
PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

**REPLACEMENT OF THE CHATTY VALLEY COLLECTOR SEWER &
CONSTRUCTION OF THE LINK SEWER, BETHELSDORP, NELSON
MANDELA BAY MUNICIPALITY, EASTERN CAPE, SOUTH AFRICA**

DATE: 2013-03-18



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SPECIALIST DECLARATION OF INTEREST

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

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



SIGNATURE –

DATE – 2013-03-18

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 EASTERN CAPE, SOUTH AFRICA**

EXECUTIVE SUMMARY

TERMS OF REFERENCE –

Jeffares & Green has been appointed by the project proponent, the NMBM, to prepare the BIA and EMP for the proposed *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development, Bethelsdorp, NMBM, Eastern Cape. The project entails an approximate 2km linear development with an estimated development corridor not exceeding 5m, situated at general development co-ordinate S33°51'16.9"; E25°31'47.1". ArchaeoMaps was appointed by Jeffares & Green to conduct the Phase 1 AIA for the development.

THE PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT –

PROJECT AREA: Approximate 2km linear development, including the Chatty Valley sewer alignment east of the R75 (+/- 130m) and the Chatty Valley sewer alignment west of the R75 (+/-2km), Bethelsdorp, NMBM, Eastern Cape [1:50,000 map ref – 3325DC].

COVERAGE & GAP ANALYSIS: Pre-feasibility and field assessment (approximate 2km linear alignment).

FIELD METHODOLOGY: One day field assessment; GPS co-ordinates – Garmin Oregon 550; Photographic documentation – Pentax K20D. Archaeological and cultural heritage site significance assessment and mitigation recommendations – SAHRA 2007 system.

SUMMARY:

Map Code	Site	Co-ordinates	Recommendations
Replacement of the Chatty Valley Collector Sewer & Construction of the Link Sewer			
CVCS-1	Colonial Period – Residence	S33°51'23.1"; E25°31'19.6"	CONSERVATION: No additional conservation measures required.
CVCS-2	Colonial Period – Cemetery	S33°51'17.5"; E25°31'22.7"	CONSERVATION: Formal conservation – Permanent fence with access gate (including CVCS-2 and CVCS-3); or Temporary conservation – Temporary fence with signage (CVCS-2).
CVCS-3	Colonial Period – Cemetery	S33°51'14.9"; E25°31'21.8"	CONSERVATION: Formal conservation – Permanent fence with access gate (including CVCS-2 and CVCS-3); or Temporary conservation – Temporary fence with signage (CVCS-3).
CVCS-4	Colonial Period – Residence	S33°51'13.4"; E25°31'33.6"	CONSERVATION: No additional conservation measures required.

RECOMMENDATIONS –

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development, Bethelsdorp, NMBM, Eastern Cape, proceeds as applied for provided the developer comply with the abovementioned summarized recommendations.

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1) TERMS OF REFERENCE

Jeffares & Green (Pty) Ltd has been appointed by the project proponent, the Nelson Mandela Bay Municipality (NMBM), to prepare the Basic Impact Assessment (BIA) and Environmental Management Plan (EMP) for the proposed *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development, Bethelsdorp, NMBM, Eastern Cape. The project entails an approximate 2km linear development with an estimated development corridor not exceeding 5m, situated at general development co-ordinate S33°51'16.9"; E25°31'47.1".

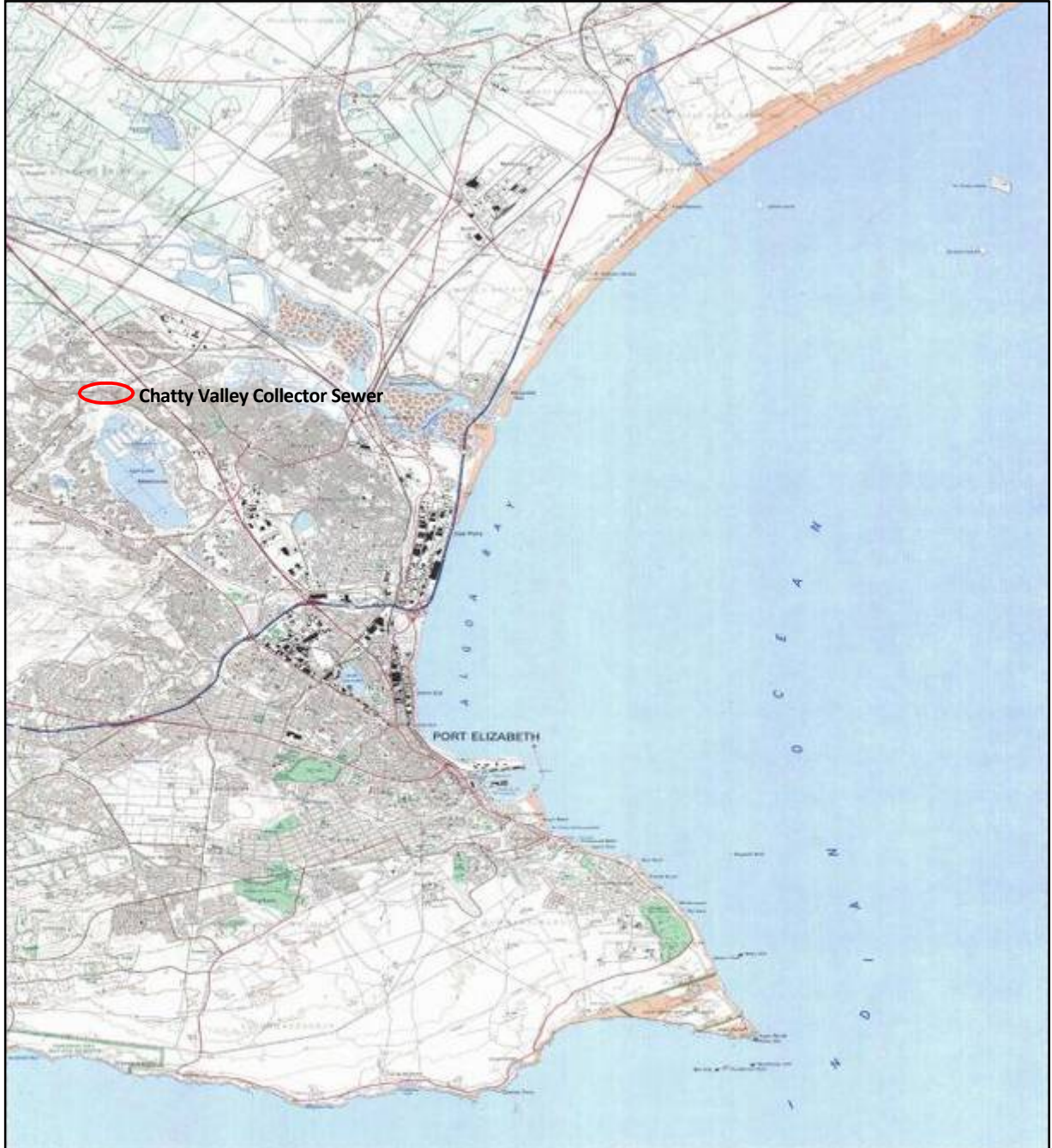
ArchaeoMaps Archaeological Consultancy was appointed by Jeffares & Green (Pty) Ltd to conduct the Phase 1 Archaeological Impact Assessment (AIA) for the development.

