# HERITAGE IMPACT ASSESSMENT

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

prepared for

NADESON Consulting Services

29 August 2012

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DR01380 Cape Winelands

Worcester – Cape Winelands District Municipality, Western Cape

## Executive summary

*Nadeson Consulting Services* appointed *vidamemoria* to conduct a heritage impact assessment for expansion of an existing borrow pit *located along DR01380 approximately 18 km southeast of Worcester* in 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 (dated August 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).

Excavated into Early Permian carbonaceous non-marine mudrocks of the Whitehill Formation, however extensive development of pencil cleavage here precludes the extensive recording and recovery of representative fossil material. Few isolated mostly weathered MSA and LSA stone artefacts were observed and no significant impact on archaeological resources is expected if the proposed extension is developed further. 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 and / or archaeological studies or mitigation is recommended and expansion be allowed to proceed.

## 1. Introduction

*Nadeson Consulting Services* on behalf of the *WCPA: Department of Transport and Pubic 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 DR01380 near Worcester**, Cape Winelands District Municipality. NID dated 03 January 2012 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 15 February 2012 (**case ref 120130JL08**) requested *'a heritage impact assessment consisting of an archaeological and palaeontological study'* (Refer Annexure A). *vidamemoria* appointed *Dr John Almond (Natura Viva CC)* to conduct the necessary palaeontological specialist study and Madelon Tusenius to conduct necessary archaeological impact assessment.

The proposed action triggers Section 38(1) *(c)(a) activity that will change the character of a site exceeding 5 000 m$^2$*. 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*

**Site location and description**

It is proposed to develop a borrow pit for road material situated *approximately 18 km southeast of Worcester* in Cape Winelands District Municipality, Western Cape. The proposal is to exploit rock material from a large existing borrow pit along the unsealed road DR1380 in the Breedevallei District, as well as from a section some 520m long and up to 15m wide along the southern side of the DR1380 to the east of the pit. Much of this land has already been quarried and partly rehabilitated, so only part of the extension is undisturbed. Portion 12 of Farm 481 Kenmoor (Farm Scherpenheuwel 481 is in private ownership of Carlo van Wyk. Borrow pit co-ordinates are 33º 45' 25.5" S, 19º 35' 07.5" E)

