

HERITAGE IMPACT ASSESSMENT

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

prepared for

AURECON SOUTH AFRICA (Pty) Ltd

27 February 2013

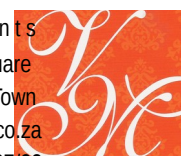
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CK 2006/049087/23



DR 01381 Overberg

Barrydale – Overberg District Municipality, Western Cape

Executive summary

Aurecon South Africa (Pty) Ltd appointed *vidamemoria* to conduct a heritage impact assessment for a expansion of existing borrow pits located along DR 01381 near Barrydale in the Little Karoo in Overberg District Municipality, Western Cape. *vidamemoria* appointed Dr John Almond (Natura Viva CC) to conduct necessary palaeontological specialist study (dated January 2013). 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).

Existing Pit DR01381/2.85/0.4L is excavated into highly weathered and only very sparsely fossiliferous mudrocks of the Gydo Formation. The proposed new borrow pit DR01381/13.5/0.8R overlies weathered mudrocks and wackes of the Tra Tra Formation whose original fossil content has been destroyed by intense tectonic cleavage. Borrow pit DR01381/9.8/0 is underlain by highly cleaved mudrocks of the Voorstehoek Formation that nevertheless contain numerous lenticles of shelly invertebrate fossils. Proposed intervention would not result in a detrimental heritage impact, yielding social and economic benefits without a negative impact on heritage resources. Mitigation is recommended for site at km 9.8 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) **expansion of existing pits along DR DR01381 near Barrydale**, Overberg District Municipality. NID dated 26 March 2012 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 11 April 2012 (**case ref 120327JL31**) requested 'a heritage impact assessment consisting of a palaeontological study' (Refer Annexure A). *vidamemoria* appointed Dr John Almond (Natura Viva CC) to conduct the necessary palaeontological specialist study (dated January 2013) 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

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Site location and description

Proposal is for proposed borrow pits at **km 2.85, 9.8 and 13.5 along DR 01381** accessed from the R62 near Platterkloof on the north-eastern side of the Warmwaterberg near Barrydale in the Little Karoo (Overberg District). Surrounding land use is characterized by grazing and stock watering in the hollow of the existing pit. Vegetation is characterized by sparse Karoo shrubs and grasses and some Port Jackson bushes in the floor of the pit

At **DR1381/2,85/0,4L** located on Farm Warmwatersbad Spa

This proposed extension to an existing borrow pit is located on the upper edge of a pediment footing the hillslope of a relatively low Warmwaterberg range of mountains. The pediment extends eastwards for about a kilometre to where it merges into the floodplain of the Doring River. The existing pit has been developed as a floodwater retention pond and stock watering facility. In ownership of Everton Family Trust and borrow pit co-ordinates are 33°46'07,72"S 20°54'09,22"E

At **DR1381/9,8/0,05L** located on Farm Warmwatersbad Spa

This proposed extension to an existing borrow pit is located mostly in the headwater reach of an existing floodwater attenuation pond that doubles as a stock watering facility. As such, it would be excavated partly into a pediment and partly into the adjoining hillslope of a ridge of moderately high mountains to the north. In ownership of Charite Beleggings (Edms)Bpk and borrow pit co-ordinates are 33°44'57,56"S 20°50'10,18"E

At **DR1381/13,5/0,7R** located on Farm Plattekloof

This proposed new borrow pit is located in the main, in the storage basin of an existing farm floodwater attenuation pond/dam that is located in a relatively narrow southward-flowing water gap. In ownership of Charite Beleggings (Edms)Bpk and borrow pit co-ordinates are 33°43'56,28"S 20°48'22,94"E

