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PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

**UTILIZATION OF BORROW PITS –  
CHRIS HANI DISTRICT MUNICIPALITY,  
EASTERN CAPE, SOUTH AFRICA**

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EASTERN CAPE, SOUTH AFRICA**

**EXECUTIVE SUMMARY**

**TERMS OF REFERENCE:**

BESC has been appointed as independent environmental consultant by the project proponent, the Department of Roads and Public Works, to prepare the Environmental Management Plan (EMP) for the *Utilization of Borrow Pits – Chris Hani District Municipality* project in the Eastern Cape. The project proposal centers on the utilization of 77 borrow pits along 18 roads across the Chris Hani District Municipal area. ArchaeoMaps has been appointed by BESC to conduct the Phase 1 Archaeological Impact Assessment (AIA) for the project.

**THE PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT:**

**PROJECT AREA:** Chris Hani District Municipal area, Eastern Cape.

**GAP ANALYSIS:** Phase 1 AIA field assessment included 76 of the proposed 77 study sites. Borrow pit 253\_BP03 was not assessed due to inaccessible access road conditions at the time of the assessment.

**METHODOLOGY:** Eight day field assessment; GPS co-ordinates – Garmin GPSMap60CSx; Photographic documentation – Pentax K20D. Archaeological and cultural heritage site significance assessment and mitigation recommendations – SAHRA 2007 system.

**SUMMARY:**

Road	Total	Borrow Pits	Recommendations
MR00680	4	680_BP01; 680_BP02; 680_BP03; 680_BP05	N/A
DR12729	2	729_BP03; 729_BP04	N/A
DR12732	5	732_BP02; 732_BP04; 732_BP05; 732_BP06; 732_BP08	N/A
DR12734	2	734_BP01; 734_BP02	734_BP01 – Phase 2 archaeological mitigation & archaeological monitoring
MR00638	5	638_BP03; 638_BP04; 638_BP05; 638_BP06; 638_BP07	N/A
MR00648	3	648_BP02; 648_BP03; 648_BP05	N/A
MR00660	4	660_BP02; 660_BP03; 660_BP04; 660_BP06	660_BP02 – Phase 2 archaeological mitigation
DR02603	5	603_BP01; 603_BP02; 603_BP03; 603_BP05; 603_BP07	N/A
DR08567	4	567_BP02; 567_BP03; 567_BP05; 567_BP07	567_BP05 – Site 567.1 – In situ conservation
DR08050	6	050_BP01; 050_BP02; 050_BP03; 050_BP04; 050_BP05; 050_BP07	N/A
DR08041	2	041_BP01; 041_BP02	041_BP01 – Site 041.1 – In situ conservation
DR08247	5	247_BP01; 247_BP02; 247_BP03; 247_BP4; 247_BP05	N/A
DR08248	8	248_BP01; 248_BP02; 248_BP03; 248_BP05; 248_BP06; 248_BP07; 248_BP08; 248_BP09	N/A
DR08038	6	038_BP01; 038_BP03; 038_BP04; 038_BP05; 038_BP06; 038_BP07	N/A
DR08253	3	253_BP03; 253_BP04; 253_BP05	253_BP03 – Archaeological site inspection
DR08261	5	261_BP02; 261_BP07; 261_BP08; 261_BP09; 261_BP10	261_BP07 – Site 261.1 conservation measures in place 261_BP08 – Community consultation 261_BP10 – Site 261.2 – In situ conservation
DR08042	6	042_BP02; 042_BP03; 042_BP05; 042_BP07; 042_BP08; 042_BP09	042_BP03 – ‘No Entry’ signage at Site 042.1
DR08381	2	381_BP01; 381_BP02	N/A

**RECOMMENDATIONS:**

It is recommended that the proposed development, the *Utilization of Borrow Pits – Chris Hani District Municipality* project, to be located in the Chris Hani District Municipal area of the Eastern Cape, proceeds as applied for provided the developer complies with the abovementioned recommendations.

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**UTILIZATION OF BORROW PITS –  
CHRIS HANI DISTRICT MUNICIPALITY,  
EASTERN CAPE, SOUTH AFRICA**

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## 1) TERMS OF REFERENCE

Biotechnology and Environmental Specialist Consultancy (BESC) has been appointed as independent environmental consultant by the project proponent, the Department of Roads and Public Works, to prepare the Environmental Management Plan (EMP) in accordance with requirements of the Minerals and Petroleum Resources Development Act, No 28 of 2002 (MPRDA 2002) for the *Utilization of Borrow Pits* to obtain road construction materials for the upgrading / re-surfacing of 18 roads across the *Chris Hani District Municipal area* of the Eastern Cape and including roads MR00680, DR12729, DR12732, DR12734, MR00638, MR00648, MR00660, DR02603, DR08567, DR08050, DR08041, DR08247, DR08248, DR08038, DR08253, DR08261, DR08042 and DR08381. ArchaeoMaps Archaeological Consultancy has been appointed by BESC to conduct the Phase 1 Archaeological Impact Assessment (AIA) for purposes of the project's EMP(s).

### 1.1) *Development Location, Details & Impact*

The *Utilization of Borrow Pits – Chris Hani District Municipality* project will be situated within the boundaries of the Chris Hani District Municipal area of the Eastern Cape. The project centers on the proposed utilization of 77 identified borrow pits along 18 roads with the aim of obtaining road construction materials for the upgrading / re-surfacing of the roads. The project application focuses on the utilization of the borrow pits only; roads or road portions to be upgraded do not form part of the scope of the project.

The greater *Utilization of Borrow Pits – Chris Hani District Municipality* project can be subdivided as:

1. Road MR00680 – 4 borrow pits
2. Road DR12729 – 2 borrow pits
3. Road DR12732 – 5 borrow pits
4. Road DR12734 – 2 borrow pits
5. Road MR00638 – 5 borrow pits
6. Road MR00648 – 3 borrow pits
7. Road MR00660 – 4 borrow pits
8. Road DR02603 – 5 borrow pits
9. Road DR08567 – 4 borrow pits
10. Road DR08050 – 6 borrow pits
11. Road DR08041 – 2 borrow pits
12. Road DR08247 – 5 borrow pits
13. Road DR08248 – 8 borrow pits
14. Road DR08038 – 6 borrow pits
15. Road DR08253 – 3 borrow pits
16. Road DR08261 – 5 borrow pits
17. Road DR08042 – 6 borrow pits
18. Road DR08381 – 2 borrow pits

An independent EMP will be prepared for each of the abovementioned subdivisions of the greater project.

Development impact at each of the proposed borrow pits is averaged at 1-1.5ha. The estimated development footprint will be exceeded especially in cases where proposed continuous use of large existing borrow pits are proposed. All borrow pits to be used will be fenced with access gates – demarcating development areas, minimizing development impact spill-over and channeling traffic during the implementation and operational phases.



**Figure 1:** General locality of the proposed *Utilization of Borrow Pits – Chris Hani District Municipality* study site



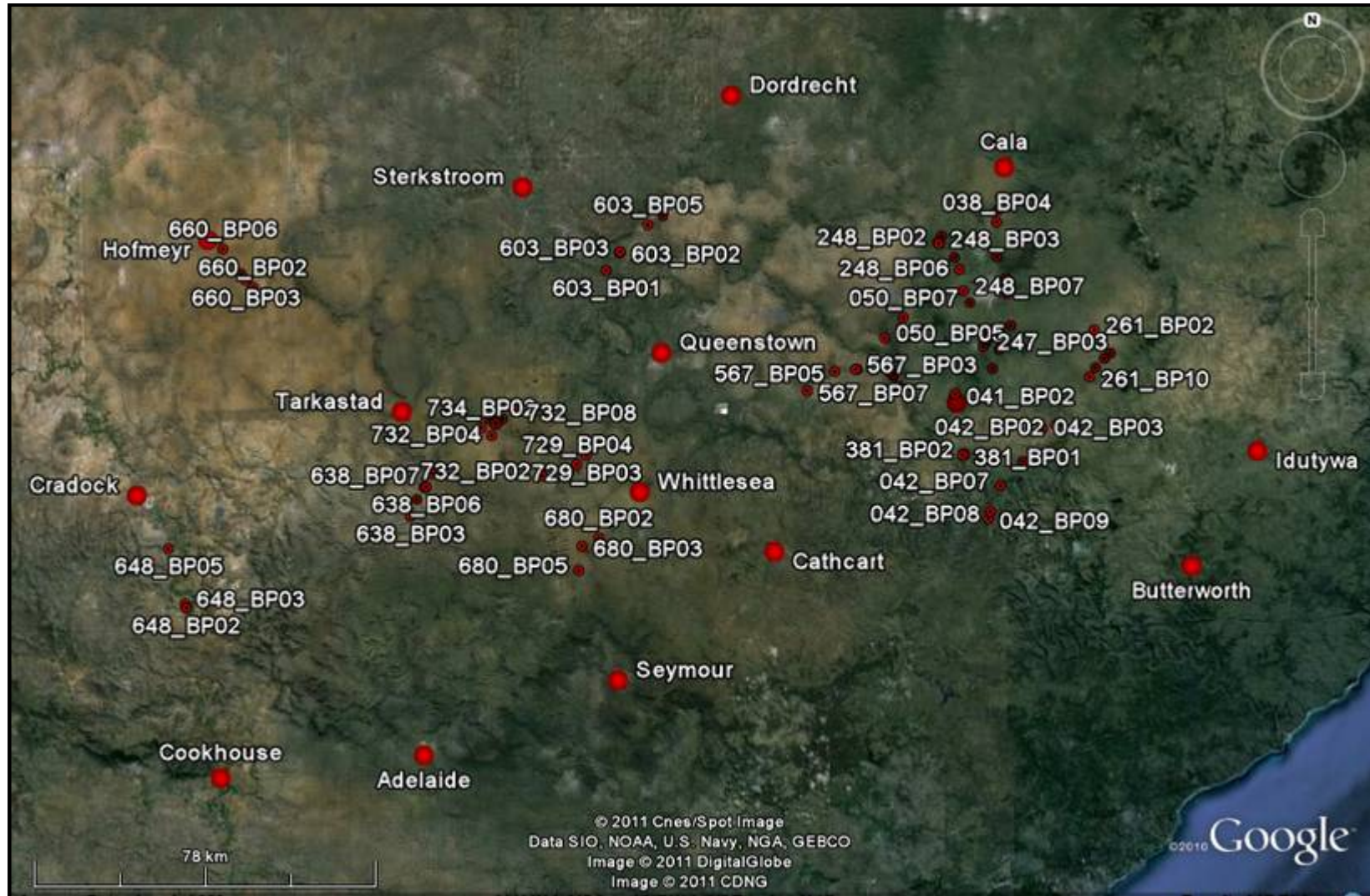


Figure 2: Spatial layout of the proposed Utilization of Borrow Pits – Chris Hani District Municipality project

## 2) THE PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

### 2.1) *Archaeological Legislative Compliance*

The Phase 1 Archaeological Impact Assessment (AIA) was done for purposes of compliance to the South African Heritage Resources Agency (SAHRA) requirements in terms of the National Heritage Resources Act, No 25 of 1999 (NHRA 1999), with specific reference to Section 38.

The Phase 1 AIA was requested as specialist sub-section to the HIA for the Environmental Management Plans (EMP's) of the proposed project in compliance with requirements of the Minerals and Petroleum Resources Development Act, No 28 of 2002 (MPRDA 2002), the National Environmental Management Act, No 107 of 1998 (NEMA 1998), the NEMA 2<sup>nd</sup> Amendment Act, No 62 of 2008 (NEMA 2008) and the NEMA Regulations (2006 & 2010), and the NHRA 1999 and NHRA Regulations (2000 & 2002).

The Phase 1 AIA aimed to locate, identify and assess the significance of cultural heritage resources, inclusive of archaeological deposits / sites, built structures older than 60 years, burial grounds and graves, graves of victims of conflict and cultural landscapes or viewsapes as defined and protected by the NHRA 1999, that may be affected by the proposed development.

- Palaeontological deposits / sites as defined and protected by the NHRA 1999 are not included as subject to this report.
- No socio-cultural consultation was conducted with the aim to identify intangible heritage resources or sites of cultural significance associated with oral histories.

### 2.2) *Methodology & Assessor Accreditation*

The Phase 1 AIA was conducted over an 8 day period (2011-01-17 to 2011-01-20 and 2011-01-14 to 2011-01-27) by one archaeologist. The assessment was done by vehicle and foot, and limited to a Phase 1 surface survey; no excavation or sub-surface testing was done. GPS co-ordinates were taken with a Garmin GPSmap 60CSx GPS (Datum: WGS84). Photographic documentation was done with a Pentax K20D camera. A combination of Garmap and Google Earth software was used in the display of spatial information.