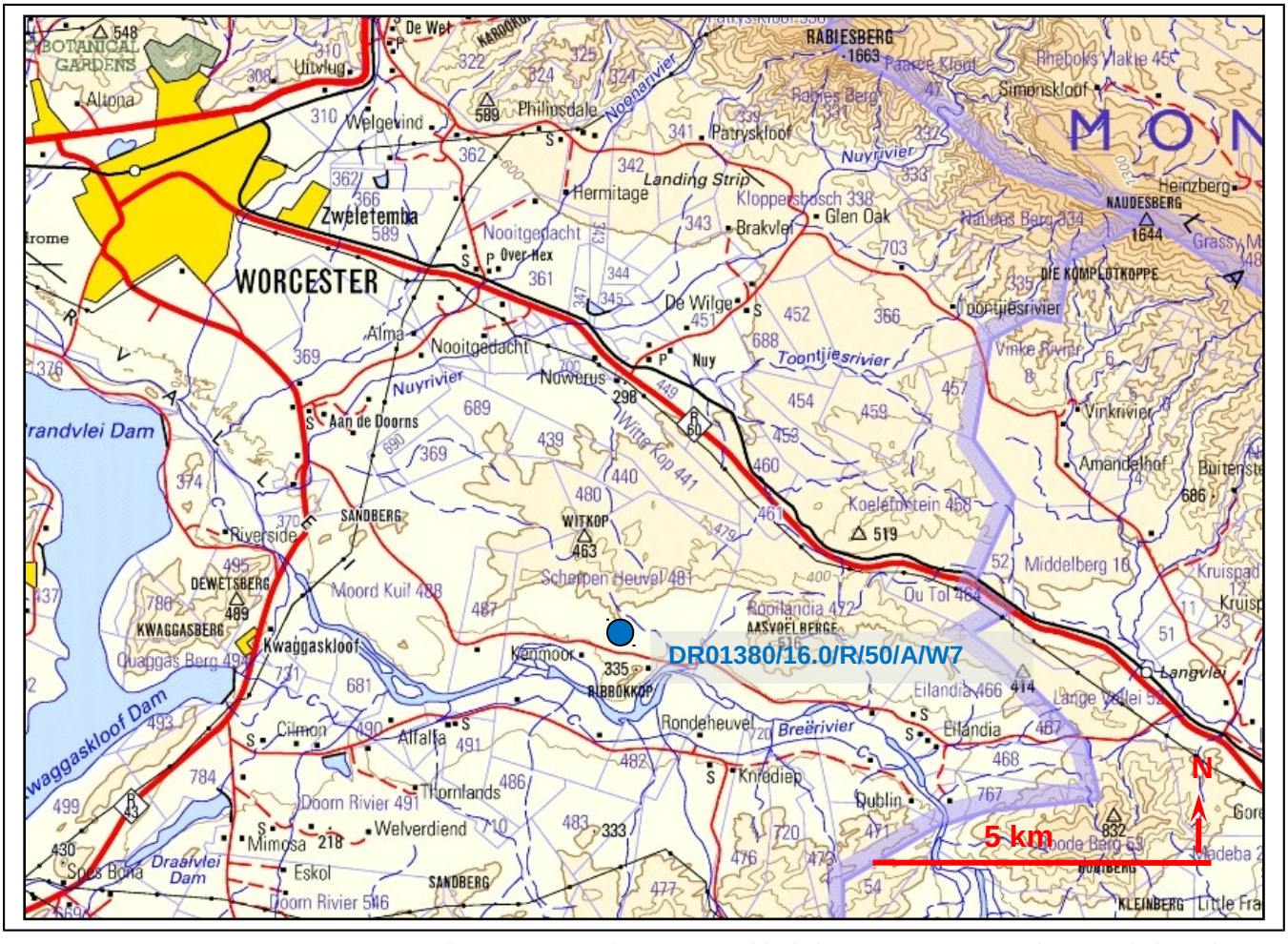


Figure 1: Extract from topographical sheet 3119 Worcester (extracted Almond 2012: 2)

Figure 2: View along the partly-rehabilitated affected area towards the east. The unfenced slope at the eastern end lies beyond the bend in the road. (Tusenius 2012: 8)

Figure 3: view towards the northwest with the existing quarry (Tusenius 2012: 9)


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


Figure 5: Aerial view of existing borrow pit (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 borrow pit located at **km 16.0 along DR01380** will be used for the re-gravelling of portions of road 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 11 000 $m^3$ of wearing course gravel. The end-use of this borrow pit would be to re-vegetation.

| Summary of road cutting borrow pit | |
|---|---|
| Borrow pit / expropriation area | Length of road: 520 m<br>Width: 15m |
| Maximum depth | 3.3 m |
| Material description | Dwyka shale |
| Proposed usage after rehabilitation | Re-vegetation |
| Volume of material to be sourced | 11 000 $m^3$ |

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.

See Figure 6 for proposed mine plan. Methodology for the preparation, operation and closure of borrow pit is outlined in Annexure B.

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.

