C. GEOLOGY

Field Note C6a. The Enon Formation - Soutpansvlakte Basin

The Enon Formation (of the Uitenhage Group) was formed 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).

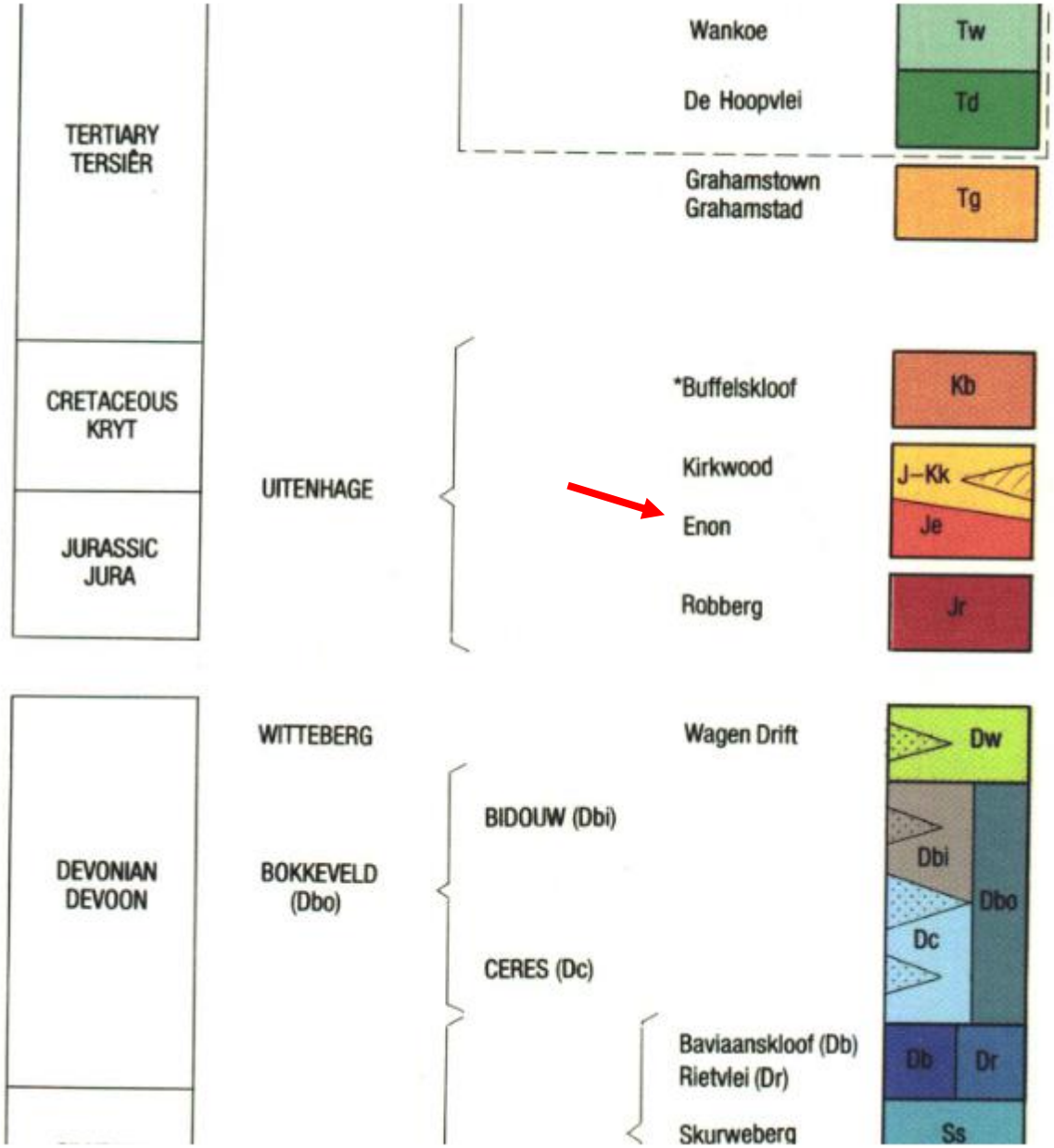

Figure 1. The location of the Enon Formation (arrow) in the geological column.

