011) confirmed the approach to be undertaken in submitting borrow pit notifications to HWC.

Structure of assessment

Section 1	Introduction provides background, site location, description of proposals and result of consultation	pg 2
Section 2	Identification of heritage resources, assessment of significance and heritage indicators	pg 6
Section 3	Assessment of impacts	pg 7
Section 4	Discussion and recommendations	pg 8
Annexure A	Interim comment from HWC	
Annexure B	Mine plan	
Annexure C	Methodology for the preparation, operation and closure of borrow pit	
Annexure D	Palaeontological specialist study conducted by Dr John Almond, Natura Viva CC (March 2012)	
Annexure E	Archaeological conducted by Madelon Tusenius, Natura Viva CC (March 2012)	

Site location and description

It is proposed to develop a borrow pit for road material at km 36.6 along DR 2308 approximately 40km south west of Beaufort West, Central Karoo District Municipality, Western Cape. The DR02308/36.6/0.05L borrow pit site is situated on an erosionally dissected Karoo landscape characterised by prominent ridges of Beaufort Group sandstones and intervening vlaktes and gentle slopes underlain by overbank mudrocks. Several south-flowing tributaries of the Gamka drainage system, including the Rietkuilsrivier 1 km to the east of the pit site, traverse the area. The site is located in a wide, very shallow, unsymmetrical, headwater valley of an ephemeral water course that heads downstream in a north-easterly direction. Farm Rietkuil is in private ownership of K. Mocke with borrow pit co-ordinates 32°24' 58" S, 22° 8' 25.29" E