❖ Development Location, Details and Impact

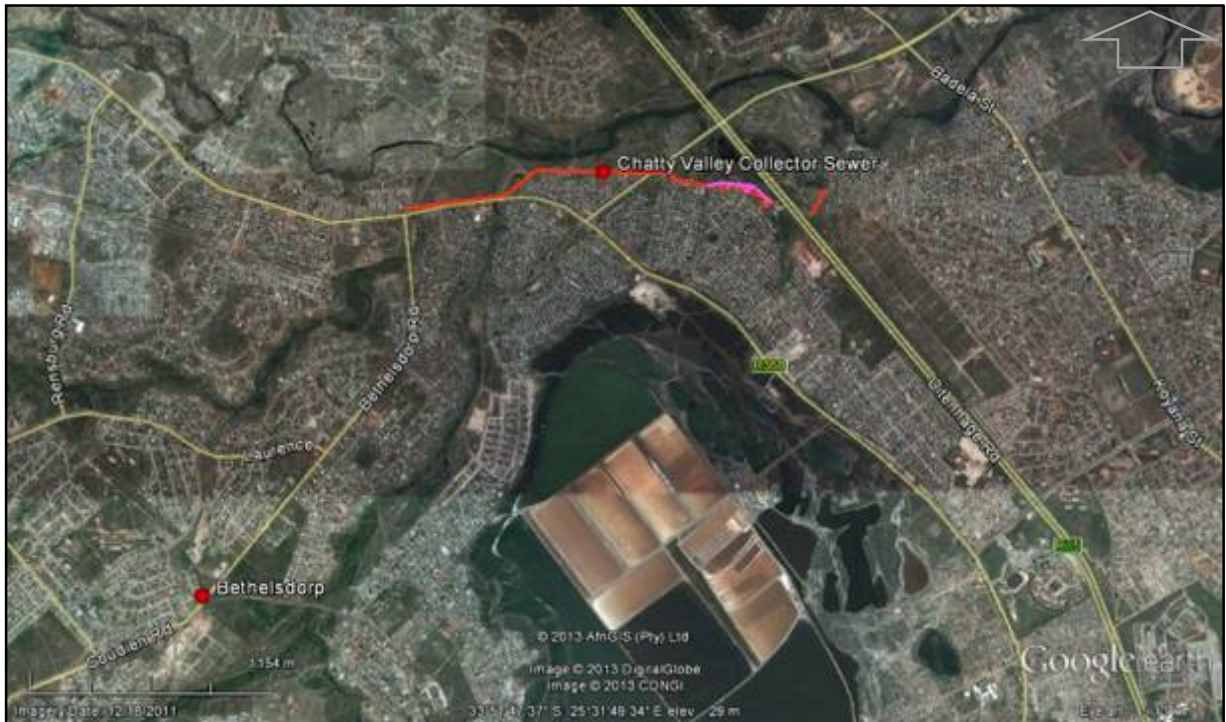
The existing Chatty Valley collector sewer (nodes 20-24) is located in Ward 33 Kleinskool within the Bethelsdorp suburb of the Nelson Mandela Bay Municipality. The land use of the area is typical residential (low income group) with an existing waterborne sanitation system. The need for an upgrade of the Chatty Valley collector sewer (nodes 20-24) was identified as early as 1996. In 2005 detailed flow investigations were undertaken, taking into account potential future demands on the system. Capacity results indicated that the sewer should be considered for an upgrade in 2008. The 2008 technical study indicated that the sewer (38 years old at the time) was in poor condition. In 2010 an environmental assessment process was undertaken by another Environmental Assessment Practitioner (EAP) under the repealed Environmental Impact Assessment (EIA) Regulations of 2008. Jeffares & Green (Pty) Ltd have been appointed by the NMBM to undertake and complete a new environmental application in terms of the EIA NEMA Regulations of 2010 (Jeffares & Green 2013).

The proposed development will include the upgrading and installation of a new collector sewer pipeline, approximately 2km in length, between nodes 20-24, with an estimated pipeline diameter of 1,000-1,200mm; the decommissioning of the existing collector sewer; the installation of an estimated 170m link sewer with additional manholes and diversion chambers and approximately 200m of additional sewer pipeline for tie-inns to the proposed alignment (Jeffares & Green 2013).

The proposed *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development is situated primarily west of the R75 in Ward 33, Kleinskool of Bethelsdorp, Port Elizabeth, NMBM, Eastern Cape [1:50,000 map ref – 3325DC].



Map 1: 1:50,000 map ref 3325DC indicating the locality of the *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development project



Map 2: General locality of the *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development project

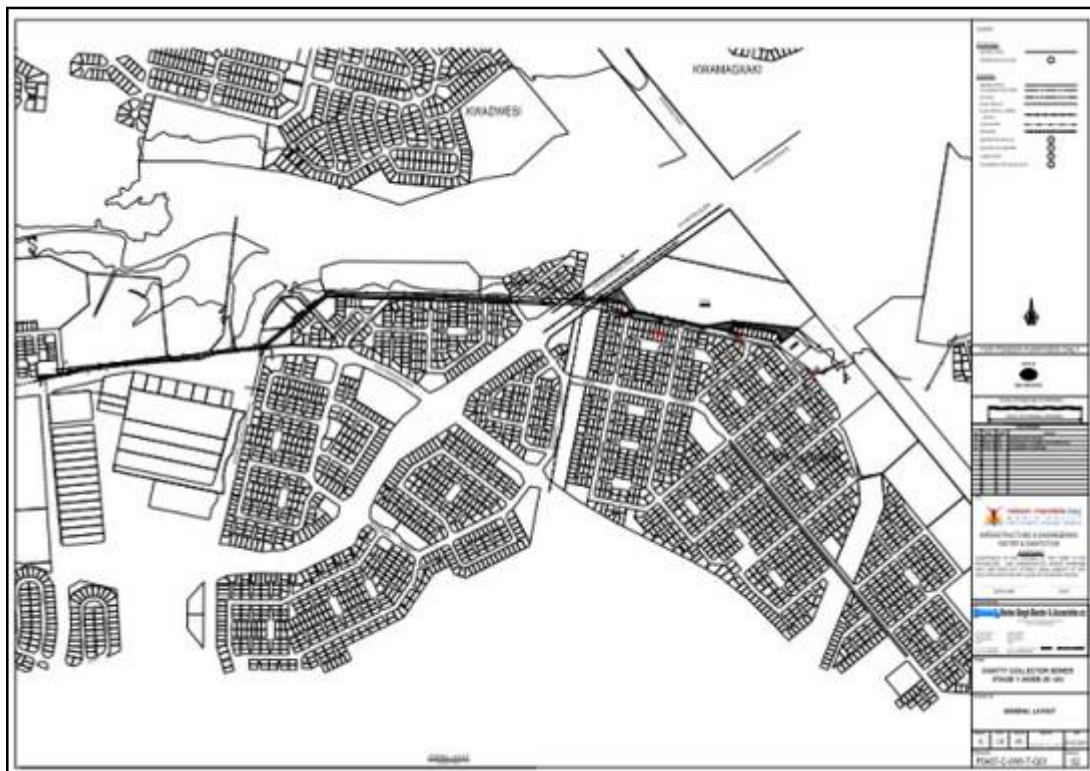


Figure 1: Development layout of the *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* project (courtesy Jeffares & Green)

2) THE PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

❖ Archaeological Legislative Compliance

The Phase 1 Archaeological Impact Assessment (AIA) for the *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development, Bethelsdorp, NMBM, Eastern Cape, was done for purposes of compliance to the Eastern Cape Provincial Heritage Resources Authority's (EC PHRA) requirements in terms of the National Heritage Resources Act, No 25 of 1999 (NHRA 1999), with specific reference to Sections 34-38.

The Phase 1 AIA was requested as specialist sub-section with findings and recommendations thereof to be included in the Basic Impact Assessment (EIA) and Environmental Management Plan (EMP) of the development, in compliance with requirements of the National Environmental Management Act, No 107 of 1998 (NEMA 1998) and associated Regulations (2010) and the NHRA 1999.

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

This report comprises of a Phase 1 AIA, including a basic pre-feasibility study and field assessment only.

❖ Methodology and Gap Analysis

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

- The pre-feasibility assessment is based on the Appendix 1 introductory archaeological literature. In addition the SAHRA 2009 Mapping Project Database and the SAHRA Built Environment Database on Declared Provincial Heritage Sites (buildings older than 60 years) were consulted. The study excludes consultation of the Albany Museum, the SAHRA accredited Data Recording Centre (DRC) for the Eastern Cape region's database.
- The field assessment was done on 2013-03-09 by 1 archaeologist and assisted by Charl Peterson. The assessment was done by foot and limited to a Phase 1 surface survey. GPS co-ordinates were taken with a Garmin Oregon 550 (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.

Surface visibility was affected where portions of the site are used for informal dumping.