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 South Western Cape it is thus found on the Bokkeveld shale hills and in channels and valleys, which were cut into them (Figures 2 and 3).

One of these valleys is a depression north-east of Bredasdorp, where the Soutpansvlakte Farm is located. The depression was named the Soutpansvlakte Basin by J Malan and J Theron, who mapped the area in 1987.

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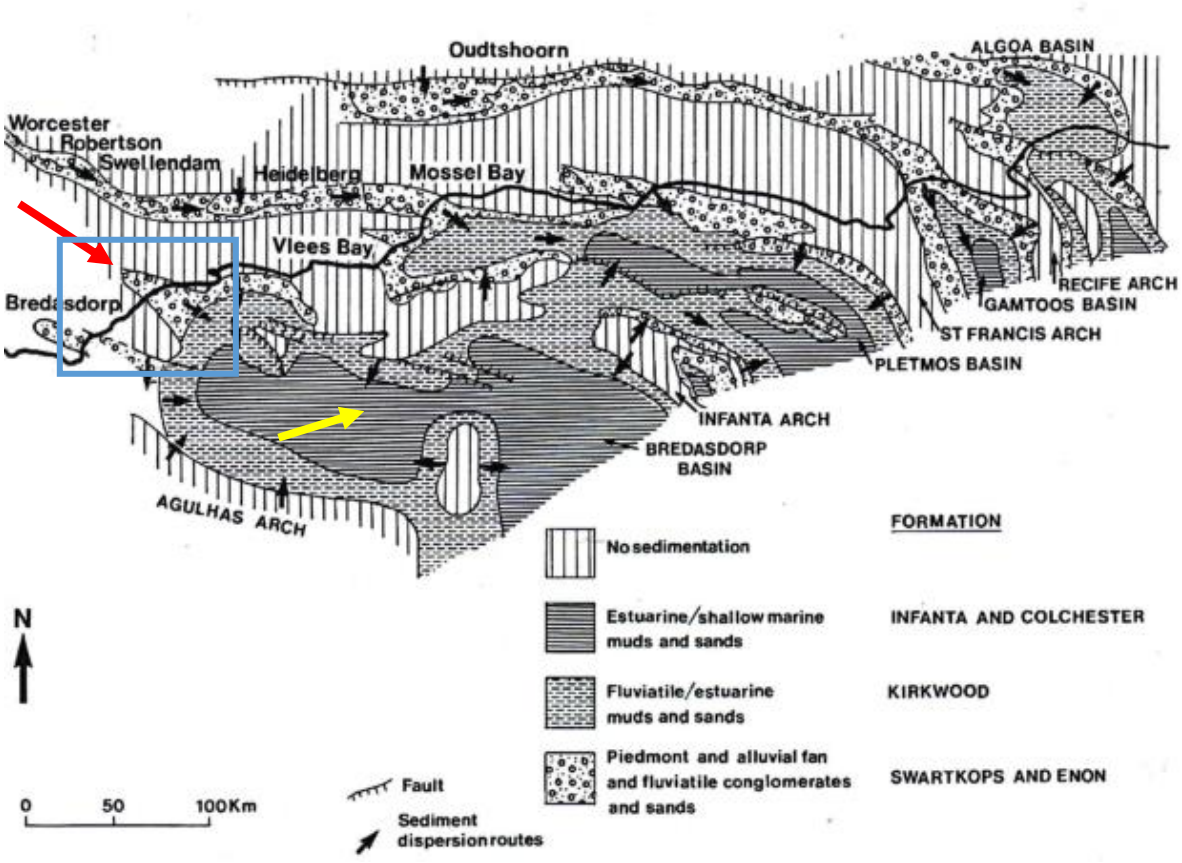

Figure 2. Palaeogeography of the basins off the south coast of SA for the late Jurassic / early Cretaceous times. The blue box indicates the section enlarged in Figure 3, which is the location of the Study Area. The red arrow points to the Soutpansvlakte Basin, which is the north-western tip of the Bredasdorp Basin (yellow arrow).
Source: Dingle et al, 1983. Mesozoic and Tertiary geology of Southern Africa.