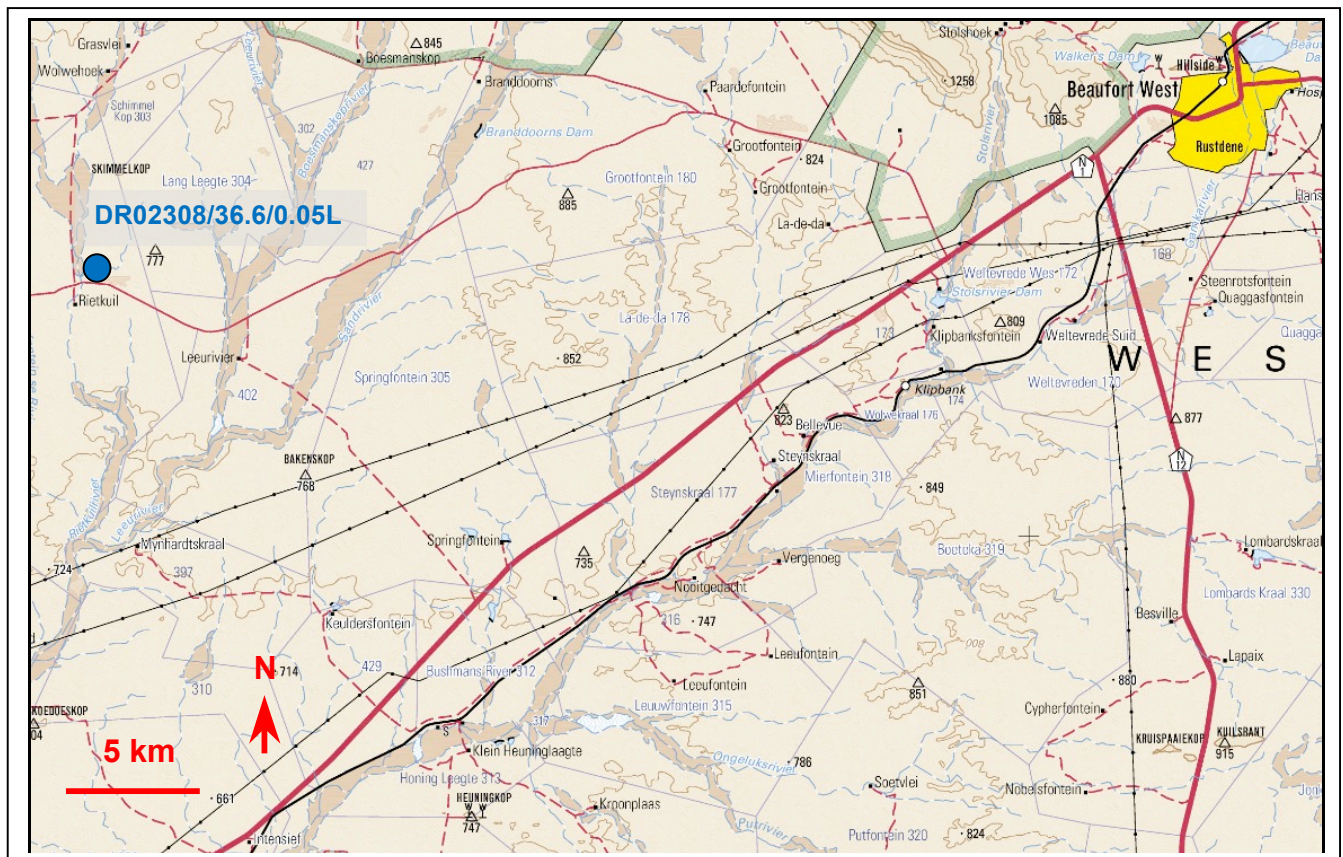


Figure 1: Extract from topographical sheet 3222 Beaufort West (extracted Almond 2012: 2)



Figure 2: Looking northwest across the site of the proposed borrow pit, north of road DR02308 (April 2011)



Figure 3: Looking northeast across the site of the proposed borrow pit, north of road DR02308 (April 2011)



Figure 4: Aerial view of proposed borrow pit location (Google earth image, April 2012)



Figure 5: Aerial view of proposed borrow pit and expropriation area (Google earth image, April 2012)

Description of proposals

In terms of the Minerals and Petroleum Resources Development Act, all mining activities including extraction of material from borrow pits and quarries requires authorisation from the Department of Mineral Resources (DMR). Where the WCPA: Dept Transport and Public Works is undertaking the maintenance and / or upgrading of roads under its control, no application needs to be submitted for a mining right or permit, however, as per provisions of Section 106(2) of the MPRDAct, they are required to prepare and submit an EMProg to DMR for their approval prior to the extraction of any material from a proposed borrow pit or quarry. According to the MPRDAct, mineral resources are in the custodianship of the State, where WCPA would temporarily acquire the right to mine the borrow pits, subject to approval by the DMR.

For a gravel road to be able to carry traffic safely and effectively an upper layer of gravel known as a wearing course, which meets specific technical requirements, has to be placed on the prepared roadbed. With time, the wearing course is eroded away by both traffic and the elements. This wearing course needs to be replaced in order to continue to deliver a safe and functional surface to road users. Implementation of regravelling activities requires extraction of suitable materials from identified material sources. During decommissioning, working areas are rehabilitated and revegetated. Material excavated from borrow pit located at **km 36.6 along DR 02308** will be used for the re-gravelling so as to benefit road users in terms of road safety and user economy as well as to minimise maintenance-related disruptions. Pit will be utilised for the sourcing of approximately 38 904 m³ of wearing course gravel for use in the regravelling. The end-use of this borrow pit would be use as a floodwater storage feature. Sufficient material is available to identify this source as a future strategic pit.

Summary of borrow pit	
Borrow pit / expropriation area	250 x 250m
Maximum depth	1.2 m
Material description	Colluvium/Alluvium and Mudstone
Proposed usage after rehabilitation	Floodwater storage feature
Volume of material to be sourced	38 904 m ³
Estimated proven material reserves	65 000 m ³

Trial pit investigations and sampling were conducted by Aurecon at four proposed borrow pits considered as potential sources of material. Three were however excluded from consideration due to environmental concerns and / or unsuitability of material for purpose of regravelling.

The mine plan outlining extent of borrow pit and mining is attached as Annexure B. Methodology for the preparation, operation and closure of borrow pit is outlined in Annexure C.

Central Karoo District Municipality is to undertake work on behalf of the WCPA. Formal agreements are to be entered into between the landowner and the WCPA, with the municipality managing the site until decommissioning and closure. During decommissioning, the working area will be rehabilitated and revegetated as per the approach outlined in the mining plan. WCPA's liability for the site persists until such time as a Closure Certificate has been issued by the DMR.

