

Phase 1 Archaeological & Cultural Heritage Impact Assessment –

**Proposed Bengal Heights Residential Development, Erf RE/2368, Amalinda,
East London, Buffalo City Metropolitan Municipality, Eastern Cape**

- 16 March 2016 -

Report to:

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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 any subsidiaries, aside from fair remuneration for specialist services rendered; and
- That work conducted has been done in an objective manner – and that any circumstances that may have compromised objectivity have been reported on transparently.



Signature –

- 16 March 2016 -

Proposed Bengal Heights Residential Development, Erf RE/2368, Amalinda, East London, Buffalo City Metropolitan Municipality, Eastern Cape

Executive Summary

Project Description –

Terreco Environmental have been appointed as independent EAP by the project proponent, Sherpa Trading (Pty) Ltd [SKG Properties], to apply for EA, including a BAR and EMPr, to the EC DEDEAT for the proposed *Bengal Heights Residential Development*, Erf RE/2368, Amalinda, East London, BCMM, Eastern Cape. The proposed development is situated at general development co-ordinate S33°00'03.6"; E27°52'08.3", with the study site comprising an approximate 14ha area, located in the urban, largely developed suburb of Amalinda. The study site is directly accessible via the existing road network and bordered to the south-west by a tributary of the Mzonyana River. The development proposal centres on the establishment of 158 residential units, including relevant services; potable and storm water, sewerage, electricity, telecommunications and access roads. The development application will include necessary subdivision and rezoning applications.

The Phase 1 Archaeological & Cultural Heritage Impact Assessment –

Project Name & Locality: *Bengal Heights Residential Development*, Erf RE/2368, Amalinda, East London, BCMM, Eastern Cape [1:50,000 Map Ref – 3227DD & 3327BB].

Summary of Findings:

From an archaeological and cultural heritage perspective the proposed *Bengal Heights Residential Development* can be described as of definite impact on identified LIA site, Site BHR-S1. Heritage management options, conservation or Phase 2 mitigation, directly affect development:

- In the case of Site BHR-S1, heritage site conservation, with cognizance to aerially identifiable site extent associated with the presence of inferred further significant sub-surface site aspects, does not allow much potential with reference to recommendations regarding amendments to development layout to conserve Site BHR-S1 within the development framework. Site conservation in this case would effectively imply a 'No-Go' option.
- An archaeological Phase 2 mitigation program can coincide with development, ensuring suitable recording, rescue excavation of archaeological deposits and exhumation of graves if identified or encountered during the course of construction. With reference to the SAHRA / EC PHRA heritage site significance rating of Site BHR-S1, associated with current heritage procedures for Phase 2 mitigation, the presence of Site BHR-S1 at the study site does not necessarily imply a 'fatal flaw'. Phase 2 mitigation hold the potential to gather significant scientific information on identified heritage sites, not possible when sites are merely conserved. Once adequate mitigation has been done (during the vegetation clearing and construction phases), heritage is unlikely, by virtue of the prescribed Phase 2 mitigation process, to pose further concerns during the operational phase of development. The developer will however need to consider cost and timeframes associated with archaeological Phase 2 mitigation.

Heritage Compliance Summary – Bengal Heights Residential Development, Erf RE/2368, Amalinda, East London, BCMM, EC			
Map Code	Site	Co-ordinates	Recommendations
Bengal Heights Residential Development (S33°00'03.6"; E27°52'08.3")			
BHR-S1	Later Iron Age – Homestead Remains (Livestock enclosures)	S33°00'09.5"; E27°52'07.9"	Permanent conservation ('No-Go' development option); OR Archaeological Phase 2 mitigation program to coincide with the vegetation clearing and construction phases of development.

Recommendations –

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that development of the *Bengal Heights Residential Development*, Erf RE/2368, Amalinda, East London, BCMM, Eastern Cape, proceed, provided the developer comply with recommended archaeological Phase 2 mitigation, or that Site BHR-S1 be conserved, effectively implying a 'No-Go' development option.

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.

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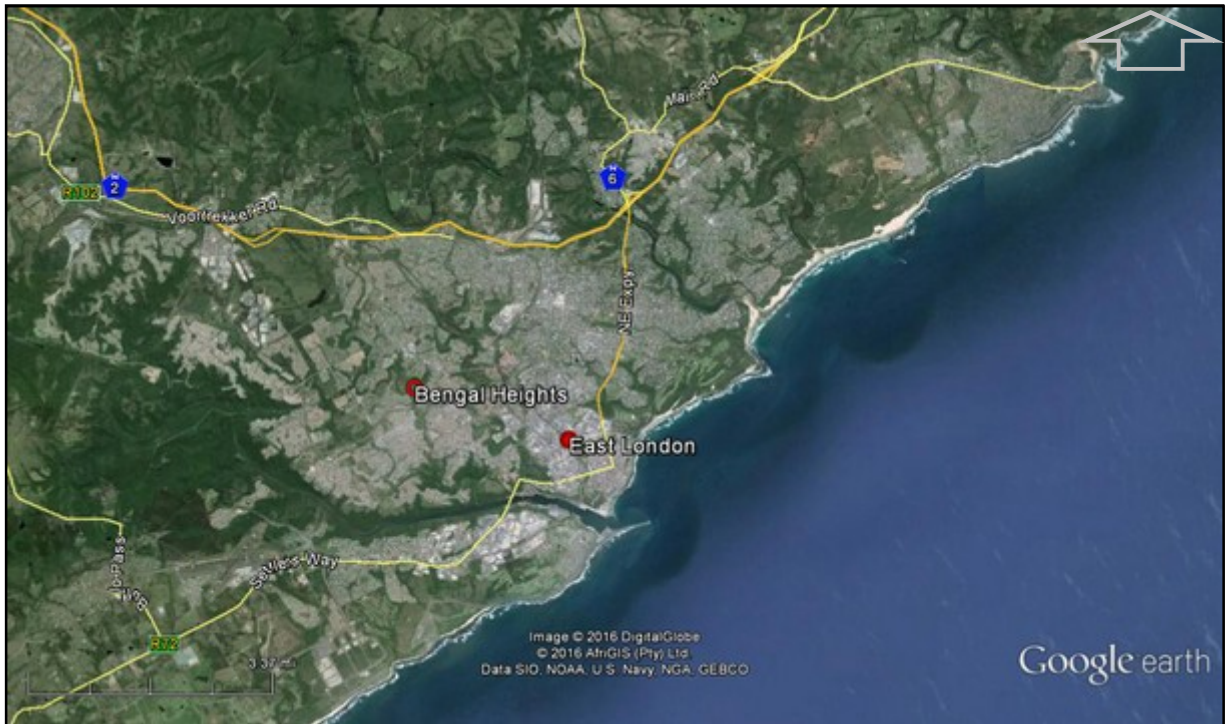
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1 – Project Description & Terms of Reference

Terreco Environmental have been appointed as independent Environmental Assessment Practitioner (EAP) by the project proponent, Sherpa Trading (Pty) Ltd [SKG Properties], to apply for Environmental Authorization (EA), including a Basic Assessment Report (BAR) and Environmental Management Programme report (EMPr), to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (EC DEDEAT) for the proposed *Bengal Heights Residential Development*, Erf RE/2368, Amalinda, East London, Buffalo City Metropolitan Municipality (BCMM), Eastern Cape. The proposed development is situated at general development co-ordinate S33°00'03.6"; E27°52'08.3", with the study site comprising an approximate 14ha area, located in the urban, largely developed suburb of Amalinda. The study site is directly accessible via the existing road network and bordered to the south-west by a tributary of the Mzonyana River. The development proposal centres on the establishment of 158 residential units, including relevant services; potable and storm water, sewerage, electricity, telecommunications and access roads. The development application will include necessary subdivision and rezoning applications.

ArchaeoMaps was appointed by Terreco Environmental 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 current cultural, historical and archaeological characteristics and the general sensitivity of these components to change;
- Describe the likely scope, scale and significance of impacts (positive and negative) on the cultural, historical and archaeological components 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 1) construction and 2) operation or use phases to avoid / reduce the significance of the identified related impacts. Mitigation measures could also be design recommendations as well as operational controls, monitoring programmes, Phase 2 mitigation, management procedures and the like;
- Broadly describe the implications of a 'No-Go' option;
- Broadly comment on the cumulative cultural, historical and archaeological impacts (positive or negative) associated with the 1) construction and 2) operation and use phases of the proposal;
- Confirm if there are any outright 'fatal flaws' to the establishment of the proposal at its current location from a cultural, historical and archaeological perspective.



Map 1: General locality of the proposed Bengal Heights Residential Development, situated in Amalinda, East London, BCMM, Eastern Cape



Map 2: Close-up of the proposed Bengal Heights Residential Development study site, Amalinda, East London, BCMM, Eastern Cape



Figure 1: Layout plan – Bengal Heights Residential Development, Amalinda, East London (courtesy Terreco Environmental)



Map 3: Locality of the Bengal Heights Residential Development, Amalinda, East London [1: 50,000 Map Ref – 3227DD & 3327BB]

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 proposed *Bengal Heights Residential Development*, Erf RE/2368, Amalinda, East London, BCMM, 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)(a), 38(1)(c)(i) and 38(1)(d). This report is submitted in (partial) fulfillment 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 300 m in length;
b)	the construction of a bridge or similar structure exceeding 50 m in length;
c)	any development or other activity which will change the character of a site –
	i. exceeding 5 000 m² in extent; or
	ii. involving three or more existing erven or subdivisions thereof; or
	iii. involving three or more erven or subdivisions thereof which have been consolidated within the past five years; or
	iv. the costs which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
d)	the rezoning of a site exceeding 10 000 m² in extent; or
e)	any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,
	must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Table 1: Extracts 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 and basic cultural landscapes or 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 Minimum Standard requirements for Phase 1 AIA reports as stipulated by SAHRA (2007).

