

Proposed rehabilitation and upgrading of N9 between Wolwefontein and Colesberg

**ARCHAEOLOGICAL IMPACT ASSESSMENT
OF FOUR BORROW PITS FOR THE PROPOSED
REHABILITATION AND UPGRADING OF SECTION
7 OF NATIONAL ROUTE 9 BETWEEN
WOLWEFONTEIN AND COLESBERG
NORTHERN CAPE**

Prepared for:

CCA ENVIRONMENTAL

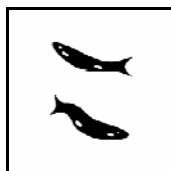
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Executive summary

The Agency for Cultural Resource Management was commissioned to undertake an Archaeological Impact Assessment of four abandoned borrow pits for the proposed rehabilitation and upgrading of Section 7 of National Route 9 (N9) between Wolwefontein and Colesberg in the Northern Cape Province.

Eight borrow pits were initially identified as sources of material for the road upgrade and rehabilitation project. However, two borrow pits were subsequently withdrawn by SANRAL due to objections by the Umsobomvu Municipality, and as a result it has become necessary to identify additional sources of fill material.

In terms of Section 38 (1) (c) (i) of the National Heritage Resources Act 1999 (Act 25 of 1999), an Archaeological Impact Assessment (AIA) of the proposed project is required if the footprint area of the proposed development is more than 5000 m².

A site inspection of each of the proposed borrow pits and expansion areas was undertaken by the archaeologist and the following findings were made:

BP9: Mostly weathered indurated shale Middle Stone Age (MSA) flake tools were located in BP9. A handful of tools were found alongside the edge and on the excavated floor of the existing quarry, while the remainder was found among the rocky hill slopes in the northern portion of the proposed expansion area.

BP10: Four weathered MSA flakes and chunks were found in BP10.

BP11: One round core, one chunk and one snapped blade were found in BP11

BP12: Dispersed, MSA flake and blade tools in highly weathered indurated shale were found in BP12. Most of the tools were found in an old farm road alongside the existing quarry. A few artefacts were found further to the west of the abandoned borrow pit.

Their small numbers, isolated and dispersed context means that the archaeological remains have been rated as having low significance. All the tools were found in an open context with no associated organic remains, such as pottery or ostrich eggshell.

The results of the archaeological study indicate that each of the proposed borrow pits is suitable for quarrying and that there will be no significant negative archaeological impacts arising out of proposed quarrying activities.

The following recommendations are made.

- No archaeological mitigation is required.
- The proposed borrow pits and expansion areas are suitable for re-use.
- In the event of any unmarked human remains being uncovered or exposed during quarrying, these must immediately be reported to the archaeologist, or South African Heritage Resources Agency (Att: Ms Mariagrazia Galimberti at 021 462 4502).

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1. INTRODUCTION

CCA Environmental, on behalf of the South African National Roads Agency Limited (SANRAL), requested that the Agency for Cultural Resource Management conduct an Archaeological Impact Assessment (AIA) of four borrow pits intended for the proposed rehabilitation and upgrading of Section 7 of the N9 between Wolwefontein and Colesberg in the Northern Cape (Figure 1).

The project involves the rehabilitation of the existing N9 road surface, repairs to structures and minor ancillary works (km 63.63 to km 94.84), as well as the addition of 2.5 m surfaced shoulders from km 63.63 to km 81.20. The project also entails the construction of a new grade separated interchange to improve safety at the N1/N9 intersection at Colesberg.

Eight borrow pits were initially identified as sources of material for the road upgrade and rehabilitation project. An AIA of these eight borrow pits was undertaken by ACRM in 2008 and 2009 (Kaplan 2008, 2009). However, two borrow pits were subsequently withdrawn by SANRAL due to objections by the Umsobomvu Municipality, and as a result it has become necessary to identify additional sources of fill material.

In terms of Section 38 (1) (c) (i) of the National Heritage Resources Act 1999 (Act 25 of 1999), an Archaeological Impact Assessment (AIA) of the proposed project is required if the footprint area of the proposed development is more than 5000 m².

The proposed four borrow pits are all previously abandoned borrow pits, with proposed expansion areas. Three of the proposed borrow pits are conveniently located alongside the N9, while BP9 is situated alongside DR3080 about 5 kms north east of Colesberg. All quarried material will be crushed and blended on site.

Although ACRM has been appointed to assess four borrow pits, in all likelihood only two would be utilised for the project, with one providing a contingency in the event that insufficient material is acquired from the other borrow pits.

In terms of the Environmental Management Programme (EMP), the borrow pits will be rehabilitated, once sufficient volumes of source material has been quarried.



Figure 1. Locality map illustrating position of the four proposed borrow pits.

