- 17 March 2015 -

**Attention:**

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

**Carene Kruger (Strategic Environmental Focus – SEF)**
E-mail: carene@sefsa.co.za; Tel: 012 349 1307; Postal Address: P.O. Box 74785, Lynwood Ridge, 0040

**RE : Basic Heritage Impact Assessment (HIA) - The Engcobo Mall Development, (Portion of Portion 1 & Portion 136 of Engcobo Township), Ngcobo, Ngcobo Local Municipality, Eastern Cape**

The basic Heritage Impact Assessment (HIA) for the proposed Engcobo Mall Development, portion of Portion 1 and Portion 136 of Engcobo Township, Ngcobo, NLM area, Eastern Cape, was commissioned by SEF to meet the Eastern Cape Provincial Heritage Resources Authority's (EC PHRA) HIA requirements as per Section 38 – Heritage Resources Management, of the National Heritage Resources Act, No 25 of 1999 (NHRA 1999).

The basic HIA for the above mentioned development comprises a:

- Phase 1 Archaeological Impact Assessment (AIA) – Karen van Ryneveld [MSc Archaeology], ArchaeoMaps cc;
- Desktop Palaeontological Assessment (PIA) – John Almond [PhD Palaeontology], Natura Viva cc; and a
- Heritage Protocol for Incidental Finds during the Construction Phase.

Yours faithfully,

**Karen van Ryneveld**
**ArchaeoMaps**
(E-mail: kvanryneveld@gmail.com / Cell: 084 871 1064)

# Archaeology

Phase 1 Archaeological Impact Assessment –

# The Engcobo Mall Development, (Portion of Portion 1 & Portion 136 of Engcobo Township), Ngcobo, Ngcobo Local Municipality, Eastern Cape

- 16 March 2015 -

**Report to:**

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

**Carene Kruger (Strategic Environmental Focus – SEF)**
E-mail: carene@sefsa.co.za; Tel: 012 349 1307; Postal Address: P.O. Box 74785, Lynwood Ridge, 0040

**Prepared by:**

**Karen van Ryneveld (ArchaeoMaps)**
E-mail: kvanryneveld@gmail.com; Tel: 084 871 1064; Postal Address: Postnet Suite 239, Private Bag X3, Beacon Bay, 5205

## Specialist Declaration of Interest

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

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

**Signature –** - 16 March 2015 -

# The Engcobo Mall Development, (Portion of Portion 1 & Portion 136 of Engcobo Township), Ngcobo, Ngcobo Local Municipality, Eastern Cape

## Executive Summary

### Terms of Reference –

SEF have been appointed as independent EAP by the project proponent, Billion Property Group, to apply for EA, including a BAR and EMPr report, to the EC DEDEAT for the proposed *Engcobo Mall Development*, to be situated on a portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, in the NLM area of the Eastern Cape. The proposed *Engcobo Mall* study site is located at general development co-ordinate S31°40'24.4"; E28°00'14.2" and comprises an approximate 10ha area. The project proposal involves the development of a shopping mall and associated infrastructure and facilities, accommodating amongst others the offices of the SASSA.

ArchaeoMaps was appointed by SEF to coordinate the basic HIA for the development. The basic HIA comprises a Phase 1 AIA, a desktop PIA and a protocol for heritage finds during the construction phase of the development. This report represents the Phase 1 AIA only, with findings and recommendations thereof to be included in the BAR and EMPr.

### The Phase 1 Archaeological Impact Assessment –

**Project Area:** *Engcobo Mall Development* study site, portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, NLM, Eastern Cape [1:50,000 Map Ref – 3128CA].

**Coverage & Gap Analysis:** Pre-feasibility and field assessment.

**Field Methodology:** One day field assessment; GPS co-ordinates – Garmin GPSmap 62s; Photographic documentation – Pentax K20D. Site significance assessment – SAHRA 2007 system.

**Summary:**

- No archaeological or cultural heritage developmental 'fatal flaws' identified;
- One (1) archaeological or cultural heritage resource [Site EMD-S1], as defined and protected by the NHRA 1999, was identified during fieldwork. Site EMD-S1 will be directly affected by development. The developer may consider either conservation of the site within the development layout or destruction thereof under an EC PHRA (BE Unit) site destruction permit (see Recommendations);
- [Should any incidental archaeological or cultural heritage resources, as defined and protected by the NHRA 1999, be encountered during the course of development the process described in the 'Heritage Protocol for Incidental Finds during the Construction Phase' should be followed.]

| Map Code | Site | Co-ordinates | Recommendations |
|---|---|---|---|
| ***Engcobo Mall* development, Ngcobo, Eastern Cape** | | | |
| **EMD-S1** | Colonial Period – Farmstead remains | S31°40'23.1"; E28°00'12.31" | **Formal Conservation**<br>Formal conservation within development layout allowing for an approximate 10-15m conservation buffer between heritage site structures and development<br>**OR**<br>**Site Destruction under an EC PHRA (BE Unit) permit**<br>Application for site destruction may well require additional site documentation. Upon approval of the Site Destruction permit application destruction of the site may legally proceed for development purposes. |

### Recommendations –

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed *Engcobo Mall Development*, to be situated on a portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, in the NLM area of the Eastern Cape, proceeds as applied for provided the developer comply with the above listed heritage management recommendations.

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

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# 1 - Terms of Reference

Strategic Environmental Focus (Pty) Ltd (SEF) have been appointed as independent Environmental Assessment Practitioner (EAP) by the project proponent, Billion Property Group, to apply for Environmental Authorization (EA), including a Basic Assessment (BAR) and Environmental Management Plan (EMPr) report, to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (EC DEDEAT) for the proposed *Engcobo Mall Development*, to be situated on a portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, in the Ngcobo Local Municipal (NLM) area of the Eastern Cape. The proposed *Engcobo Mall* study site is located at general development co-ordinate S31°40'24.4"; E28°00'14.2" and comprises an approximate 10ha area. The project proposal involves the development of a shopping mall and associated infrastructure and facilities, accommodating amongst others the offices of the South African Social Security Agency (SASSA).

ArchaeoMaps cc (ArchaeoMaps) was appointed by SEF to coordinate the basic Heritage Impact Assessment (HIA) for the development. The basic HIA comprises a Phase 1 Archaeological Impact Assessment (AIA) and a desktop Palaeontological Impact Assessment (PIA), including a protocol for heritage finds during the construction phase of the development.

This report represents the Phase 1 AIA only, with findings and recommendations thereof to be included in the BAR and EMPr. Terms of Reference (ToR) for the Phase 1 AIA, with specific reference to archaeological and basic cultural heritage compliance requirements are summarized as:

- Undertake a desktop study and field assessment to identify important archaeological and cultural heritage resources in the area. In particular identify:
  - Potential sites of archaeological and cultural heritage significance (GPS co-ordinates to be provided for planning purposes);
- Identify any potential 'fatal flaws' linked to the proposed development;
- Describe the findings of the study and their potential implications for the proposed project. This should include a description and assessment of the significance of the impacts of the proposed activities on the heritage resources; and
- Provide detailed guideline measures to manage any impacts, particularly during the construction phase but including the implementation phase, and an assessment of their likely effectiveness.

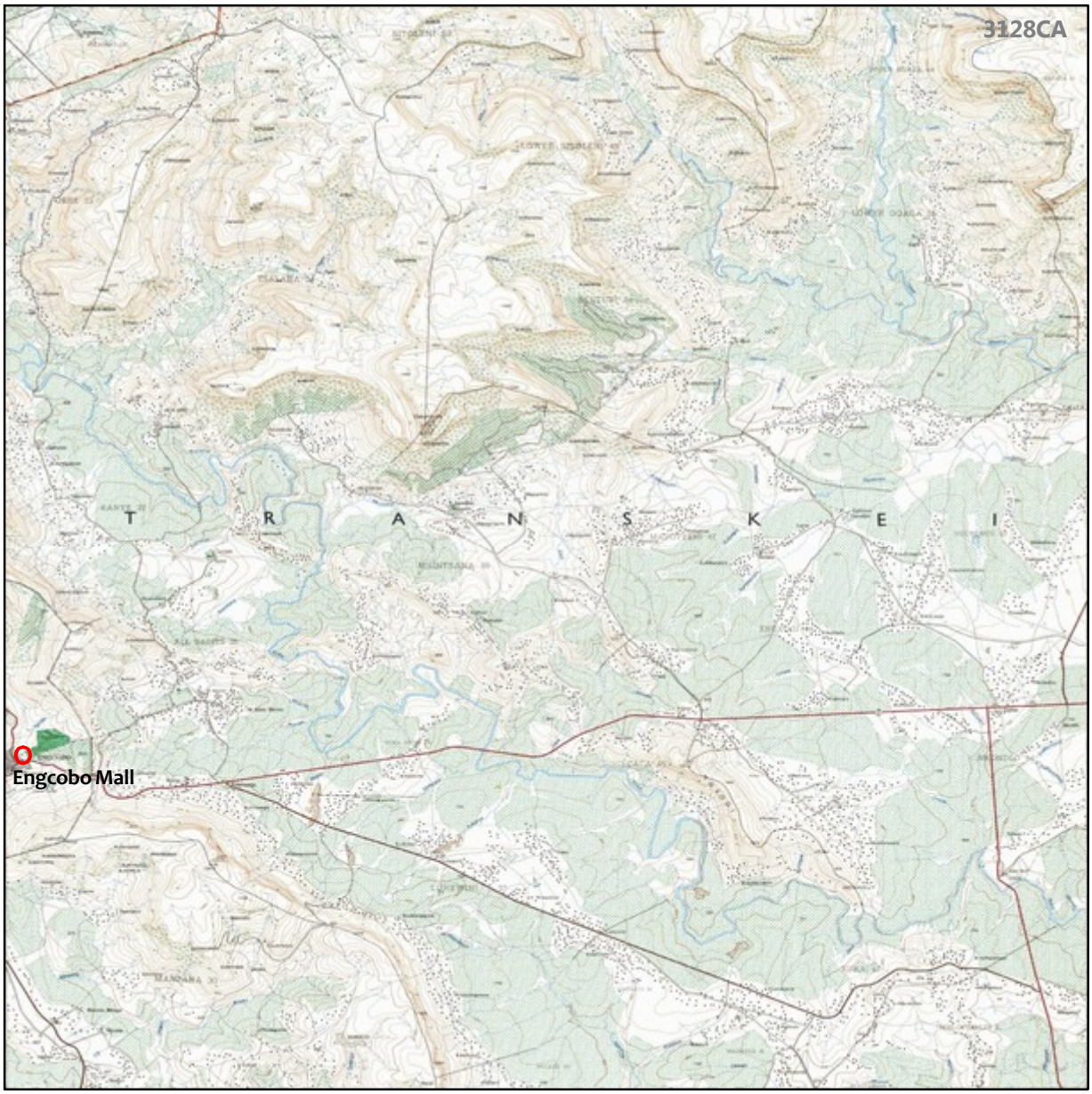
### 1.1.1) Development Location, Details and Impact

The proposed *Engcobo Mall* study site is located at general development co-ordinate S31°40'24.4"; E28°00'14.2" and comprises an approximate 10ha area, described as portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, in the Ngcobo Local Municipal (NLM) area of the Chris Hani District Municipality (CHDM), Eastern Cape [1:50,000 Map Ref – 3128CA] (SEF 2015).

The *Engcobo Mall* study site falls within portions of Wards 10 and 11 of the said area and will be accessible directly from the Ngcobo Main Road (R61) with Warner Road running immediately west of the site. The property is at present owned by the NLM. The NLM, in association with the Billion Property Group, intends to develop a shopping mall and associated infrastructure and facilities, accommodating amongst others the offices of the South African Social Security Agency (SASSA). The development application will include all relevant subdivision, consolidation and rezoning applications that may apply (SEF 2015).


**Map 1:** General locality of the *Engcobo Mall* study site, Ngcobo, Ngcobo Local Municipality (NLM), Eastern Cape [1]


**Map 2:** General locality of the *Engcobo Mall* study site, Ngcobo, Ngcobo Local Municipality (NLM), Eastern Cape [2]




**Map 3:** Locality of the *Engcobo Mall* study site, Ngcobo, NLM, Eastern Cape [1:50,000 Map Ref – 3128CA]

# 2 - The Phase 1 Archaeological Impact Assessment

## 2.1.1) Archaeological Legislative Compliance

The Phase 1 Archaeological Impact Assessment (AIA) for the proposed *Engcobo Mall Development*, portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, NLM, CHDM, Eastern Cape, was requested to meet the Eastern Cape Provincial Heritage Resources Authority's (EC PHRA) requirements with reference to archaeological and basic cultural heritage resources in terms of the National Heritage Resources Act, No 25 of 1999 (NHRA 1999), with specific reference to Section 38(1)(a), 38(1)(c)(i) and 38(1)(d).

**NHRA 1999, Section 38**

1) Subject to the provisions of subsections 7), 8) and 9), any person who intends to undertake a development categorized as –
   - **a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;**
   - b) the construction of a bridge or similar structure exceeding 50 m in length;
   - **c) any development or other activity which will change the character of a site –**
     - i. **exceeding 5 000 m² in extent;** or
     - ii. involving three or more existing erven or subdivisions thereof; or
     - iii. involving three or more erven or subdivisions thereof which have been consolidated within the past five years; or
     - iv. the costs which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
   - d) **the rezoning of a site exceeding 10 000 m² in extent;** or
   - e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

   must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

**Table 1:** Extracts from the NHRA 1999, Section 38

The Phase 1 AIA aimed to locate, identify and assess the significance of 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 viewscapes as defined and protected by the NHRA 1999, that may be affected by the development.

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

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

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

## 2.1.2) Methodology & Gap Analysis

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

- The pre-feasibility assessment is based on the Appendices A and B introductory archaeological literature. In addition the SAHRA 2009 Mapping Project Database (MPD), SAHRIS and the SAHRA Database on declared Provincial Heritage Sites (PHS) – Eastern Cape, were consulted. The study excludes consultation of museum and university databases.

