

**Alicedale Sewerage Upgrades,
Makana Local Municipality, Sarah Baartman District Municipality, Eastern Cape**

- 7 November 2016 -

Report to:

Sello Mokhanya (Eastern Cape Provincial Heritage Resources Agency – EC PHRA, APM Unit)
E-mail: smokhanya@ecphra.org.za; Tel: 043 745 0888; Postal Address: N/A

Anna Collett (GIBB)
E-mail: acollett@gibb.co.za; Tel: 041 392 7500; Postal Address: P.O. Box 63703, Greenacres, 6057



Prepared by:

Karen van Ryneveld (ArchaeoMaps)
E-mail: karen@archaeomaps.co.za; Tel: 084 871 1064; Postal Address: Postnet Suite 239, Private Bag X3, Beacon Bay, 5205

Specialist Declaration of Interest

I, Karen van Ryneveld (Company – ArchaeoMaps; Qualification – MSc Archaeology), declare that:

- I am suitably qualified and accredited to act as independent specialist in this application;
- I do not have any financial or personal interest in the application, its' proponent or subsidiaries, aside from fair remuneration for specialist services rendered; and
- That work conducted have been done in an objective manner – and that any circumstances that may have compromised objectivity have been reported on transparently.



Signature -

- 7 November 2016 -

**Alicedale Sewerage Upgrades,
Makana Local Municipality, Sarah Baartman District Municipality, Eastern Cape**

Executive Summary

Project Description –

GIBB have been appointed as independent EAP by the project proponent, the Makana Local Municipality (MLM), to apply for EA, including a BAR and EMPr to the Eastern Cape DEDEAT for the proposed *Alicedale Sewerage Upgrades* development, situated at general development co-ordinate S33°18'59.4"; E26°04'59.9" (Alicedale), MLM, SBDM, Eastern Cape. The proposed *Alicedale Sewerage Upgrades* development aims to provide Alicedale with a waterborne sanitation system which will allow sewerage to be pumped up to the existing gravity main north of Kwanonzwakazi from where sewerage would gravitate down to the existing WWTW. Two (2) route alternatives are investigated:

- Option / Alternative 1: The alternative centres on the collection of reticulation draining to a single pump station, namely the southern pump station, from where it would be pumped to the WWTW via one (1) rising main. Albeit based on construction of a single pump station the option would require deeper excavations and would require a section of the pipeline to traverse private property, potentially problematic from a maintenance point of view.
- Option / Alternative 2 (Preferred Option): The development option centres on construction of two (2) pump stations, to drain the northern and southern parts of the town respectively. Sewerage collected from the northern pump station would be pumped to the southern pump station from where it will be transported via a single rising main to the WWTW.

Development activities will include construction of the pump station(s), excavation and laying of gravity mains and sewer rising mains (~5km), traffic accommodation during the construction phase, strapping of the rising main to the Bushmans River bridge and pipe-jacking underneath the existing railway reserve.

The Phase 1 Archaeological & Cultural Heritage Impact Assessment –

Project Name & Locality: *Alicedale Sewerage Upgrades* development, MLM, SBDM, Eastern Cape [1:50,000 Map Ref – 3326AC].

Summary of Findings:

A total of 45 archaeological and cultural heritage sites (Sites ASU-S1 – ASU-S45), as defined and protected by the NHRA 1999, were identified with recorded heritage sites attesting to the founding and early Colonial Period history of Alicedale. The proposed *Alicedale Sewerage Upgrades* development, a basic services development, would not be possible should standard heritage site conservation standards, including permanent conservation measures with 30-50m conservation buffer zones around the sites be expected or enforced. Accordingly, recommendations contained in this report for purposes of development is based on light-weight temporary conservation measures during the construction phase of the development, and excludes any conservation buffer zones. Deviation in heritage recommendations from standard heritage conservation standards were done with direct reference to the principles of Integrated Environmental Management (IEM).

- The proposed development poses no 'fatal flaws' with reference to archaeological and cultural heritage resources (See the above with reference to deviation in standard heritage recommendations for purposes of development).
- The developer need to apply for an EC PHRA – APM Unit permit (site alteration) prior to pipe jacking underneath the existing railway reserve (See Site ASU-S35).
- The development will have a temporary negative visual impact on the cultural landscape during the construction phase.
- The development will have no negative long-term (implementation phase) cumulative impact on the cultural landscape.
- Compliance to heritage recommendations during the construction phase should be reported on to the EC PHRA – APM Unit by a professional heritage practitioner / ECO (basic photographic report).
- [In the event of any incidental archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, being identified during the course of development the process described in 'Appendix B: Heritage Protocol for Incidental Finds during the Construction Phase' should be followed.]

Recommendations –

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed *Alicedale Sewerage Upgrades* development, MLM, SBDM, Eastern Cape, proceed as applied for (either Option / Alternative 1 or Option / Alternative 2 – the Preferred Option) provided the developer comply with the listed heritage recommendations, as per the heritage compliance summary.

The EC PHRA-APM Unit HIA Comment will state legal requirements for development to proceed, or reasons why, from a heritage perspective, development may not be further considered.

Heritage Compliance Summary – Alicedale Sewerage Upgrades, Makana Local Municipality, Sarah Baartman District Municipality, Eastern Cape			
Map Code	Site	Co-ordinates	Recommendations
Alicedale Sewerage Upgrades			
Site ASU-S1	Colonial Period: Cemetery / Graves	S33°18'59.8"; E26°06'28.8"	N/A (Recorded for heritage database purposes)
Site ASU-S2	Colonial Period: Grave	S33°18'59.6"; E26°06'26.9"	N/A (Recorded for heritage database purposes)
Site ASU-S3	LIA / Cont. Period: Church	S33°19'05.2"; E26°05'36.5"	Temporary heritage signage (Permanent conservation measures in place)
Site ASU-S4	Cont. Period: Bridge	S33°18'59.8"; E26°05'14.0"	N/A (Not a heritage site; see also Site ASU-S5)
Site ASU-S5	Colonial Period: Bridge	S33°18'57.7"; E26°05'12.0"	Temporary heritage signage (Permanent heritage conservation measures not recommended)
Site ASU-S6	Colonial Period: Cemetery	S33°19'00.3"; E26°05'09.7"	Temporary heritage signage (Permanent conservation measures in place)
Site ASU-S7	Colonial Period: Residence	S33°18'53.4"; E26°05'07.2"	Temporary heritage signage
Site ASU-S8	Colonial Period: Jail	S33°18'53.4"; E26°05'02.7"	Permanent heritage conservation fence & signage
Site ASU-S9	Colonial Period: Commercial Structure	S33°18'58.9"; E26°05'00.8"	Temporary heritage conservation fence & signage
Site ASU-S10	Colonial Period: Church	S33°18'57.7"; E26°05'00.4"	Temporary heritage signage (Permanent conservation measures in place)
Site ASU-S11	Colonial Period: Residence	S33°18'55.7"; E26°05'00.5"	Temporary heritage conservation fence & signage
Site ASU-S12	Colonial Period: Church	S33°18'55.2"; E26°05'00.7"	Temporary heritage conservation fence & signage
Site ASU-S13	Colonial Period: Residence	S33°18'54.7"; E26°05'00.6"	Temporary heritage conservation fence & signage
Site ASU-S14	Colonial Period: Residence	S33°18'54.0"; E26°05'00.7"	Temporary heritage conservation fence & signage
Site ASU-S15	Colonial Period: Residence / Commercial structure	S33°18'53.0"; E26°05'00.8"	Temporary heritage conservation fence & signage
Site ASU-S16	Colonial Period: Residence	S33°18'52.7"; E26°05'00.8"	Temporary heritage conservation fence & signage
Site ASU-S17	Colonial Period: Residence	S33°18'52.1"; E26°05'00.9"	Temporary heritage signage
Site ASU-S18	Colonial Period: Outbuilding	S33°18'51.4"; E26°05'01.0"	Temporary heritage conservation fence & signage
Site ASU-S19	Colonial Period: Residence	S33°18'52.0"; E26°05'00.5"	Temporary heritage conservation fence & signage
Site ASU-S20	Colonial Period: Residence	S33°18'52.7"; E26°05'00.4"	Temporary heritage conservation fence & signage
Site ASU-S21	Colonial Period: Building / Church	S33°18'52.7"; E26°05'00.4"	Temporary heritage signage (Permanent conservation measures in place)
Site ASU-S22	Colonial Period: Residence	S33°18'54.3"; E26°04'59.5"	Temporary heritage conservation fence & signage
Site ASU-S23	Colonial Period: Church	S33°18'56.1"; E26°04'59.8"	Temporary heritage signage (Permanent conservation measures expected to be in place)
Site ASU-S24	Colonial Period: Residence	S33°18'56.5"; E26°04'58.5"	Temporary heritage conservation fence & signage
Site ASU-S25	Colonial Period: Railway station / Bushman sands golf club	S33°18'54.8"; E26°04'56.4"	Temporary heritage signage
Site ASU-S26	Colonial Period: Residence	S33°18'53.2"; E26°04'47.4"	Temporary heritage signage
Site ASU-S27	Colonial Period: Residence	S33°18'53.8"; E26°04'47.0"	Temporary heritage signage
Site ASU-S28	Colonial Period: Residence	S33°18'54.7"; E26°04'46.2"	Temporary heritage signage
Site ASU-S29	Colonial Period: Residence	S33°18'55.8"; E26°04'45.1"	Temporary heritage signage
Site ASU-S30	Colonial Period: Residence	S33°18'56.2"; E26°04'44.7"	Temporary heritage signage
Site ASU-S31	Colonial Period: Residence	S33°18'56.9"; E26°04'44.1"	Temporary heritage signage
Site ASU-S32	Colonial Period: Residence	S33°18'57.6"; E26°04'45.5"	Temporary heritage signage
Site ASU-S33	Colonial Period: Residence	S33°18'56.8"; E26°04'46.3"	Temporary heritage signage
Site ASU-S34	Colonial Period: Residence	S33°18'55.4"; E26°04'47.6"	Temporary heritage signage
Site ASU-S35	Colonial Period: Railway bridge and line	S33°19'00.2"; E26°04'45.7"	EC PHRA APM Unit Permit prior to any alteration of the site
Site ASU-S36	Colonial Period: Railway training college (?)	S33°19'00.9"; E26°04'50.2"	Temporary heritage conservation fence & signage
Site ASU-S37	Colonial Period: Quarry / Mining Infrastructure	S33°19'01.6"; E26°04'35.8"	N/A (Recorded for heritage database purposes)
Site ASU-S38	Cont. Period: Bridge	S33°19'07.0"; E26°04'51.1"	N/A (Not a heritage site)
Site ASU-S39	Colonial Period: Residence	S33°19'03.1"; E26°04'54.9"	Temporary heritage signage
Site ASU-S40	Colonial Period: Link-houses	S33°19'03.3"; E26°04'57.0"	Temporary heritage signage
Site ASU-S41	Colonial Period: Residence	S33°19'04.1"; E26°04'58.8"	Temporary heritage signage
Site ASU-S42	Colonial Period: Residence	S33°19'05.1"; E26°04'59.3"	Temporary heritage conservation fence & signage
Site ASU-S43	Colonial Period: Residence	S33°19'05.7"; E26°04'59.2"	Temporary heritage conservation fence & signage
Site ASU-S44	Colonial Period: Residence	S33°19'00.8"; E26°04'59.2"	Temporary heritage signage
Site ASU-S45	Colonial Period: Residence	S33°19'01.7"; E26°04'57.6"	Temporary heritage signage

CONTENTS

1 – Project Description & Terms of Reference	8
2 – The Phase 1 Archaeological & Cultural Heritage Impact Assessment	12
2.1.1) Archaeological & Cultural Heritage Legislative Compliance	12
2.1.2) Methodology & Gap Analysis	12
2.1 – Pre-feasibility Assessment	14
2.2.1) Pre-feasibility Summary	14
2.2.2) The SAHRA 2009 MPD & SAHRIS	14
2.2.3) SAHRA Provincial Heritage Site Database – Eastern Cape	15
2.2.4) General Discussion	15
2.2 – Field Assessment	17
2.2.1) Introduction	17
2.2.2) Site Descriptions	18
2.2.2.1) Site ASU-S1: Colonial Period – Cemetery / Graves (S33°18'59.8"; E26°06'28.8")	18
2.2.2.2) Site ASU-S2: Colonial Period – Grave (S33°18'59.6"; E26°06'26.9")	18
2.2.2.3) Site ASU-S3: Later Iron Age (LIA) / Contemporary Period – Church (S33°19'05.2"; E26°05'36.5")	18
2.2.2.4) Site ASU-S4: Contemporary Period – Bridge (S33°18'59.8"; E26°05'14.0")	19
2.2.2.5) Site ASU-S5: Colonial Period – Bridge (S33°18'57.7"; E26°05'12.0")	19
2.2.2.6) Site ASU-S6: Colonial Period – Cemetery (S33°19'00.3"; E26°05'09.7")	19
2.2.2.7) Site ASU-S7: Colonial Period – Residence (S33°18'53.4"; E26°05'07.2")	20
2.2.2.8) Site ASU-S8: Colonial Period – Jail (S33°18'53.4"; E26°05'02.7")	20
2.2.2.9) Site ASU-S9: Colonial Period – Commercial Structure (S33°18'58.9"; E26°05'00.8")	21
2.2.2.10) Site ASU-S10: Colonial Period – Church (S33°18'57.7"; E26°05'00.4")	21
2.2.2.11) Site ASU-S11: Colonial Period – Residence (S33°18'55.7"; E26°05'00.5")	21
2.2.2.12) Site ASU-S12: Colonial Period – Church (S33°18'55.2"; E26°05'00.7")	22
2.2.2.13) Site ASU-S13: Colonial Period – Residence (S33°18'54.5"; E26°05'00.6")	22
2.2.2.14) Site ASU-S14: Colonial Period – Residence (S33°18'54.0"; E26°05'00.7")	22
2.2.2.15) Site ASU-S15: Colonial Period – Residence / Commercial Structure (S33°18'53.0"; E26°05'00.8")	23
2.2.2.16) Site ASU-S16: Colonial Period – Residence (S33°18'52.7"; E26°05'00.8")	23
2.2.2.17) Site ASU-S17: Colonial Period – Residence (S33°18'52.1"; E26°05'00.9")	23
2.2.2.18) Site ASU-S18: Colonial Period – Outbuilding (S33°18'51.4"; E26°05'01.0")	24
2.2.2.19) Site ASU-S19: Colonial Period – Residence (S33°18'52.0"; E26°05'00.5")	24
2.2.2.20) Site ASU-S20: Colonial Period – Residence (S33°18'52.7"; E26°05'00.4")	24
2.2.2.21) Site ASU-S21: Colonial Period – Building / Church (S33°18'53.8"; E26°04'59.8")	25
2.2.2.22) Site ASU-S22: Colonial Period – Residence (S33°18'54.3"; E26°04'59.5")	25
2.2.2.23) Site ASU-S23: Colonial Period – Church (S33°18'56.1"; E26°04'59.8")	25
2.2.2.24) Site ASU-S24: Colonial Period – Residence (S33°18'56.5"; E26°04'58.5")	26
2.2.2.25) Site ASU-S25: Colonial Period – Railway Station / Bushman Sands Golf Club (S33°18'54.8"; E26°04'56.4")	26
2.2.2.26) Site ASU-S26: Colonial Period – Residence (S33°18'53.2"; E26°04'47.4")	26
2.2.2.27) Site ASU-S27: Colonial Period – Residence (S33°18'53.8"; E26°04'47.0")	27
2.2.2.28) Site ASU-S28: Colonial Period – Residence (S33°18'54.7"; E26°04'46.2")	27
2.2.2.29) Site ASU-S29: Colonial Period – Residence (S33°18'55.8"; E26°04'45.1")	27
2.2.2.30) Site ASU-S30: Colonial Period – Residence (S33°18'56.2"; E26°04'44.7")	28
2.2.2.31) Site ASU-S31: Colonial Period – Residence (S33°18'56.9"; E26°04'44.1")	28
2.2.2.32) Site ASU-S32: Colonial Period – Residence (S33°18'57.6"; E26°04'45.5")	28
2.2.2.33) Site ASU-S33: Colonial Period – Residence (S33°18'56.8"; E26°04'46.3")	29
2.2.2.34) Site ASU-S34: Colonial Period – Residence (S33°18'53.4"; E26°05'07.2")	29
2.2.2.35) Site ASU-S35: Colonial Period – Railway Bridge and Line (S33°19'00.2"; E26°04'45.7")	29
2.2.2.36) Site ASU-S36: Colonial Period – Railway Training College (?) (S33°19'00.9"; E26°04'50.2")	30
2.2.2.37) Site ASU-S37: Colonial Period – Quarry / Mining Infrastructure (S33°19'01.6"; E26°04'35.8")	30
2.2.2.38) Site ASU-S38: Contemporary Period – Bridge (S33°19'07.0"; E26°04'51.1")	30
2.2.2.39) Site ASU-S39: Colonial Period – Residence (S33°19'03.1"; E26°04'54.9")	31
2.2.2.40) Site ASU-S40: Colonial Period – Link-houses (S33°19'03.0"; E26°05'57.0")	31
2.2.2.41) Site ASU-S41: Colonial Period – Residence (S33°19'04.1"; E26°04'58.8")	31

2.2.2.42)	Site ASU-S42: Colonial Period – Residence (S33°19'05.1"; E26°04'59.3")	32
2.2.2.43)	Site ASU-S43: Colonial Period – Residence (S33°19'05.7"; E26°04'59.2")	32
2.2.2.44)	Site ASU-S44: Colonial Period – Residence (S33°19'00.8"; E26°04'59.2")	32
2.2.2.45)	Site ASU-S45: Colonial Period – Residence (S33°19'01.7"; E26°04'57.9")	32
3 –	Environmental Impact Assessment Rating	51
4 –	Recommendations	53
5 –	Acronyms & Abbreviations	56
6 –	References	57