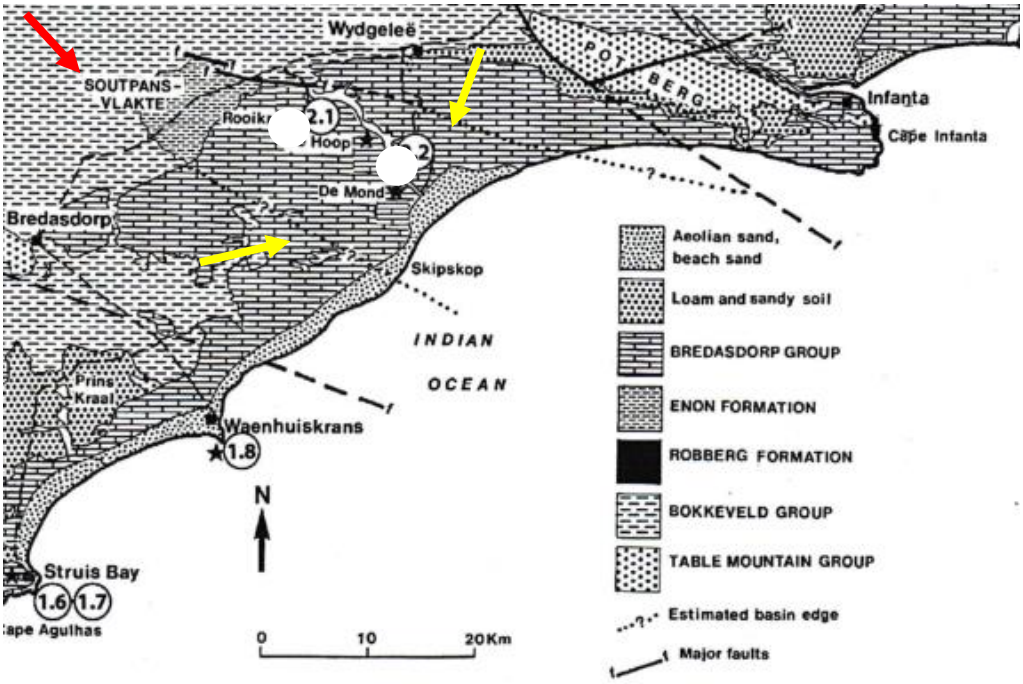

Figure 3. The Enon Basin, underlying the Hard Dunes, is defined by two inferred NW-SE trending faults (yellow arrows). The northwestern tip of the basin, NW of the Hard Dunes, and where Enon sediments are exposed) is the Soutpansvlakte Basin (red arrow).
Source: Dingle et al, 1983. Mesozoic and Tertiary geology of Southern Africa.

Some boreholes into the Enon Formation are located quite close to the present coastline (Figure 4). Boreholes have been drilled into the Enon Formation in the De Hoop Nature Reserve (the geological records could not be found).

