

HERITAGE IMPACT ASSESSMENT

**PROPOSED HIGH SPEED TEST TRACK ON PORTION 6 OF FARM NO.
419 STEENKAMPSPAN NEAR UPINGTON, NORTHERN CAPE PROVINCE**

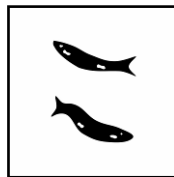
Assessment conducted under Section 38 (3) of the National Heritage
Resource Act (No. 25 of 1999)

Applicant:

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Executive summary

Introduction

Mercedes Benz South Africa is proposing the construction of a high speed test track (or proving ground) on Portion 6 of Farm No. 419 Steenkampspan, located about 40kms north east of Upington (//Kara Hais Local Municipality) in the Northern Cape.

Infrastructure associated with the project includes a building area, access roads, a multi-functional area, a handling track, gravelled 'bad roads', a construction camp, powerlines and a mining and quarry area for road construction material.

The 3750 ha property is a generally flat undulating landscape interspersed with occasional dunes. The plains are covered in red Kalahari soils, tall Bushman grass and shrubs, with sparse tree cover. There is very little surface stone covering the farm. There are no seasonal or permanent sources of water such as streams, springs or pans. An outcropping (or inselberg) of rock has been identified as a complementary source of road gravel, and is the only significant landscape feature in an otherwise featureless landscape

The development will require the extensive clearing of natural vegetation and levelling of the site in order to construct the proving ground, and will involve considerable earthmoving operations that may have a negative impact on potentially important archaeological resources.

As part of the EIA process, ACRM has been appointed by IngenAix GmbH to conduct a Heritage Impact Assessment (specialist archaeological study) of the proposed development and associated infrastructure requirements.

Legal requirements

The NHRA makes provision for a compulsory Heritage Impact Assessment (HIA) when an area exceeding 5000 m² is being developed. This is to determine if the area contains heritage sites and to take the necessary steps to ensure that they are not damaged or destroyed during development.

Section 38 (1) (a) of the Act also indicates that any person constructing a powerline, pipeline or road, or similar linear development or barrier exceeding 300m in length is required to notify the responsible heritage resources authority, who will in turn advise whether an impact assessment report is needed before development can take place

Objectives

The overall purpose of the HIA is to assess the sensitivity of archaeological resources in the affected area, to determine the potential impacts on such resources, and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

Approach to the study

A 4-day field assessment of the proposed activities was undertaken by ACRM in November, 2014. A follow up, 3-day field study was done in November 2015 in order to

investigate additional infrastructure requirements ('bad roads'), and changes to design informants (internal access roads & new building area).

Archaeological resources identified during the study were mapped using a hand held Garmin GPS device set on the map datum wgs 84. A track path of the survey was also captured.

The landscape is flat with occasional dunes and wind exposed areas. No drainage lines and no bedrock exposures were noted, apart from the granite inselberg (the proposed gravel quarry). Areas targeted in the study included sand dunes and wind deflated areas as it is known that Later Stone Age campsites occur in these locales.

Finds

The following observations were made:

- Dispersed scatters of Later Stone Age (LSA) implements (of Low Grade 3C significance) were encountered during the field assessment. The lithics are spread thinly and unevenly over the surrounding landscape, and most likely represent discarded flakes and flake debris.
- The most compelling sites encountered during the study (Sites 028, 030 & 087) comprise high density scatters of LSA implements and debris from late Holocene (2-3000 year old) hunter-gatherer campsites, where domestic activities such as the production of stone tools, manufacture of beads, and processing of foodstuffs, were carried out. A large number of different types of tools were recorded on these sites, including scrapers, adzes, bladelets, awls, backed pieces, hammerstones, anvils, and upper and lower grindstones, in a range of raw material, both local (quartzite & quartz) and exotic (indurated shale, silcrete & chalcedony). Discreet activity areas were also identified where the manufacture of tools and beads took place, while organic remains including pottery and bone were found. The presence of microlithic backed bladelets (or composite arrow points), as well as clay pottery, indicates that the campsites most likely date within the last 2-3000 years, shortly before and after the introduction of domestic stock (such as sheep) into the region. Sites 028, 030 and 087 have been rated as having Moderate to High (Grade 3B) significance within a local context. The archaeological sites are, however, located outside the footprint area of the proposed development site and will therefore not be impacted by proposed construction activities.
- A late Holocene LSA campsite (Sites 011-014 & 715) was documented in the alignment of the proposed high speed test track at ± km 7. The small number of tools recorded in the wind deflated dune included flakes, bladelets, chunks, a hammerstone, cylindrical cores, an anvil, and grindstone fragments. It is possible, that more tools and cultural remains such as pottery, ostrich eggshell and beads lie buried beneath the shifting windblown sands. Sites 011-014/715 will likely be impacted by construction of the proposed test track, and has been graded as having Medium to Low (Grade 3C) significance within a local context.
- A relatively large number of MSA tools older than 20 000 years, including flakes, miscellaneous retouched pieces, blades, chunks and cores were recorded across the south eastern portion of the farm in the proposed footprint of the calcrete quarry, and in the surrounding area. The tools are spread very thinly and unevenly over the surrounding

landscape. More than 95% of the implements are in quartzite, but a few tools in indurated shale and banded ironstone were also noted. Two large scatters of MSA tools (Sites 055 & 056) were documented about 30 m from the north western boundary of the proposed calcrete quarry. The density of tools in this area, indicate fairly intensive flaking activity (i. e. the production of tools). Sites 055 & 056 have been rated as having Medium to Low (Grade 3C) significance within a local context.

- MSA and LSA tools (of Low Grade 3C significance), in quartz, quartzite, indurated shale, silcrete and chalcedony were found scattered around the base of the stone outcrop/inselberg known as Klip Kopje. The outcrop has been identified as a source material (quarry) for road building operations.
- A few quartz flakes and chunks were found in the proposed multi-functional area, but the footprint area is not a sensitive archaeological landscape.
- No archaeological resources were encountered in the proposed handling track, which is not a sensitive archaeological landscape.
- A small number of LSA quartz flakes and chunks were recorded in the alignment of the proposed internal access roads.
- No heritage remains were found in the proposed (new) building area, which is a degraded piece of land close to existing farm infrastructure.
- Dispersed scatters of LSA tools (mainly flakes & chunks) were recorded in the footprint area of the proposed gravelled bad roads in the north eastern portion of the farm. Late Holocene 2-3000 year old campsites (Sites 745-751 & Site 753) with flakes, chips, chunks, cores, bladelets, manuports, hammerstones, anvils and grindstone fragments were also documented in the proposed development site. The campsites have been graded as having Medium to Low Grade 3C significance within a local context. Indications are that the campsites will not be impacted by road construction activities. Much of the receiving environment in the proposed bad roads development site, however, is densely vegetated, resulting in poor archaeological visibility. It is therefore possible that more hunter-gatherer campsites will be uncovered during vegetation clearing operations, and may be impacted by road construction activities.

Impact statement

Overall, the results of the study indicate that the proposed activity (i. e. the construction of a high speed test track & associated infrastructure) will not have an impact of great significance on the archaeological heritage, as these are mostly expected to be limited. Some mitigation and management of heritage resources will, however, be required.

Conclusions

The field assessment has captured a good record of the archaeological heritage present on Farm 419/6 Steenkampspan. The study has shown that the cultural landscape is dominated by dispersed scatters of Later Stone Age implements (mainly flake debris), including a number of rare, late Holocene 2-3000 year old hunter-gatherer campsites.

Middle Stone Age tools appear to be confined to the south eastern portion of the farm in the vicinity of the proposed calcrete quarry.

No Early Stone Age remains were found.

Overall, from an archaeological perspective there are no fatal flaws, and provided that the recommendations are implemented, there are no objections to the proposed development proceeding.

Recommendations

With regard to the proposed construction of a vehicle testing proving ground on Farm 419/6 Steenkampspan, the following recommendations are made:

1. Sites 028, 030 and 087 must be avoided during the construction and operational phase of the project. The site layout plan indicates that these, Grade 3B rated sites (of moderate to high significance) will not be impacted by proposed construction activities. Archaeological mitigation will therefore not be required. On the advice of the consultant, the sites have been declared 'No-Go Areas'.
2. Sites 011-014/715, in the alignment of the oval track, must be mitigated. The remains must be collected by a professional archaeologist. Sand must also be sieved for buried archaeological material. The remains must be curated and written up and a report submitted to the South African Heritage Resources Agency (SAHRA). No archaeological material may be collected without a permit issued by SAHRA.
3. A proposed 50m wide cutting on both sides of the centre line of the oval track between km 5 and km 7.1 will entail considerable earthmoving activities which may expose or uncover archaeological heritage, such as buried hunter-gatherer campsites and human remains. Therefore, it is recommended that archaeological monitoring by a professional archaeologist take place during earthmoving operations between km 5 and km 7.1.
4. A 25m wide buffer must be established around Sites 055 and 056, which are located less than 30m from the north western boundary of the proposed calcrete quarry.
5. The proposed haul road from the calcrete quarry must avoid Sites 055 & 056.
6. Sites 745-751 and Site 753 in the proposed gravelled bad roads must be avoided in the final design of the roads. If this is not possible, the remains must be collected by a professional archaeologist. Sand must also be sieved for buried archaeological material. The remains must be curated and written up and a report presented to SAHRA. No archaeological material may be collected without a permit issued by SAHRA.
7. The design and layout of the proposed gravelled bad roads must avoid the dune areas. The flatter, vegetated south eastern portion of the site is preferred for construction of the roads.
8. Vegetation clearing operations and earthworks in the proposed gravelled bad roads must be monitored by a professional archaeologist. Most of the core footprint area is densely vegetated resulting in poor archaeological visibility. It is possible that buried LSA

campsites and unmarked human remains may be exposed during vegetation clearing operations and road construction activities.

9. The Environmental Control Officer (ECO) and site contractors must be briefed by the archaeologist prior to the construction phase commencing. This is to alert them to the possibility of uncovering archaeological heritage and the process to be followed in the event of this occurring.

10. Should any unmarked human remains or ostrich eggshell caches for example, be uncovered or exposed during construction activities these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or SAHRA (Att: Mr Philip Hine 021 462 4502). Burials and ostrich eggshell caches must not be removed or disturbed until inspected by a professional archaeologist.

11. The above recommendations must be included in the Environmental Management Plan (EMP) for the project.

Declaration of independence

I, **Jonathan Kaplan** (MA in archaeology, University of Cape Town, 1989), hereby confirm that I am a professional member, in good standing, of the Association of South African Professional Archaeologists (ASAPA membership # 253).

I am an accredited Principal Investigator for coastal shell middens and Stone Age archaeology, and Field Director for Rock Art.

As the appointed independent specialist archaeologist for this project, I hereby declare that I:

- Act as an independent specialist in this application;
- Regard the information contained in this report as it relates to my specialist input to be true and correct;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for work performed.



Signature of the specialist:

Name of company: **Agency for Cultural Resource Management**

Date: **05 November 2015**

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1. INTRODUCTION

Mercedes Benz South Africa (MBSA) is proposing the construction of a high oval test track (or proving ground) on Portion 6 of Farm 419 Steenkampspan, located about 40 kms north east of Upington (//Khara Hais Local Municipality) in the Kalahari Duneveld region of the Northern Cape Province (Figures 1 & 2).

The development will require the extensive clearing of natural vegetation and levelling of the site in order to construct the proving ground, and will involve considerable earthmoving operations that may have a negative impact on potentially important archaeological resources.

The proposed project includes the following infrastructure (Figure 3):

- A high speed oval test track (length approximately 17 kms), including lay-by areas, run offs and guard rails;
- A handling track (length approximately 5.5 kms) including bypass areas and run offs;
- A multifunctional area and return lanes;
- Graveled bad roads (length approximately 10 kms), including graveled parking areas;
- Graveled access roads (length approximately 2 kms), including paved parking areas;
- Asphalt-paved access roads (length approximately 2.5 kms) including parking areas;
- Asphalt-paved access roads on 'public side' (length approximately 2.5 kms), including parking areas, turning areas and lay-by areas
- A bridge crossing the high speed oval;
- Building area, including workshop/office buildings, waste and fuel storage, car wash area and parking;
- A guard house at the main entrance;
- Security fencing, and
- Single-lane roads and fencing for maintenance and ongoing farming.

