

# 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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MR 00374, Central Karoo

Laingsburg – Central Karoo District Municipality, Western Cape

## Executive summary

Aurecon South Africa (Pty) Ltd appointed *vidamemoria* to conduct a heritage impact assessment for expansion of an existing borrow pit located along MR00374 approximately 49 km north-east of Laingsburg 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).

Assessment revealed that the contextual and intrinsic heritage significance of the site is low. Given the paucity of fossil material observed during field assessment of available exposures of Beaufort Group bedrocks close to the pit site, palaeontological sensitivity is considered as low. Three archaeological artifacts were found in an area exposed to sheet wash and considered to be of low archaeological heritage 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 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) to expand an existing borrow pit along MR 00374 near Laingsburg, Central Karoo District Municipality. NID dated 07 November 2011 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 1 December 2011 (case ref 11125JB48) 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 June 2012) and Madelon Tusenius (*Natura Viva CC*) to conduct necessary archaeological impact assessment (dated June 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

It is proposed to expand an existing borrow pit for road material along MR374 on the northern side of the DR1334 approximately 49 km north-east of Laingsburg, Central Karoo District Municipality, Western Cape. The existing borrow pit at MR374/24,5/0,2L is located on the south-western margin of an alluvial outwash deposit formed on a pediment crossed by road MR374 between km 24,5 and km 26. The existing pit forms a shallow dam retaining run-off water. Although the rest of the terrain of the proposed expansion is relatively flat-lying, sheet wash from the area to the north-west of the dam drains down a very gentle slope into the existing pit in a south-easterly direction. Vegetation consists of karoo shrubs. Farm Koeëfontein is in private ownership of P.W.Hattingh with borrow pit co-ordinates 32° 58' 10.56" S, 21° 18' 14.04" E