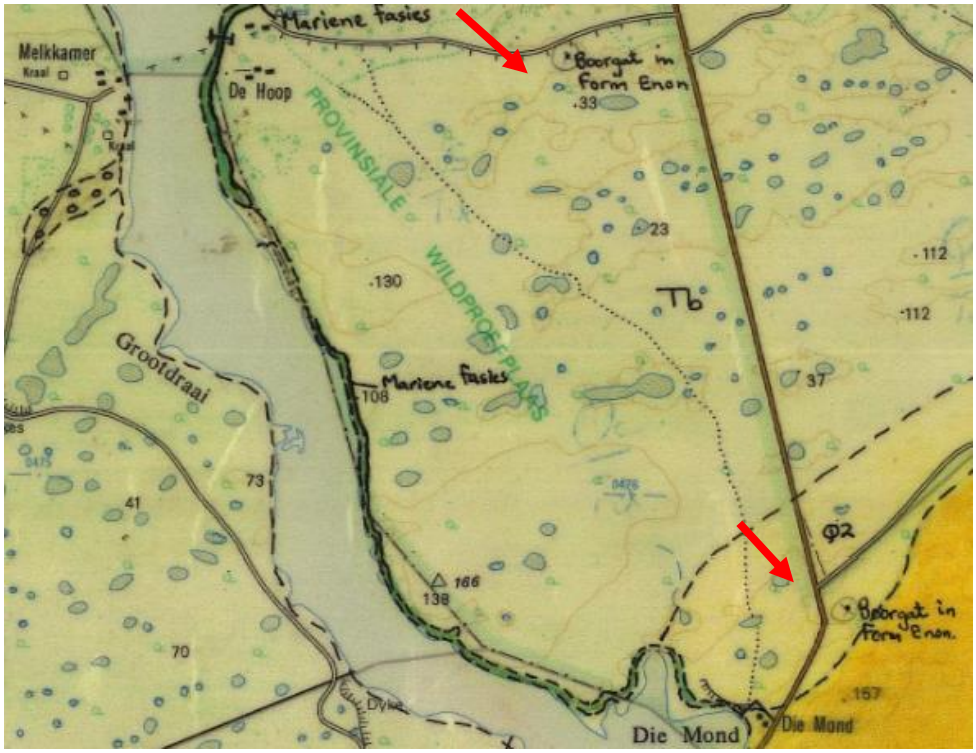

Figure 4. Geology map showing the locations of boreholes (arrows) into the Enon Formation in the De Hoop Nature Reserve. The boreholes are not in use.

The Enon Formation deposits are exposed northwest of the Hard Dunes, in the Soutpansvlakte Basin, and in the Salt River Gorge, to the east of this Basin. 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) of the Bokkeveld Formations (Figures 5 to 7).