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

SAHRA ARCHAEOLOGICAL AND CULTURAL HERITAGE SITE SIGNIFICANCE ASSESSMENT			
Site Significance	Field Rating	Grade	Recommended Mitigation
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A / 3B	Site conservation or extensive mitigation prior to development / destruction
High / Medium Significance	Generally Protected A	-	Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B	-	Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C	-	On-site sampling, monitoring or no archaeological mitigation required prior to or during development / destruction

Table 1: SAHRA archaeological and cultural heritage site significance assessment

❖ Assessor Accreditation

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

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

Karen van Ryneveld is a SAHRA / EC PHRA listed CRM archaeologist.

2.1) PRE-FEASIBILITY ASSESSMENT

Based on the basic introductory literature assessment of South African archaeology (see Appendix – A) the probability of archaeological and cultural heritage sites within the proposed *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development, Bethelsdorp, NMBM, Eastern Cape, can briefly be described as:

1. Early Hominin : Probability – *None*

2. Stone Age
 - a. ESA : Probability – *Low-Medium*
 - b. MSA : Probability – *Medium*
 - c. LSA : Probability – *Medium-High* (Human remains may be expected; if identified of both scientific and social significance)
 - i. Rock Art : Probability – *None-Low*
 - ii. Shell Middens : Probability – *None-Low*

3. Iron Age
 - a. Early Iron Age : Probability – *None*
 - b. Middle Iron Age : Probability – *None*
 - c. Later Iron Age : Probability – *Low-Medium*

4. Colonial Period
 - a. Colonial Period : Probability – *Medium-High* (Human remains expected to be primarily associated with formal cemeteries)
 - b. Iron Age / Colonial Period Contact : Probability – *Low-Medium*
 - c. Industrial Revolution : Probability – *None*

❖ The SAHRA 2009 Database

A number of archaeological Cultural Resources Management (CRM) projects are recorded in the SAHRA 2009 Mapping Project Database situated within an approximate 30km radius from the *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development, Bethelsdorp, NMBM, Eastern Cape, referenced as:

- Bennie, J. (Private). 2007. *Heritage Impact Assessment: Sand and Bulk River Dam Pipes Upgrade, Elands River Valley, Port Elizabeth*;
- Bennie, J. (Private). 2008. *Heritage Impact Assessment: Portion 87 of the Farm Cragga Kamma No 23, Port Elizabeth*;
- Binneman, J. (Albany Museum). 2000. *Eskom Poseidon (Cookhouse) – Grass-Ridge (Port Elizabeth) Proposed Power Line. First Phase Desktop Data Survey of Cultural Heritage Resources*;

- Binneman, J. (Albany Museum). 2008a. *A Phase 1 Archaeological Heritage Impact Assessment for the proposed Agricultural Village on Portion 22 and 40 of the Farm Witteklip No 466, Port Elizabeth District, Eastern Cape;*
- Binneman, J. (Albany Museum). 2008b. *A Phase 1 Archaeological Heritage Impact Assessment of the Proposed Amanzi Country Estate, Uitenhage District, Nelson Mandela Bay Municipality, Eastern Cape;*
- Kaplan, J.M. (Agency for Cultural Resources Management). 2007. *Draft Feasibility Report for the Proposed Regional General and Hazardous Waste Disposal Facility (Addo, Eastern Cape);*
- Kaplan, J.M. (Agency for Cultural Resources Management). 2008. *Phase 1 Archaeological Impact Assessment: Proposed Development of Hunters Retreat – Utopia Estate, Port Elizabeth, Eastern Cape Province;*
- Nel, J. (Archaic Heritage Project Management). 2008. *Final Report – Heritage Resources Scoping Survey and Preliminary Assessment – Transnet Freight Line EIA. Eastern Cape and Northern Cape;*
- Van Ryneveld, K. (ArchaeoMaps). 2007. *Phase 1 Archaeological Impact Assessment – The Hopewell Conservation Project, Greenbushes, Port Elizabeth, Eastern Cape;*
- Webley, L.E. (Albany Museum). 2003. *Maitland River Mouth Strategic Environmental Assessment – Phase 1 Heritage Impact Assessment;*
- Webley, L.E. (Albany Museum). 2006a. *Heritage Impact Assessment for proposed Housing Development at Winterhoek Park, Uitenhage;*
- Webley, L.E. (Albany Museum). 2006b. *Phase 1 Heritage Impact Assessment of the Proposed Biomass Plant in Zone 3, Coega, Port Elizabeth;*
- Webley, L.E. (Albany Museum). 2007. *Phase 1 Heritage Impact Assessment for the Establishment of the Sardinia Bay Golf Estate (Erf 378 – Theescombe), Port Elizabeth;*
- Webley, L.E. (ACO – UCT). 2008a. *Phase 1 Heritage Impact Assessment: Portion 6 of the Farm Florida 321, Despatch, Nelson Mandela Metropole, Eastern Cape;* and
- Webley, L.E. (ACO – UCT). 2008b. *Heritage Impact Assessment for the Farm 294 Amanzi Estate, Portion 4 of the Farm 296 Amanzi Mooi Water, Erf 296 Portion 3 of Rietheuveld and Erf 296 Rietheuveld, in the Nelson Mandela Bay Municipality, Eastern Cape.*

More archaeological CRM studies can reasonably be inferred to have been done in the more immediate area post compilation of the SAHRA 2009 database. Studies done by ArchaeoMaps include:

- Van Ryneveld, K. (Archaeomaps). 2010a. *Phase 1 Archaeological Impact Assessment. Driftsands Collector Sewer Augmentation, Port Elizabeth (Nelson Mandela Bay Municipality), Eastern Cape, South Africa;*
- Van Ryneveld, K. (Archaeomaps). 2010b. *Phase 1 Archaeological Impact Assessment. Langbos Rural Housing Project, Sundays River Valley Municipality, Eastern Cape, South Africa;*
- Van Ryneveld, K. (Archaeomaps). 2010c. *Phase 1 Archaeological Impact Assessment. Upgrading of the Brickfields Pre-treatment Works (Erf 1, Wells Estate), Motherwell, Eastern Cape, South Africa;*
- Van Ryneveld, K. (Archaeomaps). 2010d. *Phase 1 Archaeological Impact Assessment. Development of the Koedoeskloof Landfill Site, Uitenhage, Eastern cape, South Africa;*
- Van Ryneveld, K. (ArchaeoMaps). 2011a. *Phase 1 Archaeological Impact Assessment – Proposed Construction of the Balmoral-Florida Collector Sewerage System near Uitenhage and Despatch, Eastern Cape, South Africa;*
- Van Ryneveld, K. (Archaeomaps). 2011b. *Cultural Heritage Impact Assessment – NMBM (Coega) Reclaimed Effluent Scheme – Phase 1, Nelson Mandela Bay Municipality, Eastern Cape, South Africa;*
- Nilssen, P.* & Van Ryneveld, K.** (Private* & ArchaeoMaps**). 2012. *Phase 1b and Phase 2a Exploratory Archaeological Investigation of Shell Middens. Eastern Cape Provincial Heritage Resources Authority (EC*

PHRA Permit – Permit Ref. No: 2/2/APM-Permit/12/10/001. The Development of the MetroWind Van Stadens Wind Energy Facility, Rietfontein 594 and Klein Rietfontein 476, Nelson Mandela Bay Municipality, Eastern Cape Province; and

- Van Ryneveld, K. (ArchaeoMaps). 2013a. *Phase 1 Archaeological Impact Assessment – Final Report: MetroWind Van Stadens Power Line, Nelson Mandela Bay Municipality, Eastern Cape, South Africa;*
- Van Ryneveld, K. (Archaeomaps). 2013b. *Phase 1 Archaeological Impact Assessment. Malabar Extension 6 Phase 2 Housing Development, Erf/RE 349, New Brighton and Erven 444 and 1086, Malabar, Nelson Mandela Bay Municipality, Eastern Cape, South Africa; and*
- Van Ryneveld, K. (ArchaeoMaps). 2013c. *Phase 1 Archaeological Impact Assessment. Walmer Storm Water Detention Ponds and Associated Infrastructure, Erven 1935 and 7006, Walmer, Nelson Mandela Bay Municipality, Eastern Cape, South Africa.*

[No Phase 1 AIA could be located on the SAHRIS database for the Chatty Valley sewer. At present it seems as though an archaeological assessment did not form part of the specialist studies conducted for the 2010 EIA of the project.]