Source material for road construction will be mined and quarried on the farm, while water for the operation and construction will be obtained from existing and new boreholes.

As part of the EIA process that is being conducted by WSP | Parsons Brinckerhoff, ACRM was commissioned by Mr Marc Schmits-Lapanier of IngenAix GmbH, to conduct a Heritage Impact Assessment (specialist archaeological study) of the proposed development.

The overall objectives of the study are:

- To assess the nature and sensitivity of archaeological resources in the affected environment;
- To identify the impact of the proposed development on such resources as well as options for mitigation in order to minimize potential negative impacts and to make recommendations for mitigation where necessary; and
- To identify archaeological resources and issues that may require further investigation.

Heritage Impact Assessment proposed high speed oval test track near Upington



Figure 1. Locality Map. The study area is indicated by the red outline

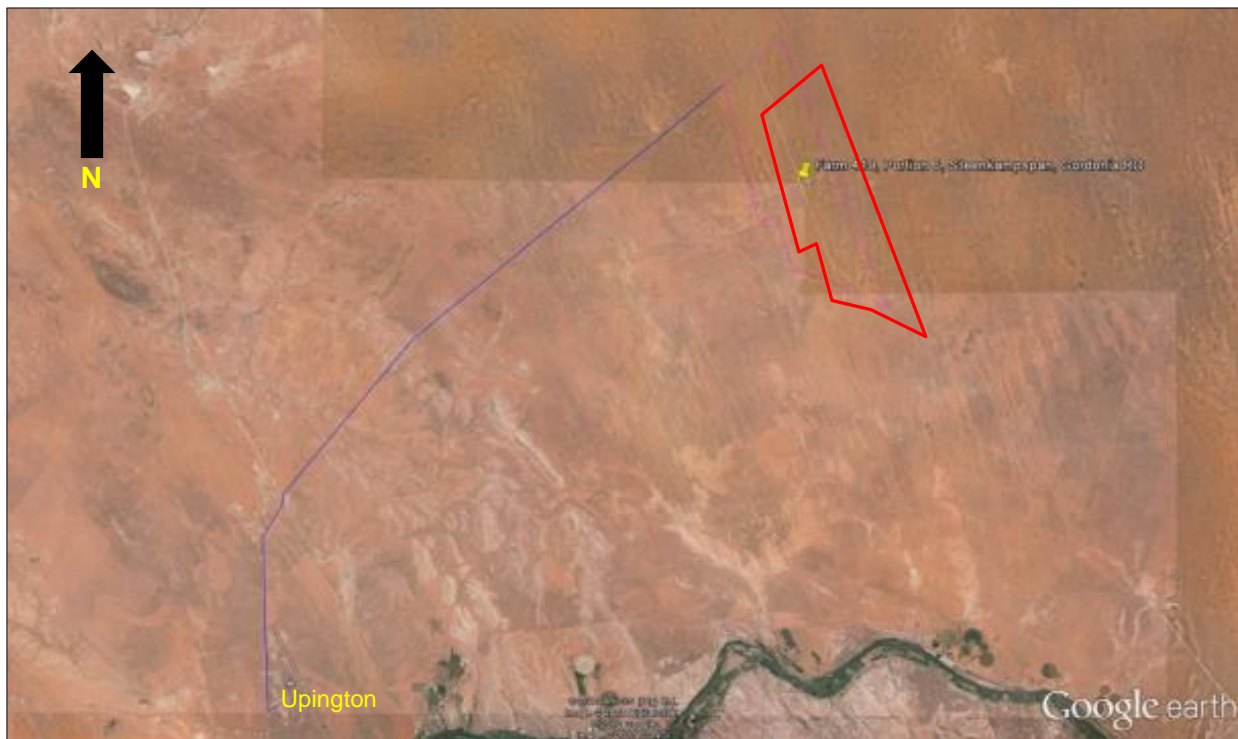


Figure 2. Google satellite image indicating the approximate boundary of Farm 149/6 Steenkampspan.

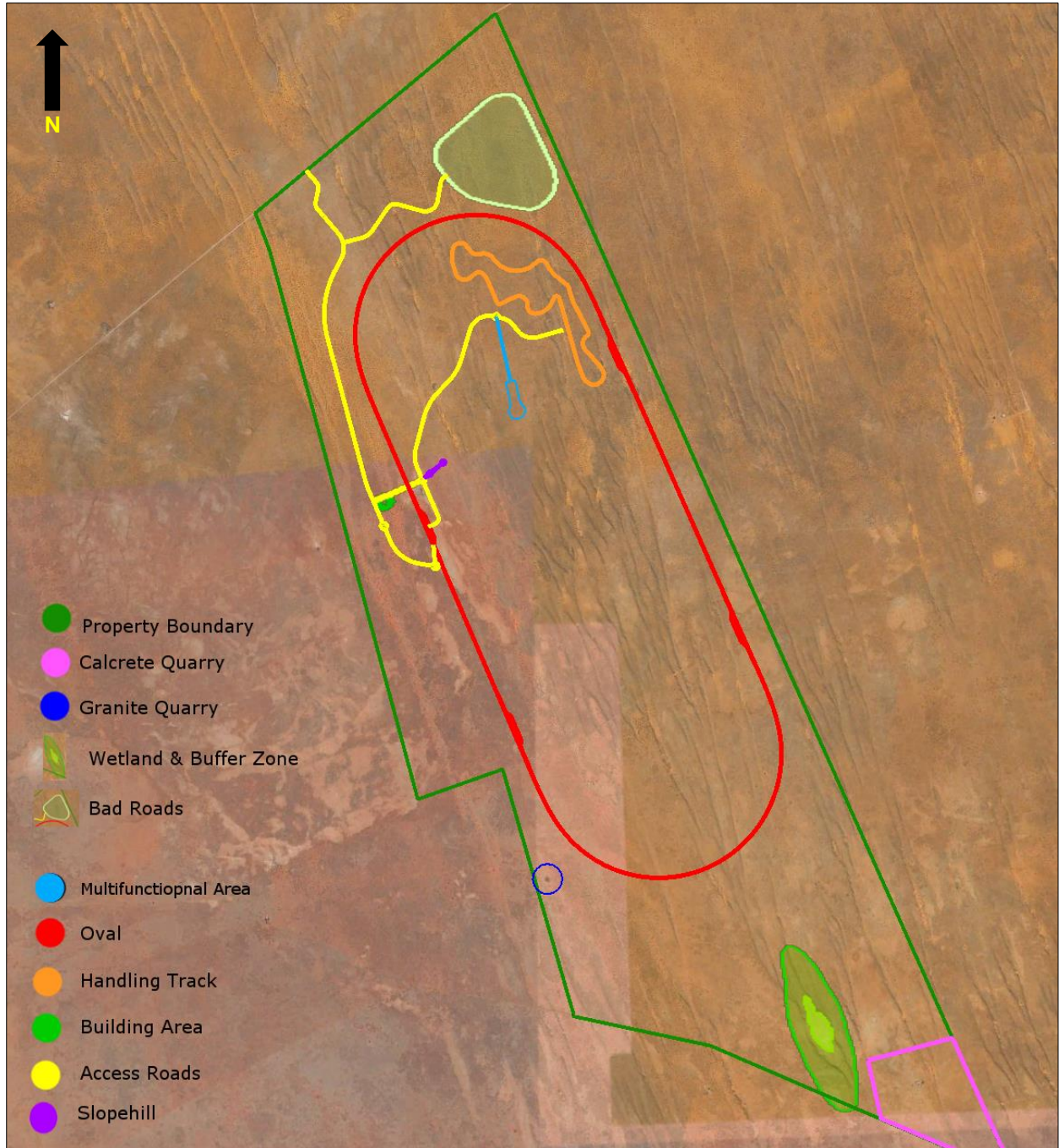


Figure 3. Google satellite image illustrating the MBSA high speed oval test track & associated infrastructure

2. HERITAGE LEGISLATION

The National Heritage Resources Act (Act No. 25 of 1999) makes provision for a compulsory Heritage Impact Assessment (HIA) when an area exceeding 5000 m² is being developed. This is to determine if the area contains heritage sites and to take the necessary steps to ensure that they are not damaged or destroyed during development.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

Section 38 (1) (a) of the Act also indicates that any person constructing a powerline, pipeline or road, or similar linear development or barrier exceeding 300m in length is required to notify the responsible heritage resources authority, who will in turn advise whether an impact assessment report is needed before development can take place

3. TERMS OF REFERENCE

The Terms of Reference for the archaeological study are:

- To determine whether there are likely to be any important archaeological remains that may be impacted by the proposed development;
- To indicate any constraints that would need to be taken into account in considering the development proposal;
- To identify potentially sensitive archaeological areas, and
- To recommend any further mitigation or management action.

4. DESCRIPTION OF THE RECEIVING ENVIRONMENT

Steenkampsan is located about 40 kms north east of Upington in the Kalahari Duneveld region of the Northern Cape. The 3750 ha farm is a generally flat, undulating landscape interspersed with occasional dunes. The plains are covered in deep red Kalahari soils, tall Bushman grass and shrubs, with sparse tree cover. There is very little surface stone covering the area. There, are no seasonal or permanent sources of water such as streams, springs or pans within the proposed development site. An outcropping (or inselberg) of rock on the farm has been identified as a complementary source of road gravel, and is the only significant landscape feature in an otherwise featureless landscape (Figures 4-14).

Existing infrastructure on the farm includes gravel roads, fencing, cattle pens, windmills, a concrete dam, and a small farm house. Current activities taking place include grazing (cattle). The surrounding land use comprises vast tracts of vacant agricultural land.

The proposed calcrete quarry in the south eastern corner of the farm (refer to Figure 3) is fairly large, although not all of the resource will be exploited. A granite porphyry outcrop/inselberg of rock (known as Klip Kopje) near the south western boundary of the farm has also been identified as a complementary source of road gravel which will be quarried (Figure 17).



Figure 4. The study site facing south east. Note the dune crests and the plains which are covered in tall Bushman grass and shrubs.



Figure 5. The study site facing northwest.



Figure 6. The study site facing north.



Figure 7. The study site facing east.



Figure 8. The study site facing south east.



Figure 9. The study site facing east.



Figure 10. The study site facing northwest.



Figure 11. View facing south east, looking onto the proposed bad roads



Figure 12. View facing south toward the proposed bad roads. Note the dense Vegetation, cover in the background.



Figure 13. Multifunctional area, view facing south.



Figure 14. Multifunctional area, view facing north.



Figure 15. View facing north from the oval track to the proposed handling track.



Figure 16. Proposed calcrete quarry. View facing east. The proposed haul road will come through this area.



Figure 17. Proposed hard rock quarry. Close up view of the inselberg.

5. STUDY APPROACH

5.1 Method of survey

The overall purpose of the HIA is to assess the sensitivity of archaeological resources in the affected area, to determine the potential impacts on such resources and to avoid and/or minimize such impacts by means of management and/or mitigation measures.

A 4-day field assessment of the proposed development site was undertaken by ACRM in November, 2014. The landscape is generally flat and much of it is covered in Bushman grass and shrub. No drainage lines and no bedrock exposures were noted apart from the outcropping inselberg (the proposed gravel quarry) in the south western portion of the farm.

A follow up, 3-day field study was done in November 2015 in order to investigate additional infrastructure requirements (proposed gravelled bad roads'), and changes to design informants (internal access roads & new building area).

Areas targeted during the field assessment included dunes and wind deflated areas, as it is known that Later Stone Age campsites occur in these locales (Kaplan 2014; Morris 2014).

The entire alignment of the proposed internal access roads was surveyed on foot.

