

C. GEOLOGY

Field Note C6a. Enon Formation - Soutpansvlakte Basin



View of the Soutpansvlakte Basin.

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The Enon Formation (of the Uitenhage Group) was deposited along the southern section of South Africa during the break up of Gondwana when there was widespread erosion of the rocks comprising the Cape Fold Belt. It is considered to be Late Jurassic to Early Cretaceous in age, some 145 ma ago (Figure 1).

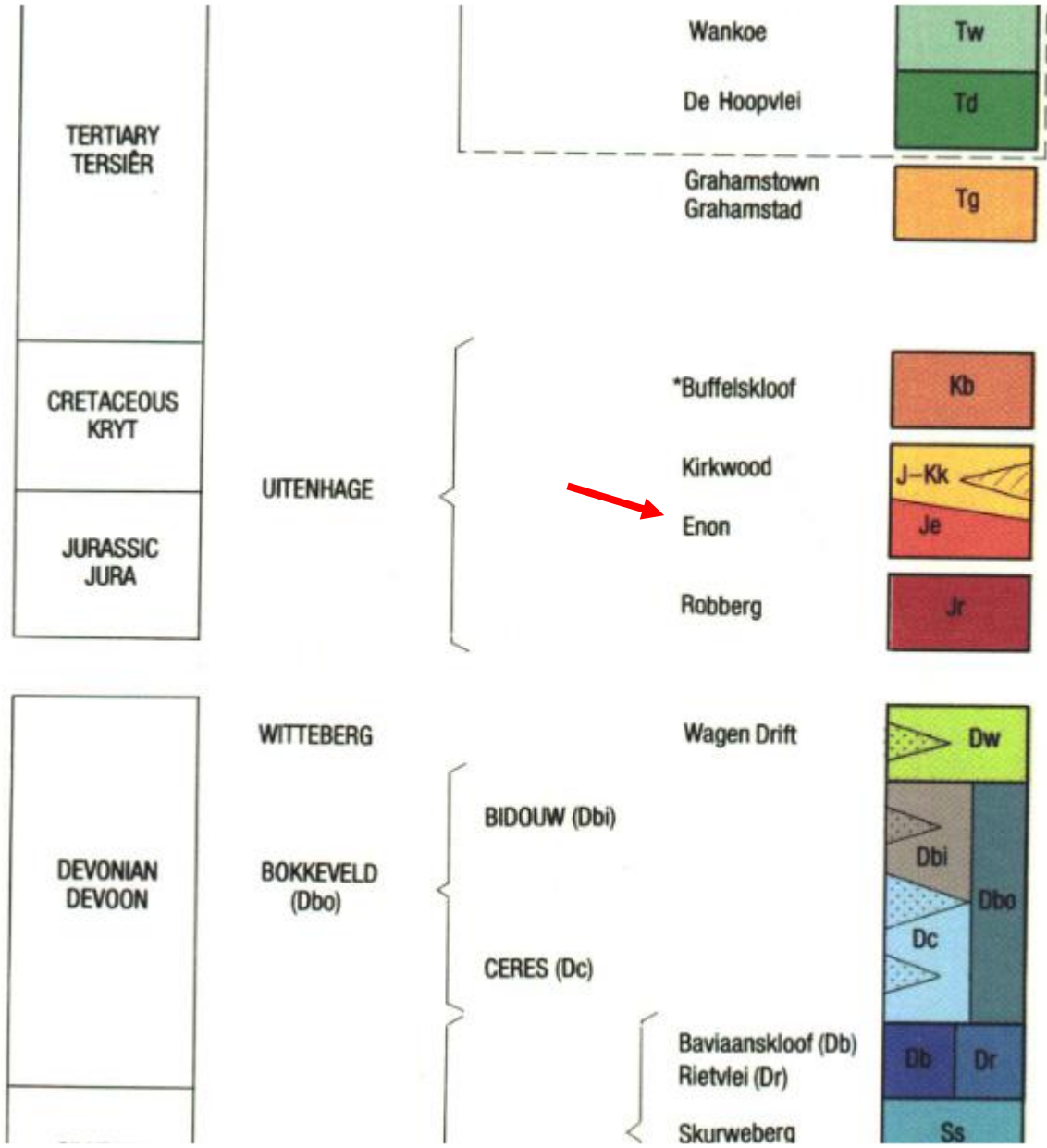


Figure 1. The location of the Enon Formation (arrow) in the geological column.