- The field assessment was done over a 1 day period (2015-03-11) with fieldwork conducted by the author. The assessment was done by foot and off-road vehicle and limited to a Phase 1 surface survey. GPS co-ordinates were taken with a Garmin GPSmap 62s (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.

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 I | Site conservation / Site development |
| High Significance | Provincial Significance | Grade II | Site conservation / Site development |
| High Significance | Local Significance | Grade III-A | Site conservation or extensive mitigation prior to development / destruction |
| High Significance | Local Significance | Grade III-B | Site conservation or extensive mitigation prior to development / destruction |
| High / Medium Significance | Generally Protected A | Grade IV-A | Site conservation or mitigation prior to development / destruction |
| Medium Significance | Generally Protected B | Grade IV-B | Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction |
| Low Significance | Generally Protected C | Grade IV-C | On-site sampling, monitoring or no archaeological mitigation required prior to or during development / destruction |

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

### 2.1.3) Assessor Accreditation

Karen van Ryneveld (ArchaeoMaps):

- Qualification: MSc Archaeology (2003) WITS University, Johannesburg / Certificate GIS (2007) NMMU University, Port Elizabeth.
- Accreditation: Association of Southern African Professional Archaeologists (ASAPA) accredited Cultural Resources Management (CRM) practitioner [member nr – 163]
    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 / AMAFA / EC PHRA / HWC listed CRM archaeologist.

Karen has been involved in CRM archaeology since 2003 and has been the author (including selected co-authored reports) of more than 300 Phase 1 AIA studies. Phase 1 AIA work is centered in South Africa, focusing on the Northern and Eastern Cape provinces and the Free State. She has also conducted Phase 1 work in Botswana (2006/2007). In 2007 she started ArchaeoMaps, an independent archaeological and heritage consultancy. In 2010 she was awarded ASAPA CRM Principle Investigator (PI) status based on large scale Phase 2 Stone Age mitigation work (De Beers Consolidated Mines – Rooipoort, Northern Cape – 2008/2009) and has also been involved in a number of other Phase 2 projects including Stone Age, Shell Middens, Grave / Cemetery projects and Iron Age sites.

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

### 2.2.1) Pre-feasibility Summary

Based on a basic introductory literature assessment of South African archaeology (See Appendices A and B) and background heritage database research, the probability of archaeological and cultural heritage sites situated within or in direct proximity to the *Engcobo Mall,* Ngcobo, study site can briefly be described as:

| **Archaeological and Basic Cultural Probability Assessment – *Engcobo Mall,* Ngcobo, NLM, Eastern Cape** | | | |
|---|---|---|---|
| **Primary Type / Period** | **Sub-Period** | **Sub-Period Type Site** | **Probability** |
| **EARLY HOMININ / HOMINID** | - | - | None |
| | Graves / Human remains: High scientific significance | | |
| **STONE AGE** | Earlier Stone Age (ESA) | | None |
| | Middle Stone Age (MSA) | | None-Low |
| | Later Stone Age (LSA) | | Low |
| | | Rock Art | None-Low |
| | | Shell Middens | None |
| | Graves / Human remains: ESA & MSA – High scientific significance; LSA – High scientific & social significance | | |
| **IRON AGE** | Early Iron Age (EIA) | | Low |
| | Middle Iron Age (MIA) | | None |
| | Later Iron Age (LIA) | | High |
| | Graves & Human remains: EIA – High scientific & medium social significance; MIA & LIA: High scientific & social significance | | |
| **COLONIAL PERIOD** | Colonial Period | | Medium |
| | | LSA – Colonial Period Contact | None-Low |
| | | LIA – Colonial Period Contact | Medium-High |
| | | Industrial Revolution | None-Low |
| | | Apartheid & Struggle | Medium-High |
| | Graves / Human Remains: Medium-high scientific & high social significance | | |

**Table 3:** Archaeological and basic cultural probability assessment

### 2.2.2) The SAHRA 2009 MPD & SAHRIS

A limited number of archaeological Cultural Resources Management (CRM) reports are recorded in the SAHRA 2009 Mapping Project Database (MPD), situated within an approximate 60km radius from the *Engcobo Mall* study site, listed as:

- Dreyer, C. (Private). 2007. *First Phase Archaeological and Cultural Heritage Assessment of the Proposed Diamond Prospecting on the Farm Saamwerk (Portion 14 Grootrivierwagendrift 29), Aliwal North, Eastern Cape*.
- Van Schalkwyk, L.O. (eThembeni). 2008. *Heritage Impact Assessment of the Proposed N2 Wild Coast Toll Highway.*
- Van Schalkwyk, L. & Wahl, B. (eThembeni). 2007. *Heritage Impact Assessment of Waste Water Treatment Works, Ugie, Eastern Cape Province, South Africa.*
- Van Schalkwyk, L. & Wahl, B. (eThembeni) 2008. *Heritage Impact Assessment of Shopping Centre, Ugie, Eastern Cape Province, South Africa*.

Five (5) cases are recorded on SAHRIS, situated within an approximate 30km radius from the *Engcobo Mall* study site. SAHRIS CaseID 2432 pertains to a coal mining application on various farms in the division of Elliot and SAHRIS CaseID to a series of borrow pit applications, but without archaeological CRM studies directly associated with the SAHRIS cases. Archaeological CRM studies are associated with the following SAHRIS cases: SAHRIS CaseID's 1234, 2230 and 4846, with relevant studies referenced as:

- Kruger, N. (AGES). 2013. *Archaeological Impact Assessment for the Cluster 6 Lokshini Water Supply Augmentation Project, Chris Hani District Municipality, Eastern Cape Province.* (SAHRIS CaseID 4846).

- Van Ryneveld, K. (ArchaeoMaps). 2011. *Phase 1 Archaeological Impact Assessment – The Qumanco Borrow Pit, near Engcobo, Chris Hani District Municipality, Eastern Cape, South Africa.* (SAHRIS CaseID 1234).
- Whelan, D. (Archaic Consulting). 2013. *Heritage Impact Assessment of the Nessie Knight Hospital near Qumbu, Eastern Cape.* (SAHRIS CaseID 2230).

### 2.2.3) SAHRA Provincial Heritage Site Database – Eastern Cape

Georeferenced declared Provincial Heritage Sites (PHS) recorded in the SAHRA – Eastern Cape database and situated within an approximate 60km radius from the *Engcobo Mall,* Ngcobo, study site can be listed as (en.wikipedia.org/wiki/List_of_heritage_sites_in_Eastern_Cape).

| Declared Provincial Heritage Sites – Eastern Cape | | | | | |
|---|---|---|---|---|---|
| **Map Ref** | **Identifier** | **Site Name** | **Town** | **NHRA status** | **Coordinates** |
| BE-EC78 | 9/2/026/0013 | Cuthbert's Building, 110 Oxford Street, East London [Architectural style: Victorian neo-Classic. Designed – 1895. Designed by architects Parker & Forsyth of Cape Town and erected in 1901 for W.M. Cuthbert.] | East London | Provincial Heritage Site | S32°00′54″; E27°54′12″ [Erroneous listing] |
| BE-EC112 | 9/2/045/0005 | Dutch Reformed Church, Voortrekker Street, Indwe [One of the last large sandstone churches to be erected in the northern Eastern Cape.] | Indwe | Register | S31°28′02″; E27°20′20″ |
| BE-EC162 | 9/2/077/0008 | Museum, Naude Street, Queenstown [Architectural style: Victorian. Erected in 1868 as a primary school.] | Queenstown | Provincial Heritage Site | S31°53′42″; E26°52′20″ [Erroneous listing] |

**Table 4:** Declared Provincial Heritage Sites in relation to the study site


**Map 4:** Spatial distribution of geo-referenced PHS in the Eastern Cape in relation to the *Engcobo Mall* study site

## 2.2.4) General Discussion

No Earlier (ESA) or Middle Stone Age (MSA) sites or occurrences have been reported on in any of the consulted archaeological CRM studies. Rock shelters with shell midden deposits have been reported on from along the N2 alignment, in cases associated with Rock Art; but these shelters are located far north along the route alignment and much closer to the coastline. Shelter sites are ascribed to the Later Stone Age (LSA), including use by hunter-gatherer or pastoralist groups, but not necessarily excluding a Later Iron Age (LIA) origin, or at least usage of certain of the sites (Van Schalkwyk 2008). Van Schalkwyk (2008) also reported on 4 '*Izivivane*', stone cairn markers that may again be associated with Khoe LSA practice or with the LIA. At least 4 LIA farmer sites were reported on by Kruger (2013), located during the Lokshini archaeological field assessment. In addition to the LIA farmer sites Kruger (2013) also reported on approximately 19 sites, primarily comprising the remains of built residential and farming related structures, inferred to be *en large* of LIA cultural assignation but dating to the Colonial Period, while Van Schalkwyk (2008) reported on the presence of a Colonial Period trading store. Whelan (2013) describes the Colonial Period cultural succession of the Nessie Knight hospital near Qumbu as having been established in 1890 as a small Mission hospital, including a house, school and church, with the major development of the 'hospital' as it became known and used for many decades as a 1938 development.

Grave sites associated with the general archaeological record are not uncommon: Dreyer (2007) cautions against the possibility of unmarked graves being encountered during the course of development. Kruger (2013) reported on no less than 49 grave and cemetery sites along the Lokshini route alignment, whilst Van Schalkwyk (2008) also recorded a grave site during the N2 archaeological survey – however, the reported on grave may well not be the grave of King Faku, with the locality of the grave not corroborated by the Sigcau Royal Family records.

The general Engcobo area is traditionally known as emaQwathini, the land of the Qwathi people. The amaQwathi is not a Xhosa clan but an independent nation founded by Mtshutshumbe ka-Mthetho in the early 1600's. The amaQwathi split from the amaXesihe and settled in the Mqanduli area of Thembuland. Shortly thereafter, during the reign of King Dlomo of the abaThembu, circa 1850/1860, they moved to their present capital at Engcobo. The amaQwathi is known to be a small but fiercely independent and anti-Colonial nation; by virtue of association more Thembu than Xhosa in culture and political orientation. Aside from ka-Mthetho significant Qwathi Chiefs include Stokwe ka-Ndlela, Dalasile ka-Fabu and Fabu himself. Chief (King) Fabu fought and killed both Rharhabe and his son Mlawu in 1782. He also defended his capital and defeated Madzikane of the Shaca in 1824 and Matiwane of Ngwane in 1828 during the Mfecane Wars of Shaka and Mzilikazi (en.wikipedia.org/wiki/Qwathi; en.wikipedia.org/wiki/Xhosa_clan_names).

On 1 November 1859, known as All Saints' Day, Chief Fabu met with Archdeacon Waters and the Reverend John Gordon of the '*Society for the Propagation of the Gospel in Foreign Parts*' (SPG). Chief Fabu granted them a stretch of land in the Xuka Valley and soon thereafter the All Saints' Mission Station was founded under the leadership of Reverend Gordon. In 1876 Walter Stanford arrived at the Mission Station to take up his post as resident Magistrate to the amaQwathi. He established the seat of his magistracy some 8km from the Mission Station on a site locally known as Engcobo – '*a green place next to a stream*'. However, merely 3 years later, in 1879, the amaQwathi rose in rebellion and during hostilities burnt both the Mission Station and the Magistry. Following the surrender of the amaQwathi, the Magistry was re-established at Engcobo in 1881 (en.wikipedia.org/wiki/Engcobo).

* * *

Engcobo is home to a number of significant anti-Colonial and anti-Apartheid leaders, including amongst others:

- **Alfred Bathini Xuma (1893-1962) –**

Alfred Bathini Xuma was born in Manzana Village near Engcobo in 1893. He attended the local Anglican primary school. At age 14 he enrolled at Clarkebury, a prestigious Wesleyen missionary institution in the Transkei. His 1st year marks were high enough for admission to the teachers training course and in 1911, at the age of 18, Xuma passed the provincially

administered 'P.T.3' exam. For about 18 months Xuma toughed at primary school level, but his quest to further his education increasingly lured him to the United States of America (USA) and in August 1913 Xuma set sail to enrol at Tuskegee, the foremost Black tertiary educational institution in Alabama, USA. Xuma enrolled at Tuskegee's Normal School for a 4 year curriculum. In 1917 Xuma was admitted to the University of Minnesota's College of Agriculture and on 17 June 1920 he received his Bachelor of Science degree from the College of Agriculture, Forestry and Home Economics, and was also admitted to the University's Medical School. However, poor marks and continuing financial constraints plagued his academic career and Xuma left for Chicago, where he spend about 9 months before being accepted at Marquette University's Medical School, Milwaukee, Wisconsin (1921). Mid 1923 his application for transfer to the Northwestern University's Medical School, Chicago, was accepted and in 1925 he passed his medical school examinations and served a 1 year internship at the St. Louis Hospital. He graduated in 1926. Xuma then turned his attention to advanced training in gynaecology and obstetrics and set off to Europe, first to Hungary, then Budapest and Britain, but it was in Edinburgh, Scotland, that he finally passed his advanced medical examinations. He set sail for South Africa in November 1927 (www.sahistory.org.za/people/dr_alfred_bathini_xuma).

By January 1928 Xuma had settled in Sophiatown, Johannesburg, and started a private practice. Xuma seized the opportunity to address schemes of African 'practical' medical training rather than complete health care training. In 1929 he became a member of the *Johannesburg Joint Council for Europeans and Africans*, a discussion group which focussed on the promotion of racial cooperation and the improvement of African welfare. In 1931 he became patron-in-chief of the *Bantu Men's Social Centre* (BMSC). Increasingly his reputation as leading figure among educated Africans rose: He used this to address concerns on policies of segregation, location and compound living conditions of urban African workers, African women, land shortages and taxation, he argued for more land for African farmers, improved African agricultural education and better conditions for farm labourers (www.sahistory.org.za/people/dr_alfred_bathini_xuma).