Appendix A:

Schematic Outline of the Pre-colonial and Colonial Periods in South Arica

Appendix B:

Heritage Protocol for Incidental Finds during the Construction Phase

Appendix C:

Resumé: Karen van Ryneveld

List of Maps

Map 1: General locality of the Alicedale Sewerage Upgrades study site, MLM, SBDM, Eastern Cape (Base Map – MapStudio, 2008)	9
Map 2: General locality of the Alicedale Sewerage Upgrades study site, MLM, SBDM, Eastern Cape [1: 50,000 Map Ref – 3326AC]	9
Map 3: Alicedale Sewerage Upgrades – Layout: Option / Alternative 1 (courtesy GIBB)	10
Map 4: Alicedale Sewerage Upgrades – Layout: Option / Alternative 2 – Preferred Option (courtesy GIBB)	11
Map 5: Spatial distribution of geo-referenced PHSs in the SAHRA – Eastern Cape database in relation to the Registration of Two Gravel Mines (Borrow Pits) for Upgrading of the DR02614 and DR02625 in the Sterkstroom Area, EMLM, Eastern Cape, study sites (https://en.wikipedia.org/wiki/List_of_heritage_sites_in_Eastern_Cape)	15
Map 6: Spatial distribution of heritage sites in relation to the Alicedale Sewerage Upgrades development corridors (Blue: Existing sewerage infrastructure)	34
Map 7: Spatial distribution of heritage sites in relation to the Alicedale Sewerage Upgrades development corridors – Close-up of site distribution through Alicedale	35

List of Plates

Plate 1: View of the existing sewerage alignment	36
Plate 2: Selected lithic artefacts	36
Plate 3: General view of the Colonial Period streetscapes of Alicedale [1]	36
Plate 4: General view of the Colonial Period streetscapes of Alicedale [2]	36
Plate 5: Site ASU-S1 – View of 2 graves situated in direct proximity to the road	37
Plate 6: Site ASU-S1 – 3 graves clustered together	37
Plate 7: View of the Site ASU-S2 grave	37
Plate 8: General view of the Site ASU-S3 church building	37
Plate 9: General view of Site ASU-S4 (left) and ASU-S5 (right)	38
Plate 10: View of Site ASU-S4, the contemporary bridge across the Bushmans River bridge	38
Plate 11: View of Site ASU-S5, the Colonial Period bridge across the Bushmans River bridge	38
Plate 12: Close-up of sections of Site ASU-S5 [1]	38
Plate 13: Close-up of sections of Site ASU-S5 [1]	39
Plate 14: View of the Site ASU-S6 cemetery [1]	39
Plate 15: View of the Site ASU-S6 cemetery [2]	39
Plate 16: View of the Site ASU-S6 cemetery [3]	39
Plate 17: General view of Site ASU-S7	40
Plate 18: General view of the Site ASU-S8 Colonial Period jail [1]	40
Plate 19: General view of the Site ASU-S8 Colonial Period jail [2]	40
Plate 20: Detail close-up of aspects of Site ASU-S8 [1]	40
Plate 21: Detail close-up of aspects of Site ASU-S8 [2]	41
Plate 22: General view of Site ASU-S9	41
Plate 23: View of the Site ASU-S10 Colonial Period church [1]	41
Plate 24: View of the Site ASU-S10 Colonial Period church [2]	41
Plate 25: View of the Site ASU-S11 Colonial Period residence	42
Plate 26: The Site ASU-S12 Colonial Period church	42
Plate 27: General view of Site ASU-S13	42
Plate 28: View of Site ASU-S14	42
Plate 29: View of Site ASU-S15	43
Plate 30: General view of Site ASU-S16	43
Plate 31: View of Site ASU-S17	43
Plate 32: View of the Site ASU-S18 Colonial Period outbuilding	43
Plate 33: General view of Site ASU-S19	44
Plate 34: View of Site ASU-S20	44
Plate 35: View of the Site ASU-S21 Colonial Period church building	44
Plate 36: General view of Site ASU-S22	44
Plate 37: General view of the Site ASU-S23 Colonial Period church	45
Plate 38: Detail of the Site ASU-S23 church bell	45
Plate 39: General view of Site ASU-S24	45
Plate 40: General view of the Site ASU-S25 Bushman Sands Golf club	45
Plate 41: General view of Site ASU-S26	46
Plate 42: View of Site ASU-S27	46
Plate 43: View of Site ASU-S28	46
Plate 44: View of Site ASU-S29	46
Plate 45: View of Site ASU-S30	47
Plate 46: View of Site ASU-S31	47
Plate 47: View of Site ASU-S32	47
Plate 48: View of Site ASU-S33	47
Plate 49: General view of Site ASU-S34	48
Plate 50: View of a portion of the Site ASU-S35 Colonial Period rail bridge	48

Plate 51: View of the main building of the Site ASU-S36 Colonial Period railway station	48
Plate 52: Site ASU-S37 – Colonial Period quarry structure remains	48
Plate 53: The Site ASU-S38 Contemporary Period bridge	49
Plate 54: View of Site ASU-S39	49
Plate 55: View of the Site ASU-S40 link-residences	49
Plate 56: View of Site ASU-S41	49
Plate 57: View of Site ASU-S42	50
Plate 58: View of Site ASU-S43	50
Plate 59: View of Site ASU-S44	50
Plate 60: View of Site ASU-S45	50

List of Tables

Table 1: Extract from the NHRA 1999, Section 38	12
Table 2: SAHRA archaeological and cultural heritage site significance assessment ratings and associated mitigation recommendations	13
Table 3: Archaeological and basic cultural heritage probability assessment	14
Table 4: Environmental Impact Assessment Rating	52
Table 5: Heritage compliance summary	54

1 – Project Description & Terms of Reference

Gibb (Pty) Ltd (GIBB) have been appointed as independent Environmental Assessment Practitioner (EAP) by the project proponent, the Makana Local Municipality (MLM), to apply for Environmental Authorization (EA), including a Basic Assessment Report (BAR) and Environmental Management Plan (EMPr) to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) for the proposed *Alicedale Sewerage Upgrades* development, situated at general development co-ordinate S33°18'59.4"; E26°04'59.9" (Alicedale), MLM, Sarah Baartman District Municipality (SBDM), Eastern Cape.

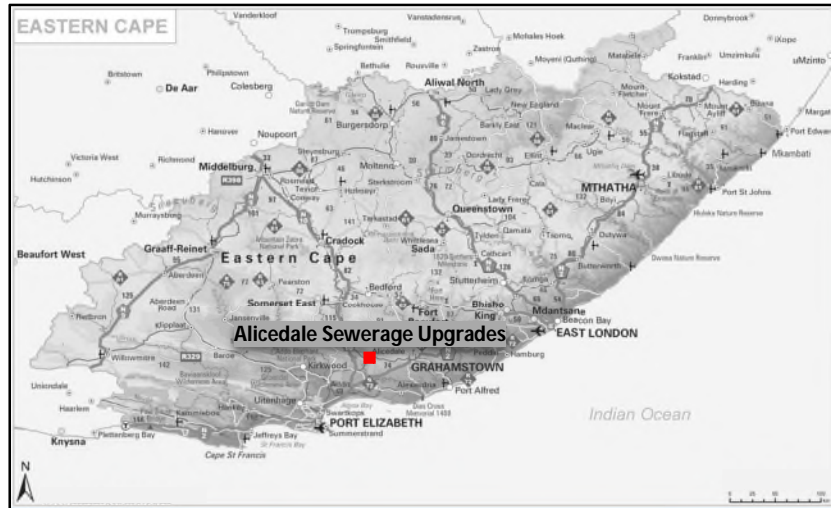
Development is motivated by the poor sewerage system in Alicedale, currently managed through a system of conservancy tanks with sewerage transported by tractor-drawn tanker to a gravity main north of Kwanonzwakazi from where it gravitates down to the recently constructed Waste Water Treatment Works (WWTW). The system is cost intensive and relies heavily on on-site personnel to transport sewerage before it overflows. In addition, it poses a health risk specifically during transportation. The proposed *Alicedale Sewerage Upgrades* development aims to provide Alicedale with a waterborne sanitation system which will allow sewerage to be pumped up to the existing gravity main north of Kwanonzwakazi from where sewerage would gravitate down to the existing WWTW. Two (2) route alternatives are investigated (GIBB 2016):

- Option / Alternative 1: The alternative centres on the collection of reticulation draining to a single pump station, namely the southern pump station, from where it would be pumped to the WWTW via one (1) rising main. Albeit based on construction of a single pump station the option would require deeper excavations and would require a section of the pipeline to traverse private property, potentially problematic from a maintenance point of view.
- Option / Alternative 2 (Preferred Option): The development option centres on construction of two (2) pump stations, to drain the northern and southern parts of the town respectively. Sewerage collected from the northern pump station would be pumped to the southern pump station from where it will be transported via a single rising main to the WWTW.

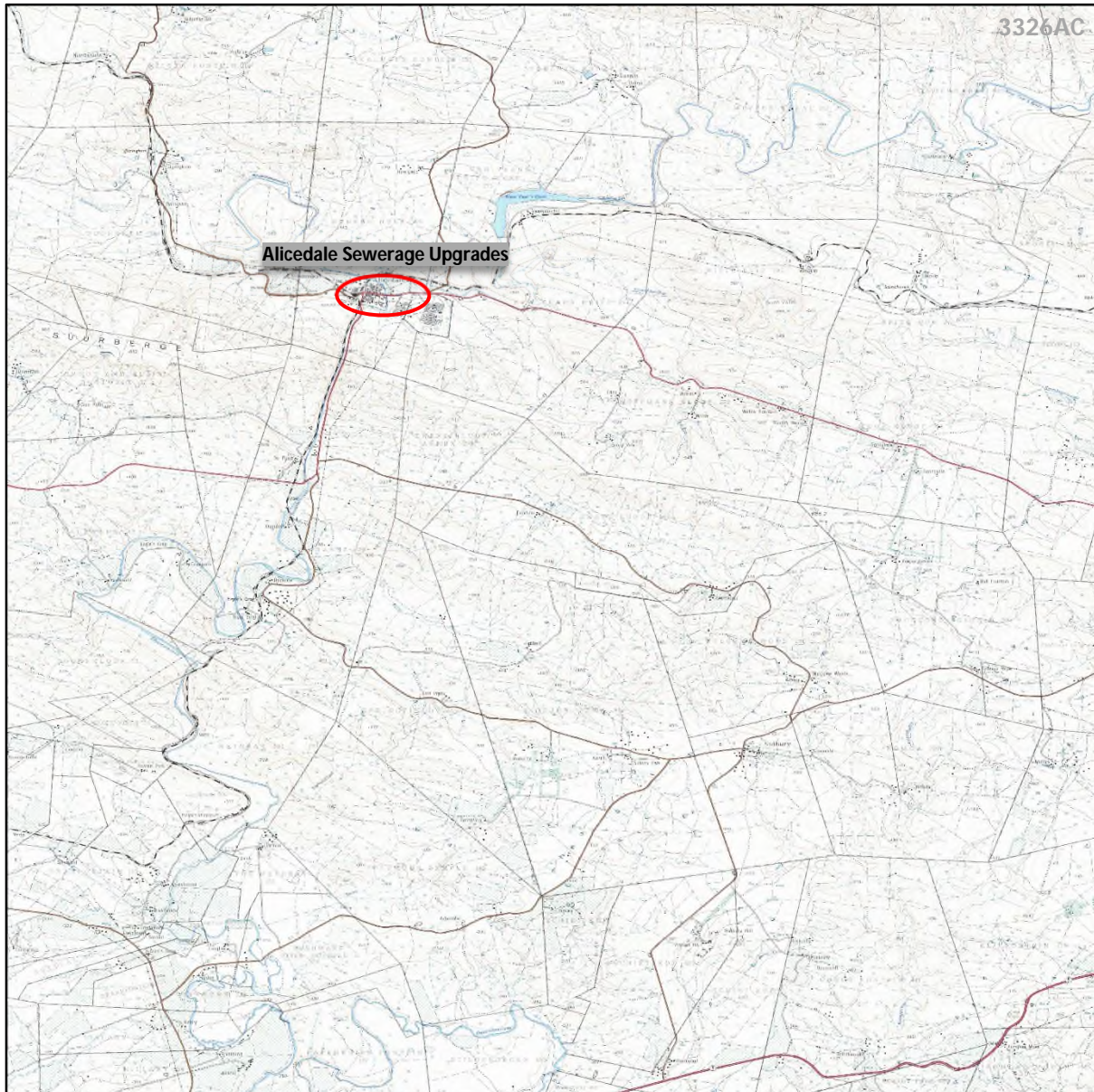
Development activities will include construction of the pump station(s), excavation and laying of gravity mains and sewer rising mains (~5km), traffic accommodation during the construction phase, strapping of the rising main to the Bushmans River bridge and pipe-jacking underneath the existing railway reserve (GIBB 2016).

ArchaeoMaps have been appointed by GIBB to compile the Phase 1 Archaeological & Cultural Heritage Impact Assessment (AIA) for the development, as specialist component to the application's Heritage Impact Assessment (HIA), and with findings and recommendations thereof to be included in the BAR and EMPr. Terms of Reference (ToR) for the Phase 1 AIA are summarized as:

- Describe the existing area to be directly affected by the proposal in terms of its archaeological and cultural heritage characteristics as formally protected by the National Heritage Resources Act, No 25 of 1999 (NHRA 1999) and the general sensitivity of these components to change;
- Describe the likely scope, scale and significance of impacts (positive and negative) on the archaeological and cultural heritage resources of the area associated with the 1) construction and 2) operation or use phases of the proposal;
- Make recommendations on the scope of any mitigation measures that may be applied during the 1) construction and 2) operation or use phases to reduce / avoid the significance of identified related impacts. Mitigation measures could be design recommendations as well as operational controls, monitoring programmes, Phase 2 mitigation, management procedures and the like;
- Broadly describe the implication of a 'No-Go' option;
- Broadly comment on the cumulative impact (positive or negative) on archaeological or cultural heritage resources associated with the 1) construction and 2) operation or use phases of the proposal; and
- Confirm if there are any outright 'fatal flaws' to the proposal at its current location from an archaeological and cultural heritage perspective.



Map 1: General locality of the Alicedale Sewerage Upgrades study site, MLM, SBDM, Eastern Cape (Base Map – MapStudio, 2008)



Map 2: General locality of the Alicedale Sewerage Upgrades study site, MLM, SBDM, Eastern Cape [1: 50,000 Map Ref – 3326AC]



Map 3: Alicedale Sewerage Upgrades – Layout: Option / Alternative 1 (courtesy GIBB)

2 – The Phase 1 Archaeological & Cultural Heritage Impact Assessment

2.1.1) Archaeological & Cultural Heritage Legislative Compliance

The Phase 1 Archaeological & Cultural Heritage Impact Assessment (AIA) for the *Alicedale Sewerage Upgrades* development, MLM, SBDM, Eastern Cape, was requested to meet the Eastern Cape Provincial Heritage Resources Authority's (EC PHRA) requirements with reference to archaeological and basic cultural heritage resources in terms of the National Heritage Resources Act, No 25 of 1999 (NHRA 1999), with specific reference to Section 38(1)(c)(i). This report is submitted in (partial) fulfilment of the NHRA 1999, Section 38(3) requirements, for purposes of a NHRA 1999, Section 38(4) / Section 38(8) Heritage Impact Assessment (HIA) Comment by the EC PHRA.

NHRA 1999, Section 38	
1)	Subject to the provisions of subsections 7), 8) and 9), any person who intends to undertake a development categorized as –
a)	The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
b)	The construction of a bridge or similar structure exceeding 50m in length;
c)	Any development or other activity which will change the character of a site –
	i. Exceeding 5,000m ² 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 10,000m ² in extent;
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.

Table 1: Extract from the NHRA 1999, Section 38

The Phase 1 AIA aimed to locate, identify and assess the significance of archaeological and cultural heritage resources, inclusive of archaeological deposits / sites (Stone Age, Iron Age and Colonial Period), rock art and shipwreck sites, built structures older than 60 years, sites of military history older than 75 years, certain categories of burial grounds and graves, graves of victims of conflict, basic living heritage and cultural landscapes and viewsapes as defined and protected by the NHRA 1999, Section 2, that may be affected by the development.

This report comprises a Phase 1 AIA, including a basic pre-feasibility study and field assessment only. The report was prepared in accordance with the 'Minimum Standards' specifications for Phase 1 AIA reports, as stipulated by SAHRA (2007).

Additional relevant legislation pertaining to the Phase 1 AIA is listed as:

- o National Environmental Management Act, No 107 of 1998 (NEMA 1998) and associated Regulations (2014).

2.1.2) Methodology & Gap Analysis

The Phase 1 AIA includes a basic pre-feasibility study and field assessment:

- o The pre-feasibility assessment is based on the Appendix A schematic outline of South Africa's Pre-colonial and Colonial past, associated with introductory archaeological as well as general and scientific literature available and relevant to the study site. Databases consulted include the SAHRA 2009 Mapping Project Database (MPD), the South African Heritage Resources Information System (SAHRIS) and SAHRA database(s) on declared Provincial Heritage Sites (PHS) pertaining to the study site. The study excludes consultation of museum and university databases.
- o The field assessment was done over a 1 day period (2016-10-29) with fieldwork conducted by the author. The assessment was done by vehicle and foot and limited to a Phase 1 surface survey. GPS co-ordinates were taken

with Garmin Montana 650 (Datum: WGS84) Photographic documentation was done with a Canon EOS 1300D camera. A combination of Garmap (Base Camp) and Google Earth software was used in the display of spatial information.