The Phase 1 AIA was done with cognizance to current heritage documentation pertaining to the *Bengal Heights Residential Development*, referenced as:

- o Galimberti *et. al.* 2016. (Cedar Tower Services). *Heritage Screener – Bengal Heights Residential Development, East London.*

Recommendations included in the Heritage Screener report states (Galimberti *et. al.* 2016):

'Recommendation by CTS Heritage Specialist: (Type 2) The heritage resources and the area proposed for development are only partially recorded – it is recommended that:

- *An AIA should be conducted with a focus on the possible presence of graves and stone terracing.*
- *A Palaeo Chance Find Procedure should be included in the EMPr and regular inspection by a palaeontologist of newly-cut mudrock within the Middleton Formation be conducted.'*

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:

- The pre-feasibility assessment is based on the Appendices A and B introductory archaeological literature as well as general 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 the SAHRA database on declared Provincial Heritage Sites (PHS) – Eastern Cape. The study excludes consultation of museum and university databases.
- The field assessment was done over a 1 day period (2016-03-10) with fieldwork conducted by the author. The assessment was done by foot and limited to a Phase 1 surface survey. GPS co-ordinates were taken with a Garmin Montana 650 (Datum: WGS84). Photographic documentation was done with a Pentax K20D camera. A combination of Garmap and Google Earth software was used in the display of spatial information.
- The field assessment was conducted across the total of the study site, with notable limitations being thick vegetation cover characterizing the site. Cognizance need to be taken of the nature of archaeological and cultural heritage resources, with their primary context being a sub-surface context. Archaeological and cultural heritage resources will be encountered during the course of development, more specifically during vegetation clearing, trenching and excavation phases of development (See Appendix C: ‘Heritage Protocol for Incidental Finds during the Construction Phase’).

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 or desktop studies, routinely coined with field assessments in order to locate, describe and assign a heritage site significance rating to identified resources that may be impacted by development. The aim of a Phase 1 HIA 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 declaration, monitoring, mitigation (Phase 2 HIA), or destruction.
- **Phase 2 HIA** – Phase 2 HIAs are as a norm required where heritage resources of such significance has 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 were done according to the combined NHRA 1999, Section 7(1) and SAHRA (2007) system.

SAHRA Archaeological and Cultural Heritage Site Significance Assessment			
Site Significance	Field Rating	Grade	Recommended Mitigation
High Significance	National Significance	Grade I	Site conservation / Site development
High Significance	Provincial Significance	Grade II	Site conservation / Site development
High Significance	Local Significance	Grade III-A	Site conservation or extensive mitigation prior to development / destruction
High Significance	Local Significance	Grade III-B	Site conservation or extensive mitigation prior to development / destruction
High / Medium Significance	Generally Protected A	Grade IV-A	Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B	Grade IV-B	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 sampling, monitoring or no archaeological 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 a basic introductory literature assessment of South African archaeology (See Appendices A and B) and background heritage database research, the probability of archaeological and cultural heritage resources situated on or in direct proximity to the *Bengal Heights Residential Development* study site can briefly be described as:

Archaeological and Basic Cultural Heritage Probability Assessment – Bengal Heights Residential Development, Erf RE/2368, Amalinda, East London, BCMM, EC			
Primary Type / Period	Sub-Period	Sub-Period Type Site	Probability
EARLY HOMININ / HOMINID	-	-	None-Low
	Graves / Human remains: High scientific significance		
STONE AGE	Earlier Stone Age (ESA)		None-Low
	Middle Stone Age (MSA)		None-Low
	Later Stone Age (LSA)		Low
		Rock Art	None
		Shell Middens	Medium
	Graves / Human remains: ESA & MSA – High scientific significance; LSA – High scientific & social significance		
IRON AGE	Early Iron Age (EIA)		None-Low
	Middle Iron Age (MIA)		None
	Later Iron Age (LIA)		Medium
	Graves & Human remains: EIA – High scientific & medium social significance; MIA & LIA: High scientific & social significance		
COLONIAL PERIOD	Colonial Period		High
		LSA – Colonial Period Contact	None-Low
		LIA – Colonial Period Contact	Medium
		Industrial Revolution	Low
		Apartheid & Struggle	Low-Medium
	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

Two archaeological Cultural Resources Management (CRM) reports are recorded in the SAHRA 2009 Mapping Project Database (MPD), situated within an approximate 5km radius from the proposed *Bengal Heights Residential Development* study site, listed as:

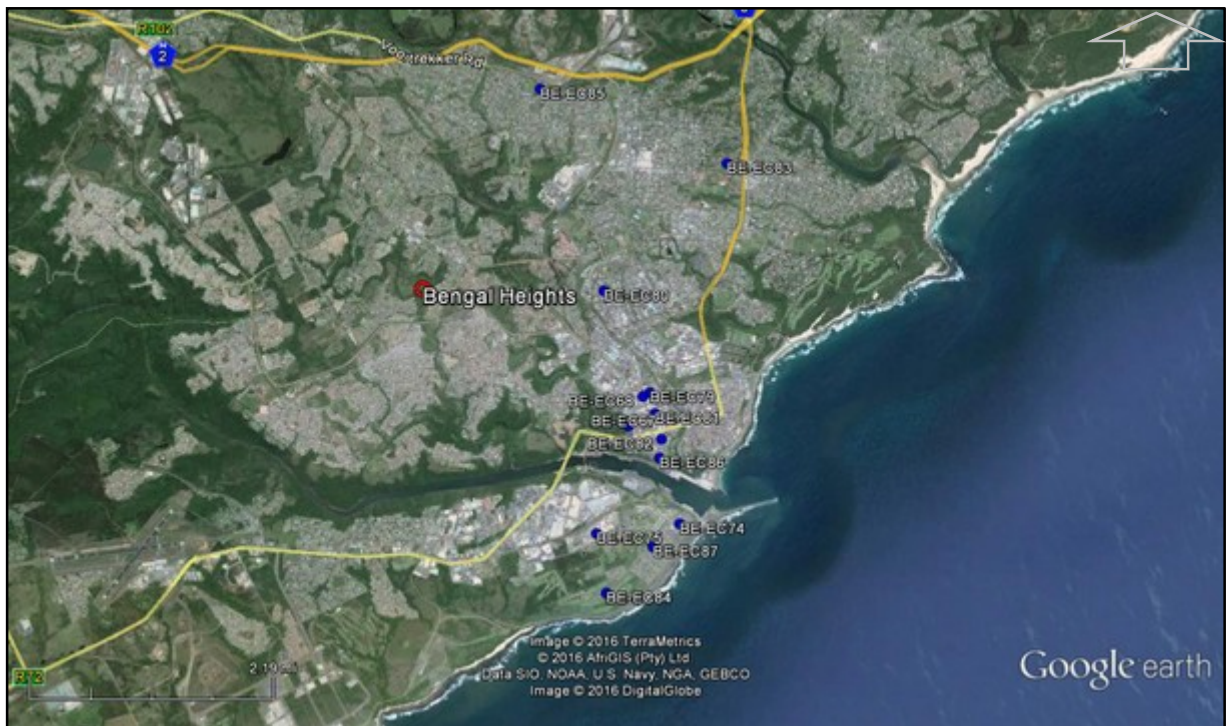
- o Van Ryneveld, K. 2008. (ArchaeoMaps). *Phase 1 Archaeological Impact Assessment: Industrial Development, Erven 17532 & 49336, Orange Grove, East London, Eastern Cape, South Africa.*
- o Webley, L.E. & Vernon, G. 2008. (Albany Museum). *Phase 1 Heritage Impact Assessment: The Construction of a Dual Carriageway linking Fitzpatrick Road and Currie Street at the ‘Sleeper Site’, Erf 15835, Buffalo City, Eastern Cape.*

Subsequent to compilation of the SAHRA 2009 MPD, a number of additional SAHRIS cases have been recorded with study sites situated within the approximate 5km radius from the proposed *Bengal Heights Residential Development* study site, with associated archaeological CRM reports listed as:

- o Anderson, G. 2009. (Umlando). *Heritage Survey of the Marine Aquaculture Zone, East London Industrial Development Zone, EIA References AR/7/F/1(e), 1(p)/1/09 & AR/7/F/1(e), 1(p)/2/09: DEDEA, East London.*
- o Anderson, G. 2013. (Umlando). *Heritage Survey of the East London IDZ Photovoltaic Facility, Eastern Cape.*
- o Binneman, J. & Webley, L. 1996. (Albany Museum). *Proposed Eastern Cape Zinc and Phosphoric Acid Project: Baseline Report: Sensitivity of Cultural Resources.*
- o Philip, L. 2015. (National Museum Bloemfontein). *Archaeological Impact Assessment (AIA) (Part 2 of HIA) for the Proposed Rehabilitation and Refurbishment of the Existing Latimer’s Landing Jetty at the Port of East London.*

- Van Ryneveld, K. 2009. (ArchaeoMaps). *Phase 1 Archaeological Impact Assessment – Queenspark Substation and Powerline, East London, Eastern Cape, South Africa.*
- Van Ryneveld, K. 2010. (ArchaeoMaps). *Addendum to the Phase 1 Archaeological Impact Assessment – Queenspark Substation and Powerline, East London, Eastern Cape, South Africa.*
- Van Ryneveld, K. 2012. (ArchaeoMaps). *Phase 1 Archaeological Impact Assessment – Oxford Harbor View Development, Erven 1829, 1830, 2382, 2383, 2385, 2388 and 2389, East London, Buffalo City Metropolitan Municipality, Eastern Cape.*
- Van Ryneveld, K. 2014a. (ArchaeoMaps). *Phase 1 Archaeological Impact Assessment – Calypso Heights Commercial and Residential Development, off Woolwash Road, Amalinda, East London, BCMM, Eastern Cape.*
- Van Ryneveld, K. 2014b. (ArchaeoMaps). *Phase 1 Archaeological Impact Assessment: Final Report – Buffalo Bridge Replacement, East London, Eastern Cape, South Africa.*
- Van Ryneveld, K. 2015. (ArchaeoMaps). *Phase 1 Archaeological Impact Assessment – Haven Hills Cemetery Expansion, Erven 1829, 1830, 2382, 2383, 2385, 2388 and 2389, East London, Buffalo City Metropolitan Municipality, Eastern Cape.*

2.2.3) SAHRA Provincial Heritage Site Database – Eastern Cape



Map 4: Spatial distribution of geo-referenced PHS in the SAHRA – East London database in relation to the *Bengal Heights Residential Development* study site, Amalinda, East London

Georeferenced declared Provincial Heritage Sites (PHS) recorded in the SAHRA – Eastern Cape database (https://en.wikipedia.org/wiki/List_of_Heritage_Sites_in_Eastern_Cape) and situated within the approximate 5km radius from the proposed *Bengal Heights Residential Development* study site are clustered in the East London Central Business District (CBD) and harbor area. No georeferenced declared PHS is situated within 2km from the Bengal Heights study site.

[For a list of declared PHS situated within the rough 5km radius from the *Bengal Heights Residential Development* study site see Galimberti et. al. 2016].