The Enon Formation was deposited about 250 million years after the deposition of the Bokkeveld Formations, when the latter have already been very well eroded. In the Southwestern Cape, it is thus found on the Bokkeveld shale hills and in channels and valleys, which were cut into them.

Two basins in the study area are recognised as Enon Basins. The southern is the 'Jubilee Hill Basin' (Figures 2 and 3) and the northern is the 'Soutpansvlakte Basin' (Figures 2 and 3).

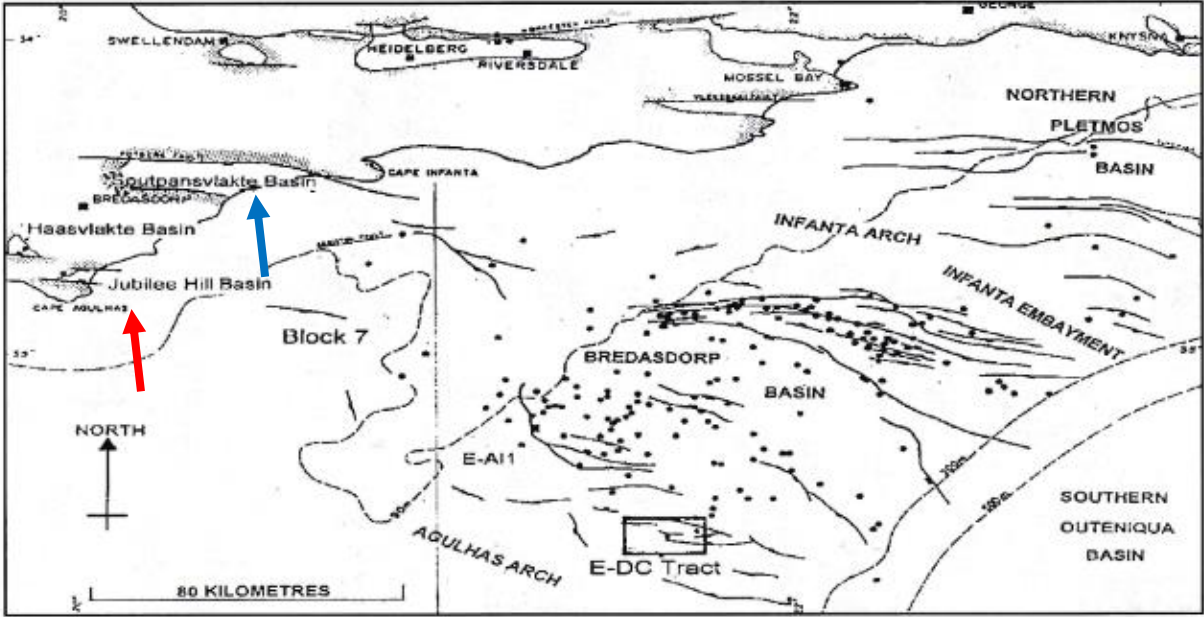


Figure 2. Study Area offshore paleogeography. Red arrow points to the Jubilee Hill Basin; blue arrow points to the Soutpansvlakte Basin, named so by J Malan and J Theron in 1987.
 Source: J Malan and J Viljoen, Field Trip Guide, 2016.

