

HERITAGE IMPACT ASSESSMENT

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

prepared for

AURECON Consulting Services

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DR 01381 Cape Winelands

Barrydale – Cape Winelands District Municipality, Western Cape

Executive summary

Aurecon Consulting Services appointed *vidamemoria* to conduct a heritage impact assessment for a proposed borrow pit located along DR 01381 northeast of Warmwaterberg in the Cape Winelands 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 Department Mineral Resources.

Tra Tra Formation has yielded diverse assemblages of shelly invertebrate fossils elsewhere in the Little Karoo but any original fossil content at the Plattekloof study site has been destroyed by intense tectonic cleavage. The palaeontological sensitivity of the bedrocks and thick gravelly superficial deposits here is rated as low. The absence of archaeological remains in the polygon itself, as well as the fairly low density of stone artefacts in a secondary context outside the affected area, indicate that the proposed extension of the existing borrow pit is of low archaeological heritage significance. No further archaeological and / or palaeontological studies or mitigation is required. Proposed intervention would not result in a detrimental heritage impact, yielding social and economic benefits without a negative impact on heritage resources.

1. Introduction

Aurecon Consulting Services 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 11.3 along DR 01381 near Barrydale, in the Cape Winelands District Municipality. NID dated 26 March 2012 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 11 APRIL 2012 (case ref 120327jl32) requested 'a heritage impact assessment limited to 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 January 2013) and Madelon Tusenius (Natura Viva CC) to conduct necessary archaeological impact assessment (dated January 2013) 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

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Site location and description

Potential source of a wearing coarse gravel pit DR01381/11.3/0.3R is located approximately 10km west north west of the junction of DR 1381 unpaved road and the R62. Proposed extension to an existing deep and steep-sided borrow pit is located on the lowest slopes of an east-west aligned moderately high ridge and partly on the northern edge of an alluvial outwash plain. Indeterminate water courses form a tributary to the Koeniekuils River in the east, a tributary to the Groot / Gouritz River system. Current access to the site is via an existing gate in the road-side fence and a farm track that leads past the embankment of an existing floodwater attenuation and stock watering pond. Grazing and stock watering in an existing floodwater retention pond with vegetation characterised by sparse Karoo shrubs and grasses and some alien reeds in the floor of the pit Farm Plattekloof in private ownership of Charite Beleggings. Borrow pit co-ordinates are 33° 44' 19.18" S, 20° 49' 37.38" E



Figure 2 View towards the north of the existing borrow pit with the proposed extension to the left (northwest) and a wind-pump and water tank outside the polygon to the right (Tusenius 2012: 7)



Figure 3: Aerial view of proposed borrow pit location
Image also indicates vidamemoria pit nos. 133, 134 and 135 subject of a separate palaeontological assessment study (refer vida HIA 69)
(Google earth image, February 2013)