Increasing opposition to the Native Bills led Xuma, as Vice-President, together with D.D.T. Jabavu as President, to convene the 1st *All African Convention* (AAC) in 1935. By early 1937 his role in the AAC had catapulted him into the front ranks of African political leadership, but again he left for Britain to further his qualification in Public Health. In December 1938 Xuma became the 1st African from South Africa to be officially awarded a Diploma in Public Health. His time in England however, well spend to strengthen ties with the Pan African Movement in London. In 1937 the *African National Congress* (ANC) Secretary General, James Calata, 1st expressed an interest in Xuma assuming presidency of the organization and in 1940 Xuma was elected President of the ANC. By 1943 a new ANC Constitution had been drafted; although the Constitution abolished the *House of Chiefs*, ANC leadership actively sought to build an alliance with South Africa's traditional leadership. The ANC's *Bantu Women's League*, originally established in 1913, was revived and women were granted full membership, but Xuma's greatest achievement remained as fundraiser for the organization. In 1943 he was elected a 2nd 3 year term as Congress President. However, as World War II (WWII) wound down dissatisfaction with the ANC's moderate constitutional strategies began and many called for more militant forms of protest, including opposition by the *African Democratic Party* (ADP) and the *Non-European Unity Movement* (NEUM), but more importantly by the emerging ANC Youth League (ANCYL), founded by Anton Lembede, Nelson Mandela, Ashley Mda, Jordan Ngubane, Walter Sisulu and Oliver Tambo. Xuma differed from militant strategies and continued to form and strengthen alliances with the *African Peoples Organization* (APO), the Coloured people's organization and the *South African Indian Congress* (SAIC). Though Xuma encouraged communist involvement in the ANC, he saw the *Communist Party of South Africa* (CPSA) as both a potential ally and rival. In 1946 Xuma was elected to a 3rd term as Congress President, but his election came despite objections. As early as February 1947 the ANCYL pressed for boycotts and devised ways of implementing these strategies and Xuma was warned that communist growth in the ANC would oust him as President. December 1948 saw the ANCYL introducing a '*Programme of Action*', calling for the use of civil disobedience, strikes and boycotts – for the 1st time senior ANC leadership was forced to re-evaluate their strategy of constitutional action. A year later, 5 December 1949, less than 2 weeks before the ANC Conference, ANCYL members Nelson Mandela, Walter Sisulu and Oliver Tambo met with Xuma at his Sophiatown home to brief him on the League's position – they would support Xuma's re-election to ANC Presidency, but on the condition that he endorses their '*Programme of Action*'; Xuma turned their proposal down. However, on 17 December 1949, at the ANC Conference, the ANCYL's '*Programme of Action*' was adopted and ratified. Xuma lost the Presidency to James Moroka, but was retained on the Executive Council. Three (3) months later, March 1950 Xuma resigned from the ANC (www.sahistory.org.za/people/dr_alfred_bathini_xuma).

Although retired from active politics Xuma continued to play an active role in African community life. Following the state's crackdown on the *Defiance Campaign* Xuma issued a public statement on civil unrest, also deeply troubled by the *Congress of the People* (COP) and the inter-cultural and –racial direction the ANC was taking. In 1955 he forwarded a letter expressing his reservations about the ANC's evolution since 1949. This letter was crucial in the arguments of a breakaway Congress group, the Africanists, led by Robert Sobukwe and supported by Alfred Nzo. But political unrest continued to rise in South Africa: On 5 December 1956, police arrested approximately 140 South Africans of all races on suspicion of treason and eventually pressed charges against 156 individuals. The ensuring *Treason Trial* was to last for 4 years. When the indictment was 1st issued Xuma was listed among 86 'co-conspirators', but he was not among those arrested and formally charged. Following the 21 March 1960 Sharpeville incident where demonstrations against pass laws resulted in the killing of 69 and the wounding of 186, resulting in the National Government declaring a State of Emergency, both the ANC and the PAC were to be officially banned from South Africa (8 April 1960). In response Xuma left for London and New York in an attempt to raise concerns with the United Nations (UN) (www.sahistory.org.za/people/dr_alfred_bathini_xuma).

Government's demolition of Sophiatown began in 1955, in mid-1959 Xuma was forced to leave his home of almost 30 years. Xuma continued to contribute to public debate, but after 1960 focussed his attention on Bantu education. On 27 January 1962 Xuma passed away (www.sahistory.org.za/people/dr_alfred_bathini_xuma).

- **Walter Ulyate Max Sisulu (1912-2003) –**

Walter Ulyate Max Sisulu was born in Qutubeni Village near Engcobo in 1912. Born out of wedlock, his father having been a white assistant magistrate, Sisulu was raised by his grandmother and uncle and only went to live with his mother at the age of 6. He attended an Anglican missionary institute, but left school at age 15, after his uncle's death. In order to help support his family he was forced to seek work in Johannesburg. In 1929 he returned to the Eastern Cape to attend traditional Xhosa initiation rites, but returned to Johannesburg thereafter. For a time he moved between jobs and Johannesburg and the Eastern Cape, but in 1933 settled in Johannesburg once again. Here he attended night school at the *Bantu Men's Social Centre* (BMSC), though he left without completing Standard 5 (Grade 7). He became active in the *Orlando Civic Association* (OCA) and the *Orlando Brotherly Society* (OBS), both being Xhosa cultural and mutual aid groups. In 1940, at age 28, Sisulu joined the African National Congress (ANC), and having once again been fired from his job went into private business (www.sahistory.org.za/print/people/walter_ulyate_sisulu).

In 1944 Sisulu attended the ANC's annual national Conference in Bloemfontein as a delegate of the ANC Orlando branch. It was at this conference that Leslie Gama proposed the establishment of the ANC's Youth League (ANCYL) and Sisulu together with Anton Lembede, Nelson Mandela, Ashley Mda, Jordan Ngubane and Oliver Tambo were elected the executive committee of the ANCYL, characterized by its strong militant African nationalism. During the Second World War (WWII) the ANCYL campaigned against Black South Africans joining the army. They supported the reform of the ANC and adopted programmes of boycotts and other forms of direct action to address the aims of the Congress. It was during this time that Sisulu had his 1st clashes with the police and in 1946 was involved in his 1st planned sabotage. Sisulu rose rapidly in the ranks of the ANC and was instrumental in the 1949 ANC's Conference adoption of the ANCYL militant '*Program of Action*'. At the same conference he was elected as ANC General-Secretary. In 1950 Sisulu and Yusuf Cachalia, then joint secretaries of the *Congress Alliance* committed to oppose Malan's new repressive Apartheid laws. The *Congress Alliance* played a central role in the advocating and planning of the *Defiance Campaign*. Sisulu, amongst others, were arrested and imprisoned before being served with the 1st of many banning orders under the Suppression of Communism Act. Sisulu was sentenced to 9 months imprisonment with hard labour, suspended for 2 years. In 1953 Sisulu was re-elected ANC General-Secretary and embarked on a 5 month trip to China, the Soviet Union, Israel, Romania and the United Kongdom, a trip that cemented the relationship between the ANC and the South African Communist Party (SACP) (www.sahistory.org.za/print/people/walter_ulyate_sisulu).

Sisulu and Mandela were banned for 6 months and barred from attending any gatherings or meetings, but in secret continued their ANC work; during this time Sisulu was part of the organizing committee of the Freedom Charter campaign

and the Congress of the People. In December 1956 Sisulu was amongst the 156 arrested for High Treason. On 29 March Sisulu together with 30 others were acquitted. Sisulu, amongst some others were again detained in 1960 after the Sharpville massacre. Following the banning of the ANC and the PAC Sisulu was placed under house arrest, but in 1961, together with Joe Slomo, Nelson Mandela and Govin Mbeki began the formation of Umkhonto we Sizwe (MK), the ANC's armed wing – In March 1963 he was convicted for furthering the aims of the banned ANC, but released on bail, after which Sisulu went underground at the SACP's secret headquarters at Liliesleaf farm in Rivonia. In July 1963 the Liliesleaf farm was raided by police. Sisulu and the rest of the 'Rivonia Group' were held in solitary confinement for 88 days and on 12 June 1964 were sentenced to life imprisonment for planning acts of sabotage. While in prison on Robben Island Sisulu completed his 'O' levels, and amongst others also 'lectured' fellow prisoners on the history of the ANC. He was instrumental in developing an underground ANC political structure, called the 'High Organ' on the island. By the time the post 1976 generation arrived at Robben Island, Sisulu's lectures formed the major component of a fully-fledged 2 year ANC lecture course, simply known as 'Syllabus A' (www.sahistory.org.za/print/people/walter_ulyate_sisulu).

In April 1982 Sisulu was admitted to the Groote Schuur hospital in Cape Town for a 'routine medical examination'. Later in the same month, Sisulu amongst others were moved from Robben Island to Pollsmoor Prison in Cape Town where Sisulu played an important advisory role to Mandela in his dealings regarding government intermediaries with the Botha government. At the insistence of Mandela his fellow prisoners, including Sisulu, were granted an early release on 15 October 1989, for Sisulu 26 years in prison. Less than 3 months later the ANC was unbanned and Mandela released (www.sahistory.org.za/print/people/walter_ulyate_sisulu).

Subsequent to his release Sisulu was involved in the re-establishment of ANC structures in South Africa. In 1991 he was elected Deputy President of the ANC at the ANC's 1st Conference. In 1994 Sisulu retired from politics due to ill health, but continued his commitment to the wellbeing of his community. Sisulu died on 5 May 2003, at his Linden, Johannesburg home (www.sahistory.org.za/print/people/walter_ulyate_sisulu).

### 2.3.1) Field Assessment Results

One archaeological and cultural heritage resource, as defined and protected by the NHRA 1999, was identified during the field assessment. The identified resource, labelled Site EMD-S1, comprises a Colonial Period site, with buildings constituting the site being older than 60 years of age.

The remainder of the study site is towards the east characterized by informal settlement, towards the south by fenced business properties and towards the west, along Warner Road by private residences. The central part of the study site, and in general containing identified Site EMD-S1 is also in private ownership, formally fenced and with eastern access to Site EMD-S1 in addition prohibited by fenced informal plots. Abovementioned development, aside from Site EMD-S1, all comprise contemporary development and associated structures are not protected by the NHRA 1999. Impact on, or alteration to contemporary structures for purposes of the proposed *Engcobo Mall Development* is not subject to EC PHRA Built Environment (BE) Unit permit applications or approvals. The informal plots and the north-central part of the study site need some further discussion. Here thick vegetation hampered surface visibility virtually in totality. Consultation with residents of the informal settlement indicated that no graves or burials are known from the area and that burial takes place at the municipal cemetery, also that they are not aware of any 'old' remains, which for purposes of this report would more specifically pertain to possible Later Iron Age (LIA) and perhaps Colonial Period remnants from the immediate area, that aside from Site EMD-S1.

Heritage compliance recommendations for the proposed *Engcobo Mall Development* are thus centered on Site EMD-S1 only, as per the site description below.

#### 2.3.1.1) Site EMD-S1 – Colonial Period – Farmstead (S31°40'23.1"; E28°00'12.3"):

Site EMD-S1 comprises a Colonial Period site, with the site inferred the be the remains of an early farmstead and comprising at minimum the original main residence (labelled EMD-S1, Site co-ordinate – S31°40'23.1"; E28°00'12.3") and an outbuilding labelled site feature EMD-S1.1 (S31°40'24.2"; E28°00'13.1"). The site is at present in private ownership and formally fenced with security fencing and access gate control – the site could thus not be directly inspected. No Chief Surveyor General (CSG) record could be located for the said site, but it can reasonably be inferred that Site EMD-S1 represents a vernacular Colonial Period development. Architecturally the site well pre-dates 60 years of age, and may at least date to the early 1900's, if not as early as the late 1800's. With at present no development layout confirmed, heritage (and environmental) specialist report recommendations will be used to inform and advise on layout. Two (2) heritage management options can be considered by the developer, including conservation of the site within the development layout, or EC PHRA BE Unit permitted destruction thereof for purposes of development.

- *Site Significance Assignation and Recommendations:* Site EMD-S1, as a structure(s) pre-dating 60 years of age, receives automatic SAHRA / EC PHRA protection as a site of *High Significance* with a *Provincial Grade II Field Rating*. The site is however, based on historical architectural significance assigned a SAHRA / EC PHRA *Medium Significance* with a *Generally Protected IV-B Field Rating.* Two (2) heritage management options can be considered by the developer:
  - *Site Conservation –*
    Conservation of both the main residence (EMD-S1) and the outbuilding (EMD-S1.1) should be ensured within the development layout, allowing for an at least 10-15m conservation buffer between the heritage structures and development structures including built structures and related infrastructure. Conservation of Site EMD-S1 should thus be ensured within the *Engcobo Mall* development planning and execution.
    1. A copy of the layout plan including the conservation of Site EMD-S1 therein should be forwarded to the EC PHRA (APM Unit) for approval prior to construction impact.

2. [Within the framework of site conservation the developer is reminded that any renovation or alteration to the heritage structures should be done under EC PHRA (BE Unit) permits.]

**OR**

- *Site Destruction under an EC PHRA BE Unit Permit –*
  The developer (or the EAP on behalf of the developer) should apply for an EC PHRA (BE Unit) destruction permit prior to development impact. Should destruction of Site EMD-S1 be the preferred development heritage management option the developer should ensure that the permit application be submitted to the EC PHRA (BE Unit) at the soonest possible time to allow reasonable time for permit committee consideration thereof.
  1. It is recommended that in addition to the basic EC PHRA (BE Unit) permit application form the complete HIA be submitted as supporting documentation to the application.
  2. The developer is reminded that an EC PHRA (BE Unit) permit application for site destruction may well result in requests for additional research and site documentation such as the appointment of an architect / architectural draughts person to record the vernacular structure prior to destruction in for ex. a Revit format that allows both 2D and 3D representation thereof for archival purposes.


