

HERITAGE IMPACT ASSESSMENT

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

prepared for

NADESON Consulting Services

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DR 2182 West Coast

Clanwillian – West Coast District Municipality, Western Cape

Executive summary

Nadeson Consulting Services appointed *vidamemoria* to conduct a heritage impact assessment for a proposed borrow pit located along DR 2182 approximately 10.5 km southeast of Clanwilliam in the West Coast 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).

Absence of any archaeological remains in the affected area indicates that the proposed extension is of low archaeological heritage significance and no further archaeological studies or mitigation are recommended. The site is regarded as of exceptionally high palaeontological sensitivity, however, fossiliferous "Soom shales" are currently poorly exposed in the pit and further excavation should promote access to new fossil material. Should the proposed pit extension along Soom Member outcrop take place, it is essential that appropriate mitigation by a palaeontologist is effected. Proposed intervention would not result in a detrimental heritage impact, yielding social and economic benefits without a negative impact on heritage resources.

1. Introduction

Nadeson 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 17.32 along DR 2182 near Clanwilliam, in the West Coast District Municipality. NID dated 10 November 2011 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 18 November 2011 (case ref 111115JB26) 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 August 2012) and Madelon Tusenius (*Natura Viva CC*) to conduct necessary archaeological impact assessment (dated August 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 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 DR2182/17.32/R/10/A is located within an existing roadside cutting borrow pit, situated on a hillside adjacent to road DR2182 approximately 10.5 km southeast of Clanwilliam in the Clanwilliam Magisterial District, Western Cape. The pit will be extended substantially towards the northeast and rehabilitated. Apart from the roadside cutting and bulldozed road, indigenous shrubs are found across most of the site. Apart from the existing roadside cutting borrow pit that is utilized for gravel by the local farmers, the land is not utilized for any specific purpose. Farm 581, Keurbos is in private ownership of the Keurbos Trust with borrow pit co-ordinates 31° 15' 02.4" S, 18° 57' 59.9" E