The Phase 1 AIA was done according to the system and 'Minimum Standards' prescribed for the 3-tiered Phase 1-3 Heritage Impact Assessment (HIA) process (SAHRA 2007):

- Phase 1 HIA – A Phase 1 HIA is compulsory for development types as stipulated in the NHRA 1999, Section 38(1) and Section 38(8), including any other development type or study site as required by the South African Heritage Resources Agency (SAHRA) or relevant Provincial Heritage Resources Authority (PHRA). A Phase 1 HIA comprises at minimum of an archaeological (AIA) and palaeontological (PIA) study, but aims to address all heritage types protected by the NHRA 1999 and to alert developers to additional heritage specialist study requirements, if and where relevant to a development. Phase 1 HIA studies focusses on pre-feasibility and desktop studies, routinely coined with field assessments in order to locate, describe and assign heritage site significance ratings to identified resources that may be impacted by development. The aim of a Phase 1 AIA is to make site specific and general development recommendations regarding identified heritage resources for development planning and implementation purposes and may include recommendations for conservation, heritage site declaration, monitoring, Phase 2 mitigation (excavation), or destruction.
- Phase 2 HIA – Phase 2 HIAs are as a norm required where heritage resources of such significance have been identified during the Phase 1 HIA that mitigation (excavation) thereof is necessary for development purposes. Aside from large scale Phase 2 mitigation (routinely to precede development impact), lower keyed Phase 2 requirements may well include sampling, testing and monitoring during the construction or implementation phase of a development. Phase 2 HIA work is as a norm done under a compulsory heritage permit.
- Phase 3 HIA – As an extension to Phase 2 HIA work or cases where recommendations for heritage declaration formed part of a development's heritage compliance requirements, heritage resources of such scientific or heritage tourism significance, that their long-term conservation and continued research would be necessary within a development framework is proposed as a Phase 3 HIA.

Archaeological and cultural heritage site significance assessment and associated mitigation recommendations are done according to the combined NHRA 1999, Section 7(1) and SAHRA (2007) system.

SAHRA Archaeological & Cultural Heritage Site Significance System			
Site Significance	Field Rating	Grade	Recommended Mitigation
High Significance	National Significance	Grade I	Heritage site conservation / Heritage site development
High Significance	Provincial Significance	Grade II	Heritage site conservation / Heritage site development
High Significance	Local Significance	Grade III-A	Heritage site conservation or extensive mitigation prior to development / destruction
High Significance	Local Significance	Grade III-B	Heritage site conservation or extensive mitigation prior to development / destruction
High / Medium Significance	Generally Protected A	Grade IV-A	Heritage site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B	Grade IV-B	Heritage site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C	Grade IV-C	On-site sapling, monitoring or no heritage mitigation required prior to or during development / destruction

Table 2: SAHRA archaeological and cultural heritage site significance assessment ratings and associated mitigation recommendations

2.2.1) Pre-feasibility Summary

Based on the Appendix A schematic outline of the Pre-colonial and Colonial Periods in South Africa and background literature and database information, the probability of archaeological and cultural heritage resources situated on, or in proximity to the *Alicedale Sewerage Upgrades* development study site, MLM, SBDM, Eastern Cape, can briefly be described as:

Archaeological and Basic Cultural Heritage Probability Assessment – Alicedale Sewerage Upgrades, Makana Local Municipality, Sarah Baartman District Municipality, Eastern Cape			
Primary Type / Period	Sub-period	Sub-period type site	Probability
EARLY HOMININ / HOMINID	-	-	None
	Graves / human remains: High scientific significance		
STONE AGE	Earlier Stone Age (ESA)		None-Low
	Middle Stone Age (MSA)		None-Low
	Later Stone Age (LSA)		Medium-High
		Rock Art	Medium
		Shel Middens	None
	Graves / human remains: ESA & MSA - High scientific significance; LSA – High scientific & social significance		
IRON AGE	Early Iron Age (EIA)		None
	Middle Iron Age (MIA)		None
	Later Iron Age (LIA)		None-Low
	Graves / human remains: EIA – High scientific significance; MIA & LIA – High scientific & social significance		
COLONIAL PERIOD	Colonial Period		High
		LSA – Colonial Period Contact	Medium-High
		LIA – Colonial Period Contact	None-Low
		Industrial Revolution	Medium-High
		Apartheid & Struggle	Low
	Graves / human remains: Medium-high scientific & high social significance		

Table 3: Archaeological and basic cultural heritage probability assessment

2.2.2) The SAHRA 2009 MPD & SAHRIS

A number of archaeological CRM reports are recorded in the SAHRA 2009 Mapping Project Database (MPD) with study sites situated within an approximate 20km radius from the *Alicedale Sewerage Upgrades* study site. Relevant SAHRA 2009 MPD reports are listed as:

- Binneman, J. 2000. (Albany Museum). *Eskom Poseidon (Cookhouse) – Grass-Ridge (Port-Elizabeth) Proposed Powerline: First Phase Desktop Data Survey of Cultural Heritage Resources*. (Report not available on SAHRIS).
- Kaplan, J.M. 2008. (ACRM). *Archaeological Impact Assessment. Proposed Lodge and Game Viewing Development on the Farm Melkhoutboom No 6, Division of Alexandria, Sundays River Municipality, Eastern Cape*. (Report not available on SAHRIS).
- Nel, J. 2008. (Archaic Heritage). *Final Report: Heritage Resources Scoping Survey and Preliminary Assessment – Transnet Freight Line EIA, Eastern Cape and Northern Cape*.
- Nilssen, P.J. 2007. (CHARM). *Archaeological Heritage Impact Assessment. Remainder Portion 3 of the Farm Boekenhout Fontein No 297 and Remainder Portions 6 and 1 of the Farm Assegaai Bush No 296. Establishment of Game Lodges and Resorts to be Incorporated into the Greater Lalibela Nature Reserve*.
- Van Schalkwyk, L.O. & Wahl, B. 2008. (eThembeni). *Heritage Impact Assessment of Ndlambe and Makana Borrow Pits, Greater Cacadu Region, Eastern Cape*.
- Webley, L.E. 2007a. (Albany Museum). *Phase 1 Heritage Impact Assessment of the Farm New Year's Drift West No 274, Register Division of Albany*.
- Webley, L.E. 2007b. (Albany Museum). *Heritage Impact Assessment on Portions of farms Boekenhout Fontein, Assegaai Bush and Birchwood Park for the Establishment of Game Lodges and Resorts to be Incorporated into the Greater Lalibela Nature Reserve*.

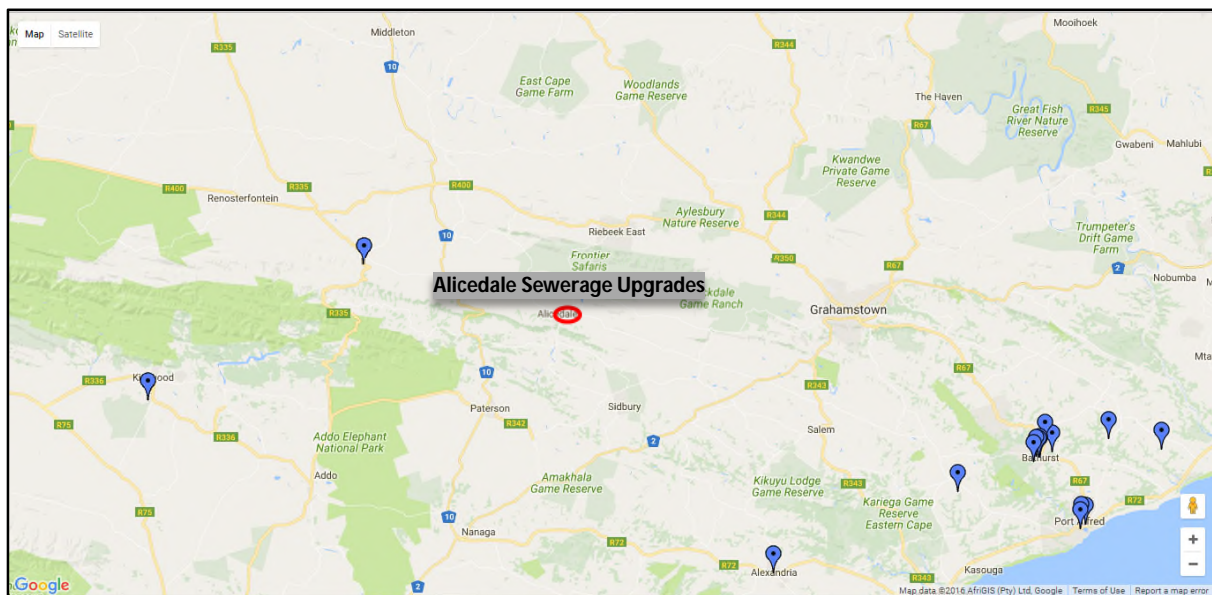
At least four (4) additional SAHRIS cases with associated archaeological CRM reports have been submitted post-compilation of the SAHRA 2009 MPD, with study sites situated within the approximate 20km radius from the proposed *Alicedale Sewerage Upgrades* development study site, listed as:

- Binneman, J. 2012. (ECHC). *A letter of Recommendation (with Conditions) for the Exemption of a Full Phase 1 Archaeological Impact Assessment for the Proposed Makana Human Settlement Project, Alicedale, Makana Local Municipality, Eastern Cape Province* [SAHRIS CaseID 250].
- Binneman, J., Booth, C. & Higgit, N. 2010. (Albany Museum). *A Phase 1 Archaeological Impact Assessment (AIA) for the Proposed Sand Mining on the Elva Heights Farm 102 and on the Difusi Land Trust Property Incorporating the Farms de Bruyns Kraal, Doorn Kloof and Lang Vley, Paterson, Sunday's River Valley Municipality, Cacadu District Municipality, Eastern Cape* [SAHRIS CaseID 2344].
- Becker, E. 2012. (Hatch). *Transnet Capital Projects. Ngqura 16 Mtpa Manganese Rail. Phase 1 Heritage Impact Assessment Hotazel to Kimberley and De Aar to Port of Ngqura* [SAHRIS CaseID 749].
- Galimberti, M. 2015. (CTI). *Heritage Screener – Bayethe Tented Lodge, Eastern Cape* [SAHRIS CaseID 8613].

2.2.3) SAHRA Provincial Heritage Site Database – Eastern Cape

No declared geo-referenced Provincial Heritage Sites (PHS) are recorded in the SAHRA – Eastern Cape database (https://en.wikipedia.org/wiki/List_of_heritage_sites_in_Eastern_Cape) and situated within the approximate 20km radius from the *Alicedale Sewerage Upgrades* development study site, with the closest geo-referenced declared PHS being Ann's Villa in Somerset East, situated approximately 25km to the west north-west of Alicedale, recorded in the SAHRA – Eastern Cape database as:

- SAHRA Identifier – 9/2/082/0004 – Ann's Villa, Somerset-East District (S33°15'14" ; E25°46'22").



Map 5: Spatial distribution of geo-referenced PHSs in the SAHRA – Eastern Cape database in relation to the *Alicedale Sewerage Upgrades* development study site (https://en.wikipedia.org/wiki/List_of_heritage_sites_in_Eastern_Cape)

2.2.4) General Discussion

No Earlier Stone Age (ESA) sites or occurrences have been reported on in archaeological CRM reports consulted. Middle Stone Age (MSA) sites, albeit to date recorded only as low density occurrences were reported on from the Boekenhout Fontein, Assegai Bush and Birchwood study sites (Webley 2007b) and in general along proposed Transnet lines, including relevant portions through the Eastern Cape (Becker 2012; Nel 2008). At the Elva Heights and Difusi study sites Binneman *et. al.* (2010) recorded at least three (3) low density MSA and a Later Stone Age (LSA) occurrence. Despite sparse records of Stone Age sites / occurrences from archaeological CRM reports the general Zuurberg Mountain area is known for its Stone Age sites, including the Melkhoutboom site, where significant ESA, MSA and LSA stratigraphic deposits were found while the area is also home to the Wilton type site (Mitchell 2002).

The general area falls outside expected Iron Age geographical area of settlement, but the presence of later Colonial-Later Iron Age (LIA) Contact Period sites can be overruled.

The general Alicedale area is known for its rich Colonial Period history, often centring around construction and development of the early railway system (Becker 2012; Nel 2008), and with construction thereof associated with development of urban and rural areas. Site records attesting to this Colonial Period development include a notable records of Colonial Period structures and cemetery and grave sites (Becker 2012; Nel 2008), with histories often closely associated with the 1820 settlers (Webley 2007b).

* * *

Alicedale is set in a meander of the Bushmans River, with its tributary, the Nuwejaars (New Year's) River running through town. Of the first inhabitants of the greater Alicedale area were San and Khoe groups, with a number of shelter or cave sites, often containing rock art, attesting to their pre-Colonial occupation of specifically the more mountainous terrain of the Bushmans River Canyon (<http://www.travelgrahamstown.co.za/places-to-see/29/Alicedale>). By the mid-1700s increasing numbers of Xhosa, as well as White explorers and hunting parties partied to the area, inevitably leading to friction between the groups and ultimately to a full century of battles, the nine (9) Frontier Wars, fought between 1779 and 1879 (<http://archiver.rootsweb/ancestry.com/th/read/SOUTH-AFRICA-EASTERN-CAPE/2005-12/1133766848>).

On 21 October 1854, three (3) years before the last and ninth (9th) Frontier War, John Richard Wilmot, an 1820s British Settler, purchased land, Plot 1020, of what was to become Alicedale. In 1873 it was decided to build a railway line between Port Elizabeth and Grahamstown, with Plot 1020 to become the main railway junction on the said line route: Plot 1020 was subdivided into two (2), with one portion being bought by the then South African Railways. By 1877, after completion of the railway line and station buildings Alicedale was a thriving town, and continued on its trajectory for more than a century (with notable bouts of development evident, dating to the 1960s and 1970s). Alicedale is said to have taken its name from the fiancée of the engineer in charge of the railway project, Alice Slessor, nee Dale (<http://archiver.rootsweb/ancestry.com/th/read/SOUTH-AFRICA-EASTERN-CAPE/2005-12/1133766848>).

In 1996 the railway station radically reduced services, with the line route finally closing in 2008 (https://en.wikipedia.org/wiki/List_of_abandoned_railway_lines_in_South_Africa), resulting in the town's economic activities coming to a grinding halt. In the 2000s efforts by Adrian Gardiner, founder of the Shamwari Game Reserve and Gary Player, designer of the Bushman Sands Golf Course, amongst others, notably served to uplift the town again to its current status (<http://archiver.rootsweb/ancestry.com/th/read/SOUTH-AFRICA-EASTERN-CAPE/2005-12/1133766848>; www.sa-venues.com/golf/bushman-sands-golf-club.php).

2.2.1) Introduction

A total of forty-five (45) archaeological and cultural heritage sites were recorded during the field assessment of the *Alicedale Sewerage Upgrades* project. Heritage along the proposed development corridors are of notable Colonial Period significance, with results of the assessment primarily confirming the early founding and history of Alicedale. Two (2) cemetery sites situated along the existing sewerage line are most probably associated with early construction of the railway line, while the railway line itself constitutes a Colonial Period heritage site, originally constructed between 1873-1877, winding through the cultural landscape and throughout town. Alicedale itself is enveloped in history; as attested by the high number of Colonial Period structures recorded in town, including primarily residential structures, but also churches, early commercial and railway related buildings, all formally protected by the NHRA 1999. Standard heritage conservation requirements for development purposes are based not only on the direct conservation of a site or resource formally protected by the NHRA 1999, but includes a conservation buffer zone, often in the region of 30-50m around such a resource. In the case of the *Alicedale Sewerage Upgrades* development, heritage recommendations contained in this report excludes conservation buffer zones around sites. This was done with direct reference to the nature of the development; a basic services development, while the current conservation status of Colonial Period resources throughout town is largely vested in the fact that these buildings are still in use. Standard heritage buffer zones will effectively render the development proposal non-implementable, while the development itself will indirectly contribute to the conservation of the heritage sites, by providing current standards of services to residents, business owners, and in general users of heritage sites. The exclusion of heritage conservation buffer zones in the heritage recommendations was accordingly done with direct reference to the general principle of Integrated Environmental Management (IEM). Secondly recommendations centre on light-weight temporary conservation measures during the course of construction. With many of the sites still in use and the majority thereof in private ownership, formal conservation measures (permanent fencing with access gates), the preferred conservation measure for heritage sites as stipulated by SAHRA / EC PHRA is not recommended. Formal conservation of properties where heritage sites situated thereon is in use by owners is not recommended, as this will have legal implications beyond the scope of the proposed development.

Colonial Period heritage resources recorded during the field assessment does not necessarily represent an all-inclusive list of heritage sites. High boundary walls and vegetated fences obscured visibility, furthermore many structures have been altered in the past, many more buildings may well have an origin pre-dating 60 years of age, but alterations, additions and recent renovations of buildings obscure age interpretations for heritage purposes. The assessment aimed to record buildings that retained time period architectural style. Second thereto, technically, some of the sidewalks and pavements of Alicedale will in themselves be of heritage temporal significance, but with these adding little value to our understanding of the past, was not recorded as such and no conservation recommendations are made with reference thereto as they will form the principle study site / area of impact: Impact thereon is inherent in approval of the proposed *Alicedale Sewerage Upgrades* development.