**Map 5:** Results of the *Engcobo Mall* development, Ngcobo, archaeological field assessment (tracklog – white)

**Plate 1:** The informal settlement characterizing the eastern part of the study site [1]

**Plate 3:** A fenced business property towards the south of the study site

**Plate 2:** The informal settlement characterizing the eastern part of the study site [2]

**Plate 4:** A fenced private residence along Warner Road, along the western boundary of the study site

**Plate 5:** Thick vegetation charactering the north-central part of the study site

**Plate 7:** View of Site EMD-S1 [1]

**Plate 6:** Thick vegetation characterizing the fenced private plots, with Site EMD-S1 in the background

**Plate 8:** View of Site EMD-S1 [2]

## 3 - Environmental Impact Assessment Rating

Identified archaeological and cultural heritage sites are ascribed an Environmental Impact Assessment (EIA) rating, based on the extent or spatial scale of the impact [E] (0 = None, 1 = Site specific, 2 = Local, 3 = Regional, 4 = National and 5 = International), the magnitude of the impact, positive or negative [M+ / M-] (0 = Zero, 2 = Very low, 4 = Low, 8 = High and 10 = Very high), the duration of the impact [D] (1 = Immediate, 2 = Short term, 3 = Medium term, 4 = Long term and 5 = Permanent), the probability of the occurrence [P] (1 = Improbable, 2 = Low probability, 3 = Medium probability, 4 = High probability and 5 = Definite), the irreplaceable loss of resources [I] (0 = None; 1 = Very low, 2 = Low, 3 = Moderate, 4 = High, 5 = Definite), the reversibility of potential impacts [R] (0 = No impact, 1 = Impact will be reversible; 2 = High potential for reversibility; 3 = Moderate potential for reversibility; 4 = Low potential for reversibility; 5 = Impact cannot be reversed) and cumulative impact (None, Low, Medium and High). A site significance point [SP] is assigned as follows:

- SP = (M + D + E + I + R) x P.

A maximum of 150 SP can be assigned to an impact. Environmental Significance [S] is assigned based on the SP as follows:

- <40 = Low [L];
- 40-74 = Medium [M];
- 75-99 = Medium-High [MH];
- 100-124 = High [H]; and
- 125-150 + Very High [H].

The significance can be either positive [+] or negative [-]. An impact of low [L] is likely to contribute to either + or – decisions about whether or not to proceed with the development, with little real effect and is unlikely to have an influence on project design or alternative motivation. An impact of M implies that if unmanaged could influence a decision on whether or not to proceed with development. An impact of MH is similar to M, with caution to mitigation options and alternative mitigation options should be investigated where possible. An impact of H could influence a decision about whether or not to proceed with development, regardless of available mitigation options and an impact of VH implies that a project cannot proceed and that impacts are irreversible, regardless of available mitigation options.

Environmental impact assessment ratings are grouped per sites with the same basic recommendation per site type or type of impact, with cognizance to the fact that impacts on heritage sites are as a norm irreversible (heritage sites are non-renewable resources) and with reference to the SAHRA (2007) prescribed mitigation options per site significance rating, weighed against development / possible natural impact.

| Environmental Impact | Site Number | Environmental Significance | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Before Mitigation | | | | | | | | | After mitigation | | | | | | | |
| | | M | D | E | I | R | P | SP | S | C | M | D | E | I | R | P | SP | S | C |
| Conservation Formal Destruction | Sites: Site EMD-S1 | +2 | 2 | 1 | 1 | 0 | 1 | 6 | L | +L | +2<br>+4 | 3<br>3 | 1<br>2 | 1<br>1 | 2<br>3 | 2<br>2 | 18<br>26 | L<br>L | +L<br>+L |
| | **Comment:** Site EMD-S1 Colonial Period farmstead remains | | | | | | | | | | | | | | | | | | |
| | **Summary of mitigation points:** Site conservation within final development layout OR Formal site destruction under an EC PHRA BE Unit site destruction permit N/A | | | | | | | | | | | | | | | | | | |

**Table 5:** Environmental significance assessment of identified Colonial Period site EMD-S1, *Engcobo Mall* development, Ngcobo, Eastern Cape

# 4 - Recommendations

With reference to archaeological and cultural heritage compliance, as per the requirements of the NHRA 1999, it is recommended that the proposed *Engcobo Mall Development*, to be situated on a portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, in the NLM area of the Eastern Cape, proceeds as applied for provided the developer comply with the below listed heritage management recommendations.

- No archaeological or cultural heritage developmental 'fatal flaws' identified;
- One (1) archaeological or cultural heritage resource [Site EMD-S1], as defined and protected by the NHRA 1999, was identified during fieldwork. Site EMD-S1 will be directly affected by development. The developer may consider either conservation of the site within the development layout or destruction thereof under an EC PHRA (BE Unit) site destruction permit (see Recommendations);
- [Should any incidental archaeological or cultural heritage resources, as defined and protected by the NHRA 1999, be encountered during the course of development the process described in the 'Heritage Protocol for Incidental Finds during the Construction Phase' should be followed.]

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

| ***Engcobo Mall Development,* Portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, NLM, Eastern Cape** | | | |
|---|---|---|---|
| **Map Code** | **Site** | **Co-ordinates** | **Recommendations** |
| ***Engcobo Mall* development, Ngcobo, Eastern Cape** | | | |
| **EMD-S1** | Colonial Period – Farmstead | S31°40'23.1"; E28°00'12.31" | **Formal Conservation**<br>Formal conservation within development layout allowing for an approximate 10-15m conservation buffer between heritage site structures and development<br>**OR**<br>**Site Destruction under an EC PHRA (BE Unit) permit**<br>Application for site destruction may well require additional site documentation. Upon approval of the Site Destruction permit application destruction of the site may legally proceed for development purposes. |

**Table 6:** Archaeological and cultural heritage compliance summary for the proposed *Engcobo Mall Development*, Ngcobo, Eastern Cape

**Notes:**

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

**Simplified guide to the identification of archaeological sites:**

- **Stone Age** – Knapped stone display flakes that appear unnatural and may result in similar type 'shaped' stones often concentrated in clusters or forming a distinct layer in the geological stratigraphy. ESA shapes may represent 'pear' or oval shaped stones, often in the region of 10cm in length or larger. Typical MSA types include blade-like or triangular shaped stones often associated with randomly shaped stones that display use or edge-wear around the rim of the artefact. LSA types may well be small, informally shaped stones, often associated with bone, pieces of charcoal and in cases ceramic shards.

  **Rock Art** – Includes both painted and engraves images.

  **Shell Middens** – Include compact shell lenses that may be quite extensive in size or small ephemeral scatters of shell food remains, often associated with LSA artefact remains, but may also be of MSA and Iron Age cultural association.
- **Iron Age** – Iron Age sites are often characterized by stone features, i.e. the remains of former livestock enclosures or typical household remains, huts are often identified by either mound or depression hollows. Typical artefacts include ceramic remains, farming equipment, beads and trade goods, metal artefacts (including jewelry) etc. Remains of the 'Struggle' – events, histories and landmarks associated therewith are often, based on cultural association, classed as part of the Iron Age heritage of South Africa.
- **Colonial Period** – Built environment remains, either urban or rural, are of a western cultural affiliation with typical artefacts representing early western culture, including typical household remains, trade and manufactured goods, such as old bottles, porcelain and metal artefacts. War memorial remains including the vast array of associated graves and the history of the Industrial Revolution form important parts of South Africa's Colonial Period heritage.

# 5 - Acronyms and Abbreviations

| | |
|---|---|
| AD | : Anno Domini (the year 0.) |
| AIA | : Archaeological Impact Assessment |
| AMAFA | : Amafa aKwaZulu-Natali |
| ASAPA | : Association of Southern African Professional Archaeologists |
| BAR | : Basic Assessment Report |
| BC | : Before the Birth of Christ (the year 0.) |
| BCE | : Before the Common Era (the year 0.) |
| BIA | : Basic Impact Assessment |
| BID | : Background Information Document |
| BP | : Before the Present (the year 1950.) |
| cm | : Centimeter |
| CRM | : Cultural Resources Management |
| DAC | : Department of Arts and Culture |
| DEAT | : Department of Environmental Affairs and Tourism |
| DEDEAT | : Department of Economic Development, Environmental Affairs and Tourism |
| DME | : Department of Minerals and Energy |
| DSACR | : Department of Sport, Arts, Culture and Recreation |
| ECO | : Environmental Control Officer |
| EAP | : Environmental Assessment Practitioner |
| EC PHRA | : Eastern Cape Provincial Heritage Resources Authority |
| EIA | : Environmental Impact Assessment |
| $EIA_1$ | : Early Iron Age |
| EMPr | : Environmental Management Plan report |
| ESA | : Earlier Stone Age |
| ha | : Hectare |
| HIA | : Heritage Impact Assessment |
| HWC | : Heritage Western Cape |
| HCMP | : Heritage Conservation Management Plan |
| ICOMOS | : International Council on Monuments and Sites |
| IEM | : Integrated Environmental Management |
| km | : Kilometer |
| Kya | : Thousands of years ago |
| LIA | : Later Iron Age |
| LSA | : Later Stone Age |
| m | : Meter |
| $m^2$ | : Square Meter |
| MIA | : Middle Iron Age |
| mm | : Millimeter |
| MPRDA (2002) | : Mineral and Petroleum Resources Development Act, No 28 of 2002 |
| MSA | : Middle Stone Age |
| Mya | : Millions of years ago |
| NEMA (1998) | : National Environmental Management Act, No 107 of 1998 |
| NHRA (1999) | : National Heritage Resources Act, No 25 of 1999 |
| PIA | : Palaeontological Impact Assessment |
| PHRA | : Provincial Heritage Resources Authority |
| PSSA | : Palaeontological Society of South Africa |
| PPP | : Public Participation Process |
| SAHRA | : South African Heritage Resources Agency |
| SAHRIS | : South African Heritage Resources Information System |
| ScIA | : Socio-cultural Impact Assessment |
| SIA | : Social Impact Assessment |

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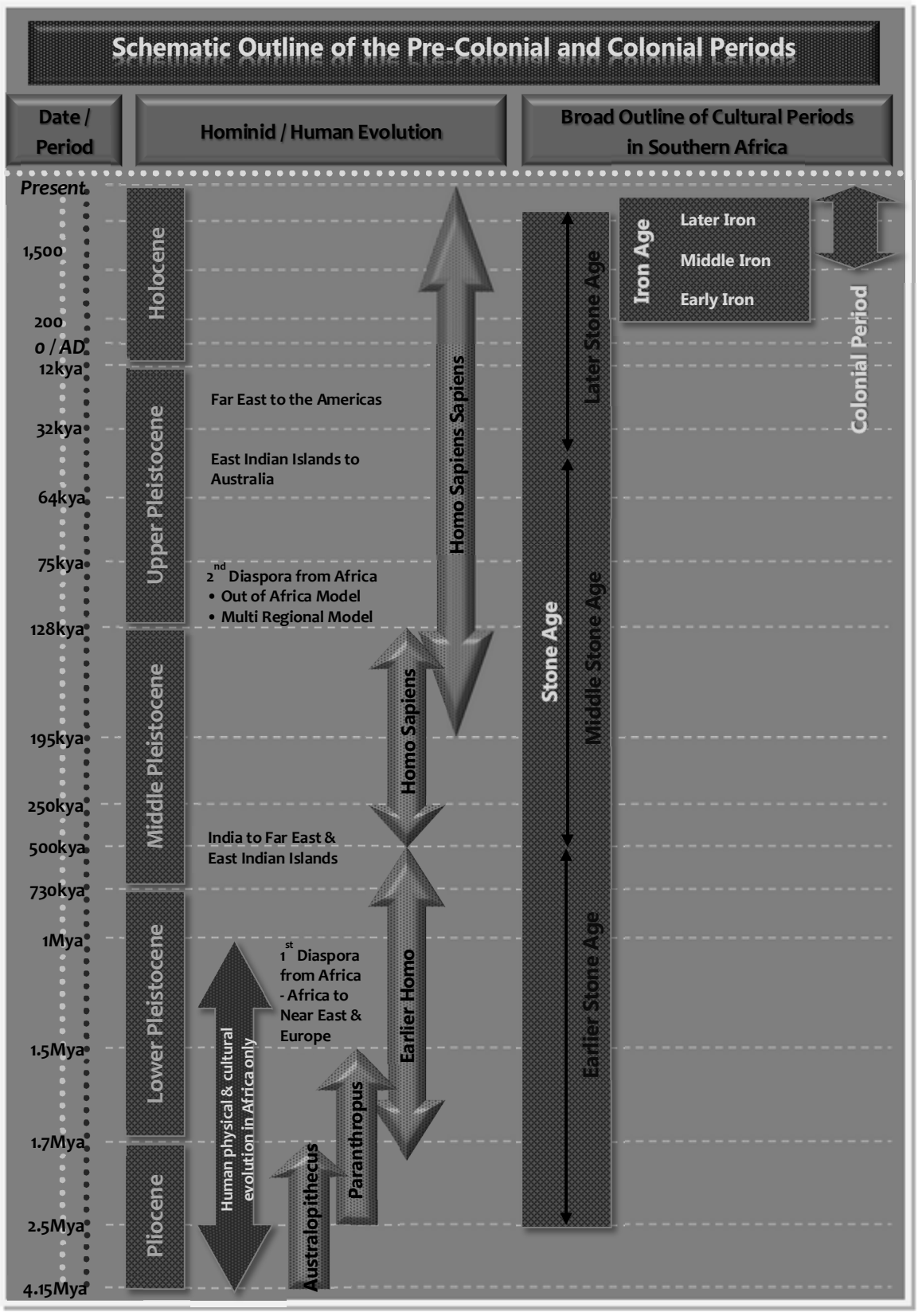
**Appendix A:**


Schematic Outline of the Pre-Colonial and Colonial Periods
Date / Period
Hominid / Human Evolution
Broad Outline of Cultural Periods in Southern Africa
Present
1,500
200
0 / AD
12kya
32kya
64kya
75kya
128kya
195kya
250kya
500kya
730kya
1Mya
1.5Mya
1.7Mya
2.5Mya
4.15Mya
Holocene
Upper Pleistocene
Middle Pleistocene
Lower Pleistocene
Pliocene
Far East to the Americas
East Indian Islands to Australia
2nd Diaspora from Africa
• Out of Africa Model
• Multi Regional Model
India to Far East & East Indian Islands
1st Diaspora from Africa - Africa to Near East & Europe
Human physical & cultural evolution in Africa only
Homo Sapiens Sapiens
Homo Sapiens
Earlier Homo
Paranthropus
Australopithecus
Stone Age
Later Stone Age
Middle Stone Age
Earlier Stone Age
Iron Age
Later Iron
Middle Iron
Early Iron
Colonial Period

# Appendix B:

## 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. Kingships 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 indicates 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 breath 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 micolithic 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 the 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 (strething 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 a 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 5$^{th}$ 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 (7$^{th}$ – 10$^{th}$ Century) is ancestral to the Toutswe tradition which persisted in eastern Botswana into the 13$^{th}$ Century.