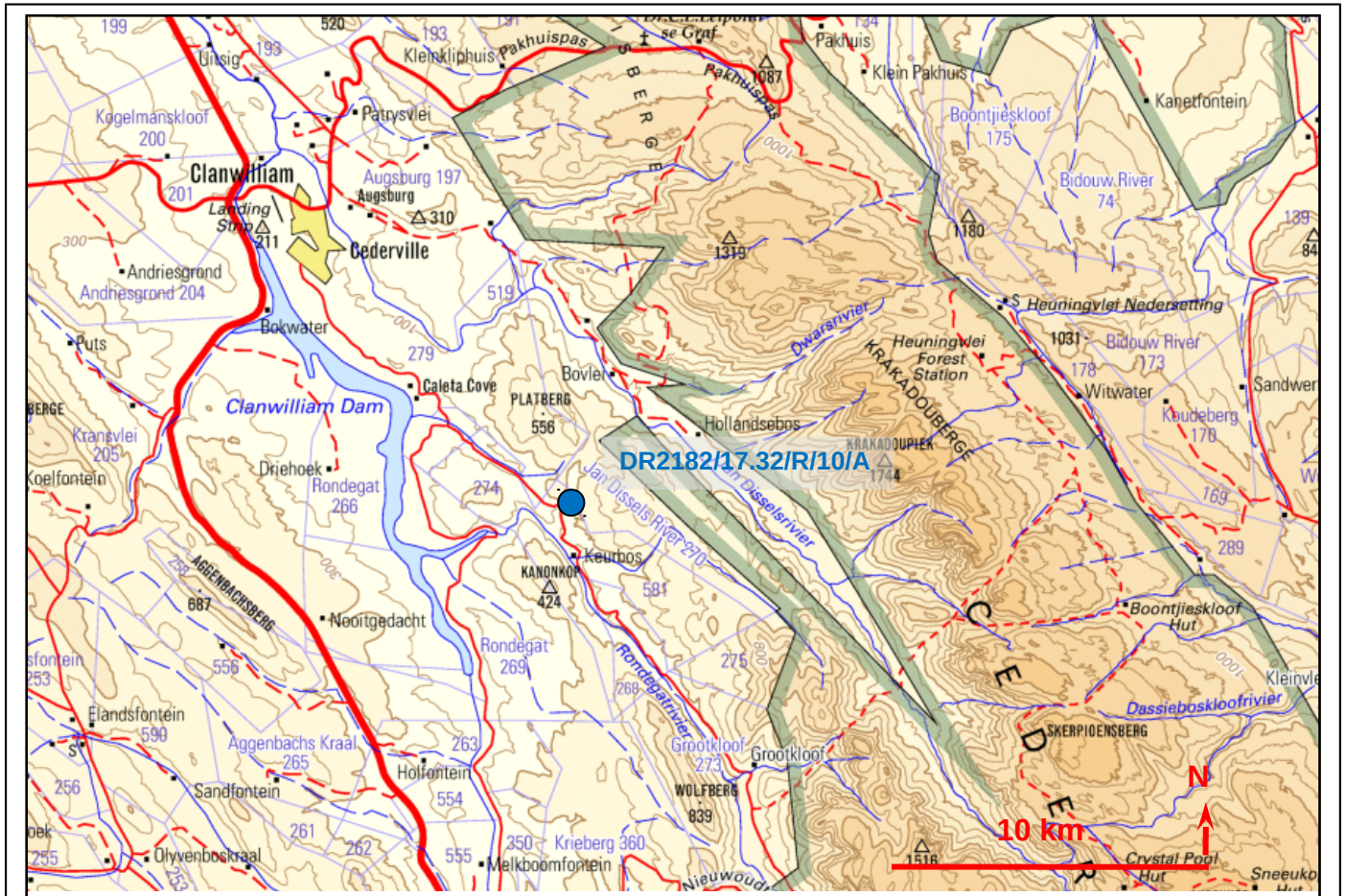


Figure 1: Extract from topographical sheet 3218 Clanwilliam (extracted Almond 2012: 2)



Figure 2: Looking south-west over site and roadside cutting (July 2011)



Figure 3: View towards the west of the existing roadside-cutting borrow pit and the proposed extension in the foreground (Tusenius 2012: 8)