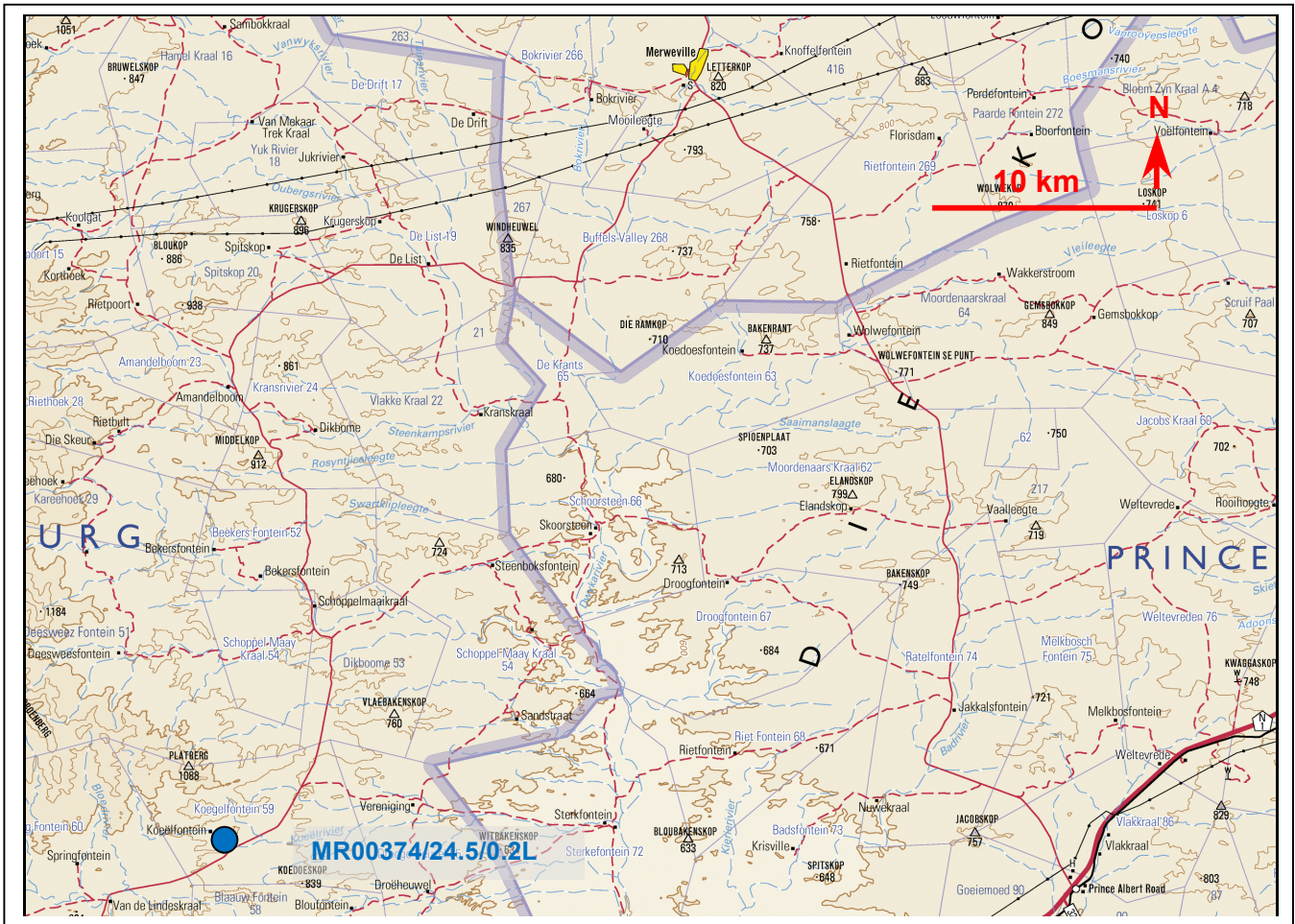


Figure 1: Extract from topographical sheet 3220 Sutherland (extracted Almond 2012: 2)



Figure 2: Panorama of entire pit area (2011)