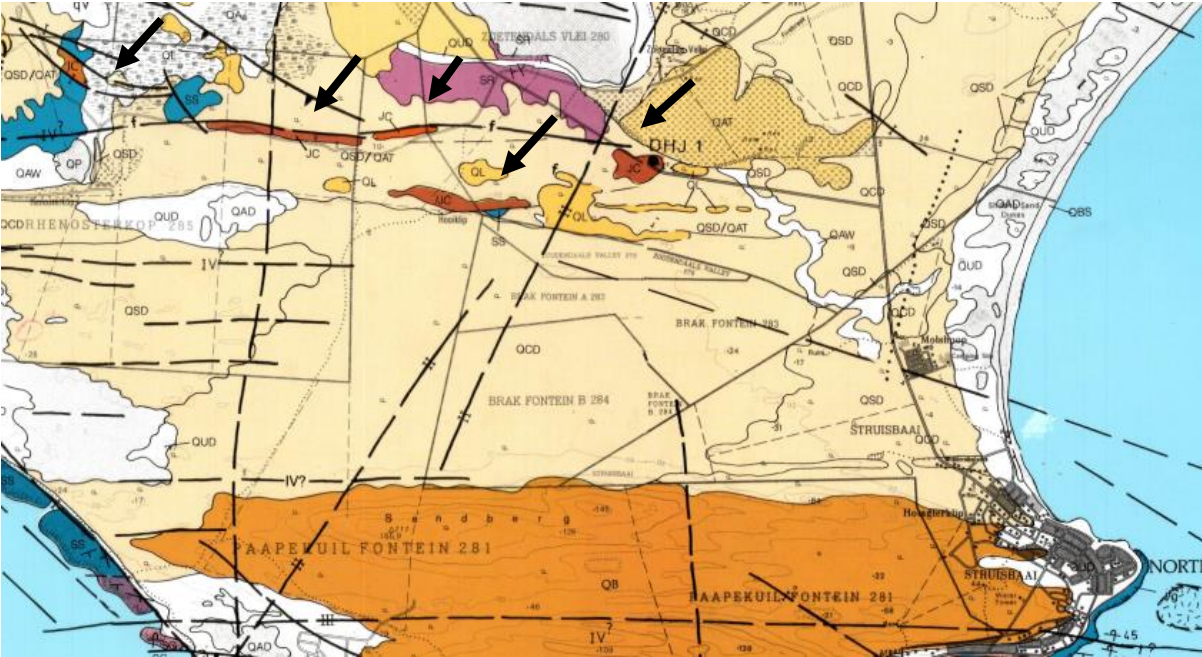


Figure 3. Geology map (MAG Andreoli, 1989) of the area north of Struis Bay. Arrows point to the Enon Formation outcrops, within the Jubilee Hill Basin.

The location of the Soutpansvlakte Basin in the context of the regional geology is shown in Figures 4 and 5.