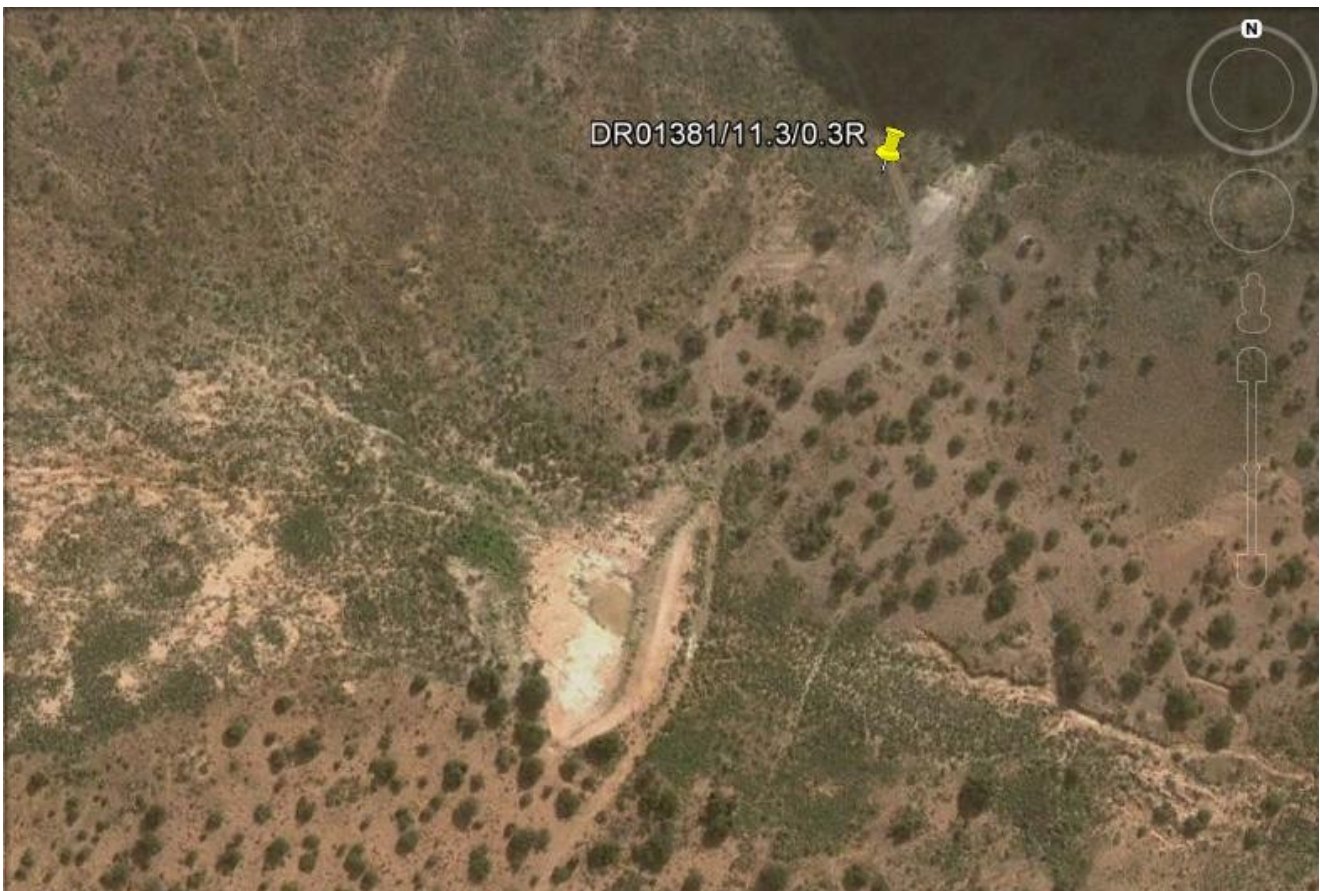


Figure 4: Aerial view of proposed borrow pit area (Google earth image, August 2012)

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 potential borrow pit located at **km 11.3 along DR 01381** 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.

Summary of borrow pit	
Borrow pit / expropriation area	8 450 m ²
Maximum depth	5 m
Material description	Shale of the Tra-tra Formation, Bokkeveld Group
Proposed usage after rehabilitation	Revegetation
Volume of material to be sourced	16 377 m ³
Estimated proven material reserves	16 377 m ³

Trial pit investigations and sampling were conducted 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.

Cape Winelands 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:

None noted

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. The existing borrow pit and its proposed extension overlies Middle Devonian marine mudrocks and wackes of the Tra Tra Formation has yielded diverse assemblages of shelly invertebrate fossils elsewhere in the Little Karoo but any original fossil content at the Plattekloof study site has been destroyed by intense tectonic cleavage.

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. No archaeological remains, including signs of possible graves in the alluvium, were observed in the affected area itself. However, some Stone Age quartzite artefacts were noted to the southeast of the polygon. One flake of CCS (cryptocrystalline silica) was seen. Some of the flaked material is of indeterminate age, probably Middle Stone Age (MSA) and/or Later Stone Age (LSA), but some clearly MSA artefacts were recorded. This material appears to have been washed down the slope from higher up (Tusenius 2013: 2).

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

A previous desktop basic assessment of the borrow pit site by the author assessed its palaeontological heritage sensitivity as high due to the presence here of potentially fossiliferous sediments of the Lower Bokkeveld Group (Ceres Subgroup). However, Tra Tra Formation has yielded diverse assemblages of shelly invertebrate fossils elsewhere in the Little Karoo but any original fossil content at the Plattekloof study site has been destroyed by intense tectonic cleavage. The palaeontological sensitivity of the bedrocks and thick gravelly superficial deposits here is rated as low.

The absence of any archaeological remains in the affected area indicates that the proposed extension site is of low archaeological heritage significance.

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 and material of archaeological significance were identified. The site is however regarded to be of exceptionally high palaeontological sensitivity.

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: 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 on archaeological or palaeontological resources would occur as a result of expansion.

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. Rehabilitation should ensure that the aesthetic appearance of the landscape is improved after utilization, ensure public safety and eliminate health hazards associated with the borrow pit (e.g. contamination of groundwater), contouring the slopes of the borrow pits and preparation of the site to accept vegetation before replacing overburden, topsoil and vegetation.

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.

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 absence of archaeological remains in the polygon itself, as well as the fairly low density of stone artefacts in a secondary context outside the affected area, indicate that the proposed extension of the existing borrow pit is of low archaeological heritage significance. No significant impact on such resources is expected if the proposed extension is developed. No further archaeological studies or mitigation are recommended. If any human remains are found during the development of the proposed pits, work in that area must cease and the South African Heritage Resources Agency (SAHRA) must be notified immediately (Tusenius 2013: 9)

Tra Tra Formation has yielded diverse assemblages of shelly invertebrate fossils elsewhere in the Little Karoo but any original fossil content at the Plattekloof study site has been destroyed by intense tectonic cleavage. The palaeontological sensitivity of the bedrocks and thick gravelly superficial deposits here is rated as low. Therefore, pending the discovery of substantial new fossil material such as shelly fossil or remains, no further mitigation of fossil heritage is recommended (Almond 2013: 7).

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 (February 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
- 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 (February 2013): *Archaeological Impact Assessment*
- vidamemoria (March 2012): *Notification of Intent to Develop*