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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DR 2262, Cederberg

Clanwilliam District – West Coast District Municipality, Western Cape

Executive summary

Nadeson Consulting Services appointed *vidamemoria* to conduct a heritage impact assessment for the expansion of existing borrow pits *located along DR 2262 approximately 31 km east 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).

Pits under consideration are excavated into mudrocks of the lower Gydo Formation. However, level of bedrock exposure at pit km 25.8 is poor and it is unlikely that substantial fossil remains will be obtained from the site, considered to be of low palaeontological sensitivity. At km 18.55 it is likely that newly excavated mudrocks would yield diverse assemblages of well-preserved shelly fossils and it is therefore recommended that the developer should commission a professional palaeontologist to record and sample fossil material. No archaeological remains were observed at either of the proposed extensions and are considered to be of low archaeological heritage significance. The site is not considered as an integral component of the cultural landscape. No impact on heritage resources is expected should the proposed development proceed. Overall status of the impact is considered as low.

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 existing borrow pits along DR 2262 near Clanwilliam**, 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 111115JB25**) requested *a heritage impact assessment limited an archaeological scoping report and a palaeontological scoping report with an integrated set of recommendations* (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) 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 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

Annexure E Archaeological conducted by Madelon Tusenius, Natura Viva CC

Site location and description

It is proposed to re-excavate and extend two existing borrow pits along DR2196 at **km 18.55** and **km 28.5** situated in the northern Cederberg region to the northeast of Clanwilliam, Western Cape.

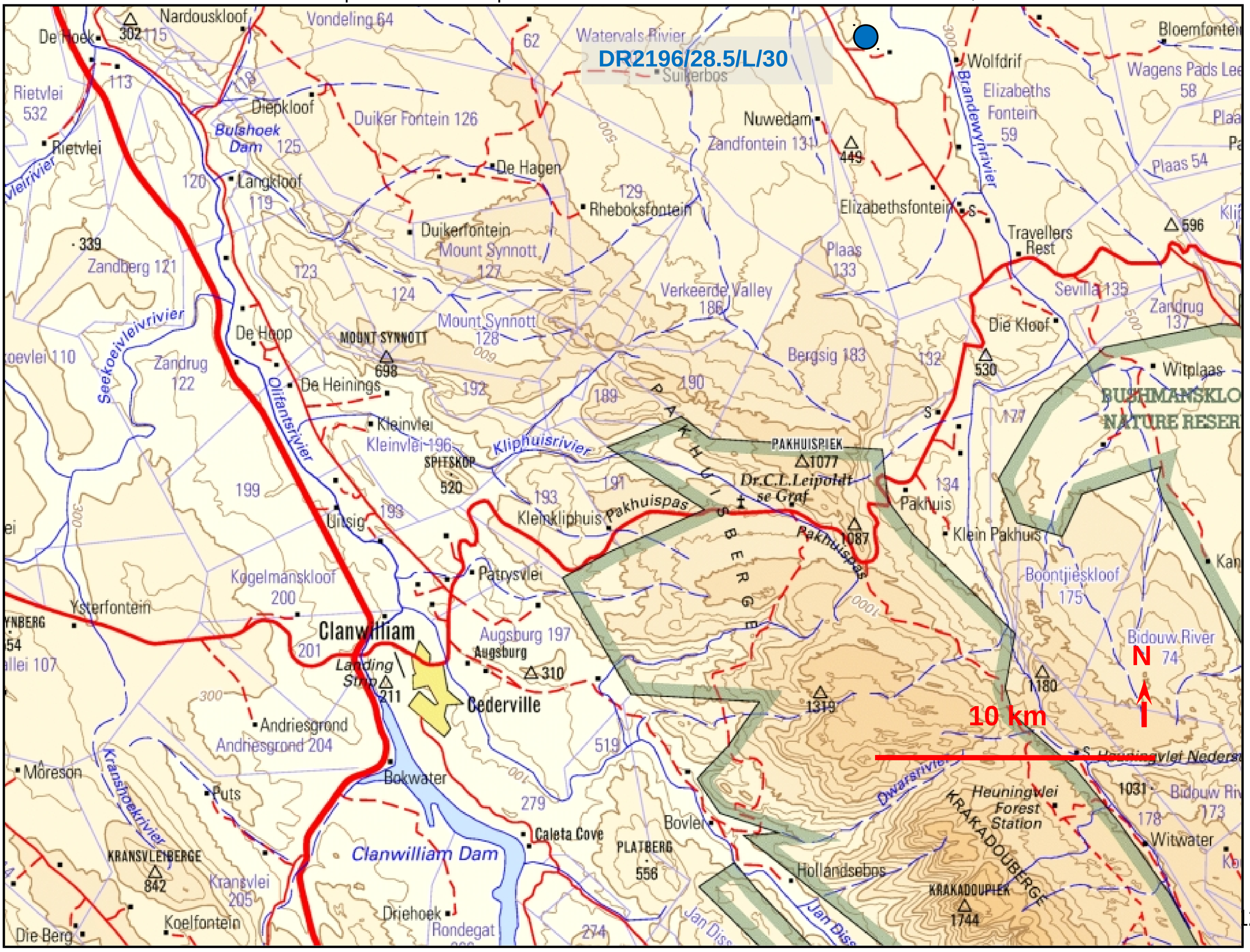
Pit DR2196/18.55/R/130 is located on the southern side of the unsealed road approximately 26.5 km north- northeast of Clanwilliam. This source of a wearing coarse gravel is located at an existing borrow pit at the base of a hill that forms a plateau further east. Not much vegetation occurs within the existing borrow pit area, while indigenous shrubs (fynbos) are found across the rest of the site.Apart from the old borrow pit that was once utilized for gravel, the land is not utilized for any specific purpose. The site on Farm Portion 7 of farm Frederiks Dal, No. 60 is in private ownership of Mr F de Milander. Co-ordinates are 31º 56' 44.9" S, 18º 57' 05.2" E.