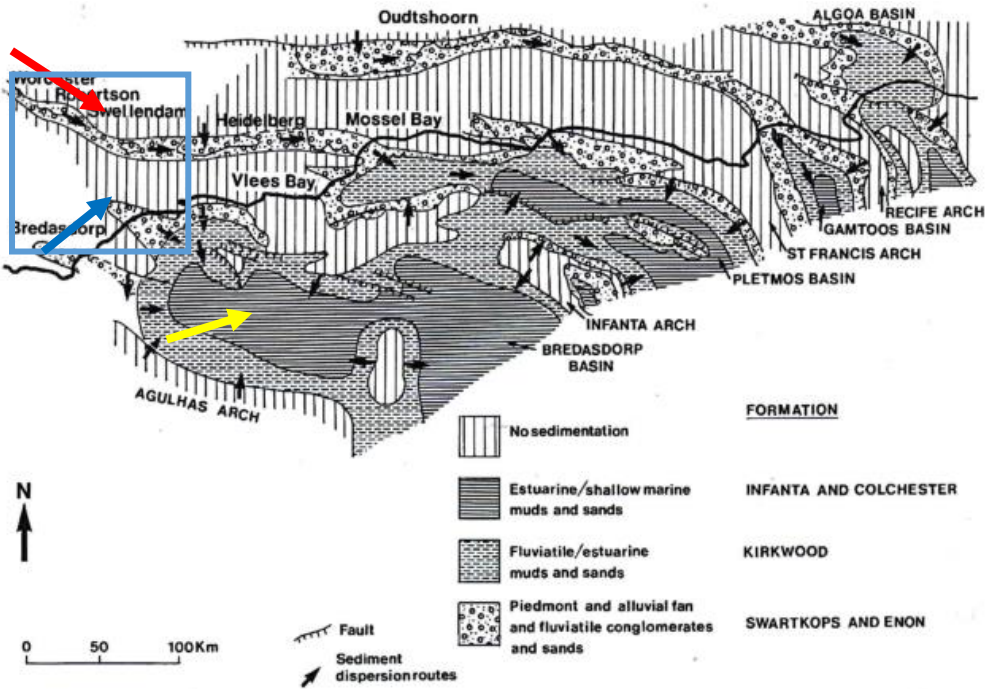


Figure 4. Palaeogeography map of the basins off the south coast of SA for the late Jurassic / early Cretaceous times. The blue box indicates the section enlarged in Figure 5. The red arrow points to the Soutpansvlakte Basina and the blue arrow points to the Jubilee Hill Basin, both at the north-western tip of the Bredasdorp Basin (yellow arrow).

Source: Dingle et al, 1983. Mesozoic and Tertiary geology of Southern Africa.

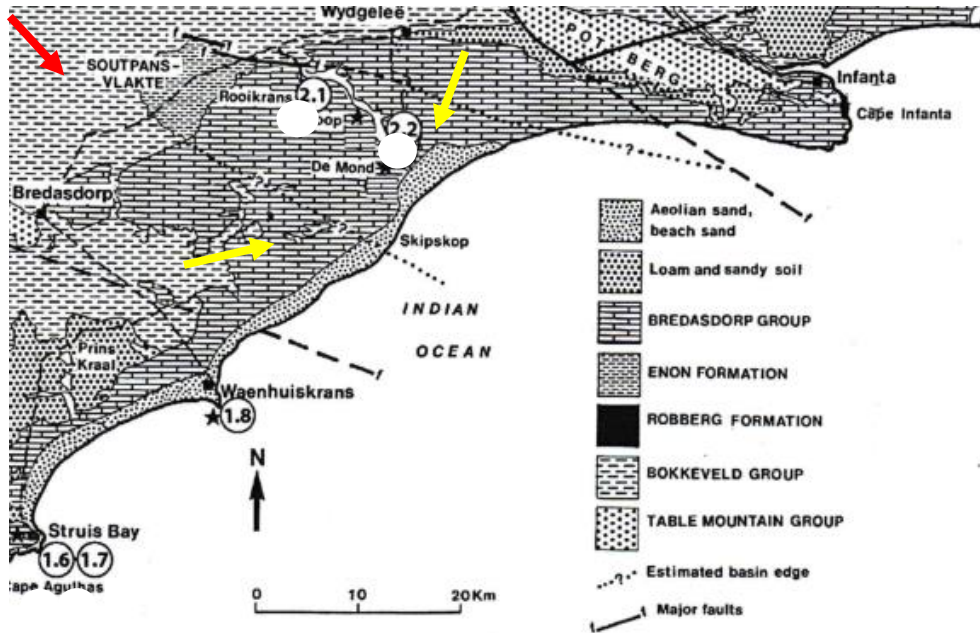


Figure 5. The Enon Basin, underlying the Hard Dunes, is defined by two inferred NW-SE trending faults (yellow arrows). The northwestern tip of the basin, NW of the Hard Dunes, and where Enon sediments are exposed, is the Soutpansvlakte Basin (red arrow).

(Source: J Malan and J Viljoen, 2016: Southern Cape Geology: Evolution of a Rifted Margin. 35th International Geological Congress, Cape Town. Field trip guide.