❖ General Discussion

Port Elizabeth was officially founded in 1820 to accommodate British settlers, primarily also as a means to strengthen the border region between the Cape Colony and the Xhosa. The general Port Elizabeth area formed part of the Cape Colony and its turbulent history from the time of its founding in 1652 to the formation of the Union of South Africa in 1910 (<http://www.southafrica.travelnet/eastcape.epelizab.htm>).

Prior to formal Colonial Period settlement the general area around today's Algoa Bay was settled by a hunter-gatherer people ancestral to the San, at least 100,000 years ago, and from roughly 2,000 years ago by Khoer herder groups. Shortly thereafter, from the late 1500's agriculturalist populations ancestral to the Xhosa migrated into the region from the north, eventually displacing or assimilating the region's indigenous populations (<http://en.wikipedia.org/wiki/PortElizabeth>).

The first Europeans to have visited the area included the Portuguese explorer Bartolomeu Dias, who landed on St. Croix Island in Algoa Bay in 1488. In 1497, Vasco da Gama noted the nearby Bird Island, but for many years to come the area was simply known as '*a landing place with fresh water*' to seafarers (<http://en.wikipedia.org/wiki/PortElizabeth>).

In 1799 (the time of the first British occupation of the Colony, during the Napoleonic Wars), Fort Frederick was built to protect Britons against a possible landing of French troops and to gain better control over rebellious Boers from the hinterland (<http://www.southafrica.travelnet/eastcape.epelizab.htm>). From 1814 to 1821 the Strandfontein farm, today known as the Summerstrand suburb, was in possession of Piet Retief, who later became a renowned Voortrekker leader, killed in 1837 by the Zulu King Dingane. After Retief the Strandfontein farm was owned by Frederik Korsten. In 1820 a party of 4,000 British settlers arrived by sea, encouraged by the government of the Cape Colony and the devastating living circumstances in England at the time. The settlement was encouraged by the Cape Colony mainly to strengthen the border region between the Cape Colony and the Xhosa people. At this time the seaport town was founded by Sir Rufane Shaw Donkin, Acting Governor of the Cape Colony, who named it after his late wife, Elizabeth. The town expanded,

building a diverse community comprising European, Cape Malay and other immigrants, and particularly rapidly so after 1873 when the railway to Kimberley was built. In 1861 the town was granted the status of autonomous municipality (<http://en.wikipedia.org/wiki/PortElizabeth>).

During the Second Boer War, the port of Port Elizabeth formed an important transit point for soldiers, horses and materials headed to the front by railway. Despite the fact that the city itself did not see any conflict, many refugees from the war flocked to the city; including Boer women and children interned by the British in a concentration camp. Following the war, the Horse Memorial was erected in honor of the tens of thousands of horses and mules that died during the conflict (<http://en.wikipedia.org/wiki/PortElizabeth>).

Outcomes of the Apartheid regime were not lost on Port Elizabeth: Forced relocation of non-white populations under the Group Areas Act began in 1962, causing various townships to rise. The whole of the South End district, being a prime real estate location, was forcibly depopulated and flattened in 1965; relocations continued until 1975. In 1977 Steve Biko, distinguished black anti-apartheid activist, was interrogated and tortured by the security police in Port Elizabeth, before being transported to Pretoria where he died (<http://en.wikipedia.org/wiki/PortElizabeth>).

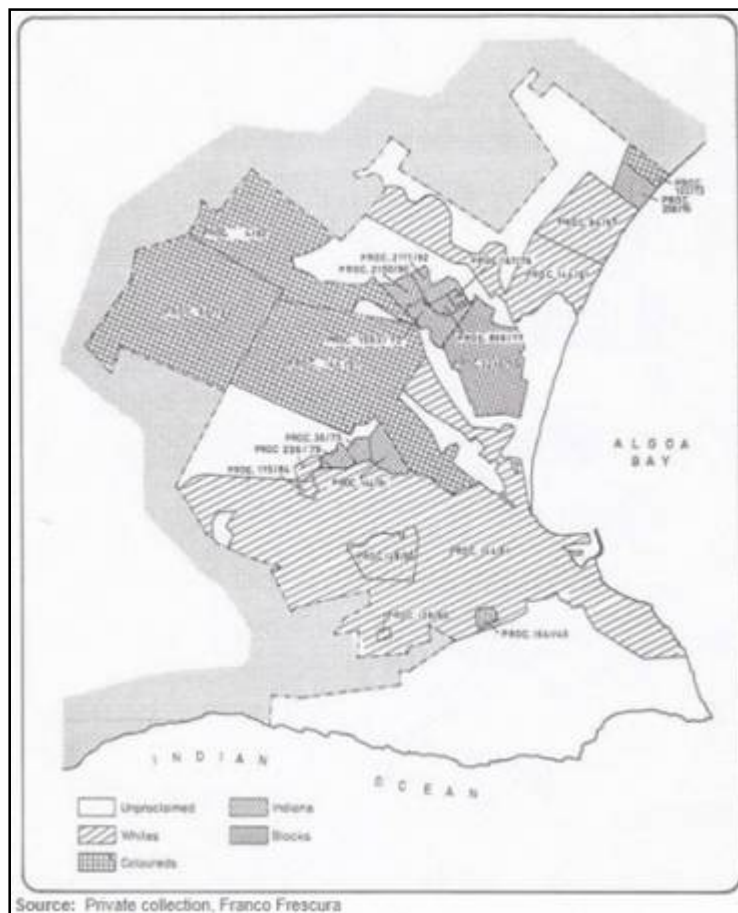
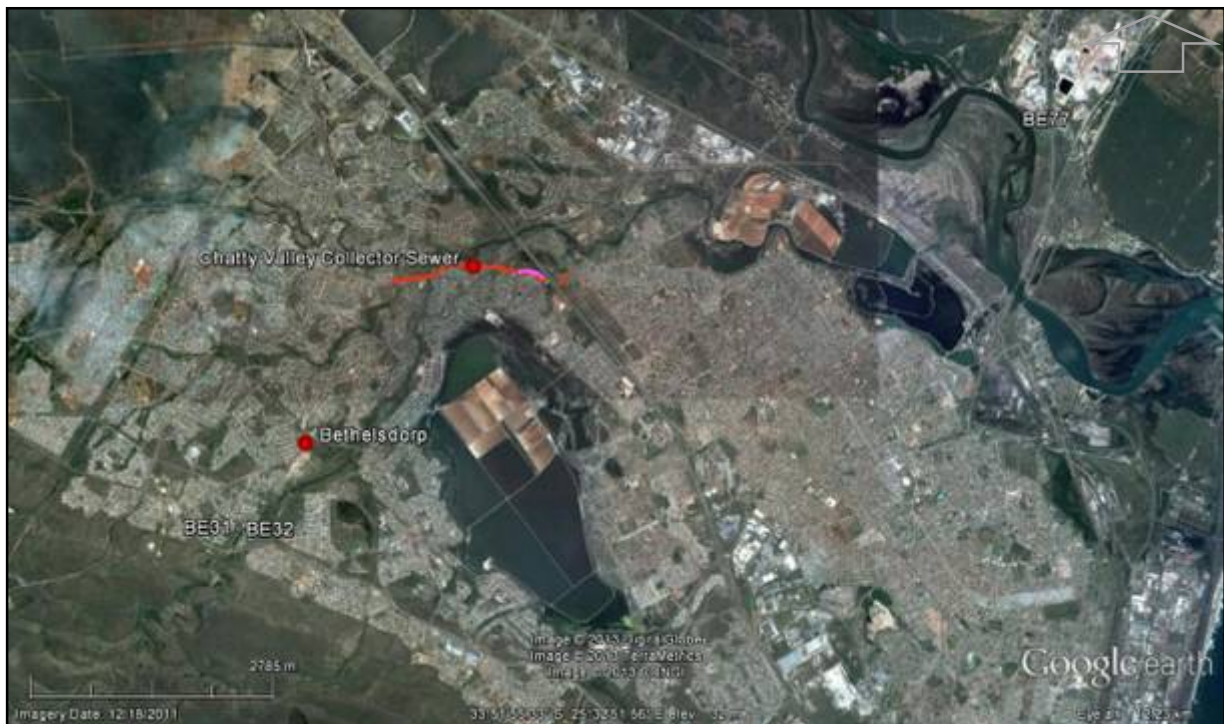


Figure 2: Port Elizabeth – Map depicting proclaimed Group Areas in the 1950's
(<http://www.sahistory.org.za/content/group-areas-1950>)

The historical village of Bethelsdorp was one of the 1st Mission Stations established in the Eastern Cape. The Mission Station was founded by London missionaries Van der Kemp and Read in 1802. They built the original almshouses, still standing today, behind the Ven der Kemp Memorial Church (the 1st congregational church in southern Africa), after convincing the government at the time to establish a settlement, where they would be able to educate and provide religious and social instruction to indigenous people. The market square and Livingstone's Cottage attest to time period significance of the Bethelsdorp Mission Station (<http://www.savenues.com/attractionsec/bethelsdorp.png>).