<b>SAHRA ARCHAEOLOGICAL AND CULTURAL HERITAGE SITE SIGNIFICANCE ASSESSMENT</b>			
<i>SITE SIGNIFICANCE</i>	<i>FIELD RATING</i>	<i>GRADE</i>	<i>RECOMMENDED MITIGATION</i>
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A / 3B	Site conservation or extensive mitigation prior to development / destruction
High / Medium Significance	Generally Protected A	-	Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B	-	Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C	-	On-site sampling, monitoring or no archaeological mitigation required prior to or during development / destruction

**Table 1:** SAHRA archaeological and cultural heritage site significance assessment

Archaeological and cultural heritage site significance assessment and associated mitigation recommendations were done according to the system prescribed by SAHRA (2007).

The assessment was done by Karen van Ryneveld (ArchaeoMaps):

- Qualification: MSc Archaeology (2003) WITS University.
- Accreditation:
  1. 2004 – Association of Southern African Professional Archaeologists (ASAPA) – Professional Member.
  2. 2005 – ASAPA CRM Section: Accreditation – Field Director (Stone Age, Iron Age, Colonial Period).
  3. 2010 – ASAPA CRM Section: Accreditation – Principle Investigator (Stone Age).

Karen van Ryneveld is a SAHRA listed CRM archaeologist.

### *2.3) Coverage and Gap Analysis*

The Phase 1 AIA covered 76 of the proposed 77 borrow pit study sites along the proposed 18 roads. Borrow pit 253\_BP03 was not assessed due to inaccessible access road conditions at the time of the assessment.

### *2.4) Phase 1 AIA Assessment Findings*

The Phase 1 AIA assessment indicated that utilization of borrow pits along 11 of the 18 roads poses no threat to any archaeological or cultural heritage resources as defined and protected under the NHRA 1999. These 11 roads include Roads MR00680; DR12729; DR12732; MR00638; MR00648; DR02603; DR08050; DR08247; DR08248; DR08038 and DR08381.

The most significant Stone Age assemblages were identified at borrow pits 734\_BP01 and 660\_BP02 where Phase 2 archaeological mitigation and in the case of borrow pit 734\_BP01 archaeological monitoring is proposed prior to development impact.

Iron Age tradition resources and 1 Colonial Period site were identified, in most cases in proximity to proposed borrow pit study sites, implying that development will not impact negatively thereon. In situ conservation is proposed for these sites and including:

1. Site 567.1 in close proximity to borrow pit 567\_BP05 [Iron Age];
2. Site 041.1 in close proximity to borrow pit 041\_BP01 [Iron Age];
3. Site 261.1 in close proximity to borrow pit 261\_BP07 [Colonial Period];
4. Site 261.2 in close proximity to borrow pit 261\_BP10 [Iron Age]; and
5. Site 042.1 in close proximity to borrow pit 042\_BP03 [Iron Age] (but recommended that 'no-entry' signage be erected).

Continued impact on the contemporary Iron Age tradition remains recorded at borrow pit 261\_BP07 should be preceded by community consultation.

### 2.4.1) Road MR00680 (Road 680)



**Figure 3:** Proposed borrow pits in relation to Road 680

Road MR00680 (Road 680) comprises of an unpaved road of approximately 64.5km in length with start and end coordinates being S32°12'06.7"; E26°47'35.3" and S32°35'27.0"; E26°40'52.0" respectively. Five borrow pits were identified along the road portion of which 4 are subjected to detailed inspection including 680\_BP01; 680\_BP02; 680\_BP03 and 680\_BP05 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 680:**

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of the 4 borrow pits proposed for development along Road 680.



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**2.4.1.1) 680\_BP01 – S32°14'07.8"; E26°45'00.6"**

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**Figure 4:** Borrow pit 680\_BP01

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 680\_BP01.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 680\_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 5:** View of borrow pit 680\_BP01 from the western side of the assessed area

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**2.4.1.2) 680\_BP02 – S32°15'59.7"; E26°43'28.8"**

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**Figure 6:** Borrow Pit 680\_02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 680\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 680\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 7:** View of a portion of the southern section of borrow pit 680\_BP02



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**2.4.1.3) 680\_BP03 – S32°16'58.3"; E26°41'02.5"**

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**Figure 8:** Borrow Pit 680\_03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 680\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 680\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 9:** General view of borrow pit 680\_BP03

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**2.4.1.4) 680\_BP05 – S32°19'51.9"; E26°40'32.4"**

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**Figure 10:** Borrow Pit 680\_05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 680\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 680\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 11:** General view of borrow pit 680\_BP05

#### 2.4.2) Road DR12729 (Road 729)



**Figure 12:** Proposed borrow pits in relation to Road 729

Road DR12729 (Road 729) comprises of an unpaved road of approximately 32km in length with start and end coordinates being S32°03'41.0" ; E26°47'06.0" and S32°18'19.0" ; E26°33'07.0" respectively. Four borrow pits were identified along the road portion of which 2 are subjected to detailed inspection including 729\_BP03 and 729\_BP04 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 729:**

1. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of borrow pit 729\_BP03.
2. A low density MSA Stone Age 'feature' characterizes the general borrow pit 729\_BP04 terrain. Particularly low artefact quantities without a clear stratigraphic context does not warrant further investigation and it is recommended that development proceed without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT prior to impact on the archaeological 'feature'.

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**2.4.2.1) 729\_BP03 – S32°05'57.6"; E26°41'46.2"**

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**Figure 13:** Borrow Pit 729\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 729\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 729\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 14:** General view of borrow pit 729\_BP03



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**2.4.2.2) 729\_BP04 – S32°07'04.0"; E26°40'25.3"**


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**Figure 15:** Borrow Pit 729\_BP04

A low quantity of Stone Age lithic artefacts were discovered in the grassy plain at borrow pit 729\_BP04. Artefact quantities were particularly low, and too low to attempt assignment of an estimated artefact ratio (artefacts: m<sup>2</sup>). Exposed sections at the borrow pit yielded a top approximate 10cm red-brown surface layer interpreted as the stratigraphic member containing the cultural material. No artefacts were identified in situ context within the layer at exposed borrow pit sections, inferred to be the direct result of particularly low artefact quantities. Based on typology and technology the low density 'feature' is assigned to the Middle Stone Age (MSA), with an emphasis on blade and flake types. The few on site artefacts can in general be described as of good technological quality, also the result of raw material used; very fine grained dolorite and lydianite (baked shale), known for its fairly good flaking qualities. Due to the presence of artefacts at the borrow pit assessment extended slightly beyond the boundaries of the assessment area, towards the west where a small drainage line characterizes the landscape and towards the east where rocky outcrops may have provided the original context of the artefacts. However, neither of these additionally assessed areas provided more information on the low density 'feature', and no more definite archaeological context or an actual archaeological 'site' locality could be identified.

**RECOMMENDATIONS:** The low density MSA Stone Age 'feature' at borrow pit 729\_BP04 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. The 'feature' is ascribed a SAHRA LOW SIGNIFICANCE and GENERALLY PROTECTED C FIELD RATING. It is recommended that (relevant portions of) the 'feature' be destroyed *in lieu* of the development without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.



Figure 16: View of borrow pit 729\_BP04



Figure 17: MSA lithic artefacts from the borrow pit terrain



Figure 18: View of borrow pit 729\_BP04 from the rocky outcrops east of the borrow pit

### 2.4.3) Road DR12732 (Road 732)



**Figure 19:** Proposed borrow pits in relation to Road 732

Road DR12732 (Road 732) comprises of an unpaved road of approximately 39km in length with start and end coordinates being S32°08'01.0"''; E26°36'23.0"'' and S31°58'12.0"''; E26°35'49.0"'' respectively. Ten borrow pits were identified along the road portion of which 5 are subjected to detailed inspection including 732\_BP02; 732\_BP04; 732\_BP05; 732\_BP06 and 732\_BP08 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 732:**

1. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of borrow pit 732\_BP05.
2. Low density Stone Age 'features', primarily comprising of MSA, but including in cases macrolithic LSA artefacts characterized the general localities of borrow pits 732\_BP02; 732\_BP04 and 732\_BP08. It is recommended that development proceed across these locales without the developer having to apply for SAHRA SITE DESTRUCTION PERMITS.
3. A lag, mixed MSA / macrolithic LSA assemblage characterizes the general terrain of borrow pit 732\_BP06. Based primarily on poor artefact context it is recommended that the site be destroyed *in lieu* of the development without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT prior to development impact.

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**2.4.3.1) 732\_BP02 – S32°08'24.1"; E26°35'29.1"**


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**Figure 20:** Borrow Pit 732\_BP02

A low presence of Middle Stone Age (MSA) lithic artefacts was present across the surface of the 732\_BP02 borrow pit terrain. Artefact quantities were particularly low; and too low to attempt an estimated artefact ratio (artefacts: m<sup>2</sup>). Artefacts are, based on typology and technology, ascribed to the MSA with a strong emphasis on blade and bladelet types, with lydianite or baked shale as preferred raw material type. Artefacts are inferred to be directly associated with the approximate 10cm red-brown top stratigraphic member, identified within exposed sections of the borrow pit, but no artefacts were identified in situ section. Identified artefacts were all collected from the surface. The assessment extended slightly towards the north of the assessment area where large erosion sections are directly associated with massive erosion gullies. Erosion section stratigraphy proved to be very similar to that of the borrow pit but inspection could not verify the top approximate 10cm stratigraphic member as the layer to which cultural material can exclusive be assigned, due in large to the lack of lithic material in situ section at the erosion gullies. Again only a few artefacts were collected and all within erosion gullies where they must have collected primarily as a result of water erosion (post-depositional impact) over many centuries.

**RECOMMENDATIONS:** The low density MSA Stone Age 'feature' at borrow pit 732\_BP02 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. The 'feature' is ascribed a SAHRA LOW SIGNIFICANCE and GENERALLY PROTECTED C FIELD RATING. It is recommended that (relevant portions of) the 'feature' be destroyed *in lieu* of the development without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.





**Figure 21:** General view of borrow pit 732\_BP02, with large erosion gullies towards the north thereof



**Figure 22:** An exposed section of borrow pit 732\_BP02



**Figure 23:** Lithic artefacts from the general terrain

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**2.4.3.2) 732\_BP04 – S32°03'25.2"; E26°28'19.9"**

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**Figure 24:** Borrow Pit 732\_BP04

No lithic artefacts were collected from the surface of the general borrow pit 732\_BP04 terrain, but a number of stone tools were found collected in the small erosion gullies of the borrow pit itself. Original artefacts contexts may well be closely associated with the top 10-15cm stratigraphic member of the exposed sections, but the lack of in situ material waves verification of the assumption. Clusters of artefacts, in approximate groups varying from 3-10 were recorded. The low density of artefacts encountered at the site together with the evident ex situ context thereof does not allow estimation of artefact ratios (artefacts: m<sup>2</sup>). Artefacts are preliminary, based on typology and technology, assigned to both the Middle Stone Age (MSA) and a macrolithic Later Stone Age (LSA). General flake types dominated the mixed assemblage and basic artefact size was used for preliminary Industry classification. Fine grained dolorite seems to have been the preferred raw material used to produce tools.

**RECOMMENDATIONS:** The low density MSA Stone Age 'feature' at borrow pit 732\_BP04 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. The 'feature' is ascribed a SAHRA LOW SIGNIFICANCE and GENERALLY PROTECTED C FIELD RATING. It is recommended that (relevant portions of) the 'feature' be destroyed *in lieu* of the development without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.



**Figure 25:** View of borrow pit 732\_BP04



**Figure 26:** Artefacts were encountered in small erosion gullies at the borrow pit sections



**Figure 27:** A selection of artefacts from borrow pit 732\_BP04



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**2.4.3.3) 732\_BP05 – S32°01'55.3"; E26°28'55.4"**

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**Figure 28:** Borrow Pit 732\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 732\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 732\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 29:** View of borrow pit 732\_BP05

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**2.4.3.4) 732\_BP06 – S32°01'25.7"; E26°29'55.1"**


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**Figure 30: Borrow Pit 732\_BP06**

Surface areas around borrow pit 732\_BP06 were characterized by a fairly high density of Stone Age artefacts, with approximate recorded artefact ratios of 3-7:1 (artefacts: m<sup>2</sup>). Artefact types include both Middle Stone Age (MSA) and macrolithic Later Stone Age (LSA) samples produced from a variety of raw material sources, with the flaking quality of raw material primarily determining preliminary interpretation regarding knapping technology: Technologically the assemblage varied from finely knapped flake and blade types to rough amorphous flakes. The surface collection represents a heavily lagged deposit, containing a mix of Industry type material identified amongst the loose stone rich geological context of the general terrain and nearby hill. Assessment extended towards the north-east and east of the assessment area in an attempt to determine if the hilly terrain associated therewith would have provided the original context of the artefacts and if stratified cultural members could be identified for the primarily ex situ material characterizing the development terrain. Assessment of the hill however only indicated that the lag Stone Age assemblage continues in a very similar manner across the hill and most probably well beyond that – ‘feature’ extent could not be determined.