The proposed gravel haul road from the calcrete quarry was not assessed as the large footprint area was investigated in November 2014.

The significance of archaeological resources was assessed in terms of their content and context. Attributes considered in determining significance include artefact and/or ecofact types, rarity of finds, exceptional items, organic preservation, potential for future research, density of finds and the context in which archaeological traces occur.

Survey track paths were captured (refer to Figures A-D in Appendix II) and the position of identified archaeological occurrences and observations were fixed by a hand held GPS unit set on the map datum wgs 84. Unfortunately, some of the track paths and waypoints in the proposed bad roads was lost and could not be recovered.

A desk top study and literature review was also done, mostly sourced from the SAHRIS/SAHRA website, although it must be noted that, apart from the 2014 ACRM field study, no work has previously been done in the surrounding area.

Heritage resources identified during the study were graded following the system established by Winter & Baumann (2005) in the guidelines for involving heritage practitioners in EIAs (Table 1).

Grade	Level of significance	Description
1	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
2	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
3A	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3A heritage resources.
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources

Table 1. Grading of heritage resources (Source: Winter & Baumann 2005)

5.2 Constraints and limitations

Overall, archaeological visibility over much of the farm was fairly good, but dense vegetation cover in the proposed handling track and multi-functional area resulted in poor visibility. However, the results of the field study indicate that this area of the farm is not a sensitive or threatened archaeological landscape.

The proposed gravelled bad roads in the north eastern portion of the farm are densely vegetated with large thorny Swarthaak, resulting in limited visibility. Results from the field assessment indicate that the proposed development site is potentially, a sensitive archaeological landscape.

5.3 Identification of potential risks

It cannot be ruled out that significant archaeological resources will be impacted during the construction phase of the development. Potential heritage-sensitive areas are the proposed bad roads in the north eastern portion of the farm and the oval test track, between km 5 and km 7.1. Buried archaeological sites and unmarked human remains may be uncovered during vegetation clearing, landscaping and earthmoving operations.

5.4 Results of the desk top study

According to Beaumont and Vogel (2006), the archaeology of the Northern Cape is rich and varied covering long spans of human history. In Upington, only a few studies have been done, as part of the EIA process. It was shown that stone artefact frequencies tend to be low, temporally mixed and occurring in a displaced context (Beaumont 2006a, b, c, d, 2008; Kaplan 2008; Dreyer 2013; Van Schalkwyk 2014; Nilssen 2012). In contrast Morris (2014) notes that there is substantial herder encampments along the floodplain of the Orange River but tend to be short duration visits by small groups of hunter-gatherers. Early and Middle Stone Age site older than 20 000 years are rare in the Upington area, but small scatters of tools have been encountered in the area and ESA tools such as

handaxes, cleavers cores and blades have been documented north of the town (Morris 2014, Morris 2010, 2012; Kaplan 2013a & b).

6. FINDINGS

A spreadsheet and description of archaeological resources documented during the study is presented in Table 2 (refer to Appendix I).

Track paths and location of archaeological occurrences recorded during the field study is presented in Figures A-D (refer to Appendix II).

Two hundred and twenty four archaeological observations were recorded during the study. The majority of resources documented comprise dispersed scatters of LSA remains of Low Grade 3C significance. Most of the remains are spread very thinly and unevenly over the surrounding landscape, and comprise unmodified quartz flakes, chunks and cores, with a few quartzite and indurated shale flakes assigned to the MSA (Figures 18 & 19). It is maintained that most of the implements represent discarded flakes and flake debris. Scatters of MSA remains are confined to the south eastern portion of the farm, closer to the footprint area of the proposed calcrete quarry.



Figure 18, Collection of LSA & MSA tools. Scale is in cm



Figure 19, Collection of LSA & MSA tools. Scale is in cm

As anticipated, the most compelling archaeological sites encountered during the study were recorded in wind deflated areas. These sites comprise high density scatters of LSA implements from late Holocene (2-3000 year old) hunter-gatherer campsites, where domestic activities such as the production of stone tools, manufacture of beads and processing of foodstuffs (plants & animals) were carried out.

Site 028 and 030 (Figure 21) held a large number of different types of tools, including convex and thumbnail scrapers, adzes, bladelets, backed pieces, awls, hammerstones, manuports, anvils, and upper and lower grindstone fragments, in a range of raw materials, both local (quartzite & quartz) and exotic (indurated shale, silcrete & chalcedony) (Figures 22-26). Organic remains including pottery, ostrich eggshell, beads, bone (tortoise) and the remains of broken ostrich eggshell water containers were also

found. Discreet activity areas (with cores, hammerstones, anvils, chips, chunks, flakes & ostrich eggshell fragments) were identified among outcroppings of stone beneath a stand of large *Acacia* trees (Figures 28-33). Large numbers of quartz flakes, chunks, manuports, chips and cores (Site 030) were also recorded near the northern edge of the dune (Figure 27) and are likely to be another discreet activity area. The site is well preserved, but trampling by cattle has compromised the integrity of the site.

The presence of microlithic backed tools (composite arrow points), as well as clay pottery, indicates that these sites date within the last 2-3000 years, shortly before and after the introduction of domestic stock (such as sheep) into the region.

Site 087 is another well preserved late Holocene, LSA campsite located in a large dune blowout in the south eastern portion of the farm (Figure 34). The site contains relatively large numbers of tools, including flakes, chips, chunks, scrapers, bladelets, backed pieces, an awl, miscellaneous retouched pieces, round and cylindrical bladelet cores, ostrich eggshell, including an edge ground disc, hammerstones, anvils, manuports, and lower and upper grindstone fragments, in quartz, quartzite, silcrete, indurated shale and chalcedony (Figures 34-42).

Significance of the archaeological remains

Sites 028, 030 and 087 have been rated as having Moderate-High (Grade 3B) significance in a local context. The proposed site layout plan (Figure 20 below) indicates that these sites will not be impacted by proposed development activities. On the advice of the archaeologist, the sites have been declared 'No-Go' areas.

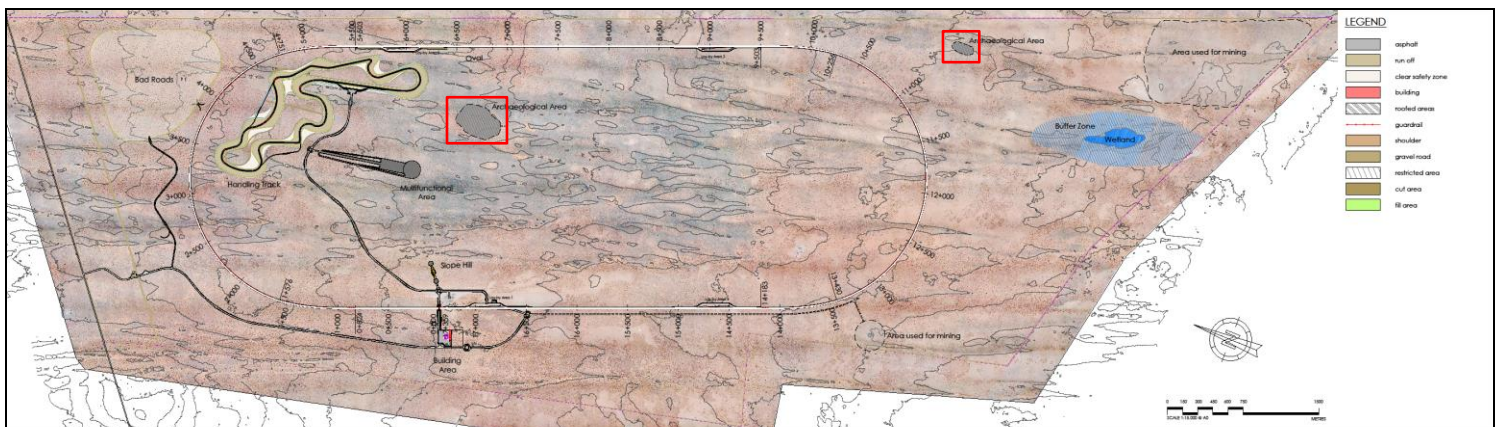


Figure 20. Proposed site layout plan for the MBSA high speed test track on Farm 149/6 Steenkampspan. The Grade 3B sites (red polygons) will not be impacted by proposed development activities. The sites have been declared 'No-Go' areas.

Several smaller scatters of tools (Sites 002, 079, 105 & 111), also representing LSA campsites were documented on the farm (Figures 43-48). Tools recorded on these sites, in wind deflated areas, include flakes, chips, chunks, bipolar cores, scrapers, backed pieces, hammerstones, manuports, anvils, ostrich eggshell and upper and lower grindstones, in quartz, indurated shale, silcrete, chalcedony and banded ironstone. The sites are located outside the footprint area of the proposed development site and will therefore not be impacted by proposed construction activities.

Heritage Impact Assessment proposed high speed oval test track near Uppington



Figure 21. Site 028 facing west



Figure 22. Site 028. View facing north



Figure 23. Site 028



Figure 24. Site 028



Figure 25. Site 028



Figure 26. Site 028



Figure 27. Site 030



Figure 29. Activity areas, Site 028



Figure 28. Activity areas, Site 028



Figure 30. Site 028. Ostrich eggshell & potsherd.



Figure 31. Site 028. Anvil. Scale in cm



Figure 32. Site 028. Anvil & ironstone core. Scale in cm



Figure 33. Site 028. In-situ hammerstone, anvil & quartz bipolar core. Scale in cm



Figure 35. Site 087



Figure 34. Site 087. View facing north east



Figure 36. Site 087



Figure 37. Site 087. Anvil. Scale in cm



Figure 38 Site 087



Figure 39. Collection of tools, Site 087. Scale in cm



Figure 40. Collection of tools/activity area, Site 087



Figure 41. Lower grindstone, Site 087. Scale in cm



Figure 43. Collection of tools from Site 079. Scale in cm



Figure 42. Site 087.



Figure 44. Site 079. View facing north west



Figure 45. Site 105. Arrow indicates scatter of tools



Figure 46. Collection of tools, Site 105. Scale in cm



Figure 47. Site 111. View facing north



Figure 48. Site 111. Scatter of tools including manuports flakes, chips, grindstone fragment & an anvil.

6.1 Proposed oval track

A late Holocene, LSA campsite (Sites 011-014/715) was documented close to the alignment of the proposed high speed test track, at \pm km 7 in the north eastern portion of the farm (Figure 49). Tools recorded in a series of wind deflated dunes include flakes, bladelets, chunks, a hammerstone, manuports cylindrical cores, an anvil, and grindstone fragments (Figure 50 & 53), in quartz, indurated shale, silcrete, quartzite and chalcedony. It is likely that more tools and cultural remains such as pottery, ostrich eggshell and beads may be buried below the windblown sands, and that the surface traces are only a small sample of what lies beneath the shifting sands (Kaplan 2014).

