HERITAGE IMPACT ASSESSMENT

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

prepared for

NADESON Consulting Services

27 March 2013

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DR01347 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 pits *located along DR01347 approximately 22 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 (dated March 2013). 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).

Shallow marine bedrocks are folded, cleaved and deeply weathered. The only fossils observed were low diversity trace fossil assemblages on sandstone bedding planes. The palaeontological heritage sensitivity of both borrow pit sites were assessed as low. Pending the discovery of significant new fossil material, no further studies or mitigation of palaeontological heritage for these borrow pit projects were recommended.

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 01347 near Worcester**, Cape Winelands District Municipality. NID dated 25 June 2012 was submitted to Heritage Western Cape (HWC) for consideration. Response dated 08 August 2012 (**case ref 120726JL24E**) requested *'a heritage impact assessment consisting of a palaeontological study'* (Refer Annexure A). *vidamemoria* appointed *Dr John Almond (Natura Viva CC)* to conduct the necessary palaeontological specialist study (dated March 2013) 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

Site location and description

It is proposed to expand existing borrow pits for road material situated at **km 17.22** DR01347/17.22/L/500/A/W3 and **km 18.51** DR01347/18.51/L/50/A/W38 accessed from the R43 south of Worcester. Surrounding context is undeveloped land and existing borrow pits. At **km 17.22** the potential source of wearing course gravel lies within an existing borrow pit. Grass and shrubs are found on the outer shoulder of the borrow pit area. At **km 18.51** the potential source of wearing course gravel is located within an existing borrow pit directly off the gravel road. Grass and shrubs surround the borrow pit. Worcester Farm No. 641 (Lemoenpoort) is in private ownership of the Lemoenpoort Trust. Borrow pit co-ordinates at km 17.22 are 33° 51' 0.69S, 19° 28' 11.40"E and at km 18.51 are 33° 50' 18.72S, 19° 28' 38.28"E