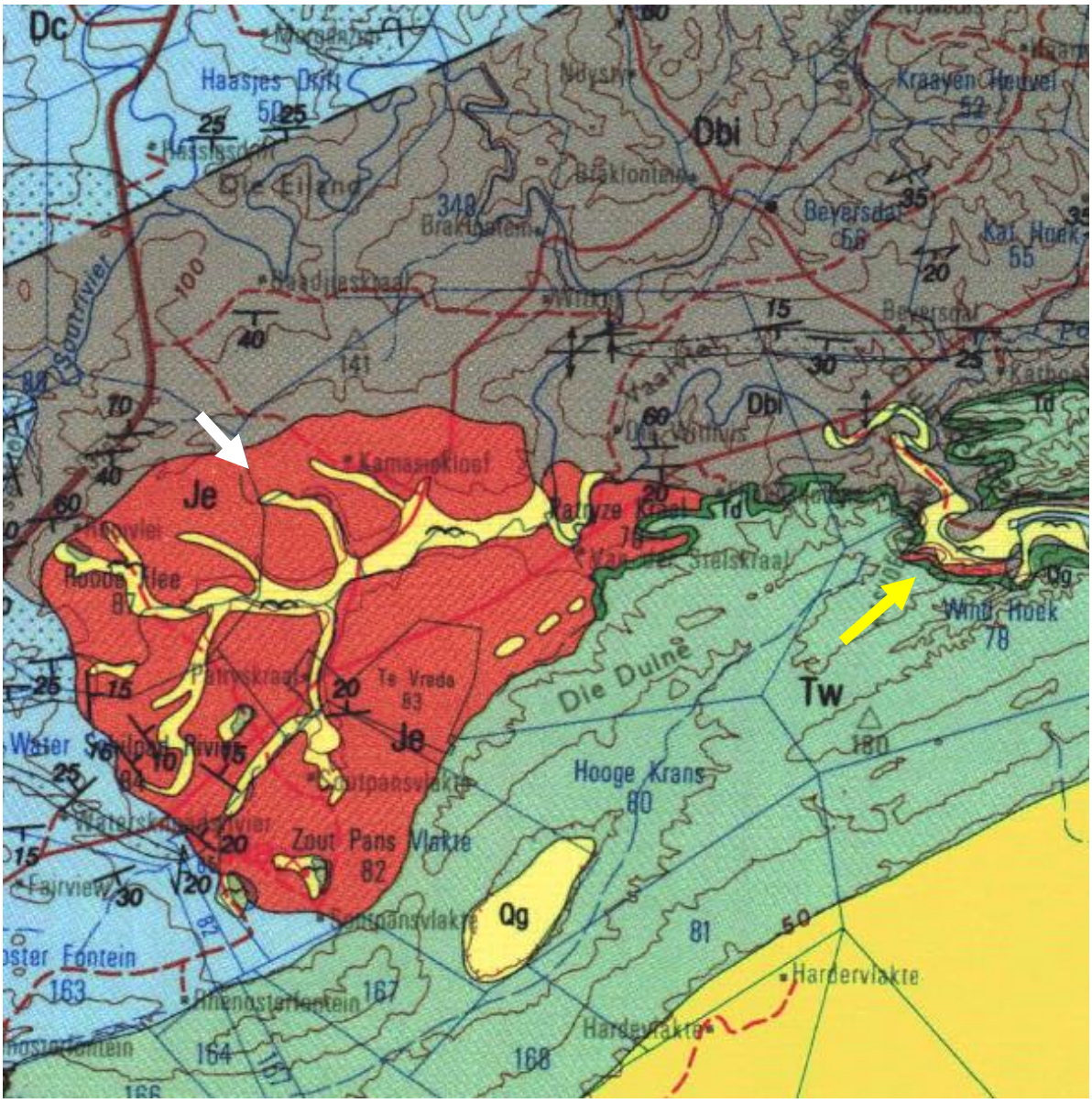

Figure 5. Geology map (Riversdale sheet, 1:250,000, 1993) showing the locations where the Enon Formation sediments are exposed (coloured red) in the Soutpansvlakte Basin (white arrow) and the Salt River Gorge (yellow arrow). Small Enon Formation outcrops are located within the De Hoop Vlei Gorge, farther to the south east. The Soutpansvlakte Basin is drained by the Waterskilspad River (yellow within the red).