Heritage Impact Assessment proposed high speed oval test track near Uppington

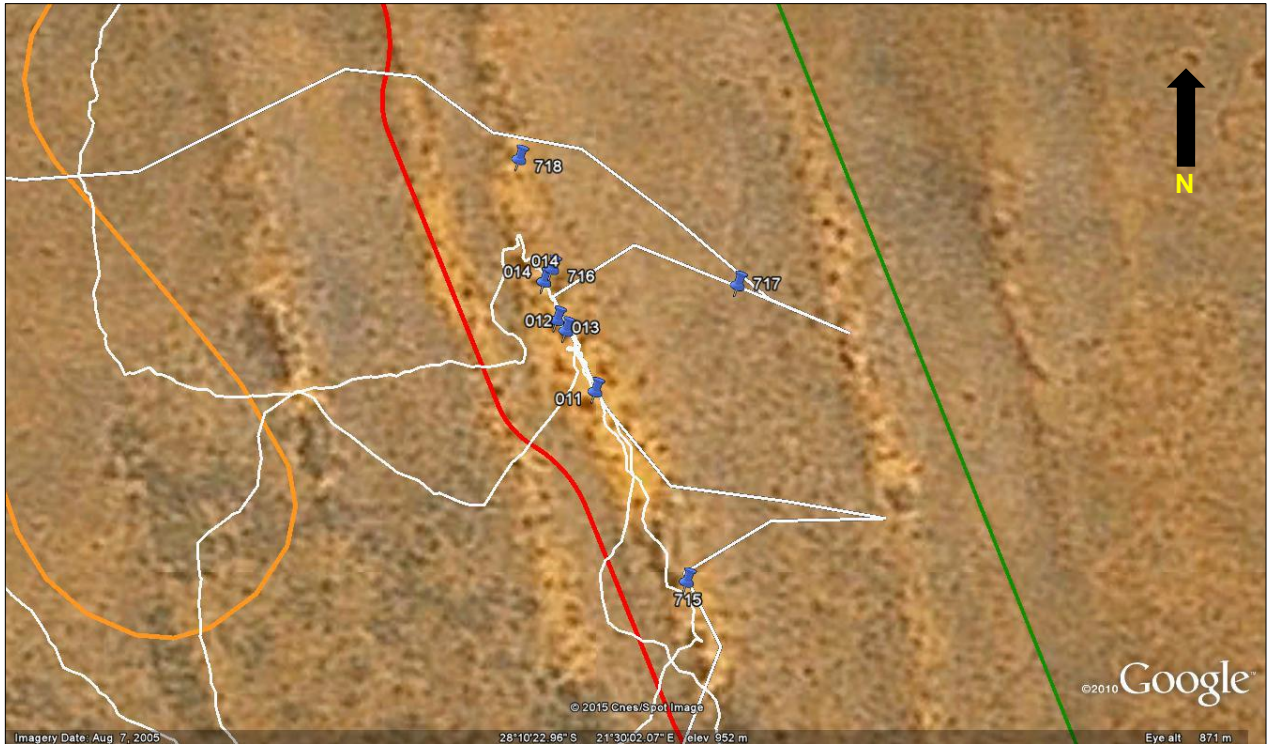


Figure 49. Google satellite map indicating sites 011-014/715 close to the alignment (red line) of the proposed oval track. The green line is the farm boundary. The orange line is the handling track. White lines are track paths.



Figure 50. Site 715. View facing northwest.



Figure 51. Sites 011-015. View facing south west.



Figure 52. Site 011-015. View facing north



Figure 53. Collection of tools, Site 011-014. Scale is in cm

Significance of the archaeological remains

Sites 011-015 and 715 have been graded as having Medium to Low (Grade 3C) significance within a local context.

6.2 Proposed quarries

A relatively large number of MSA tools older than 20 000 years, including modified and unmodified flakes, miscellaneous retouched pieces, blades, chunks and cores were recorded across the south eastern portion of the farm in the proposed footprint of the calcrete quarry, and in the surrounding area (Figure 54). A number of weathered flakes were also noted. The receiving environment is scattered with small nodules of calcrete (Figure 56). The tools are spread very thinly and unevenly over the surrounding landscape. More than 95% of the implements are in quartzite, but a few tools in indurated shale and banded ironstone were also recorded. LSA tools, including a limestone flake, a few quartz pieces and an upper grindstone were found in a large, degraded dune blowout north east of the footprint area (Site 036).

Two well preserved, *in-situ* scatters of MSA lithics (Sites 055 & 056) were recorded about 30 m from the north western corner of the proposed calcrete quarry (Figure 56). The density of tools indicates fairly extensive flaking activity (i. e. the production of tools). Tools counted include chunky triangular shaped and blunted flakes with convergent dorsal scars, chunks, and round and worked out (disc) cores in quartzite, silcrete and banded ironstone (Figures 57 & 58). No formal tools such as points or scrapers were found.

Significance of the archaeological remains

Sites 055 and 056 have been rated as having Medium-Low Grade 3C significance in a local context.

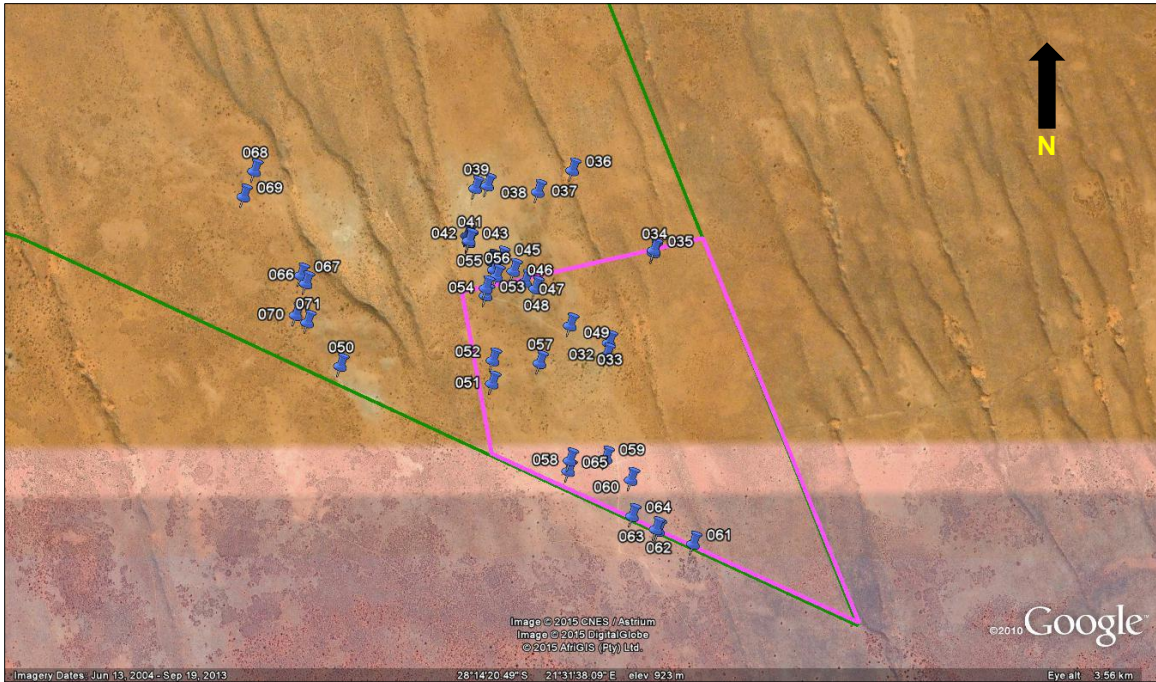


Figure 54. Google satellite map indicating the location of archaeological sites documented in the footprint area of the proposed calcrete mine (pink polygon).



Figure 55. The proposed calcrete quarry. View facing south. Note the large amount of calcrete nodules.



Figure 56, Sites 055 and 056 comprise large numbers of Middle Stone Age tools. A much smaller portion of the site will be quarried than indicated by the polygon



Figure 57. Site 055 and 056. View facing south east



Figure 58. Collection of MSA tools from Site 055 & 056. Scale is in cm

MSA and LSA tools in quartz, quartzite, indurated shale, silcrete, banded ironstone and chalcedony were found scattered around the base of the rock outcropping/inselberg known as Klip Kopje (Sites 072), while a few tools were documented on the kopje itself and in the surrounding area (Figure 59). The outcrop of granite porphyry has been identified as a source material (quarry) for road building activities (Figures 60 & 61). The outcropping is a significant feature in the landscape, and would have provided commanding views over the surrounding terrain during earlier Stone Age times.

Significance of the archaeological remains

The tools recorded near the kopje occur in a disturbed and displaced context and have been rated as having low (Grade 3C) significance.

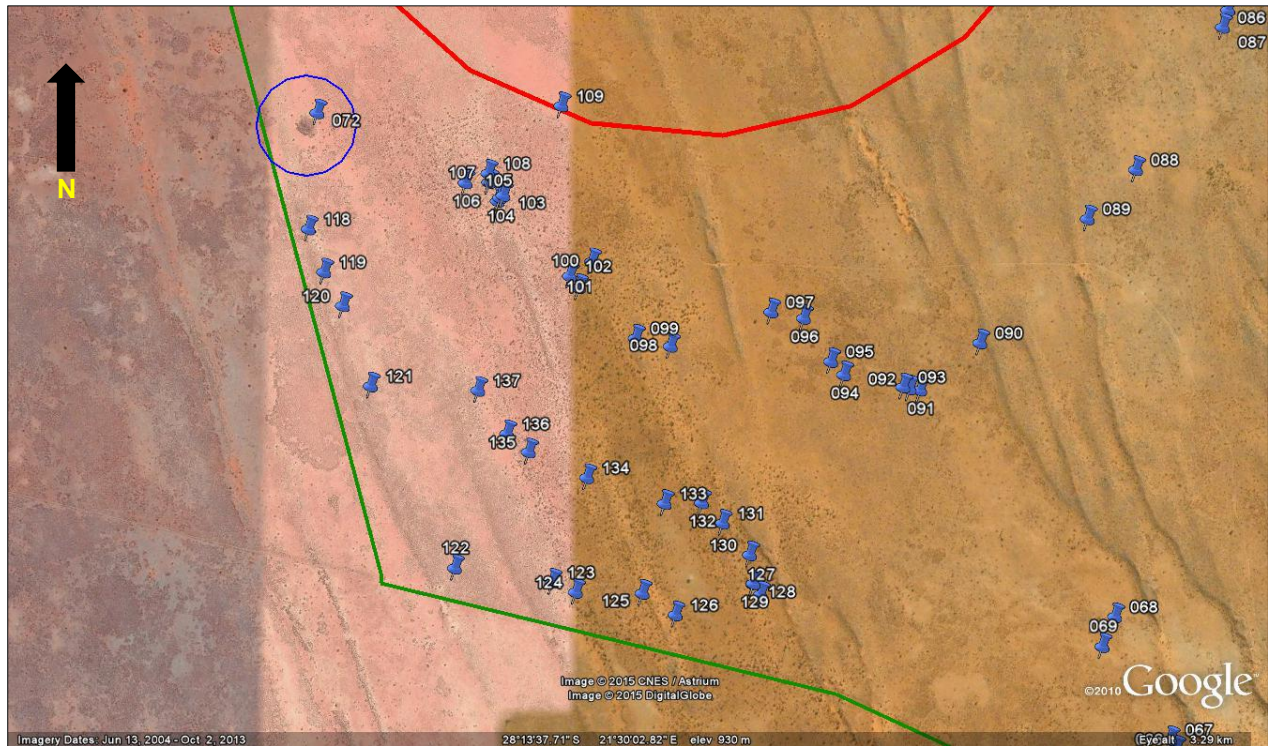


Figure 59. Google satellite image of archaeological sites documented in the southern portion of the farm. The blue circle (072) indicates the location of the proposed hard rock quarry which will be mined for road construction material.



Figure 60. Proposed Klip Kopje hard rock quarry. View facing south west.



Figure 61. Collection of LSA and MSA tools from Klip Kopje. Scale is in cm.

6. 3. Proposed multi-functional area

A few quartz flakes and chunks (of low Grade 3C significance) were found in the footprint area of the proposed multi-functional area. The proposed development site is not a sensitive archaeological landscape.

6.4 Proposed handling track

No archaeological resources were encountered in the footprint area of the proposed handling track. The proposed development site is not a sensitive archaeological landscape.

6.5 Proposed access roads

A small number of stone tools including LSA quartz flakes, chunks and cores, and a MSA retouched blade (of low Grade 3C significance) were recorded in the alignment of the proposed access roads. The proposed alignment and the immediate surrounding area are not considered a sensitive archaeological landscape. Large portions of the route are covered in thick patches of dune grass and dense stands of thicket vegetation. The wide, circular route is relatively flat, although it does pass close to the edge of the dune cordon in the north western portion of the farm, which was also searched for archaeological remains.

6.6 Proposed building area

No archaeological remains were found in the footprint area of the proposed new building area, which is a degraded piece of land close to existing farm infrastructure.