Despite known Stone Age sites, primarily Later Stone Age (LSA) San and Khoe related sites, no Stone Age sites were identified during the field assessment. The lack of Stone Age sites and occurrences across the greater *Alicedale Sewerage Upgrades* study site may be ascribed to its geographic locality coined with the prevalence of shales and sandstones (of the Ecca and Beaufort Group) in the area; i.e. raw material sources not particularly suitable to knapping. However, gravel lenses do surface at intervals, comprising mixed raw material sources but with a fairly high presence of quartzitic material and infrequent Stone Age lithics were identified within such gravel lenses. Artefact ratios (artefacts: m²) are however extremely low. The few artefacts identified seem to be of a general later Middle Stone Age (MSA) typology, based primarily on artefact size, but of an indistinctive technology. Accordingly, no recommendations relating to the conservation or mitigation of Stone Age resources are made.

2.2.2) Site Descriptions

2.2.2.1) Site ASU-S1: Colonial Period – Cemetery / Graves (S33°18'59.8"; E26°06'28.8")

Site ASU-S1 comprise of five (5) stone cairn and stone outlined graves, clustered in a group of two (2) and another of three (3), situated along the existing sewer line near the WWTW. The site is at present not formally conserved; no formal fence, aside from the farm camp fence is in place. The site is located opposite the Nuwejaars (New Year's) River from the Colonial Period railway tunnel and is most probably associated with early construction thereof (1873-1877), implying that the graves may well be more than one hundred (100) years old. The site is situated approximately 60m from the existing sewer line; despite proximity to the line route graves were evidently not negatively impacted by this initial development. Site ASU-S1 is situated approximately 2.3km from Alicedale and was recorded for heritage database purposes only.

- **Site Significance and Recommendations:** Site ASU-S1, the small informal Colonial Period cemetery comprising of five (5) graves, most probably associated with early railway construction, is formally protected by the NHRA 1999. Site ASU-S1 most probably pre-dates 100 years of age. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. Site ASU-S1 is situated approximately 2.3km from Alicedale and will not be impacted by development. The site was recorded for heritage database purposes. The developer need not comply with additional heritage compliance requirements pertaining to Site ASU-S1 for purposes of development.

2.2.2.2) Site ASU-S2: Colonial Period – Grave (S33°18'59.6"; E26°06'26.9")

Site ASU-S2 comprise a single Colonial Period grave, inferred to be associated with the Site ASU-S1 graves and most probably associated with early railway construction activities, again implying that the grave site may well pre-date one hundred (100) years of age. The grave is weathered, with stones of the stone cairn demarcation scattered about the area. A glass medicine bottle is still visible at the grave and thick bottomed bottle glass pieces was found in the direct vicinity thereof. The grave is situated approximately 20m from the existing sewer alignment. No formal conservation measures are in place. The site will not be impacted by development and was recorded for heritage database purposes.

- **Site Significance and Recommendations:** The Site ASU-S2 Colonial Period grave may well be more than 100 years of age and is formally protected by the NHRA 1999. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. Site ASU-S2 is situated approximately 2.3km from Alicedale and will not be impacted by development. The site was recorded for heritage database purposes. The developer need not comply with additional heritage compliance requirements pertaining to Site ASU-S2 for purposes of development.

2.2.2.3) Site ASU-S3: Later Iron Age (LIA) / Contemporary Period – Church (S33°19'05.2"; E26°05'36.5")

Site ASU-S3 constitute the *Apostolic Amen Church in Zion* property. The church building itself post-dates 60 years of age, but the site comprises a culturally sensitive site, as defined and protected by the NHRA 1999, with specific reference to its religious / spiritual significance. The site is situated immediately adjacent to the development corridors (within approximately 20m), but is not directly threatened by the proposed development. Current formal conservation measures include a permanent fence with access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation.

- **Site Significance and Recommendations:** Site ASU-S3 comprise a Later Iron Age (LIA) / Contemporary Period church. The church building post-dates 60 years; the structure itself is not formally protected by the NHRA 1999, but the site represents a culturally sensitive site as defined and protected by the NHRA 1999. Site ASU-S3 is ascribed a SAHRA / EC PHRA *Medium Significance* and a *Generally Protected IV-B Field Rating*. The site is situated within 20m from the proposed development corridors. Based on proximity to the study sites it is

recommended that the developer ensures that additional temporary conservation measures be instated for the duration of construction in the vicinity of the site: Recommended temporary conservation signage indicating the site as '*Caution – Heritage Site*' should be attached at intervals along the property fence for the tenure of construction in the vicinity of the site. All temporary conservation signage should be removed upon completion of construction.

2.2.2.4) Site ASU-S4: Contemporary Period – Bridge (S33°18'59.8"; E26°05'14.0")

Site ASU-S4 comprise the Contemporary Period bridge across the Bushmans River. The bridge was constructed in 1964 and is at present 52 years old; by implication not formally protected by the NHRA 1999. The development proposal includes the attachment of service lines to the bridge.

- **Site Significance and Recommendations:** The Site ASU-S4 Contemporary Period bridge across the Bushmans River post-dates 60 years of age and is not formally protected by the NHRA 1999; a SAHRA / EC PHRA site significance assignment is irrelevant. The development proposal includes the attachment of service lines to the bridge: The developer need not comply with additional heritage compliance requirements prior to alteration / amendment to the bridge.

2.2.2.5) Site ASU-S5: Colonial Period – Bridge (S33°18'57.7"; E26°05'12.0")

Site ASU-S5 constitutes the early Colonial Period bridge across the Bushmans River. The exact date of construction is unknown, but it can reasonably be inferred that the bridge dates to ~1873, at the time when Alicedale was founded and coinciding with the rough recorded historical period of stone built bridges in the Eastern Cape. The Colonial Period bridge, reasonably inferred to be older than one hundred (100) years is by implication formally protected by the NHRA 1999. Later period alterations to the bridge is evident, with these in themselves of temporal heritage significance. The Site ASU-S5 Colonial Period bridge is situated in close proximity (25-30m) to the proposed development corridor and Site ASU-S4, to which service lines will be attached. Site ASU-S5 is still in use; but with vehicular access limited to a backroad to the Bushman Sands Country Estate. Steep landscape gradient as well as vegetation serves to protect the bridge from the main road. Accordingly, no formal heritage protection measures are recommended. However, the developer should ensure that temporary heritage conservation measures are instated for the duration of construction work in the vicinity of Site ASU-S4 and Site ASU-S5 to ensure no accidental impact on the site.

- **Site Significance and Recommendations:** The Site ASU-S5 Colonial Period bridge across the Bushmans River pre-dates 60 years of age, and most probably 100 years; the site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. The site is still in limited use and situated in close proximity (25-30m) to the proposed development corridors. It is recommended that the developer ensures that temporary heritage conservation measures are instated for the tenure of construction activities in the vicinity of the site to ensure no accidental impact thereon. Recommended temporary heritage signage, indicating the site as '*Caution – Heritage Site*' should be attached at both ends of the bridge for the duration of construction activities in the vicinity of the site. All temporary heritage conservation measures should be removed upon completion of construction.

2.2.2.6) Site ASU-S6: Colonial Period – Cemetery (S33°19'00.3"; E26°05'09.7")

Site ASU-S6 comprise the original Colonial Period Alicedale cemetery. The formally conserved cemetery houses a vast number of graves, primarily Colonial Period graves, with these routinely pre-dating 60 years of age and with many graves older than one hundred (100) years. Towards the southern extremity of the cemetery a number of recent graves are present, including primarily earth mound with headstone inscribed graves (of typical LIA / Contemporary Period style). The cemetery is at present formally fenced with an access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The Site ASU-S6 cemetery is situated immediately adjacent to the proposed development corridors. It is recommended that the developer ensures that additional temporary conservation

measures be instated during the construction phase of development in the vicinity of the site to avoid any accidental impact thereon.

- **Site Significance and Recommendations:** Site ASU-S6 comprise a Colonial Period cemetery pre-dating 60 / 100 years of age. The site is formally protected by the NHRA 1999 and ascribed a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. The site is situated immediately adjacent to the proposed development corridors, but with formal conservation measures, complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation already in place. It is recommended that the developer ensures that additional temporary conservation measures be instated during the construction phase of development, to avoid any accidental impact on the site. Temporary heritage signage, indicating the site as '*Caution – Heritage Site*' should be attached at intervals along the conservation fence for the duration of construction activities in the vicinity of the site. All temporary heritage conservation measures should be removed upon completion of construction.

2.2.2.7) Site ASU-S7: Colonial Period – Residence (S33°18'53.4"; E26°05'07.2")

Site ASU-S7 comprises a Colonial Period residence pre-dating 60 / 100 years of age. The site, still in use, is formally protected by the NHRA 1999. Current conservation measures include a permanent fence with access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The site is situated in direct proximity to the proposed development corridors.

- **Site Significance and Recommendations:** The Site ASU-S7 Colonial Period residence pre-dates 60 / 100 years of age and is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. The site is situated in direct proximity to the proposed development corridors. Formal conservation measures, complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation is in place. It is recommended that the developer ensures additional temporary conservation measures; temporary heritage signage, indicating the site as '*Caution – Heritage Site*', attached at intervals to the conservation fence, for the duration of the construction phase. All temporary conservation measures should be removed upon completion of construction.

2.2.2.8) Site ASU-S8: Colonial Period – Jail (S33°18'53.4"; E26°05'02.7")

Site ASU-S8 comprises the old Colonial Period jail. Corrugated iron cells and associated buildings pre-dates 60 years of age and can reasonably be inferred to well pre-date one hundred (100) years of age; the site is by implication formally protected by the NHRA 1999. The site, no longer in use, is in a poor state of conservation, but with significant detail, including cell locks, keyholes, peepholes and so forth still in place. The rich tree-scape at the site comprise the direct cultural landscape of the Colonial Period jail. The site is situated in direct proximity to the proposed development corridors, but will not be directly impacted by development. No conservation measures are in place.

- **Site Significance and Recommendations:** Site ASU-S8, the Colonial Period jail comprise structures pre-dating 60 / 100 years of age; the site is formally protected by the NHRA 1999 and receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. The site is situated in direct proximity to the proposed development corridors. No formal conservation measures are in place, but the site is not directly threatened by development. It is recommended that the developer ensures that suitable conservation measures, including a permanent fence with access gate be erected around the site prior to commencement of development. In addition, temporary signage indicating the site as '*Caution – Heritage Site*' should be attached at intervals along the conservation fence of the site for the duration of construction works in the vicinity of the site. All temporary signage should be removed upon completion of construction in the vicinity of the site.

2.2.2.9) Site ASU-S9: Colonial Period – Commercial Structure (S33°18'58.9"; E26°05'00.8")

Site ASU-S9 comprise a Colonial Period commercial structure, with buildings on the property well pre-dating 60 years of age and most probably 100 years of age. Buildings are notably well conserved, with the site still in use as the business property of *Evan Furniture*. Proposed development corridors pass in direct proximity to the site, but will not directly impact thereon. No formal conservation measures are in place.

- **Site Significance and Recommendations:** The Site ASU-S9 Colonial Period commercial structures, currently in use as the business property of *Evan Furniture*, comprise a heritage site pre-dating 60 / 100 years of age; the site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. The site is situated in direct proximity to the proposed development corridors. No formal conservation measures are in place. It is recommended that the developer ensures additional temporary conservation measures during the construction phase, including a temporary conservation fence (construction netting or a similar visually clear demarcation) along the length of the property with temporary heritage signage, indicating the site as '*Caution – Heritage Site*' attached at intervals along the conservation fence for the tenure of construction works in the vicinity of the site. All temporary conservation measures should be removed upon completion of works in the vicinity of the site. (Permanent conservation measures are not recommended as this may well have a long term negative impact on operation of the business, and with use of the site vital to its conservation status).

2.2.2.10) Site ASU-S10: Colonial Period – Church (S33°18'57.7"; E26°05'00.4")

Site ASU-S10 comprise a Colonial Period church, with the church building dating to ~1906 as evidenced by two (2) foundation stone plaques attached to the structure with the following inscriptions: '*This stone was laid by Mrs. E.J. Wilmot, October 11th, 1906*' and '*This stone was laid by W. Thomas Esomla, October 11th, 1906*'. The Site ASU-S10 church is still in use with the site notably well conserved. Formal conservation measures comprise a permanent fence with access gate, with these complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. Proposed development corridors pass in direct proximity to the site, but without any direct negative impact on the site itself.

- **Site Significance and Recommendations:** The Site ASU-S10 Colonial Period church is one hundred and ten (110) years old; the site is formally protected by the NHRA 1999 as a SAHRA / EC PHRA site of *High Significance* with a *Provincial Grade II Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are in place. The site is situated in direct proximity to proposed development corridors. It is recommended that the developer ensures additional temporary conservation measures during the construction phase to avoid accidental impact thereon: Temporary heritage signage, indicating the site '*Caution – Heritage Site*', should be attached at intervals along the existing conservation fence for the duration of construction works in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction works.

2.2.2.11) Site ASU-S11: Colonial Period – Residence (S33°18'55.7"; E26°05'00.5")

The Site ASU-S11 co-ordinate demarcates the locality of a Colonial Period residence. The residence, pre-dating 60 / 100 years of age, is still in use and formally conserved / permanently fenced on three (3) sides, but excluding the front façade of the residence with the residence build in typical Colonial Period style, with the front veranda façade of the structure directly bordering the street front. The site is situated in direct proximity, on the opposite side of the street and within 10m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S11 comprises a Colonial Period residence pre-dating 60 / 100 years of age and is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. The front veranda façade of the structure is situated directly on the street front and within 10m from the proposed development corridors. It is recommended that temporary conservation measures, including a temporary heritage conservation fence

(of construction netting or a similar visually clear demarcation) be erected along the length of the street front of the residence (allowing access by residents) and that temporary signage indicating the site as 'Caution – Heritage Site' be attached at intervals along the conservation fence for the duration of construction activities in the vicinity of the site. All temporary conservation measures should be removed once construction has been completed.

2.2.2.12) Site ASU-S12: Colonial Period – Church (S33°18'55.2"; E26°05'00.7")

Site ASU-S12 constitutes the Colonial Period St. Barnabas Anglican Church site, with the church building constructed in 1887; a hundred and twenty-nine (129) year old building and with the site still in use. The site is well conserved and formally fenced on three (3) sides, but without formal fencing along the street front of the property. The site is situated in direct proximity, on the opposite side of the street, and within 10m from the proposed development corridors.

- **Site Significance and Recommendations:** The Site ASU-S12 Colonial Period church comprise a 129-year-old heritage site, formally protected by the NHRA 1999, as a SAHRA / EC PHRA site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place along the street front of the site. The site is situated in direct proximity, and within 10m from the proposed development corridors. It is recommended that temporary heritage conservation measures, including a temporary fence (construction netting or a similar visually clear demarcation, allowing access to the site) with temporary signage, indicating the site as 'Caution – Heritage Site' attached at intervals along the conservation fence be instated for the duration of construction work in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.13) Site ASU-S13: Colonial Period – Residence (S33°18'54.5"; E26°05'00.6")

Site ASU-S13 comprise a Colonial Period residence pre-dating 60 / 100 years of age, with the site still in use and well maintained. Formal conservation measures / permanent fencing is in place, but excluding the street front of the residence. The site is situated in direct proximity, on the opposite side of the street, and within 10m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S13 comprise a Colonial Period residence, older than 60 / 100 years of age and formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place along the street front of the site, with the site situated in direct proximity, and within 10m from the proposed development corridors. It is recommended that temporary heritage conservation measures, including a temporary fence (construction netting or a similar visually clear demarcation, allowing access to residents) with temporary signage, indicating the site as 'Caution – Heritage Site' attached at intervals along the conservation fence be instated for the duration of construction work in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.14) Site ASU-S14: Colonial Period – Residence (S33°18'54.0"; E26°05'00.7")

Site ASU-S14 comprise a Colonial Period residence which is older than 60 / 100 years of age, still in use and well conserved. The front veranda façade of the residence directly borders the street front, in typical Colonial Period fashion, with a permanent fence conserving the site along the three (3) remaining property boundaries. The site is situated in direct proximity, and within 10m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S14, a Colonial Period residence pre-dating 60 / 100 years of age is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place along the street front of the site, with the site situated in direct proximity, and within 10m from the proposed

development corridors. Recommended temporary heritage conservation measures during the construction phase of development include the construction of a temporary conservation fence along the street front of the property (construction netting or a similar visually clear demarcation, allowing access to residents), temporary heritage signage, indicating the site as 'Caution – Heritage Site' should be attached at intervals along the conservation fence. All temporary conservation measures should be removed once construction work in the vicinity of the site has been completed.

2.2.2.15) Site ASU-S15: Colonial Period – Residence / Commercial Structure (S33°18'53.0"; E26°05'00.8")

The Site ASU-S15 co-ordinate demarcates the locality of a Colonial Period residence, pre-dating 60 / 100 years of age and formally protected by the NHRA 1999. The site is notably well conserved and currently in use as an arts and crafts curio shop. The veranda façade of the structure again directly borders the street front, in typical Colonial period style. Formal conservation measures (permanent fence) are in place at the remaining three (3) sides of the property. The site is situated in direct proximity to the proposed development corridors, and within 10m thereof.