Figure 1: Extract from topographical sheet 3118 Calvinia (extracted Almond 2012: 3)

Figure 2: At km 18.55 looking north-east over the site (July 2011)

Figure 3: Aerial view of surrounding context at km 18.55 (Google earth image, August 2012)

Pit DR2196/28.5/L/30 is situated approximately 22km northeast of Clanwilliam. This source of a wearing coarse gravel is located at within the road reserve at an existing borrow pit. The site lies at the base of a hillside adjacent to the road DR2196. Entrance to the site is directly from the DR2196 which forms the sites western boundary. Patches of vegetation, consisting of grasses and indigenous shrubs (fynbos) that have been rehabilitated in the area of the old borrow pit, are found across the site. Apart from the old borrow pit that was once utilized for gravel, the land is not utilized for any specific purpose. The site on Portion 10 of Farm Elizabethsfontein 59 is in private ownership of Mr K Strauss. Co-ordinates are 32º 00’ 27.0” S, 19º 01’ 11.3” E



2: 3)

Figure 5: At km 28.5 Looking south-east over site (July 2011)

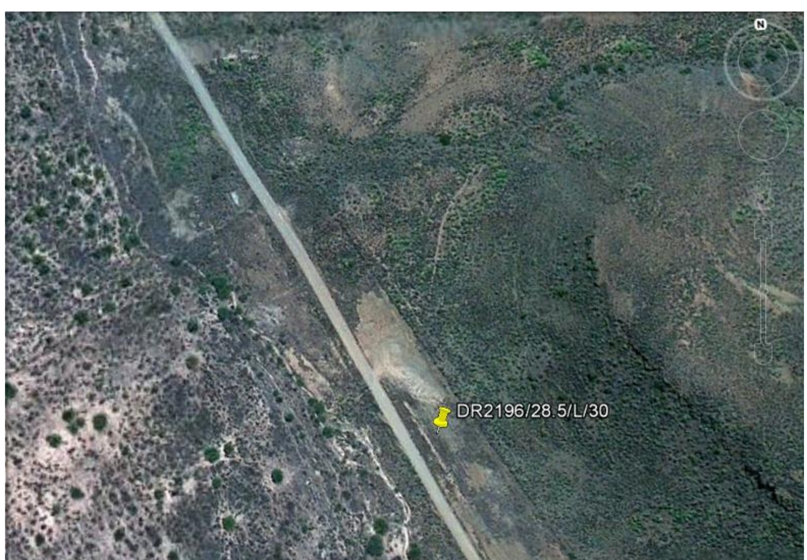


Figure 6: Aerial view of existing borrow pit at km 28.5 (Google earth image, August 2012)