6.7 Proposed gravelled bad roads

Dispersed scatters of LSA remains were recorded in the proposed gravelled bad roads in the north eastern portion of the farm¹. The majority of these remains comprise isolated tools and small numbers of quartz flakes, chunks and cores (refer to Table 1 in Appendix I). Eight fragments of ostrich eggshell, and a few quartz flakes (Site 758) were found on a dune top outside the proposed development site. Most of the remains were encountered in the dune slacks, and on the sandy dune slopes in the western portion of the proposed site, although dispersed scatters and a few tools were encountered over the remainder of the site.

The proposed footprint area is densely vegetated (with Swarthaak) across the eastern portion of the site, but several LSA campsites (Sites 750/751, Site 753 & Sites 745-749) were encountered in wind deflated areas and dune blowouts. The context of the sites and the cultural remains present suggests that these sites are contemporaneous with the other hunter-gatherer campsites recorded on the farm (i .e. Sites 028, 030 & 087), and in the oval test track (i.e. Sites 011-105/751) (Figures 62 & 64-67). Most of the remains in these wind eroded sites comprise quartz flakes, chunks, a few cores and several large manuports, but tools such bladelets, hammerstones and grindstone

¹ Some track paths including waypoints were lost and could not be recovered

fragments were also noted. No pottery, beads or ostrich eggshell was found, but these may be buried below the windblown sands.

Significance of the archaeological remains

Sites 745-749, Sites 750/751 and Sites 753 have been rated as having Medium-Low Grade 3C significance within a local context. According to the layout plan for the gravelled bad roads (Figure 63), these potentially important sites will not be impacted by road construction activities. Sites 745-749 are located between 50 and 80 m from the alignment of the bad roads, and Sites 750/751 and 753 are located about 100m from the alignment. According to the lead project engineer Mr Marc Schmits-Lapainer (pers comm.) the maximum width of the gravelled roads will be ± 7 m, including a 1 m embankment on either side of the road.

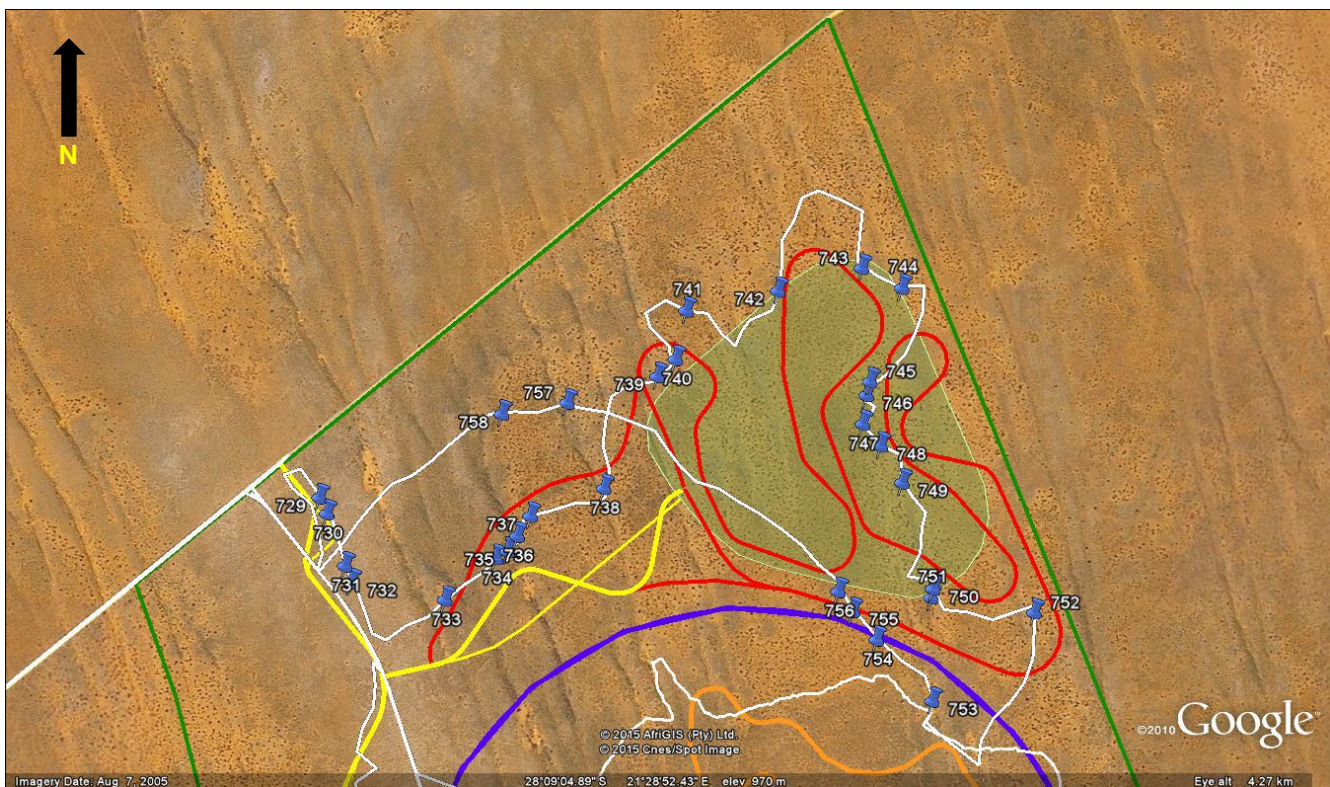


Figure 62. Google satellite image of archaeological sites in the proposed bad roads (red lines). The purple line is the oval track, and the white lines are track paths. The yellow line is the proposed access road



Figure 63. Google satellite image showing the Sites 745-753 in relation to the proposed layout of the bad roads.



Figure 64. Site 750/751



Figure 65. Site 745-749



Figure 66. Lower grindstone, Site 745-749. Scale is in cm



Figure 67. Site 753. View facing north east.

7. CONCLUSION

The field study has captured a good record of the archaeological heritage present on Farm 419/6 Steenkampspan. The assessment has shown that the cultural landscape is dominated by dispersed scatters of Later Stone Age implements (mainly flake debris), including a number of rare, late Holocene 2-3000 year old hunter-gatherer campsites.

Middle Stone Age tools appear to be confined to the south eastern portion of the farm in the vicinity of the proposed calcrete quarry.

No Early Stone Age remains were found.

Overall, the results of the study indicate that the proposed activity (i. e. development of a high speed test track) and associated infrastructure will not have an impact of great significance on the archaeological heritage, as these are mostly expected to be limited.

Indications are that there are no fatal flaws, and provided that the recommendations for mitigation and management are considered and/or implemented, there are no objections to the proposed development proceeding on Farm 419/6 Steenkampspan.

8. RECOMMENDATIONS

With regard to the proposed construction of a high speed test track (or proving ground) on Farm No. 419/6 Steenkampspan, the following recommendations are made:

1. Sites 028, 030 and 087 must be avoided during the construction and operational phase of the project. The site layout plan indicates that these, Grade 3B rated sites (of moderate to high significance) will not be impacted by proposed construction activities. Archaeological mitigation will therefore not be required. On the advice of the consultant, the sites have been declared 'No-Go Areas'.

2. Sites 011-014/715, in the alignment of the oval track, must be mitigated. The remains must be collected by a professional archaeologist. Sand must also be sieved for buried archaeological material. The remains must be curated and written up and a report submitted to the South African Heritage Resources Agency (SAHRA). No archaeological material may be collected without a permit issued by SAHRA.
3. A proposed 50m wide cutting on both sides of the centre line of the oval track between km 5 and km 7.1 will entail considerable earthmoving activities which may expose or uncover archaeological heritage, such as buried hunter-gatherer campsites and human remains. Therefore, it is recommended that archaeological monitoring by a professional archaeologist take place during earthmoving operations between km 5 and km 7.1.
4. A 25m wide buffer must be established around Sites 055 and 056, which are located less than 30m from the north western boundary of the proposed calcrete quarry.
5. The proposed haul road from the calcrete quarry must avoid Sites 055 & 056.
6. Sites 745-751 and Site 753 in the proposed gravelled bad roads must be avoided in the final design of the roads. If this is not possible, the remains must be collected by a professional archaeologist. Sand must also be sieved for buried archaeological material. The remains must be curated and written up and a report presented to SAHRA. No archaeological material may be collected without a permit issued by SAHRA.
7. The design and layout of the proposed gravelled bad roads must avoid the dune areas. The flatter, vegetated south eastern portion of the site is preferred for construction of the roads.
8. Vegetation clearing operations and earthworks in the proposed gravelled bad roads must be monitored by a professional archaeologist. Most of the core footprint area is densely vegetated resulting in poor archaeological visibility. It is possible that buried LSA campsites and unmarked human remains may be exposed during vegetation clearing operations and road construction activities.
9. The Environmental Control Officer (ECO) and site contractors must be briefed by the archaeologist prior to the construction phase commencing. This is to alert them to the possibility of uncovering archaeological heritage and the process to be followed in the event of this occurring.
10. Should any unmarked human remains or ostrich eggshell caches for example, be uncovered or exposed during construction activities these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or SAHRA (Att: Mr Philip Hine 021 462 4502). Burials and ostrich eggshell caches must not be removed or disturbed until inspected by a professional archaeologist.
11. The above recommendations must be included in the Environmental Management Plan (EMP) for the project.

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Appendix A

Spreadsheet of waypoints and description of archaeological finds

Heritage Impact Assessment proposed high speed oval test track near Upington

Site	Name of farm	Lat/Long	Description of finds	Grading	Suggested mitigation
	Farm 419/6 Steenkampspan				
001		S28 09.999 E21 28.459	Quartz flake	3C	None required
002		S28 09.963 E21 28.671	Small scatter of tools on east facing dune top, on red sands, including small quartz core, flake, chips, ccs flake, limestone core, tiny pieces of weathered adiaagnostic bone, chunk of quartzite manuport.	3C	None required, site falls outside the proposed development site
003		S28 10.008 E21 28.707	Quartz core, weathered/cortex	3C	None required
004		S28 09.941 E21 28.670	Quartz flake	3C	None required
005		S28 09.940 E21 28.681	Quartz chunk	3C	None required
006		S28 10.223 E21 28.932	Quartz flake	3C	None required
007		S28 10.237 E21 29.134	Quartz chunk	3C	None required
008		S28 10.251 E21 29.219	Quartz chunk	3C	None required
009		S28 10.280 E21 29.258	Nicked quartz flake	3C	None required
010		S28 10.305 E21 29.283	Quartz chunk/core	3C	None required
015		S28 10.304 E21 29.769	Quartz flake	3C	None required
016		S28 10.237 E21 29.777	Very thin scatter of a few quartz flakes and chips	3C	None required
017		S28 10.211 E21 29.787	Quartz chunk	3C	None required
018		S28 09.772 E21 29.533	Quartz and limestone flakes	3C	None required
119		S28 10.241 E21 28.748	Quartz flake	3C	None required
020		S28 10.432 E21 28.777	Quartz flake	3C	None required
021		S28 10.511 E21 28.805	Relatively large number of quartz flakes & chunks, quartz core, a few quartzite and banded ironstone flakes, CCS chip and flake & quartzite core, on dune slope that has been cut through by a sandy farm road. Mostly in a disturbed context. Site is very disturbed.	3C	None required
023		S28 10.014 E21 28.693	Quartz flake and chunk	3C	None required
025		S28 11.951 E21 30.568	CCS flake	3C	None required
026		S28 11.816 E21 30.550	Quartz flake on dune	3C	None required
027		S28 11.778	CCS chunk	3C	None required