The Soutpansvlakte Basin is flanked on the southeast by the Hard Dunes, and on all other sides by the Shale Hills (name given by the author, Chapter S) of the Bokkeveld Formations. The Enon Formation deposits are exposed in the Soutpansvlakte Basin and in areas east of the basin and along the Salt River Gorge (Figures 6 to 8).

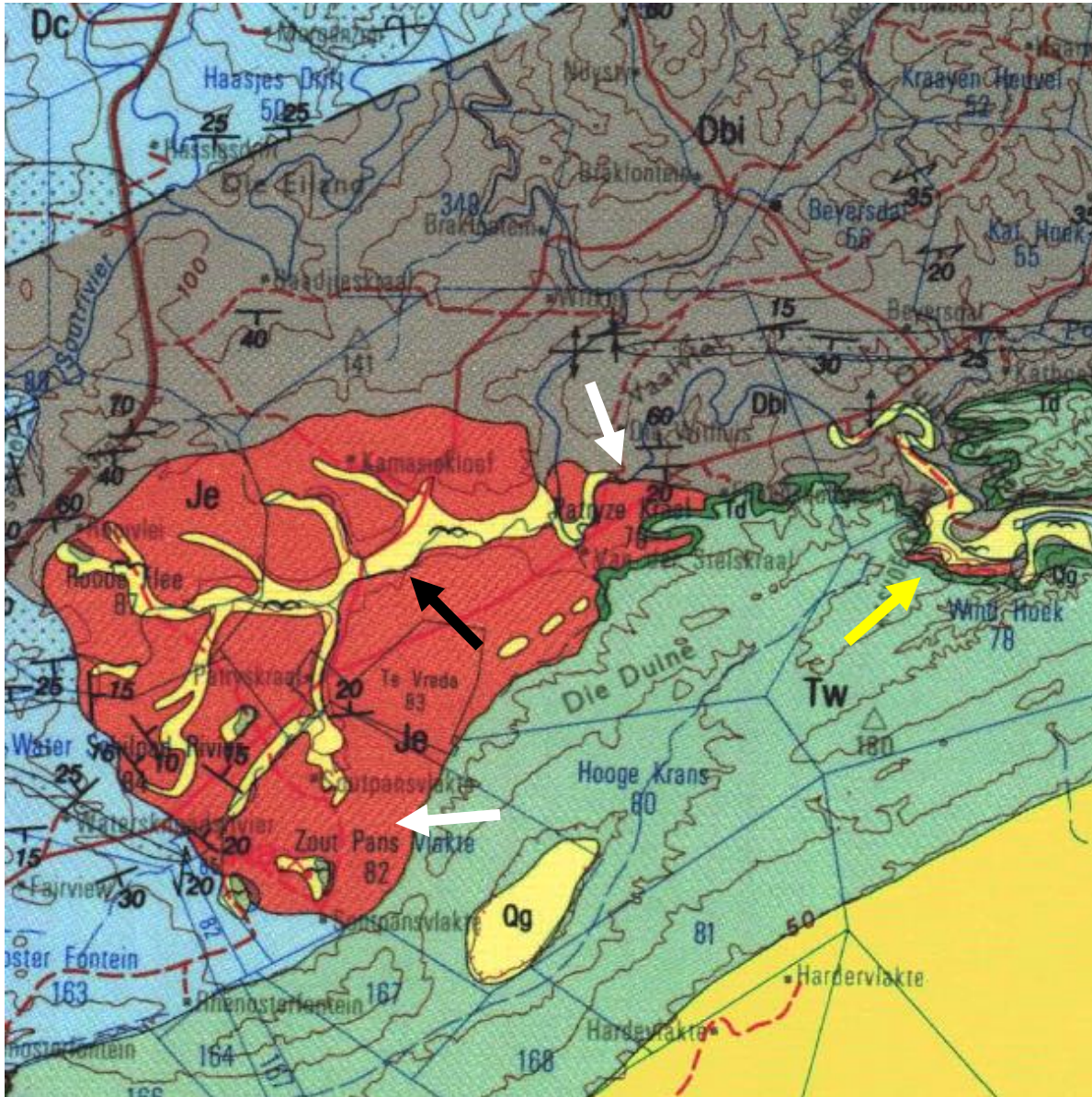


Figure 6. Geology map (Riversdale sheet, 1:250,000, 1993) showing the locations where the Enon Formation sediments are exposed in the Soutpansvlakte Basin (red), drained by the Waterskilspads River (yellow within the red), which flows to the Salt River (white arrow), and along the Salt River Gorge (yellow arrow). Small Enon Formation outcrops are located within the De Hoop Vlei Gorge, farther to the southeast.

