

Palaeontological Heritage Impact Assessment for the Proposed Carpe Diem Coastal Nature Estate Development, Great Fish Point

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September 2006

Witteberg Group remains

The area of the proposed development is underlain by interbedded quartzites and shales of the upper Witteberg Formation. These strata are of great interest due to their potential inclusion of fossil fish and plants from above and below the Devonian/Carboniferous boundary (end – Devonian extinction event). Such fossils are best known from the vicinity of Grahamstown, although plant fossils of this nature have also been noted in the Kap River valley, a little to the north of the proposed development. At Fish Point the geological bedding is tipped from horizontal to near vertical orientation. The more resistant quartzites are to be observed forming the rocky spits and promontories extending out to sea, below the proposed housing area. The gullies between these result from the preferential weathering of the softer shales (in which the fossils would be likely to be situated). No fossils were observed during the site visit, though more exhaustive examination might prove fruitful.

Although these strata extend beneath the proposed development it is unlikely that they will be intercepted during construction, over most of the area, due to the large volume of more recent dune sand overlying them at this point.

Areas of coastal fynbos are likely to be underlain by Witteberg rocks, as soils derived from quartzites of the Cape Supergroup (including the Wittebroup Group) appear to be a prerequisite for the development of the fynbos biome. Shales here are likely to be deep weathered and it is unlikely that fresh material will be revealed during the excavation of foundations.

It would, however, be appropriate for initial excavations in this area to be inspected by a qualified individual.

Geologically recent remains

The immediate substrate of the proposed development consists of unconsolidated sands, bonded by climax dune forest. It is very likely that geologically recent mammal remains are situated therein. The thick dune forest, however, makes survey almost impossible. Mammal remains may, however, be intercepted by post holes sunk for supporting houses and boardwalks, construction of access roads and associated disturbances. Should these be disturbed SAHRA should be notified and a qualified individual should assess whether excavation would be appropriate. If development proceeds, all contractors should be notified of this requirement, and site inspections should also be conducted at appropriate times by an independent paleontologist.

Impact assessment

Potential Impact:

a) Disturbance of Witteberg (Upper Devonian) palaeontological remains.

	EXTENT	DURATION	INTENSITY	STATUS	SIGNIFICANCE	CONFIDENCE	PROBABILITY
WITHOUT MITIGATION	L	M	M-	neg	M-	M	L
WITH MITIGATION	L	L	L+	neut	L+	M	L

Proposed Mitigation:

- a) During any excavation into bedrock, at the extreme north of the site, a suitable palaeontologist should be present to assess for fossils.
- b) Should any fossils be unearthed an excavation can be carried out, information on which will be made available to the developers.

Potential Impact:

- b) Disturbance of geologically recent mammal remains.

	EXTENT	DURATION	INTENSITY	STATUS	SIGNIFICANCE	CONFIDENCE	PROBABILITY
WITHOUT MITIGATION	L	H	H-	Negative	H-	M	M
WITH MITIGATION	L	H	M-	Negative	M-	M	M

Proposed Mitigation:

- a) Should mammal bones be unearthed, a suitable palaeontologist should be brought onto site to map the positions of all disturbed bones and collect them.
- b) Excavation of important material may be required.
- c) Information and, possibly, assistance with an on site museum could be made available.

NOTE THOUGH that as large mammal remains sites are normally best excavated over a wide area to give the most useful data, the crisscrossing of the area by trenches and pole holes would seriously detract from the value of a locality, and its occupation and development would ensure it's long term inaccessibility to science.

The No-Go Option

The No-Go Option should certainly be considered, in this case, as the area would clearly be extremely suitable for conservation and environmental/heritage studies/education. 120 dwellings spaced throughout the area, with associated transport networks, water reticulation, sewerage management and recreational areas, would constitute a fairly large new holiday village and it is difficult to conceive that this would not entirely and permanently change what is presently a pristine environment, and a heritage asset to the entire population.

Cumulative Impacts

The building of access routes, sewerage systems, boardwalks etc. will have a far greater cumulative affect than the housing alone. In addition it is doubtful whether residents, their children and pets will entirely stay on the boardwalks, and dune slope erosion is also to be expected - leading to more widespread disturbance, exacerbated by unconsolidated sediments and steep slopes. A cumulative effect of increasing strip development along the coastline will also be the eventual loss of any remaining pristine stretches where past life, archaeology and ecology can still be studied and where future educational programs can be conducted for the benefit of the wider national community.