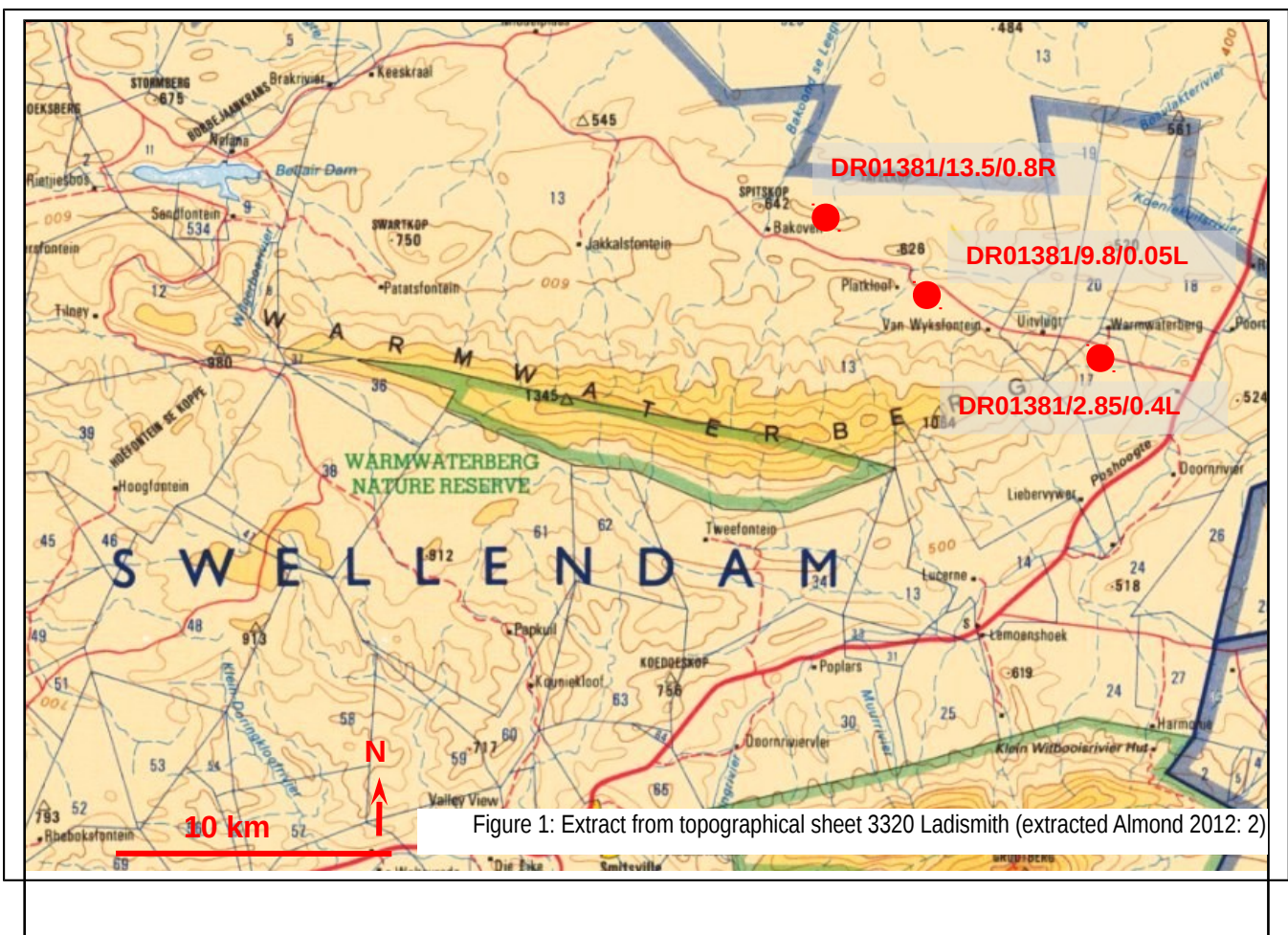




Figure 2: Aerial view of borrow pit at km 2.85 and view of the existing pit

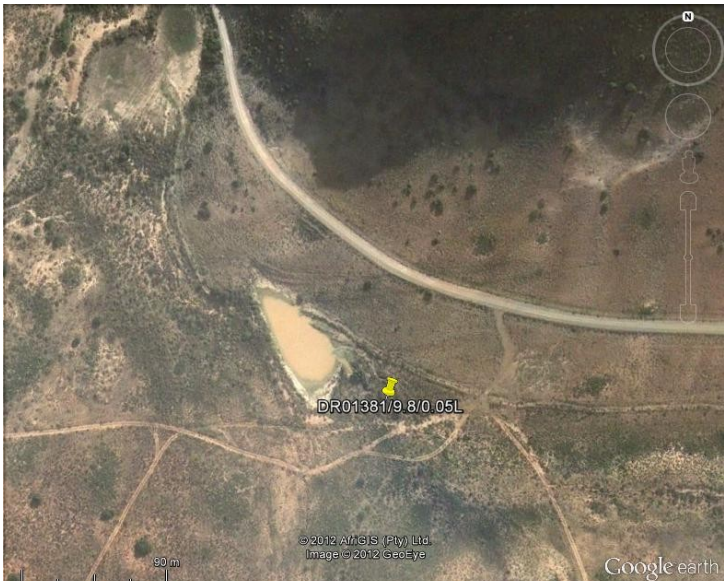


Figure 3: Aerial view of borrow pit at km 9.8 overall panoramic view of the existing pit from the access gate

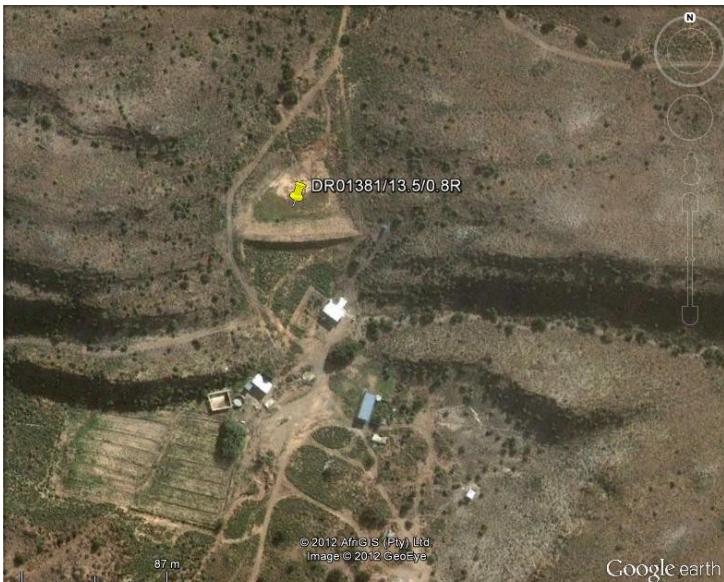


Figure 4: Aerial view of borrow pit at km 13.5 and overall panoramic view of the existing dam excavation

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 proposed borrow pit will be used for re-gravelling of portions of road **DR DR 01381 at km 2.85, 9.87 and 13.5** to benefit road users in terms of road safety and user economy as well as to minimise maintenance-related disruptions.

