

Phase 1 Palaeontological Impact Assessment of a
proposed new conference and development center near
the Port of East London, EC Province.

Report prepared for:
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Executive Summary

- A Phase 1 Palaeontological Impact Assessment was carried out at a 1.9 ha property located in an industrial area near the Port of East London in East London, EC.
- There is no indication for the accumulation and preservation of intact fossil material within the Quaternary sediments (topsoils) covering the underlying sedimentary rocks.
- The site is underlain potentially fossil-bearing Middleton Fm. sediments, but it is unlikely that the proposed development will affect palaeontological heritage resources due to the spoiled condition of the substrate. However, a low to moderate possibility exist that objects of palaeontological significance may be uncovered during the course of excavation activities into **intact sedimentary bedrock**. In such an event it is advised that SAHRA and a professional palaeontologist should be notified immediately.
- There are no major palaeontological reason to halt the proposed development at the site.

Introduction

At the request of CCS Environmental Consultants, a Phase 1 Palaeontological Impact Assessment was carried out at a 1.9 ha property located in an industrial area near the Port of East London (**Fig. 1**). DV D-Lite Electrical cc. plans to develop the property into a conference facility, a youth entertainment center and an electrical supply business. A food outlet and a number of residential units are also planned.

In terms of Section 38 of the National Heritage Resources Act 25 of 1999 the survey is required as a prerequisite for any development which will change the character of a site exceeding 5 000 m² in extent. A site visit and subsequent assessment took place in November 2012. The task involved identification of possible paleontological sites or occurrences in the proposed zone, an assessment of their significance, related impact by the proposed development and recommendations for mitigation where relevant.

Description of the Affected Area

Details of area surveyed

Locality data

1 : 50 000 scale topographic map: 3327BB East London

1 : 250 000 scale geological map 3326 Grahamstown

The site is located between South Street and the Port of East London on the eastern bank of the Buffalo River (**Fig. 2**). The affected area consists of approximately 1.9 ha of heavily disturbed and overgrown, high-relief terrain (**Fig. 3**) A squatter camp is located next to the site, and parallel to the Short Street boundary line (33° 1'21.95"S 27°54'23.40"E to 33° 1'23.00"S 27°54'19.20"E).

The extent of the site is demarcated by the following coordinates:

1	33° 1'23.12"S	27°54'19.45"E
2	33° 1'24.85"S	27°54'25.46"E
3	33° 1'24.14"S	27°54'28.06"E
4	33° 1'22.86"S	27°54'29.88"E
5	33° 1'20.55"S	27°54'29.41"E

Survey Method

The site was investigated on foot. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera, were used to record relevant data. Relevant palaeontological information was assimilated for the report and integrated with data acquired during the on-site inspection.

Geology

The geology of the area has been described by Mountain (1974) and Johnson and Le Roux (1994). The site and surrounding area is underlain by the Permian Middleton Formation of the Adelaide Subgroup (*Pm*, Beaufort Group) which is made up of upward-fining, lenticular sandstone grading into mudstone, with prominent red coloured mudstone beds (**Fig 4**). Jurassic-age dolerite intrusions, in the form of sills and dykes (*Jd*), occur extensively to the south of the Buffalo River. Middleton Formation sediments are capped by Late Pleistocene, calcareous Nahoon Frm. sandstones (*Qn*, Algoa Group) situated along the coastline between Eastern Beach and Nahoon Point (Le Roux 1989).

Palaeontology

The mid-Permian Middleton Frm. (Adelaide Subgroup) can be biostratigraphically subdivided to include the upper *Pristerognathus Assemblage Zone (AZ)*, the *Tropidostoma AZ*, as well as the lower *Cistecephalus AZ* (Rubidge 1995). These zones are characterised by a varying suite of therapsid fossils mainly represented by the Dicynodontia, Gorgonopsia and Therocephalia. Poorly preserved reptile remains have previously been recovered from several localities believed to be along the western bank of the Buffalo River (Mountain 1974). Ichnofossil occurrences are known from the uppermost *Pristerognathus AZ* (Bordy *et al.* 2011). Fish, amphibians and Glossopteris plant fossils are also known from these assemblages.

Three hominid footprints preserved as casts were found in 1964 in Pleistocene aeolianites of the Nahoon Formation near Bats Cave. In addition, shell fragments and foraminifera are common in the Nahoon Frm. (Algoa Group) and fossil bone fragments have been observed in Nahoon Frm aeolinities at Black Rock and Kasuka between East London and Port Alfred.