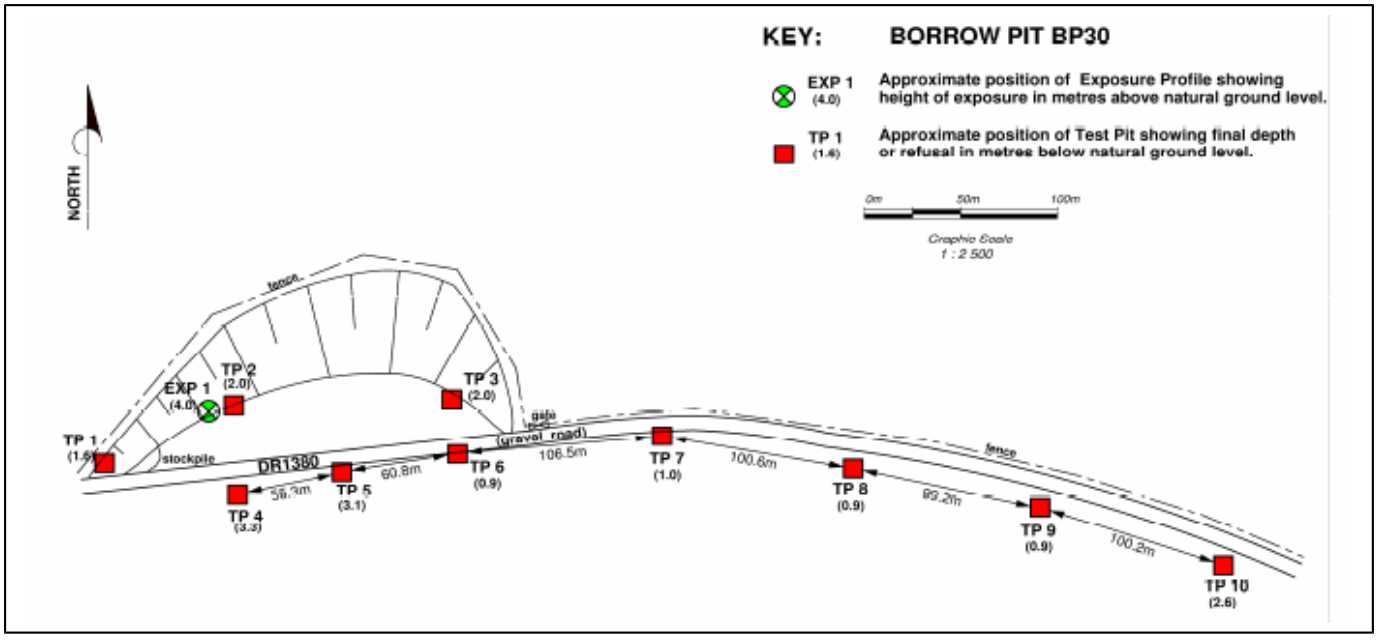


Figure 6: Proposed mine plan (July 2011)

**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:*

- The road cutting will have to be constructed in half-widths with suitable accommodation of traffic
- Take into consideration rehabilitation of the borrow pit after the material has been removed

## 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. Thin-bedded siliceous mudrocks and tuffs (volcanic ash layers) of the lowermost Collingham Formation exposed at the top of the quarry face contain low diversity trace fossil assemblages.

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. Fewer than 10 isolated, mostly weathered MSA and LSA stone artefacts were observed at the bottom of a slope in the eastern portion. Ddisturbed, slope-wash context of stone artefacts at proposed extension site indicates that material is in a secondary context.

**Heritage significance**

A previous desktop basic assessment of the pit by Dr Almond assessed its palaeontological heritage sensitivity as high due to the presence here of known fossiliferous sediments of the Whitehill Formation (Ecca Group). The pit is excavated into Early Permian carbonaceous non-marine mudrocks of the Whitehill Formation (Ecca Group). This site has yielded important fossil material of crustaceans, insects and aquatic mesosaurid reptiles over the past three decades. The quarry furthermore represents one of the best exposures of the Whitehill Formation succession known and is of considerable geological significance in terms of Ecca Group stratigraphy and sedimentology. Extensive development of pencil cleavage here precludes the extensive recording and recovery of representative fossil material. Archaeological material is in a secondary context and is therefore of low archaeological heritage significance. No significant impact on such resources is expected if the proposed extension is developed further.

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 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. 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.

**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.

It is likely that this scientifically important quarry will continue to receive sporadic attention from palaeontologists and geologists in future. Should the Department of Transport plan to re-excavate Ecca Group rocks in this area, Heritage Western Cape should be advised well in advance so that a professional palaeontologist can be commissioned to advise on, and carry out, appropriate mitigation measures. No further mitigation of fossil heritage for this site is recommended (Almond 2012: 11).

No significant impact on archaeological resources is expected if the proposed extension is developed further. 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 2012: 10).

**Recommendations**

It is therefore recommended that:

1. expansion of exiting borrow pit within road cutting 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 (August 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 investigationsand 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 (January 2012): *Notification of Intent to Develop*