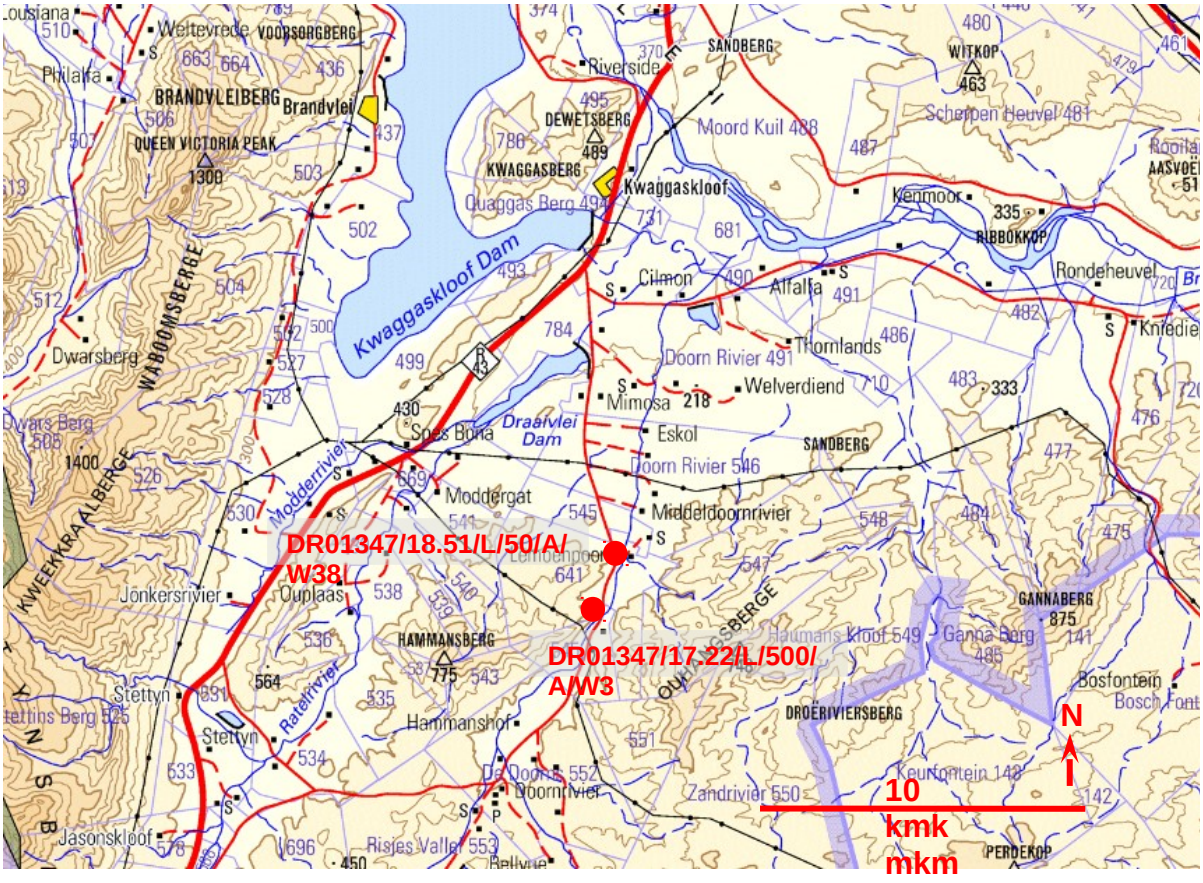

Figure 1: Extract from topographical sheet 3319 Worcester (extracted Almond 2013: 2)

Figure 2: View towards southeast of the existing pit at km 17.22(Almond 2013: 6)

Fig. 3. View towards the south across pit at km 18.51(Almond 2013: 8)