Results of Survey

The site is heavily overgrown and mostly covered by substantial deposits of old building rubble and modern refuse (**Fig. 11**). No outcrop was recorded as a result and no sites of palaeontological significance were discovered in the study area. Investigation of exposed topsoils shows signs of extensive turbation as a result of decades of construction activity on the property. There is little indication of intact Quaternary sediments (topsoils) and for the accumulation and preservation fossil material covering the underlying sedimentary rocks. There is a low probability that Quaternary fossils will be adversely impacted by the proposed development.

Statement of Significance

The site is underlain potentially fossil-bearing Middleton Fm. sediments, but it is unlikely that the proposed development will affect palaeontological heritage resources due to the spoiled condition of the substrate. However, a low to moderate possibility exist that objects of palaeontological significance may be uncovered during the course of excavation activities into **intact sedimentary bedrock**. In such an event it is advised that SAHRA and a professional palaeontologist should be notified immediately.

Recommendations

The area demarcated for development has been suitably recorded, mapped and documented in accordance with the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).

There are no major palaeontological grounds to halt development at the site. The site can be accessed for further development.

References

- Bordy, E.M., Linkermann, S. and Prevec, R. 2011. Palaeoecological aspects of some invertebrate trace fossils from the Mid to Upper Permian Middleton Formation, Eastern Cape, South Africa. *Journal of African Earth Sciences* 61, 238 – 244.
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- Le Roux, F.G. 1989. Lithostratigraphy of the Nahoon Formation. *SA Comm. Strat.* 9, 1-14.
- Mountain, E.D. 1974. The geology of the area around East London, Cape Province. Geological Survey, Pretoria.
- Rubidge, B. S. 1995. (ed.) *Biostratigraphy of the Beaufort Group*. Biostrat. Ser. S.Afr. Comm. Strat. 1, 1 – 45.

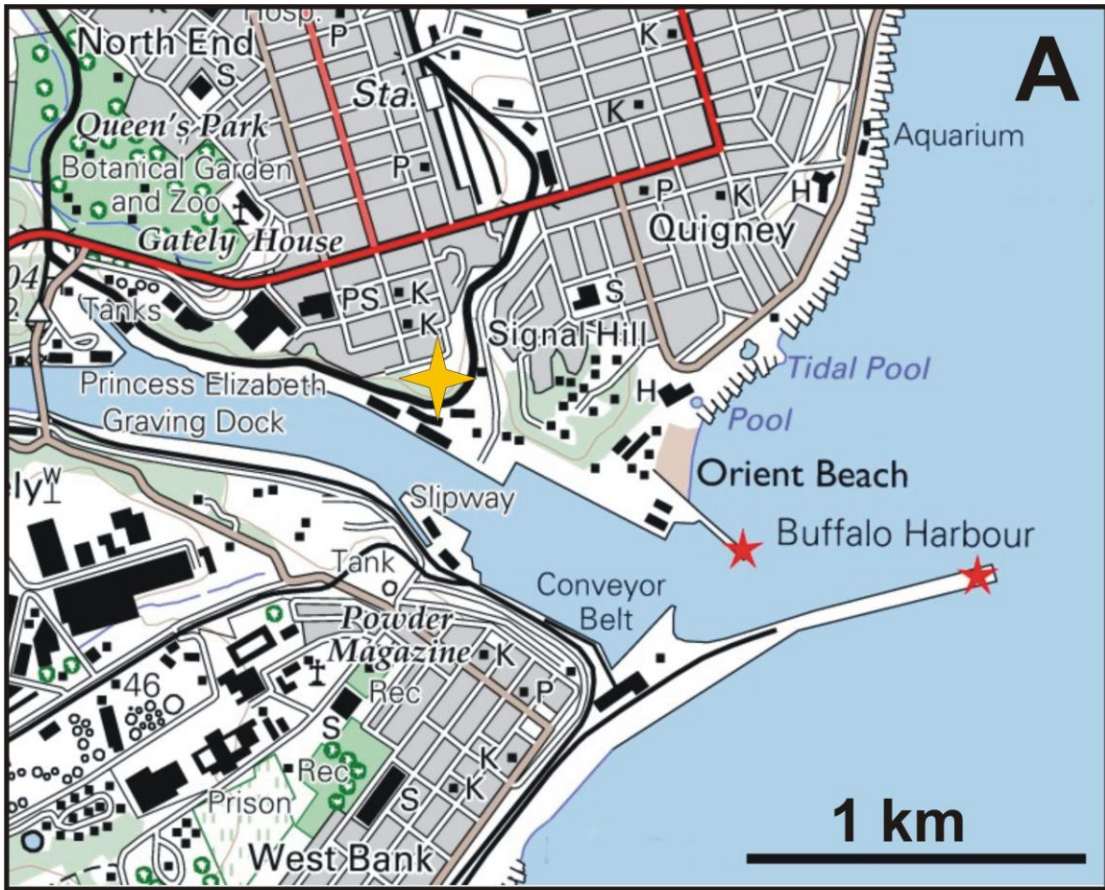


Figure 1. (A) Portion of 1:50 000 scale topographic map of East London (3327BB East London). (B) Aerial photograph of the Port of East London.



