

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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DR 01674 Eden

Calitzdorp – Eden 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 DR01674 near Calitzdorp, Eden District Municipality. *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.

Proposed borrow pit is mainly excavated into deeply-weathered, cleaved mudrocks of the Tra Tra Formation (Lower Bokkeveld Group / Ceres Subgroup) of Middle Devonian age. The sparse fossil remains recorded are either poorly-preserved or represent very widespread forms. Therefore the palaeontological sensitivity of the site is assessed as low and no further studies or mitigation of palaeontological heritage for this borrow pit project are recommended. The relatively low density of mixed ESA/MSA material, with some LSA artefacts, suggests that the archaeological heritage remains are mainly in a secondary context. These archaeological remains are not considered to be of sufficient scientific value to warrant mitigation. Although there will be an impact on such resources if the proposed pit extension is developed, no further archaeological studies or mitigation are recommended. Proposed intervention would not result in a detrimental heritage impact, yielding social and economic benefits without a negative impact on heritage resources. No further archaeological or palaeontological studies or mitigation is required.

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 an existing borrow pit at km 4.5 along DR 01674 in Calitzdorp, Eden District Municipality.** NID dated 11 September 2013 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 13 November 2013 (**case ref 131011GT27**) 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 May 2014) and Madelon Tusenius (Natura Viva CC) to conduct necessary archaeological impact assessment (dated May 2014).

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.

Section 1	Introduction provides background, site location, description of proposals and result of consultation	pg 2
Section 2	Identification of heritage resources, assessment of significance and heritage indicators	pg 6
Section 3	Assessment of impacts	pg 7
Section 4	Discussion and recommendations	pg 8

- Annexure A* Interim comment from HWC
- Annexure B* Mine plan
- Annexure C* Methodology for the preparation, operation and closure of borrow pit
- Annexure D* Palaeontological specialist study conducted by Dr John Almond, Natura Viva CC (May2014)
- Annexure E* Archaeological conducted by Madelon Tusenius, Natura Viva CC (May 2014)

Site location and description

The potential source of a wearing coarse gravel pit site is located along the unpaved DR 1674/4.5/0.05L is accessed from the R62 southeast of Calitzdorp in Eden District, Western Cape. The proposed extension lies to the west of an existing borrow pit and the affected area is situated on the floodplain of the Gamka River at the foot of a hillslope where the Gamkaberg and Rooiberg meet. Uncultivated veld with mainly small indigenous xerophytic succulents and grasses surround the borrow pit. Farm Welgunst 394 is in private ownership of Mr Wynand Zaaïman. Borrow pit co-ordinates are 33°38'19.22"S and 21°43'24.21"E



Figure 1: Extract from topographical sheets 3320(Dr John E. Amund 2014:2)