Heritage Impact Assessment proposed high speed oval test track near Uppington

		E21 30.600			
028		S28 10.860 E21 29.759	Extensive, high density scatter of LSA tools on large prominent dune, many of the tools in wind deflated areas, but many also lying on the surface, including activity areas (quartz and indurated shale flakes, pottery, chunks, cores, under large trees). Many tools, including OES concentrated among small outcroppings (seats) of stone. 100's of pieces of quartz, flakes, silcrete bladelets, chunks, points and cores. Anvil/hammerstone, scrapers, indurated shale cobble/cortex core, hammerstone/upper grindstone, many pieces of OES, also indurated shale, and some CCS. A few pieces of undecorated pottery as well. Quartzite core. CCS core and anvil lying side by side. Site is quite heavily trampled by cattle.	Moderate to High 3B	Archaeological site has been set aside as a No-Go Area.
029		S28 10.657 E21 30.109	Quartz chunk and a few flakes	3C	None required
030		S28 10.774 E21 29.740	Large numbers of quartz flakes, chips and chunks – extension of Site 028	Moderate to High 3B	Archaeological site has been set aside as a No-Go Area
031		S28 11.119 E21 29.808	Quartz chunk in 'deep' windblown hollow	3C	None required
Mine area					
033		S28 14.340 E21 31.693	Weathered indurated shale MSA flake	3C	None required
034		S28 14.167 E21 31.790	Weathered indurated shale MSA flake	3C	None required
035		S28 14.163 E21 31.791	MSA quartzite flake	3C	None required
036		S28 14.011 E21 31.613	Lower grindstone and limestone chunk in large wind deflated hollow. Highly disturbed, gravel road through.	3C	None required
037		S28 14.052 E21 31.538	Low density scatter of MSA quartzite flakes	3C	None required
038		S28 14.040 E21 31.428	Low density scatter of MSA quartzite flakes including, a banded ironstone utilized/retouched blade near test pit	3C	None required
040		S28 14.136 E21 31.385	MSA flake	3C	None required
041		S28 14.145 E21 31.389	Snapped MSA blade reworked as an end scraper.	3C	None required
042		S28 14.148 E21 31.389	Quartzite MSA flake	3C	None required
043		S28 14.149 E21 31.389	Low density scatter of quartzite MSA flakes and chunks, also some in banded ironstone	3C	None required

Heritage Impact Assessment proposed high speed oval test track near Upington

044		S28 14.186 E21 31.438	MSA quartzite flake	3C	None required
045		S28 14.180 E21 31.459	MSA quartzite flake	3C	None required
046		S28 14.203 E21 31.485	MSA chunk	3C	None required
047		S28 14.224 E21 31.511	Quartzite MSA disc/prepared core	3C	None required
048		S28 14.237 E21 31.533	Low density scatter of MSA quartzite flakes	3C	None required
049		S28 14.307 E21 31.609	Large flake, MSA quartzite flakes and core	3C	None required
050		S28 14.385 E 21 31.110	Low density scatter of quartzite MSA flakes, some in white fine-grained quartzite	3C	None required
051		S28 14.418 E21 31.439	Thick chunky triangular shaped MSA quartzite flake	3C	None required
052		S28 14.374 E21 31.441	Broken MSA quartzite flake	3C	None required
054		S28 14.236 E21 31.426	Reworked MSA retouched flake	3C	None required
055		S28 14.201 E21 31.443	Medium density-scatter of MSA tools (mostly quartzite) on crest of hill close to calcrete road. Overlooking the valley. Also indurated shale, weathered. Large and smaller chunky tools	Medium to Low 3C	Buffer of 25 m to be established around the site. Haul roads from the quarry to avoid
056		S28 14.214 E21 31.448	Same as above, probably an extension	Medium to Low 3C	Buffer of 25 m to be established around the site. Haul roads from the quarry to avoid
057		S28 14.379 E21 31.543	Low density scatter of a few quartzite MSA tools		None required
058		S28 14.565 E21 31.609	Lovely indurated shale utilized/retouched blade	3C	None required
059		S28 14.561 E21 31.687	Chunky MSA quartzite flake	3C	None required
060		S28 14.602 E21 31.742	Several quartzite MSA flakes (low – density scatter) and disc core	3C	None required
061		S28 14.724 E21 31.877	Diffuse scatter of some MSA quartzite flakes, including indurated shale	3C	None required
062		S28 14.699 E21 31.801	Same as above	3C	None required
063		S28 14.696 E21 31.797	Same as above including disc core	3C	None required
067		S28 14.213 E21 31.024	Broken quartzite MSA chunk	3C	None required
068		S28 14.014 E21 30.922	2 quartzite MSA flakes	3C	None required
069		S28 14.062 E21 30.898	Large quartzite core	3C	None required
070		S28 14.289 E21 31.013	Quartzite flake	3C	None required

Heritage Impact Assessment proposed high speed oval test track near Upington

071		S28 14.303 E21 31.038	Quartzite flake	3C	None required
072		S28 13.201 E21 29.455	Klip kopje – loose scatter of MSA & LSA tools in quartzite, quartz, banded ironstone & quartz, including flakes, chunky flakes, broken flakes, quartz core and quartzite flake on top of kopje. Significant landscape feature and clearly visited by Stone Age people in the distant past	3C	None required
073		S28 13.198 E21 29.456	Klip kopje	3C	None required
076		S28 12.643 E21 30.560	Quartz chunk	3C	None required
077		S28 12.318 E21 30.758	Reworked silcrete MSA flake	3C	None required
078		S28 12.382 E21 31.021	Large quartzite core	3C	None required
079		S28 12.447 E21 31.074	A few fragments of ostrich eggshell, large lump of quartzite, smaller quartzite chunk, utilized quartz piece. About 20m to the west of the Shepherd Tree, quartzite flake, slab quartzite and small chunk – in small dune hollow. Banded ironstone flake	Medium to Low 3C, but <u>outside</u> the development site	None required
080		S28 12.518 E21 31.079	Small quartz chunk	3C	None required
081		S28 12.476 E21 31.087	Small piece of ochre in deflation hollow	3C	None required
082		S28 12.671 E21 31.146	Quartz flake	3C	None required
083		S28 12.810 E21 31.025	Quartz flake	3C	None required
084		S28 12.830 E21 31.047	Quartz chunk	3C	None required
085		S28 13.032 E21 31.127	Quartz flake	3C	None required
086		S28 13.060 E21 31.117	Quartz flake and chunk	3C	None required
087		S28 13.071 E21 31.222	Large dune blow out – relatively large numbers of stone flakes and chips, mostly quartz, but also some quartzite and CCS. Including flakes, small bipolar cores, chunks, backed bladelet, backed awl, end/side scraper, quartzite core, several anvils, and hammerstones, large cobbles, upper & lower grindstones, scraper, MRPs, convex/end scraper, quartz and CCS blade and x 3 bladelets, CCS core & scraper, large manuports. Ostrich eggshell disc. Very likely that more material	Moderate to High 3B	Archaeological site has been set aside as a No-Go Area

Heritage Impact Assessment proposed high speed oval test track near Upington

			is buried under the soft sands.		
088		S28 13.290 E21 30.958	Quartz chunk	3C	None required
089		S28 13.370 E21 30.870	MSA quartzite flake	3C	None required
090		S28 13.571 E21 30.673	Quartz flake	3C	None required
091		S28 13.648 E21 30.563	Quartz flake	3C	None required
092		S28 13.646 E21 30.544	MSA weathered snapped quartzite flake & miscellaneous retouched MSA flake	3C	None required
093		S28 13.643 E21 30.532	MSA broken quartzite flake	3C	None required
094		S28 13.623 E21 30.423	Quartz crystal flake	3C	None required
095		S28 13.602 E21 30.399	Quartz flake	3C	None required
096		S28 13.532 E21 30.349	Quartz chunk/core	3C	None required
097		S28 13.522 E21 30.289	Quartz flake	3C	None required
098		S28 13.578 E21 30.104	Quartz chunk	3C	None required
099		S28 13.565 E21 30.040	Quartzite chunk	3C	None required
100		S28 13.441 E21 29.960	Quartz flake	3C	None required
101		S28 13.483 E21 29.936	Indurated shale flake	3C	None required
102		S28 13.464 E21 29.919	Quartzite chunk	3C	None required
103		S28 13.334 E21 29.797	Quartz flake	3C	None required
104		S28 13.338 E21 29.791	Quartzite flake	3C	None required
105		S28 13.343 E21 29.787	A scatter of artefacts on soft sand around a Shepherd Tree, that includes a double-sided anvil, CCS scraper, CCS utilised flake, 2 pieces of OES, a handful of quartz chunks and flakes	Medium to Low 3C, but falls <u>outside</u> the proposed development site	None required
106		S28 13.314 E21 29.727	Lots of loose non-artefactual stone, including a single quartzite flake and chunk	3C	None required
107		S28 13.313 E21 29.771	Snapped utilized quartzite blade, and chunk, cortex quartz flake	3C	None required
108		S28 13.298 E21 29.769	Several flakes and a chunk	3C	None required
109		S28 13.189 E21 29.903	Thin quartzite flake	3C	None required
110		S28 12.894 E21 30.154	Quartz flake	3C	None required
111		S28 12.656 E21 30.231	Low density scatter of LSA tools in a dune blow out, including large	Medium to Low 3C, but	None required

Heritage Impact Assessment proposed high speed oval test track near Upington

			quartzite MRP, anvil, CCS chunk, CCS flake, small piece of weathered and burnt adiaagnostic bone, CCS cortex flake, Quartzite cobble, large quartz flake, lovely CCS utilized bladelet, lower grindstone/chunk, quartz chips, quartzite flake, cores, fragment of OES, hammerstone	falls <u>outside</u> the proposed development site	
112		S28 12.631 E21 30.221	Quartzite flake	3C	None required
114		S28 12.569 E21 30.183	Miscellaneous retouched quartzite flake	3C	None required
115		S28 12.667 E21 29.979	Chunky retouched quartz cortex flake	3C	None required
116		S28 12.753 E21 29.856	Small quartz chunk	3C	None required
117		S28 12.752 E21 29.811	Large quartzite MSA flake	3C	None required
118		S28 13.389 E21 29.439	Butt of snapped CCS bladelet	3C	None required
119		S28 13.458 E21 29.468	Quartz chunk	3C	None required
120		S28 13.513 E21 29.503	Snapped CCS flake/blade	3C	None required
121		S28 13.643 E21 29.554	Small chert/CCS flake	3C	None required
122		S28 13.937 E21 29.709	Very thin and dispersed scatter of a few quartzite flakes, chunks on soft sands	3C	None required
123		S28 13.960 E21 29.888	Same as above, including quartzite chunk and flake	3C	None required
124		S28 13.976 E21 29.931	Quartzite chunk	3C	None required
125		S28 13.977 E21 30.054	Quartz chunk	3C	None required
126		S28 14.012 E21 30.114	Quartz chunk	3C	None required
127		S28 13.979 E21 30.271	MSA silcrete flake	3C	None required
128		S28 13.962 E21 30.257	Very thin and dispersed scatter of tools including quartz flakes and chunk on soft sands in back of dune area	3C	None required
129		S28 13.961 E21 30.258	Same as above – back dune area	3C	None required
130		S28 13.915 E21 30.251	Same as above – back dune area	3C	None required
131		S28 13.864 E21 30.200	Same as above – back dune area	3C	None required
132		S28 13.831 E21 30.162	Same as above – back dune area	3C	None required
133		S28 13.832 E21 30.094	Same as above, including quartzite flake	3C	None required
134		S28 13.790	Dispersed scatter of quartz flakes &	3C	None required