Results of consultation

DMR has outlined requirements for public participation in terms of the Minerals and Petroleum Resources Development Act (Act 28 of 2002) for exempted organs of state. This includes liaison with the landowner, notification of the immediate neighbours and either an on-site advertisement or advertisement in the local newspaper. The WCPA has indicated a commitment to developing and maintaining good relations with landowners and therefore landowners concerns are incorporated into the final agreement.

The public consultation process for this project has involved consultation with the landowners and neighbours, and the advertising of the proposed activity in the local newspaper.

No heritage related comments and / or concerns were received.

Requests / concerns of owner:

- Create a water storage feature to provide water for livestock
- Be aware of uranium mining concessions given for portions of this farm
- Ensure rills and dongas do not develop from the borrow pit into the surrounding grazing lands

2. Heritage resources

Identification of heritage resources

Proposed site and immediate context do not fall within conservation or protected heritage areas, and is not located near to or visible from any protected heritage sites. The site does not fall within a historical settlement or townscape and does not contribute towards rural or natural landscape of cultural significance. The site is therefore not considered as an integral component of the cultural landscape.

Dr John Almond conducted a palaeontological field assessment and provided a report outlining geological context, palaeontological heritage and palaeontological sensitivity. Refer to Annexure D report dated March 2012. An extensive existing pit is excavated into mudrocks of the Abrahamskraal Formation (Lower Beaufort Group) that are famous for their rich fossil record of terrestrial vertebrates (e.g. reptiles and therapsids) of Middle Permian age. A number of robust, disarticulated postcranial bones of large-bodied reptiles and / or therapsids were recorded weathered out at-surface within the pit site during field assessment. The specimens were mostly weathered and sun-cracked, and probably unidentifiable to a specific fossil animal.

Madelon Tusenius conducted archaeological field assessment and provided report identifying and assessing archaeological resources, associated impact, assessment of significance and recommendations regarding any mitigation required. Dr L Webley of ACO Associates acted as the Principal Investigator supervising the study done by M Tusenius. Low density scatters of mixed MSA and LSA artefacts were observed

The site has no known historical, social, or spiritual significance. No built environment issues and / or cultural landscape issues have been identified. Palaeontological and archaeological sensitivity has been identified as low and no further heritage resources were identified.

Heritage significance

A previous desktop basic assessment of the pit site by the author assessed its palaeontological heritage sensitivity as high due to the presence here of potentially fossiliferous sediments of the Lower Beaufort Group. However, palaeontological sensitivity of the sites is rated as moderate and it is likely that further vertebrate remains may be exposed during further excavation of the pit area. However, the anticipated low density of fossil material in the subsurface does not warrant special mitigation measures or further studies. Low density scatters of mixed MSA and LSA artefacts which were observed are in a secondary context and are therefore of low archaeological heritage significance.

The context within which the site lies is identified as possessing low intrinsic heritage value. The proposed development site is transformed and possesses no known historical, social or spiritual significance. No sensitive landscapes were identified. The site is therefore considered to possess a very low level of intrinsic heritage value.

Heritage indicators

Heritage indicators identified aim to ensure that significance would not be adversely impacted on by the proposed development. Indicators concern impact on the cultural landscape, identified heritage resources and visual impact. No sensitive landscapes, archaeological or palaeontological material of significance were identified. Landscaping and rehabilitation of the site should commence as soon as advancing face and sufficient working/loading area moves away from an area that has been mined out.

3. Assessment of impacts

An assessment of the potential development impacts on significance is undertaken using relevant assessment criteria as well as response to indicators. Assessment of impacts on palaeontological significance has been provided as well as consideration of the cultural landscape and assessment of cumulative impacts.

Cultural landscape: Expansion of existing borrow pit would not result in a negative impact on the cultural landscape. The landscape within which the site lies possesses low intrinsic heritage value and no heritage resources were identified within the immediate context. The site and its immediate context are considered as being of low heritage significance. No heritage resources will be impacted and the overall status of the impact is considered as low.

Archaeological and palaeontological impact: No impact would occur as a result of expansion. The site has been sufficiently recorded and requires no further recording before borrow pit activity occurs.