2.2.4) General Discussion

Though Earlier (ESA) and Middle Stone Age (MSA) sites and occurrences have been reported on in research literature from the greater East London area, no such sites have been recorded in archaeological CRM reports consulted. The primary reported on Stone Age site remain Later Stone Age (LSA) shell midden sites: Binneman & Webley (1996) reported on a number of LSA shell midden sites situated just above the high water mark, identified during their Zinc and Phosphoric Acid Project assessment. Anderson (2009) recorded 7 shell midden sites at the Marine Aquaculture study site, with sites in cases also containing both faunal and lithic remains together with a probable hearth at one of these. Further LSA shell midden sites were identified at the IDZ Photovoltaic study site, with 2 broken grinding stones associated with midden remains (Anderson 2013). A small shell scatter identified approximately 2.5km along the banks of the Buffalo River represents the furthest inland identified midden site to date (Van Ryneveld 2009, 2010).

Records of Iron Age heritage sites are scant in existing archaeological CRM reports of East London, but the Iron Age history of the greater terrain remain significant: Canasta Place (AD700-1,000), situated approximately 25km west of East London is the southernmost Early Iron Age (EIA,) site scientifically excavated and reported on to date (Nogwaza 1994). The Later Iron Age (LIA) history of East London is directly tied to the Xhosa, more specifically the AmaRharhabe tribe of the House of Phalo, with the Rharhabe known to have generally settled between the Keiskamma and Buffalo Rivers (<https://en.wikipedia.org/wiki/Rharhabe>). A LIA / contemporary cemetery (or burial ground) was reported on from Haven Hills, located approximately 1.3km south-west of the *Bengal Heights Residential Development* study site (van Ryneveld 2015).

The Colonial Period history of East London is well represented in archaeological CRM reports: East London was founded in 1836 by Lieutenant John Bailie of the Royal Navy. The town grew around the only river port in South Africa, originally named Port Rex and was declared a city in 1914 (https://en.wikipedia.org/wiki/East_London,_Eastern_Cape). Early Colonial Period stone walling, a staircase leading down to the harbor, a bunker, probably dating to the Second World War (WWII) and an old reservoir was reported on during the Oxford Harbour View assessment (Van Ryneveld 2012). Still in the immediate vicinity of the harbor, Phillip (2015) reported on the Latimer's Landing jetty, dating to 1898 and believed to be the only wooden surviving jetty of its time, with the Buffalo Bridge, looking onto Latimer's Landing and the jetty, the only double decker road-rail bridge in South Africa, dating to 1933 (Van Ryneveld 2014b). Further reported sites in the harbor and surrounds include the East Bank tunnel, three Colonial Period buildings, a barracks, a smaller cement bridge and the Queen Elizabeth Memorial (van Ryneveld 2014b). The 'Sleepers Site' assessment by Webley & Vernon (2008) revealed components of the said property dating back to 1874, with a further stone building dating to 1897 recorded. In addition they reported on a number of buildings, today situated in the East London CBD dating back to 1935, but pertinently comment on the fact that 1972 photographic documentation already indicate significant impact on these structures (Webley & Vernon 2008). Two further Colonial Period bridges and early infrastructure were reported on along the Queenspark power line alignment (Van Ryneveld 2009, 2010).

2.3.1) Field Assessment Results

Infrequently scattered lithic artefacts were present at the *Bengal Heights Residential Development* study site. Artefact densities are however too low to ascribe an artefact ratio (artefacts: m²), with less than 10 artefacts having been identified during the field assessment. Low artefact densities do not allow an industry description; based on artefact size a general Middle Stone Age (MSA) is inferred. Artefacts seem to be surface restricted in an apparent secondary context, with exposed sections not having revealed an anthropogenic member. The Stone Age observation is of no archaeological significance.

A high number of Later Iron Age (LIA) livestock enclosure feature remains, scattered across the study site are visible on earlier aerial imagery (Google Earth 2002), first commented on by Galimberti *et. al.* (2016). These features could not be located during the field assessment; thick vegetation hampered assessment to a degree that the Site BHR-S1 site description is based on aerial imagery only.

- Traditional, un-aculturated Later Iron Age remains, though rarely identified and reported on, specifically from East London itself, is not unexpected: The Battle of Amalinda [Amalinde] being one that attests to the significance of East London in Later Iron Age history, often overshadowed in literature by its Colonial Period past. Herbst & Kopke (2006) provides a brief introduction to the Battle of Amalinde: ‘In October 1818, the long standing rivalry between the senior Chief of Xhosaland, Ngqika, and his uncle, Ndlambe, erupted in a battle of epic proportions that was to go down in Xhosa tradition as the Battle of Amalinde. This exceptional battle lasted from midday to nightfall, and was fought with such unusual ferocity that it takes a special place in the history of Xhosa warfare. It resulted in the defeat of Ngqika and the death of 500 of his followers. Though events surrounding the battle are well documented and various authors have described it, many details are yet unknown. Where was the actual site? What were the numbers involved in the battle and what methods of fighting were used? How many were killed? What was it that burned on the battlefield? There are stories about the killing of survivors by firelight...’ Herbst & Kopke (2006) further comment on the fact that Ngqika travelled more than 45km to arrive at the battle site and Ndlambe roughly 25km, from his ‘Great Place’ in what is now known as the Mount Coke area. It is estimated that 5,000-10,000 Xhosa warriors took part in the battle. With reference to the actual site of the battle, it seems unlikely that the battle took place at the ‘Amalinde’; with the old Isi-Xhosa word ‘i-linde’ or ‘umlinde’, meaning grave mound or furrow – ‘Amalinde’ thus in the past used to describe various of these grave mounds or furrows, and within tradition an unlikely locale to have been chosen, or approved, for a battle and reasonably inferred to imply ‘in the vicinity of the Amalinde’.

2.3.1.1) Site BHR-S1: Later Iron Age – Homestead Remains (Livestock enclosures): S33°00’09.5”; E27°52’07.9”

Aerially identifiable Site BHR-S1 site features are scattered across the *Bengal Heights Residential Development* study site, mainly in 2 clusters being a southern cluster, labelled Site BHR-S1.1 and a northern cluster, situated north of the stream, and labelled Site BHR-S1.2. Spatial distribution of features is typical of a Later Iron Age (LIA) homestead’s livestock enclosure clusters, with the extent thereof indicative of a notably prominent ‘kraal’. The sheer number of livestock features indicates significant wealth of the homestead Head; albeit unlikely to a level of these being ascribed to the ‘kraal’ of a Chief (Kgosi) or under-chief (Kgosani). Spatial distribution and enclosure shape spells of little Western acculturated elements.

Notably missing from the aerially identifiable features is living and cooking quarters. It may be that these were situated north, north-west of the Site BHR-S1.1 livestock area, in the open space south of the stream, or even north thereof, closer associated with the demarcated Site BHR-S1.2 area. However, associated living quarters may well also have been situated adjacent to the study site, on areas now impacted to such an extent that they have been destroyed by development.

LIA tradition cautions against the possibility of graves being present at the site: Men would typically have been buried in the ‘male’ area, directly associated with cattle as wealth – in a central cattle byre in accordance with the Central Cattle Pattern (CCP), with deviations thereof notable in Xhosa settlement pattern and including burial adjacent to a cattle byre, which may include the Head of the homestead and the senior wife, in proximity to cattle byres and even in the walls thereof. Women were typically buried in the ‘female’ area closely associated with residential huts or hut clusters, in proximity to the huts and even in middens. Children of various ages would have been buried according to their age group, including infants and toddlers on occasion in the hut itself.

- **Site Significance & Recommendations:** With thick vegetation having literally nullified visibility on site it remain impossible to further describe Site BHR-S1. The site is however ascribed a SAHRA / EC PHRA preliminary *High Significance* and a *Generally Protected IV-A Field Rating*. Development will need to go hand-in-hand with an archaeological Phase 2 mitigation program to address various aspects of Site BHR-S1:
 - 1) *Vegetation Clearing, Site Recording and Final Recommendations:* Vegetation clearing should preferably be done by hand or should follow a low-keyed mechanical excavator clearance program. An archaeologist should be on site at all times during vegetation clearing. Once vegetation is cleared it should be possible to further define the preliminary layout sketch of Site BHR-S1 with actual on site detail, including amongst others the presence of stone walling, which will heighten the site recording and research potential of the site. In the event of livestock enclosures having been built from earth and organic material only (pole and branch) it may not be possible to add significantly to the layout sketch. Effort should be done to locate the residential and cooking areas, or verify their absence from the study site. Theoretically middens should be present on site, the conservation of which would be directly dependable on past post-depositional processes. Considering site size, indicative of fairly significant temporal depth and occupation, graves can reasonably be expected.

Careful vegetation clearing associated with an archaeological Phase 2 mitigation program should result in an actual site description, addressing the true heritage site significance of Site BHR-S1, including further recommendations regarding monitoring and mitigation during the construction phase of development.

1a) *Middens:* In the event of middens being identified during the archaeological Phase 2 mitigation program coinciding with vegetation clearing, it would be necessary to further test these (Phase 2 mitigation / rescue excavation). A Phase 2 test pit / excavation permit would be necessary and the process associated therewith; excavation (data collection), documentation and analysis of all excavated material be followed in order to further interpretation of the site. As, and if conditions allow, samples should be submitted to a suitable laboratory for dating.

- 1b) *Graves:* The probable presence of graves remains a concern with reference to development impact.
- It is recommended that the purported presence of graves be also addressed in the Public Participation Process (PPP), aiming to gain further information on the knowledge of, apparent numbers and locales of graves. However, considering inferred site age coined with the fact that contemporary beneficiaries of houses in the nearby vicinity may not necessarily be ancestrally connected to the general area and more specifically Site BHR-S1, relevant information may not necessarily be forthcoming from the PPP procedure.
 - Should any graves be identified during the archaeological Phase 2 mitigation program or encountered during the course of development, the exhumation and reinterment or permanent conservation in an accredited EC PHRA repository thereof would be necessary. It is advised that the EC PHRA comments on the suitability of such exhumation as part of the archaeological Phase 2 mitigation program, based on the fact that graves / skeletal remains in the case of Site BHR-S1 would form an integral part of the identified archaeological site, or if the process for Phase 2 grave relocation should be followed, independent from the archaeological Phase 2 mitigation program (with reference also to the varying EC PHRA permit application and procedure requirements).

2.3.2) Conclusion

The proposed *Bengal Heights Residential Development* will directly impact on identified Site BHR-S1. Site BHR-S1 is not visible on the surface of the site; the result of thick vegetation cover, but reasonably inferred also overburden with reference to anticipated site age. What is recorded in this report for purposes of a site description and associated recommendations for development is based on earlier aerial imagery only. Site features are ample and cluttered across the proposed study site, with further significant site aspects reasonably inferred to be present sub-surface.