2. TERMS OF REFERENCE

The terms of reference for the archaeological study were:

- to identify and map archaeological remains within the proposed borrow pits/expansion areas;
- to assess the sensitivity and conservation significance of archaeological remains within the proposed borrow pits/expansion areas;
- to assess the status and significance of any impacts resulting from the proposed quarrying for road material, and
- to identify measures to protect and maintain any valuable archaeological sites or remains that may exist within the proposed borrow pits.

3. STUDY APPROACH

3.1 Method

Each of the proposed borrow pits and expansion areas were searched for archaeological remains.

Archaeological remains documented during the study were mapped using a Garmin Oregon 300 GPS unit, set on the map datum wgs 84.

The site visit and assessment took place on the 29th and 30th March, 2011.

3.2 Constraints and limitations

Most of the surface area of the proposed borrow pit expansion areas is covered in thick grassland vegetation resulting in low archaeological visibility.

It is maintained, however, that the archaeological study has captured good information on the archaeological heritage present at each of the proposed borrow pits.

3.3 Identification of potential risks

Based on the results of the study, there are no significant archaeological risks associated with the proposed project.

3.4 Results of the desk top study

Low to moderately larger numbers of weathered, indurated shale Middle Stone Age flake tools and some cores were found during an assessment of eight proposed borrow pits which were (initially) identified as possible material sources for the proposed construction of the new N1/N9 access interchange in Colesberg (Kaplan 2008), as well as for the proposed rehabilitation and upgrading of Section 7 of the N9 between Wolwefontein and Colesberg (Kaplan 2009). The archaeological remains, documented in already disturbed and degraded context, were rated as having low significance.

4. THE STUDY AREA

Colesberg is located in the Upper Karoo region of South Africa and is about 700kms north of Cape Town on the National Road 1 (N1). The topography of the region is characterised by vast open grassland plains interspersed with numerous hillocks, hills and plateaus with striking rock outcrops, or kopjes. The area is characterised by low rainfall. Despite the Karoo's bleakness and challenging winters, the area had a relatively high carrying capacity and teemed with game long before European colonisation. Hunter gatherers (mainly San) successfully occupied the central interior of South Africa during the last 4500 years, subsisting on the large herds of grazing animals that occurred during that time (Sampson *et al.* 1989).

Later Stone Age sites dating to the late Holocene (within the last 4000 years) are surprisingly common. Although the Karoo is presently more suited to the keeping of small stock such as sheep and goats, research in the Eastern Karoo region has revealed that, at about 1200 – 1400 AD, a climatic fluctuation (known as the mini-ice age) may well have caused an increased rainfall in the central Karoo resulting in the area being more suitable for grazing of cattle and occupation by Khoekhoen pastoralist groups. They left behind an archaeological legacy that consists of stone *kraal* complexes of which several hundred have been recorded in the Zeekoe Valley in the eastern Karoo (Hart 1989).

The indigenous people of the Karoo waged a bitter war against colonial expansion as they gradually lost control of their traditional land. With the implementation of the commando system in the late 18th and early 19th centuries, the Karoo "Bushmen" were eventually destroyed or indentured into farm labour (Hart 1989).

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By 1814, a mission station had been established in Colesberg in the hopes of bringing peace to what was an extremely unruly frontier area of the Cape Colony. By 1820 several large farms had been established in the district and in 1822 the farmers petitioned for the establishment of a town. The Government granted 18 138 Morgan (i.e. approximately 15 536 ha) of land to the Dutch Reformed Church on January 27, 1830 and so Colesberg, named after Sir Lowry Cole, (Governor at the Cape from 1828 to 1833), was established.

The district of Colesberg was proclaimed in 1837 and it became a municipality in 1840. Colesberg played a part in the Anglo-Boer War between 1899 and 1900, where a number of battles took place between the Boer forces and British troops over this period and there are many battlefield sites on farms in the surrounding area.

Colesberg also has a rich history closely linked to South Africa's diamond industry. John O'Reiley, who purchased the first diamond found in South Africa from its owner, Schalk van Niekerk, took it to Colesberg for testing. It was used to scratch "DP", the initials of Draper and Plewman, a store which still exists, on the shop's window. Once the stone passed this test, it was sent to Dr Guybourne Atherstone, a well-known geologist. He confirmed it was a diamond and so started "The Diamond Rush" (Costandius 2011).

4.1 BP9 (S 30°41'.515" E 25°03'.060")

BP9 is located alongside DR3080 on the Farm Colesbergkop (Figures 2 - 4). It is proposed to expand the borrow pit to the west and north and the extent of the expansion area is about 1.5 ha. The proposed expansion area slopes from the west to east, and the receiving environment comprises very thick grassland vegetation, with sporadic trees occurring in places. There is a rocky hillock to the north, where the slopes are covered in loose dolerite stone. An, Eskom powerline and servitude crosses the lands to the south west.



