

# HERITAGE IMPACT ASSESSMENT

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

prepared for

AURECON South Africa (Pty) Ltd

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Divisional Road 01721, Klaarstroom

Prince Albert – Central Karoo District Municipality, Western Cape

## Executive summary

Aurecon South Africa (Pty) Ltd appointed *vidamemoria* to conduct a heritage impact assessment for a expansion of an existing borrow pit located along Divisional Road 01721 approximately 9km to the southwest of Klaarstroom in Prince Albert Municipality, Central Karoo in the Western Cape. *vidamemoria* appointed Madelon Tusenius (*Natura Viva CC*) to conduct necessary archaeological impact assessment (dated March 2012). 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).

No Stone Age or herder archaeological remains were observed on the ground or in heaps of stone from past agricultural activity and the excavation of geotechnical test pits. The site under consideration is of low archaeological heritage significance. No impact on archaeological resources is expected if expansion of existing pit proceeds. The proposed borrow pit site is also considered to be of low palaeontological significance. 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 archaeological studies or mitigation is recommended and the proposed borrow pit should 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 **proposed expansion of an existing borrow pit located along Divisional Road 01721 near Klaarstroom, Central Karoo**. NID dated 14 September 2011 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 03 October 2011 (**case ref 11928JB27**) requested 'a heritage impact assessment limited to an archaeological scoping' (Refer Annexure A). *vidamemoria* appointed 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 m<sup>2</sup>*. 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

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## Site location and description

Expansion of borrow pit along DR01721 at km 8.4 is located on the farm Kleinvelei approximately 8.7 km to the southwest of Klaarstroom in the Prince Albert Municipality of the Central Karoo District. Expansion site is located to the north of the Swartberg mountain range, up-slope of a dam, a converted former quarry, which stores water used for irrigation. The site lies in disturbed, agricultural land adjacent to a dam and is bounded by the road to the east and a small rocky slope adjacent to the road in the south. Farm Kleinvelei is owned by the Avondrust Family Trust. Site co-ordinates are 33° 21' 31.50"S 22° 26' 48.06"E.