With reference to development, heritage legislation and processes accommodate 2 options of heritage management with reference to the Site BHR-S1 scenario:

- 1) *Heritage site conservation*: With reference to site conservation, the distribution of site features associated with inferred further significant sub-surface site aspects does not allow much potential with reference to recommendations regarding amendments to development layout to conserve Site BHR-S1 within the development framework. Site conservation in this case would effectively imply a ‘No-Go’ option.
- 2) *Archaeological Phase 2 mitigation to coincide with development*: An archaeological Phase 2 mitigation program should coincide with development to ensure responsible mitigation of Site BHR-S1 within the development framework. The archaeological program should focus on the recording of all site features during vegetation clearing with test pit excavations in suitable areas to collect relevant information regarding the site. Any graves or skeletal remains encountered during the archaeological Phase 2 mitigation program or the course of construction should be exhumed and reinterred or permanently conserved at an accredited EC PHRA repository. Archaeological work should be done under relevant permits from the EC PHRA and in accordance with EC PHRA procedures and Minimum Standards (NHRA 1999, Regulations 2000; SAHRA 2007). The developer is reminded that despite the fact that procedures exist for the mitigation of heritage sites for development purposes, the implementation of such a plan, specifically with reference to the size, complexities of, and the number of unknown variables relating to Site BHR-S1, will be costly as well as time consuming.

From an archaeological and cultural heritage perspective the proposed *Bengal Heights Residential Development* can be described as of definite impact on identified LIA site, Site BHR-S1. Heritage management options, conservation or Phase 2 mitigation, directly affect development:

- In the case of Site BHR-S1, heritage site conservation, with cognizance to aerially identifiable site extent associated with the presence of inferred further significant sub-surface site aspects, does not allow much potential with reference to recommendations regarding amendments to development layout to conserve Site BHR-S1 within the development framework. Site conservation in this case would effectively imply a ‘No-Go’ option.
- An archaeological Phase 2 mitigation program can coincide with development, ensuring suitable recording, rescue excavation of archaeological deposits and exhumation of graves if identified or encountered during the course of construction. With reference to the SAHRA / EC PHRA heritage site significance rating of Site BHR-S1, associated with current heritage procedures for Phase 2 mitigation, the presence of Site BHR-S1 at the study site does not necessarily imply a ‘fatal flaw’. Phase 2 mitigation hold the potential to gather significant scientific information on identified heritage sites, not possible when sites are merely conserved. Once adequate mitigation has been done (during the vegetation clearing and construction phases), heritage is unlikely, by virtue of the prescribed Phase 2 mitigation process, to pose further concerns during the operational phase of development. The developer will however need to consider cost and timeframes associated with archaeological Phase 2 mitigation.



Map 5: Map of the proposed Bengal Heights Residential Development, indicating Site BHR-S1 [BHR-S1.1 and BHR-S1.2] where former Later Iron Age features are visible on earlier aerial imagery

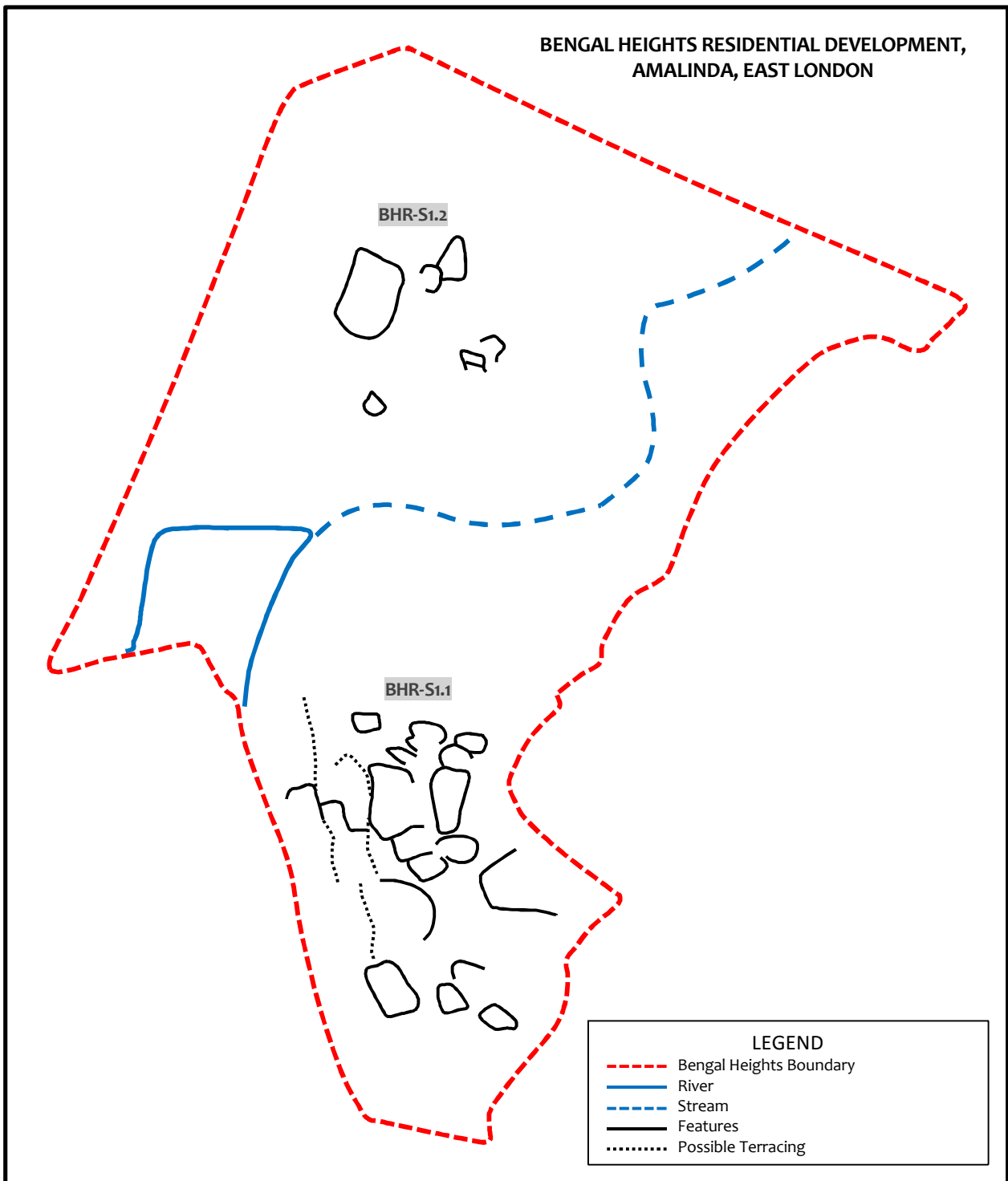


Figure 2: Bengal Heights: Layout sketch – Site BHR-S1



Plate 1: View over the southern part of the Bengal Heights study site



Plate 3: A Stone Age lithic artefact found near the stream bed



Plate 2: Thick vegetation characterizing the study site



Plate 4: View from across the stream bed towards the northern portion of the study site



Plate 5: Municipal infrastructure line route crossing the stream bed



Plate 6: Slight clearings in vegetation may in cases be indicative of former anthropogenic feature impact

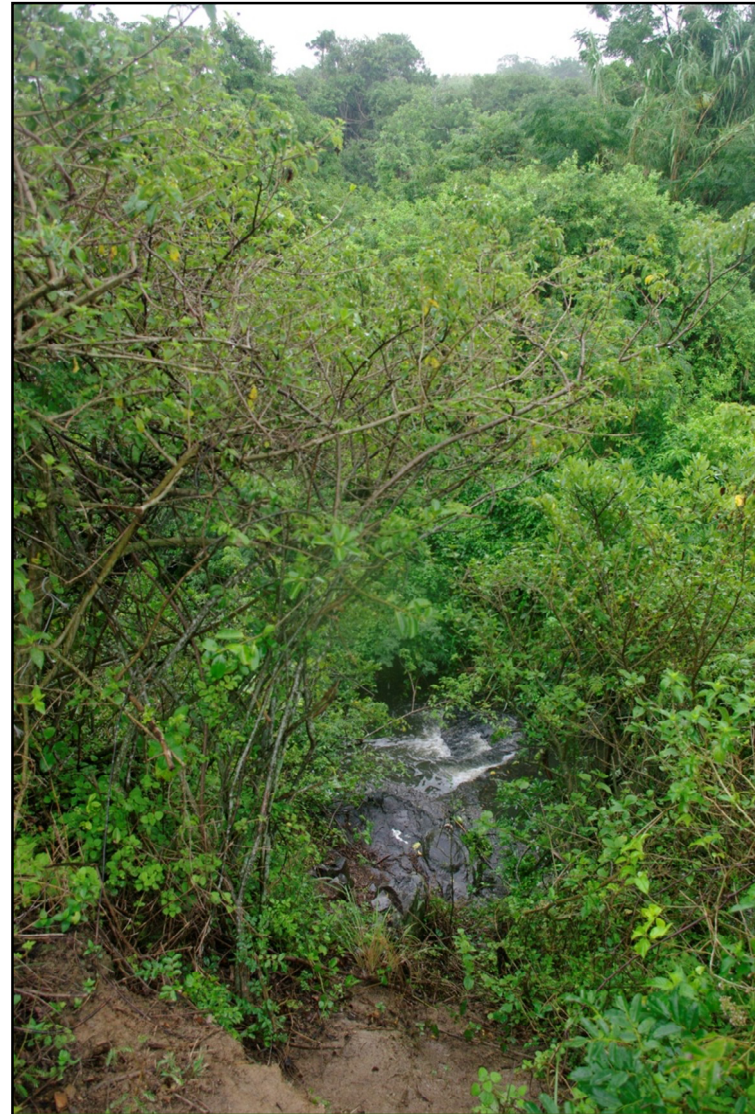


Plate 7: Steep slopes of the stream bed were thickly vegetated

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 or 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 farther 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 50m 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 a) Positive or b) 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 destroyed (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 unmitigatable (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: Bengal Heights Residential Development													
Potential Impacts	Aspect / Site:	Overall nature	Type	Spatial extent	Duration	Severity	Reversibility	Irreplaceable loss	Probability	MITIGATION POTENTIAL	IMPACT SIGNIFICANCE		MITIGATION MEASURES
											Without mitigation	With mitigation	
	BHR-S1												
Construction Phase		N (-)	Direct	Site	Short-term	High (-)	Partly reversible	Resource cannot be replaced	Definite	Moderate or partially mitigatable	Substantial	Moderate	Archaeological Phase 2 mitigation program
Operational phase		P (+)	Cumulative	Site	N/A	Low (+)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 4: Environmental Impact Assessment Rating – Bengal Heights Residential Development

4 – Recommendations

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that development of the *Bengal Heights Residential Development*, Erf RE/2368, Amalinda, East London, BCMM, Eastern Cape, proceed, provided the developer comply with recommended archaeological Phase 2 mitigation, or that Site BHR-S1 be conserved, effectively implying a ‘No-Go’ development option.