Despite fairly high artefact quantities, the particularly poor context thereof, an evident lag deposit restricted to the surface of the area and not extending much deeper than 5-10cm into the stratigraphic exposed sections of the borrow pit radically diminishes the archaeological significance of the find. Phase 2 archaeological mitigation would not allow interpretation beyond basic technology and typology of a heavily mixed Industry deposit; and thus inferred to add little value to the current understanding of MSA / macrolithic LSA mixed deposits. The value of the site lies primarily in the identification of the southern Stormberg region as a potentially sensitive Stone Age region, highlighting the probability of more significant Stone Age deposits in the general area.

**RECOMMENDATIONS:** The MSA / macrolithic LSA lag deposit at borrow pit 732\_BP06 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. The site is ascribed a SAHRA LOW SIGNIFICANCE and GENERALLY PROTECTED C FIELD RATING. It is recommended that (relevant portions of) the site be destroyed *in lieu* of the development without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.



**Figure 31:** View of borrow pit 732\_BP06



**Figure 32:** Selected surface artefacts



**Figure 33:** View of the general stone rich surface context of the general borrow pit 732\_BP06 terrain



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**2.4.3.5) 732\_BP08 – S32°00'25.2"; E26°31'40.2"**

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**Figure 34:** Borrow Pit 732\_BP08

Lithic artefacts were found on the surface of the borrow pit and clustered in small erosion gullies at borrow pit 732\_BP08. It is inferred that original artefacts contexts are closely associated with the top 10-15cm stratigraphic member of the exposed sections, but again, the lack of in situ encountered material wave verification of the assumption. Clusters of artefacts, in approximate groups varying from 2-5 were recorded. The low density of artefacts encountered at the site together with the evident ex situ context thereof does not allow estimation of artefact ratios (artefacts: m<sup>2</sup>). Artefacts are preliminary, based on typology and technology, assigned to the Middle Stone Age (MSA) with an emphasis on flake and bladelet types. General artefact size may indicate a temporal association with the latter part of the MSA. All artefacts encountered were produced from fine grained dolorite.

**RECOMMENDATIONS:** The low density MSA Stone Age 'feature' at borrow pit 732\_BP08 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. The 'feature' is ascribed a SAHRA LOW SIGNIFICANCE and GENERALLY PROTECTED C FIELD RATING. It is recommended that (relevant portions of) the 'feature' be destroyed *in lieu* of the development without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.



Figure 35: View of borrow pit 732\_BP08



Figure 36: Exposed sections at borrow pit 732\_BP08



Figure 37: Selected artefacts from the general terrain



#### 2.4.4) Road DR12734 (Road 734)



**Figure 38:** Proposed borrow pits in relation to Road 734

Road DR12734 (Road 734) comprises of a paved / unpaved road of approximately 18km in length with start and end co-ordinates being S31°58'13.0"''; E26°27'59.0"'' and S32°04'22.0"''; E26°25'05.0"'' respectively. Two borrow pits were identified along the road portion, both of which, including 734\_BP01 and 734\_BP02, are subjected to detailed inspection for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 734:**

1. A low density of macrolithic LSA Stone Age artefacts characterized the general locale of borrow pit 734\_BP02. It is recommended that development proceed across the site locale without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.
2. MSA artefacts in direct in situ context associated with lensed geological layers, which served as the selected raw material source for artefact production, were identified at borrow pit 734\_BP01. It is recommended that the identified exposed occurrence be subjected to Phase 2 archaeological mitigation prior to development impact and on site archaeological monitoring during exploitation of the site is recommended.

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**2.4.4.1) 734\_BP01 – S32°01'23.7"; E26°27'58.1"**


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**Figure 39: Borrow Pit 734\_BP01**

A particularly low quantity of lithic artefacts, too low to ascribe an artefact ratio (artefacts: m<sup>2</sup>), were identified across the surface of the general borrow pit 734\_BP01 terrain. Surface artefacts were produced from lydianite (baked shale) and primarily ascribable to a very late MSA or macrolithic LSA typology. No stratigraphic context for these artefacts could be identified within exposed sections of the borrow pit, but their presence is inferred to be very closely linked to the topmost soil layer.

Within the borrow pit a high quantity of artefacts were discovered in an approximate 7x7m area, all produced from a medium-rough grained dolorite and concentrated in the immediate vicinity of the raw material lens. Artefact concentrations here approximated 10:1 in ratio (artefacts: m<sup>2</sup>), with an emphasis on rough flake types and with fairly large sizes designating the assemblage a fairly definite middle Middle Stone Age (MSA) assignation. Artefacts are technologically not of the highest standard, and of an inferior technological quality to the sparsely scattered lydianite artefacts encountered on the surface. The significance of the find lies in the clear association of the use of raw material in direct relation to suitable raw material resources (in this case a lens of medium-rough grained dolorite). Fairly pristine artefact context may well hold the potential of reconstructing artefact production sequences / methodologies (*chaîne opératoire*). High densities of artefacts in direct relation to knapping (artefact production) activities and the pristine context of these deposits are of particular significance, in spite of basic technological inferiority, but directly ascribable to flaking qualities of the selected raw material. Similar types of collections may well be present and may well be encountered during exploitation of the borrow pit.

**RECOMMENDATIONS:** Stone Age deposits at borrow pit 734\_BP01 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. The lensed archaeological assemblage at the study site is ascribed a SAHRA LOW-MEDIUM SIGNIFICANCE and a GENERALLY PROTECTED C FIELD RATING.

1. It is recommended that development at borrow pit 734\_BP01 be preceded by Phase 2 mitigation of the identified lensed MSA assemblage.
2. On site archaeological monitoring is recommended at the time of borrow pit exploitation to salvage and record artefacts that may well be encountered in lensed contexts.
3. Phase 2 archaeological mitigation and monitoring should be done by an ASAPA accredited CRM archaeologist under a SAHRA EXCAVATION PERMIT.



**Figure 40:** View of borrow pit 734\_BP01



**Figure 41:** The medium-rough grained dolomite (lens) intrusion in the primary shale sub-surface geological context



**Figure 42:** Selected artefacts from the shale lens



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**2.4.4.2) 734\_BP02 – S32°02'27.1"; E26°26'54.4"**

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**Figure 43:** Borrow Pit 734\_BP02

An extremely low quantity of lithic artefacts, too low to attempt an artefact ratio (artefacts: m<sup>2</sup>), were encountered on the plain towards the east of borrow pit 734\_BP02. Based on typology and technology artefacts can be ascribed to a very late Middle Stone Age (MSA) or macrolithic Later Stone Age (LSA) temporal assignment, with fairly small flakes and blades dominating samples encountered. Artefacts were produced from a very fine grained dolorite. Towards the north-east, and in direct proximity to the borrow pit a cluster of artefacts, comprising of approximately 25-30 stone tools were found. The artefact cluster is however not associated with a paleosol or any other significant archaeological context and their presence are interpreted as a chance activity occurrence. No associated surface artefacts serves to enhance the significance of the find and no archaeological sub-surface context is inferred. Significant Stone Age activity may well have been centered closer to the Swart Klei River towards the east of the study site with samples sparsely scattered across the plain and at the cluster at the borrow pit interpreted as nothing more than extended site perimeter, evidencing fairly wide spread use of the palaeo-landscape.

**RECOMMENDATIONS:** The low density MSA Stone Age 'feature' at borrow pit 734\_BP02 and the artefact scatter located north-east of the site comprises of archaeological and cultural heritage resources as defined and protected under the NHRA 1999. These 'features' are ascribed SAHRA LOW SIGNIFICANCE and GENERALLY PROTECTED C FIELD RATINGS. It is recommended that (relevant portions of) the 'features' be destroyed *in lieu* of the development without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.



**Figure 44:** View of the general borrow pit 734\_BP02 terrain



**Figure 45:** General anthropically sterile surface and sections at the study site



**Figure 46:** A collection of artefacts from the cluster located north-east of the borrow pit

#### 2.4.5) Road MR00638 (Road 638)



**Figure 47:** Proposed borrow pits in relation to Road 638

Road MR00638 (Road 638) comprises of a paved / unpaved road of approximately 172km in length with start and end co-ordinates being S32°41'50.0"''; E26°17'32.0"'' and S31°33'06.0"''; E26°32'27.0"'' respectively. Seven borrow pits were identified along the road portion of which 5 are subjected to detailed inspection including 638\_BP03; 638\_BP04; 638\_BP05; 638\_BP06 and 638\_BP07 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 638:**

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of the 5 borrow pits proposed for development along Road 638.



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**2.4.5.1) 638\_BP03 – S32°13'05.5"; E26°16'34.3"**

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**Figure 48:** Borrow Pit 638\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 638\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 638\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 49:** General view of the borrow pit 638\_BP03 area

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**2.4.5.2) 638\_BP04 – S32°11'02.6"; E26°17'32.9"**

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**Figure 50:** Borrow Pit 638\_BP04

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 638\_BP04.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 638\_BP04 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 51:** View of borrow pit 638\_BP04



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**2.4.5.3) 638\_BP05 – S32°09'37.5"; E26°18'36.4"**

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**Figure 52:** Borrow Pit 638\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 638\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 638\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 53:** View of a portion of borrow pit 638\_BP05

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2.4.5.4) 638\_BP06 – S32°09'32.9"; E26°18'51.7"

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**Figure 54:** Borrow Pit 638\_BP06

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 638\_BP06.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 638\_BP06 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 55:** General view over borrow pit 638\_BP06

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2.4.5.5) 638\_BP07 – S32°07'54.7"; E26°19'38.3"

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**Figure 56:** Borrow Pit 638\_BP07

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 638\_BP07.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 638\_BP07 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 57:** View of borrow pit 638\_BP07



#### 2.4.6) Road MR00648 (Road 648)



**Figure 58:** Proposed borrow pits in relation to Road 648

Road MR00648 (Road 648) comprises of an unpaved road of approximately 41km in length with start and end coordinates being S32°25'26.0"''; E25°45'51.0"'' and S32°15'56.0"''; E25°41'17.0"'' respectively. Five borrow pits were identified along the road portion of which 3 are subjected to detailed inspection including 648\_BP02; 648\_BP03 and 648\_BP05 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 648:**

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of the 3 borrow pits proposed for development along Road 648.



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**2.4.6.1) 648\_BP02 – S32°23'48.1"; E25°44'00.2"**

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**Figure 59:** Borrow Pit 648\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 648\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 648\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 60:** General view over the borrow pit 648\_BP02 study site

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**2.4.6.2) 648\_BP03 – S32°23'17.0"; E25°43'50.2"**

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**Figure 61:** Borrow Pit 648\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 648\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 648\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 62:** View of borrow pit 648\_BP03

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**2.4.6.3) 648\_BP05 – S32°16'32.0"; E25°41'34.0"**

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**Figure 63:** Borrow Pit 648\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 648\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 648\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 64:** View of borrow pit 648\_BP05



#### 2.4.7) Road MR00660 (Road 660)



**Figure 65:** Proposed borrow pits in relation to Road 660

Road MR00660 (Road 660) comprises of a paved / unpaved road of approximately 45km in length with start and end co-ordinates being S31°48'17.0"''; E26°00'36.0"'' and S31°39'11.0"''; E25°48'15.0"'' respectively. Seven borrow pits were identified along the road portion of which 4 are subjected to detailed inspection including 660\_BP02; 660\_BP03; 660\_BP04 and 660\_BP06 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 660:**

1. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of borrow pits 660\_BP03; 660\_BP04 or 660\_BP06.
2. MSA and LSA deposits at borrow pit 660\_BP02 with possible significant contributions to lithic typological and technological interpretation as well as dating possibilities would require Phase 2 archaeological mitigation prior to development impact. Phase 2 archaeological mitigation should be done by an ASAPA accredited CRM archaeologist under a SAHRA EXCAVATION PERMIT.



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 2.4.7.1) 660\_BP02 – S31°44'57.0"; E25°54'34.1"
 

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**Figure 66:** Borrow Pit 660\_BP02

The general borrow pit 660\_BP02 area is characterized by clusters of artefacts scattered together in patches varying between 16m<sup>2</sup>-25m<sup>2</sup> in size. Patches of artefacts contained fairly high quantities of lithics, in general varying from 10-17:1 in ratio (artefacts: m<sup>2</sup>). The dominant raw material used to produce artefacts comprise of lydianite (baked shale) and to a much lesser extent fine grained dolorite. Typologically and technologically the collections of artefacts are all ascribed to the latter part of the Middle Stone Age (MSA) or a macrolithic Later Stone Age (LSA), based primarily on artefact size. The collection contains some larger blade and bladelet types, but is dominated by smaller amorphous flakes and scrapers. Exposed sections of the borrow pit yielded a clear stratigraphy wherein the anthropic member is directly associated with the topmost approximate 10cm red-brown layer. The general good technological quality of the artefacts is directly ascribable to the raw material used.

High artefact quantities together with a clear sub-surface in situ component of the assemblages, of approximately 10cm in depth, may well yield significant information relating to artefact production sequences / methodologies (*chaîne opératoire*). Together with possible dating potential (OSL single-grain), information may be invaluable for reconstruction purposes.