BUILT ENVIRONMENT – DECLARED PROVINCIAL HERITAGE SITES: The SAHRA Built Environment Database, listing all buildings in the Port Elizabeth region older than 60 years of age and declared Provincial Heritage Sites, lists 82 buildings, 57 of which are geo-referenced. Of the geo-referenced Provincial Heritage Sites 3 are displayed in proximity to the *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development, Bethelsdorp, including (http://en.wikipedia.org/wiki/List_of_heritage_sites_in_Port_Elizabeth):



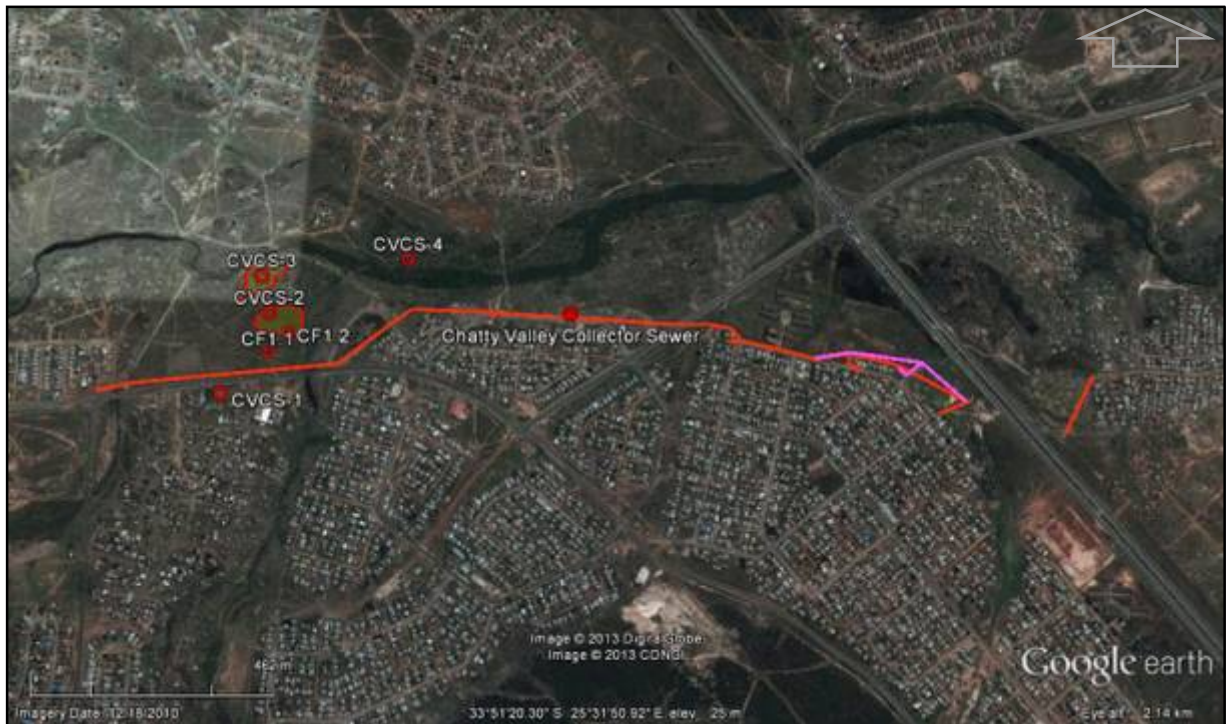
Map 3: Declared Built Environment Provincial Heritage Sites (buildings older than 60 years) in relation to the study site

1. BE31 - Almshouses, erected in 1822, Bethelsdorp, PE (9/2/073/0020);
2. BE32 - Van der Kemp Memorial Church, built in 1803 and re-built in 1903 and 1926, Bethelsdorp, PE (9/2/073/0020/001-01); and
3. BE77 - Redhouse Village Hall (9/2/073/0057).

SHIPWRECKS: Shipwrecks of the general Port Elizabeth area can be listed as (<http://www.sashipwrecks.com>): Abbotsford [1843]; Abdul Medjid [1871]; Abeona [1900]; Aberna [1900]; Aberystroith [1897]; Agincourt [1866?]; Albatros [1846]; Albatros [1881]; Albina [1851]; Alcona [1900]; Alma [1877]; Almira Coombs [1878]; Alman / Almena [1889]; Amelia Mulholland [1850]; Amena [1899]; Amsterdam HNMS [1817]; Amwell [1852]; Anreas Riis [1875]; Angus [1908]; Anne Marie [1872]; Arabian [1859]; Araminta [1889]; Argali [1869]; Arnold [1902]; Arum [1957]; Asiatic [1861]; Asiatic [1850]; Assyrian [1877]; Astrida [1945]; Atlantic [1835]; Aurora [1875]; Balgay [1902]; Ballarat [1864]; Barbadoes [1861]; Barso / Basileria / Basseilica [1879]; Bengali [1843]; Blackaller / Bankalter [1846]; Brilliant [1880]; Buffon [1858]; Burgomeester Schorer [1888]; Cambusnethan [1897], Cape Breton [1835]; Cape Lassie [1857]; Caprera [1884]; Catherine [1883]; Catherine Scott [1878]; Cavalerie Michelle Russo [1902]; Cavalini [1902]; Charles [1845]; Charlotte [1854]; Charlotte A. Morrison [1862]; Charlotte Gladstone [1879]; Chasseur [1859]; Clan McFarlane [1903]; Clara [1902]; Clara [1880]; Claren [1965]; Clydesdale [1880]; Competitor [1955]; Constant [1902]; Content [1902]; Cruiser [1872]; Crusader [1910]; Cuba [1853]; Curley [1887]; Cyclon [1883]; C. Boschetto / Boschetti [1888]; Deer Lodge [1943]; Delhi [1843]; Disa [1958]; Dodigton [1755]; Dolfonn [1943]; Don Pedro [1840]; Dona Castle [1914]; Dora [1897]; Doris [1850]; Dorothea [1888]; Drei Emmas [1888]; Duke of Buccleugh [1869]; East Lea [1929]; East London Packet [1855]; Edith Smith [1871]; Elda [1903]; Elephanta [1850]; Elizabeth [1822]; Elizabeth Brown [1872]; Elizabeth Rowell [1843]; Elizabeth Stevens [1888]; Elliot [1902]; Emilia [1898]; Emma [1873]; Emmanuel / Immaneuil [1902]; England [1869]; Essex [1832]; Eurydice [1857]; E.B. Lohe [1872]; Feejee / Feegee / Feyee [1837]; Fermann [1874]; Flamingo [1988]; Flash [1869]; Flatdog [1996]; Flora [1854]; Florence [1883]; Flying Scud [1880]; Forest Grove [1887]; Forres / Fonnes [1869]; Foxhound [1848]; Francis Burn / Bain [1849]; Francis Watson [1830]; Francis [1830]; Fred Warren [1872]; Friend [1858]; Gabrielle [1902]; Gaika [1902]; Galene [1870]; Gambia [1871]; Gerhardine [1888]; Gilbert Henderson [1847]; Good Hope [1819]; Governess (of Aberdeen?) [1859]; Gowan [1830]; Grindley [1850]; Gustaf [1869]; Hans Wagner [1902]; Harbinger [1891]; Hanselnodder [1901]; Hepworth [1823]; Herman [1874]; Hero [1861]; Heworth / Hepworth [1823]; Horwood [1845]; Hotbank [1873]; H.C. Hull [1961]; Ilva [1866]; Inch Marnock [1887]; Iris [1902]; Isabel / Isobel [1844]; Jack Tar [1840]; James Searle [1955]; James Searle [1901]; Jane Harvey [1888]; Jaunita / Juanita [1972]; Jeanne [1896]; Jim Crow [1846]; Johanna [1881]; Johanna [1848]; John M. Gamewell [1880]; Jorawur / Jarawar [1887]; Josephine [1855]; Justitia [1848]; Kapodistrias [1985]; Kate [1834]; Katherine Gwladys [1854]; Kayena [1857]; Kilbrennan [1970]; Killermont [1847]; Knysna [1952]; La Preneuse [1799]; Lada [1888]; Lady Leith [1848]; Lady McDonald [1876]; Lakme / Lakome [1896]; Lama [1843]; Laura [1843]; Le Condor [1978]; Lemoire [1903]; Ligonier / Legonier [1842]; Limari [1902]; L'Imperatrice Eugenie [1867]; Llanfullan (?); Longusta I [1970]; Lord Elgin [1904]; Lotos [1895]; Ludwig [1899]; Lyme Regis [1859]; Lyna [1914]; Lyttleton [1874]; Mabel Young [1879]; Maid of Devon [1865]; Margaret [1847]; Margareth [1846]; Maria [1837]; Manners Pride [1869]; Mariposa [1900]; Maritana [?]; Martha [1848]; Mary [1844]; Mary Ann [1888]; Mary Ann [1850]; Matilda [1838]; Mary [1874]; Meg Meriles [1869]; Mocha [1853]; Modesta [1892]; Mona [1846]; Mossel [1960]; Natal [1888]; Natalia [1955]; Nautilus [1902]; Neda / Nada [1888]; Nerbudda HMS [1855]; Nicolene [1875]; Nideros [1929]; Norfolk [1850]; Oaklands [1860]; Oakworth [1902]; Ondes [1901]; Orange Grove [1829]; Orchomene / Orchomere [1892]; Ornate [1904]; Ourimbah [1909]; Palestine [1846]; Paris Maru [1934]; Pati [1976]; Paz [1884]; Penelope [1591]; Petronella [1878]; Philip Dundas [1828]; Pickle [1935 / 1939]; Pilot [1844]; Plaudit [1942]; Port Douglas [1897]; Porto Alegre [1942]; Portsmouth [1866]; Poseidon [1889]; Prince of the Seas [1866]; Prince Woronzoff [1859]; Queen Victoria [1896]; Queensmoore [1934]; Reistad [1897]; Resolintion [1846]; Rhodesia I [1917]; Rockhurst [1883]; Roman [1867]; Rose II [1975]; R.A.C. Smith [1898]; Sabina [1842]; Sabrina [1840?]; Sailors Friend [1869]; San Antonio [1903]; Sarah Black [1869]; Sayre [1902]; Scindia [1864]; Scoobe [1991]; Scotia [1902]; Sea Gull [1844]; Sea Snake [1869]; Sedan [1879]; Sedna [1930]; Sedwell Jane [1893]; Sheperdess [1859]; Silistra [1862]; Simon [1871]; Sincapore [1824]; Sir Frederick [1928]; Sokoto [1881]; Sophia [1846]; Sparkling Foam [1875]; Spray [1906]; St. Brycedale [1875]; St. Croix [1871]; St. Croix I [1869]; St. Peter [1952]; Star of the East [1859]; Stella [1876]; Stork [1910]; Straits of Dover