From an archaeological and cultural heritage perspective the proposed *Bengal Heights Residential Development* can be described as of definite impact on identified Later Iron Age (LIA) site, Site BHR-S1. Heritage management options, conservation or Phase 2 mitigation, directly affect development:

- In the case of Site BHR-S1, heritage site conservation, with cognizance to aerially identifiable site extent associated with the presence of inferred further significant sub-surface site aspects, does not allow much potential with reference to recommendations regarding amendments to development layout to conserve Site BHR-S1 within the development framework. Site conservation in this case would effectively imply a ‘No-Go’ option.
- An archaeological Phase 2 mitigation program can coincide with development, ensuring suitable recording, rescue excavation of archaeological deposits and exhumation of graves if identified or encountered during the course of construction. With reference to the SAHRA / EC PHRA heritage site significance rating of Site BHR-S1, associated with current heritage procedures for Phase 2 mitigation, the presence of Site BHR-S1 at the study site does not necessarily imply a ‘fatal flaw’. Phase 2 mitigation hold the potential to gather significant scientific information on identified heritage sites, not possible when sites are merely conserved. Once adequate mitigation has been done (during the vegetation clearing and construction phases), heritage is unlikely, by virtue of the prescribed Phase 2 mitigation process, to pose further concerns during the operational phase of development. The developer will however need to consider cost and timeframes associated with archaeological Phase 2 mitigation.

Heritage Compliance Summary – Bengal Heights Residential Development, Erf RE/2368, Amalinda, East London, BCMM, EC			
Map Code	Site	Co-ordinates	Recommendations
Bengal Heights Residential Development (S33°00'03.6"; E27°52'08.3")			
BHR-S1	Later Iron Age – Homestead Remains (Livestock enclosures)	S33°00'09.5"; E27°52'07.9"	Permanent conservation (‘No-Go’ development option); OR Archaeological Phase 2 mitigation program to coincide with the vegetation clearing and construction phases of development.

Table 5: Summarized heritage compliance requirements for the proposed *Bengal Heights Residential Development*, Erf RE/2368, Amalinda, East London, BCMM, Eastern Cape

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.

Notes:

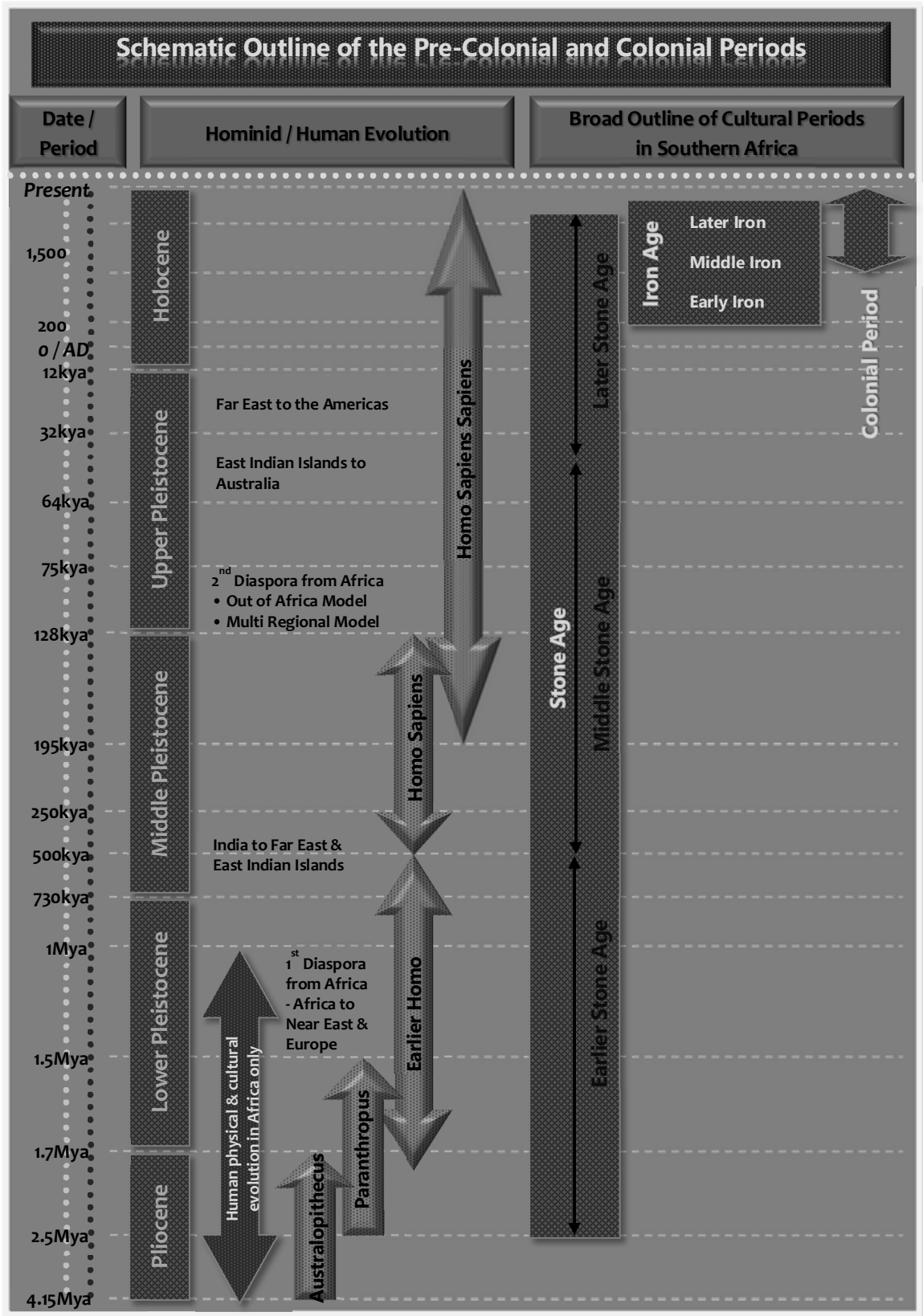
- Should any registered Interested & Affected Party (I&AP) wish to be consulted in terms of Section 38(3)(e) of the NHRA 1999 (Socio-cultural consultation / SAHRA SIA) it is recommended that the developer / EAP ensures that the consultation be prioritized within the timeframe of the environmental assessment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

Simplified guide to the identification of archaeological sites:

- ❖ **Stone Age** – Knapped stone display flakes 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 in length or larger. Typical MSA types include blade-like or triangular shaped stones often associated with randomly shaped stones that display use or edge-wear around the rim of the artefact. LSA types may well be small, informally shaped stones, often associated with bone, pieces of charcoal and in cases ceramic shards.
 - Rock Art** – Includes both painted and engraves 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 often identified by either mound or depression hollows. Typical artefacts include ceramic remains, farming equipment, beads and trade goods, metal artefacts (including jewelry) 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 bottles, 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 o.)
AIA	: Archaeological Impact Assessment
AMAFA	: Amafa aKwaZulu-Natali
ASAPA	: Association of Southern African Professional Archaeologists
BAR	: Basic Assessment Report
BC	: Before the Birth of Christ (the year o.)
BCE	: Before the Common Era (the year o.)
BIA	: Basic Impact Assessment
BID	: Background Information Document
BP	: Before the Present (the year 1950.)
cm	: Centimeter
CRM	: Cultural Resources Management
DAC	: Department of Arts and Culture
DEAT	: Department of Environmental Affairs and Tourism
DEDEAT	: Department of Economic Development, Environmental Affairs and Tourism
DME	: Department of Minerals and Energy
DSACR	: Department of Sport, Arts, Culture and Recreation
ECO	: Environmental Control Officer
EAP	: Environmental Assessment Practitioner
EC PHRA	: Eastern Cape Provincial Heritage Resources Authority
EIA	: Environmental Impact Assessment
EIA ₁	: Early Iron Age
EMPr	: Environmental Management Plan report
ESA	: Earlier Stone Age
ha	: Hectare
HIA	: Heritage Impact Assessment
HWC	: Heritage Western Cape
HCMP	: Heritage Conservation Management Plan
ICOMOS	: International Council on Monuments and Sites
IEM	: Integrated Environmental Management
km	: Kilometer
Kya	: Thousands of years ago
LIA	: Later Iron Age
LSA	: Later Stone Age
m	: Meter
m ²	: Square Meter
MIA	: Middle Iron Age
mm	: Millimeter
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
ScIA	: Socio-cultural Impact Assessment
SIA	: Social Impact Assessment

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Introduction to the Archaeology of South Africa

Archaeologically the southern African cultural environment is roughly divided into the Stone Age, the Iron Age and the Colonial Period, including its subsequent Industrial component. This cultural division has a rough temporal association beginning with the Stone Age, followed by the Iron Age and the Colonial Period. The division is based on the identified primary technology used. The hunter-gatherer lifestyle of the Stone Age is identified in the archaeological record through stone being the primary raw material used to produce tools. Iron Age people, known for their skill to work iron and other metal, also practiced agriculture and animal husbandry. Kingdoms and civilizations associated with the Iron Age are indicative of a complex social hierarchy. The Colonial Period is marked by the advent of writing, in southern Africa primarily associated with the first European travelers (Mitchell 2002).

During the latter part of the Later Stone Age (LSA) hunter-gatherers shared their cultural landscape with both pastoralists and Iron Age people, while the advent of the Colonial Period in South Africa is marked by a complex cultural mosaic of people; including LSA hunter-gatherers, pastoralists, Later Iron Age farming communities and Colonial occupation.

1) Early Hominin Evolution

DNA studies indicate that humans and chimpanzees shared a common ancestor between 6-8Mya (Sibley & Ahlquist 1984). By 4Mya, based on fossil evidence from Ethiopia and Kenya, hominins (humans and their immediate fossil ancestors and relatives) had already evolved. The earliest fossils are ascribed to *Ardipithecus ramidus* (4.4Mya), succeeded by *Australopithecus anamensis* (4.2-3.9Mya). These fossils are inferred to lie at the base from which all other hominins evolved (Leakey et al. 1995; White et al. 1994).