**RECOMMENDATIONS:** Stone Age deposits at borrow pit 660\_BP02 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. Lithic assemblages at the study site are ascribed a SAHRA MEDIUM SIGNIFICANCE and a GENERALLY PROTECTED B FIELD RATING.

1. It is recommended that development at borrow pit 660\_BP02 be preceded by Phase 2 mitigation.
2. Phase 2 archaeological mitigation should be done by an ASAPA accredited CRM archaeologist under a SAHRA EXCAVATION PERMIT.



**Figure 67:** An artefact scatter characterizing the general borrow pit 660\_BP02 area



**Figure 68:** Selected artefacts from the study site



**Figure 69:** Borrow pit stratigraphy – the anthropic member is confined to the top approximate 10cm layer

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**2.4.7.2) 660\_BP03 – S31°44'05.5"; E25°53'32.1"**

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**Figure 70:** Borrow Pit 660\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 660\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 660\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 71:** View of a portion of borrow pit 660\_BP03



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**2.4.7.3) 660\_BP04 – S31°43'17.7"; E25°52'54.7"**

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**Figure 72:** Borrow Pit 660\_BP04

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 660\_BP04.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 660\_BP04 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 73:** View of borrow pit 660\_BP04



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**2.4.7.4) 660\_BP06 – S31°40'12.0"; E25°50'18.6"**

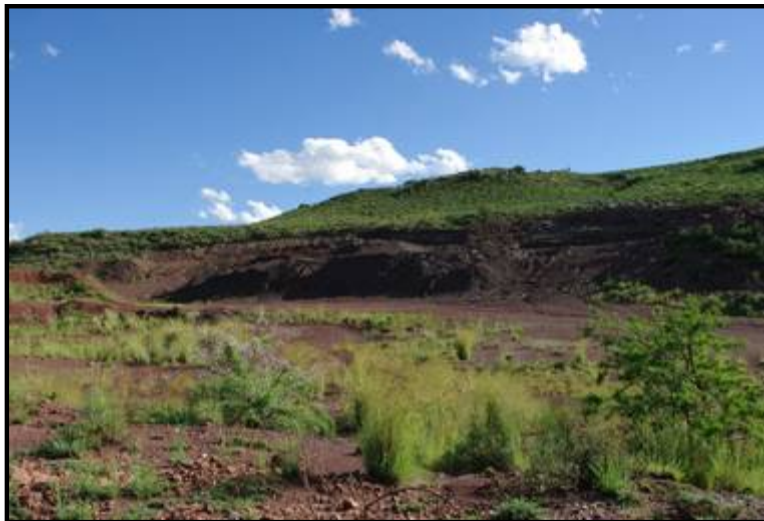
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**Figure 74:** Borrow Pit 660\_BP06

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 660\_BP06.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 660\_BP06 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 75:** View of a portion of borrow pit 660\_BP06

#### 2.4.8) Road DR02603 (Road 603)



**Figure 76:** Proposed borrow pits in relation to Road 603

Road DR02603 (Road 603) comprises of an unpaved road of approximately 31km in length with start and end coordinates being S31°43'53.9" ; E26°43'58.4" and S31°38'52.4" ; E26°55'29.5" respectively. Eight borrow pits were identified along the road portion of which 5 are subjected to detailed inspection including 603\_BP01; 603\_BP02; 603\_BP03; 603\_BP05 and 603\_BP07 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 603:**

1. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of borrow pits 603\_BP01; 603\_BP05 and 603\_BP07.
2. Low density earlier and middle Middle Stone Age (MSA) 'features' are present at the borrow pit 603\_BP02 and 603\_BP03 study sites. It is recommended that development proceed across these locales without the developer having to apply for SAHRA SITE DESTRUCTION PERMITS.

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**2.4.8.1) 603\_BP01 – S31°43'36.8"; E26°44'57.0"**

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**Figure 77:** Borrow Pit 603\_BP01

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 603\_BP01.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 603\_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 78:** General view of borrow pit 603\_BP01

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**2.4.8.2) 603\_BP02 – S31°41'21.8"; E26°46'55.8"**


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**Figure 79:** Borrow Pit 603\_BP02

A low density of Stone Age artefacts were found scattered amongst clusters of stone rich surface deposits appearing patch-patch on the surface of the general borrow pit 603\_BP02 area. Artefact densities within these scatters of stone rich deposits remained fairly low, on average not exceeding ratios of 3-4:1 (artefacts: m<sup>2</sup>) where present, but receding in quantity from the abovementioned ratio and absent within other areas. Identified artefacts had a noticeable rolled appearance. Based primarily on size, typology and technology the assemblage is ascribed an earlier to middle Middle Stone Age (MSA) assignment. Artefacts were produced from the variety of raw material present in the surface gravels. Borrow pit stratigraphy did not reveal a definite artefact member; artefacts may be loosely associated with the approximate top 20cm red-brown member, implying that a stone scatter was simply not exposed in situ section at the time of the assessment. Alternatively the artefact occurrence may be associated with a lagged deposit restricted to surface stone rich gravel occurrences and implying that the context of the assemblage has already been lost. The borrow pit 603\_BP02 artefact occurrence represents a low density Stone Age 'feature' rather than a 'site'.

**RECOMMENDATIONS:** The low density MSA Stone Age 'feature' at borrow pit 603\_BP02 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. The 'feature' is ascribed a SAHRA LOW SIGNIFICANCE and GENERALLY PROTECTED C FIELD RATING. It is recommended that (relevant portions of) the 'feature' be destroyed *in lieu* of the development without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.





**Figure 80:** General view of borrow pit 603\_BP02



**Figure 81:** Stone rich surface scattered amongst which artefacts occurred



**Figure 82:** A selection of artefacts from the borrow pit 603\_BP02 area

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### 2.4.8.3) 603\_BP03 – S31°41'26.6"; E26°46'52.7"

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**Figure 83:** Borrow Pit 603\_BP03

Only a few artefacts were collected from the surface of the general borrow pit 603\_BP03 study site, with artefact ratios (artefacts: m<sup>2</sup>) by implication too low to attempt an approximate value. Encountered artefacts were in general fairly large. The find implies a continuation, albeit in even lower distribution, of the occurrence recorded at the borrow pit 603\_BP02 study site, situated immediately north of borrow pit 603\_BP03. The few lithics at the borrow pit 603\_BP03 study site is again, based on size, typology and technology, ascribed to the earlier to middle Middle Stone Age (MSA). Particularly low quantities of artefacts indicated a clear decrease in artefact ratios from low densities recorded at the borrow pit 603\_BP02 study site, while no possibility of a sub-surface context is inferred: No artefacts were found in exposed sections at the borrow pit itself, while inspection of piles of stones aligned to the east of the site and representing collected sub-surface stones yielded no artefacts.

The few artefacts encountered at the borrow pit 603\_BP03 study site is interpreted as the low density 'feature' perimeter essentially recorded at the borrow pit 603\_BP02 study site.

**RECOMMENDATIONS:** The low density of MSA Stone Age lithics encountered at borrow pit 603\_BP03 is inferred to represent the perimeter of the 'feature' recorded at the borrow pit 603\_BP02 study site, and thus representing a continuation thereof. As for borrow pit 603\_BP02, the perimeter of the low density 'feature' recorded at the borrow pit 603\_BP03 study site is ascribed a SAHRA LOW SIGNIFICANCE and GENERALLY PROTECTED C FIELD RATING. It is recommended that development at the site proceeds without the developer having to apply for a SAHRA SITE DESTRUCTION PERMIT.



**Figure 84:** View of borrow pit 603\_BP03



**Figure 85:** One of the few artefacts encountered at the borrow pit 603\_BP03 study site



**Figure 86:** No artefacts were encountered within piles of stone located east of the borrow pit



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**2.4.8.4) 603\_BP05 – S31°38'06.5"; E26°50'53.2"**

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**Figure 87:** Borrow Pit 603\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 603\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 603\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 88:** General view of borrow pit 603\_BP05



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**2.4.8.5) 603\_BP07 – S31°37'00.7"; E26°53'05.3"**

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**Figure 89:** Borrow Pit 603\_BP07

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 603\_BP07.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 603\_BP07 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 90:** General view of borrow pit 603\_BP07

### 2.4.9) Road DR08567 (Road 567)



**Figure 91:** Proposed borrow pits in relation to Road 567

Road DR08567 (Road 567) comprises of an unpaved road of approximately 32km in length with start and end coordinates being S31°55'24.0"; E27°23'51.0" and S31°58'26.0"; E27°10'29.0" respectively. Seven borrow pits were identified along the road portion of which 4 are subjected to detailed inspection including 567\_BP02; 567\_BP03; 567\_BP05 and 567\_BP07 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 567:**

1. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of borrow pits 567\_BP02; 567\_BP03 and 567\_BP07.
2. Contemporary Iron Age tradition remains (Site 567.1) are located south east of the borrow pit 567\_BP05 study site. Graves may well be present at the site and it is recommended that Site 567.1 be conserved in situ. Quarrying at borrow pit 567\_BP05 will not impact on the site.

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**2.4.9.1) 567\_BP02 – S31°55'46.1"; E27°20'32.2"**

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**Figure 92:** Borrow Pit 567\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 567\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 567\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 93:** View of a portion of borrow pit 567\_BP02

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**2.4.9.2) 567\_BP03 – S31°55'48.1"; E27°20'21.5"**

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**Figure 94:** Borrow Pit 567\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 567\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 567\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 95:** General view of borrow pit 567\_BP03



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**2.4.9.3) 567\_BP05 – S31°56'02.0"; E27°17'20.5"**


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**Figure 96:** Borrow Pit 567\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 567\_BP05.

**Site 567.1:**

Towards the south-east of the study site remains of what seems to be fairly ephemeral and quite recent Iron Age tradition remnants are present, characterized by stone foundation remains of circular and rectangular stock enclosures and a few huts. Wall remains were broken down / deteriorated to ground level and the general stone rich environment made identification of features almost impossible. It is inferred that the site have only been used for a brief period after which the emphasis probably moved north as evidenced by clear indications of stock enclosures towards the north of the study site, many of which are still in use today. No date can be assigned to the site, but based on general feature foundation evidence it is inferred that the site most probably do not have significant archaeological time depth and that the site was most probably only fairly recently occupied for a brief period (in a manner similar to what have been reported on regarding settlement of the general area, see van Ryneveld 2010a and 2010b). Despite the lack of inferred archaeological significance of the site graves may well be present and it is recommended that the general Site 567.1 terrain be conserved in situ.

**RECOMMENDATIONS:** Site 567.1 most probably post-dates archaeological temporal depth, no SAHRA Site Significance assignation is thus of relevance to the essentially contemporary heritage site. However, graves may well be present, a resource formally protected under the NHRA 1999. Graves would be assigned a SAHRA MEDIUM SIGNIFICANCE and a GENERALLY PROTECTED B FIELD RATING. Quarrying activities at borrow pit 567\_BP05 will not impact on Site 567.1: It is recommended that Site 567.1 be conserved in situ.



**Figure 97:** View of a portion of borrow pit 567\_BP05



**Figure 98:** Foundation remains at Site 567.1



**Figure 99:** A possible grave from Site 567.1, but mound morphology remains dubious

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**2.4.9.4) 567\_BP07 – S31°55'48.1"; E27°20'21.5"**

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**Figure 100:** Borrow Pit 567\_BP07

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 567\_BP07.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 567\_BP07 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 101:** View of a portion of borrow pit 567\_BP07



#### 2.4.10) Road DR08050 (Road 050)



**Figure 102:** Proposed borrow pits in relation to Road 050

Road DR08050 (Road 050) comprises of an unpaved road of approximately 24km in length with start and end coordinates being S31°58'07.0"; E27°26'358.0" and S31°49'15.0"; E27°27'58.0" respectively. Seven borrow pits were identified along the road portion of which 6 are subjected to detailed inspection including O50\_BP01; O50\_BP02; O50\_BP03; O50\_BP04; O50\_BP05 and O50\_BP07.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 050:**

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of the 6 borrow pits proposed for development along Road 680.