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		E21 29.952	chunks, including large chunk and blade		
135		S28 13.749 E21 29.844	Large flat quartzite MSA blade, miscellaneous retouched piece, quartzite flake	3C	None required
136		S28 13.719 E21 29.805	Dispersed scatter of tools on soft sand in back dune area.	3C	None required
137		S28 13.649 E21 29.751	Quartz flake	3C	None required
138		S28 12.966 E21 29.620	Quartz flake	3C	None required
139		S28 12.893 E21 29.612	Round quartz core	3C	None required
140		S28 12.853 E21 29.607	Quartzite chunk	3C	None required
Multifunctional area					
007			Quartz flake	3C	None required
008			Quartz flake	3C	None required
009			Broken quartzite flake/blade (MSA)	3C	None required
010			Broken silcrete flake, quartzite chunk, 2 quartz flakes on patch of ground.	3C	None required
712			A few quartz pebbles and chunks	3C	None required
Handling track					
015		S28 10.304 E21 29.769	Quartz flake	3C	None required
016		S28 10.237 E21 29.777	Very thin scatter of a few quartz flakes and chips	3C	None required
017		S28 10.211 E21 29.787	Quartz chunk	3C	None required
018		S28 09.772 E21 29.533	Quartz and limestone flakes	3C	None required
119		S28 10.241 E21 28.748	Quartz flake	3C	None required
Oval track					
141		S28 12.626 E21 29.522	Quartz flake	3C	None required
011		S28 10.389 E21 30.015	Wind deflated dune top, flat quartz flake, 2-3 quartz chunks, quartz core, 3-4 chips, 4-5 quartzite flakes	Moderate to Low 3C	Archaeological remains to be collected. Sands to be sieved for presence of sub-surface material
012		S28 10.364 E21 30.001	Large lump of quartz	3C	None required
013		S28 10.359 E21 29.996	Small deflated hollow, indurated shale flake, a few quartz chips, ccs and quartz flake, quartzite core, quartz core, flat anvil,	Medium to Low 3C	Archaeological remains to be collected. Sands to be sieved for presence of sub-surface material
014		S28 10.343 E21 29.990	Small wind blowout – including a few quartz pebbles, quartz flakes,	Medium to Low 3C	Archaeological remains to be

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			chips & small chunk		collected. Sands also to be sieved for presence of sub-surface material
714			2 quartz chunks and quartz flake	3C	None required
715			Small scatter below dune slope, including snapped chalcedony flake, snapped silcrete bladelet, 2 cylindrical quartz cores, quartzite flake, grindstone fragment	Medium to Low 3C	Archaeological remains to be collected. Sands also to be sieved for presence of sub-surface material
716			Large quartz chunk (see Site 014)	3C	None required
717			Dispersed scatter of a few quartz pieces	3C	None required
718			Small patch/scatter of a few quartz flakes, chunk, core		
Bad roads					
733		S28 09.480 E21 28.368	Quartz chunk	3C	None required
734		S28 09.397 E21 28.483	Snapped, retouched quartz flake	3C	None required
735		S28 09.383 E21 28.509	Dispersed scatter of a few quartz pieces including quartz core on dune slope	3C	None required
736		S28 09.353 E21 28.531	Quartz flake & a few chunks scattered across the lower slopes of a dune ridge.	3C	None required
737		S28 09.313 E21 28.561	Dispersed scatter of quartz on dune slope	3C	None required
738		S28 09.257 E21 28.727	A few quartz chunks on dune slope	3C	None required
739		S28 09.034 E21 28.849	Several chunks and flakes on dune slope	3C	None required
740		S28 09.000 E21 28.890	Dispersed scatter of a few quartz flakes & chunks	3C	None required
741		S28 08.903 E21 28.914	Thin scatter of quartz chunk and flakes on level sands	3C	None required
742		S28 08.864 E21 29.122	Dispersed scatter of a few quartz chunks and flakes	3C	None required
743		S28 08.819 E21 29.311	Several quartz chunks and 2 flakes	3C	None required
744		S28 08.858 E21 29.402	Dispersed scatter of quartz flakes and chunks	3C	None required
745		S28 09.045 E21 29.330	Wide, yet patchy and dispersed Scatter of LSA tools – campsite, with quartz, large chunk, manuport	Medium-Low Grade 3C Will not be impacted	None required
746		S28 09.072 E21 29.322	Scatter of quartz including Lower grindstone	Medium-Low Grade 3C. will not be impacted	None required
747		S28 09.129 E21 29.313	Scatter of quartz in patch, including flakes and chunks	Medium-Low Grade 3C,	None required

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				will not be impacted	
748		S28 09.173 E21 29.354		Medium-Low Grade 3C. Will not be impacted	None required
749		S28 09.246 E21 29.402		Medium-Low Grade 3C, will not be impacted	None required
750		S28 09.458 E21 29.472	Scatter of quartz chunks and flakes	Medium-Low Grade 3C, will not be impacted	None required
751		S28 09.476 E21 29.469	Is probably extension of Sites 745/750, & includes a scatter of quartz chips, chunks & flakes, large quartzite chunk	Medium-Low Grade 3C, will not be impacted	None required
752		S28 09.505 E21 29.702	Quartz core and flake	3C	None required
753		S28 09.682 E21 29.471		Medium-Low Grade 3C, will not be impacted	None required
754		S28 09.560 E21 29.345		3C	None required
755		S28 09.503 E21 29.291		3C	None required
756		S28 09.463 E21 29.258		3C	None required
757		S28 09.087 E21 28.644		3C	None required
758		S28 09.110 E21 28.496	8 fragments of ostrich eggshell and a few quartz chunks and flakes	3C	None required
033		Co-ordinates lost	Quartz core, 2 quartz flakes	3C	None required
034		Co-ordinates lost	Quartz chunk and core	3C	None required
035		Co-ordinates lost	Quartz chunk	3C	None required
036		Co-ordinates lost	A few quartz flakes and chunks	3C	None required
037		Co-ordinates lost	Quartz chunk and 2-3 flakes	3C	None required
038		Co-ordinates lost			None required
039		Co-ordinates lost	Dispersed scatter of quartz in a dune blowout, including 2-3 larger chunks, ± 10 smaller chunks, several flakes, chips, misc. retouched piece and silcrete bipolar core – Campsite	Medium-Low Grade 3C, but outside the core footprint area	None required
040		Co-ordinates lost	Few quartz chunks & flakes and core in old 2-track road	3C	None required
041		Co-ordinates lost	Wide, dispersed scatter of quartz in flat dune area, surrounded by dune grass and Swarthaak.	3C	None required
042		Co-ordinates lost	Dispersed scatter of quartz, mainly chunks and small nodules near Shephard tree.	3C	None required
043		Co-ordinates lost	Same as above	3C	None required

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044		Co-ordinates lost	A few quartz flakes	3C	None required
045		Co-ordinates lost	2 large quartz chunks and smaller pieces of quartz.	3C	None required
046		Co-ordinates lost	Several pieces of quartz and possible grooved stone in dune blowout	3C	None required
047/see 753					
049		Co-ordinates lost	Relatively large numbers of quartz pebbles and chunks, including several chunks of fine grained siliceous rock, and fine grained quartzite in basin of a large dune blowout	3C	None required
051		Co-ordinates lost	Small dispersed scatter of quartz	3C	None required
053		Co-ordinates lost	High density scatter of quartz flakes, chunks and chips, cortex cobble chunks, large quartzite chunks, silcrete miscellaneous retouched piece, silcrete bladelet, quartz blade. And many pieces of ostrich eggshell – in a small wind deflated area in north eastern portion of the footprint area. LSA late Holocene campsite. Surrounded by Swarthaak	Medium-Low Grade 3C, but will not be impacted by proposed road	None required
054		Co-ordinates lost	Combined grindstone/hammerstone on broken cobble	3C	None required
Access roads					
719		S28 09.963 E21 28.108	A few bits of quartz stone	3C	None required
720		S28 10.023 E21 28.083	A few bits of quartz stone	3C	None required
721		S28 10.211 E21 28.082	Some quartz – flake and chunks and milky white chunk & core, & large quartzite chunk on edge of dune.	3C	None required
722		S28 10.450 E21 28.194		3C	None required
724		S28 11.246 E21 28.452	Quartz flake/utilized bladelet.	3C	None required
725		S28 11.390 E21 28.555	Quartzite chunk/utilized edge	3C	None required
726		S28 11.257 E21 28.734	Quartzite miscellaneous retouched blade	3C	None required
727		S28 11.254 E21 28.731	MSA quartzite flake (prepared platform)	3C	None required
728		S28 11.089 E21 28.643	Quartz chunk	3C	None required
729		S28 09.276 E21 28.083	Small quartz chunk/broken core in trampled area	3C	None required
730		S28 09.308 E21 28.100	Quartz chunk in trampled area	3C	None required
731		S28 09.412 E21 28.141	Broken silcrete chunk	3C	None required

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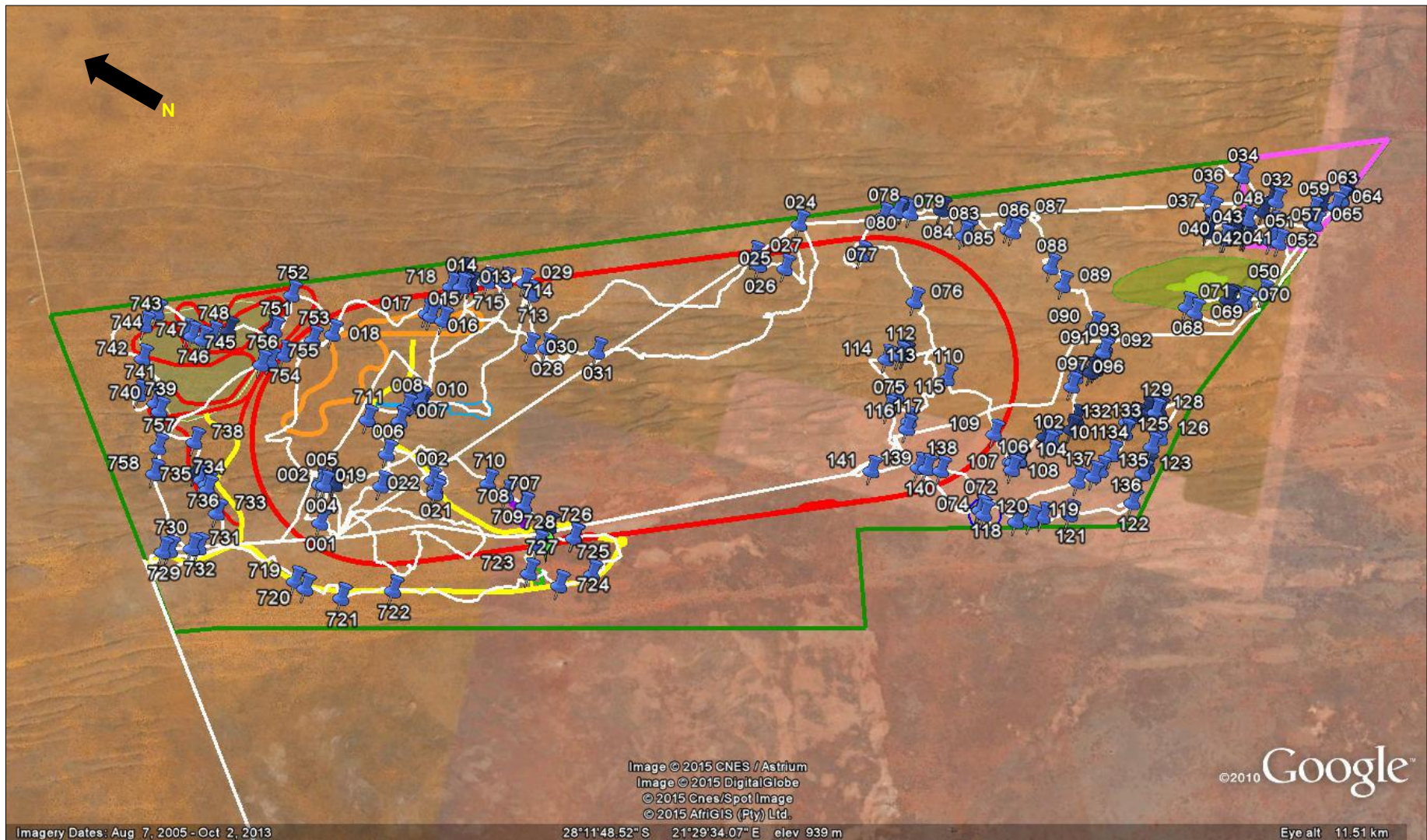
732		S28 09.445 E21 28.155	Quartz chunk	3C	None required
Building area				3C	None required
723		S28 11.084 E21 28.476	No archaeological heritage located in the 40 x 40 m footprint area. The footprint is already severely degraded		