In South Africa the later hominins are classed into 3 groups or distinct genera; *Australopithecus* (gracile australopithecines), *Paranthropus* (robust australopithecines) and *Homo*. South Africa has 3 major hominin sites: Taung in the North-West Province, where Raymond Dart identified the first *Australopithecus* fossil in 1924 (Dart 1925); The Cradle of Humankind (Sterkfontein Valley) sites in Gauteng, the most prolific hominin locality in the world for the period dating 3.5-1.5Mya which have yielded numerous *Australopithecus*, *Paranthropus* and limited *Homo* fossils (Keyser et al. 2000; Tobias 2000); and Makapansgat in the Limpopo Province, where several more specimens believed to be older than most of the Cradle specimens were discovered (Klein 1999).

A. africanus, represented at all 3 sites are believed to have been present on the South African landscape from about 3Mya. From approximately 2.8Mya they shared, at least in the Cradle area, the landscape with *P. robustus* and from roughly 2.3Mya with early forms of *Homo* (Clarke 1999). Global climatic cooling around 2.5Mya may have stimulated a burst of species turnover amongst hominins (Vrba 1992); the approximate contemporary appearance of the first stone tools suggests that this was a critical stage in human evolution. But exactly which early hominin population is to be accredited as the ancestor of *Homo* remains elusive.

H. ergaster is present in the African palaeo-anthropological record from around 1.8Mya and shortly thereafter the first exodus from Africa is evidenced by *H. erectus* specimens from China, Indonesia and even Europe (Klein 1999).

2) The Stone Age

2.1) The Earlier Stone Age

In South Africa the only Earlier Stone Age (ESA) Oldowan lithic assemblage comes from Sterkfontein Cave. The predominant quartz assemblage is technologically very simple, highly informal and inferred to comprise exclusively of multi-purpose tools (Kuman et al. 1997). The latter part of the ESA is characterized by the Acheulean Industrial Complex, present in the archaeological record from at least 1.5Mya. Both *H. ergaster* and *P. robustus* may be accredited with the production of these tools. The association between stone tools and increased access to meat and marrow supporting the greater dietary breadth of *Homo* may have been vital to *Homo's* evolutionary success; and the eventual extinction of the robust australopithecines (Klein 1999).

Probably the longest lasting artefact tradition ever created by hominins, the Acheulean is found from Cape Town to north-western Europe and India, occurring widely in South Africa. Despite the many sites it is still considered a 'prehistoric dark age' by many archaeologists, encompassing one of the most critical periods in human evolution; the transition from *H. ergaster* to archaic forms of *H. Sapiens* (Klein 1999).

The Acheulean industry is characterized by handaxes and cleavers as *folies directeurs* (signatory artefact types), in association with cores and flakes. Handaxes and cleavers were multi-purpose tools used to work both meat and plant matter (Binneman & Beaumont 1992). Later Acheulean flaking techniques involved a degree of core preparation that allowed a single large flake of predetermined shape and size to be produced. This *Victoria West technique* indicates an origin within the Acheulean for the *Levallois technique* of the Middle Stone Age (Noble & Davidson 1966). The lithic artefact component was supplemented by wood and other organic material (Deacon 1970).

2.2) The Middle Stone Age

The Middle Stone Age (MSA), dating from approximately 500kya to 40-27/23kya is interpreted as an intermediate technology between the Acheulean and the Later Stone Age (LSA) (Goodwin & van Riet Lowe 1929). The MSA is typologically characterized by the absence of handaxes and cleavers, the use of prepared core techniques and the production of blades, triangular and convergent flakes, with convergent dorsal scars and faceted striking platforms, often produced by means of the *Levallois technique* (Volman 1984). The widespread occurrence of MSA technology across Africa and its spread into much of Eurasia in Oxygen Isotope Stage (OIS) 7 is viewed as part of a process of population dispersal associated with both the ancestors of the later Neanderthals in Europe and anatomically modern humans in Africa (Foley & Lahr 1997).

After the riches offered by the Cradle sites and Makapansgat, southern Africa's Middle Pleistocene fossil record is comparatively poor. Early Middle Pleistocene fossil evidence suggests an archaic appearance and fossils are often assigned to *H. heidelbergensis* and *H. sapiens rhodesiensis* (Rightmire 1976). Modern looking remains, primarily from Border Cave (KwaZulu-Natal) and Klasies River Mouth (Eastern Cape) raised the possibility that anatomically modern humans had, by 120kya, originated south of the Sahara before spreading to other parts of the world (Brauer 1982; Stringer 1985). Subsequent studies of modern DNA indicated that African populations are genetically more diverse and probably older than those elsewhere (Cann *et al.* 1994). Combined, the fossil and genetic evidence underpins the so-called *Out of Africa 2* model (arguing that gene flow and natural selection led regional hominin populations along distinct evolutionary trajectories after *Homo*'s expansion from Africa in the Lower Pleistocene *Out of Africa 1* model) of modern human origins and the continuing debate as to whether it should be preferred to its *Multiregional* alternative (arguing that modern humans evolved more or less simultaneously right across the Old World) (Mellars & Stringer 1989; Aitken *et al.* 1993; Nitecki & Nitecki 1994).

Persuasive evidence of ritual activity or bodily decoration is evidenced by the widespread presence of red ochre at particularly MSA 2 sites (after Volman's 1984 MSA 1-4 model; Hensilwood & Sealy 1997), while evidence from Lion Cave, Swaziland, indicates that specularite may have been mined as early as 100kya (Beaumont 1973). Evidence for symbolic behavioral activity is largely absent; no evidence for rock art or formal burial practices exists.

2.3) The Later Stone Age

Artefacts characteristic of the Later Stone Age (LSA) appear in the archaeological record from 40/27-23kya and incorporates microlithic as well as macrolithic assemblages. Artefacts were produced by modern *H. sapien* or *H. sapien sapien*, who subsisted on a hunter-gatherer way of life (Deacon 1984; Mitchell 2002).

According to Deacon (1984) the LSA can temporally be divided into 4 broad units directly associated with climatic, technological and subsistence changes:

1. Late Pleistocene microlithic assemblages (40-12kya);
2. Terminal Pleistocene / early Holocene non-microlithic assemblages (12-8kya);
3. Holocene microlithic assemblages (8kya to the Historic Period); and
4. Holocene assemblages with pottery (2kya to the Historic Period) closely associated with the influx of pastoralist communities into South Africa (Mitchell 2002).

Elements of material culture characteristic of the LSA reflect modern behavior. Deacon (1984) summarizes these as:

1. Symbolic and representational art (paintings and engravings);
2. Items of personal adornment such as decorated ostrich eggshell, decorated bone tools and beads, pendants and amulets of ostrich eggshell, marine and freshwater shells;
3. Specialized hunting and fishing equipment in the form of bows and arrows, fish hooks and sinkers;
4. A greater variety of specialized tools including bone needles and awls and bone skin-working tools;
5. Specialized food gathering tools and containers such as bored stone digging stick weights, carrying bags of leather and netting, ostrich eggshell water containers, tortoiseshell bowls and scoops and later pottery and stone bowls;
6. Formal burial of the dead in graves (sometimes covered with painted stones or grindstones and accompanied by grave goods);
7. The miniaturization of selected stone tools linked to the practice of hafting for composite tools production; and
8. A characteristic range of specialized tools designed for making some of the items listed above.

➤ Rock Art

Rock Art is one of the most visible and informative components of South Africa's archaeological record. Research into LSA ethnography (as KhoiSan history) has revolutionized our understanding of both painted and engraved (petroglyph) images, resulting in a paradigm shift in Stone Age archaeology (Deacon & Dowson 2001). Paintings are concentrated in the Drakensberg / Maluti mountains, the eastern Free State, the Cape Fold Mountains, the Waterberg Plateau and the Soutpansberg mountains. Engravings on the other hand are found throughout the Karoo, the western Free State and North-West Province (Mitchell 2002). Both forms of LSA art drew upon a common stock of motifs, derived from widely shared beliefs and include a restricted range of naturalistically depicted animals, geometric imagery, human body postures and non-realistic combinations of human and animal figures (anthropomorphic figurines). LSA Rock Art is closely associated with spiritual or magical significance (Lewis-Williams & Dowson 1999).

Aside from LSA or KhoiSan Rock Art, thus art produced by both hunter-gatherer and pastoralist and agro-pastoralist groups, Rock Art produced by Iron Age populations are known to be present towards the north of the country.

➤ Shell Middens ('Strandloper' Cultures)

South Africa's nearly 3,000km coastline is dotted by thousands of shell middens, situated between the high water mark and approximately 5km inland, bearing witness to long-term exploitation of shellfish mainly over the past 12,000 years. These LSA shell middens are easily distinguishable from natural accumulations of shells and deposits can include bones of animals eaten such as shellfish, turtles and seabirds, crustaceans like crabs and crayfish and marine mammal remains of seals, dolphins and occasionally whales. Artefacts and hearth and cooking remains are often found in shell midden deposits. Evidence exist that fish were speared, collected by hand, reed baskets and by means of stone fish traps in tidal pools (Mitchell 2002).

Shell midden remains were in the past erroneously assigned to 'Strandloper cultures'. Deacon & Deacon (1999) explain that 'no biological or cultural group had exclusive rights to coastal resources.' Some LSA groups visited the coast periodically while others stayed year round and it is misleading to call them all by the same name. Two primary sources of archaeological enquiry serves to shed more light on the lifestyles of people who accumulated shell middens, one being the analysis of food remains in the middens itself and the other being the analysis of LSA human skeletal remains of people buried either in shell middens or within reasonable proximity to the coast.

Shell middens vary in character ranging from large sites tens of meters in extent and with considerable depositional depth to fairly small ephemeral collections, easily exposed and destroyed by shifting dune action. Shell middens are also found inland, along rivers where fresh water mussels occur. These middens are often fairly small and less common; in the Eastern Cape often dated to within the past 3,000 years (Deacon & Deacon 1999).

In addition shell middens are not exclusively assigned to LSA cultures; shellfish were exploited during the Last Interglacial, indicating that the practice was most probably continuous for the past 120,000 years (MSA shell middens). Along the coast of KwaZulu-Natal evidence exist for the exploitation of marine food resources by Iron Age communities. These shell middens are easily distinguished from Stone Age middens by particularly rich, often decorated ceramic artefact content. Colonial Period shell middens are quite rare and extremely ephemeral in character; primarily the result of European shipwreck survivors and reported on along the coast of KwaZulu-Natal and the Transkei, Eastern Cape.

3) The Iron Age

For close to 2 millennia people combining cereal agriculture with stock keeping have occupied most of southern Africa's summer rainfall zone. The rapid spread of farming, distinctive ceramics and metallurgy is understood as the expansion of a Bantu-speaking population, in archaeological terms referred to as the Iron Age.