- **Site Significance and Recommendations:** Site ASU-S15, a Colonial Period residence, currently used as an arts and crafts curio shop is older than 60 / 100 years of age and formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place along the street front of the site, with the site situated in direct proximity, and within 10m from the proposed development corridors. It is recommended that temporary heritage conservation measures, including a temporary fence (construction netting or a similar visually clear demarcation, allowing access to the site) with temporary signage, indicating the site as 'Caution – Heritage Site' attached at intervals along the conservation fence be instated for the duration of construction work in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.16) Site ASU-S16: Colonial Period – Residence (S33°18'52.7"; E26°05'00.8")

Site ASU-S16 comprise a Colonial Period residence, pre-dating 60 / 100 years of age. The site is still in use and well maintained. In typical Colonial Period style the veranda façade of the residence directly borders the street front, with formal conservation measures (permanent fencing) in place at the remaining three (3) sides of the property. The site is situated in direct, and within 10m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S16 comprise a Colonial Period residence, older than 60 / 100 years of age and formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place along the street front of the site, with the site situated in direct proximity, and within 10m from the proposed development corridors. It is recommended that temporary heritage conservation measures, including a temporary fence (construction netting or a similar visually clear demarcation, allowing access to residents) with temporary signage, indicating the site as 'Caution – Heritage Site' attached at intervals along the conservation fence be instated for the duration of construction work in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.17) Site ASU-S17: Colonial Period – Residence (S33°18'52.1"; E26°05'00.9")

The Site ASU-S17 co-ordinate represents the locality of a Colonial Period residence, pre-dating 60 / 100 years of age. The site is still in use and well maintained. Formal conservation measures, comprising a combination of fencing and property boundary walls are in place, with the front boundary wall in itself of heritage significance. The site is situated in direct proximity and within 10m from the proposed development corridors.

- **Site Significance and Recommendations:** The Site ASU-S17 Colonial Period residence pre-dates 60 / 100 years of age and is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. Formal conservation measures are in place

including a boundary wall along the street front, but with the boundary wall itself of significant heritage temporal age. Additional temporary conservation measures during the course of construction should include temporary heritage signage, indicating the site as 'Caution – Heritage Site' being attached in a non-intrusive manner to the existing boundary wall or erected in direct proximity thereto.

2.2.2.18) Site ASU-S18: Colonial Period – Outbuilding (S33°18'51.4"; E26°05'01.0")

The Site ASU-S18 Colonial Period outbuilding is older than 60 / 100 years of age. The site is still in use, but in a fairly poor state of conservation. No formal conservation measures are in place. The site is situated within 10m from the proposed development corridors.

- **Site Significance and Recommendations:** The Site ASU-S18 Colonial Period outbuilding is older than 60 / 100 years of age and formally protected by the NHRA 1999, as a SAHRA / EC PHRA site of *High Significance* with a *Provincial Grade II Field Rating*. No conservation measures are in place. It is recommended that the developer ensures additional temporary conservation measures during the construction phase, including a temporary conservation fence (construction netting or a similar visually clear demarcation) along the length of the property with temporary heritage signage, indicating the site as 'Caution – Heritage Site' attached at intervals along the conservation fence for the tenure of construction works in the vicinity of the site. All temporary conservation measures should be removed upon completion of works in the vicinity of the site.

2.2.2.19) Site ASU-S19: Colonial Period – Residence (S33°18'52.0"; E26°05'00.5")

Site ASU-S19 constitute a Colonial Period residence pre-dating 60 / 100 years of age. A large portion of the property is formally fenced / conserved with a boundary wall. However, the entrance veranda façade of the residence directly borders the street front. The site is situated in direct proximity to the proposed line routes and within 2m thereof.

- **Site Significance and Recommendations:** Site ASU-S19 comprise a Colonial Period residence pre-dating 60 / 100 years of age. The site is by implication formally protected by the NHRA 1999 as a SAHRA / EC PHRA heritage site of *High Significance* with a *Provincial Grade II Field Rating*. Formal conservation measures are largely in place, but excluding the entrance veranda façade of the building. Temporary conservation measures, including a temporary fence (construction netting or a similar visually clear demarcation) and temporary heritage signage, indicating the site as 'Caution – Heritage Site' can be limited to the entrance façade portion of the site.

2.2.2.20) Site ASU-S20: Colonial Period – Residence (S33°18'52.7"; E26°05'00.4")

Site ASU-S20 comprise a Colonial Period residence, pre-dating 60 / 100 years of age. The site is still in use and well maintained. The site is situated directly on the street front and in direct proximity and within 2m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S20 comprise a Colonial Period residence, older than 60 / 100 years of age and formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place, with the site situated in direct proximity, and within 2m from the proposed development corridors. It is recommended that temporary heritage conservation measures, including a temporary fence (construction netting or a similar visually clear demarcation, allowing access to residents) with temporary signage, indicating the site as 'Caution – Heritage Site' attached at intervals along the conservation fence be instated for the duration of construction work in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.21) Site ASU-S21: Colonial Period – Building / Church (S33°18'53.8"; E26°04'59.8")

Site ASU-S21 comprise a Colonial Period building which is older than 60 / 100 years of age. The building is currently used as the *Faith in Action Christian Centre*. Formal conservation measures, comprising a permanent fence with access gate are in place, with these measures complying with SAHRA / EC PHRA minimum standards for heritage site conservation. The church property is situated in direct proximity to the proposed development corridors, but with the building itself approximately 15m from the development corridors.

- **Site Significance and Recommendations:** Site ASU-S21 constitutes a Colonial Period building pre-dating 60 / 100 years of age and currently used as the *Faith in Action Christian Centre*. The site is formally protected by the NHRA 1999, with the site receiving automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. Formal conservation measures, complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are in place. It is recommended that the developer ensures additional temporary conservation measures, comprising of temporary heritage signage, indicating the site as '*Caution – Heritage Site*' attached at intervals along the existing fence for the duration of construction works in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.22) Site ASU-S22: Colonial Period – Residence (S33°18'54.3"; E26°04'59.5")

Site ASU-S22, comprising a Colonial Period residence predating 60 / 100 years of age is situated on the property immediately adjacent to the Site ASU-S21 church. The site is in a poor state of conservation with alterations thereto evident. No formal conservation measures are in place, with the structure situated approximately 15m from the proposed development corridors.

- **Site Significance and Recommendations:** The Site ASU-S22 Colonial Period residence pre-dates 60 / 100 years of age; the site is by implication formally protected by the NHRA 1999, as a SAHRA / EC PHRA heritage site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place. It is recommended that the developer ensures that temporary conservation measures, comprising a temporary conservation fence (of construction netting or a similar visually clear demarcation) be instated either along the street front of the property or around the building itself, with temporary signage indicating the site as '*Caution – Heritage Site*' attached at intervals along the conservation fence. All temporary conservation measures should be removed upon completion of construction.

2.2.2.23) Site ASU-S23: Colonial Period – Church (S33°18'56.1"; E26°04'59.8")

Site ASU-S23 represents a Colonial Period church, with the church building being older than 60 years, based on architectural style, although the date of construction is unknown. A church bell represents a significant related heritage artefact. At the time of the field assessment a boundary wall along the street front was being built and it can reasonably be inferred that this boundary wall will be completed prior to commencement of the *Alicedale Sewerage Upgrade* development. Formal conservation measures, including permanent fencing are in place at the remaining three (3) sides of the property; implying that conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation will be in place. The site is situated in direct proximity to the proposed development corridors, and within approximately 2m from the proposed line routes.

- **Site Significance and Recommendations:** Site ASU-S23, a Colonial Period church comprise a heritage site pre-dating 60 years of age and is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. It can reasonably be inferred that formal conservation measures, complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation will be in place prior to commencement of the *Alicedale Sewerage Upgrades development*. Based on the heritage significance of the site and proximity to the proposed development corridors it is recommended that additional temporary conservation measures, namely temporary signage indicating the site as '*Caution – Heritage Site*' be attached in a non-intrusive manner to the conservation fence for the duration of

construction work in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.24) Site ASU-S24: Colonial Period – Residence (S33°18'56.5"; E26°04'58.5")

Site ASU-S24 comprise a Colonial Period residence pre-dating 60 / 100 years of age. The front veranda façade of the residence directly borders the street front, with the residence situated in direct, and within 10m from the proposed development corridors. Formal conservation measures are in place along the three (3) remaining sides of the property.

- **Site Significance and Recommendations:** Site ASU-S24 comprise a Colonial Period residence, older than 60 / 100 years of age and formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place along the front façade of the residence, with the site situated in direct proximity, and within 10m from the proposed development corridors. It is recommended that temporary heritage conservation measures, including a temporary fence (construction netting or a similar visually clear demarcation, allowing access to residents) with temporary signage, indicating the site as '*Caution – Heritage Site*' attached at intervals along the conservation fence be instated for the duration of construction work in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.25) Site ASU-S25: Colonial Period – Railway Station / Bushman Sands Golf Club (S33°18'54.8"; E26°04'56.4")

The Site ASU-S25 co-ordinate represents the general locality of the early Colonial Period railway station, with early construction thereof probably dating back to the late 1800s, but reported also that a number of structures date to the early 1900s and with these believed to have been constructed by Scottish masons with bricks imported from England (<http://archiver.rootsweb/ancestry.com/th/read/SOUTH-AFRICA-EASTERN-CAPE/2005-12/1133766848>). Structures at the site thus reasonably pre-date 60 years of age, with many of these most probably older than 100 years. Buildings are restored and currently in use as the Bushman Sands Golf Club, varying in function and including hotel and conferencing facilities to name a few. The Bushman Sands Golf Course, primarily lying to the north of the indicated Site ASU-S25 area was designed by Gary Player, and is reported on to 'hauntingly' include a cemetery on the property, though the exact locality thereof has not been recorded for purposes of his assessment, and will not be affected thereby. Formal conservation measures are in place, not only around the Bushman Sands Golf Club, but also the associated golf course. Proposed development corridors pass in direct proximity and within 2-10m from the Bushman Sands Golf Club conservation fence.

- **Site Significance and Recommendations:** Site ASU-S25 comprise the Colonial Period railway station, currently used as the Bushman Sand Golf Club. Structures on the property pre-date 60 / 100 years of age, with these receiving in general automatic SAHRA / EC PHRA protection as sites of *High Significance* with *Provincial Grade II Field Ratings*. Formal conservation measures, comprising a boundary wall and controlled access is in place. Proposed development corridors pass in direct proximity and within 2-10m from the property boundary. It is recommended that temporary heritage conservation measures, comprising temporary signage, indicating the site as '*Caution – Heritage Site*' be attached at intervals along the conservation fence for the duration of construction work in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.26) Site ASU-S26: Colonial Period – Residence (S33°18'53.2"; E26°04'47.4")

Site ASU-S26 comprise a Colonial Period residence. The Site ASU-S26 residence represents the 1st of six (6) sandstone built residences in the street, thereby making them of the oldest residences of Alicedale. These residences, based on architectural style, but more specifically building material are older than 100 years of age and therefore of archaeological temporal age. The site is formally conserved (permanent fence with access gate), with these conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The site is situated in direct

proximity to the proposed development corridors and with the conservation fence within 2m from the proposed development alignment.

- **Site Significance and Recommendations:** The Site ASU-S26 Colonial Period residence pre-dates 100 years of age, by implication of archaeological temporal significance and formally protected by the NHRA 1999. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation is in place. Based on close proximity (within 2m) of the site to the development corridors it is recommended that the developer ensures that additional temporary conservation measures, including temporary heritage signage indicating the site as '*Caution – Heritage Site*' attached at intervals to the conservation fence, are in place during the construction phase of development. All temporary conservation measures should be removed upon completion of construction in the vicinity of the site.

2.2.2.27) Site ASU-S27: Colonial Period – Residence (S33°18'53.8"; E26°04'47.0")

The Site ASU-S27 sandstone built Colonial Period residence is older than 100 years of age and of archaeological temporal significance. Formal conservation measures, including a permanent fence with access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are in place. The site is situated in direct proximity to the proposed development corridors and with the conservation fence within 2 m from development alignments.

- **Site Significance and Recommendations:** Site ASU-S27, a Colonial Period residence older than 100 years of age and thus of archaeological temporal significance is formally protected by the NHRA 1999. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation is in place. It is recommended that the developer ensures that additional temporary conservation measures, comprising temporary heritage signage indicating the site as '*Caution – Heritage Site*' be attached at intervals along the conservation fence for the tenure of construction in the vicinity of the site, to avoid any accidental impact thereon. All temporary conservation measures should be removed upon completion of construction in the vicinity of the site.

2.2.2.28) Site ASU-S28: Colonial Period – Residence (S33°18'54.7"; E26°04'46.2")

Site ASU-S28 constitutes the 3rd sandstone built Colonial Period residence along the street, again being over 100 years of age and formally protected by the NHRA 1999. Formal conservation measures, including a permanent fence with access gate are already in place, with these complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The site's conservation fence is situated within 2m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S28 constitutes a Colonial Period residence, older than 100 years of age, thus of archaeological temporal significance and formally protected by the NHRA 1999. The site is ascribed a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation is in place. It is recommended that the developer ensures that additional temporary conservation measures, temporary heritage signage indicating the site as '*Caution – Heritage Site*' be attached at intervals along the conservation fence during the construction phase. All temporary conservation measures should be removed once construction has been completed.

2.2.2.29) Site ASU-S29: Colonial Period – Residence (S33°18'55.8"; E26°04'45.1")

The Site ASU-S29 co-ordinate represents the locality of a Colonial Period residence, re-dating 100 years of age and of archaeological temporal significance. Formal conservation measures comprising a permanent fence with access gate is

in place, complying with SAHRA/ EC PHRA Minimum Standards for heritage site conservation. The site is situated in close proximity to the proposed development corridors and with the conservation fence within 2m thereof.

- **Site Significance and Recommendations:** The Site ASU-S29 Colonial Period residence pre-dates 100 years of age, by implication of archaeological temporal significance and formally protected by the NHRA 1999. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation is in place. Based on close proximity (within 2m) of the site to the development corridors it is recommended that the developer ensures that additional temporary conservation measures, including temporary heritage signage indicating the site as '*Caution – Heritage Site*' attached at intervals to the conservation fence, are in place during the construction phase of development. All temporary conservation measures should be removed upon completion of construction in the vicinity of the site.

2.2.2.30) Site ASU-S30: Colonial Period – Residence (S33°18'56.2"; E26°04'44.7")

Site ASU-S30 comprise a Colonial Period residence which is older than 100 years of age and of archaeological temporal significance. The site is formally conserved with a permanent fence and access gate, with these conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The site's conservation fence is situated in direct proximity, and within 2m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S30 constitutes a Colonial Period residence, older than 100 years of age, thus of archaeological temporal significance and formally protected by the NHRA 1999. The site is ascribed a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation is in place. It is recommended that the developer ensures that additional temporary conservation measures, temporary heritage signage indicating the site as '*Caution – Heritage Site*' be attached at intervals along the conservation fence during the construction phase. All temporary conservation measures should be removed once construction has been completed.

2.2.2.31) Site ASU-S31: Colonial Period – Residence (S33°18'56.9"; E26°04'44.1")

Site ASU-S31 constitutes the last of the Colonial Period sandstone built residences along the street. Again, the site pre-dates 100 years of age and is archaeological temporal significance. Formal conservation measures, a permanent fence with access gate are already in place. Current conservation measures comply with SAHRA/ EC PHRA Minimum Standards for heritage site conservation. The site's conservation fence is situated within approximately 2m from the proposed development corridors, with the site being located roughly 30m from the railway line, with the early railway line in itself constituting a heritage site.

- **Site Significance and Recommendations:** The Site ASU-S31 Colonial Period residence pre-dates 100 years of age, by implication of archaeological temporal significance and formally protected by the NHRA 1999. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. Formal conservation measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation is in place. Based on close proximity (within 2m) of the site to the development corridors it is recommended that the developer ensures that additional temporary conservation measures, including temporary heritage signage indicating the site as '*Caution – Heritage Site*' attached at intervals to the conservation fence, are in place during the construction phase of development. All temporary conservation measures should be removed upon completion of construction in the vicinity of the site.

2.2.2.32) Site ASU-S32: Colonial Period – Residence (S33°18'57.6"; E26°04'45.5")

Site ASU-S32 comprise a Colonial Period residence, pre-dating 60 / 100 years of age. Formal conservation measures including a permanent fence with access gate, with these complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The proposed development corridor is situated in direct proximity and within approximately

2-6m from the conservation fence. The site is also situated immediately adjacent to an old railway track (See Site ASU-S35), with the railway line in itself pre-dating 100 years of age, also comprising a heritage site formally protected by the NHRA 1999.

- **Site Significance and Recommendations:** Site ASU-S32 comprise a Colonial Period residence pre-dating 60 / 100 years of age. The site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. An old railway line runs in close proximity to the site (See Site ASU-S35). The railway line comprises a heritage site in itself (See Site ASU-S35). It is recommended that the developer ensures that additional temporary conservation measures, including temporary heritage signage indicating Site ASU-S32 as '*Caution – Heritage Site*' be attached at intervals to the Site ASU-S32 fence, while a temporary conservation fence (construction netting or a similar visually clear demarcation) be erected along the railway line with temporary heritage signage again attached thereto for the duration of construction works in the vicinity thereof. All temporary conservation measures should be removed once construction in the vicinity of these heritage resources have been completed.

2.2.2.33) Site ASU-S33: Colonial Period – Residence (S33°18'56.8"; E26°04'46.3")

The Site ASU-S33 co-ordinate demarcates the locality of a Colonial Period residence. The residence, pre-dating 60 / 100 years of age, is still in use and formally conserved / permanently fenced with an access gate. The site is situated in direct proximity, and within approximately 2m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S33 comprises a Colonial Period residence pre-dating 60 / 100 years of age and is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. Formal conservation measures are in place, with these complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. It is recommended that temporary conservation measures, comprising of temporary signage indicating the site as '*Caution – Heritage Site*' be attached at intervals along the conservation fence for the duration of construction activities in the vicinity of the site. All temporary conservation measures should be removed once construction has been completed.