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**2.4.10.1) 050\_BP01 – S31°57'50.3"; E27°26'27.7"**

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**Figure 103:** Borrow Pit 050\_BP01

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 050\_BP01.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 050\_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 104:** View of borrow pit 050\_BP01

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**2.4.10.2) 050\_BP02 – S31°56'37.9"; E27°25'44.6"**

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**Figure 105:** Borrow Pit 050\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 050\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 050\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 106:** View of a portion of borrow pit 050\_BP02

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**2.4.10.3) 050\_BP03 – S31°56'27.1"; E27°25'39.4"**

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**Figure 107:** Borrow Pit 050\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 050\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 050\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 108:** View of a portion of borrow pit 050\_BP03

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**2.4.10.4) 050\_BP04 – S31°56'06.5"; E27°25'12.4"**

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**Figure 109:** Borrow Pit 050\_BP04

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 050\_BP04.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 050\_BP04 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 110:** View of a portion of borrow pit 050\_BP04



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**2.4.10.5) 050\_BP05 – S31°51'58.4"; E27°24'29.3"**

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**Figure 111:** Borrow Pit 050\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 050\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 050\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 112:** General view of borrow pit 050\_BP05

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**2.4.10.6) 050\_BP07 – S31°49'32.1"; E27°27'12.4"**

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**Figure 113:** Borrow Pit 050\_BP07

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 050\_BP07.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 050\_BP07 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 114:** View of the borrow pit 050\_BP07 study site

#### 2.4.11) Road DR08041 (Road 041)



**Figure 115:** Proposed borrow pits in relation to Road 041

Road DR08041 (Road 041) comprises of an unpaved road of approximately 8.8km in length with start and end coordinates being S31°59'51.2"; E27°34'42.8" and S31°55'45.5"; E27°33'16.6" respectively. Two borrow pits were identified along the road portion of which both are subjected to detailed inspection, including O41\_BP01 and O41\_BP02, for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 041:**

1. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of borrow pit O41\_BP02;
2. Site O41.1 is situated immediately east of borrow pit O41\_BP01. The site may well be of significant time depth and graves are present. Quarrying activities at borrow pit O41\_BP01 will not impact on the site. The site is reported on for purposes of proximity to the development area only. It is recommended that the site be conserved in situ.

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**2.4.11.1) 041\_BP01 – S31°59'16.3"; E27°34'26.4"**


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**Figure 116:** Borrow Pit 041\_BP01

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of the borrow pit 041\_BP01 study site.

**Site 041.1:**

To the east of the borrow pit 041\_BP01 study site sparsely scattered remains of stock enclosures and associated huts were present. The majority of the 'kraals' within the Site 041.1 extent comprise of the remains of rectangular structures, thus implying a more recent date and very reminiscent of remains directly south of the study site, some of which are still in use. It is inferred that the older portion of the site, with probable archaeological time depth, is centered towards the south of the indicated site extent. Here easily discernable remains, of a fairly large circular stock enclosure are directly related to at least 4 hut remains represented by mounds. Two graves (S31°59'20.9"; E27°34'34.5" – black cross) are situated immediately adjacent to the stock enclosure. The general area specifically towards the western access road is fairly disturbed and more archaeological site features as well as graves may be present. Site 041.1 will not be impacted on by the development; the site will by implication be conserved. Proximity of the identified graves to the site is regarded as safe; no additional conservation measures are recommended.

**RECOMMENDATIONS:** Site 041.1 comprises of an archaeological and cultural heritage resource as defined and protected by the NHRA 1999. Site 041.1 is ascribed a SAHRA LOW SIGNIFICANCE and a GENERALLY PROTECTED C FIELD RATING. The identified graves at Site 041.1 are ascribed a SAHRA MEDIUM SIGNIFICANCE and a GENERALLY PROTECTED B FIELD RATING. Development will not impact on the site: It is recommended that Site 041.1 be conserved in situ.





**Figure 117:** General view of borrow pit 041\_BP01



**Figure 118:** Remains of stone stock enclosures to the east of the borrow pit 041\_BP01 study site



**Figure 119:** Two graves located adjacent to a circular stock enclosure at Site 041.1

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**2.4.11.2) 041\_BP02 – S31°58'49.5"; E27°34'33.0"**

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**Figure 120:** Borrow Pit 041\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 041\_BP02. The general area is however characterized by fairly recent scattered rectangular stone stock enclosures, some of which are still in use. Stock enclosures in the vicinity of the borrow pit 041\_BP02 study site is inferred to indicate cultural continuity from Site 041.1 situated immediately south thereof.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 041\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 121:** General view of borrow pit 041\_BP02

#### 2.4.12) Road DR08247 (Road 247)



**Figure 122:** Proposed borrow pits in relation to Road 247

Road DR08247 (Road 247) comprises of an unpaved road of approximately 22km in length with start and end coordinates being S31°35'45.5"; E27°33'16.6" and S31°50'24.0"; E27°43'09.0" respectively. Five borrow pits were identified along the road portion of which all are subjected to detailed inspection including 247\_BP01; 247\_BP02; 247\_BP03; 247\_BP04 and 247\_BP05 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 247:**

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of the 5 borrow pits proposed for development along Road 247.

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**2.4.12.1) 247\_BP01 – S31°53'03.4"; E27°38'33.4"**

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**Figure 123:** Borrow pit 247\_BP01

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 247\_BP01.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 247\_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 124:** View of borrow pit 247\_BP01



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**2.4.12.2) 247\_BP02 – S31°52'31.4"; E27°38'56.4"**

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**Figure 125:** Borrow pit 247\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 247\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 247\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 126:** View of borrow pit 247\_BP02

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**2.4.12.3) 247\_BP03 – S31°52'13.0"; E27°38'55.8"**

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**Figure 127:** Borrow pit 247\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 247\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 247\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 128:** View of borrow pit 247\_BP03

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**2.4.12.4) 247\_BP04 – S31°51'39.6"; E27°40'59.7"**

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**Figure 129:** Borrow pit 247\_BP04

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 247\_BP04.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 247\_BP04 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 130:** View of borrow pit 247\_BP04

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**2.4.12.5) 247\_BP05 – S31°50'31.5"; E27°42'32.2"**

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**Figure 131:** Borrow pit 247\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 247\_BP05.

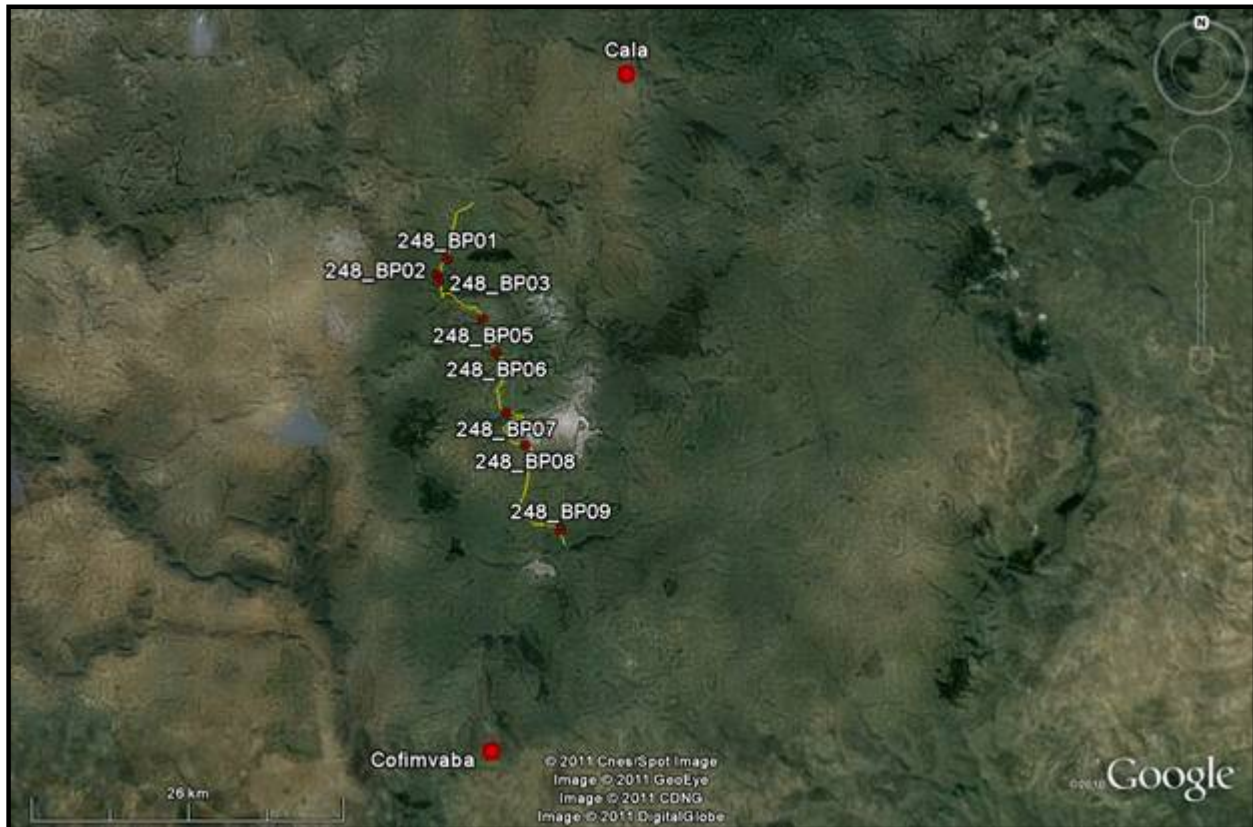
**RECOMMENDATIONS:** It is recommended that use of borrow pit 247\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 132:** View of a portion of borrow pit 247\_BP05



### 2.4.13) Road DR08248 (Road 248)



**Figure 133:** Proposed borrow pits in relation to Road 248

Road DR08248 (Road 248) comprises of an unpaved road of approximately 44km in length with start and end coordinates being S31°36'17.0"; E27°33'57.8" and S31°52'01.0"; E27°38'48.0" respectively. Nine borrow pits were identified along the road portion of which 8 are subjected to detailed inspection including 248\_BP01; 248\_BP02; 248\_BP03; 248\_BP05; 248\_BP06; 248\_BP07; 248\_BP08 and 248\_BP09 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 248:**

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of the 8 borrow pits proposed for development along Road 248.

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**2.4.13.1) 248\_BP01 – S31°39'36.5"; E27°32'42.1"**

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**Figure 134:** Borrow pit 248\_BP01

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 248\_BP01.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 248\_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 135:** View of borrow pit 248\_BP01

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**2.4.13.2) 248\_BP02 – S31°40'17.8"; E27°32'09.8"**

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**Figure 136:** Borrow pit 248\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 248\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 248\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 137:** View of a portion of borrow pit 248\_BP02

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**2.4.13.3) 248\_BP03 – S31°40'34.2"; E27°32'16.2"**

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**Figure 138:** Borrow pit 248\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 248\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 248\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 139:** View of a portion of borrow pit 248\_BP03



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**2.4.13.4) 248\_BP05 – S31°42'12.3"; E27°34'31.3"**

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**Figure 140:** Borrow pit 248\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 248\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 248\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 141:** View of borrow pit 248\_BP05

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**2.4.13.5) 248\_BP06 – S31°43'40.6"; E27°35'12.6"**

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**Figure 142:** Borrow pit 248\_BP06

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 248\_BP06.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 248\_BP06 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 143:** View of borrow pit 248\_BP06

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**2.4.13.6) 248\_BP07 – S31°46'16.9"; E27°35'44.7"**

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**Figure 144:** Borrow pit 248\_BP07

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 248\_BP07.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 248\_BP07 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 145:** View of borrow pit 248\_BP07

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**2.4.13.7) 248\_BP08 – S31°47'41.1"; E27°36'42.8"**

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**Figure 146:** Borrow pit 248\_BP08

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 248\_BP08.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 248\_BP08 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 147:** View of a portion of borrow pit 248\_BP08



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**2.4.13.8) 248\_BP09 – S31°51'22.7"; E27°38'34.7"**

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**Figure 148:** Borrow pit 248\_BP09

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 248\_BP09.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 248\_BP09 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 149:** View of a portion of borrow pit 248\_BP09

#### 2.4.14) Road DR08038 (Road 038)



**Figure 150:** Proposed borrow pits in relation to Road 038

Road DR08038 (Road 038) comprises of an unpaved road of approximately 39km in length with start and end coordinates being S31°31'37.5"; E27°41'37.2" and S31°49'16.1"; E27°44'43.8" respectively. Nine borrow pits were identified along the road portion of which 6 are subjected to detailed inspection including 038\_BP01; 038\_BP03; 038\_BP04; 038\_BP05; 038\_BP06 and 038\_BP07 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 038:**

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of the 6 borrow pits proposed for development along Road 038.

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**2.4.14.1) 038\_BP01 – S31°34'57.2"; E27°41'07.3"**

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**Figure 151:** Borrow pit 038\_BP01

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 038\_BP01.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 038\_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 152:** General view of borrow pit 038\_BP01

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**2.4.14.2) 038\_BP03 – S31°36'27.5"; E27°40'44.3"**

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**Figure 153:** Borrow pit 038\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 038\_BP03.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 038\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 154:** View of the northern portion of borrow pit 038\_BP03



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**2.4.14.3) 038\_BP04 – S31°37'56.2"; E27°40'31.9"**

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**Figure 155:** Borrow pit 038\_BP04

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 038\_BP04.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 038\_BP04 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 156:** General view of borrow pit 038\_BP04

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**2.4.14.4) 038\_BP05 – S31°42'09.9"; E27°40'34.8"**

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**Figure 157:** Borrow pit 038\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 038\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 038\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 158:** View of borrow pit 038\_BP05

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**2.4.14.5) 038\_BP06 – S31°44'46.4"; E27°41'48.8"**

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**Figure 159:** Borrow pit 038\_BP06

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 038\_BP06.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 038\_BP06 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.

(No photographic documentation).