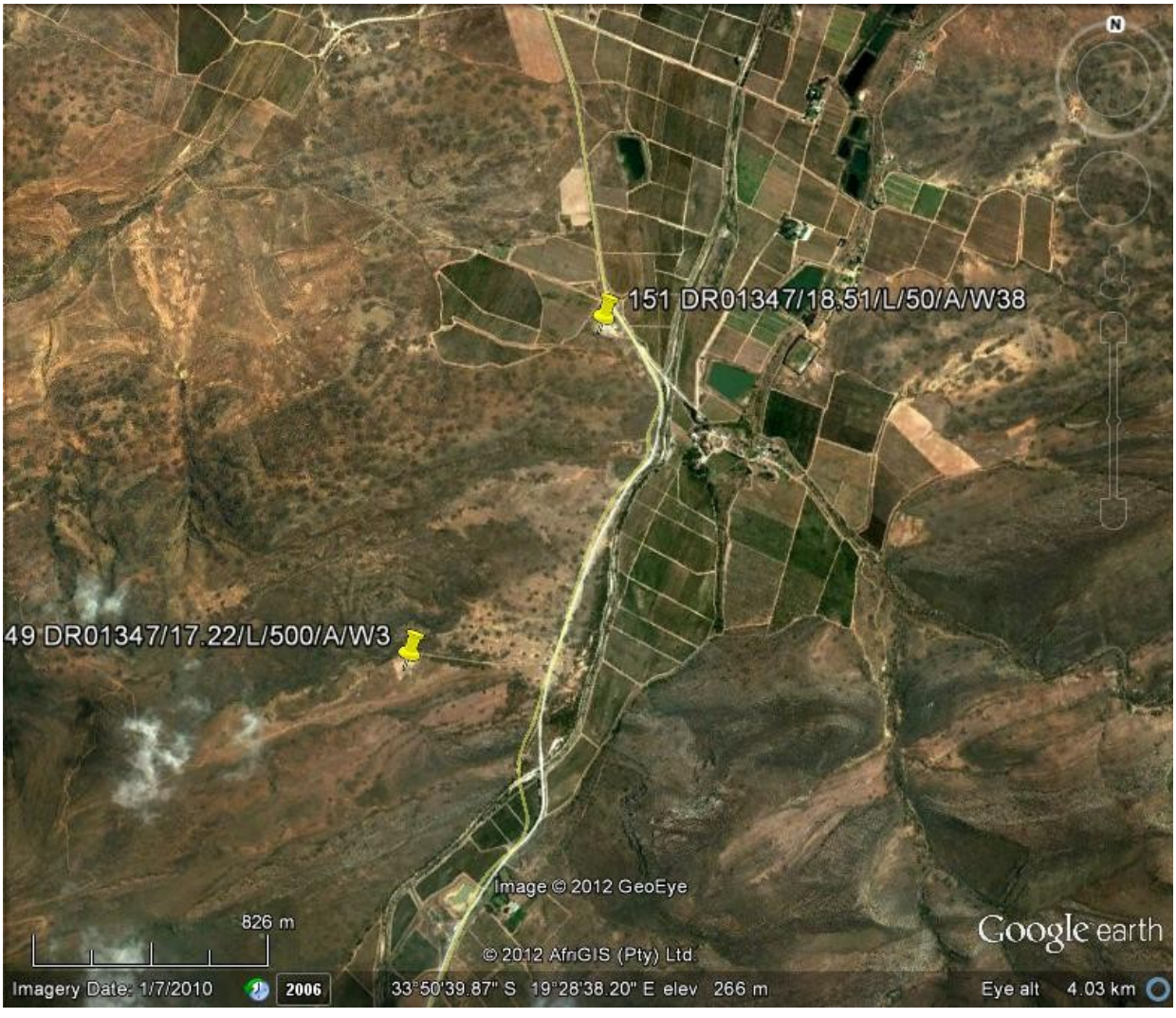

Figure 4: Aerial view of existing borrow pits location (Google earth image, August 2012)

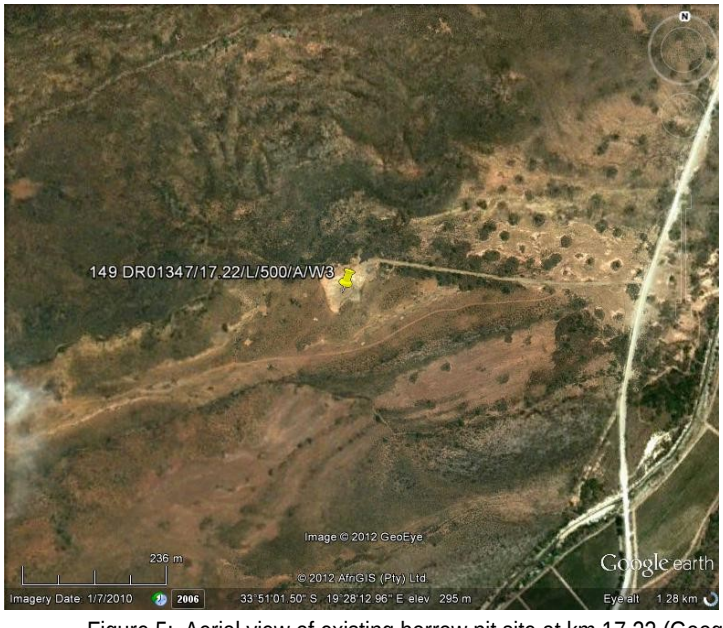

Figure 5: Aerial view of existing borrow pit site at km 17.22 (Google earth image, August 2012)

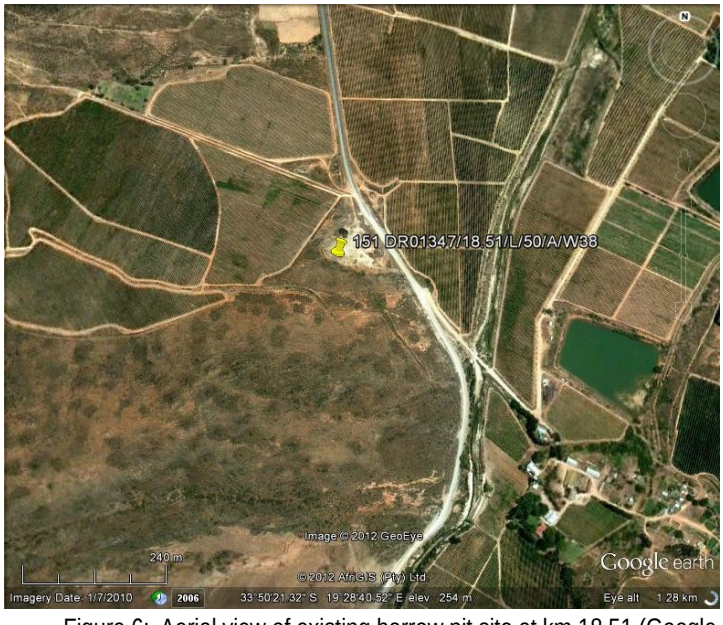

Figure 6: Aerial view of existing borrow pit site at km 18.51 (Google earth image, August 2012)

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 pits 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 pits located at **km 17.22 and 18.51 along DR01347** will be used for re-gravelling to benefit road users in terms of road safety and user economy as well as to minimise maintenance related disruptions.