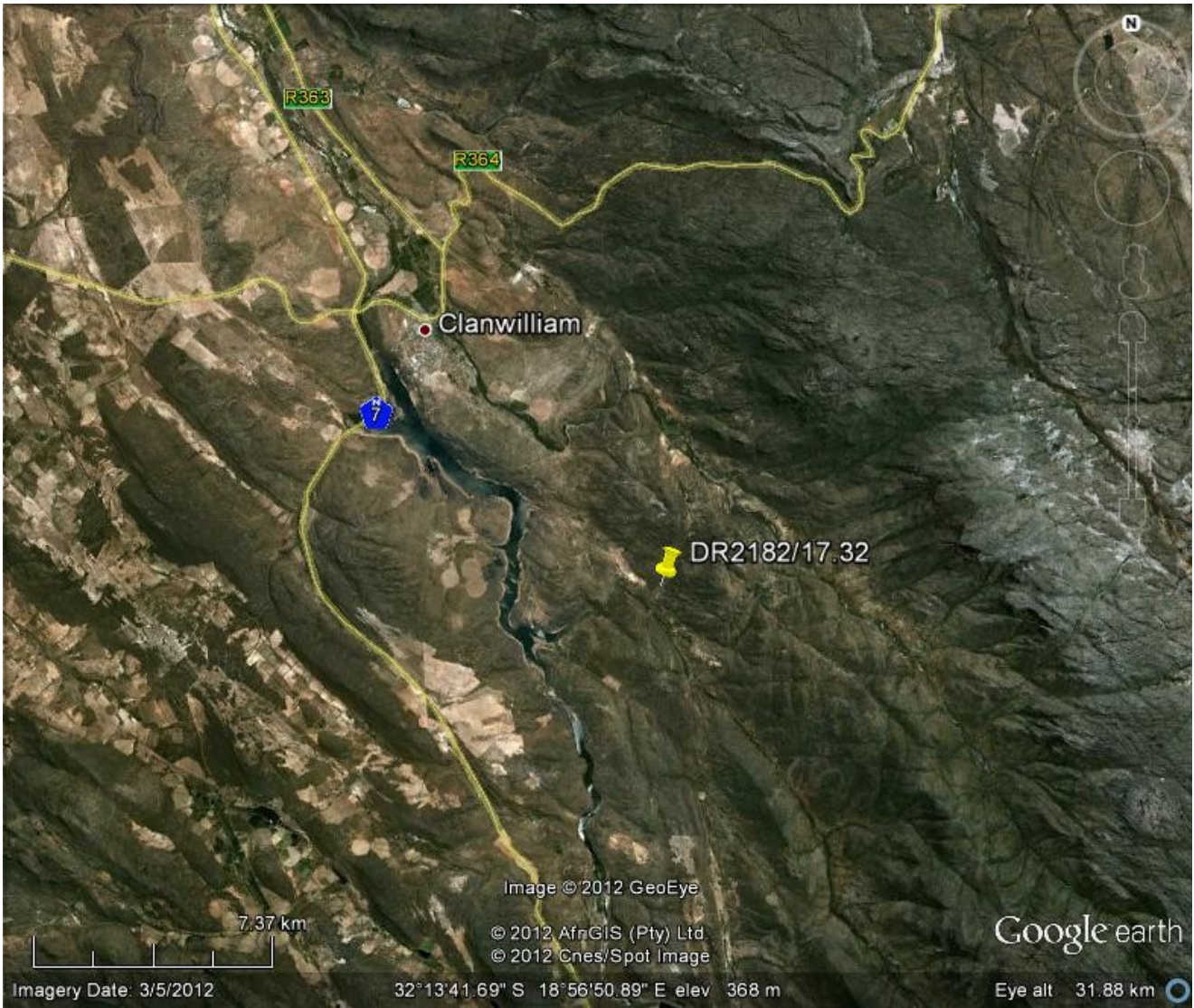
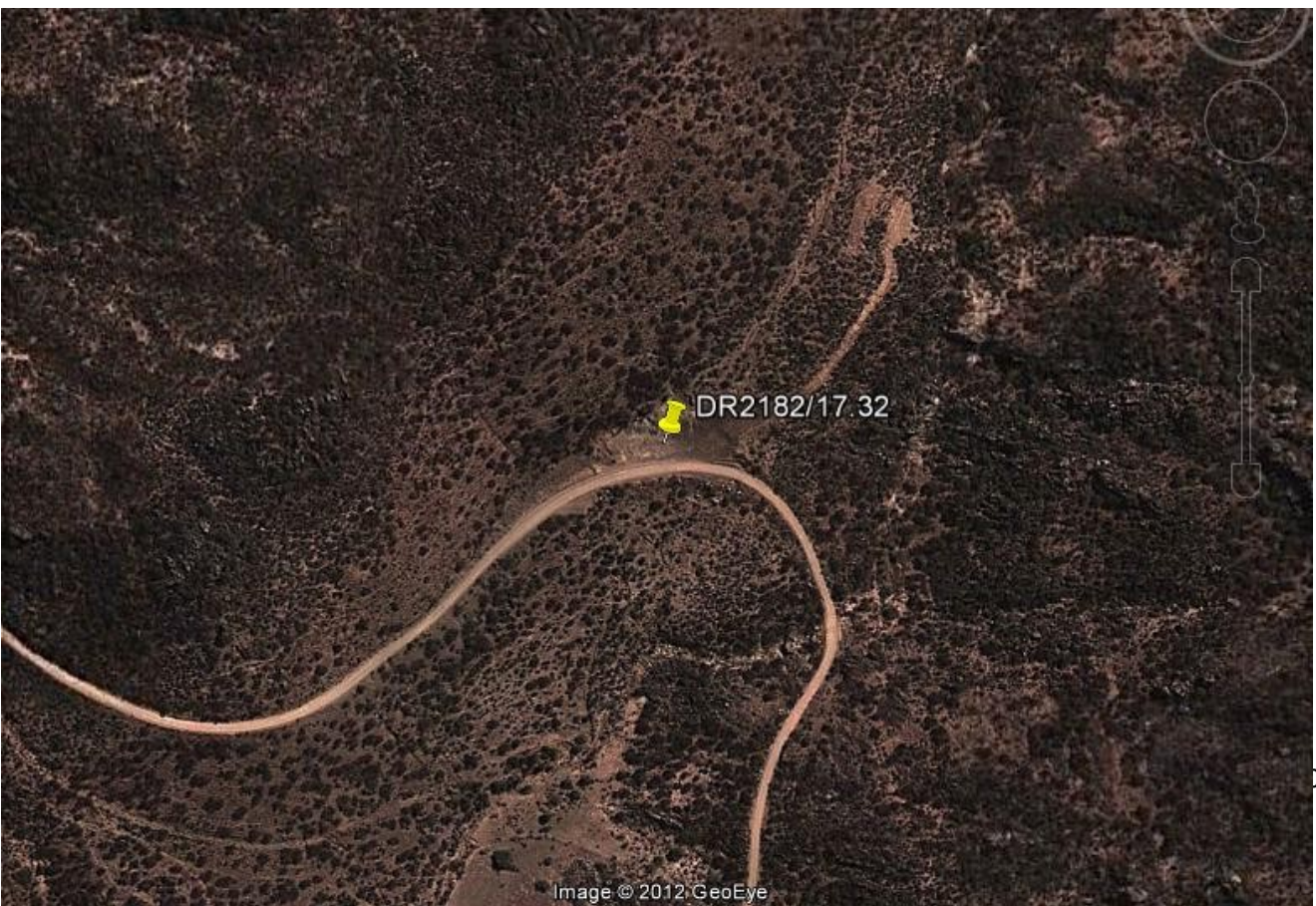