Author's note: the Soutpansvlakte is a name of a farm at the southwestern 'corner' of the basin (white arrow in Figure 6). It would have been more appropriate to name the basin after the Waterskilspads River Basin, as it is this river's catchment area.

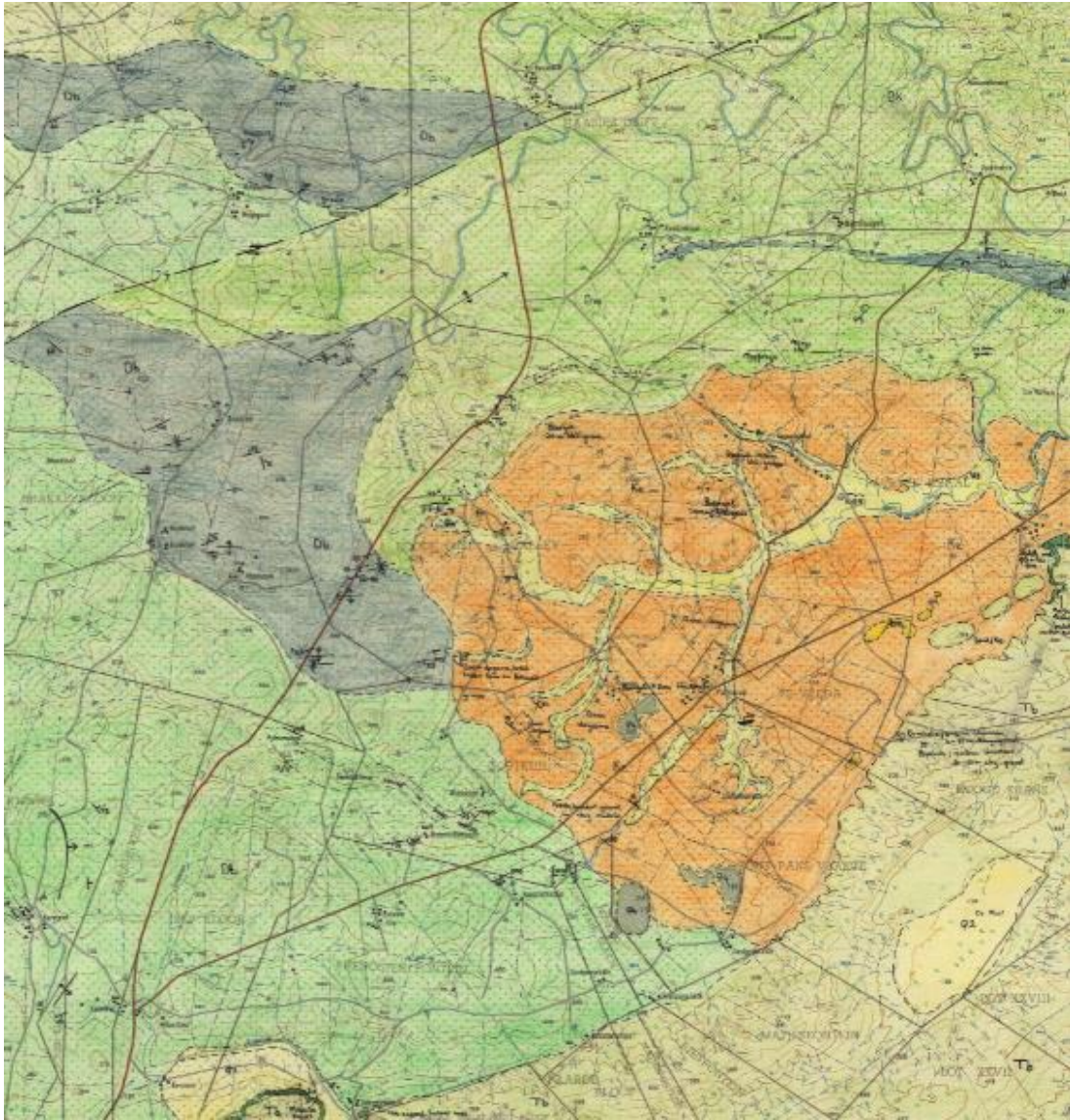


Figure 7. Geology map (field sheet 3420AD 1:50,000, 1984) showing the Enon Formation deposits (orange) in the Soutpansvlakte Basin.

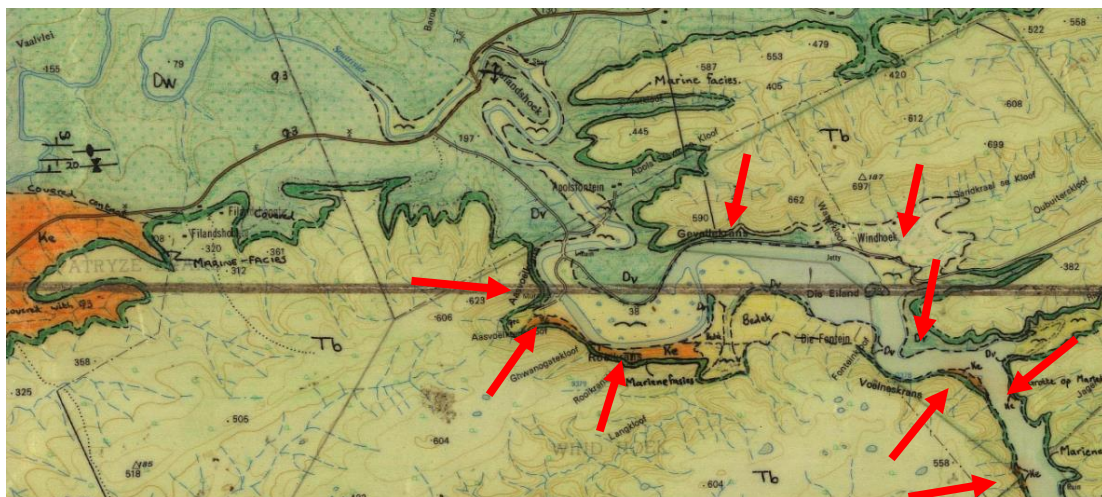


Figure 8. Geology map (Malan's field sheet 3420AD 1:50,000, 1984) showing the Enon Formation outcrops (orange) within the Salt River and De Hoop Vlei Gorges (arrows).

The Soutpansvlakte Basin is flanked by the Hard Dunes on the southeast and by the Bokkeveld shale hills on all other sides (Figures 9 to 11).



Figure 9. Top and bottom – views of the Soutpansvlakte Basin.



Figure 10. Top and bottom – views of the Soutpansvlakte Basin.



Figure 11. Top and bottom – views of the Soutpansvlakte Basin.

Some of the hills in the north of the basin (Bokkeveld shale hills) have no, or only little, Enon Formation deposits cover. Further studies are required to exactly map the distribution of the Enon Formation in and around the basin (see Chapter W).

The Waterskildpadsrivier drains the Soutpansvlakte Basin (Figures 12 to 15).



Figure 12. A tributary of the Waterskildpadsrivier.



Figure 13. The Waterskildpadsrivier.



Figure 14. The Waterskilpadsvier bed at the heart of the Soutpansvlakte Basin.



Figure 15. Top and bottom – views of the Waterskilpadsrivier in the Soutpansvlakte Basin.