Summary of borrow pits			
	at km 2.85	at km 9.8	at km 13.5
Expropriation area	22 540 m ²	21 590 m ²	15 899 m ²
Borrow pit area	15 340 m ²	14 360 m ²	4 975 m ²
Maximum depth	4.5 m	2.5 m	3.5 m
Material description	Mudstone of the Gydo Formation, Bokkeveld Group	Shale of the Voorstehoek Formation, Bokkeveld Group	Shale of Tra-tra Formation, Bokkeveld Group
Proposed usage after rehabilitation	Re-vegetation	Re-vegetation	Re-vegetation
Volume of material to be sourced	30 630 m ³	19 744 m ³	15 600 m ³

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

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

Overberg 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:

At km 2.5, 9.8 and 13.5

- Deepen the existing pit to form a larger floodwater retention pond for stock watering, without excessively increasing the footprint of the existing workings.
- Ensure rills and dongas do not develop from the borrow pit into the surrounding grazing lands
- Ensure that existing and/or new cut slopes surrounding the water storage area are smooth and neatly finished off.

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. At site **km 2.85** borrow pit is excavated into highly weathered and only very sparsely fossiliferous mudrocks of the Gydo Formation. At **km 13.5** the site overlies weathered mudrocks and wackes of the Tra Tra Formation whose original fossil content has been destroyed by intense tectonic cleavage. At **km 9.8** the site is underlain by highly cleaved mudrocks of the Voorstehoek Formation that nevertheless contain numerous lenticles or thin horizons of poorly- to well-preserved shelly invertebrate fossils dominated by several genera of articulate brachiopods and well-articulated crinoid stems.

There are no major archaeological concerns and sites are extensively disturbed. A caution is that pre-colonial and historical graves may be found in alluvium (desktop assessment conducted by Dave Halkett ACO, March 2012) The site has no known historical, social, or spiritual significance. No built environment issues and / or cultural landscape issues have been identified. No further heritage resources were identified.

Heritage significance

Palaeontological sensitivity of sites at km 2.85 and 13.5 is rated as low. As very few fossil sites are known from the Voorstehoek Formation of the Little Karoo region, the palaeontological heritage significance of the site located at km 9.8 is considered to be of moderate sensitivity (Almond, 2012: 1). No archaeological resources were identified and the site has been identified to possess low archaeological significance (ACO, March 2012)

The context within which the site lies is identified as possessing low intrinsic heritage value. No heritage resources were identified within the immediate context of the site. 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 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: It is expected that there should be an acceptable seed bank in the topsoil and this would be kept aside for rehabilitation. Ensure that the aesthetic appearance of the landscape is improved after utilization by smoothing out and contouring the slopes of the borrow pits and preparing the site to accept vegetation before replacing overburden, topsoil and vegetation. Topsoil from newly developed areas should be carefully stockpiled for later redistribution over the worked out areas, after the completion of any one phase of exploitation of the resources in this pit.

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. Standard safety measures in place would include fencing, access control and fire management.

There are no major archaeological concerns and sites are extensively disturbed. A caution is that pre-colonial and historical graves may be found in alluvium. Any human remains found during excavations must be left in place and be reported to HWC. No further archaeological investigation is required (desktop assessment conducted by Dave Halkett ACO, March 2012)

Palaeontological sensitivity of sites at km 2.85 and 13.5 is rated as low and therefore, pending the discovery of substantial new fossil material such as shelly fossil, fish or plant remains, no further mitigation of fossil heritage for these two borrow pit sites is recommended.

As very few fossil sites are known from the Voorstehoek Formation of the Little Karoo region, the palaeontological heritage significance of the site located at km 9.8 is considered to be of moderate sensitivity. It is therefore recommended that recording and judicious sampling of fossil remains here be undertaken by a professional palaeontologist once the pit has been opened up to expose fresh bedrock but before the excavated material has been removed for road construction.

Recommendations

It is therefore recommended that:

1. expansion of existing borrow pits be supported
2. recommended that recording and judicious sampling of fossil remains be undertaken by a professional palaeontologist once the pit has been opened up to expose fresh bedrock but before the excavated material has been removed for road construction at site located at km 9.8
3. comment be issued that proposed activity may proceed in terms of Section 38(8) of the NHRAct

References:

- Almond John E PhD (January 2013): *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
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- Heritage Western Cape (July 2007): *Minimum Standards For Phase 1 Archaeological Impact Assessment (Aia) Reports*
- vidamemoria (March 2012): *Notification of Intent to Develop*