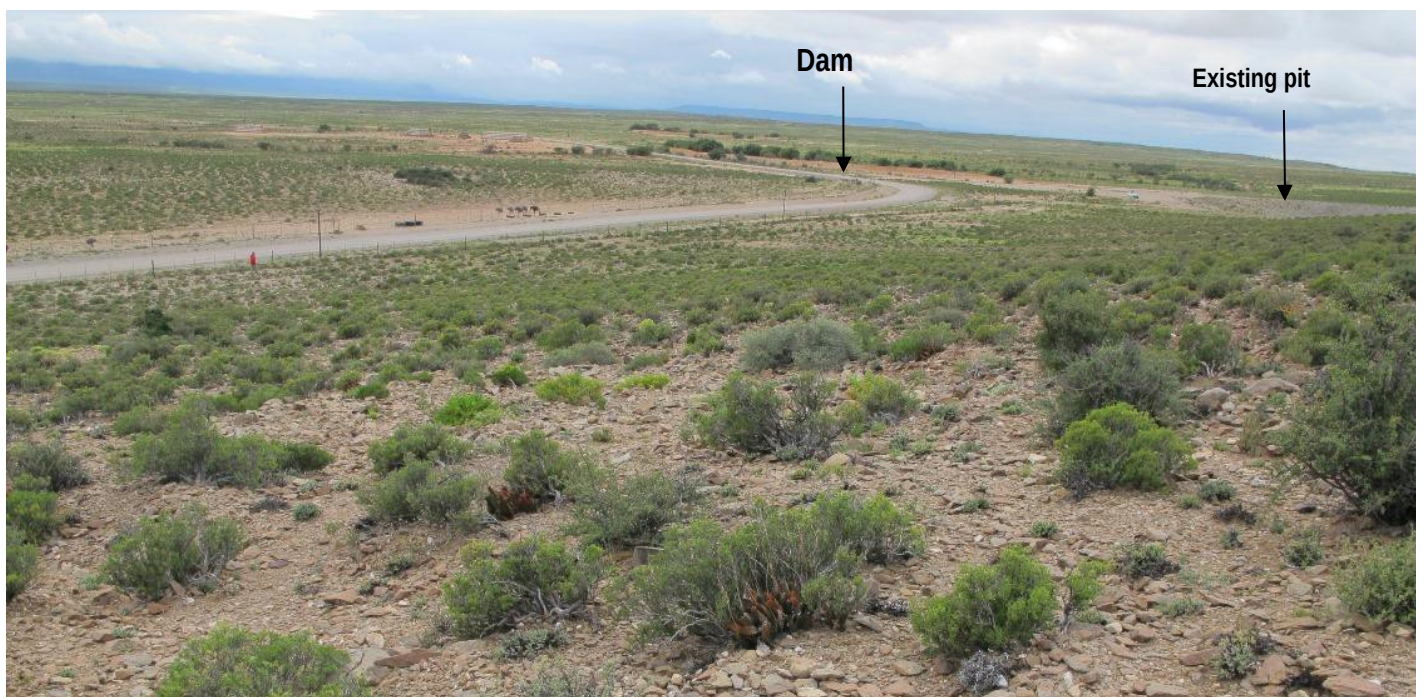


Figure 2: View towards the east of the existing quarry (Tusenius 2014: 7)



Figure 3: Site context and borrow pit location (Google earth, September 2013)



Figure 4: Aerial view of borrow pit and preliminary pit area (Google earth, September 2013)

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 EMProg 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 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 4.5 along DR 01674** 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	45 000 m ²
Maximum depth	3 m
Material description	interbedded shale and feldspathic sandstone horizons (Bokkeveld Group, Cape Super-group, Devonian age)
Proposed usage after rehabilitation	Revegetation
Volume of material to be sourced	6 750 m ³
Estimated proven material reserves	6 750 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.

Eden 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:

- Please finish off the rehabilitation of the existing pit before extending it.

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 falls within Tra Tra Formation (Lower Bokkeveld Group / Ceres Subgroup) of Middle Devonian age and is mainly excavated into deeply weathered cleaved mudrocks. Most of the original fossils in the pit area have been distorted or destroyed by weathering and tectonic deformation, with only occasional moulds of nuculid bivalves and crinoidal material now recognisable. The latter include occasional fossiliferous float blocks (crinoidal debris, fossil burrows) that have probably been downwasted from the Hexrivier Formation sandstones building the rocky ridge above. The sparse fossil remains recorded at the DR01674/4.5/0.05L borrow pit site are either poorly-preserved or represent very widespread forms (Almond 2014: 1).

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. The majority of the artefacts appear to be of ESA/MSA origin, with only a few diagnostic broken MSA blades and a MSA point. Several LSA artefacts were also noted. No organic remains, pre-colonial pottery or stone features indicating possible burials were observed. Although there are likely to be more stone artefacts below the surface of the proposed extension, the relatively low density of mixed ESA/MSA material, with some LSA artefacts, suggests that the archaeological heritage remains are mainly in a secondary context (Tusenius 2014: 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

The palaeontological sensitivity of the site is rated as low (Almond 2014: 11). The proposed pit extension is graded as having low to medium, rather than negligible, archaeological heritage significance (Tusenius 2014: 13).

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 and palaeontological significance were identified.

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 resources 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:

Worked pit faces should be finished smooth and left neat and tidy, and all possible surfaces covered with any available topsoil. Existing borrow pit should be rehabilitated while additional material is being removed.

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 proposed pit extension is graded as having low to medium, rather than negligible, archaeological heritage significance. However, these archaeological remains are not considered to be of sufficient scientific value to warrant mitigation. Although there will be an impact on such resources if the proposed pit 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 2014: 13).

The palaeontological sensitivity of the site is assessed as low and no further studies or mitigation of palaeontological heritage for this borrow pit project are recommended. (Almond 2014: 11).

Site is considered to possess a very low level of intrinsic heritage value and the overall status of the impact is considered as low. 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 expansion should be allowed to 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 (May 2014): *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 (November 2013): *Minimum Standards For Phase 1 Archaeological Impact Assessment (Aia) Reports*
- Tusenius M (May 2013): *Archaeological Impact Assessment*
- vidamemoria (September 2013): *Notification of Intent to Develop*