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**2.4.14.6) 038\_BP07 – S31°46'45.4"; E27°42'02.8"**

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**Figure 160:** Borrow pit 038\_BP07

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 038\_BP07.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 038\_BP07 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 161:** View of borrow pit 038\_BP07



#### 2.4.15) Road DR08253 (Road 253)



**Figure 162:** Proposed borrow pits in relation to Road 253

Road DR08253 (Road 253) comprises of an unpaved road of approximately 25km in length with start and end coordinates being S32°00'67.6" ; E27°40'21.7" and S31°50'24.0" ; E27°42'09.0" respectively. Six borrow pits were identified along the road portion of which 3 are subjected to detailed inspection including 253\_BP03; 253\_BP04 and 253\_BP05.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 253:**

1. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of borrow pits 253\_BP04 and 253\_BP05.
2. Borrow pit 253\_BP03 was not assessed due to the state of the access road at the time of the Phase 1 AIA. It is recommended that borrow pit 253\_BP03 be assessed at the time of development, by means of an archaeological site inspection / on site archaeological monitoring.

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**2.4.15.1) 253\_BP03 – S31°55'44.9"; E27°39'53.7"**

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**Figure 163:** Borrow pit 253\_BP03

Borrow pit 253\_BP03 was not assessed due to inaccessible access roads as a result of the particularly wet late 2010 rainy season.

**RECOMMENDATIONS:** It is recommended that borrow pit 253\_BP03 be assessed at the time of development, by means of an archaeological site inspection / on site archaeological monitoring.

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**2.4.15.2) 253\_BP04 – S31°53'26.4"; E27°40'49.9"**

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**Figure 164:** Borrow pit 253\_BP04

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 253\_BP04.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 253\_BP04 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 165:** View of borrow pit 253\_BP04

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**2.4.15.3) 253\_BP05 – S31°52'26.2"; E27°41'19.3"**

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**Figure 166:** Borrow pit 253\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 253\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 253\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 167:** View from borrow pit 253\_BP05



## 2.4.16) Road DR08261 (Road 261)



**Figure 168:** Proposed borrow pits in relation to Road 261

Road DR08261 (Road 261) comprises of an unpaved road of approximately 22km in length with start and end coordinates being S31°49'05.0"''; E27°53'11.0"'' and S31°57'07.0"''; E27°52'42.0"'' respectively. Ten borrow pits were identified along the road portion of which 5 are subjected to detailed inspection including 261\_BP02; 261\_BP07; 261\_BP08; 261\_BP09 and 261\_BP10.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

**SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 261:**

1. No archaeological or cultural heritage resources were identified during Phase 1 assessment of borrow pits 261\_BP02 and 261\_BP09.
2. Borrow pit 261\_BP08 is at present impacting on the remains of a fairly recent Iron Age tradition homestead. It is recommended that continued impact be preceded by community consultation.
3. Borrow pit 261\_BP07 is situated in close proximity to the Colonial Period Site 261.1 and borrow pit 261\_BP10 in close proximity to the Iron Age homestead and cemetery, demarcated as Site 261.2. Utilization of the borrow pits will not impact on either of the sites; both sites are thus recorded for purposes of proximity to the study sites. Both sites will be conserved in situ.

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**2.4.16.1) 261\_BP02 – S31°51'01.7"; E27°54'38.0"**

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**Figure 169:** Borrow Pit 261\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 261\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 261\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 170:** General view of borrow pit 261\_BP02

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**2.4.16.2) 261\_BP07 – S31°53'51.6"; E27°56'47.7"**

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**Figure 171:** Borrow Pit 261\_BP07

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of the borrow pit 261\_BP07 study site area.

**Site 261.1:**

A Colonial Period farmstead is situated immediately south of the study site and south of road 261. Construction of the farmstead pre-dates 60 years of age; the site is by implication formally protected under the NHRA 1999. Built structures at the site are still in use and formally fenced, with conservation measures complying with SAHRA Minimum Site Conservation Standards (formal fence with access gate). Utilization of borrow pit 261\_BP07 will not impact on the Colonial Period Site 261.1. The site was locked at the time of the assessment; not allowing a more in depth inspection of site features or verification of a possible associated cemetery.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 261\_BP07 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.

Site 261.1 comprises of an archaeological and cultural heritage resource as defined and protected under the NHRA 1999. The site is ascribed a SAHRA MEDIUM SIGNIFICANCE and a GENERALLY PROTECTED B FIELD RATING. Current conservation measures (fence with access gate) comply with SAHRA Minimum Site Conservation Standards. Utilization of borrow pit 261\_BP07 will not impact on Site 261.1



Figure 172: General view of borrow pit 261\_BP07



Figure 173: General view of the Site 261.1 Colonial Period homestead



Figure 174: Close-up of a selection of the structures at Site 261.1



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**2.4.16.3) 261\_BP08 – S31°54'31.3"; E27°55'56.6"**

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**Figure 175:** Borrow Pit 261\_BP08

The borrow pit 261\_BP08 area is characterized by scattered remains of a fairly recent homestead: Rectangular remains of stone stock enclosures are scattered around. A single fairly large circular kraal is inferred to have been present towards the north-east of the study site, characterized by a slight change in vegetation (grass color), a possible result of dung deposits. A number of huts may well have been present, identified by stone foundation remains, mounds and circular impressions. The existing borrow pit impacted on a portion of such a hut foundation; here part of the hut and associated verandah can still be identified, but the remainder thereof has already been destroyed by quarrying activities at the borrow pit. The assumption of a recent date for the site is supported in large by the high degree of rectangular structures, but also by the absence of any graves – implying a short occupation period. The site is not of archaeological significance, but community consultation is recommended before continued use of the borrow pit.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 261\_BP08 proceeds as applied for without the developer having to comply with additional heritage compliance requirements. Utilization of the site should be preceded by community consultation.



**Figure 176:** General view of borrow pit 261\_BP08



**Figure 177:** Rectangular stone stock enclosure remains at borrow pit 261\_BP08



**Figure 178:** A selection of site features at borrow pit 261\_BP08

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**2.4.16.4) 261\_BP09 – S31°55'38.5"; E27°54'40.7"**

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**Figure 179:** Borrow Pit 261\_BP09

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 261\_BP09. The remains of 2 fairly large circular stone stock enclosures are situated towards the north-east of the study, these features will not be impacted on during utilization of the borrow pit

**RECOMMENDATIONS:** It is recommended that use of borrow pit 261\_BP09 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.

(No photographic documentation).

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**2.4.16.5) 261\_BP10 – S31°56'44.4"; E27°53'48.6"**


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**Figure 180:** Borrow Pit 261\_BP10

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of the immediate borrow pit 261\_BP10 study site.

**Site 261.2**

A large Iron Age site, Site 261.2 is situated to the immediate south-west of the study site, with the site proper located at approximately S31°56'46.3"; E27°53'48.6". Here stone foundations are indicative of a large circular stock enclosure, with at least 3 smaller circular stock enclosures in the immediate vicinity. Associated residential remains constitute hut mounds and foundation walls, but thick vegetation obscured visibility to a degree negatively affecting basic site feature identification.

In close proximity to the site proper a fairly large cemetery housing approximately 16 graves were identified, situated at S31°56'45.5; E27°53'46.3", indicated on the map with a black cross. More recent graves are easily distinguished from older ones – build-up earth mounds with clear stone demarcations often displaying head and footstones are easily identifiable, while older graves situated slightly to the north-west of the newer graves are characterized by stone head and footstones and settled earth demarcations, and by implication less easily visible.

From the site proper more recent cultural remains, comprising primarily of rectangular stone stock enclosures but associated with a few circular kraal indicators and associated huts are scattered sparsely across the landscape, covering an area of approximately 400x150m in extent.

Despite evidence that the site was occupied until fairly recently, with component parts thereof perhaps still occasionally in use and associated with the principle of cultural continuity as evidenced by the sustained use of the cemetery or burial place, fairly significant time depth is inferred.



**RECOMMENDATIONS:** It is recommended that use of borrow pit 261\_BP10 proceeds as applied for, without the developer having to comply with additional heritage compliance requirements.

Site 261.2 comprises of an archaeological and cultural heritage site as defined and protected by the NHRA 1999. The site is ascribed a SAHRA LOW-MEDIUM SIGNIFICANCE and a GENERALLY PROTECTED C FIELD RATING. The grave site directly associated with the Iron Age remains is ascribed a SAHRA MEDIUM SIGNIFICANCE and a GENERALLY PROTECTED B FIELD RATING. Despite fairly close proximity of the cemetery to the proposed study site fencing of the borrow pit for EMP purposes will ensure conservation of the site without additional partial site conservation measures (such as formal conservation of the cemetery), implying also no impact on the archaeological site.



**Figure 181:** General view of borrow pit 261\_BP10



**Figure 182:** View of selected site features from Site 261.2



**Figure 183:** Stock enclosure remains at Site 261.2



**Figure 184:** View of the Site 261.2 cemetery, with more recent graves in the foreground



**Figure 185:** Close-up of some of the older graves from the Site 261.2 cemetery

## 2.4.17) Road DR08042 (Road 042)



**Figure 186:** Proposed borrow pits in relation to Road 042

Road DR08042 (Road 042) comprises of an unpaved road of approximately 43.5km in length with start and end coordinates being S32°02'25.0"; E27°49'12.0" and S32°02'51.0"; E27°39'58.0" respectively. Ten borrow pits were identified along the road portion of which 6 are subjected to detailed inspection including 042\_BP02; 042\_BP03; 042\_BP05; 042\_BP07; 042\_BP08 and 042\_BP09 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

**SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 042:**

1. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of borrow pits 042\_BP02; 042\_BP05; 042\_BP07; 042\_BP08 or 042\_BP09.
2. No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified within the proposed borrow pit 042\_BP03 study site area. Site 042.1 is located immediately south of the site. It is recommended that the developer erects signage at the site, stating that the area is a 'no-go' zone (no entry sign).



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**2.4.17.1) 042\_BP02 – S32°02'35.5"; E27°48'52.8"**

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**Figure 187:** Borrow Pit 042\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 042\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 042\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 188:** View of a portion of borrow pit 042\_BP02



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**2.4.17.2) 042\_BP03 – S32°02'02.9"; E27°47'03.1"**


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**Figure 189:** Borrow Pit 042\_BP03

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of the borrow pit 042\_BP03 study site.

The general area north-east of the study site, and north-east of the gravel access road demarcating the borrow pit site extent is characterized by a number of sparsely scattered dominating rectangular stone stock enclosure remains. These remains are inferred to be of fairly recent origin based on the post-Colonial Iron Age adaptation with an emphasis on square or rectangular structure shapes. The general area north-east of the study site was only briefly assessed; very visible stock enclosure remains are often associated with circular hut remains comprising of hut foundations, mounds or indents / depressions. No associated cemeteries or burial places were identified; but based on the essential 'spot assessment' methodology applied to the area the presence of such sites cannot be excluded. Utilization of borrow pit 042\_BP03 will not impact on the fairly recent Iron Age remains situated north-east of borrow pit 042\_BP03 or possible associated cemetery or grave sites; remains will be conserved *in situ*.

**Site 042.1:**

Immediately south of the borrow pit 042\_BP03 study site, Site 042.1 (S32°03'05.5; E27°47'03.7") Iron Age remains comprise of a complex of rectangular stone stock enclosure remains situated towards the east of the trees. Remains are directly associated with a circular depression that may well represent an earlier stock enclosure and remains of a smaller circular stone structure, inferred to have been that of a hut, perhaps for young boys acting as cattle herders.

In direct proximity to the stock enclosure remains is a cemetery (indicated on the map with a cross and situated at S32°03'04.5; E27°47'06.7, comprising of no less than 12 graves varying from modern (Xozwa family), to stone cairn, to simple head and foot stone demarcations; implying use of the site over a quite extensive period of time.

Residential remains are clustered towards the west of the site and west of the trees; at least 5 circular hut remains were identified associated with foundation remains of square / rectangular shaped structures. A table-like stone stacked feature is still standing and situated roughly midway between the residential and stock enclosure remains, perhaps indicative of a 'meeting place' locality. Site layout directly contravenes the Central Cattle Pattern (CCP) and is based on 2 spatial groupings: Stock enclosures to the east, residential areas to the west, with a clear open space demarcating these localities (centrally characterized by the locality of the trees and the table-like structure).

In addition fairly creative and quite elaborate flower bed stone demarcations emphasize layout design closely associated with relief of the immediate site landscape.

Site 042.1 is ascribed a SAHRA MEDIUM SIGNIFICANCE and a GENERALLY PROTECTED B FIELD RATING.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 042\_BP03 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.

*In situ* conservation is recommended for Site 042.1, implying that measures should be taken to ensure that the site is conserved as is. In order to ensure that utilization of the borrow pit, or associated development impact spill-over do not impact on the site, it is recommended that the developer erect signage at the site, south of borrow pit 042\_BP03 and Road 042, stating that the area is a 'no-go' zone (no entry sign).