Figure 2. Google aerial photograph of BP9 and the proposed expansion area in red

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Figure 3. BP9 View facing south west. Note the powerline servitude



Figure 4. BP9 View of the proposed expansion area facing south

4.2 BP10 (S 30°45'.537" E 25°05'.017")

The small abandoned borrow pit is situated right up against a small hillock about 200 m west of the N9, on the Farm Southfork (Figures 5-7). It is proposed to expand the borrow pit (comprising baked shale/mudstone) to the east and southeast into very thick grassland vegetation. The extent of the expansion area is about 2.5 ha.



Figure 5. Google aerial photograph of BP10 and the proposed expansion area is read



Figure 6. BP10 View of the proposed expansion area facing south.

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Figure 7. BP10 View of the proposed expansion area facing west

4.3 BP11 (S 30°46'.016" E 25°05'.701")

The proposed site – an abandoned borrow pit, is located on the Oorlogspoort Road, on the Farm Grassridge which is about 1 km to the east of the N9 (Figures 8-10). It is proposed to expand the borrow pit (which is currently filled with water) to the north and northwest. The extent of the expansion area is about 3 ha. Thick grassland and Kweek grass dominates the surrounding vegetation. The site is level and there is hardly any surface stone in the proposed footprint area.



Figure 8. Google aerial photograph of BP11 and the proposed expansion area in red

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Figure 9. BP11 View of the proposed expansion area facing south



Figure 10. BP11 View of the proposed expansion area facing south east

4.4. BP12 (S 30°46'.742" E 25°05'.089")

BP12 is located about 150 m east (i.e. on the right hand side) of the N9, on Erf 1272 and slopes gently from north to south (Figures 11-13). It is proposed to expand the existing borrow pit to the west and north. The extent of the expansion area is about 2 ha. The affected environment comprises thick thigh-high grassland vegetation which covers the entire footprint area. There is some deep burrowing on patches of ground to the west of the abandoned quarry. There is an old farm road that runs alongside the northern edge of the quarry.



Figure 11. Google aerial photograph of BP12 and the proposed expansion area in red



Figure 12. BP12 View of the proposed expansion area facing south



Figure 13. BP11 View of the proposed expansion area facing south east

5. RESULTS OF THE STUDY

A spreadsheet of GPS waypoints and a description of each of the archaeological finds are presented in Table 2 in the Appendix.

5.1 BP9

A low density scatter of stone artefacts was documented in BP9. No tools were found over 95% of the proposed footprint area which is covered in thick grassland vegetation. A few MSA stone flakes and chunks were found on the edge, as well as on the excavated floor, of the abandoned quarry, while a few flake tools and blades were found on a slab of exposed mudstone in the north western portion of the site, alongside an excavation trench. A few flakes and chunks were also found on the rocky slopes below the kopje in the northern portion of the proposed expansion area. The majority of the tools (all MSA) are in highly weathered indurated shale, but a few blades and flakes in 'fresh' indurated shale was also found (Figures 14 & 15). No paintings or engravings were found on the dolerite kopje overlooking the proposed expansion area.



Figure 14. Collection of tools from BP9. Scale is in cm



Figure 15. Collection of tools from BP9. Scale is in cm

5.2 BP10

Four MSA artefacts were found in BP10. The tools are in highly weathered indurated shale. One flake appears to be have, been re-used, possibly by Later Stone Age people.

A collection of the tools is illustrated in Figure 16.



Figure 16. Collection of tools from BP10. Scale is in cm

5.3 BP11

One round weathered indurated shale MSA core and one quartzite chunk were found on the edge of the abandoned quarry in BP11, while one snapped indurated shale blade (probably trampled by cattle) was found in a small footpath leading to the water-filled quarry.

A collection of tools is illustrated in Figures 17 & 18.



Figure 17. MSA core from BP11. Scale is in cm



Figure 18. Chunks and snapped blade from BP11. Scale is in cm

5.4 BP12

Marginally higher numbers of MSA flakes and blade tools were found in BP12. Most of the tools occur in the farm road close to the abandoned quarry (refer to Figure 11), while a few isolated finds were documented to the west of the quarry among the thick grassland vegetation. One quartzite chunk was found on a patch of ground near the fence line alongside the N9. Despite a careful search of the surrounding footprint area, no other tools were found. All the lithics found in the proposed expansion area are in very weathered indurated shale that includes several retouched/utilized flakes and flake/blades, one flat core, one large chunky side scraper and one scraper with 'fresh' retouch.

A collection of tools is illustrated in Figure 19 and 20.



Figure 19. MSA tools from BP12. Scale is in cm



Figure 20. MSA reused flake and utilized flake. Scale is in cm

5.5 Significance of the archaeological remains

The Upper Karoo region is shot through by dolerite dykes where the raw material known as hornfels (or indurated shale) is ubiquitous and an excellent source for making stone tools. The very small numbers, however, isolated and dispersed distribution and the context in which the tools were found at each of the proposed borrow pits means that the archaeological remains located during the study are rated as having low significance. All the tools were found in an open context with no associated organic remains, such as pottery or ostrich eggshell.