[1896]; Sunbeam [1883]; Surrey [1857]; Susan [1846]; Swallow [1863]; Swamswee [1902]; S.A.S Haerlem [1987]; S.A.S. Y-1506 [?]; Taurus [1872]; Tentonia / Teutonia [1869]; Terina [1875]; Tevere [1878]; Thekla [1902]; Thunderbolt [1847]; Trafalgar [1904]; Trekboer [1844]; Tweed [1888]; Twilight [1886]; Udston [1881]; Uitenhage Packet [1819]; Umkhomanzi [1883]; Univers [1877]; Urania [1835]; Venice [1881]; Venture [1883]; Ville d'Oberon [1854]; Waimeg [1902]; Waratah [1909]; Wayfarer [1903]; Werner [1902]; West Indian [1851]; Wheatlandside [1878]; Wigrams [1859]; William Homewood [1857]; William Pitt [1813]; Witch of the Waves [1859]; Wolseley [1888]; W.H. Fuller [1944]; Yarra [2001]; Zeepaard [1823] and Zephyr [1889].

2.2) FIELD ASSESSMENT



Map 4: Results of the Field Assessment [1] [Red – Chatty Valley Collector Sewer; Magenta – Proposed realignment]



Map 5: Results of the Field Assessment [2]

2.2.1) CHATTY VALLEY SEWER ALIGNMENT – EAST OF THE R75

No archaeological or cultural heritage resources, as defined and protected by the NHRA 1999, were identified during the field assessment of the Chatty Valley sewer alignment situated east of the R75. Informal dumping characterized the short, approximate 130m alignment portion, while cleared tracks, disturbed surface areas and large exposed sub-surface sections along the south-western portion of the study site proved to be anthropogenically sterile. Development along the proposed alignment will by implication not impact on any identified cultural heritage resources.



Plate 1: View of the south-western part of the alignment east of the R75



Plate 3: Cleared pathways and tracks at the study site [1]



Plate 2: Anthropogenic sterile sections towards the south-western part of the study site



Plate 4: Cleared pathways and tracks at the study site [2]

2.2.2) CHATTY VALLEY SEWER ALIGNMENT – WEST OF THE R75

Four archaeological and cultural heritage resources, as defined and protected by the NHRA 1999, were identified during the field assessment of the Chatty Valley sewer alignment situated west of the R75, all situated along the western portion of the study site. All identified resources (Sites CVCS-1, CVCS-2, CVCS-3 and CVCS-4) are classed as Colonial Period resources.

Sites CVCS-1 and CVCS-4 are Built Environment sites; Colonial Period residences, still in use and pre-dating 60 years of age, thus formally protected by the NHRA 1999. Despite fairly close proximity neither of the sites will be impacted on by development, as a result of contemporary infrastructural development or natural geographic features respectively. Site CVCS-1 is situated south of the Old Uitenhage Rd, while Site CVCS-4 is situated north of the Chatty River – Development impact will be restricted to the area north of the Old Uitenhage Rd and south of the Chatty River.

In addition to the legally protected Built Environment resources 2 structures post-dating 60 years of age were also identified, these contemporary features are not formally protected by the NHRA 1999. Despite close proximity to the study site development will not impact on the features – alteration, defacement or destruction of the features are not subject to application or approval of an EC PHRA Built Environment permit. The contemporary features are briefly described as:

- CF1.1 (S33°51'20.1"; E25°31'23.0"): The feature comprises of an approximate 2x10+m rectangular brick and cement platform structure situated approximately 30m north of the proposed development alignment; and
- CF1.2 (S33°51'18.7"; E25°31'24.5"): The feature is characterized by an approximate 3x3m cement platform located immediately south of and in direct proximity to some of the southern graves of the CVCS-2 cemetery, more or less 70m north of the proposed development alignment.

Recorded Colonial Period cemetery sites, Sites CVCS-2 and CVCS-3, are situated just north of the development alignment with the southern perimeter of Site CVCS-2 within 70m from the proposed development alignment. An eroded stream or tributary of the Chatty River divides the Colonial Period burial areas, but it is important to note that these sites should best be regarded as a single large cemetery. Formal heritage conservation (including CVCS-2 and CVCS-3) would be preferable; implying that these burial grounds be permanently fenced with an access gate before construction starts. Identified graves at the site date from the late 1800's / early 1900's to as recently and 2004; recorded sites have a Colonial Period origin, but can essentially be described as still in use. Formal heritage conservation recommendations may thus well necessitate additional EIA requirements with reference to the 'establishment' of a cemetery, outside the scope of this application. Should this be the case it is recommended that the presence of the cemetery be brought to the attention of the NMBM to further investigate the possibility of 'establishment' of a cemetery while temporary conservation measures (demarcation of the CVCS-2 and CVCS-3 features with construction netting and sign posting) should be put in place by the developer to ensure the safety of the burial grounds during construction.