Figure 190: View of borrow pit 042\_BP03



Figure 191: General view of Site 042.1



Figure 192: The cemetery area at Site 042.1



Figure 193: Portion of the stock enclosure cluster, with grain storage pit areas visible inside the enclosures

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**2.4.17.3) 042\_BP05 – S32°07'03.2"; E27°44'14.5"**

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**Figure 194:** Borrow Pit 042\_BP05

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 042\_BP05.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 042\_BP05 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 195:** View of borrow pit 042\_BP05



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**2.4.17.4) 042\_BP07 – S32°10'00.0"; E27°41'00.4"**

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**Figure 196:** Borrow Pit 042\_BP07

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 042\_BP07. (Contemporary stock enclosure remains characterized the north-eastern part of the assessment area and the general area north-east thereof).

**RECOMMENDATIONS:** It is recommended that use of borrow pit 042\_BP07 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 197:** View of a portion of borrow pit 042\_BP07

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**2.4.17.5) 042\_BP08 – S32°13'07.4"; E27°39'34.7"**

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**Figure 198:** Borrow Pit 042\_BP08

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 042\_BP08.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 042\_BP08 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 199:** View of a portion of borrow pit 042\_BP08

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**2.4.17.6) 042\_BP09 – S32°13'58.9"; E27°39'13.4"**

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**Figure 200:** Borrow Pit 042\_BP09

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 042\_BP09.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 042\_BP09 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 201:** General view of borrow pit 042\_BP09

#### 2.4.18) Road DR08381 (Road 381)



**Figure 202:** Proposed borrow pits in relation to Road 381

Road DR08381 (Road 381) comprises of an unpaved road of approximately 5km in length with start and end coordinates being S32°05'20.0"; E27°33'26.0" and S32°06'08.0"; E27°36'09.0" respectively. Two borrow pits were identified along the road portion of which both are subjected to detailed inspection, including 381\_BP01 and 381\_BP02 for purposes of environmental compliance.

Phase 1 AIA assessment focused on approximate 1-1.5ha areas immediately surrounding the borrow pits. The study did not include assessment of the associated road portion, not subject to the scope of the development application.

#### **SUMMARY OF PHASE 1 AIA FINDINGS – BORROW PITS ALONG ROAD 381:**

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified during Phase 1 AIA assessment of the 2 borrow pits proposed for development along Road 381.



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**2.4.18.1) 381\_BP01 – S32°06'14.6"; E27°35'34.6"**

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**Figure 203:** Borrow Pit 381\_BP01

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of the borrow pit 381\_BP01 study site.

The general area towards the north of the study site and north of Road 381 is characterized by a fairly high quantity of widely scattered Iron Age remains comprising primarily of quite visible rectangular stone stock enclosure remains. In addition circular hut foundations, mounds and indents are indicative of associated occupation, often clustered in close proximity to the stock enclosures. The emphasis on rectangular stock enclosure structure shapes indicates a recent date for the site. This inference of recent occupation is supported by the lack of identified cemeteries or burial places in direct proximity to any of the clusters of residential remains or the traditional practice of graves being located immediately adjacent to stock enclosures. The general area, not forming part of the study site and based on proximity thereto not inferred to be impacted on during utilization of borrow pit 381\_BP01 was not subjected to Phase 1 AIA level of inspection and graves may well be present; but not threatened by development impact.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 381\_BP01 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 204:** View of borrow pit 381\_BP01



**Figure 205:** Rectangular stone stock enclosure remains characterizing the general area north of Road 381



**Figure 206:** Residential and stone stock enclosure remains from north of Road 381

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**2.4.18.2) 381\_BP02 – S32°06'08.9"; E27°35'55.4"**

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**Figure 207:** Borrow Pit 381\_BP02

No archaeological or cultural heritage resources, as defined and protected under the NHRA 1999, were identified on the surface or within exposed sub-surface sections during Phase 1 AIA assessment of borrow pit 381\_BP02.

**RECOMMENDATIONS:** It is recommended that use of borrow pit 381\_BP02 proceeds as applied for without the developer having to comply with additional heritage compliance requirements.



**Figure 208:** View of borrow pit 381\_BP02

### 3) CONCLUSION AND RECOMMENDATIONS

With reference to cultural heritage compliance as per the requirements of the NHRA 1999 it is recommended that the proposed *Utilization of Borrow Pits – Chris Hani District Municipality* project, which centers on the utilization of 77 borrow pits along 18 roads including the MR00680, DR12729, DR12732, DR12734, MR00638, MR00648, MR00660, DR02603, DR08567, DR08050, DR08041, DR08247, DR08248, DR08038, DR08253, DR08261, DR08042 and DR08381, located in the Chris Hani District Municipal area of the Eastern Cape proceeds as applied for provided the developer complies with the following requirements:

- The Phase 1 AIA assessment indicated that utilization of borrow pits along 11 of the 18 roads poses no threat to any significant archaeological or cultural heritage resources as defined and protected under the NHRA 1999. These 11 roads include Roads MR00680; DR12729; DR12732; MR00638; MR00648; DR02603; DR08050; DR08247; DR08248; DR08038 and DR08381.
- Low density Stone Age ‘features’ (rather than ‘sites’) were present at some borrow pits, including 729\_BP04, 732\_BP02, 732\_BP04, 732\_BP05, 732\_BP06, 734\_BP02, 603\_BP02 and 603\_BP03. The recording of low density Stone Age ‘features’ are of significance as reference to possible sites or culturally utilized areas, but without the potential for further research or mitigation. It is recommended that low density Stone Age ‘features’ or portions of the ‘features’ be destroyed *in lieu* of the development without the developer having to apply for SAHRA SITE DESTRUCTION PERMITS.
- The most significant Stone Age assemblages were identified at borrow pits 734\_BP01 and 660\_BP02 where Phase 2 archaeological mitigation is proposed prior to development impact and in the case of borrow pit 734\_BP01 archaeological monitoring at the time of impact. Phase 2 archaeological mitigation should be done by an ASAPA accredited CRM archaeologist and under a SAHRA SITE EXCAVATION PERMIT. The site management alternative to archaeological mitigation is site conservation, implying ‘no-development’ in the vicinity of the find, thus in the case of borrow pits 734\_BP01 and 660\_BP02 the sites should be excluded from the project proposal.
- Iron Age tradition resources and 1 Colonial Period site were identified, in most cases in proximity to proposed borrow pit study sites, implying that development will not impact negatively thereon. In situ conservation is proposed for these sites and including:
  1. Site 567.1 in close proximity to borrow pit 567\_BP05 [Iron Age];
  2. Site 041.1 in close proximity to borrow pit 041\_BP01 [Iron Age];
  3. Site 261.1 in close proximity to borrow pit 261\_BP07 [Colonial Period];
  4. Site 261.2 in close proximity to borrow pit 261\_BP10 [Iron Age]; and
  5. Site 042.1 in close proximity to borrow pit 042\_BP03 [Iron Age] (but recommended that ‘no-entry’ signage be erected).
- Continued impact on the contemporary Iron Age tradition remains recorded at borrow pit 261\_BP07 should be preceded by community consultation.
- Borrow pit 253\_BP03 was not assessed due to inaccessible access road conditions at the time of the Phase 1 AIA. It is recommended that use of the site be preceded by an archaeological site inspection / on site archaeological monitoring.



## UTILIZATION OF BORROW PITS – CHRIS HANI DISTRICT MUNICIPALITY

## EASTERN CAPE

MAP CODE	SITE	TYPE / PERIOD	DESCRIPTION	CO-ORDINATES	PRELIMINARY RECOMMENDATIONS
<b>Road MR00680</b>					
680_BP01	-	-	-	S32°14'07.8"; E26°45'00.6"	N/A
680_BP02	-	-	-	S32°15'59.7"; E26°43'28.8"	N/A
680_BP03	-	-	-	S32°16'58.3"; E26°41'02.5"	N/A
680_BP05	-	-	-	S32°19'51.9"; E26°40'32.4"	N/A
<b>Road DR12729</b>					
729_BP03	-	-	-	S32°05'57.6"; E26°41'46.2"	N/A
729_BP04	-	-	-	S32°07'04.0"; E26°40'25.3"	N/A
<b>Road DR12732</b>					
732_BP02	-	-	-	S32°08'24.1"; E26°35'29.1"	N/A
732_BP04	-	-	-	S32°03'25.2"; E26°28'19.9"	N/A
732_BP05	-	-	-	S32°01'55.3"; E26°28'55.4"	N/A
732_BP06	-	-	-	S32°01'25.7"; E26°29'55.1"	N/A
732_BP08	-	-	-	S32°00'25.2"; E26°31'40.2"	N/A
<b>Road DR12734</b>					
734_BP01	734_BP01	Stone Age (MSA)	Knapping	S32°01'23.7"; E26°27'58.1"	<b>Phase 2 archaeological mitigation &amp; Archaeological monitoring</b>
734_BP02	-	-	-	S32°02'27.1"; E26°26'54.4"	N/A
<b>Road MR00638</b>					
638_BP03	-	-	-	S32°13'05.5"; E26°16'34.3"	N/A
638_BP04	-	-	-	S32°11'02.6"; E26°17'32.9"	N/A
638_BP05	-	-	-	S32°09'37.5"; E26°18'36.4"	N/A
638_BP06	-	-	-	S32°09'32.9"; E26°18'51.7"	N/A
638_BP07	-	-	-	S32°07'54.7"; E26°19'38.3"	N/A
<b>Road MR00648</b>					
648_BP02	-	-	-	S32°23'48.1"; E25°44'00.2"	N/A
648_BP03	-	-	-	S32°23'17.0"; E25°43'50.2"	N/A
648_BP07	-	-	-	S32°16'32.0"; E25°41'34.0"	N/A
<b>Road MR00660</b>					
660_BP02	660_BP02	Stone Age (LSA)	Knapping	S31°44'57.0"; E25°54'34.1"	<b>Phase 2 archaeological mitigation</b>
660_BP03	-	-	-	S31°44'05.5"; E25°53'32.1"	N/A
660_BP04	-	-	-	S31°43'17.7"; E25°52'54.7"	N/A
660_BP06	-	-	-	S31°40'12.0"; E25°50'18.6"	N/A
<b>Road DR02603</b>					
603_BP01	-	-	-	S31°43'36.8"; E26°44'57.0"	N/A
603_BP02	-	-	-	S31°41'21.8"; E26°46'55.8"	N/A
603_BP03	-	-	-	S31°41'26.6"; E26°46'52.7"	N/A
603_BP05	-	-	-	S31°38'06.5"; E26°50'53.2"	N/A
603_BP07	-	-	-	S31°37'00.7"; E26°53'05.3"	N/A
<b>Road DR08567</b>					
567_BP02	-	-	-	S31°55'46.1"; E27°20'32.2"	N/A
567_BP03	-	-	-	S31°55'48.1"; E27°20'21.5"	N/A
567_BP05	-	-	-	S31°56'02.0"; E27°17'20.5"	N/A
567.1	Site 567.1	Contemporary	Homestead (graves?)	S31°56'02.8"; E27°17'24.9"	<b>In situ conservation</b>
567_BP07	-	-	-	S31°58'22.8"; E27°13'24.1"	N/A
<b>Road DR08050</b>					
050_BP01	-	-	-	S31°57'50.3"; E27°26'27.7"	N/A
050_BP02	-	-	-	S31°56'37.9"; E27°25'44.6"	N/A
050_BP03	-	-	-	S31°56'27.1"; E27°25'39.4"	N/A
050_BP04	-	-	-	S31°56'06.5"; E27°25'12.4"	N/A
050_BP05	-	-	-	S31°51'58.4"; E27°24'29.3"	N/A