3.1) The Early Iron Age

Ceramic typology is central to current discussions of the expansion of iron using farming communities. The most widely used approach is that of Huffman (1980), who employs a multidimensional analysis (vessel profile, decoration layout and motif) to reconstruct different ceramic types. Huffman (1998) argues that ceramics can be used to trace the movements of people, though not necessarily of specific social or political groupings. Huffman's Urewe Tradition coincides largely with Phillipson's (1977) Eastern Stream. A combined Urewe Tradition / Eastern Stream model for the Early Iron Age can be summarized as:

1. The Kwale branch (extending along the coast from Kenya to KwaZulu-Natal);
2. The Nkope branch (located inland and reaching from southern Tanzania through Malawi and eastern Zambia into Zimbabwe); and
3. The Kalundu branch (stretching from Angola through western Zambia, Botswana and Zimbabwe into South Africa).

In southern Africa, recent work distinguishes two phases of the Kwale branch: The earlier Silver Leaves facies (250-430AD) occurring as far south as the Northern Province. The later expression or Mzonjani facies (420-580AD) occurs in the Northern Province as well as along the KwaZulu-Natal coastal belt (Huffman 1998). Since the Silver Leaves facies is only slightly younger than the Kwale type site in Kenya, very rapid movement along the coast, perhaps partly by boat, is inferred (Klapwijk 1974). Subsequently (550-650AD) people making Mzonjani derived ceramics settled more widely in the interior of South Africa.

Assemblages attributable to the Nkope branch appear south of the Zambezi but north of South Africa from the 5th Century. Ziwa represents an early facies, with Gokomere deriving jointly from Ziwa and Bambata. A subsequent phase is represented by the Zhizo facies of the Shashe-Limpopo basin, and by Taukome (Huffman 1994). Related sites occur in the Kruger National Park (Meyer 1988). Zhizo (7th – 10th Century) is ancestral to the Toutswe tradition which persisted in eastern Botswana into the 13th Century.

Kalundu origins need further investigation; its subsequent development is however better understood. A post Bambata phase is represented by the 5th – 7th Century sites of Happy Rest, Klein Africa and Maunatlana in the Northern Province and Mpumalanga (Prinsloo 1974, 1989). Later phases are present at the Lydenburg Heads site (Whitelaw & Moon 1996) and by the succession of Mzuluzi, Ndongonwane and Ntshekane in KwaZulu-Natal (7th – 10th Centuries) (Prins & Grainger 1993). Later Kalundu facies include Klingbeil and Eiland in the northern part of the country (Evers 1980) with Kgotpolwe being a lowveld variant in Mpumalanga (10th – 12th Century). Broadhurst and other sites indicate a still later survival in Botswana (Campbell 1991).

Despite the importance accorded to iron agricultural implements in expanding the spread of farming and frequent finds of production debris, metal objects are rare. Metal techniques were simple, with no particular sign of casting, wire drawing or hot working. Jewelry (bangles, beads, pendants etc.) constitute by far the largest number of finds but arrows, adzes, chisels, points and spatulae are known (Miller 1996).

Early Iron Age people were limited to the Miombo and Savannah biomes; excluded from much of the continent's western half by aridity and confined in the south during the 1st millennium to bushveld areas of the old Transvaal. Declining summer rainfall restricted occupation to a diminishing belt close to the East Coast and north of S33° (Maggs 1994); sites such as Canasta Place (800AD), Eastern Cape, mark the southern-most limit of Early Iron Age settlement (Nogwaza 1994).

➤ The Central Cattle Pattern

The Central Cattle Pattern (CCP) was the main cognitive pattern since the Early Iron Age (Huffman 1986). The system can be summarized as opposition between male pastoralism and female agriculture; ancestors and descendants; rulers and subjects; and men and women. Cattle served as the primary means of transaction; they represented symbols exchanged for the fertility of wives, legitimacy of children and appeasement of ancestors. Cattle were also used as tribute to rulers confirming sub-ordination and redistribution as loan cattle by the ruler to gain political support. Cattle represented healing and fertilizing qualities (Huffman 1998; Kuper 1980).

This cognitive and conceptual structure underlies all cultural behavior, including the placement of features in a settlement. The oppositions of male and female, pastoralism and agriculture, ancestors and descendants, rulers and subjects, cool and hot are represented in spatial oppositions, either concentric or diametric (Huffman 1986).

A typical CCP village comprise of a central cattle enclosure (byre) where men are buried. The *Kgotla* (men's meeting place / court) is situated adjacent to the cattle enclosure. Surrounding the enclosure is an arc of houses, occupied according to seniority. Around the outer perimeter of the houses is an arc of granaries where women keep their pots and grinding stones (Huffman 1986). The model varies per ethnic group which helps to distinguish ethnicity throughout the Iron Age, but more studies are required to recognize the patterns.

3.2) The Middle Iron Age

The hiatus of South African Middle Iron Age activity was centered in the Shashe-Limpopo Valley and characterized by the 5-tier hierarchical Mapungubwe State spanning some 30,000km². By the 1st millennium ivory and skins were already exported overseas, with sites like Sofala and Chibueni, Mozambique, interfacing between interior and transoceanic traders. Exotic glass beads, cloth and Middle Eastern ceramics present at southern African sites mark the beginning of the regions incorporation into the expanding economic system that, partly tied together with maritime trading links across the Indian Ocean, increasingly united Africa, Asia and Europe long before Da Gama or Columbus (Eloff & Meyer 1981; Meyer 1998).

Occupation was initially focused at Bambandanyalo and K2. The Bambandanyalo main midden (1030-1220AD) stands out above the surrounding area, reaching more than 6m in places and covering more than 8ha the site may have housed as many as 2,000 people (Meyer 1998). The CCP was not strictly followed; whether this is ideologically significant or merely a reflection of local topography remains unclear. The midden, the size of which may reflect the status of the settlement's ruler, engulfed the byre around 1060-1080AD, necessitating relocation of the cattle previously kept there. The re-organization of space and worldview implied suggests profound social changes even before the sites' abandonment in the early 13th century, when the focus of occupation moved to Mapungubwe Hill, 1 km away (Huffman 1998).

Excavations at Mapungubwe Hill, though only occupied for a few decades (1220-1290AD), yielded a deep succession of gravel floors and house debris (Eloff & Meyer 1981). Huffman (1998) suggests that the suddenness with which Mapungubwe was occupied may imply a deliberate decision to give spatial expression to a new social order in which leaders physically removed themselves from ordinary people by moving onto more inaccessible, higher elevations behind the stone walls demarcating elite residential areas. Social and settlement changes speak of considerable centralization of power and perhaps the elaboration of new ways of linking leaders and subjects.

At Bambandanyalo and Mapungubwe elite burial grave goods include copper, bone, ivory and golden ornaments and beads. Social significance of cattle is reinforced by their importance among the many human and animal ceramic figurines and at least 6 'beast burials' (Meyer 1998).

Today the drought prone Shashe-Limpopo Valley receives less than 350mm of rainfall per annum, making cereal cultivation virtually impossible. The shift to drier conditions in the late 1200's across the Shashe-Limpopo basin and the eastern Kalahari may have been pivotal in the break-up of the Mapungubwe polity, the collapse of Botswana's Toutswe tradition and the emergence of Great Zimbabwe (1220-1550AD), southern Africa's best known and largest (720ha) archaeological site (Meyer 1998).

South of the Limpopo and north of the Soutpansberg, Mapungubwe derived communities survived into the 14th Century, contemporary with the establishment of Sotho-speaking makers of Maloko pottery.

3.3) The Later Iron Age

South African farming communities of the 2nd millennium experienced increased specialization of production and exchange, the development of more nucleated settlement patterns and growing political centralization, albeit not to the same extent as those participating in the Zimbabwe tradition. However, together they form the background to the cataclysmic events of the late 18th / early 19th Century *Mfecane* (Mitchell 2002).

Archaeological evidence of settlement pattern, social organization and ritual practice often differ from those recorded ethnographically. The Maloko ceramic tradition seems to be ancestral to modern Sotho-Tswana speakers (Evers 1980) and from about 1,100AD a second tradition, the Blackburn tradition, appears along South Africa's eastern coastline. Blackburn produced mostly undecorated pottery (Davies 1971), while Mpambanyoni assemblages, reaching as far south as Transkei, includes examples of rim notching, incised lines and burnished ochre slip (Robey 1980). At present, no contemporary farming sites are known further inland in KwaZulu-Natal or the Eastern Cape.

Huffman (1989) argues that similarities between Blackburn and early Maloko wares imply a related origin, presumably in the Chifumbaze of Zambia or the Ivuna of Tanzania, which contains a range of ceramic attributes important in the Blackburn as well as beehive grass huts similar to those made by the Nguni. This is one of the few suggestions of contact between Sotho-Tswana and Nguni speakers on the one hand and farming communities who, if Huffman is correct, were already long established south of the Limpopo. Both ethnographic and archaeological data demonstrate that Sotho-Tswana and Nguni are patrilineal and organize their settlements according to the CCP (Kuper 1980).

From 1,300AD there is increasing evidence for the beginning of agro-pastoralist expansion considerably beyond the area of previous occupation. It is also to this time that the genealogies of several contemporary Bantu speaking groups can be traced (Wilson & Thompson 1969). Associated with this expansion was the regular employment of stone, rather than wood, as building material, an adaptation that has greatly facilitated the discovery and identification of settlements. Maggs (1976) describes 4 basic settlement types all characterized by the use of semi weathered dolomite to produce hard binding *daga* for house floors and a wall building tradition employing larger more regular stones for the inner and outer faces and smaller rubble for the infill. As with the more dispersed homesteads of KwaZulu-Natal and the Eastern Cape, sites tend to be in locally elevated situations, reflecting a deep seated Sotho and Nguni preference for benign higher places rather than supernaturally dangerous riverside localities; another important contrast to both 1st millennium (Maggs 1976) and later Zulu Kingdom settlement patterns (Hall & Maggs 1979).

The lack of evidence for iron production in the interior and eastern part of South Africa emphasize exchange relationships between various groups and associated more centralized polities. By the 19th Century iron production in KwaZulu-Natal was concentrated in particular clans and lineages and associated with a range of social and religious taboos (Maggs 1992). South of Durban comparatively few smelting sites are known (Whitelaw 1991), a trend even more apparent in Transkei (Feely 1987). However, metal remained the most important and archaeologically evident item traded between later farming communities. (Other recorded trade items include glass and ostrich eggshell beads; Indian Ocean seashells; siltstone pipes; *dagga*, and later on tobacco; pigments including ochre, graphite and specularite; hides and salt.)