Figure 4: Aerial view of proposed borrow pit location (Google earth image, August 2012)



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 17.32 along DR 2182** 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. Pit will be utilised for the sourcing of approximately 11 400 m³ of wearing course gravel for use in regravelling. Rehabilitation of this borrow pit would be would involve revegetation.

Summary of borrow pit	
Borrow pit / expropriation area	5 700 m ²
Maximum depth	1 m
Material description	Shale and sandstone
Proposed usage after rehabilitation	Revegetation
Volume of material to be sourced	11 400 m ³
Estimated proven material reserves	11 400 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.

West Coast 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:

- Proper rehabilitation of the borrow pit once material has been removed
- Heavy vehicles accessing the farm roads used by the farmer and local residents should be limited
- Minimise dust and noise pollution

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 August 2012. The proposed extension of the borrow pit on the Farm Keurbos will be excavated into sandy glacial sediments of the Late Ordovician Pakhuis Formation that are of low palaeontological sensitivity, as well as overlying carbonaceous mudrocks of the Cederberg Formation (Table Mountain Group) that have yielded a wealth of unique, well-preserved fossil invertebrate and vertebrate material since the mid-1970s, including specimens of water scorpions and primitive jawless fish with preserved soft tissues (muscles, gills, guts etc) (Almond 2012: 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 proposed extension occurs in an area which has a rich archaeological heritage, particularly in terms of rock art sites. During the survey, one large sandstone boulder with potential surfaces for rock paintings was examined but none were noted. No archaeological remains were discovered in the affected area (Tusenius 2012: 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 pit site by the author assessed its palaeontological heritage sensitivity as high. The site lies within the Cedarberg Formation (Table Mountain Group) of Late Ordovician age representative of world-renowned post-glacial fossil assemblage showing exceptional preservation of fossil fish, water scorpions and other arthropods, molluscs, algae, microfossils etc of very high palaeontological significance (desktop survey conducted by Dr John Almond, October 2011). The site is regarded as of exceptionally high palaeontological sensitivity. However, fossiliferous "Soom shales" are currently poorly exposed in the pit and further excavation should promote access to new fossil material.

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 resources would occur as a result of expansion. The site is regarded as of exceptionally high palaeontological sensitivity, however, fossiliferous "Soom shales" are currently poorly exposed in the pit and further excavation should promote access to new fossil material.

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.

No further archaeological studies or mitigation is recommended, as there will be no direct impact on archaeological heritage resources. If any human remains are found during the development of the proposed pit, work in that area must cease and the South African Heritage Resources Agency (SAHRA) must be notified immediately (Tusenius 2012: 9)

The finely laminated claystones of the Soom Member at the base of the Cederberg Formation is regarded as of exceptionally high palaeontological sensitivity. The fossiliferous "Soom shales" are however currently poorly exposed in the pit and should the proposed pit extension along the Soom Member outcrop take place, it is essential that Heritage Western Cape be notified well before any excavation takes place and that a suitably qualified palaeontologist be consulted to consider appropriate mitigation actions during and following development. Mitigation is likely to involve the recording and sampling of fossil material as well as relevant geological data. Collaboration between the developer and palaeontologists should ensure that further invaluable specimens of the exceptional Soom Member fossil biota are preserved for scientific analysis (Almond 2012: 10).

Recommendations

It is therefore recommended that:

1. proposed borrow pit be supported
2. should the proposed pit extension along the Soom Member outcrop take place, it is essential that Heritage Western Cape be notified well before any excavation takes place and that a suitably qualified palaeontologist be consulted to consider appropriate mitigation actions during and following development
3. 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 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 (August 2012): *Archaeological Impact Assessment*
- vidamemoria (November 2011): *Notification of Intent to Develop*