2.2.2.34) Site ASU-S34: Colonial Period – Residence (S33°18'53.4"; E26°05'07.2")

Site ASU-S34 comprise a Colonial Period residence, pre-dating 60 / 100 years of age. Formal conservation measures including a permanent fence with access gate, with these complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are in place. The proposed development corridor is situated in direct proximity and within approximately 2m from the conservation fence.

- **Site Significance and Recommendations:** Site ASU-S34 comprise a Colonial Period residence pre-dating 60 / 100 years of age. The site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. It is recommended that the developer ensures that additional temporary conservation measures, temporary heritage signage indicating Site ASU-S34 as '*Caution – Heritage Site*' be attached at intervals along the conservation fence for the duration of construction works in the vicinity thereof. All temporary conservation measures should be removed once construction in the vicinity of the site have been completed.

2.2.2.35) Site ASU-S35: Colonial Period – Railway Bridge and Line (S33°19'00.2"; E26°04'45.7")

The Site ASU-S35 co-ordinate designates the locality of the old railway bridge, but is representative of the railway line and associated infrastructure as well. With the railway line originally constructed between 1873 – 1877, the site (including the bridge, railway line and associated infrastructure) pre-dates 100 years of age, implying that the site is of archaeological temporal significance and formally protected under the NHRA 1999, Section 2(ii)(a) as an archaeological site.

- **Site Significance and Recommendations:** Site ASU-S35 comprise a Colonial Period heritage site, pre-dating 100 years of age and formally protected by the NHRA 1999, with the site of archaeological temporal significance. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. The development proposal includes pipe-jacking underneath the existing railway reserve, at approximately S33°19'04.1"; E26°04'48.2". The developer would need to apply for an EC PHRA APM Unit heritage site alteration permit [NHRA 1999, Section 35 & NHRA 1999, Regulations 2000, Vol 420, No 2 1239] prior to any alteration to the site (See attached permit application form). Upon the issue of an EC PHRA permit alteration to Site ASU-S35 may legally proceed.

2.2.2.36) Site ASU-S36: Colonial Period – Railway Training College (?) (S33°19'00.9"; E26°04'50.2")

The Site ASU-S36 co-ordinate represents a large property, believed to have been the early Railway Training College property. Buildings on the property are restored in time period style, with structures still in use, albeit for varying new functions and including selected of the buildings now in private ownership, some of which are individually conserved (fenced with access gates). Structures on the property are believed to date to the late 1800s / early 1900s, with structures in general older than 60 years of age, but with some of them older than 100 years. The overall property is however not formally conserved, with proposed development corridors passing in direct proximity thereto, and within 2-10m from the property boundary.

- **Site Significance and Recommendations:** The Site ASU-S36 Colonial Period railway training college property houses a number of buildings pre-dating 60 / 100 years of age with these formally protected by the NHRA 1999, in general receiving automatic SAHRA / EC PHRA protection as sites of *High Significance* with *Provincial Grade II Field Ratings*. Proposed development corridors pass in direct proximity to the general site property and it is recommended that the developer ensures additional temporary conservation measures, including temporary fencing (of construction netting or a similar visually clear demarcation) with temporary heritage signage, indicating the site property as '*Caution – Heritage Site*' for the duration of construction works in the vicinity of the site. All temporary conservation measures should be removed once construction works have been completed.

2.2.2.37) Site ASU-S37: Colonial Period – Quarry / Mining Infrastructure (S33°19'01.6"; E26°04'35.8")

Site ASU-S37 demarcates the general locality of a set of early quarrying / mining related infrastructure. It can reasonably be inferred that the site, and the number of structure remains still present on site were used during early construction of the railways, implying that they are Colonial Period heritage resources, pre-dating 100 years of age and of archaeological temporal significance with specific reference to early technology. The general site area is formally protected by the NHRA 1999. The site is situated approximately 200m from the closest proposed development alignment and roughly opposite the railway station. The site was recorded for heritage database purposes.

- **Site Significance and Recommendations:** Site ASU-S37 comprise a Colonial Period quarry / mining site with related infrastructural ruins still in place. The site is inferred to predate 100 years of age and is of archaeological temporal significance and formally protected by the NHRA 1999. Site ASU-S37 is ascribed a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. The site is situated more than 200m from the closest proposed development alignment and was recorded for heritage database purposes only. The developer need not comply with any additional heritage compliance requirements with reference to Site ASU-S37 for purposes of development.

2.2.2.38) Site ASU-S38: Contemporary Period – Bridge (S33°19'07.0"; E26°04'51.1")

Site ASU-S38 comprise a Contemporary Period bridge across the Bushmans River. The bridge was constructed in 1974 and is at present 42 years old. The site is not protected under the NHRA 1999. The site is representative of fairly significant development in Alicedale during the 1960s and 1970s.

- **Site Significance and Recommendations:** Site ASU-S38 represents a Contemporary Period bridge across the Bushmans River, constructed in 1974 and not formally protected by the NHRA 1999. A SAHRA / EC PHRA heritage site significance rating is irrelevant. The developer need not comply with any additional heritage compliance requirements pertaining to the site for purposes of development.

2.2.2.39) Site ASU-S39: Colonial Period – Residence (S33°19'03.1"; E26°04'54.9")

Site ASU-S39 comprise a Colonial Period residence, built of corrugated iron. The site may well be one of the oldest remaining residences in Alicedale and pre-dating 100 years of age, with the site of archaeological temporal significance. Site ASU-S39 is permanently fenced with an access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. Proposed development corridors pass in direct proximity to the site, varying in distance from approximately 2-10m from the Site ASU-S39 conservation fence.

- **Site Significance and Recommendations:** Site ASU-S39 comprise a Colonial Period residence pre-dating 100 years of age. The site, of archaeological temporal significance is formally protected by the NHRA 1999. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. It is recommended that the developer ensures that additional temporary conservation measures, namely temporary heritage signage indicating the site as '*Caution – Heritage Site*' attached at intervals along the conservation fence for the duration of construction works in the vicinity thereof. All temporary conservation measures should be removed upon completion of construction in the vicinity of the site.

2.2.2.40) Site ASU-S40: Colonial Period – Link-houses (S33°19'03.0"; E26°05'57.0")

The Site ASU-S40 corrugated iron link-houses is classed as a Colonial Period heritage site, pre-dating 100 years of age, thereby making it one of the oldest residences of Alicedale and of archaeological temporal significance. Formal conservation measures, including a permanent fence with access gate is in place, with these measures complying with SAHRA/ EC PHRA Minimum Standards for heritage site conservation. The site is situated in direct proximity to proposed development corridors, and with the Site ASU-S40 conservation fence within approximately 2m thereof.

- **Site Significance and Recommendations:** Site ASU-S40 comprise a Colonial Period residence pre-dating 100 years of age. The site, of archaeological temporal significance is formally protected by the NHRA 1999. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. It is recommended that the developer ensures that additional temporary conservation measures, namely temporary heritage signage indicating the site as '*Caution – Heritage Site*' attached at intervals along the conservation fence for the duration of construction works in the vicinity thereof. All temporary conservation measures should be removed upon completion of construction in the vicinity of the site.

2.2.2.41) Site ASU-S41: Colonial Period – Residence (S33°19'04.1"; E26°04'58.8")

Site ASU-S41 comprise a Colonial Period residence, pre-dating 60 / 100 years of age. Formal conservation measures including a permanent fence with access gate, with these complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are in place. The proposed development corridor is situated in direct proximity and within approximately 2m from the conservation fence.

- **Site Significance and Recommendations:** Site ASU-S41 comprise a Colonial Period residence pre-dating 60 / 100 years of age. The site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. It is recommended that the developer ensures that additional temporary conservation measures, temporary heritage signage indicating the site as '*Caution – Heritage Site*' be attached at intervals along the conservation fence for the duration of construction works in the vicinity thereof. All temporary conservation measures should be removed once construction in the vicinity of the site have been completed.

2.2.2.42) Site ASU-S42: Colonial Period – Residence (S33°19'05.1"; E26°04'59.3")

The Site ASU-S42 co-ordinate designates the locality of a Colonial Period residence. The residence is still in use, well maintained and older than 60 / 100 years, but no formal conservation measures are in place. The site is situated within 10m from the proposed development corridors.

- **Site Significance and Recommendations:** Site ASU-S42 comprise a Colonial Period residence pre-dating 60 / 100 years of age. The site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place. It is recommended that the developer ensures additional temporary conservation measures during the course of construction comprising of a temporary fence (construction netting or a similar visually clear demarcation along the street front of the property, allowing access to residents) and temporary signage indicating the site as '*Caution – Heritage Site*' for the duration of construction works in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.43) Site ASU-S43: Colonial Period – Residence (S33°19'05.7"; E26°04'59.2")

Site ASU-S43 comprise a Colonial Period residence, pre-dating 60 / 100 years of age. No formal conservation measures are in place. The proposed development corridor is situated in direct proximity and within approximately 10m from the conservation fence.

- **Site Significance and Recommendations:** Site ASU-S42 comprise a Colonial Period residence pre-dating 60 / 100 years of age. The site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. No formal conservation measures are in place. It is recommended that the developer ensures additional temporary conservation measures during the course of construction comprising of a temporary fence (construction netting or a similar visually clear demarcation along the street front of the property, allowing access to residents) and temporary signage indicating the site as '*Caution – Heritage Site*' for the duration of construction works in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction.

2.2.2.44) Site ASU-S44: Colonial Period – Residence (S33°19'00.8"; E26°04'59.2")

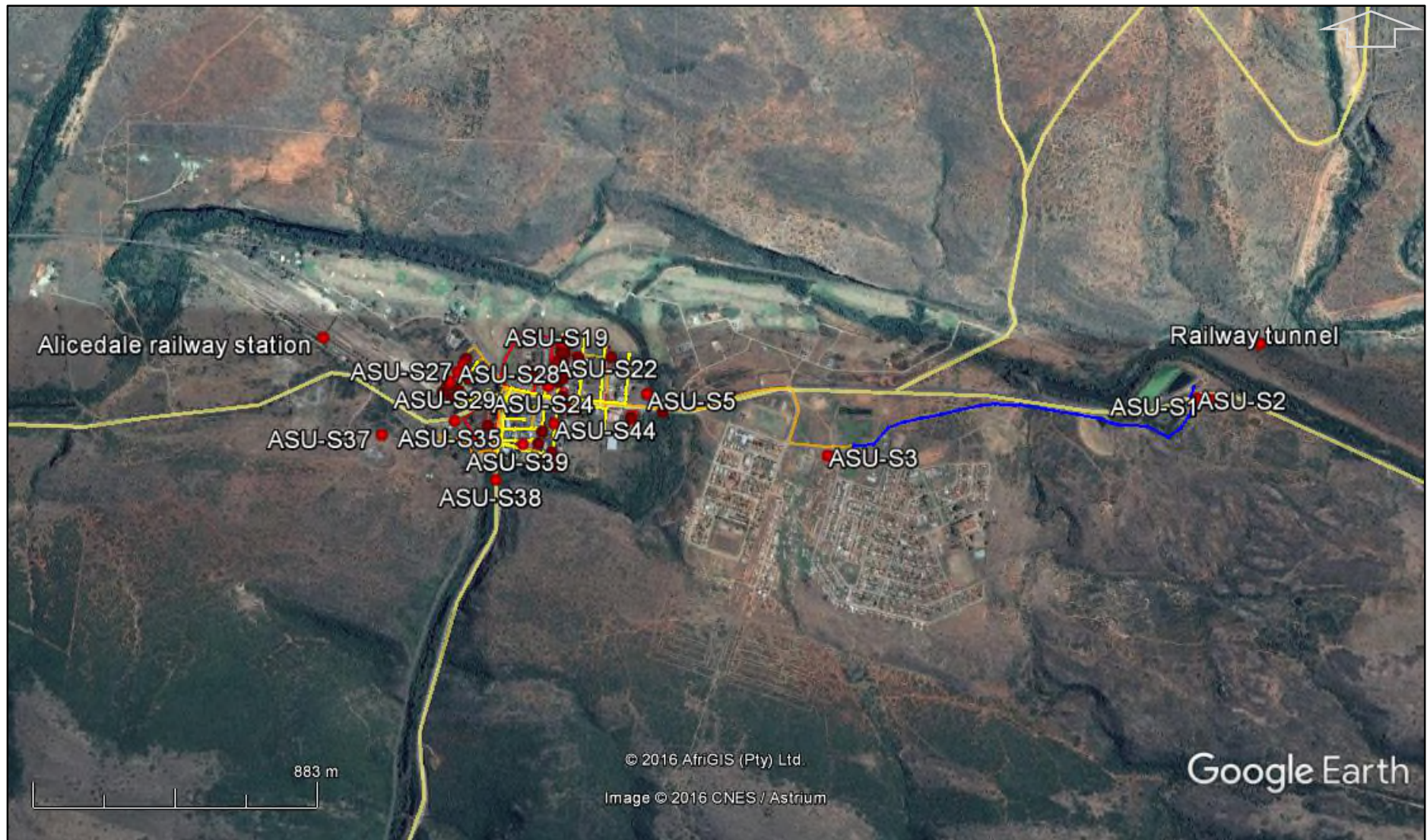
Site ASU-S44 comprise a Colonial Period residence, pre-dating 60 / 100 years of age. Formal conservation measures including a permanent fence with access gate, with these complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation are in place. The proposed development corridor is situated in direct proximity and within approximately 2m from the conservation fence.

- **Site Significance and Recommendations:** Site ASU-S44 comprise a Colonial Period residence pre-dating 60 / 100 years of age. The site is formally protected by the NHRA 1999. The site receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. It is recommended that the developer ensures that additional temporary conservation measures, temporary heritage signage indicating the site as '*Caution – Heritage Site*' be attached at intervals along the conservation fence for the duration of construction works in the vicinity thereof. All temporary conservation measures should be removed once construction in the vicinity of the site have been completed.

2.2.2.45) Site ASU-S45: Colonial Period – Residence (S33°19'01.7"; E26°04'57.9")

Site ASU-S45 comprise a Colonial Period residence, built of corrugated iron. The site may well be one of the oldest remaining residences in Alicedale and pre-dating 100 years of age, with the site of archaeological temporal significance. The site is permanently fenced with a boundary wall and access gate, with these measures complying with SAHRA / EC PHRA Minimum Standards for heritage site conservation. The proposed development corridor pass in direct proximity and within 2m from the Site ASU-S45 conservation fence.

- **Site Significance and Recommendations:** Site ASU-S45 comprise a Colonial Period residence pre-dating 100 years of age. The site, of archaeological temporal significance is formally protected by the NHRA 1999. The site is assigned a SAHRA / EC PHRA *High / Medium Significance* and a *Generally Protected IV-A Field Rating*. It is recommended that the developer ensures that additional temporary conservation measures, comprising of temporary heritage signage indicating the site as '*Caution – Heritage Site*' be attached at intervals along the conservation fence for the duration of construction works in the vicinity of the site. All temporary conservation measures should be removed upon completion of construction in the vicinity of Site ASU-S45.