Rising polity settlements are particularly evident in the north of the country and dated to the 17th Century, including Molokwane, capital of the Bakwena chiefdom (Pistorius 1994) and Kaditshwene, capital of a major section of the Hurutshe, whose population of 20,000 in 1820 almost equals contemporary Cape Town in size (Boeyens 2000). The agglomeration of Tswana settlements in the north of the country was fuelled by both population growth and conflict over access to elephant herds for ivory and long distance trade with the East Coast. During this period ceramic decoration became blander and more standardized than the earlier elaborate decoration that included red ochre and graphite coloring.

The *Mfecane* refers to the wars and population movements of the early 19th Century which culminated in the establishment of the Zulu Kingdom and came to affect much of the interior, even beyond the Zambezi: The late 18th Century was marked by increasing demands for ivory (and slaves) on the part of European traders at Delagoa Bay; as many as 50 tons of ivory were exported annually from 1750-1790. As elephant populations declined, competition increased both for them and for the post 1790 supply of food to European and American whalers calling at Delagoa Bay (Smith 1970). Cattle raiding, conflict over land and changes in climatic and subsistence strategies characterized much of the cultural landscape of the time.

Competition for access to overseas trade encouraged some leaders to replace locally organized circumcision schools and age-sets with more permanently maintained military regiments. These were now used to gain access through warfare to land, cattle and stored food. By 1810 three groups, the Mthethwa, Ndwandwe and Ngwane dominated northern KwaZulu-Natal (Wright 1995). The Mthethwa paramountcy was undermined by the killing of its leader Dingiswayo in circa 1818, which led to a brief period of Ndwandwe dominance. In consequence one of Dingiswayo's former tributaries, Shaka, established often forceful alliances with chiefdoms further south. Shaka's Zulu dominated coalition resisted the Ndwandwe who in return fled to Mozambique. As the Zulu polity expanded it consolidated its control over large areas, incorporating many communities into it. Others sought refuge from political instability by moving south of the Thukela River, precipitating a further *domino effect* as far as the Cape Colony's eastern border (Wright 1995).

4) The Colonial Period

In the 15th Century Admiral Zheng He and his subordinates impressed the power of the Ming Dynasty rulers in a series of voyages as far afield as Java, Sri Lanka, southern Arabia and along the East African coast, collecting exotic animals *en route*. But nothing more came of his expeditions and China never pursued opportunities for trade or colonization (Mote 1991).

Portuguese maritime expansion began around the time of Zheng He's voyages; motivated by a desire to establish a sea route to the riches of the Far East. By 1485 Diogo Cao had reached Cape Cross, 3 years later Bartolomeu Dias rounded the Cape of Good Hope and less than a decade later Vasco da Gama called at several places along South Africa's coast, trading with Khoekhoen (Khoi) at Mossel Bay before reaching Mozambique and crossing the ocean to India. His voyage initiated subsequent Portuguese bases from China to Iraq. In Africa interest was focused on seizing important coastal trading towns such as Sofala and gaining access to the gold of Zimbabwe. Following the 1510 Portuguese-Khoekhoen battle at Table Bay, in which the viceroy of India was killed, Portuguese ships ceased to call along the South African coast (Elphick 1985).

A number of shipwrecks, primarily along the eastern coast attest to Portuguese activity including the Sao Joao, wrecked in 1552 near Port Edward and the Sao Bento, destroyed in 1554 off the Transkei coast. Survivors' accounts provided the 1st detailed information on Africa's inhabitants (Auret & Maggs 1982).

By the late 1500's Portuguese supremacy of the Indian Ocean was threatened. From 1591 numerous Dutch and English ships called at Table Bay and in 1652 the Dutch East India Company (VOC) established a permanent base, with the intent to provide fresh food and water to VOC ships. In an attempt to improve the food supply a few settlers (free burghers) were allowed to establish farms. The establishment of an intensive mixed farming economy failed due to shortages of capital and labor, and free burghers turned to wheat cultivation and livestock farming. While the population grew slowly the area of settlement expanded rapidly with new administrative centers established at Stellenbosch (1676), Swellendam (1743) and Graaf-Reinet (1785). By the 1960's the Colony's frontier was too long to be effectively policed by VOC officials (Elphick 1985).

From the 1700's many settlers expanded inland over the Cape Fold Mountain Belt. The high cost of overland transport constrained the ability to sell their produce while settlement of the interior was increasingly made difficult by resident KhoiSan groups, contributing due to a lack of VOC military support to growing Company opposition in the years before British control of the Cape (1795 / 1806) (Davenport & Saunders 2000).

In 1820 a major British settlement was implanted on the eastern frontier of the Cape Colony, resulting in large numbers of the community moving into the interior, initially to KwaZulu-Natal, and then after Britain annexed Natal (1843), further into the interior to beyond the Vaal River. Disruptions of the *Mfecane* eased their takeover of African lands and the Boers (farmers) established several Republics. A few years later the 2nd South African War saw both the South African and Orange Free State Republics annexed by Britain, a move largely motivated by British desire to control the goldfields of the Witwatersrand. With adjacent regions of the sub-continent also falling, directly or indirectly, under British rule and German colonization of Namibia, European control of the whole of southern Africa was firmly established before the 1st World War (Davenport & Saunders 2000).

➤ Xhosa Iron Age Cultures meets Colonists in the Eastern Cape

From the late 1600's conflict between migrants from the Cape (predominantly Boers) and Xhosa people in the region of the Fish River were strife, ultimately resulting in a series of 9 Frontier Wars (1702-1878) (Milton 1983). Both cultures were heavily based and reliant on agriculture and cattle farming. As more Cape migrants, and later settlers from Britain (1820) and elsewhere arrived, population pressures and competition over land, cattle and good grazing became intense. Cattle raiding became endemic on all sides, with retaliatory raids launched in response. As missionaries arrived with evangelical messages, confrontations with hostile chiefs who saw them as undermining traditional Xhosa ways of life resulted in conflicts which flared into wars.

As pressures between the European settlers and the Xhosa grew, settlers organized themselves into local militia, counteracted by Xhosa warring skills: But both sides were limited by the demands of seasonal farming and the need for labor during harvest. Wars between the Boers and the Xhosa resulted in shifting borders, from the Fish to the Sundays River, but it was only after the British annexed the Cape in 1806 that authorities turned their attention to the Eastern

regions and petitions by the settlers about Xhosa raids. British expeditions, in particular under Colonel John Graham in 1811 and later Harry Smith in 1834, were sent not only to secure the frontier against the Xhosa, but also to impose British authority on the settlers, with the aim to establish a permanent British presence. Military forts were built and permanently manned. Over time the British came to dominate the area both militarily and through occupation with the introduction of British settlers. The imposition of British authority led to confrontations not only with the Xhosa but also with disaffected Boers and other settlers, and other native groups such as the Khoikhoi, the Griqua and the Mpondo. The frontier wars continued over a period of about 150 years; from the 1st arrival of the Cape settlers, and with the intervention of the British military ultimately ending in the subjugation of the Xhosa people. Fighting ended on the Eastern Cape frontier in June 1878 with the annexation of the western areas of the Transkei and administration under the authority of the Cape Colony (Milton 1983).

➤ The Industrial Revolution

The Industrial Revolution refers roughly to the period between the 18th - 19th Centuries, typified by major changes in agriculture, manufacturing, mining, transport, and technology. Changing industry had a profound effect on socio-economic and socio-cultural conditions across the world: The Industrial Revolution marks a major turning point in human history; almost every aspect of daily life was eventually influenced in some way. Average income and population size began to exhibit unprecedented growth; in the two centuries following 1800 the world's population increased over 6-fold, associated with increasing urbanization and demand of resources. Starting in the latter part of the 18th century, the transition from manual labor towards machine-based manufacturing changed the face of economic activity; including the mechanization of the textile industries, the development of iron-making techniques and the increased use of refined coal. Trade expansion was enabled by the introduction of canals, improved roads and railways. The introduction of steam power fuelled primarily by coal and powered machinery was underpinned by dramatic increases in production capacity. The development of all-metal machine tools in the first two decades of the 19th century facilitated the manufacture of more production machines in other industries (More 2000).

Effects of the Industrial Revolution were widespread across the world, with its enormous impact of change on society, a process that continues today as 'industrialization'.

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Heritage Impact Assessment (HIA) – Proposed Bengal Heights Residential Development, Erf RE/2368, Amalinda, East London, Buffalo City Metropolitan 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-internment / 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

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Contact Details:	1) Cell: 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] <ul style="list-style-type: none"> • 2010 – ASAPA CRM Section: Principle Investigator – Stone Age • 2005 – ASAPA CRM Section: Field Director – Stone Age, Iron Age & Colonial Period 2) SAHRA, AMAFA, EC PHRA and HWC listed ASAPA accredited CRM archaeologist

Tertiary Education

2015-Present	University of Fort Hare, East London (<i>MPhil Environmental Studies</i>)
2010	UNISA University, Pretoria (<i>Project Management 501</i>)
2006-2007	Nelson Mandela Metropolitan University, Port Elizabeth (<i>Undergraduate Certificate in Geographical Information Systems</i>)
2001-2003	WITS University, Johannesburg (<i>MSc Archaeology</i>)
1999-2000	University of Pretoria, Pretoria (<i>BA Hons. Archaeology</i>)
1991-1993	University of Pretoria, Pretoria (<i>BA Archaeology & History of Art</i>)

Courses

2016/01	SPA (Safety Passport Alliance) – Petrol Retail [SA Safety Management Services Training (Pty) Ltd – SMST, Sasolburg, Gauteng]
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Employment – Professional Archaeology

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

Employment – Freelance: Ground Penetrating Radar

2015/10-Present	Terra Scan assistant (BCM area, EC) – GPR & underground utilities focussing on the petrol retail (oil & gas) industry [GPR in grave / cemetery sensitive heritage cases – MPhil dissertation research]
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Archaeology – Summary

Karen has been involved in CRM archaeology since 2003 and has been the author (including selected co-authored reports) of approximately 400 Phase 1 AIA studies. Phase 1 AIA work is centred in South Africa, focusing 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 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 aKwa-Zulu Natali (2004).

Company Profile

Company Name	: ArchaeoMaps cc
Registration number	: 2005/180719/23
VAT number	: Not VAT Registered
Accountant	: Azima Financial Services, Bloemfontein
Members / Shareholders	: Karen van Ryneveld (100%)
BBBEE status	: Exempted Micro Enterprise (EME)