Visual impact: Low intensity visual impact is limited to the immediate surroundings and will be limited to operational phase.

Cumulative impact: The proposed moderate intensity intervention lies within a disturbed context with degraded conditions. No new roads would have to be constructed as the borrow pit is accessed directly off main / divisional roads or via existing access tracks. The borrow pit and access tracks would be fenced for the duration of the mining activities. There will be no site buildings located at the borrow pit site. No long-term traffic increase will be experienced. Low impact is associated with impact of increased personnel and cumulative impacts on borrow pit footprint and surroundings.

Site rehabilitation: It is expected that there should be an acceptable seed bank in the topsoil and this would be kept aside for rehabilitation. Topsoil from newly developed areas should be carefully stockpiled for later redistribution over all the worked out area, preferably in stages as the working area advances into un-mined ground. Landowner prefers this site to become a floodwater storage feature, topsoil should only be spread on areas above the eventual full supply level. In addition, cut slopes should be covered with gravel, to emulate natural slopes of similar steepness, to prevent rill and donga development.

Impact relative to sustainable social and economic benefits: The project will result in social and economic benefits for the local community in terms of service provision and employment opportunities.

The site is considered to possess a very low level of intrinsic heritage value and the overall status of the impact is considered as low.

4. Discussion

During the course of borrow pit excavations, operations should be planned in such a way that the amount of work that will be necessary for the finishing off of the borrow pit is reduced as far as possible. Indiscriminate excavation without due regard for the desired final shape of the borrow pit should not be permitted and should be rectified immediately. Timing of rehabilitation is important as rehabilitation of disturbed areas should ideally be programmed to occur as soon as practically possible following cessation of work in a specific area. The period between cessation of activities associated with mining of materials and the onset of rehabilitation for that area should ideally not exceed 1 month. Rehabilitation operations should ideally be conducted in parallel with extraction. Accordingly, progressive rehabilitation, in which depleted sections of a borrow pit are reclaimed while extraction is ongoing in other sections of the same pit is encouraged.

Site development, operation, mining and closure guidelines outlined with the Environmental Management Programme provides detailed guidance for the preparation, operation and decommissioning of the site. Rehabilitation of old and current working faces has been undertaken to mitigate visual impact to road users. Measures outlined should be adhered to in order to minimise potential negative impacts. It is recommended within the EMProg that an environmental control officer or suitable experienced engineer monitors the preparation, operational and decommissioning of the borrow pit so as to ensure that mitigation and rehabilitation measures are adhered to.

The palaeontological sensitivity of this site is rated as moderate and it is likely that further vertebrate remains may be exposed during further excavation of the pit area. However, the anticipated low density of fossil material in the subsurface does not warrant special mitigation measures or further studies. No further palaeontological heritage studies or mitigation are recommended for this project. (Almond 2012: 7)

Low density scatters of mixed MSA and LSA artefacts observed are in a secondary context and are of low archaeological heritage significance. No further mitigation or investigation is required (Tusenius 2012: 9).

The site is considered to possess a very low level of intrinsic heritage value and the overall status of the impact is considered as low. No further archaeological and palaeontological heritage studies or mitigation are recommended for this project. No impact on heritage resources is expected should the proposed development proceed.

Recommendations

It is therefore recommended that:

1. proposed borrow pit be supported
2. comment be issued that proposed activity may proceed in terms of Section 38(8) of the NHRAct

References:

- Almond John E PhD (March 2012): *Palaeontological specialist study: field assessment & recommendation for exemption from further studies & mitigation*
- ASAPA Aggregate and Sand Producers Association of Southern Africa (30 September 2009): *The issue of borrow pits being used in the aggregate and sand industry* accessed online
- Aurecon / Nadeson JV (July 2011): *Draft environmental management programme, summary report and mine plan*
- Galliers R M (July 2011): *Geotechnical investigations and geological strategic gravel pit summary report* for Aurecon South Africa
- Heritage Western Cape (July 2007): *Minimum Standards For Phase 1 Archaeological Impact Assessment (Aia) Reports*
- Tusenius M (2012): *Archaeological Impact Assessment*
- vidamemoria (September 2011): *Notification of Intent to Develop*