050_BP07	-	-	-	S31°49'32.1"; E27°27'12.4"	N/A
<b>Road DR08041</b>					
041_BP01	-	-	-	S31°59'16.3"; E27°34'26.4"	N/A
041.1	Site 041.1	Iron Age	Homestead	S31°59'15.9"; E27°34'35.8"	In situ conservation
041_BP02	-	-	-	S31°58'49.5"; E27°34'33.0"	N/A
<b>Road DR08247</b>					
247_BP01	-	-	-	S31°53'03.4"; E27°38'33.4"	N/A
247_BP02	-	-	-	S31°52'31.4"; E27°38'56.4"	N/A
247_BP03	-	-	-	S31°52'13.0"; E27°38'55.8"	N/A
247_BP04	-	-	-	S31°51'39.6"; E27°40'59.7"	N/A
247_BP05	-	-	-	S31°50'31.5"; E27°42'32.2"	N/A
<b>Road DR08248</b>					
248_BP01	-	-	-	S31°39'36.5"; E27°32'42.1"	N/A
248_BP02	-	-	-	S31°40'17.8"; E27°32'09.8"	N/A
248_BP03	-	-	-	S31°40'34.2"; E27°32'16.2"	N/A
248_BP05	-	-	-	S31°42'12.3"; E27°34'31.3"	N/A
248_BP06	-	-	-	S31°43'40.6"; E27°35'12.6"	N/A
248_BP07	-	-	-	S31°46'16.9"; E27°35'44.7"	N/A
248_BP08	-	-	-	S31°47'41.1"; E27°36'42.8"	N/A
248_BP09	-	-	-	S31°51'22.7"; E27°38'34.7"	N/A
<b>Road DR08038</b>					
038_BP01	-	-	-	S31°34'57.2"; E27°41'07.3"	N/A
038_BP03	-	-	-	S31°36'27.5"; E27°40'44.3"	N/A
038_BP04	-	-	-	S31°37'56.2"; E27°40'31.9"	N/A
038_BP05	-	-	-	S31°42'09.9"; E27°40'34.8"	N/A
038_BP06	-	-	-	S31°44'46.4"; E27°41'48.8"	N/A
038_BP07	-	-	-	S31°46'45.4"; E27°42'02.8"	N/A
<b>Road DR08253</b>					
253_BP03	-	-	-	S31°55'44.9"; E27°39'53.7"	Archaeological site inspection
253_BP04	-	-	-	S31°53'26.4"; E27°40'49.9"	N/A
253_BP05	-	-	-	S31°52'26.2"; E27°41'19.3"	N/A
<b>Road DR08261</b>					
261_BP02	-	-	-	S31°51'01.7"; E27°54'38.0"	N/A
261_BP07	-	-	-	S31°53'51.6"; E27°56'47.7"	N/A
261.1	Site 261.1	Colonial Period	Homestead	S31°53'55.8"; E27°56'45.8"	Site conservation measures in place
261_BP08	-	-	-	S31°45'31.3"; E27°55'56.6"	Community consultation
261_BP09	-	-	-	S31°55'38.5"; E27°54'40.7"	N/A
261_BP10	-	-	-	S31°51'01.7"; E27°54'38.0"	N/A
261.2	Site 261.2	Iron Age	Homestead	S31°56'46.3"; E27°53'44.3"	In situ conservation
<b>Road DR08042</b>					
042_BP02	-	-	-	S32°02'35.5"; E27°48'52.8"	N/A
042_BP03	-	-	-	S32°03'02.9"; E27°47'03.1"	N/A
042.1	Site 042.1	Iron Age	Homestead	S32°03'05.5"; E27°47'03.7"	In situ conservation – 'No Entry' signage
042_BP05	-	-	-	S32°07'03.2"; E27°44'14.5"	N/A
042_BP07	-	-	-	S32°10'00.0"; E27°41'00.4"	N/A
042_BP08	-	-	-	S32°13'07.4"; E27°39'34.7"	N/A
042_BP09	-	-	-	S32°13'58.9"; E27°39'13.4"	N/A
<b>Road DR08381</b>					
381_BP01	-	-	-	S32°06'14.6"; E27°35'34.6"	N/A
381_BP02	-	-	-	S32°06'08.9"; E27°35'55.4"	N/A

**Table 2:** Development and Phase 1 AIA assessment findings – co-ordinate details

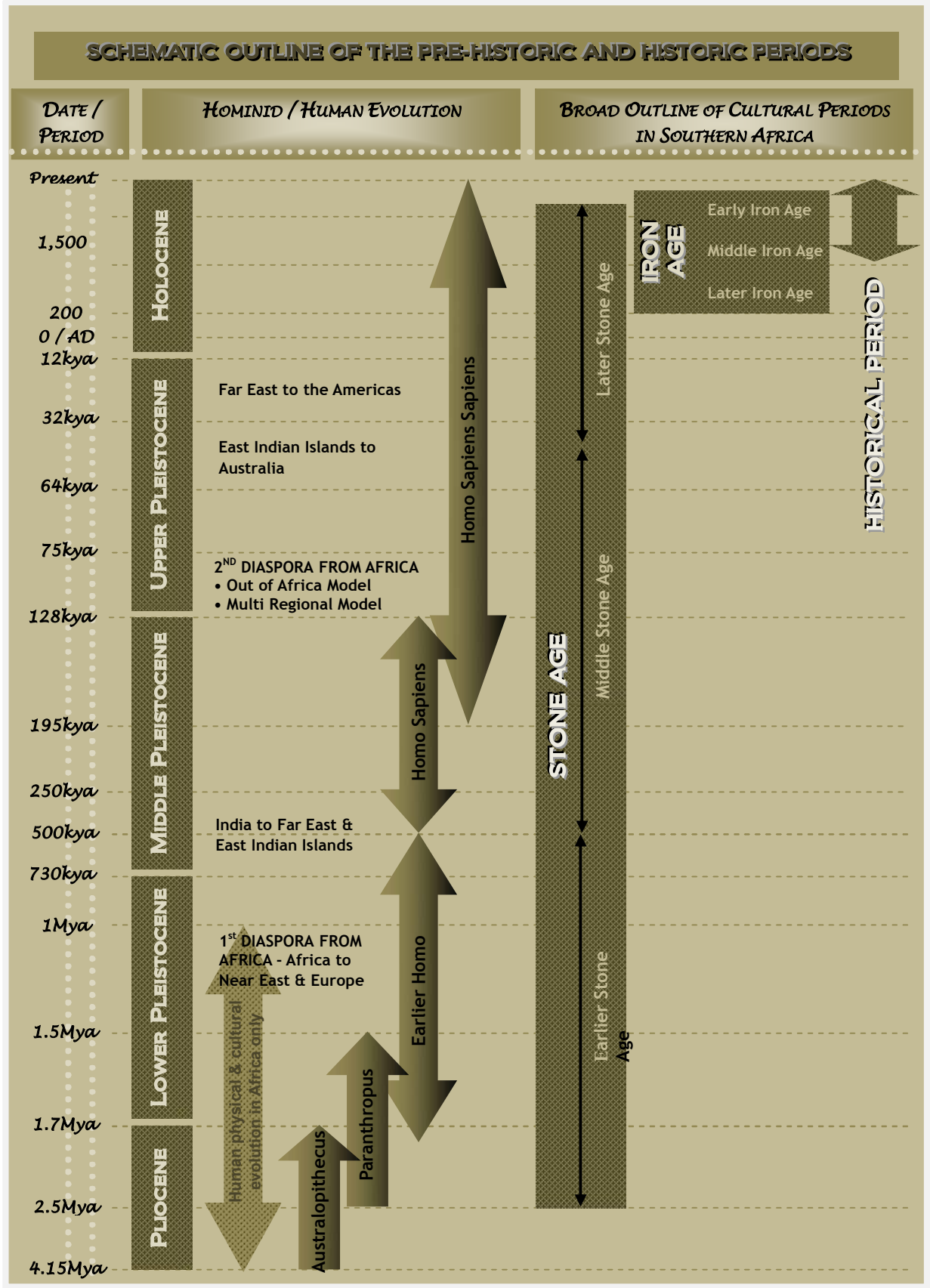
**NOTE:** Should any archaeological or cultural heritage resources as defined and protected by the NHRA 1999 and not reported on in this report be identified during the course of development the developer should immediately cease operation in the vicinity of the find and report the site to SAHRA / an ASAPA accredited CRM archaeologist.

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*EXTRACTS FROM THE*  
**NATIONAL HERITAGE RESOURCES ACT (No 25 of 1999)**

**DEFINITIONS***Section 2*

In this Act, unless the context requires otherwise:

- ii. *"Archaeological"* means –
  - a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
  - b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10 m of such representation;
  - c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic,... and any cargo, debris, or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation.
- viii. *"Development"* means any physical intervention, excavation or action, other than those caused by natural forces, which may in the opinion of a heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including –
  - a) construction, alteration, demolition, removal or change of use of a place or structure at a place;
  - b) carrying out any works on or over or under a place;
  - c) subdivision or consolidation of land comprising, a place, including the structures or airspace of a place;
  - d) constructing or putting up for display signs or hoardings;
  - e) any change to the natural or existing condition or topography of land; and
  - f) any removal or destruction of trees, or removal of vegetation or topsoil;
- xiii. *"Grave"* means a place of interment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place;
- xxi. *"Living heritage"* means the intangible aspects of inherited culture, and may include –
  - a) cultural tradition;
  - b) oral history;
  - c) performance;
  - d) ritual;
  - e) popular memory;
  - f) skills and techniques;
  - g) indigenous knowledge systems; and
  - h) the holistic approach to nature, society and social relationships.
- xxxi. *"Palaeontological"* means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trances;
- xli. *"Site"* means any area of land, including land covered by water, and including any structures or objects thereon;
- xlii. *"Structure"* means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith;

**NATIONAL ESTATE***Section 3*

- 1) For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.
- 2) Without limiting the generality of subsection 1), the national estate may include –
  - a) places, buildings, structures and equipment of cultural significance;
  - b) places to which oral traditions are attached or which are associated with living heritage;
  - c) historical settlements and townscapes;
  - d) landscapes and natural features of cultural significance;
  - e) geological sites of scientific or cultural importance
  - f) archaeological and palaeontological sites;
  - g) graves and burial grounds, including –
    - i. ancestral graves;
    - ii. royal graves and graves of traditional leaders;
    - iii. graves of victims of conflict
    - iv. graves of individuals designated by the Minister by notice in the Gazette;
    - v. historical graves and cemeteries; and
    - vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No 65 of 1983)
  - h) sites of significance relating to the history of slavery in South Africa;
  - i) movable objects, including –
    - i. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
    - ii. objects to which oral traditions are attached or which are associated with living heritage;
    - iii. ethnographic art and objects;
    - iv. military objects;
    - v. objects of decorative or fine art;
    - vi. objects of scientific or technological interest; and
    - vii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 xiv) of the National Archives of South Africa Act, 1996 (Act No 43 of 1996).

## **STRUCTURES**

### ***Section 34***

- 1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

## **ARCHAEOLOGY, PALAEOLOGY AND METEORITES**

### ***Section 35***

- 3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.
- 4) No person may, without a permit issued by the responsible heritage resources authority –
  - a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
  - b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
  - c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
  - d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assists in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.
- 5) When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and no heritage resources management procedure in terms of section 38 has been followed, it may –
  - a) serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;
  - b) carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;
  - c) if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph a) to apply for a permit as required in subsection 4); and
  - d) recover the costs of such investigation from the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.
- 6) The responsible heritage resources authority may, after consultation with the owner of the land on which an archaeological or palaeontological site or meteorite is situated, serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

## **BURIAL GROUNDS AND GRAVES**

### ***Section 36***

- 3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority –
  - a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
  - b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
  - c) bring onto or use at a burial ground or grave referred to in paragraph a) or b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- 4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction of any burial ground or grave referred to in subsection 3a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.
- 5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection 3b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority –
  - a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
  - b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.
- 6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority –
  - a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and
  - b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

## HERITAGE RESOURCES MANAGEMENT

### Section 38

- 1) Subject to the provisions of subsections 7), 8) and 9), any person who intends to undertake a development categorised as –
  - a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
  - b) the construction of a bridge or similar structure exceeding 50 m in length;
  - c) any development or other activity which will change the character of a site –
    - i. exceeding 5 000 m<sup>2</sup> in extent; or
    - ii. involving three or more existing erven or subdivisions thereof; or
    - iii. involving three or more erven or subdivisions thereof which have been consolidated within the past five years; or
    - iv. the costs which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
  - d) the rezoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
  - e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,
 must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.
- 2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection 1) –
  - a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or
  - b) notify the person concerned that this section does not apply.
- 3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection 2a) ...
- 4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development decide –
  - a) whether or not the development may proceed;
  - b) any limitations or conditions to be applied to the development;
  - c) what general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;
  - d) whether compensatory action is required in respect of any heritage resources damaged or destroyed as a result of the development; and
  - e) whether the appointment of specialists is required as a condition of approval of the proposal.

## APPOINTMENT AND POWERS OF HERITAGE INSPECTORS

### Section 50

- 7) Subject to the provision of any other law, a heritage inspector or any other person authorised by a heritage resources authority in writing, may at all reasonable times enter upon any land or premises for the purpose of inspecting any heritage resource protected in terms of the provisions of this Act, or any other property in respect of which the heritage resources authority is exercising its functions and powers in terms of this Act, and may take photographs, make measurements and sketches and use any other means of recording information necessary for the purposes of this Act.
- 8) A heritage inspector may at any time inspect work being done under a permit issued in terms of this Act and may for that purpose at all reasonable times enter any place protected in terms of this Act.
- 9) Where a heritage inspector has reasonable grounds to suspect that an offence in terms of this Act has been, is being, or is about to be committed, the heritage inspector may with such assistance as he or she thinks necessary –
  - a) enter and search any place, premises, vehicle, vessel or craft, and for that purpose stop and detain any vehicle, vessel or craft, in or on which the heritage inspector believes, on reasonable grounds, there is evidence related to that offence;
  - b) confiscate and detain any heritage resource or evidence concerned with the commission of the offence pending any further order from the responsible heritage resources authority; and
  - c) take such action as is reasonably necessary to prevent the commission of an offence in terms of this Act.
- 10) A heritage inspector may, if there is reason to believe that any work is being done or any action is being taken in contravention of this Act or the conditions of a permit issued in terms of this Act, order the immediate cessation of such work or action pending any further order from the responsible heritage resources authority.