Map 6: Spatial distribution of heritage sites in relation to the Alicedale Sewerage Upgrades development corridors (Blue: Existing sewerage infrastructure)



Map 7: Spatial distribution of heritage sites in relation to the Alicedale Sewerage Upgrades development corridors – Close-up of site distribution through Alicedale



Plate 1: View of the existing sewerage alignment



Plate 3: General view of the Colonial Period streetscapes of Alicedale [1]



Plate 2: Selected lithic artefacts



Plate 4: General view of the Colonial Period streetscapes of Alicedale [2]



Plate 5: Site ASU-S1 – View of 2 graves situated in direct proximity to the road



Plate 7: View of the Site ASU-S2 grave



Plate 6: Site ASU-S1 – 3 graves clustered together



Plate 8: General view of the Site ASU-S3 church building



Plate 9: General view of Site ASU-S4 (left) and ASU-S5 (right)



Plate 11: View of Site ASU-S5, the Colonial Period bridge across the Bushmans River bridge



Plate 10: View of Site ASU-S4, the contemporary bridge across the Bushmans River bridge



Plate 12: Close-up of sections of Site ASU-S5 [1]



Plate 13: Close-up of sections of Site ASU-S5 [1]



Plate 15: View of the Site ASU-S6 cemetery [2]



Plate 14: View of the Site ASU-S6 cemetery [1]



Plate 16: View of the Site ASU-S6 cemetery [3]



Plate 17: General view of Site ASU-S7



Plate 19: General view of the Site ASU-S8 Colonial Period jail [2]



Plate 18: General view of the Site ASU-S8 Colonial Period jail [1]



Plate 20: Detail close-up of aspects of Site ASU-S8 [1]



Plate 21: Detail close-up of aspects of Site ASU-S8 [2]



Plate 23: View of the Site ASU-S10 Colonial Period church [1]



Plate 22: General view of Site ASU-S9



Plate 24: View of the Site ASU-S10 Colonial Period church [2]



Plate 25: View of the Site ASU-S11 Colonial Period residence



Plate 27: General view of Site ASU-S13



Plate 26: The Site ASU-S12 Colonial Period church



Plate 28: View of Site ASU-S14



Plate 29: View of Site ASU-S15



Plate 31: View of Site ASU-S17



Plate 30: General view of Site ASU-S16



Plate 32: View of the Site ASU-S18 Colonial Period outbuilding



Plate 33: General view of Site ASU-S19



Plate 35: View of the Site ASU-S21 Colonial Period church building



Plate 34: View of Site ASU-S20



Plate 36: General view of Site ASU-S22



Plate 37: General view of the Site ASU-S23 Colonial Period church



Plate 39: General view of Site ASU-S24



Plate 38: Detail of the Site ASU-S23 church bell



Plate 40: General view of the Site ASU-S25 Bushman Sands Golf club



Plate 41: General view of Site ASU-S26



Plate 43: View of Site ASU-S28



Plate 42: View of Site ASU-S27



Plate 44: View of Site ASU-S29



Plate 45: View of Site ASU-S30



Plate 47: View of Site ASU-S32



Plate 46: View of Site ASU-S31



Plate 48: View of Site ASU-S33



Plate 49: General view of Site ASU-S34



Plate 51: View of the main building of the Site ASU-S36 Colonial Period railway station



Plate 50: View of a portion of the Site ASU-S35 Colonial Period rail bridge



Plate 52: Site ASU-S37 – Colonial Period quarry structure remains



Plate 53: The Site ASU-S38 Contemporary Period bridge



Plate 55: View of the Site ASU-S40 link-residences



Plate 54: View of Site ASU-S39



Plate 56: View of Site ASU-S41



Plate 57: View of Site ASU-S42



Plate 59: View of Site ASU-S44



Plate 58: View of Site ASU-S43



Plate 60: View of Site ASU-S45

3 – Environmental Impact Assessment Rating

Identified archaeological and cultural heritage resources are ascribed an Environmental Impact Assessment (EIA) rating, based on the outline presented below to provide a significance rating of development impact on resources, both during the 1) construction and 2) operation and use phases of development (in accordance with NEMA 1998, Regulations 2014):

Overall Nature:	1) Negative (negative impact on affected biophysical or human environment), or 2) Positive (benefit to the affected biophysical or human environment).
Type:	1) Direct (caused by the action and occur at the same time and place), 2) Indirect or secondary (caused by the action and are later in time or further removed in distance but reasonably foreseeable), or 3) Cumulative (impact which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions; can result from individually minor, but collectively significant actions taking place over a period of time).
Spatial Extent:	1) Site (immediate area of activity, incorporating a 5m zone from the edge of the affected area), 2) Local (area up to and/or within 10km from the 'site' as defined above), 3) Regional (entire community, basin or landscape), or 4) National (South Africa).
Duration:	1) Short-term (impact would last for the duration of activities; quickly reversible), 2) Medium-term (impact would affect project activity; reversible over time), 3) Long-term (impact would continue beyond project activity), or 4) Permanent (impact would continue beyond decommissioning).
Severity:	1) Low , 2) Medium , or 3) High , being +) Positive , or -) Negative (based on separately described categories examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functionality or slightly alters the environment itself).
Reversibility:	1) Completely reversible (completely reversible impact with implementation of correct mitigation measures), 2) Partly reversible (partly reversible impact with implementation of correct mitigation measures), or 3) Irreversible (impact cannot be reversed, regardless of mitigation or rehabilitation measures).
Irreplaceable loss:	1) Resource will not be lost (resource will not be lost provided mitigation measures are implemented), 2) Resource will be partly lost (partial loss or destruction of the resource will occur even though management and mitigation measures are implemented), or 3) Resource cannot be replaced (resource is irreplaceable no matter which management or mitigation measures are implemented).
Probability:	1) Unlikely (<40% probability), 2) Possible (40% probability), 3) Probable (>70% probability), or 4) Definite (>90% probability).
Mitigation potential:	1) High or completely mitigatable (relatively easy and cost effective to manage. Specialist expertise and equipment generally not required. Nature of impact easily understood and may be mitigated through implementation of a management plan or 'good housekeeping', including regular monitoring and reporting regimes. Significance of the impact after mitigation is likely to be low or negligible), 2) Moderate or partially mitigatable (management requires higher level of expertise and resources to maintain impacts with acceptable levels. Mitigation can be tied up in the design of the project. Significance of the impacts after mitigation is likely to be low to moderate. It may not be possible to mitigate the impact entirely, with residual impacts resulting), or 3) Low or un-mitigatable (will not be possible to mitigate the impact entirely, regardless of expertise and resources. Potential to manage the impacts may be beyond the scope of the project. Management of the impact is not likely to result in a measurable change in the level of significance).
Impact significance:	1) Negligible , 2) Low (largely of HIGH mitigation potential, after consideration of other criteria), 3) Moderate (largely of MODERATE or partial mitigation potential, after consideration of other criteria), or 4) Substantial (largely of LOW mitigation potential, after consideration of other criteria).

Environmental Impact Assessment Rating: Alicedale Sewerage Upgrades, Makana Local Municipality, Sarah Baartman District Municipality, Eastern Cape												
Potential Impacts	Overall nature	Type	Spatial extent	Duration	Severity	Reversibility	Irreplaceable loss	Probability	MITIGATION POTENTIAL	IMPACT SIGNIFICANCE		MITIGATION MEASURES
										Without mitigation	With mitigation	
SITES: ASU-S1, ASU-S2, ASU-S37												
Construction phase	2	3	2	4	3(+)	N/A	N/A	N/A	N/A	N/A	N/A	Conservation
Operational phase	2	3	2	4	3(+)	N/A	N/A	N/A	N/A	N/A	N/A	Conservation
Mitigation details: Heritage site conservation by virtue of proximity from the development corridor												
SITES: ASU-S3, ASU-S4, ASU-S5, ASU-S6, ASU-S7, ASU-S8, ASU-S9, ASU-S10, ASU-S11, ASU-S12, ASU-S13, ASU-S14, ASU-S15, ASU-S16, ASU-S17, ASU-S18, ASU-S19, ASU-S20, ASU-S21, ASU-S22, ASU-S23, ASU-S24, ASU-S25, ASU-S26, ASU-S27, ASU-S28, ASU-S29, ASU-S30, ASU-S31, ASU-S32, ASU-S33, ASU-S34, ASU-S36, ASU-S39, ASU-S40, ASU-S41, ASU-S42, ASU-S43, ASU-S44, ASU-S45												
Construction phase	2	3	2	4	3(+)	N/A	1	1	1	3	1	Conservation
Operational phase	2	3	2	4	3(+)	N/A	1	1	1	3	1	Conservation
Mitigation details: Recommendation for temporary heritage conservation measures for duration of construction phase only (including sites where permanent heritage conservation measures will be supplemented with temporary conservation measures)												
SITES: ASU-S35												
Construction phase	1	1	1	1	2(-)	3	2/3	3/4	2/3	4	2/3	Heritage site alteration
Operational phase	2	2	1	2	1(-)	1	2/3	3/4	2/3	4	2/3	Conservation
Mitigation details: Recommendation for site alteration to heritage resources to be done under EC PHRA – APM Unit Permit, in accordance with the NHRA (1999), Regulations (2000) and SAHRA Guidelines (2007)												

Table 4: Environmental Impact Assessment Rating

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed *Alicedale Sewerage Upgrades* development, MLM, SBDM, Eastern Cape, proceed as applied for (either Option / Alternative 1 or Option / Alternative 2 – the Preferred Option) provided the developer comply with the listed heritage recommendations, as per the heritage compliance summary.

A total of 45 archaeological and cultural heritage sites (Sites ASU-S1 – ASU-S45), as defined and protected by the NHRA 1999, were identified with recorded heritage sites attesting to the founding and early Colonial Period history of Alicedale. The proposed *Alicedale Sewerage Upgrades* development, a basic services development, would not be possible should standard heritage site conservation standards, including permanent conservation measures with 30-50m conservation buffer zones around the sites be expected or enforced. Accordingly, recommendations contained in this report for purposes of development is based on light-weight temporary conservation measures during the construction phase of the development, and excludes any conservation buffer zones. Deviation in heritage recommendations from standard heritage conservation standards were done with direct reference to the principles of Integrated Environmental Management (IEM).

- The proposed development poses no ‘fatal flaws’ with reference to archaeological and cultural heritage resources (See the above with reference to deviation in standard heritage recommendations for purposes of development).
- The developer need to apply for an EC PHRA – APM Unit permit (site alteration) prior to pipe jacking underneath the existing railway reserve (See Site ASU-S35).
- The development will have a temporary negative visual impact on the cultural landscape during the construction phase.
- The development will have no negative long-term (implementation phase) cumulative impact on the cultural landscape.
- Compliance to heritage recommendations during the construction phase should be reported on to the EC PHRA – APM Unit by a professional heritage practitioner / ECO (basic photographic report).
- [In the event of any incidental archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, being identified during the course of development the process described in ‘*Appendix B: Heritage Protocol for Incidental Finds during the Construction Phase*’ should be followed.]

The EC PHRA-APM Unit HIA Comment will state legal requirements for development to proceed, or reasons why, from a heritage perspective, development may not be further considered.

Heritage Compliance Summary – Alicedale Sewerage Upgrades, Makana Local Municipality, Sarah Baartman District Municipality, Eastern Cape			
Map Code	Site	Co-ordinates	Recommendations
Alicedale Sewerage Upgrades			
Site ASU-S1	Colonial Period: Cemetery / Graves	S33°18'59.8"; E26°06'28.8"	N/A (Recorded for heritage database purposes)
Site ASU-S2	Colonial Period: Grave	S33°18'59.6"; E26°06'26.9"	N/A (Recorded for heritage database purposes)
Site ASU-S3	LIA / Cont. Period: Church	S33°19'05.2"; E26°05'36.5"	Temporary heritage signage (Permanent conservation measures in place)
Site ASU-S4	Cont. Period: Bridge	S33°18'59.8"; E26°05'14.0"	N/A (Not a heritage site; see also Site ASU-S5)
Site ASU-S5	Colonial Period: Bridge	S33°18'57.7"; E26°05'12.0"	Temporary heritage signage (Permanent heritage conservation measures not recommended)
Site ASU-S6	Colonial Period: Cemetery	S33°19'00.3"; E26°05'09.7"	Temporary heritage signage (Permanent conservation measures in place)
Site ASU-S7	Colonial Period: Residence	S33°18'53.4"; E26°05'07.2"	Temporary heritage signage
Site ASU-S8	Colonial Period: Jail	S33°18'53.4"; E26°05'02.7"	Permanent heritage conservation fence & signage
Site ASU-S9	Colonial Period: Commercial Structure	S33°18'58.9"; E26°05'00.8"	Temporary heritage conservation fence & signage
Site ASU-S10	Colonial Period: Church	S33°18'57.7"; E26°05'00.4"	Temporary heritage signage (Permanent conservation measures in place)
Site ASU-S11	Colonial Period: Residence	S33°18'55.7"; E26°05'00.5"	Temporary heritage conservation fence & signage
Site ASU-S12	Colonial Period: Church	S33°18'55.2"; E26°05'00.7"	Temporary heritage conservation fence & signage
Site ASU-S13	Colonial Period: Residence	S33°18'54.7"; E26°05'00.6"	Temporary heritage conservation fence & signage
Site ASU-S14	Colonial Period: Residence	S33°18'54.0"; E26°05'00.7"	Temporary heritage conservation fence & signage
Site ASU-S15	Colonial Period: Residence / Commercial structure	S33°18'53.0"; E26°05'00.8"	Temporary heritage conservation fence & signage
Site ASU-S16	Colonial Period: Residence	S33°18'52.7"; E26°05'00.8"	Temporary heritage conservation fence & signage
Site ASU-S17	Colonial Period: Residence	S33°18'52.1"; E26°05'00.9"	Temporary heritage signage
Site ASU-S18	Colonial Period: Outbuilding	S33°18'51.4"; E26°05'01.0"	Temporary heritage conservation fence & signage
Site ASU-S19	Colonial Period: Residence	S33°18'52.0"; E26°05'00.5"	Temporary heritage conservation fence & signage
Site ASU-S20	Colonial Period: Residence	S33°18'52.7"; E26°05'00.4"	Temporary heritage conservation fence & signage
Site ASU-S21	Colonial Period: Building / Church	S33°18'52.7"; E26°05'00.4"	Temporary heritage signage (Permanent conservation measures in place)
Site ASU-S22	Colonial Period: Residence	S33°18'54.3"; E26°04'59.5"	Temporary heritage conservation fence & signage
Site ASU-S23	Colonial Period: Church	S33°18'56.1"; E26°04'59.8"	Temporary heritage signage (Permanent conservation measures expected to be in place)
Site ASU-S24	Colonial Period: Residence	S33°18'56.5"; E26°04'58.5"	Temporary heritage conservation fence & signage
Site ASU-S25	Colonial Period: Railway station / Bushman sands golf club	S33°18'54.8"; E26°04'56.4"	Temporary heritage signage
Site ASU-S26	Colonial Period: Residence	S33°18'53.2"; E26°04'47.4"	Temporary heritage signage
Site ASU-S27	Colonial Period: Residence	S33°18'53.8"; E26°04'47.0"	Temporary heritage signage
Site ASU-S28	Colonial Period: Residence	S33°18'54.7"; E26°04'46.2"	Temporary heritage signage
Site ASU-S29	Colonial Period: Residence	S33°18'55.8"; E26°04'45.1"	Temporary heritage signage
Site ASU-S30	Colonial Period: Residence	S33°18'56.2"; E26°04'44.7"	Temporary heritage signage
Site ASU-S31	Colonial Period: Residence	S33°18'56.9"; E26°04'44.1"	Temporary heritage signage
Site ASU-S32	Colonial Period: Residence	S33°18'57.6"; E26°04'45.5"	Temporary heritage signage
Site ASU-S33	Colonial Period: Residence	S33°18'56.8"; E26°04'46.3"	Temporary heritage signage
Site ASU-S34	Colonial Period: Residence	S33°18'55.4"; E26°04'47.6"	Temporary heritage signage
Site ASU-S35	Colonial Period: Railway bridge and line	S33°19'00.2"; E26°04'45.7"	EC PHRA APM Unit Permit prior to any alteration of the site
Site ASU-S36	Colonial Period: Railway training college (?)	S33°19'00.9"; E26°04'50.2"	Temporary heritage conservation fence & signage
Site ASU-S37	Colonial Period: Quarry / Mining Infrastructure	S33°19'01.6"; E26°04'35.8"	N/A (Recorded for heritage database purposes)
Site ASU-S38	Cont. Period: Bridge	S33°19'07.0"; E26°04'51.1"	N/A (Not a heritage site)
Site ASU-S39	Colonial Period: Residence	S33°19'03.1"; E26°04'54.9"	Temporary heritage signage
Site ASU-S40	Colonial Period: Link-houses	S33°19'03.3"; E26°04'57.0"	Temporary heritage signage
Site ASU-S41	Colonial Period: Residence	S33°19'04.1"; E26°04'58.8"	Temporary heritage signage
Site ASU-S42	Colonial Period: Residence	S33°19'05.1"; E26°04'59.3"	Temporary heritage conservation fence & signage
Site ASU-S43	Colonial Period: Residence	S33°19'05.7"; E26°04'59.2"	Temporary heritage conservation fence & signage
Site ASU-S44	Colonial Period: Residence	S33°19'00.8"; E26°04'59.2"	Temporary heritage signage
Site ASU-S45	Colonial Period: Residence	S33°19'01.7"; E26°04'57.6"	Temporary heritage signage

Table 5: Heritage compliance summary

Notes:

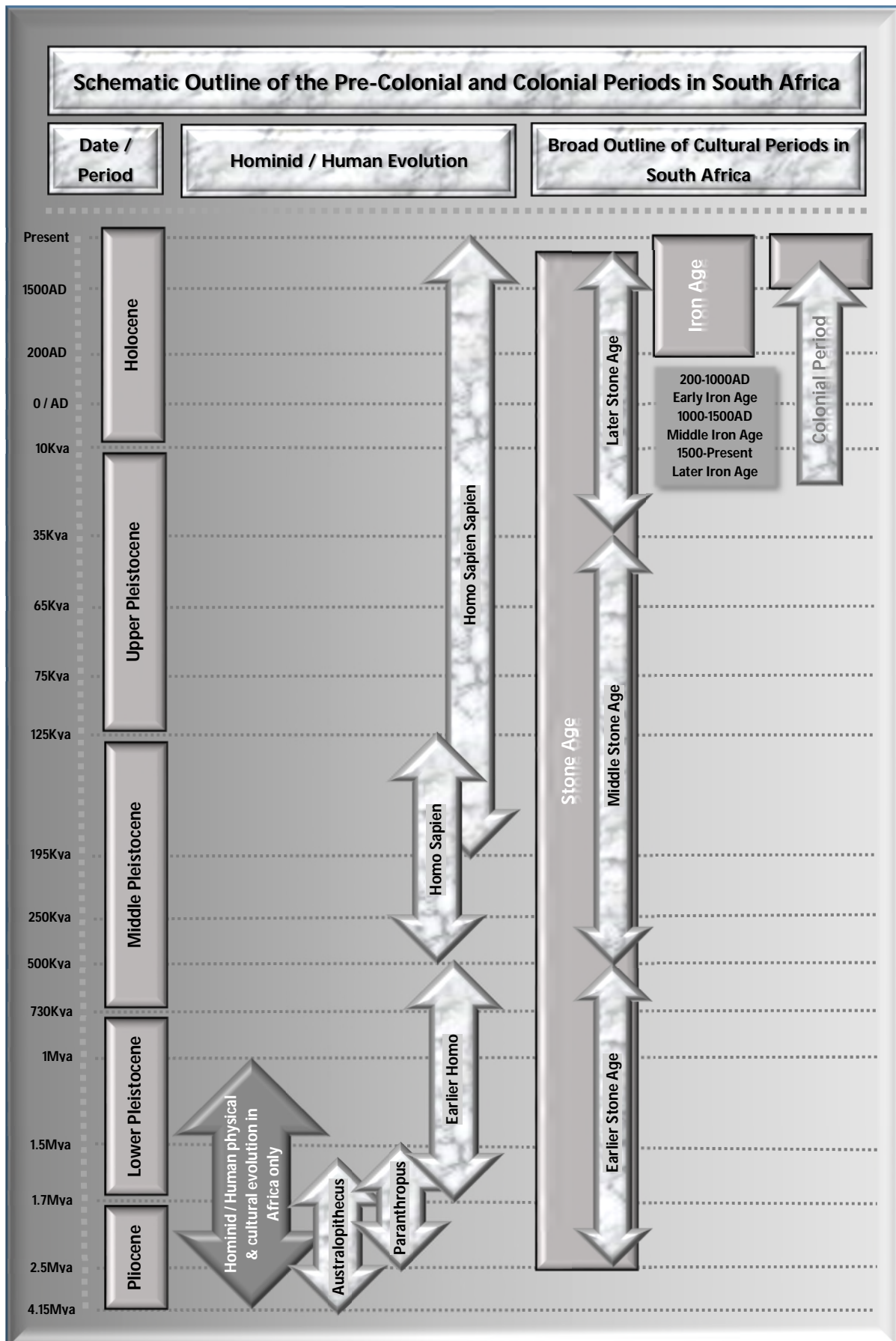
Should any registered Interested & Affected Party (I&AP) wish to be consulted in terms of Section 38(3)(e) of the NHRA 1999 (socio-cultural consultation / SAHRA SIA) it is recommended that the developer / EAP ensures that the consultation be prioritized within the timeframe of the environmental assessment process.