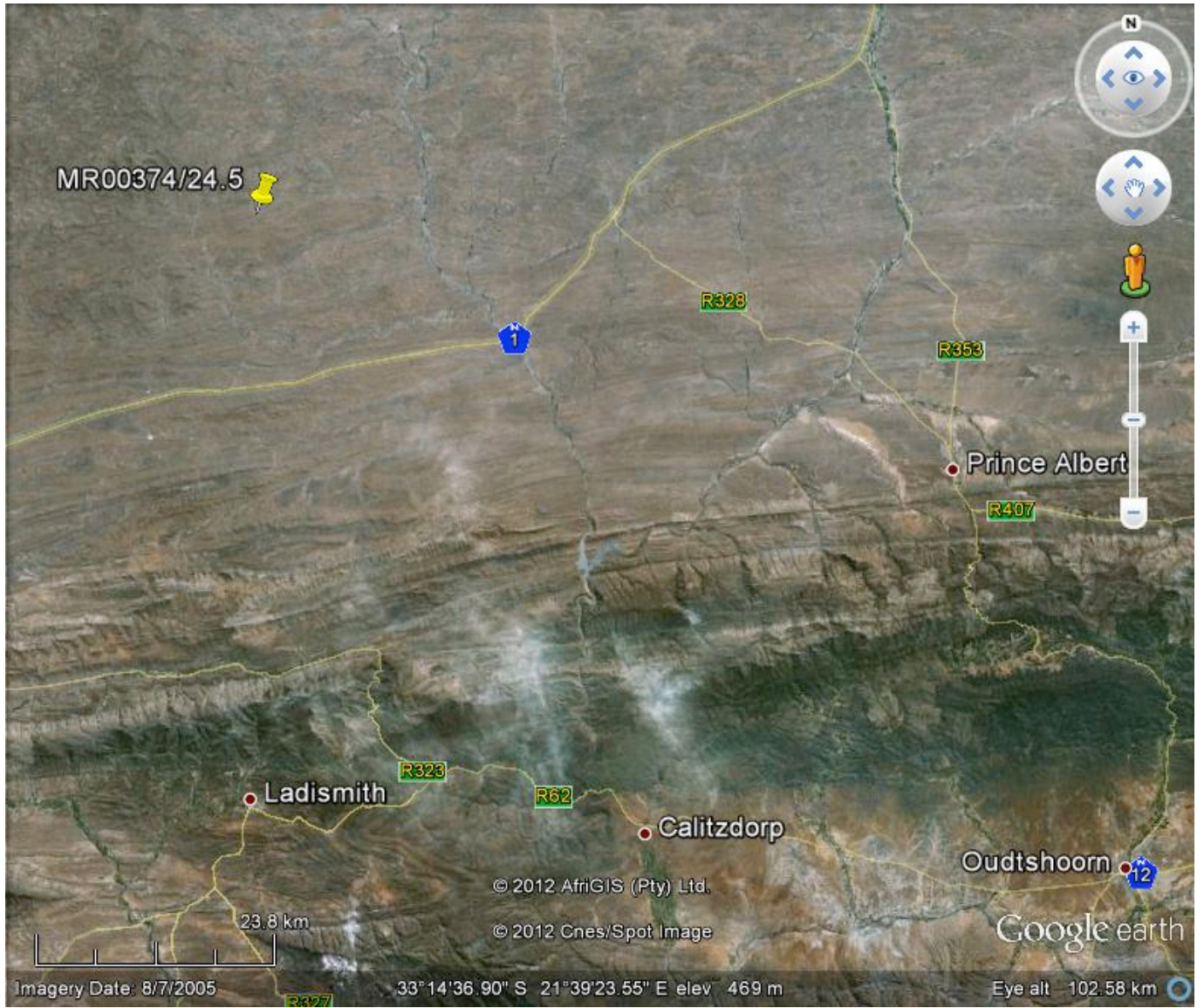


Figure 3: Aerial view of existing borrow pit location (Google earth image, June 2012)