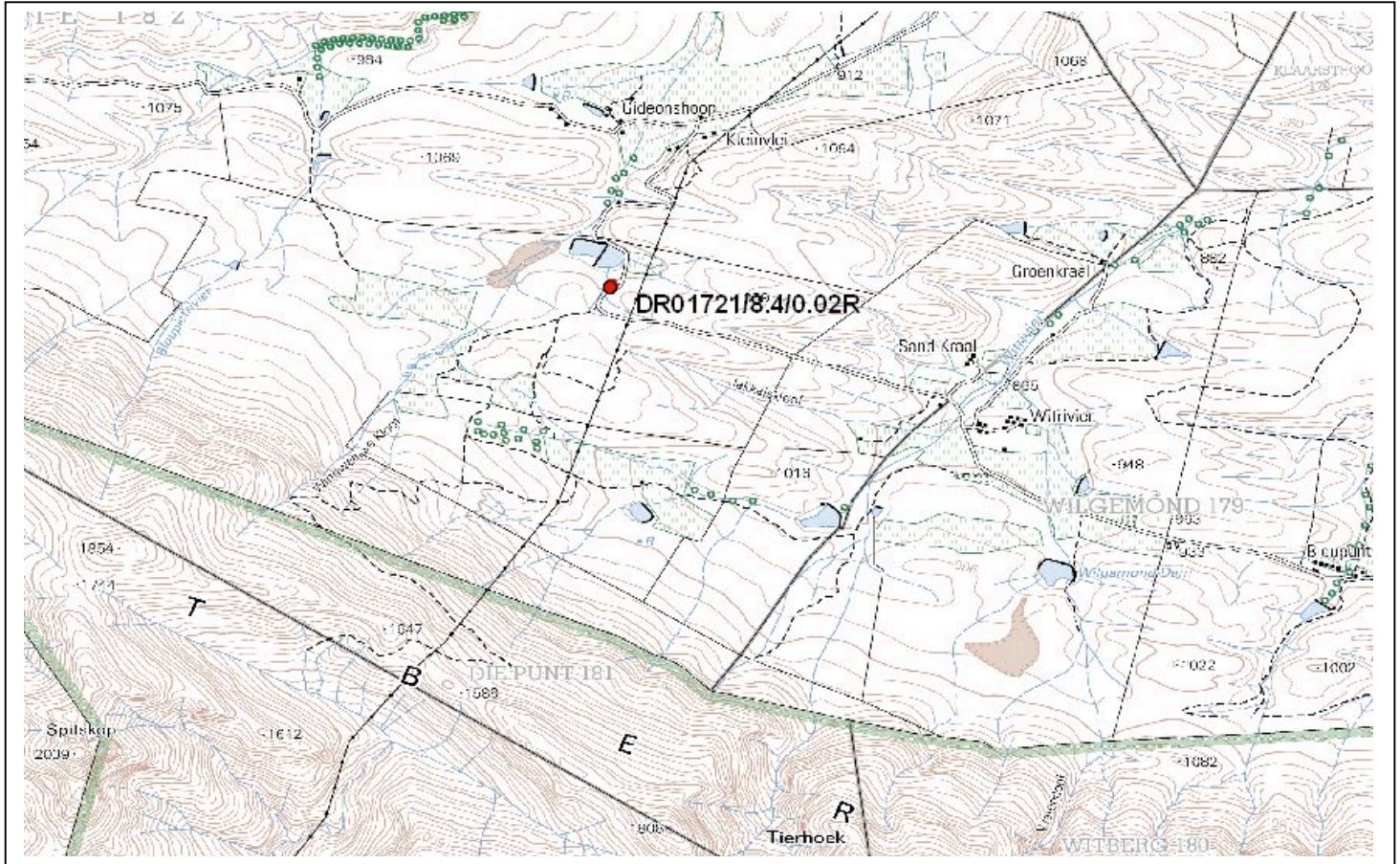


Figure 1: Extract from topographical sheet 3322AD Rosselsersf (Source: Surveys and Mapping)



Figure 2: Looking northwest across the site of proposed expansion located between road DR01721 and existing dam (April 2011)



Figure 3: Looking west across site of proposed expansion located to the south and east of existing farm dam (April 2011)





Figure 4: Aerial view of proposed borrow pit location (Tusenius, March 2012)



Figure 5: Aerial view of proposed borrow pit location (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 the **borrow pit at km 8.4 along DR 01721** 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. Proposed borrow pit will be utilised for the sourcing of approximately 1 3267m<sup>3</sup> of wearing course gravel for use in regravelling. It is estimated that approximately 52 400m<sup>3</sup> of gravel wearing course is available from this pit. The end-use of this borrow pit would be a dam.

Summary of borrow pit	
Borrow pit area	15 000 m <sup>2</sup>
Maximum depth	5 m
Material description	Bokkeveld shale
Proposed usage after rehabilitation	Dam
Volume of material to be sourced at a depth of 2 m	18 300 m <sup>3</sup>
Volume of material to be sourced at a depth of 5 m	38 500 m <sup>3</sup>
Volume of material available	52 400 m <sup>3</sup>

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:*

- Request by farmer to enlarge dam
- Request that once borrow pit worked out to remove wall between existing dam and borrow pit to enlarge dam
- Prevent the borrowing of material resulting in loss of water or contamination



## 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.

Key Geological Units and age are Waboomberg or Karies Formation of early middle Devonian age Gydo and Voorstehoek Formation of early Devonian age with potential shelly fossil assemblages, land plants and trace fossils as well as diverse shelly invertebrate biot, fish remains and microfossils considered to be of low palaeontological value (desktop survey conducted by Dr John Almond, August 2011).

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. No Stone Age or herder archaeological remains were observed on the ground or in heaps of stone from past agricultural activity and the excavation of geotechnical test pits. A historical dry stone wall is located approximately 70 m to the southwest of the site.

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 significance has been identified as low and no further heritage resources were identified.

### Heritage significance

The site under consideration is of low archaeological heritage significance (Tusenius (2012: 10)). 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:** The proposed 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 the proposed borrow pit. 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:** Existing borrow pits are used as water retention facilities (dams) to supply water for livestock. The expanded borrow pits and the new borrow pits proposed will serve the same purpose.

**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 proposed site. 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 site under consideration is of low archaeological heritage significance. No impact on archaeological resources is expected if expansion of existing pit proceeds (Tusenius 2012: 10). Proposed expansion will not affect the stone wall as the site will be fenced off and is located a distance away.

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 expansion of existing borrow pit proceed.

### **Recommendations**

It is therefore recommended that:

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

References:

- Tusenius M (March 2012): *Archaeological impact assessment*
- 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 (May 2011): *Draft environmental management programme, summary report and mine plan*
- Galliers R M (January 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*
- vidamemoria (September 2011): *Notification of Intent to Develop*