Simplified Guide to the Identification of Archaeological Sites:

- ❖ **Stone Age** – Knapped stone display flakes and flake scars that appear unnatural and may result in similar type ‘shaped’ stones often concentrated in clusters or forming a distinct layer in the geological stratigraphy. ESA shapes may represent ‘pear’ or oval shaped stones, often in the region of 10cm or larger. Typical MSA types include blade-like or rough triangular shaped artefacts, often associated with randomly shaped lithics or flakes that display use- or edge-wear around the rim of the artefact. LSA types are similar to MSA types, but generally smaller (≤ 3 cm in size), often informally shaped, and are frequently found in association with bone, pieces of charcoal, ceramic shards and food remains.
 - **Rock Art** – Includes both painted and engraved images.
 - **Shell Middens** – Include compact shell lenses that may be quite extensive in size or small ephemeral scatters of shell food remains, often associated with LSA artefact remains, but may also be of MSA and Iron Age cultural association.
- ❖ **Iron Age** – Iron Age sites are often characterized by stone features, i.e. the remains of former livestock enclosures or typical household remains; huts are identified by either mound or depression hollows. Typical artefacts include ceramic remains, farming equipment, beads and trade goods, metal artefacts (including jewellery) etc. Remains of the ‘Struggle’ – events, histories and landmarks associated therewith are often, based on cultural association, classed as part of the Iron Age heritage of South Africa.
- ❖ **Colonial Period** – Built environment remains, either urban or rural, are of a Western cultural affiliation with typical artefacts representing early Western culture, including typical household remains, trade and manufactured goods, such as old bottle, porcelain and metal artefacts. War memorial remains, including the vast array of associated graves and the history of the Industrial Revolution form important parts of South Africa’s Colonial Period heritage.

AD	: Anno Domini (the year 0)
AIA	: Archaeological Impact Assessment
AMAFA	: Amafa aKwaZulu-Natali (Natal PHRA)
ASAPA	: Association of Southern African Professional Archaeologists
BAR	: Basic Assessment Report
BC	: Before the Birth of Christ (the year 0)
BCE	: Before the Common Era (the year 0)
BID	: Background Information Document
BP	: Before the Present (the year 0)
cm	: Centimetre
CMP	: Conservation Management Plan
CRM	: Cultural Resources Management
DAC	: Department of Arts and Culture
DEAT	: Department of Environmental Affairs and Tourism
DME	: Department of Minerals and Energy
EAP	: Environmental Assessment Practitioner
ECO	: Environmental Control Officer
ELO	: Environmental Liaison Officer
EC PHRA	: Eastern Cape Provincial Heritage Resources Authority
EIA ₁	: Environmental Impact Assessment
EIA ₂	: Early Iron Age
EMPr	: Environmental Management Plan / Programme Report
ESA	: Earlier Stone Age
ha	: Hectare
HIA	: Heritage Impact Assessment
HWC	: heritage Western Cape
ICOMOS	: International Council on Monuments and Sites
IEM	: Integrated Environmental Management
km	: kilometre
Kya	: Thousands of years ago
LIA	: Later Iron Age
LSA	: Later Stone Age
m	: metre
m ²	: Square meter
MIA	: Middle Iron Age
Mm	: millimetre
MPRDA 2002	: Mineral and Petroleum Resources Development Act, No 28 of 2002
MSA	: Middle Stone Age
Mya	: Millions of years ago
NEMA 1998	: National Environmental Management Act, No 107 of 1998
NHRA 1999	: National Heritage Resources Act, No 25 of 1999
PIA	: Palaeontological Impact Assessment
PHRA	: Provincial Heritage Resources Authority
PSSA	: Palaeontological Society of South Africa
PPP	: Public Participation Process
SAHRA	: South African Heritage Resources Agency
SAHRIS	: South African Heritage Resources Information System
SIA	: Social Impact Assessment

1. Binneman, J., Booth, C. & Higgit, N. 2010. (Albany Museum). *A Phase 1 Archaeological Impact Assessment (AIA) for the Proposed Sand Mining on the Elva Heights Farm 102 and on the Difusi Land Trust Property Incorporating the Farms de Bruyns Kraal, Doorn Kloof and Lang Vley, Paterson, Sunday's River Valley Municipality, Cacadu District Municipality, Eastern Cape.*
2. Becker, E. 2012. (Hatch). *Transnet Capital Projects. Ngqura 16 Mtpa Manganese Rail. Phase 1 Heritage Impact Assessment Hotazel to Kimberley and De Aar to Port of Ngqura.*
3. GIBB. 2016. *Alicedale Sewerage Upgrades. Basic Environmental Assessment Process Background Information Document (BID).*
4. <http://archiver.rootsweb/ancestry.com/th/read/SOUTH-AFRICA-EASTERN-CAPE/2005-12/1133766848> [Accessed: 2016-11-01].
5. https://en.wikipedia.org/wiki/List_of_abandoned_railway_lines_in_South_Africa [Accessed: 2016-11-01].
6. https://en.wikipedia.org/wiki/List_of_heritage_sites_in_Eastern_Cape [Accessed: 2016-11-04].
7. <http://www.travelgrahamstown.co.za/places-to-see/29/Alicedale> [Accessed: 2016-11-01].
8. Mitchell, P. 2002. *The Archaeology of Southern Africa.* Cambridge: Cambridge University Press.
9. Nel, J. 2008. (Archaic Heritage). *Final Report: Heritage Resources Scoping Survey and Preliminary Assessment – Transnet Freight Line EIA, Eastern Cape and Northern Cape.*
10. SAHRA. 2007. *Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessments.*
11. South African Government. (No 107 of) 1998. *National Environmental Management Act.*
12. South African Government. (No 25 of) 1999. *National Heritage Resources Act.*
13. Webley, L.E. 2007b. (Albany Museum). *Heritage Impact Assessment on Portions of farms Boekenhout Fontein, Assegaai Bush and Birchwood Park for the Establishment of Game Lodges and Resorts to be Incorporated into the Greater Lalibela Nature Reserve.*
14. www.sa-venues.com/golf/bushman-sands-golf-club.php [Accessed: 2016-11-01].





Heritage Impact Assessment (HIA) – Alicedale Sewerage Upgrades, Makana Local Municipality, Sarah Baartman District Municipality, Eastern Cape

Heritage Protocol for Incidental Finds during the Construction Phase

Should any palaeontological, archaeological or cultural heritage resources, including human remains / graves, as defined and protected by the NHRA 1999, be identified during the construction phase of development (including as a norm during vegetation clearing, surface scraping, trenching and excavation phases), it is recommended that the process described below be followed.

➤ On-site Reporting Process:

1. The identifier should immediately notify his / her supervisor of the find.
2. The identifier's supervisor should immediately (and within 24 hours after reporting by the identifier) report the incident to the on-site SHE / SHEQ officer.
3. The on-site SHE / SHEQ officer should immediately (and within 24 hours after reporting by the relevant supervisor) report the incident to the appointed ECO / ELO officer. [Should the find relate to human remains the SHE / SHEQ officer should immediately notify the nearest SAPS station informing them of the find].
4. The ECO / ELO officer should ensure that the find is within 72 hours after the SHE / SHEQ officers report reported on SAHRIS and that a relevant heritage specialist is contacted to make arrangements for a heritage site inspection. [Should the find relate to human remains the ECO / ELO officer should ensure that the archaeological site inspection coincides with a SAPS site inspection, to verify if the find is of forensic, authentic (informal / older than 60 years), or archaeological (older than 100 years) origin].
5. The appointed heritage specialist should compile a 'heritage site inspection' report based on the site specific findings. The site inspection report should make recommendations for the destruction, conservation or mitigation of the find and prescribe a recommended way forward for development. The 'heritage site inspection' report should be submitted to the ECO / ELO, who should ensure submission thereof on SAHRIS.
6. SAHRA / the relevant PHRA will state legal requirements for development to proceed in the SAHRA / PHRA Comment on the 'heritage site inspection' report.
7. The developer should proceed with implementation of the SAHRA / PHRA Comment requirements. SAHRA / PHRA Comment requirements may well stipulate permit specifications for development to proceed.
 - Should permit specifications stipulate further Phase 2 archaeological investigation (including grave mitigation) a suitably accredited heritage specialist should be appointed to conduct the work according to the applicable SAHRA / PHRA process. The heritage specialist should apply for the permit. Upon issue of the SAHRA / PHRA permit the Phase 2 heritage mitigation program may commence.
 - Should permit specifications stipulate destruction of the find under a SAHRA / PHRA permit the developer should immediately proceed with the permit application. Upon the issue of the SAHRA / PHRA permit the developer may legally proceed with destruction of the palaeontological, archaeological or cultural heritage resource.
 - Upon completion of the Phase 2 heritage mitigation program the heritage specialist will submit a Phase 2 report to the ECO / ELO, who should in turn ensure submission thereof on SAHRIS. Report recommendations may include that the remainder of a heritage site be destroyed under a SAHRA / PHRA permit.
 - Should the find relate to human remains of forensic origin the matter will be directly addressed by the SAPS: A SAHRA / PHRA permit will not be applicable.

NOTE: Note that SAHRA / PHRA permit and process requirements relating to the mitigation of human remains requires suitable advertising of the find, a consultation, mitigation and re-interment / deposition process.

➤ **Duties of the Supervisor:**

1. The supervisor should immediately upon reporting by the identifier ensure that all work in the vicinity of the find is ceased.
2. The supervisor should ensure that the location of the find is immediately secured (and within 12 hours of reporting by the identifier), by means of a temporary conservation fence (construction netting) allowing for a 5-10m heritage conservation buffer zone around the find. The temporary conserved area should be sign-posted as a 'No Entry – Heritage Site' zone.
3. Where development has impacted on the resource, no attempt should be made to remove artefacts / objects / remains further from their context, and artefacts / objects / remains that have been removed should be collected and placed within the conservation area or kept for safekeeping with the SHE / SHEQ officer. It is imperative that where development has impacted on palaeontological, archaeological and cultural heritage resources the context of the find be preserved as good as possible for interpretive and sample testing purposes.
4. The supervisor should record the name, company and capacity of the identifier and compile a brief report describing the events surrounding the find. The report should be submitted to the SHE / SHEQ officer at the time of the incident report.

➤ **Duties of the SHE / SHEQ Officer:**

1. The SHE / SHEQ officer should ensure that the location of the find is recorded with a GPS. A photographic record of the find (including implementation of temporary conservation measures) should be compiled. Where relevant a scale bar or object that can indicate scale should be inserted in photographs for interpretive purposes.
2. The SHE / SHEQ officer should ensure that the supervisors report, GPS co-ordinate and photographic record of the find be submitted to the ECO / ELO officer. [Should the find relate to human remains the SHE / SHEQ officer should ensure that the mentioned reporting be made available to the SAPS at the time of the incident report].
3. Any retrieved artefacts / objects / remains should, in consultation with the ECO / ELO officer, be deposited in a safe place (preferably on-site) for safekeeping.

➤ **Duties of the ECO / ELO officer:**

1. The ECO / ELO officer should ensure that the incident is reported on SAHRIS. (The ECO / ELO officer should ensure that he / she is registered on the relevant SAHRIS case with SAHRIS authorship to the case at the time of appointment to enable heritage reporting).
2. The ECO / ELO officer should ensure that the incident report is forwarded to the heritage specialist for interpretive purposes at his / her soonest opportunity and prior to the heritage site inspection.
3. The ECO / ELO officer should facilitate appointment of the heritage specialist by the developer / construction consultant for the heritage site inspection.
4. The ECO / ELO officer should facilitate access by the heritage specialist to any retrieved artefacts / objects / remains that have been kept in safekeeping.
5. The ECO / ELO officer should facilitate coordination of the heritage site inspection and the SAPS site inspection in the event of a human remains incident report.
6. The ECO / ELO officer should facilitate heritage reporting and heritage compliance requirements by SAHRA / the relevant PHRA, between the developer / construction consultant, the heritage specialist, the SHE / SHEQ officer (where relevant) and the SAPS (where relevant).

➤ **Duties of the Developer / Construction Consultant:**

The developer / construction consultant should ensure that an adequate heritage contingency budget is accommodated within the project budget to facilitate and streamline the heritage compliance process in the event of identification of incidental palaeontological, archaeological and cultural heritage resources during the course of development, including as a norm during vegetation clearing, surface scraping, trenching and excavation phases, when resources not visible at the time of the surface assessment may well be exposed.

Resumé
Karen van Ryneveld
2016

Name: Karen van Ryneveld

Contact Details:

- 1) Mobile – 084 871 1064
- 2) E-mail – karen@archaeomaps.co.za
- 3) Website – www.archaeomaps.co.za
- 4) Postal address – Postnet Suite 239, Private Bag X3, Beacon Bay, 5205

Company: ArchaeoMaps cc

Occupation: Archaeologist

Qualification: MSc Archaeology (WITS University – 2003)

Accreditation:

- 1) Association of Southern African Professional Archaeologists (ASAPA) accredited Cultural Resources Management CRM practitioner [member nr – 163]
 - o 2010 – ASAPA CRM Section: Principle Investigator – Stone Age
 - o 2005 – ASAPA CRM Section: Field Director – Iron Age & Colonial Period
- 2) SAHRA, AMAFA, EC PHRA and HWC listed ASAPA accredited CRM archaeologist

Tertiary Education

2015 – Present	University of Fort Hare (UFH), East London (MPhil Environmental Studies)
2010	University of South Africa (UNISA), Pretoria (Project Management 501)
2006 – 2007	Nelson Mandela Metropolitan University (NMMU), Port Elizabeth (Undergraduate Certificate in Geographical Information Systems – GIS)
2001 – 2003	University of the Witwatersrand (WITS), Johannesburg (MSc Archaeology)
1999 – 2000	University of Pretoria (UP), Pretoria (BA Hons. Archaeology)
1991 – 1993	University of Pretoria (UP), Pretoria (BA Archaeology & History of Art)

Courses

2016/01	SPA (Safety Passport Alliance) – Petrol Retail [SA Safety Management Training Services – SMST]
---------	--

Employment – Professional Archaeology

2007/04 – Present	ArchaeoMaps [Self-employed] (Archaeologist – CRM)
2006/06 – 2007/03	National Museum, Bloemfontein (Archaeologist – CRM, Dept. of Archaeology)
2005/04 – 2006/05	McGregor Museum, Kimberley (Archaeologist – CRM / Research, Dept. of Archaeology)
2004/04 – 2005/01	Amafa aKwaZulu-Natali (HoD: Archaeology, Palaeontology & Meteorites Unit – APM Unit)
2002/09 – 2004/03	McGregor Museum, Kimberley (Archaeologist – CRM / Research, Dept. of Archaeology)

Employment – Freelance: Ground Penetrating Radar

2015/10 – Present	Terra Scan assistant (BCM area, EC) – GPR & underground utilities focussing on petrol retail (oil & gas) industry
-------------------	---

Archaeology – Summary

Karen has been involved in CRM archaeology since 2003 and has been the author (including selected co-authored reports) of approximately 450 Phase 1 AIA studies. Phase 1 AIA work is centred in South Africa, focussing on the Northern and Eastern Cape provinces and the Free State. She has also conducted Phase 1 work in Botswana (2006 / 2007). In 2007 she started ArchaeoMaps, an independent archaeological and heritage consultancy. In 2010 she was awarded ASAPA CRM Principle Investigator (PI) status based on large scale Phase 2 Stone Age mitigation work (De Beers Consolidated Mines – Rooipoort, Northern Cape, 2008 / 2009) and has also been involved in a number of other Phase 2 projects including Stone Age, Shell Middens, Grave / Cemetery projects and Iron Age sites.

In addition to CRM archaeology she has been involved in research, including the international collaborations at Maloney's Kloof and Grootkloof, Ghaap Plateau, Northern Cape (2005 / 2006). Archaeological compliance experience includes her position as Head of the Archaeology, palaeontology and Meteorites (APM) Unit at AMAFA aKwaZulu-Natali (2004).

Company Profile

Company Name	: ArchaeoMaps cc
Registration Number	: 2005/180719/23
VAT Number	: Not VAT Registered
Accountant	: AZIMA Financial Services
Members / Shareholders	: Karen van Ryneveld (100%)
BBBEE Status	: Exempted Micro Enterprise (EME)