Summary of borrow pit		
	km 17.22	**km 18.51**
Expropriation area	7 173 m2	5 963 m^2
Borrow pit	7 173 m^2	5 963 m^2
Maximum depth	4 m	4.5 m
Material description	shale and sandstone of the Dwyka Group	shale and sandstone of the Dwyka Group
Proposed usage after rehabilitation	Re-vegetation	Re-vegetation
Volume of material to be sourced	10 760 m^3	7 155 m^3

Trial pit investigations and sampling were conducted by Nadeson 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 plans outlining extent of borrow pits and mining is attached as Annexure B. Methodology for the preparation, operation and closure of borrow pits 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 sites 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:

at km 17.22

- Access to the sites be restricted by a locked gate
- The access road leading to the borrow pits is in a dilapidated condition with uneven ground and numerous dongas cutting across the road. The road access road will have to be evened out so that heavy vehicles will not get stuck

at km 18.51

- Take into consideration rehabilitation of the borrow pits after the material has been removed
- There is a 150mm diameter plastic water pipe running across the site from south to north at the boundary, located after the test pits on the hill. This pipe is in use and will break if heavy plant drives over it

2. Heritage resources

Identification of heritage resources

Proposed sites 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 sites do not fall within a historical settlement or townscape and does not contribute towards rural or natural landscape of cultural significance. The sites are 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. Borrow pit at **km 17.22** is excavated into micaceous siltstones and thin sandstones of the upper Kweekvlei and / or the Floriskraal Formation (upper Witteberg Group) of Early Carboniferous age. The shallow marine bedrocks are folded, cleaved and deeply weathered. The only fossils observed were low diversity trace fossil assemblages on sandstone bedding planes. At **km 18.51** the borrow pit is excavated into highly weathered and cleaved mudrocks of the Prince Albert Formation (Ecca Group) and the uppermost tillites of the underlying Dwyka Group (Elandsvlei Formation) of Early Permian age. The tillites are unfossiliferous and the mudrocks contain only poorly-preserved trace fossils.

No potential archaeological issues were identified and no further archaeological assessment was required (desktop assessment conducted by Dave Halkett ACO, June 2012). The site has no known historical, social, or spiritual significance. No built environment issues and / or cultural landscape issues have been identified. Palaeontological sensitivity and archaeological significance have been identified as low and no further heritage resources were identified.

Heritage significance

The palaeontological heritage sensitivity of both borrow pit sites is assessed as low (Almond, 2013: 13).

The context within which the sites lie is identified as possessing low intrinsic heritage value. No heritage resources were identified within the immediate context of the sites. The proposed development sites are transformed and possesses no known historical, social or spiritual significance. No sensitive landscapes were identified. The sites are 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 pits would not result in a negative impact on the cultural landscape. The landscape within which the sites lies possesses low intrinsic heritage value and no heritage resources were identified within the immediate context. The sites 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 sites have been sufficiently recorded and requires no further recordings before borrow pits 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 sites. 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:

- 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)
- Smoothing out and contouring the slopes of the borrow pits
- Prepare the sites 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 sites are 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. 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 palaeontological sensitivity of the sites is low (Almond 2012: 13). Proposed intervention would yield positive benefits without a negative impact on heritage resources. Pending the discovery of significant new fossil material, no further studies or mitigation of palaeontological heritage for these borrow pit projects are recommended.

Recommendations

It is therefore recommended that:

1. expansion of exiting borrow pits 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 (March 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 investigationsand geological strategic gravel pit summary report* for Aurecon South Africa
- Heritage Western Cape (August 2012): *Minimum Standards For Phase 1 Archaeological Impact Assessment (Aia) Reports*
- vidamemoria (June 2012): *Notification of Intent to Develop*