

## **RECOMMENDED EXEMPTION FROM FURTHER PALAEOLOGICAL IMPACT ASSESSMENT OR MITIGATION**

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### **Proposed project: PE AIRPORT STORMWATER UPGRADE**

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**Rose Prevec** PhD (Wits) PhD (UKZN)

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The Airports Company South Africa (ACSA) has contracted SRK Consulting to conduct a Basic Assessment of the potential impacts of a proposed project to upgrade the stormwater outfall system at Port Elizabeth Airport's secondary runway. The project will involve the laying of a 600m long underground pipe, and the installation of subsoil drains and manholes/catchpits at regular intervals along the pipeline (Fig. 1a).

This report addresses the potential impacts of the proposed project to palaeontological heritage in the development footprint. For reasons explained below, it is very unlikely that fossil heritage will be impacted upon, and my recommendation is that no further palaeontological impact assessment or mitigation is required for this development.

#### **Geology of the development area**

The geology of the proposed development area is shown in Fig. 1b, on the 1:250 000 Geological map of Port Elizabeth (3324; Council for Geoscience, Toerien, 1991). The area is underlain by rocks of the Peninsular Formation, Table Mountain Group, Cape Supergroup and aeolian sands of Quaternary age.

The Peninsular Formation (Op) comprises medium to coarse-grained sandstone and quartzites, with rare occurrences of lenticular shales and matrix-supported, small-pebble conglomerate (Torien & Hill, 1989; Thamm & Johnson, 2006). The formation was laid down on a fluvial braid-plain that graded distally into a low-energy marine environment (Thamm & Johnson, 2006).

The Quaternary deposits (Qw) that cover much of the region to the south, are unconsolidated, aeolian sand dune deposits of the Schelm Hoek Formation, the youngest formation in the Algoa Group, still being deposited today (Le Roux, 1989).

#### **Fossil potential of development area**

The Peninsular Formation is of Early to Late Ordovician in age. Sparse fossils have been found in this formation particularly shallow marine / coastal / estuarine to freshwater trace fossils, including eurypterid trackways and trilobite burrows (Anderson, 1975; Braddy & Almond, 1999; Almond *et al.*, 2008). These traces have been recorded mainly from mudrock-rich, more marine-influenced parts of the

succession in the Western Cape, but there is the potential to find them within the development area.

The Quaternary aeolian sands (Qw) of the Schelm Hoek Formation represent the most recent deposits in the area. Fossils that may be encountered include: shells, skeletal algae, foraminiferae, echinoid spines, land gastropods and scarce root casts and vertebrate skeletal remains.

Considering (1) the scarcity of fossils within the Peninsular Formation in the Eastern Cape, in conjunction with (2) the strong tectonic overprint of the Cape Folding Event that took place around 310 million years ago, and (3) the long period of weathering and erosion that produced the African Land Surface in the region, there is a greatly diminished likelihood of finding well preserved fossils within this formation in the development area. Fossils are sufficiently scarce in the Schelm Hoek Formation that it is unlikely that they will be encountered during the linear excavations proposed.