Kalundu origins need further investigation; its subsequent development is however better understood. A post Bambata phase is represented by the 5$^{th}$ – 7$^{th}$ 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 Ntshekane in KwaZulu-Natal (7$^{th}$ – 10$^{th}$ 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 (10$^{th}$ – 12$^{th}$ 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 continents western half by aridity and confined in the south during the 1$^{st}$ 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$^{\circ}$ (Maggs 1994); sites such as Canasta Place (800AD), Eastern Cape, mark the southern-most limit of Early Iron Age settlement (Nogwaza 1994).

#### ➢ The Central Cattle Pattern

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

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

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

## 3.2) The Middle Iron Age

The hiatus of South African Middle Iron Age activity was centered in the Shashe-Limpopo Valley and characterized by the 5-tier hierarchical Mapungubwe State spanning some 30,000km$^2$. By the 1st millennium ivory and skins were already exported overseas, with sites like Sofala and Chibuene, Mosambique, interfacing between interior and transoceanic traders. Exotic glass beads, cloth and Middle Eastern ceramics present at southern African sites mark the beginning of the regions incorporation into the expanding economic system that, partly tied together with maritime trading links across the Indian Ocean, increasingly united Africa, Asia and Europe long before Da Gama or Columbus (Eloff & Meyer 1981; Meyer 1998).

Occupation was initially focused at Bambandanyalo and K2. The Bambananyalo 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 dolorite to produce hard binding *daga* for house floors and a wall building tradition employing larger more regular stones for the inner and outer faces and smaller rubble for the infill. As with the more dispersed homesteads of KwaZulu-Natal and the Eastern Cape, sites tend to be in locally elevated situations, reflecting a deep seated Sotho and Nguni preference for benign higher places rather than supernaturally dangerous riverside localities; another important contrast to both 1st millennium (Maggs 1976) and later Zulu Kingdom settlement patterns (Hall & Maggs 1979).

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

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

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

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

## 4) The Colonial Period

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

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

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

By the late 1500's Portuguese supremacy of the Indian Ocean was threatened. From 1591 numerous Dutch and English ships called at Table Bay and in 1652 the Dutch East 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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# Palaeontology

**Palaeontological specialist assessment: desktop study**

# Proposed Engcobo Mall Development, Ngcobo Local Municipality, Eastern Cape, South Africa

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**EXECUTIVE SUMMARY**

The Billion Property Group is proposing to develop a shopping mall with associated infrastructure and facilities on a Portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, in the Ngcobo Local Municipal (NLM) area, Eastern Cape. The study area of about 10 hectares is located on the north-eastern outskirts of Ngcobo and just north of the R61 Queenstown to Mthatha tar road, *c*. 75 km west of Mthatha.

The Engcobo Mall Development study area is underlain by Early Triassic continental sediments of the Upper Beaufort Group (Tarkastad Subgroup, Karoo Supergroup) that are assigned to the Burgersdorp Formation and possibly also - in the northernmost sector - by Early Jurassic intrusions (sills, dykes) of the Karoo Dolerite Suite. The Burgersdorp Formation elsewhere in the Eastern Cape is well known for locally abundant fossil vertebrates and trace fossils (*e.g.* invertebrate and vertebrate burrows) of the *Cynognathus* Assemblage Zones. However, very few records of fossil vertebrate remains, or other palaeontological material, are known from the Karoo Supergroup rocks in the Cofimvaba – Encobo area of the former Transkei. This may well be attributed in large part to low levels of fresh bedrock exposure - mainly due to the thick mantle of superficial deposits (colluvium / alluvium / soils) as well as seasonally dense vegetation cover. Deep weathering of bedrocks in humid, pluvial climates, baking of sedimentary country rocks by extensive dolerite intrusion as well as the paucity of palaeontological field studies in the area may also have played a role here. The Karoo dolerites themselves contain no fossils, while the palaeontological sensitivity of the Late Caenozoic superficial sediments (colluvium, alluvium, soils) is generally very low.

These factors, together with the comparatively small footprint of the planned mall development, suggest that large volumes of fresh, fossil-bearing rock are unlikely to be disturbed here. It is concluded that the proposed development will not have a significant impact on local palaeontological heritage and, pending the discovery of new fossil material on site before or during construction, no further specialist studies or mitigation are recommended for this project.

The Environmental Control Officer (ECO) for the mall development should be alerted to the potential for, and scientific significance of, new fossil finds during the construction phase of the development, however. Should substantial fossil remains such as vertebrate bones and teeth, plant-rich fossil lenses or dense fossil burrow assemblages, be exposed during construction a chance-find procedure should be implemented. The ECO should take the appropriate action, which includes:

- Stopping work in the immediate vicinity and fencing off the area with tape to prevent further access;
- Reporting the discovery to the provincial heritage agency, ECPHRA (*i.e.* The Eastern Cape Provincial Heritage Resources Authority. Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za);
- Appointing a palaeontological specialist to inspect, record and (if warranted) sample or collect the fossil remains;
- Implementing any further mitigation measures proposed by the palaeontologist; and
- Allowing work to resume only once clearance is given in writing by the relevant authorities.

The mitigation measures proposed here should be incorporated into the Environmental Management Plan (EMPr) for the Engcobo Mall Development project. The palaeontologist concerned with mitigation work would need a valid collection permit from ECPHRA. All work would have to conform to international best practice for palaeontological fieldwork and the study (*e.g.* data recording fossil collection and curation, final report) should adhere to the minimum standards for Phase 2 palaeontological studies recently published by SAHRA (2013).

## 1. INTRODUCTION AND BRIEF

Billion Property Group is proposing to develop a shopping mall with associated infrastructure and facilities on a Portion of Portion 1 and Portion 136 of the Engcobo Township, Ngcobo, in the Ngcobo Local Municipal (NLM) area, Eastern Cape (Fig.1). The study area of about 10 hectares is located on the north-eastern outskirts of Ngcobo and just north of the R61 Queenstown to Mthatha tar road, *c*. 75 km west of Mthatha.

Strategic Environmental Focus (Pty) Ltd (SEF) have been appointed as the independent Environmental Assessment Practitioner (EAP) by the project proponent, Billion Property Group, to apply for Environmental Authorization (EA), including a Basic Assessment (BAR) and Environmental Management Plan (EMPr) report, to the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (EC DEDEAT) for the proposed Engcobo Mall development.

The proposed Engcoco Mall Development footprint overlies potentially fossiliferous sedimentary rocks of the Burgersdorp Formation (Tarkastad Subgroup, Karoo Supergroup) of Early Triassic age. A desktop study of the potential impact on palaeontological heritage has therefore been commissioned on behalf of the developer and Strategic Environmental Focus (Pty) Ltd by Ms Karen van Ryneveld of ArchaeoMaps - Archaeological and Heritage Consultancy (Contact details: Postnet Suite 239, Private Bag X3, Beacon Bay, 5205. Cell: 084 871 1064. E-mail: kvanryneveld@gmail.com) as part of a broader-ranging HIA, in accordance with the requirements of the National Heritage Resources Act, 1999.

### 1.1. Scope of this palaeontological heritage study

The Engcobo Mall study area is largely underlain by potentially fossiliferous sedimentary rocks of the Upper Beaufort Group (Tarkastad Subgroup) of Early Triassic age. This desktop palaeontological specialist report provides an assessment of the inferred palaeontological heritage in the Ngcobo region with recommendations for further specialist palaeontological studies and / or mitigation where considered necessary.

The Specialist Terms of Reference (ToR) for this Palaeontological Specialist Study, as determined by ArchaeoMaps - Archaeological and Heritage Consultancy, are as follows:

- Undertake a desktop study to identify important palaeontological resources in the area.
- Identify any potential 'fatal flaws' linked to the proposed development.
- Describe the findings of the study and its potential implications for the proposed project. This should include a description and assessment of the significance of the impacts of the proposed activities on the palaeontological resources; and
- Provide detailed guideline measures to manage any impacts, particularly during the construction phase but including the implementation phase, and an assessment of their likely effectiveness.

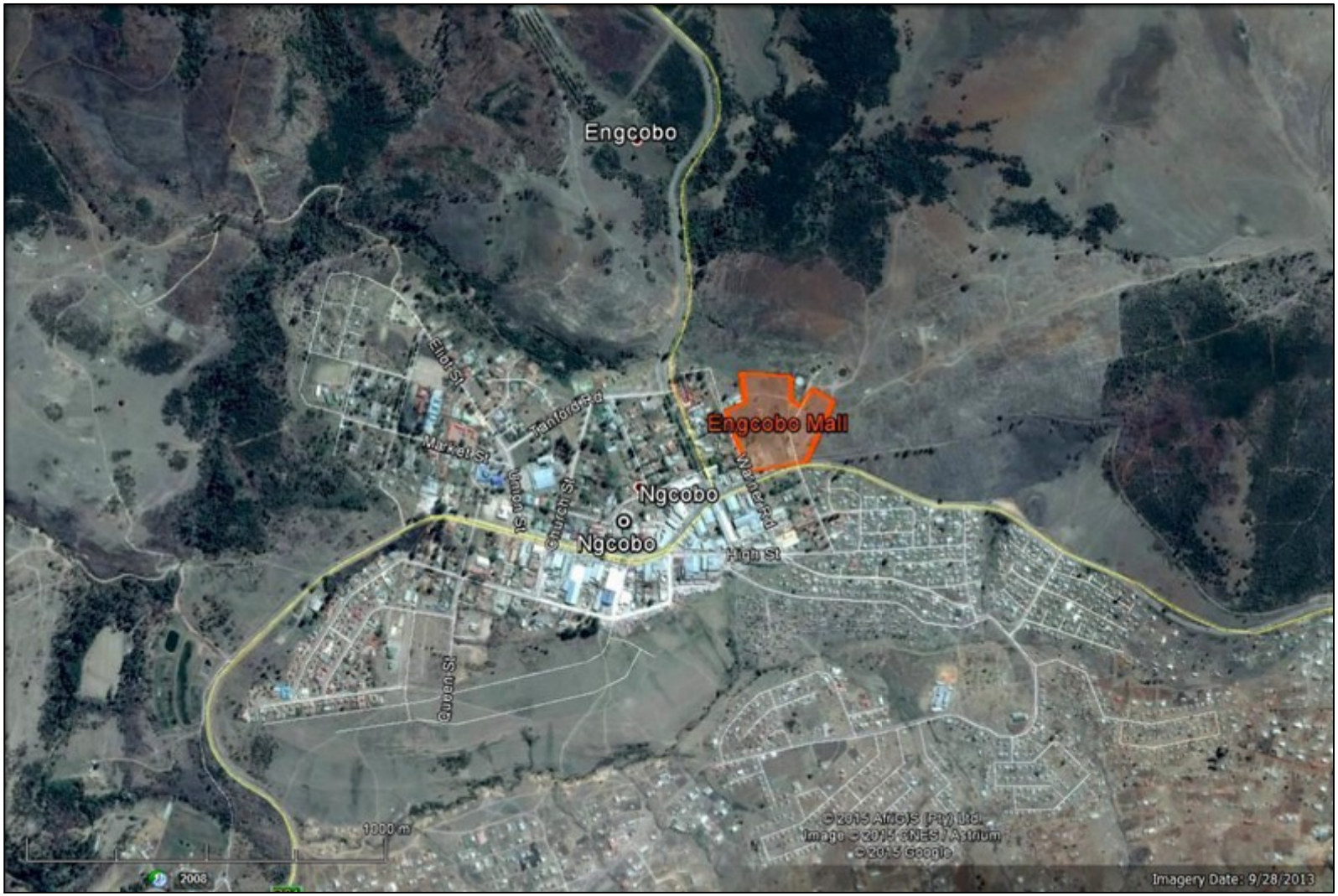


**Figure 1: Google earth© satellite image showing the location of the Engcobo Mall Development study area on the north-eastern outskirts of the small town of Ngcobo, Ngcobo Local Municipality, Eastern Cape, South Africa (orange polygon).**

### 1.2. Legislative context for palaeontological assessment studies

The present desktop palaeontological heritage report falls under Sections 35 and 38 (Heritage Resources Management) of the South African Heritage Resources Act (Act No. 25 of 1999), and it will also inform the Environmental Management Plan for this project.

The proposed mall development is located in an area that is underlain by potentially fossil-rich sedimentary rocks of Early Triassic age as well as Early Jurassic intrusive dolerites and Late Caenozoic superficial sediments (Sections 2 and 3). The construction phase will entail substantial excavations into the superficial sediment cover and in some cases also into the Triassic bedrocks. These developments may adversely affect known or potential fossil heritage at or beneath the surface of the ground within the study area by destroying, disturbing or sealing-in fossils that are then no longer available for scientific research or other public good.

The various categories of heritage resources recognised as part of the National Estate in Section 3 of the National Heritage Resources Act include, among others:

- geological sites of scientific or cultural importance;
- palaeontological sites;
- palaeontological objects and material, meteorites and rare geological specimens.

According to Section 35 of the National Heritage Resources Act, dealing with archaeology, palaeontology and meteorites:

(1) The protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority.

(2) All archaeological objects, palaeontological material and meteorites are the property of the State.