Identical types of tools were documented during the archaeological inspection of the eight other borrow pits identified for the same project (Kaplan 2009, 2008).

6. IMPACT STATEMENT

The archaeological investigation of four proposed borrow pits intended for the proposed rehabilitation and upgrading of Section 7 of N9 between Wolwefontein and Colesberg, has identified no significant impacts to pre-colonial archaeological heritage remains that will need to be mitigated prior to proposed development activities (Table1).

Borrow Pit (BP)	Extent	Duration	Intensity	Probability	Confidence	Significance Without Mitigation	Significance With mitigation
BP9	Local	Short term	Low	Improbable	High	Very Low	Very Low
BP10	Local	Short term	Low	Improbable	High	Very Low	Very Low
BP11	Local	Short term	Low	Improbable	High	Very Low	Very Low
BP12	Local	Short term	Low	Improbable	High	Very Low	Very Low

Table 1. Assessment of the archaeological impacts of the proposed project

7. CONCLUSION

The results of the Archaeological Impact Assessment indicate that each of the proposed borrow pits is suitable for quarrying and that there will be no significant negative archaeological impacts arising from the proposed project.

8. RECOMMENDATIONS

With regard to the proposed quarrying of road material from four borrow pits located alongside the N9 and DR3080 near Colesberg in the Northern Cape, the following recommendations are made:

- No archaeological mitigation is required.
- The proposed borrow pits and expansion areas are suitable for re-use.
- In the event of any unmarked human remains being uncovered or exposed during quarrying operations, these must immediately be reported to the archaeologist, or South African Heritage Resources Agency (Att: Ms Mariagrazia Galimberti at 021 462 4502).

9. REFERENCES

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Appendix

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Site	Name of Farm	Lat/Long	Finds
BP9	Erf 1733 – Farm Colesbergkop		
556		S30 41.526 E25 03.164	LSA ind. shale flake alongside fence
557		S30 41.509 E25 02.978	Weathered MSA ind. shale flake
558		S30 41.546 E25 02.958	Utilized pointed MSA flake and thin blade in ind. shale
559		S30 41.509 E25 02.994	X 2 weathered ind. shale chunks, LSA utilized blade, several MSA weathered ind. shale flakes, weathered MSA blade on stony platform next to excavated trench
560		S30 41.526 E25 02.971	Weathered chunk
561		S30 41.524 E25 03.043	Weathered MSA flakes on edge of borrow pit
562		S30 41.538 E25 03.031	X 2 weathered MSA flakes on edge of quarry
563		S30 41.550 E25 03.071	Very thin scatter of weathered MSA indurated shale flakes and chunks in borrow pit
564		S30 41.540 E25 03.092	Weathered indurated chunks and flakes near edge of borrow pit
BP10	Erf 2054 – Farm Southfork		
548		S30 45.567 E25 05.022	Weathered ind. shale chunk
549		S30 45.545 E25 05.021	Weathered MSA ind. shale flake
550		S30 45.576 E25 05.005	Weathered ind. shale MSA blade/chunk
551		S30 45.574 E25 05.012	Re-used weathered ind. shale MSA flake – utilized and 1-2 retouch scars
552		S30 45.589 E25 04.995	Weathered ind. shale flat MSA flake
BP11	Erf 1272 – Farm Grassridge		
536		S30 46.028 E25 05.711	Large ind. shale MSA core near edge of dam
537		S30 46.043 E25 05.675	MSA quartzite flake near edge of dam
538		S30 45.970 E25 05.691	Snapped ind. shale utilized blade
BP12	Erf 1271		
539		S30 46.755 E25 05.074	Weathered ind. shale MSA flake on edge of old quarry
540		S30 46.671 E25 05.076	Weathered ind. shale, partially retouched MSA flake
541		S30 46.710 E25 05.099	Weathered ind. shale MSA utilized flake/blade in farm road
542		S30 46.719 E25 05.098	Round, core and long utilized and retouched flake blade, and several flakes and flaked chunks in farm road. All in ind. shale

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543		S30 46.704 E25 05.096	Large ind. shale flake with some scraper retouch, and ind. shale core
544		S30 46.717 E25 05.074	Weathered flaked chunk/minimal core
545		S30 46.734 E25 05.058	Large rectangular shaped ind. shale flake with side scraper retouch
546		S30 46.733 E25 05.023	Large indurated shale flake with ('fresh') step retouch.
547		S30 46.704 E25 05.018	Quartzite chunk next to fence

Table 2. Spreadsheet of waypoints and description of the archaeological finds