Figure 2. Aerial view of the proposed site.

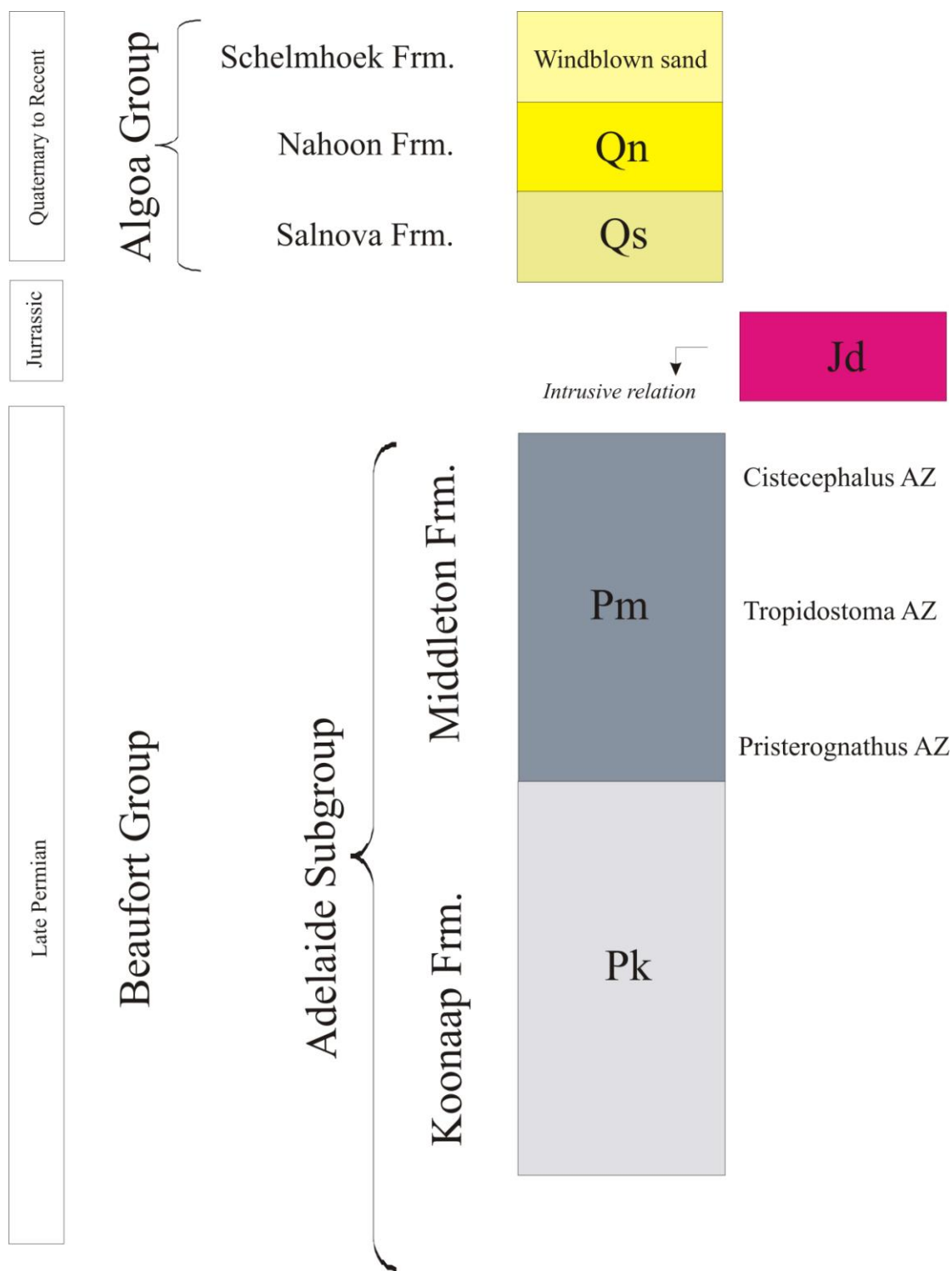


Figure 4. Schematic representation of the geology in and around the survey area.



Figure 4. Dilapidated foundation structures, building rubble and dumping of refuse have led to in extensive landscape alterations on the property.