(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 assist 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.

Minimum standards for the palaeontological component of heritage impact assessment reports (PIAs) have recently been published by SAHRA (2013).

### 1.3. Approach to the palaeontological heritage study

The approach to this palaeontological heritage study is briefly as follows. Fossil bearing rock units occurring within the broader study area are determined from geological maps and satellite images. Known fossil heritage in each rock unit is inventoried from scientific literature, previous assessments of the broader study region, and the author's field experience and palaeontological database. Based on this data as well as field examination of representative exposures of all major sedimentary rock units present, the impact significance of the proposed development is assessed with recommendations for any further studies or mitigation.

In preparing a palaeontological desktop study the potentially fossiliferous rock units (groups, formations *etc*) represented within the study area are determined from geological maps and satellite images. The known fossil heritage within each rock unit is inventoried from the published scientific literature, previous palaeontological impact studies in the same region, and the author's field experience (consultation with professional colleagues as well as examination of institutional fossil collections may play a role here, or later following field assessment during the compilation of the final report). This data is then used to assess the palaeontological sensitivity of each rock unit to development (provisional tabulations of palaeontological sensitivity of all formations in the Western, Eastern and Northern Cape have already been compiled by J. Almond and colleagues; *e.g.* Almond *et al.* 2008). The likely impact of the proposed development on local fossil heritage is then determined on the basis of (1) the palaeontological sensitivity of the rock units concerned and (2) the nature and scale of the development itself, most significantly the extent of fresh bedrock excavation envisaged. When rock units of moderate to high palaeontological sensitivity are present within the development footprint, a Phase 1 field assessment study by a professional palaeontologist is usually warranted to identify any palaeontological hotspots and make specific recommendations for any mitigation required before or during the construction phase of the development.

On the basis of the desktop and Phase 1 field assessment studies, the likely impact of the proposed development on local fossil heritage and any need for specialist mitigation are then determined. Adverse palaeontological impacts normally occur during the construction rather than the operational or decommissioning phase. Phase 2 mitigation by a professional palaeontologist – normally involving the recording and sampling of fossil material and associated geological information (*e.g.* sedimentological data) may be required (a) in the pre-construction phase where important fossils are already exposed at or near the land surface and / or (b) during the construction phase when fresh fossiliferous bedrock has been exposed by excavations. To carry out mitigation, the palaeontologist

involved will need to apply for a palaeontological collection permit from the relevant heritage management authority *e.g.* ECPHRA for the Eastern Cape (Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; Email: smokhanya@ecphra.org.zaso). It should be emphasized that, *providing appropriate mitigation is carried out*, the majority of developments involving bedrock excavation can make a *positive* contribution to our understanding of local palaeontological heritage.

### 1.4. Assumptions & limitations

The accuracy and reliability of palaeontological specialist studies as components of heritage impact assessments are generally limited by the following constraints:

1. Inadequate database for fossil heritage for much of the RSA, given the large size of the country and the small number of professional palaeontologists carrying out fieldwork here. Most development study areas have never been surveyed by a palaeontologist.

2. Variable accuracy of geological maps which underpin these desktop studies. For large areas of terrain these maps are largely based on aerial photographs alone, without ground-truthing. The maps generally depict only significant ("mappable") bedrock units as well as major areas of superficial "drift" deposits (alluvium, colluvium) but for most regions give little or no idea of the level of bedrock outcrop, depth of superficial cover (soil *etc*), degree of bedrock weathering or levels of small-scale tectonic deformation, such as cleavage. All of these factors may have a major influence on the impact significance of a given development on fossil heritage and can only be reliably assessed in the field.

3. Inadequate sheet explanations for geological maps, with little or no attention paid to palaeontological issues in many cases, including poor locality information;

4. The extensive relevant palaeontological "grey literature" - in the form of unpublished university theses, impact studies and other reports (*e.g*. of commercial mining companies) - that is not readily available for desktop studies;

5. Absence of a comprehensive computerized database of fossil collections in major RSA institutions which can be consulted for impact studies. A Karoo fossil vertebrate database is now accessible for impact study work.

In the case of palaeontological desktop studies without supporting Phase 1 field assessments these limitations may variously lead to either:

(a) *underestimation* of the palaeontological significance of a given study area due to ignorance of significant recorded or unrecorded fossils preserved there, or

(b) *overestimation* of the palaeontological sensitivity of a study area, for example when originally rich fossil assemblages inferred from geological maps have in fact been destroyed by tectonism or weathering, or are buried beneath a thick mantle of unfossiliferous "drift" (soil, alluvium *etc*).

Since most areas of the RSA have not been studied palaeontologically, a palaeontological desktop study usually entails *inferring* the presence of buried fossil heritage within the study area from relevant fossil data collected from similar or the same rock units elsewhere, sometimes at localities far away. Where substantial exposures of bedrocks or potentially fossiliferous superficial sediments are present in the study area, the reliability of a palaeontological impact assessment may be significantly enhanced through field assessment by a professional palaeontologist. In the present case, site visits

to the various loop and borrow pit study areas in some cases considerably modified our understanding of the rock units (and hence potential fossil heritage) represented there.

In the case of the Ngcobo area bedrock exposure is usually very poor due to soil and vegetation cover while there has been little documentation of vertebrate and other fossil remains in the former Transkei region of the Eastern Cape.

### 1.5. Information sources

The information used in this desktop study was based on the following:

1. A brief project outline provided by ArchaeoMaps - Archaeological and Heritage Consultancy

2. A review of the relevant scientific literature, including published geological maps and accompanying sheet explanations as well a limited number of desktop and field-based palaeontological assessment studies in the broader Queenstown - Cofimvaba – Mthatha study region (*e.g.* Almond 2010, 2011a, 2011b, 2011c, 2014a, 2014b, 2014c, 2015, Prevec 2011, Groenewald 2011);

3. The author's previous field experience with the formations concerned and their palaeontological heritage (See reference list and also review of Eastern Cape fossil heritage by Almond *et al.* 2008);

## 2. GEOLOGICAL OUTLINE OF THE STUDY AREA

The small town of Ngcobo is located towards the southern edge of the Drakensberg foothills of the former Transkei between the Mgwali and Xuka Rivers. The Engcobo Mall Development study area lies on the north-eastern outskirts of town, on the northern side of the R61 Mthatha tar road, in undulating to hilly terrain between 930 and 965 m amsl. Judging from satellite images (Fig. 2), the project area is already highly disturbed, with several buildings and tracks. Bedrock exposure is very limited here, but might be present along the edges of excavations holding rounded storage tanks just to the northeast of the study area. Pale sediments in road cuttings and hillslopes to the north of Ngcobo suggest deeply weathered saprolite (*in situ* weathered bedrock) and / or thick cover by superficial sediments (*e.g.* soils, alluvium). Rusty-brow hues due north of the Engcobo Mall Development study area probably reflect dolerite bedrock underlying this region.

The geology of the Ngcobo study area is depicted on the western edge of the 1: 250 000 geology map sheet 3128 Umtata (Council for Geoscience, Pretoria; Karpeta & Johnson 1979) (Fig. 3). The region is largely underlain at depth by Early to Middle Triassic fluvial sediments of the **Burgersdorp Formation** (Tarkastad Subgroup, Upper Beaufort Group, Karoo Supergroup) (**TRb** in Fig. 3). These sediments are locally exposed on steeper hill slopes and stream banks, as well as in road cuttings, dams and borrow pits, but much of the Burgersdorp outcrop in this region is obscured by dolerite scree and lateritic soils in the mountainous uplands (rusty brown areas in satellite images) and by alluvium in the lowlands. Large sill-like bodies of resistant-weathering dolerite (**Jd**) of the **Karoo Dolerite Suite** intrude the Burgersdorp Formation sediments and tend to build higher ground. Extensive low-lying areas are mantled in river alluvium (pale yellow in Fig. 3) of Pleistocene to Recent age, as seen to the northeast of town.


**Figure 2: Close-up Google earth© satellite image of the Engcobo Mall Development study area (orange polygon) at Ngcobo just north of the R61 tar road to Mthatha showing high level of disturbance and lack of bedrock exposure here, with possible exception of excavations to the northeast containing round storage tanks.**

Various types of **superficial deposits** of Late Caenozoic (Miocene / Pliocene to Recent) age occur widely throughout the Ngcobo study region. They include pedocretes (*e.g*. calcretes, ferricretes), slope deposits (scree, hillwash *etc*), river alluvium, diverse soils and surface gravels as well as spring and pan sediments (*cf* Partridge *et al*. 2006). As a result of these deposits as well as pervasive grassy vegetation cover, surface exposure of fresh Karoo Supergroup rocks within the region is usually poor, apart from occasional stream banks and beds, erosional gullies or *dongas* and steeper hill slopes as well as artificial exposures in road and railway cuttings, farm dams and borrow pits or quarries. The hill slopes are typically mantled with a thin to thick layer of **colluvium** or slope deposits (*e.g.* sandstone and dolerite scree, finer-grained hill wash) and soil. Thicker accumulations of silty, sandy, gravelly and bouldery **alluvium** of Late Caenozoic age (< 5 Ma), including pediment gravels, are found in streams and river valleys. These colluvial and alluvial deposits may be extensively calcretised (*i.e.* cemented with soil limestone or calcrete), especially in the neighbourhood of dolerite intrusions.

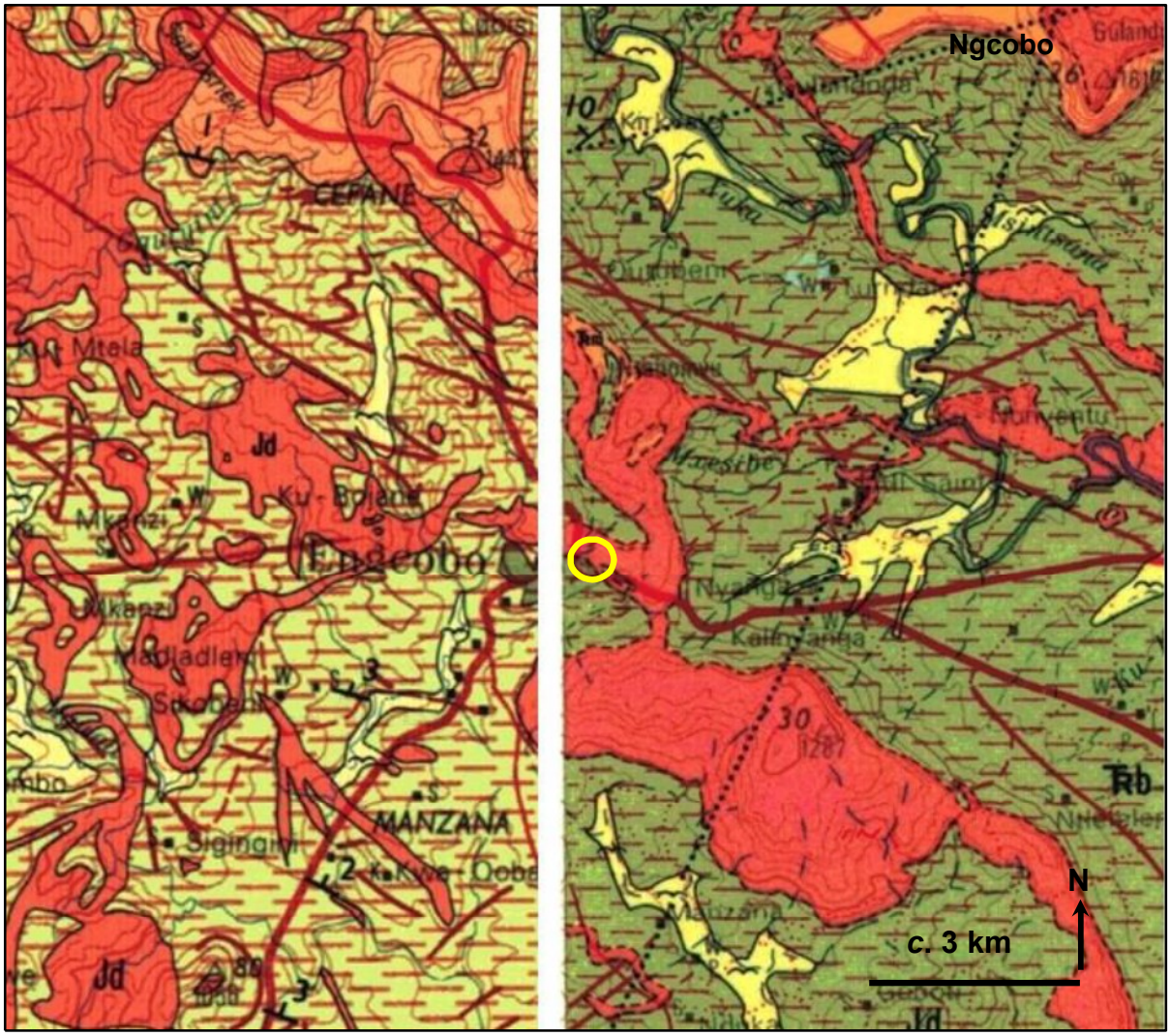


**Figure 3. Extract from adjoining 1: 250 000 geological maps 3126 Queenstown (left) and 3128 Mthatha (right) (Council for Geoscience, Pretoria) showing the geology of the study area near the town of Ngcobo, Eastern Cape (yellow circle). The main geological units represented here include: Early Triassic Burgersdorp Formation (Upper Beaufort Group/ Tarkastad Subgroup) (TRb, yellow-green or green-grey with red dashes); intrusions of the Early Jurassic Karoo Dolerite Suite (Jd, orange); Late Caenozoic alluvium (pale yellow with "flying bird" symbol). At this scale, it appears that the Engcobo Mall Development area is underlain by Burgersdorp Formation sediments, with possible Karoo dolerite in the north.**

### 2.1. Burgersdorp Formation

The Burgersdorp Formation is the youngest subunit of the Permo-Triassic Beaufort Group (Karoo Supergroup, Tarkastad Subgroup) and is paraconformably overlain by the Molteno and Elliot Formations of the Stormberg Group. It is a mudrock-rich succession of Early to Middle Triassic age with a total thickness of some 900-1000 m in its southern outcrop area near Queenstown (Johnson *et al.* 2006). Kitching (1995) quotes a thickness of 600 m in the type area for this formation between Queenstown and Lady Frere. Brief geological descriptions of the Burgersdorp Formation are given by Karpeta and Johnson (1979), Dingle *et al.* (1983), Johnson (1976, 1984), Hiller & Stavrakis (1984), Johnson & Hiller (1990), Kitching (1995) and Hancox (2000; see also extensive references therein).