Recorded archaeological and cultural heritage resources are individually described as:

❖ CVCS-1: Colonial Period – Residence – S33°51'23.1"; E25°31'19.6"

The CVCS-1 site comprises of a Colonial Period residence. The residence pre-dates 60 years of age and is formally protected by the NHRA 1999. The site is situated approximately 50m south of the development alignment, south of the Old Uitenhage Rd. and will not be impacted on by development. The residence is still in use and fairly well maintained. (The site was not directly inspected.)

- **RECOMMENDATIONS:** Site CVCS-1 comprises of a Colonial Period residence, pre-dating 60 years of age and formally protected by the NHRA 1999. The site receives automatic SAHRA protection as a *Grade 2 Provincial Heritage Resource of High Significance*. The site is situated approximately 50m south of the development alignment, south of the Old Uitenhage Rd. and will not be impacted on by development. The residence is still in use. No additional conservation measures are recommended.

❖ CVCS-2: Colonial Period – Cemetery – S33°51'17.5"; E25°31'22.7"

The southern perimeter of the CVCS-2 Colonial Period cemetery lies roughly 70m north of the proposed development alignment. The CVCS-2 cemetery, or southern portion of the greater Colonial Period cemetery, measures roughly 100x50m in size with the original cemetery gate posts demarcating the original south-central entrance of the cemetery. The exact number of graves is unknown, but estimated at 200-300+ in number. Graves are demarcated by varying types of grave markers, from formal granite, inscribed headstones, to clearly outline graves with cement headstones, some of which the inscriptions are still legible. The north-eastern and central part of the site is characterized by more traditional style graves; some stone outlined, some decorated and some inscribed. In many cases grave mounds have settled making these graves difficult to identify amidst often thick vegetation. In the central part of the cemetery it seems as though some graves have been exhumed, inferred to be for reburial in formal cemetery purposes. The graves vary quite radically in age. Un-inscribed graves are impossible to date: However, settled grave mounds are an indicator of relative age, implying that many of these graves may well pre-date 60 years of age. Marked graves range in date of burial from the early 1900's to as recent as 2004.

- **RECOMMENDATIONS:** Site CVCS-2 comprises of a Colonial Period cemetery: The site is formally protected by the NHRA 1999. Site CVCS-2 is ascribed a SAHRA *High Significance* and a *Generally Protected A Field Rating*. The site will not be impacted on by development. Proximity of the development to the site remains a cause of concern. Formal conservation (of the CVCS-2 and CVCS-3 sites) would be preferable, implying a permanent fence and access gate to be erected before construction starts. Preferred formal conservation heritage recommendations should however be weighed against EIA requirements and it may well be that a separate application would be necessary for the 'establishment' of a cemetery, in which case the developer should ensure that temporary conservation measures (temporary conservation fence of for ex. orange construction netting and signage indicating the area as a 'No Entry - Heritage Sensitive Zone') be in place for the full tenure of construction. Temporary conservation measures should be removed when construction have been completed.

❖ CVCS-3: Colonial Period – Cemetery – S33°51'14.9"; E25°31'21.8"

The CVCS-3 Colonial Period cemetery is situated roughly 200m north of the proposed development alignment, and north of the dry stream section dividing the greater cemetery or the CVCS-2 and CVCS-3 burial grounds. The CVCS-3 cemetery measures approximately 70x65m in size and contains a 200+ conservative estimate of graves. Graves are again demarcated by varying types of grave markers, from formal granite, inscribed headstones, to clearly outline graves with inscribed headstones. The oldest identified, inscribed graves date to the late 1800's with the youngest grave observed dating to 2002. Sections of the cemetery are characterized by unmarked earth mound graves, with settled grave mounds as an indicator of possible noticeable age. No indication of exhumation was identified within the CVCS-3 cemetery.

- **RECOMMENDATIONS:** Site CVCS-3 comprises of a Colonial Period cemetery: The site is formally protected by the NHRA 1999. Site CVCS-3 is ascribed a SAHRA *High Significance* and a *Generally Protected A Field Rating*. The site will not be impacted on by development: The site is situated approximately 200m north of the proposed development alignment. Formal conservation (of the CVCS-2 and CVCS-3 sites) would be preferable, implying a permanent fence and access gate to be erected before construction starts. Formal conservation heritage recommendations should be weighed against EIA requirements for the 'establishment' of a cemetery, outside the scope of this application. Alternatively the developer should ensure that temporary conservation measures (temporary conservation fence of for ex. orange construction netting and signage indicating the area as a '*No Entry - Heritage Sensitive Zone*') be in place for the full tenure of construction. Temporary conservation measures should be removed when construction have been completed.

❖ CVCS-4: Colonial Period – Residence – S33°51'13.4"; E25°31'33.6"

The CVCS-4 site comprises of a Colonial Period residence, pre-dating 60 years of age and formally protected by the NHRA 1999. The site is situated roughly 100m north of the development alignment, on the northern banks of the Chatty River. The residence is still in use. (The site was not directly inspected.)

- **RECOMMENDATIONS:** Site CVCS-4 comprises of a Colonial Period residence, pre-dating 60 years of age and formally protected by the NHRA 1999. The site receives automatic SAHRA protection as a *Grade 2 Provincial Heritage Resource of High Significance*. The site is situated approximately 100m north of the development alignment, on the northern banks of the Chatty River. The residence is still in use. No additional conservation measures are recommended.



Plate 5: View of the western part of the alignment route west of the R75



Plate 7: View of the central part of the alignment route west of the R75 [2]



Plate 6: View of the central part of the alignment route west of the R75 [1]



Plate 8: View of the eastern part of the alignment route west of the R75



Plate 9: View of the CF1.1 structure remains



Plate 11: View of the CVCS-1 house, pre-dating 60 years of age



Plate 10: View of the CF1.2 remains



Plate 12: View of the CVCS-4 house, pre-dating 60 years of age



Plate 13: Gate posts of the Colonial Period CVCS-2 cemetery



Plate 15: Graves from the CVCS-2 cemetery [2]



Plate 14: Graves from the CVCS-2 cemetery [1]



Plate 16: Graves from the CVCS-2 cemetery [3]



Plate 17: A single grave from the CVCS-2 cemetery



Plate 19: Graves from the CVCS-3 cemetery [1]



Plate 18: Graves from the CVCS-2 cemetery [4]



Plate 20: Graves from the CVCS-3 cemetery [2]



Plate 21: Graves from the CVCS-3 cemetery [3]



Plate 23: Graves from the CVCS-3 cemetery [5]



Plate 22: Graves from the CVCS-3 cemetery [4]



Plate 24: Graves from the CVCS-3 cemetery [6]

3) CONCLUSION AND RECOMMENDATIONS

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed *Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer* development, Bethelsdorp, NMBM, Eastern Cape, proceeds as applied for provided the developer comply with the below listed heritage compliance requirements:

- 1) The CVCS-1 and CVCS-4 Colonial Period residences will be conserved – no additional conservation measures are required before development commences; and
- 2) The CVCS-2 and CVCS-3 Colonial Period cemeteries should be conserved – Should formal conservation (permanent fence with access gate including the CVCS-2 and CVCS-3 cemetery demarcations) require compliance to EIA requirements for the ‘establishment’ of a cemetery, outside the scope of this application, the developer should ensure that these areas be temporarily demarcated and sign posted for the tenure of construction.

REPLACEMENT OF THE CHATTY VALLEY COLLECTOR SEWER AND CONSTRUCTION OF THE LINK SEWER					
BETHELSDORP, NMBM, EASTERN CAPE					
Map Code	Site	Type / Period	Description	Co-ordinates	Preliminary Recommendations
Replacement of the Chatty Valley Collector Sewer and Construction of the Link Sewer					
	Chatty Valley Collector Sewer	-		S33°59'06.6"; E25°34'29.6"	Development to proceed
CVCS-1	CVCS-1	Colonial Period	Residence	S33°51'23.1"; E25°31'19.6"	CONSERVATION: No additional conservation measures required.
CVCS-2	CVCS-2	Colonial Period	Cemetery	S33°51'17.5"; E25°31'22.7"	CONSERVATION: Formal conservation – Permanent fence with access gate (including CVCS-2 and CVCS-3); or Temporary conservation – Temporary fence with signage (CVCS-2).
CVCS-3	CVCS-3	Colonial Period	Cemetery	S33°51'14.9"; E25°31'21.8"	CONSERVATION: Formal conservation – Permanent fence with access gate (including CVCS-2 and CVCS-3); or Temporary conservation – Temporary fence with signage (CVCS-3).
CVCS-4	CVCS-4	Colonial Period	Residence	S33°51'13.4"; E25°31'33.6"	CONSERVATION: No additional conservation measures required.