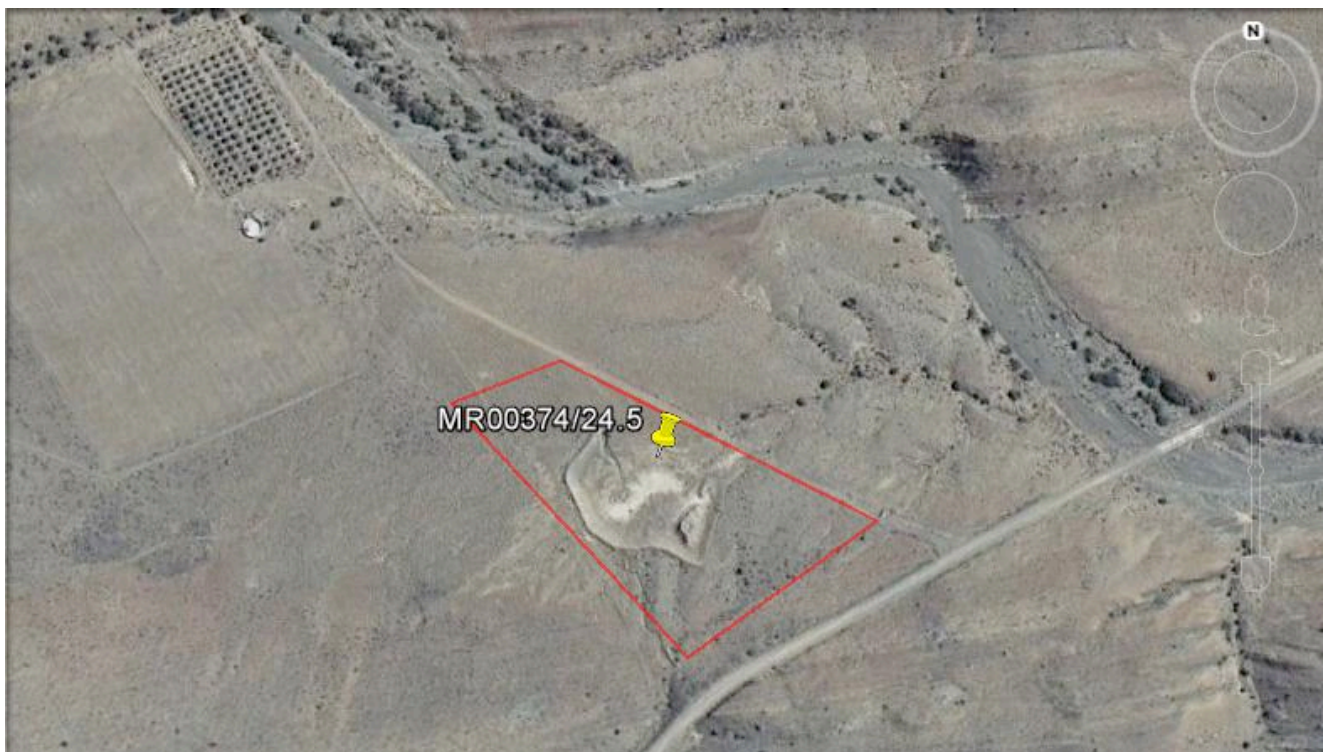


Figure 4: Aerial view of existing borrow pit (Google earth image, June 2012) 3

## 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 MPRDA, they are required to prepare and submit an EMP to DMR for their approval prior to the extraction of any material from a proposed borrow pit or quarry. According to the MPRDA, 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 regraveling 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 24.5 along MR00374** will be used for the re-graveling of portions of road MR 000374 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 59 450 m<sup>3</sup> of wearing course gravel for use in the regraveling. The end-use of this borrow pit would be a water retention facility.

Summary of borrow pit	
Expropriation area	29 600 m <sup>2</sup>
Borrow pit area	20 700 m <sup>2</sup>
Maximum depth	6 m
Material description	Mudrocks of Abrahamskraal Formation (Beaufort Group, Karoo Supergroup)
Proposed usage after rehabilitation	Dam
Volume of material to be sourced	59 450 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 regraveling.

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:* Prevent rill development around the margins of the borrow pit

## 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 June 2012. Proposed extension will be excavated into potentially fossiliferous fluvial sediments of the Abrahamskraal Formation (Lower Beaufort Group) as well as overlying thick alluvial outwash deposits. Paucity of fossil material observed during field assessment of available exposures of Beaufort Group bedrocks close to the pit site is of low palaeontological sensitivity (Almond, 2012: 5).

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. Three artefacts observed at the proposed borrow pit site occur in an area affected by sheet wash and are therefore in a secondary context. No rock engravings or stone features such as walls or graves were observed (Tusenius 2012: 8 - 9). The proposed borrow pit site is therefore of low archaeological heritage sensitivity.

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

Given the paucity of fossil material observed during field assessment of available exposures of Beaufort Group bedrocks close to the pit site, the palaeontological sensitivity of the pit site is assessed as low (Almond, 2012: 5). Archaeological material from this site is considered to be of low heritage significance (Tusenius 2012: 9).

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 archaeological and 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. Slope changes would be finished off so that flowing curves that blend with the surrounding landscape are formed in preference to sharp angles. Topsoil and vegetation stripped during site clearance would be spread evenly across the borrow pit area. The area excavated as part of previous borrow pit activities would be ripped and also covered with a layer of topsoil.

**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.

Site is considered to possess a very low level of intrinsic heritage value and 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. 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.

Proposed extension will be excavated into potentially fossiliferous fluvial sediments of the Abrahamskraal Formation as well as overlying thick alluvial outwash deposits. While it is possible that vertebrate and other fossil remains may be exposed during excavation of the pit area, low palaeontological sensitivity and the anticipated low density of fossil material subsurface does not warrant special mitigation measures or further studies (Almond, 2012: 5).

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. 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:

- Almond John E PhD (June 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 (June 2012): *Archaeological impact assessment*
- vidamemoria (November 2011): *Notification of Intent to Develop*