Table 2. Spreadsheet of waypoints and description of archaeological finds

Appendix B

Track paths and waypoints of archaeological finds

Heritage Impact Assessment proposed high speed oval test track near Uppington



Heritage Impact Assessment proposed high speed oval test track near Upton

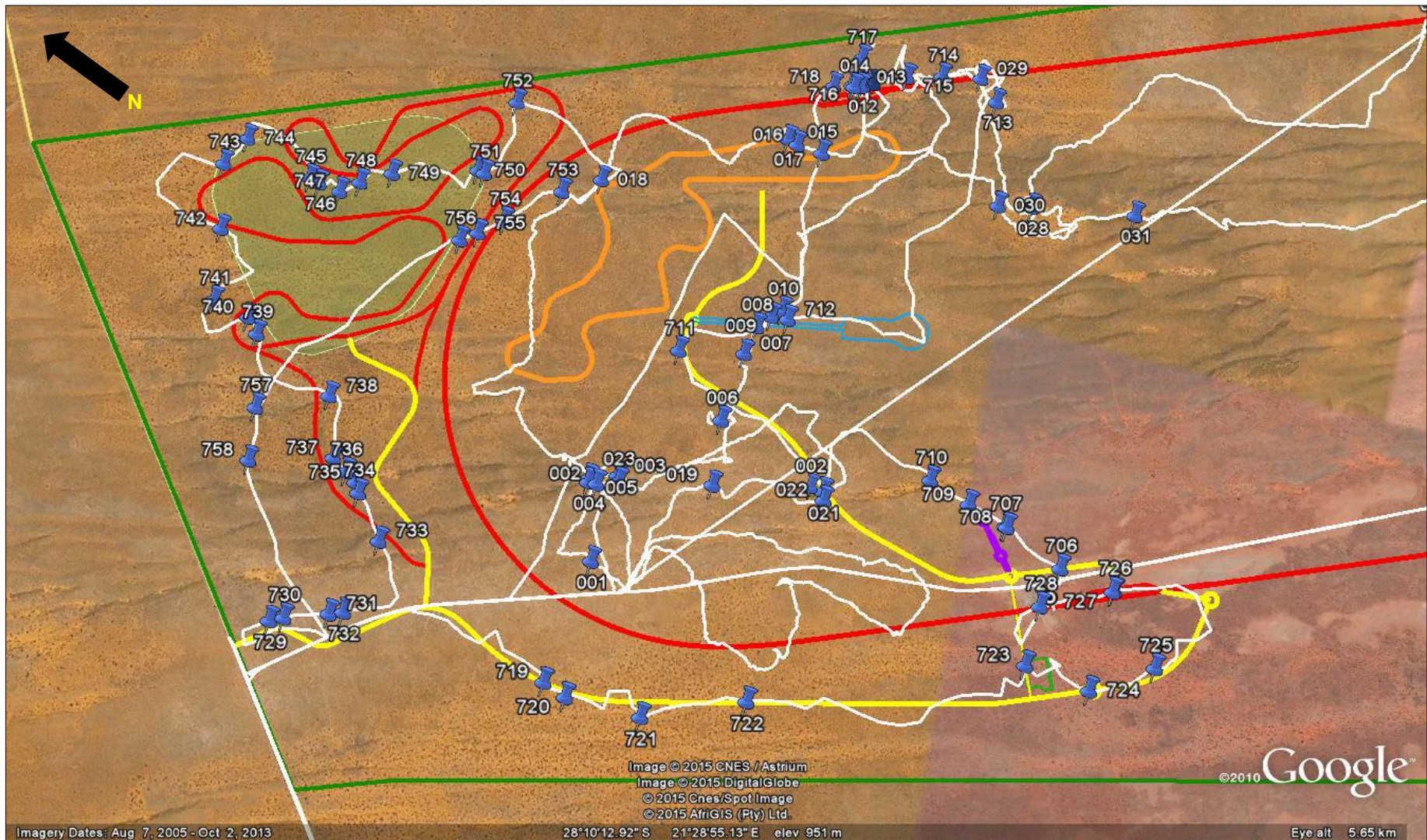


Figure B. Waypoint of archaeological occurrences. White lines are track paths

Heritage Impact Assessment proposed high speed oval test track near Uppington

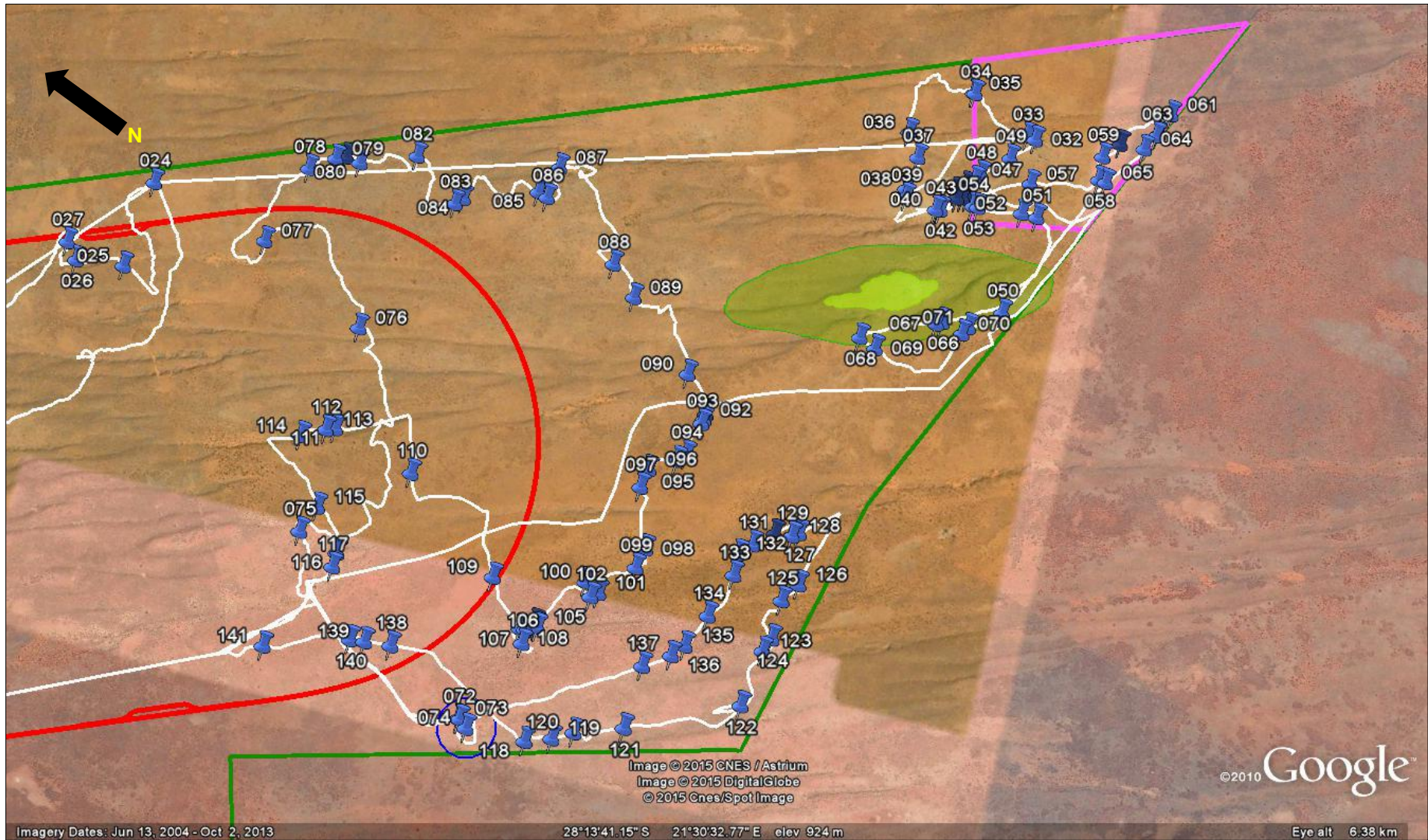


Figure C. Waypoint of archaeological occurrences. Red lines are track paths

Heritage Impact Assessment proposed high speed oval test track near Upington

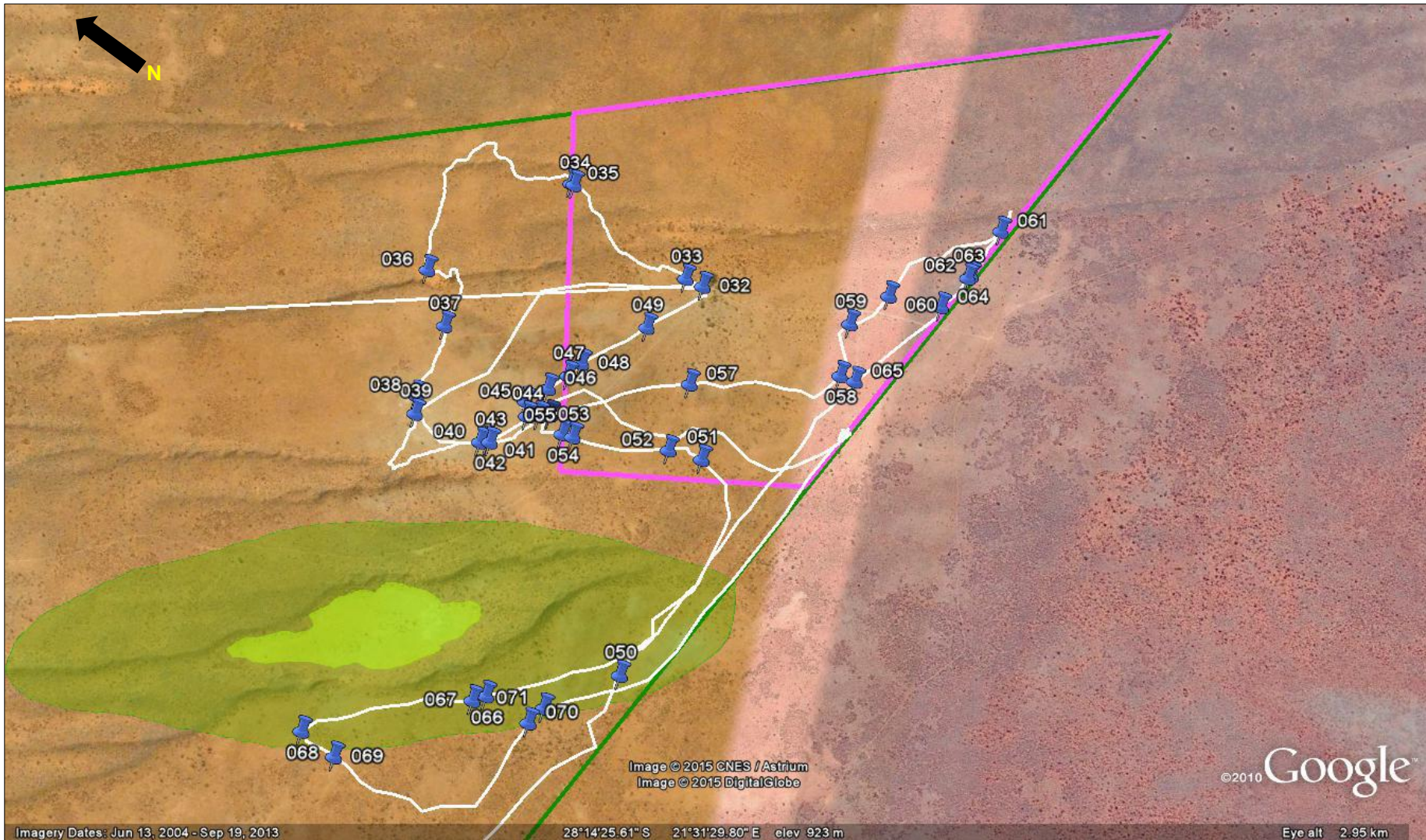


Figure D. Waypoint of archaeological occurrences. White lines are track paths.