### **Recommendation**

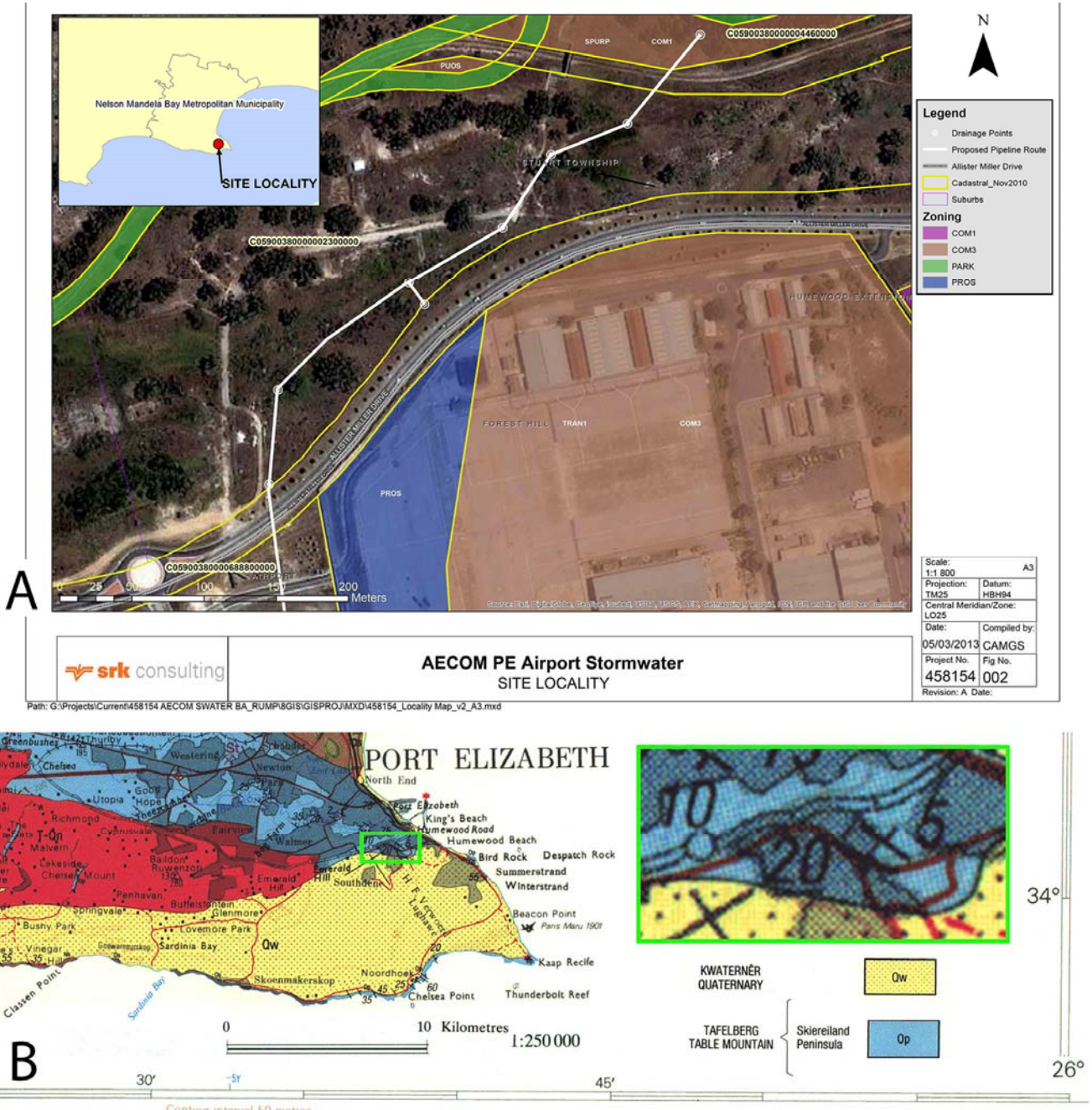
In conclusion, since there is little likelihood of any significant fossils resources being impacted upon by this development, my recommendation is that further palaeontological impact assessment or mitigation is not required.

However, should fossil remains be exposed during excavations, the onsite ECO should protect these from damage (preferably without removal from site), and immediately alert SAHRA so that a palaeontologist can be consulted and appropriate action taken.

Yours sincerely



Dr Rose Prevec  
Candidate Natural Scientist  
email: r.prevec@ru.ac.za



**Fig. 1(A):** Site Locality Plan for proposed PE Airport Stormwater Upgrade;  
**(B):** Geological map of the development area (1:250 000 Geological Map; 3324 Port Elizabeth, Council for Geoscience; Toerien, 1991).

## References

- Almond, J.E. 1998. Trace fossils from the Cape Supergroup (Early Ordovician – Early Carboniferous) of South Africa. *Journal of African Earth Sciences* 27 (1A): 4-5.
- Almond, J.E., de Klerk, W.J. & Gess, R. 2008. Palaeontological heritage of the Eastern Cape. Draft report for SAHRA, 20 pp. Natura Viva cc, Cape Town
- Anderson, A.M., 1975. The “Trilobite” trackways in the Table Mountain Group (Ordovician) of South Africa. *Palaeontologia africana* 18, 35-45.
- Braddy, S.J. & Almond, J.E. 1999. Eurypterid trackways from the Table Mountain Group (Ordovician) of South Africa. *Journal of African Earth Sciences* 29(1):165-177.
- Le Roux, F.G. 1989. The lithostratigraphy of Cenozoic deposits along the south-east Cape coast as related to sea-level changes. M.Sc. thesis, Stellenbosch University. 246 pp.
- Thamm, A.G. and Johnson, M.R. 2006. The Cape Supergroup. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds.) *The geology of South Africa*, pp. 443-459. Geological Society of South Africa, Marshalltown.
- Toerien, D.K. & Hill, R.S. 1989. The geology of the Port Elizabeth area. Explanation to 1: 250 000 geology Sheet 3324 Port Elizabeth, 35 pp. Council for Geoscience, Pretoria.

## Declaration of Independence

I, Rosemary Prevec, declare that I am an independent specialist consultant and have no financial, personal or other interest in the proposed development, nor the developers or any of their subsidiaries, apart from fair remuneration for work performed in the delivery of palaeontological heritage assessment services. There are no circumstances that compromise the objectivity of my performing such work.



Dr Rosemary Prevec  
Palaeontologist