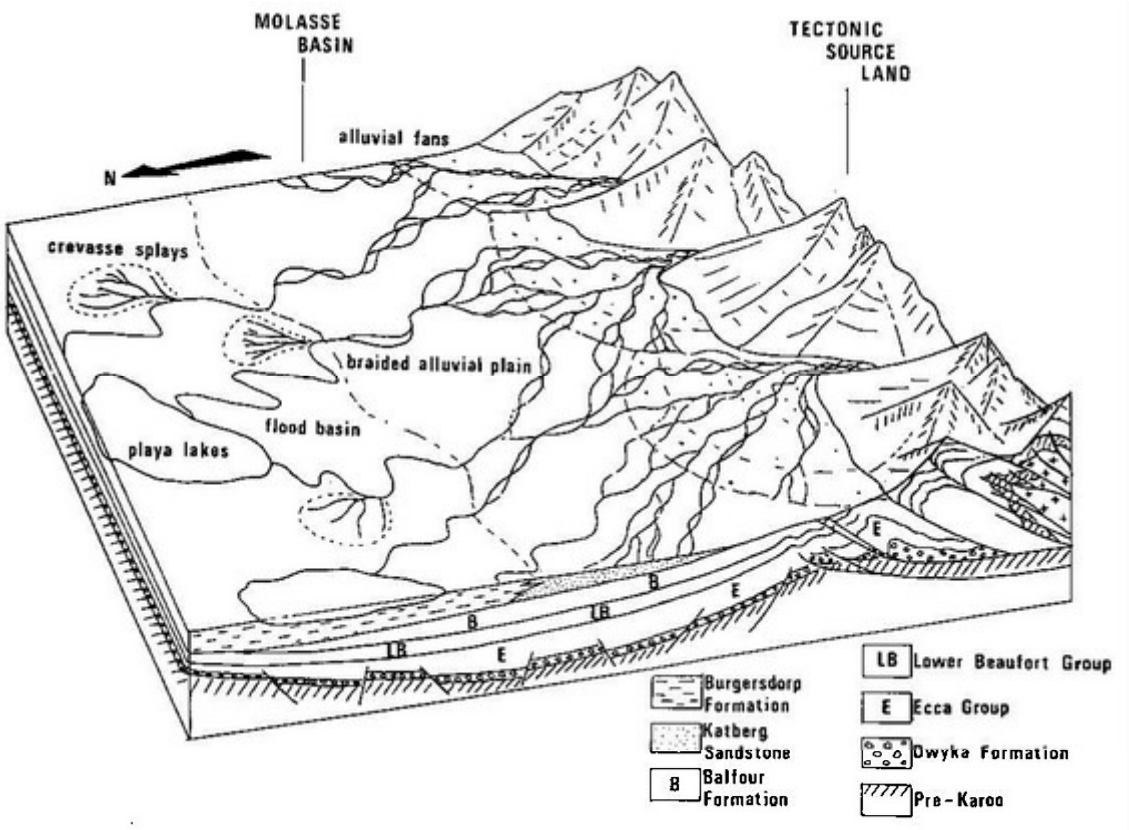


**Figure 4: Reconstruction of the south-eastern part of the Main Karoo Basin in Early Triassic times showing the deposition of the sandy Katberg Formation near the mountainous source area in the south. The mudrock-dominated Burgersdorp Formation was deposited on the distal floodplain where numerous playa lakes are also found (From Hiller & Stavrakis 1984).**

The Burgersdorp rocks were laid down within the Main Karoo Basin by north-westwards flowing meandering rivers during a warm, arid to semi-arid climatic interval (Fig. 4). They comprise isolated, lenticular, feldspathic channel sandstones, abundant crevasse splay sandstones, and typically greyish-red to dusky red overbank mudrocks, forming upwards-fining cycles of a few meters to tens of meters in thickness. Intraformational mudflake breccio-conglomerates are common at the base of the sandstone units. The mudrocks are generally massive (unbedded) but occasionally display sand-infilled mudcracks and clastic dykes. Well-laminated reddish mudrocks with pedocrete horizons are interpreted as playa lake deposits. Lacustrine palaeoenvironments predominated in the northern part of the Karoo Basin at this time and these lake deposits have recently received considerable palaeontological attention (*e.g.* Free State; Welman *et al.* 1991, Hancox *et al.* 2010 and references therein). Brief descriptions of the Burgersdorp beds in the Queenstown and Mthatha sheet areas are given by Johnson (1984) and Karpeta and Johnson (1979) respectively.

### 2.2 Karoo Dolerite Suite

Numerous Early Jurassic sills and dykes of Karoo dolerite intruding sediments of the Tarkastad Subgroup are mapped in the Ngcobo study area (Fig. 3, Jd). The tough dolerite bodies often weather

prominently as linear ridge-like features in the landscape, usually mantled with downwasted corestones and reddish-brown lateritic soils (Fig. 1). Near-surface the fresher dolerite often forms rounded, massive, well-jointed outcrops, while deeply-weathered, crumbly dolerite or *sabunga* is exposed in deeper excavations (*e.g.* quarries for road material). Adjacent to the dolerite intrusions the country mudrocks and sandstones are baked, generally darker, greyish to grey-green in hue and often vuggy (with secondary cavities), with secondary silicification of palaeocalcrete.

### 2.3. Late Caenozoic superficial deposits

Surface exposure of fresh Beaufort Group rocks within the development area is therefore likely to be generally poor, judging from satellite images, apart from occasional stream beds, dongas and steeper hillslopes. Collluvial deposits such as fine-grained hillwash and downwasted sandstone gravels mantle most hillslopes. Thicker accumulations of sandy, gravelly and bouldery alluvium of Late Caenozoic age (< 5 Ma) can usually be found in stream and river beds in the region. These colluvial and alluvial deposits may be extensively calcretised (*i.e.* cemented with soil limestone or calcrete), especially in the neighbourhood of dolerite intrusions.

## 3. PALAEONTOLOGICAL HERITAGE WITHIN THE STUDY REGION

The overall palaeontological sensitivity of the Beaufort Group sediments in the Main Karoo Basin of South Africa is high (Rubidge 1995, Rubidge 2005, Almond *et al*. 2008). These continental sediments have yielded one of the richest fossil records of land-dwelling plants and animals of Permo-Triassic age anywhere in the world. A chronological series of mappable fossil biozones or assemblage zones (AZ), defined mainly on their characteristic tetrapod faunas, has been established for the Main Karoo Basin of South Africa (Rubidge 1995, 2005). Maps showing the distribution of the Beaufort assemblage zones within the Main Karoo Basin have been provided by Kitching (1977), Keyser and Smith (1977-78) and Rubidge (1995). The 1: 250 000 geological maps as well as a recently updated biozone map based on a comprehensive GIS fossil database (Van der Walt *et al.* 2010) suggests that the Early Triassic *Cynognathus* Assemblage Zone is represented within Burgersdorp Formation rocks the Engcobo study region. (See previous palaeontological assessment studies by Almond (2011a, 2011b, 2014a, 2014b, 2014c, 2015) and Prevec (2011) for an outline of Early Triassic fossil biotas in the broader Queenstown – Cofimvaba – Engcobo region of the Eastern Cape).

As a consequence of their proximity to large dolerite intrusions, the Beaufort Group sediments in parts of the study area been thermally metamorphosed or “baked” (*i.e*. recrystallised, impregnated with secondary minerals). Embedded fossil material of phosphatic composition, such as bones and teeth, is frequently altered by baking – bones may become blackened, for example - and can be very difficult to extract from the hard matrix by mechanical preparation (Smith & Keyser *in* Rubidge 1995). Thermal metamorphism by dolerite intrusions therefore tends to reduce the palaeontological heritage potential of Beaufort Group sediments.

A recent compilation map of known fossil vertebrate sites from the Beaufort Group of the Main Karoo Basin (Nicolas 2007) emphasises the lack of records from the former Transkei region between Queenstown and Umtata that includes the present study area (Fig. 5). Rather than simply a lack of fossils here, the main reasons are probably low levels of surface exposure (soil, colluvial, alluvial and vegetation cover), high levels of subsurface humid climate weathering, as well as the paucity of palaeontological field studies in the region.

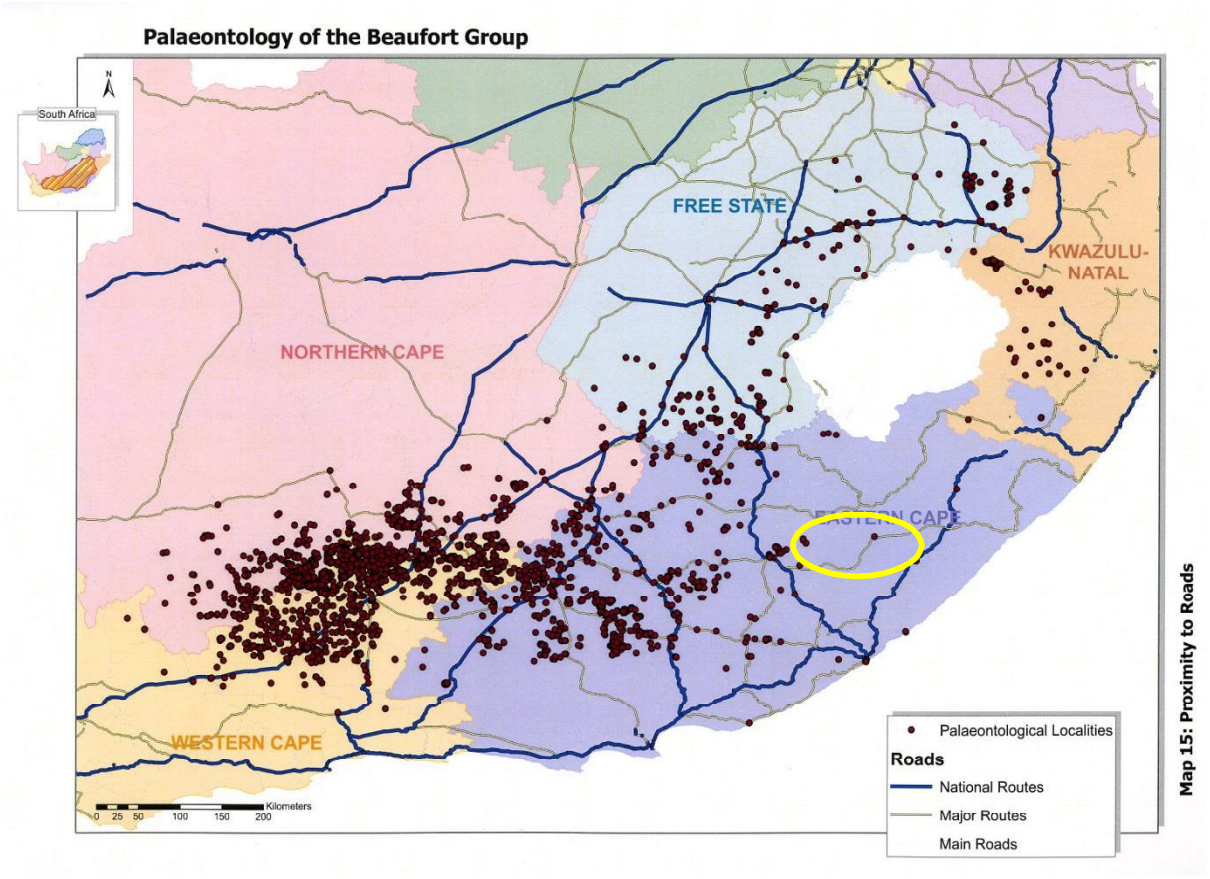


**Figure 5: Distribution of recorded fossil vertebrate localities within the Beaufort Group (Main Karoo Basin) showing the lack of sites in the poorly-studied region of the former Transkei region between Queenstown and Umtata (yellow ellipse) (Map abstracted from Nicolas 2007).**

### 3.1. Fossils within the Burgersdorp Formation

The Burgersdorp Formation is characterized by a diverse continental fossil biota of Early to Middle Triassic (Olenekian to Anisian) age, some 249 to 237 milllion years old (Kitching 1995, Rubidge 2005, Neveling *et al.* 2005, Smith *et al.* 2012). The Burgersdorp fauna is dominated by a wide variety of tetrapod taxa, notably a range of amphibians, reptiles and therapsids ("mammal-like reptiles"). This distinctive biota is referred to the *Cynognathus* Assemblage Zone (= *Kannemeyeria – Diademodon* Assemblage Zone of earlier authors; see Keyser & Smith 1977-78, Kitching 1995). Comparable Triassic faunas have been described from various parts of the ancient supercontinent Pangaea, including Russia, China, India, Argentina, Australia and Antarctica.