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 18.55 and 28.5 along DR 2196** 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 pits		
	at km 18.55	**at km 28.5**
Expropriation area	7 000 m^2	7 400 m^2
Maximum depth	1 m	1.8 m
Material description	Bokkeveld shale	Bokkeveld shale
Proposed usage after rehabilitation	Revegetation	Revegetation
Volume of material to be sourced	16 000 m^3	11 100 m^3

Trial pit investigations and sampling were conducted by Aurecon at four proposed borrow pits considered as potential sources of material. Two 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:

- Rehabilitation of the borrow pit once material has been removed
- Heavy vehicles accessing the DR2196 gravel road that is main access road used by farmers and local residents
- Dust pollution affecting road users

2. Heritage resources

Identification of heritage resources

Proposed site and immediate context do not fall within conservation or protected heritage areas. 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. Both the DR2196 pits under consideration are excavated into mudrocks of the lower Gydo Formation that is well known in the northern Cederberg region for its rich fossil heritage – especially shelly invertebrates and trace fossils – from the Early Devonian Period (Almond 2012: 14) Well-consolidated (comparatively unweathered) mudrocks of the lowermost Gydo Formation at km 18.55 contain a range of shelly invertebrate fossils, including some uncommon bivalve genera and assemblages preserving palaeoecolgical information (*e.g.* possible trilobite moult assemblages). It is very likely that newly-excavated mudrocks from this pit will yield diverse faunas of well-preserved shelly fossils (Almond 2012: 1). Pit at km 28.5 is excavated into interbedded sandstones and siltstones that lie stratigraphically well above the base of the Gydo Formation and are not high fossiliferous. Although occasional limestone nodules here contain well-preserved invertebrate fossils (*e.g.* encrusting bryozoan colonies), the level of bedrock exposure is poor and it is unlikely that substantial fossil remains can be obtained in future.

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 were observed at either of the proposed extensions even though the northern Cederberg has a rich archaeological heritage. No rocky outcrops were located in the immediate vicinity of the affected areas so there is unlikely to be any direct impact on painting sites if the proposed extensions are developed (Tusenius 2012: 2).

Heritage significance

The palaeontological sensitivity of the site at km 18.55 is considered to be high. The palaeontological sensitivity of the site at km 28.5 is considered to be low. The affected sites are considered to be of low archaeological heritage significance, although the surrounding area provides a significant context (Tusenius 2012: 11).

The context within which the site lies is identified as possessing low intrinsic heritage value. 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. At km 18.55 it is likely that newly-excavated mudrocks would yield diverse assemblages of well-preserved shelly fossils and it is therefore recommended that the developer should commission a professional palaeontologist to record and sample fossil material.

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 archaeological and 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. Sites and 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 has been sufficiently recorded and requires no further recording before borrow pit activity occurs. However, at km 18.55 it is likely that newly-excavated mudrocks would yield diverse assemblages of well-preserved shelly fossils and it is therefore recommended that the developer should commission a professional palaeontologist to record and sample 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: site rehabilitation would 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.

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. 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 suitably 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 palaeontological sensitivity of the site at km 28.5 is low and no further studies or mitigation of palaeontological heritage are recommended in this case. (Almond 2012: 14). However, palaeontological significance is considered as high at km 18.55 and it is therefore recommended that a professional palaeontologist be appointed to record and sample fossil material from the pit during the early stages of excavation when abundant fresh (*i.e.* unweathered) mudrock is available for examination, and before most material is employed for road construction (Almond 2012: 14).

No further archaeological studies or mitigation are recommended for these particular pits as there will be no direct impact on archaeological heritage resources at the affected sites. 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 – 11).

The context within which the site lies is identified as possessing low intrinsic heritage value. The proposed development site is transformed and possesses no known historical, social or spiritual significance. No sensitive landscapes were identified. No further archaeological and palaeontological heritage studies or mitigation are recommended and no impact on heritage resources is expected should the proposed development proceed. Overall status of the impact is considered as low.

Recommendations

It is therefore recommended that:

1. expansion of exiting borrow pits be supported
2. palaeontologist be appointed to record and sample fossil material during early stages of excavation at km 18.55
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 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*
- Tusenius M (August 2012): *Archaeological impact assessment*
- vidamemoria (November 2011): *Notification of Intent to Develop*