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

NOTES:

- Should any archaeological or cultural heritage resources, including human remains / graves, as defined and protected under the NHRA 1999, and not reported on in this report be identified during the course of development the developer should immediately cease operation in the vicinity of the find and report the site to the EC PHRA / an ASAPA accredited CRM archaeologist. Human remains confirmed younger than 60 years are to be reported directly to the nearest police station.

- 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 Impact Assessment (EIA).

4) REFERENCES

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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 *fosilles 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, Ndondonwane and Ntshokane 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 Kgopolwe 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 comprises 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 region's 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 typography 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 Moloko 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 tones 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 Indian 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

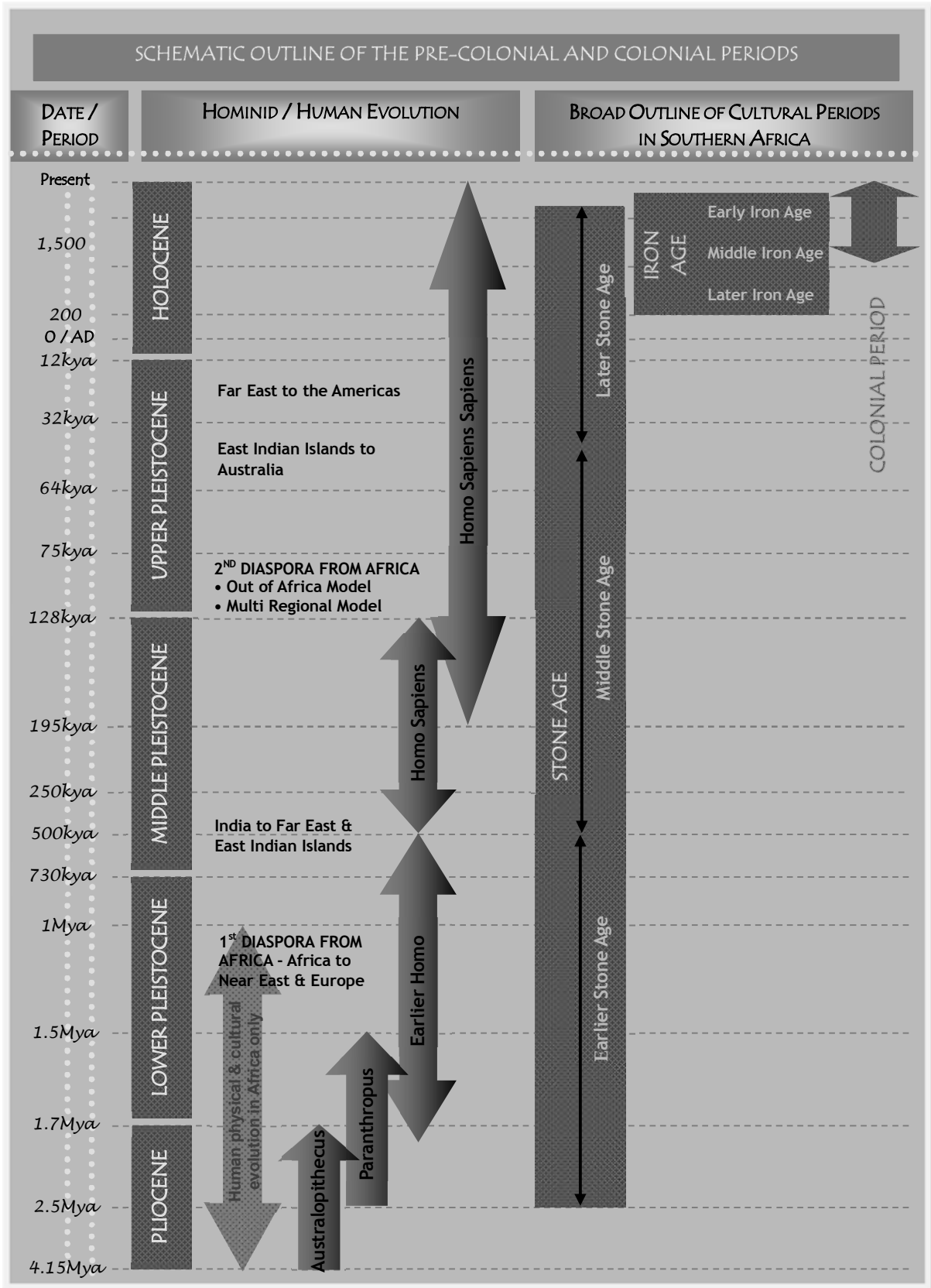
From the late 1600's conflict between migrants from the Cape (predominantly Boers) and Xhosa people in the region of the Fish River were strife, ultimately resulting in a series of 9 Frontier Wars (1702-1878) (Milton 1983). Both cultures were heavily based and reliant on agriculture and cattle farming. 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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EXTRACTS FROM THE NATIONAL HERITAGE RESOURCES ACT, NO 25 OF 1999

DEFINITIONS

Section 2

In this Act, unless the context requires otherwise:

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

NATIONAL ESTATE

Section 3

- 1) For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.
- 2) Without limiting the generality of subsection 1), the national estate may include –
 - a) places, buildings, structures and equipment of cultural significance;
 - b) places to which oral traditions are attached or which are associated with living heritage;
 - c) historical settlements and townscapes;
 - d) landscapes and natural features of cultural significance;
 - e) geological sites of scientific or cultural importance
 - f) archaeological and palaeontological sites;
 - g) graves and burial grounds, including –
 - i. ancestral graves;
 - ii. royal graves and graves of traditional leaders;
 - iii. graves of victims of conflict
 - iv. graves of individuals designated by the Minister by notice in the Gazette;
 - v. historical graves and cemeteries; and
 - vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No 65 of 1983)
 - h) sites of significance relating to the history of slavery in South Africa;

- i) movable objects, including –
 - i. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - ii. objects to which oral traditions are attached or which are associated with living heritage;
 - iii. ethnographic art and objects;
 - iv. military objects;
 - v. objects of decorative or fine art;
 - vi. objects of scientific or technological interest; and
 - vii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 xiv) of the National Archives of South Africa Act, 1996 (Act No 43 of 1996).

STRUCTURES

Section 34

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

ARCHAEOLOGY, PALAEOLOGY AND METEORITES

Section 35

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

BURIAL GROUNDS AND GRAVES

Section 36

- 3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority –
 - a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
 - b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
 - c) bring onto or use at a burial ground or grave referred to in paragraph a) or b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- 4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction of any burial ground or grave referred to in subsection 3a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.
- 5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection 3b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority –

- a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
 - b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.
- 6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority –
- a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and
 - b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-internment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

HERITAGE RESOURCES MANAGEMENT

Section 38

- 1) Subject to the provisions of subsections 7), 8) and 9), any person who intends to undertake a development categorised as –
- a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
 - b) the construction of a bridge or similar structure exceeding 50 m in length;
 - c) any development or other activity which will change the character of a site –
 - i. exceeding 5 000 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.
- 2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection 1) –
- a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or
 - b) notify the person concerned that this section does not apply.
- 3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection 2a) ...
- 4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development decide –
- a) whether or not the development may proceed;
 - b) any limitations or conditions to be applied to the development;
 - c) what general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;
 - d) whether compensatory action is required in respect of any heritage resources damaged or destroyed as a result of the development; and
 - e) whether the appointment of specialists is required as a condition of approval of the proposal.

APPOINTMENT AND POWERS OF HERITAGE INSPECTORS

Section 50

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

- 10) A heritage inspector may, if there is reason to believe that any work is being done or any action is being taken in contravention of this Act or the conditions of a permit issued in terms of this Act, order the immediate cessation of such work or action pending any further order from the responsible heritage resources authority.