Useful accounts of the palaeontological heritage of this stratigraphic unit – which has recently being recognised as one of the richest Early-Mid Triassic biotas worldwide – are given by Kitching (1977, 1995), Keyser and Smith (1977-78), MacRae (1999), Hancox (2000; see also many references therein), Cole *et al.* (2004), Rubidge (2005) and Smith *et al.* (2012). The Burgersdorp biotas include a rich freshwater vertebrate fauna, with a range of fish groups (*e.g.* sharks, lungfish, coelacanths, ray-finned bony fish such as palaeoniscoids) as well as large capitosaurid and trematosuchid amphibians. The latter are of considerable important for long-range biostratigraphic correlation. The interesting reptile fauna includes lizard-like sphenodontids, beaked rhynchosaurs, and various primitive archosaurs (distant relatives of the dinosaurs) such as the crocodile-like erythrosuchids, some of which reached body lengths of 5 m, as well as the more gracile *Euparkeria* (Fig. 6). The therapsid fauna contains large herbivorous dicynodonts like *Kannemeyeria* (Fig. 7), which may have lived in herds, *plus* several small to medium-sized carnivorous or herbivorous therocephalians (*e.g. Bauria*)

and advanced cynodonts. The most famous cynodont here is probably the powerful-jawed genus *Cynognathus* (Fig. 7), but remains of the omnivorous *Diademodon* are much commoner. Tetrapods are also represented by several fossil trackways while large *Cruziana*–like burrow systems with coarsely scratched ventral walls are attributed to burrowing vertebrates (*cf* Shone 1978, Almond 2011b). Locally abundant vertebrate burrows have been attributed to small procolophonid reptiles (Groenewald *et al.* 2001). Important new studies on lacustrine biotas in the northern Burgersdorp outcrop area have yielded rich microvertebrate faunas as well as vertebrate coprolites; sites such as Driefontein in the Free State are now among the best-documented non-marine occurrences of Early Triassic age anywhere in the world (Bender & Hancox 2003, 2004, Hancox *et al*. 2010, Ortiz *et al.* 2010 and refs. therein).

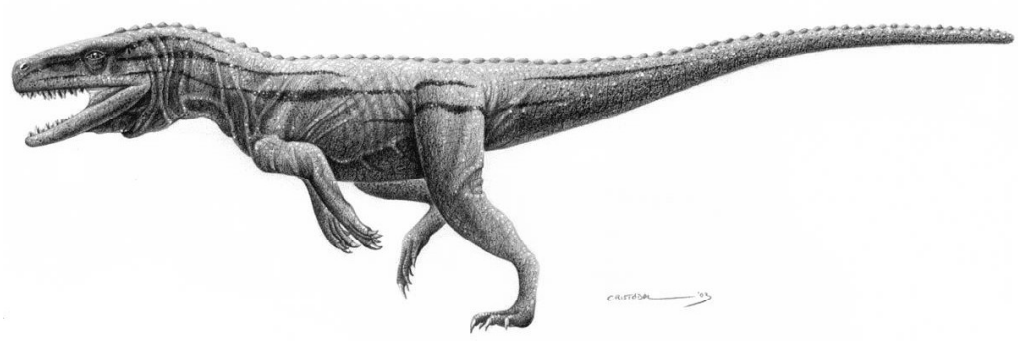

**Figure 6: Reconstruction of the small (*c*. 0.5m long) bipedal reptile *Euparkeria*, a primitive member of the archosaur group from which dinosaurs evolved later in the Triassic Period.**

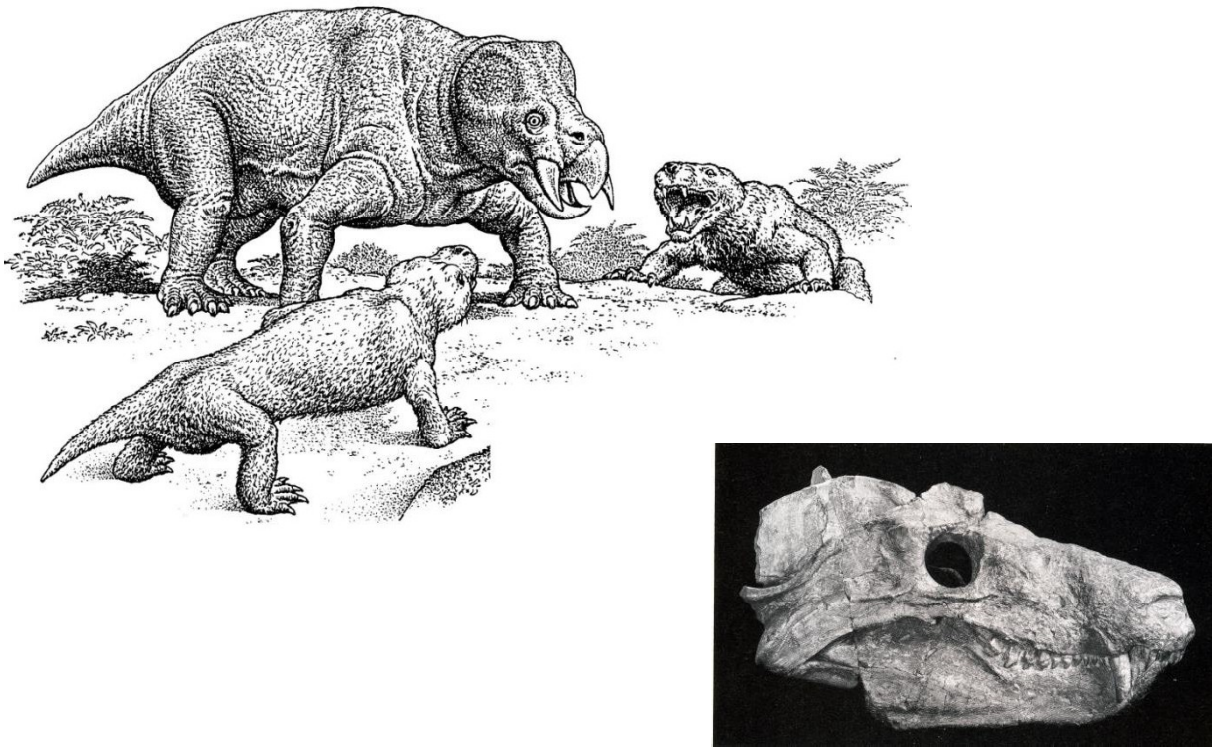

**Figure 7: Reconstruction of typical therapsids of the Early Triassic *Cynognathus* Assemblage Zone - the large tusked herbivorous dicynodont *Kannemeyeria* and the predatory, bear-sized cynodont *Cynognathus*. The inset shows the heavily-built skull of *Cynognathus* (*c*. 30 cm long) in lateral view.**

Contemporary invertebrate faunas are still very poorly known. Freshwater unionoid molluscs are rare, while the chitinous exoskeletons of the once-abundant terrestrial arthropods do not preserve well in the highly oxidising arid-climate sediments found here; arthropod trace fossils are known but so far no fossil insects. Likewise fossil plants of the characteristic Triassic *Dicroidium* Flora are poorly represented and low in diversity. They include lycophytes (club mosses), ferns (including horsetails such as *Schizoneura*), "seed ferns" (*e.g. Dicroidium*) and several gymnospermous groups (conifers, ginkgos, cycads *etc*) (Anderson & Anderson, 1985, Bamford 2004). A small range of silicified gymnospermous fossil woods are also present including *Agathoxylon, Podocarpoxylon* and *Mesembrioxylon* (Bamford 1999, 2004).

According to Kitching (1963, 1995) isolated, dispersed fossil bones, as well as some well-articulated skeletons, are associated with "thin localised lenses of silty sandstone" within the Burgersdorp Formation. Pedogenic, brown-weathering calcrete concretions occasionally contain complete fossil skeletons, while transported "rolled" bone is associated with intraformational conglomeratic facies at the base of channel sandstones. Fossil diversity decreases upwards through the succession. Complete tetrapod specimens are commoner lower down and amphibian remains higher up (Kitching 1995).

Burgersdorp Formation fossils from the Queenstown – Cofimvaba – Mthatha region have been briefly treated by Johnson (1984), Karpeta and Johnson (1979) as well as Almond (2011b, 2015).

### 3.3. Fossils within Late Caenozoic superficial deposits

The central Karoo superficial or "drift" deposits have been comparatively neglected in palaeontological terms. However, they may occasionally contain important fossil biotas, notably the bones, teeth and horn cores of mammals as well as remains of reptiles like tortoises. Good examples are the Pleistocene mammal faunas at Florisbad, Cornelia and Erfkroon in the Free State and elsewhere (Wells & Cooke 1942, Cooke 1974, Skead 1980, Klein 1984, Brink, J.S. 1987, Bousman *et al.* 1988, Bender & Brink 1992, Brink *et al*. 1995, MacRae 1999, Meadows & Watkeys 1999, Churchill *et al*. 2000, Partridge & Scott 2000, Brink & Rossouw 2000, Rossouw 2006). Other late Caenozoic fossil biotas from these superficial deposits include non-marine molluscs (bivalves, gastropods), ostrich egg shells, tortoise remains, trace fossils (*e.g.* calcretised termitaria, coprolites, invertebrate burrows), and plant material such as peats or palynomorphs (pollens) in organic-rich alluvial horizons (Scott 2000) and diatoms in pan sediments. In Quaternary deposits, fossil remains may be associated with human artefacts such as stone tools and are also of archaeological interest (*e.g.* Smith 1999 and refs. therein). Ancient solution hollows within extensive calcrete hardpans may have acted as animal traps in the past. As with coastal and interior limestones, they might occasionally contain mammalian bones and teeth (perhaps associated with hyaena dens) or invertebrate remains such as snail shells.

## 4. CONCLUSIONS AND RECOMMENDATIONS

The Engcobo Mall Development study area is underlain by Early Triassic continental sediments of the Upper Beaufort Group (Tarkastad Subgroup, Karoo Supergroup) that are assigned to the Burgersdorp Formation and possibly also - in the northernmost sector - by Early Jurassic intrusions (sills, dykes) of the Karoo Dolerite Suite. The Burgersdorp Formation elsewhere in the Eastern Cape is well known for locally abundant fossil vertebrates and trace fossils (*e.g.* invertebrate and vertebrate burrows) of the *Cynognathus* Assemblage Zones. However, very few records of fossil vertebrate remains, or other palaeontological material, are known from the Karoo Supergroup rocks in the Cofimvaba – Encobo area of the former Transkei. This may well be attributed in large part to low levels of fresh bedrock exposure - mainly due to the thick mantle of superficial deposits (colluvium / alluvium / soils) as well

as seasonally dense vegetation cover. Deep weathering of bedrocks in humid, pluvial climates, baking of sedimentary country rocks by extensive dolerite intrusion as well as the paucity of palaeontological field studies in the area may also have played a role here. The Karoo dolerites themselves contain no fossils, while the palaeontological sensitivity of the Late Caenozoic superficial sediments (colluvium, alluvium, soils) is generally very low.

These factors, together with the comparatively small footprint of the planned mall development, suggest that large volumes of fresh, fossil-bearing rock are unlikely to be disturbed here. It is concluded that the proposed development will not have a significant impact on local palaeontological heritage and, pending the discovery of new fossil material on site before or during construction, no further specialist studies or mitigation are recommended for this project.

The Environmental Control Officer (ECO) for the mall development should be alerted to the potential for, and scientific significance of, new fossil finds during the construction phase of the development, however. Should substantial fossil remains such as vertebrate bones and teeth, plant-rich fossil lenses or dense fossil burrow assemblages, be exposed during construction a chance-find procedure should be implemented. The ECO should take the appropriate action, which includes:

- Stopping work in the immediate vicinity and fencing off the area with tape to prevent further access;
- Reporting the discovery to the provincial heritage agency, ECPHRA (*i.e.* The Eastern Cape Provincial Heritage Resources Authority. Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za);
- Appointing a palaeontological specialist to inspect, record and (if warranted) sample or collect the fossil remains;
- Implementing any further mitigation measures proposed by the palaeontologist; and
- Allowing work to resume only once clearance is given in writing by the relevant authorities.

The mitigation measures proposed here should be incorporated into the Environmental Management Plan (EMPr) for the Engcobo Mall Development project. The palaeontologist concerned with mitigation work would need a valid collection permit from ECPHRA. All work would have to conform to international best practice for palaeontological fieldwork and the study (*e.g.* data recording fossil collection and curation, final report) should adhere to the minimum standards for Phase 2 palaeontological studies recently published by SAHRA (2013).

## 5. ACKNOWLEDGEMENTS

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## 7 . QUALIFICATIONS & EXPERIENCE OF THE AUTHOR

Dr John Almond has an Honours Degree in Natural Sciences (Zoology) as well as a PhD in Palaeontology from the University of Cambridge, UK. He has been awarded post-doctoral research fellowships at Cambridge University and in Germany, and has carried out palaeontological research in Europe, North America, the Middle East as well as North and South Africa. For eight years he was a scientific officer (palaeontologist) for the Geological Survey / Council for Geoscience in the RSA. His current palaeontological research focuses on fossil record of the Precambrian - Cambrian boundary and the Cape Supergroup of South Africa. He has recently written palaeontological reviews for several 1: 250 000 geological maps published by the Council for Geoscience and has contributed educational material on fossils and evolution for new school textbooks in the RSA.

Since 2002 Dr Almond has also carried out palaeontological impact assessments for developments and conservation areas in the Western, Eastern and Northern Cape under the aegis of his Cape Town-based company *Natura Viva* cc. He is a long-standing member of the Archaeology, Palaeontology and Meteorites Committee for Heritage Western Cape (HWC) and an advisor on palaeontological conservation and management issues for the Palaeontological Society of South Africa (PSSA), HWC and SAHRA. He is currently compiling technical reports on the provincial palaeontological heritage of Western, Northern and Eastern Cape for SAHRA and HWC. Dr Almond is an accredited member of PSSA and APHP (Association of Professional Heritage Practitioners – Western Cape).

**Declaration of Independence**

I, John E. Almond, declare that I am an independent consultant and have no business, financial, personal or other interest in the proposed development project, application or appeal in respect of which I was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances that compromise the objectivity of my performing such work.

**Dr John E. Almond**.

**Palaeontologist, *Natura Viva* cc**

# Heritage Protocol for Finds

**Heritage Impact Assessment (HIA) – The Engcobo Mall Development, (Portion of Portion 1 & Portion 136 of Engcobo Township), Ngcobo, Ngcobo Local Municipality, Eastern Cape**

## Heritage Protocol for Incidental Finds during the Construction Phase

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

### ➢ On-site Reporting Process:

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

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

- **Duties of the Supervisor:**

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

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

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

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

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

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

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