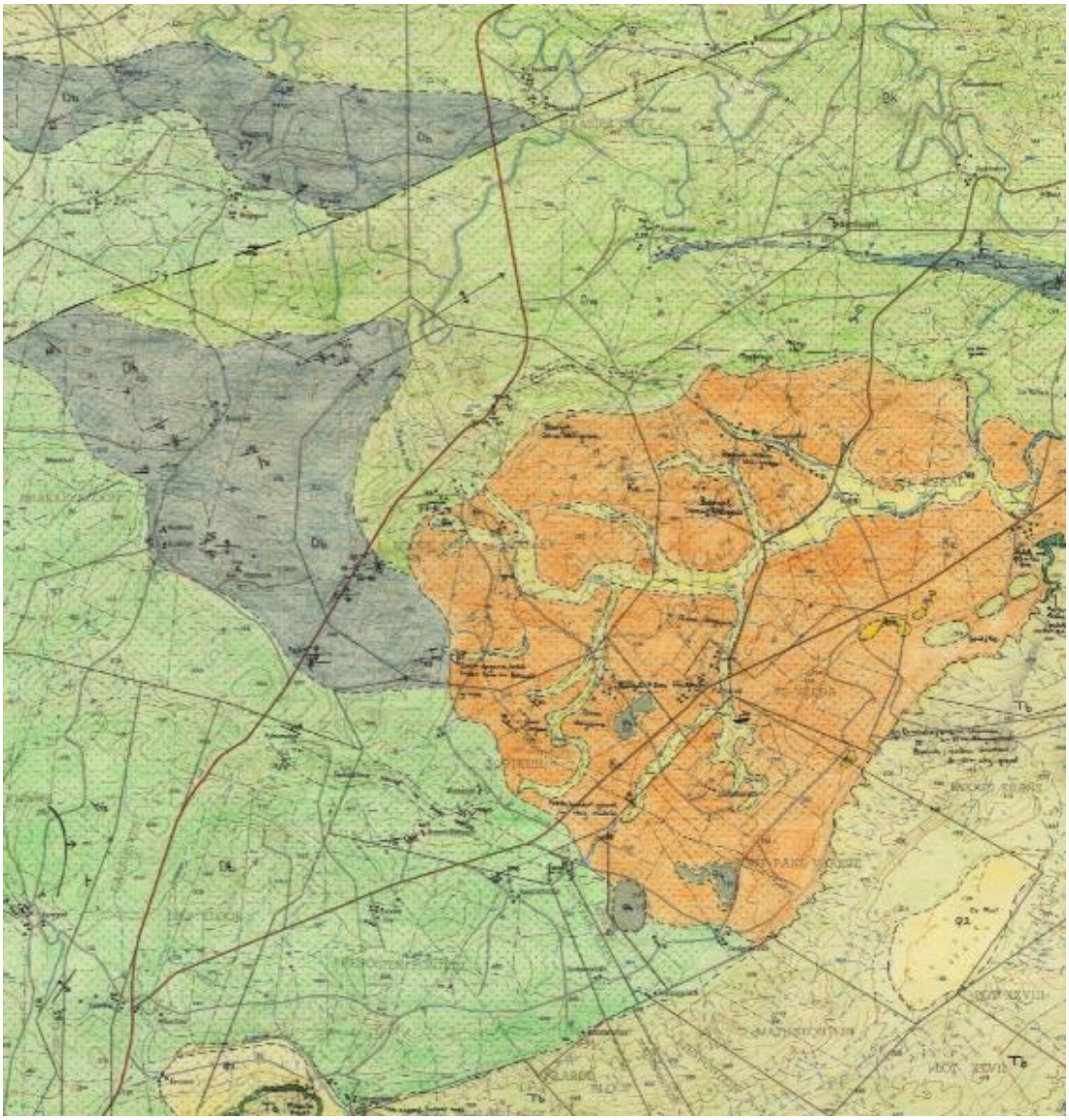

Figure 6. Geology map (field sheet 3420 AD 1:50,000, 1984) showing the Enon Formation deposits (orange) in the Soutpansvlakte Basin.

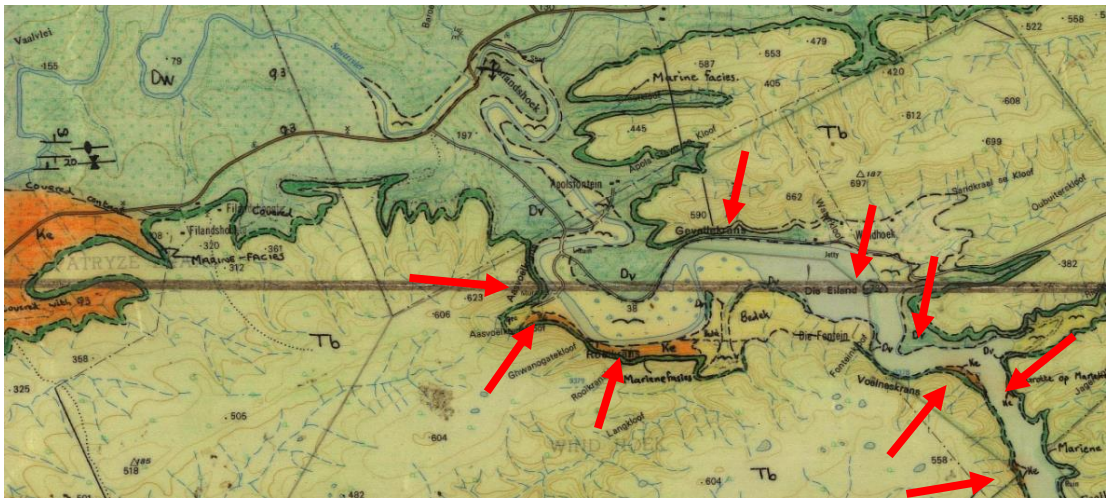

Figure 7. Geology map (field sheet 3420AD 1:50,000, 1984) showing the Enon Formation outcrops (orange) within the Salt River Gorge (arrows).

The Soutpansvlakte Basin is flanked by the Hard Dunes on the southeast and by the Bokkeveld shale hills on all other sides (Figures 8 and 9).

Figure 8. The southern part of the Soutpansvlakte Basin. View from the west. The Shale Hills are seen at a distance.

Figure 9. The southern part of the Soutpansvlakte Basin. View to the southeast on a tributary of the Waterskilspad River (dry in this photograph and during most days of the year), which drains the basin. The Hard Dunes are seen at a distance.

The author found that the Enon Formation deposits in the basin are very thin in place, where Bokkeveld shales are exposed. It was also found, the basin is smaller than shown on the map (Figure 10).

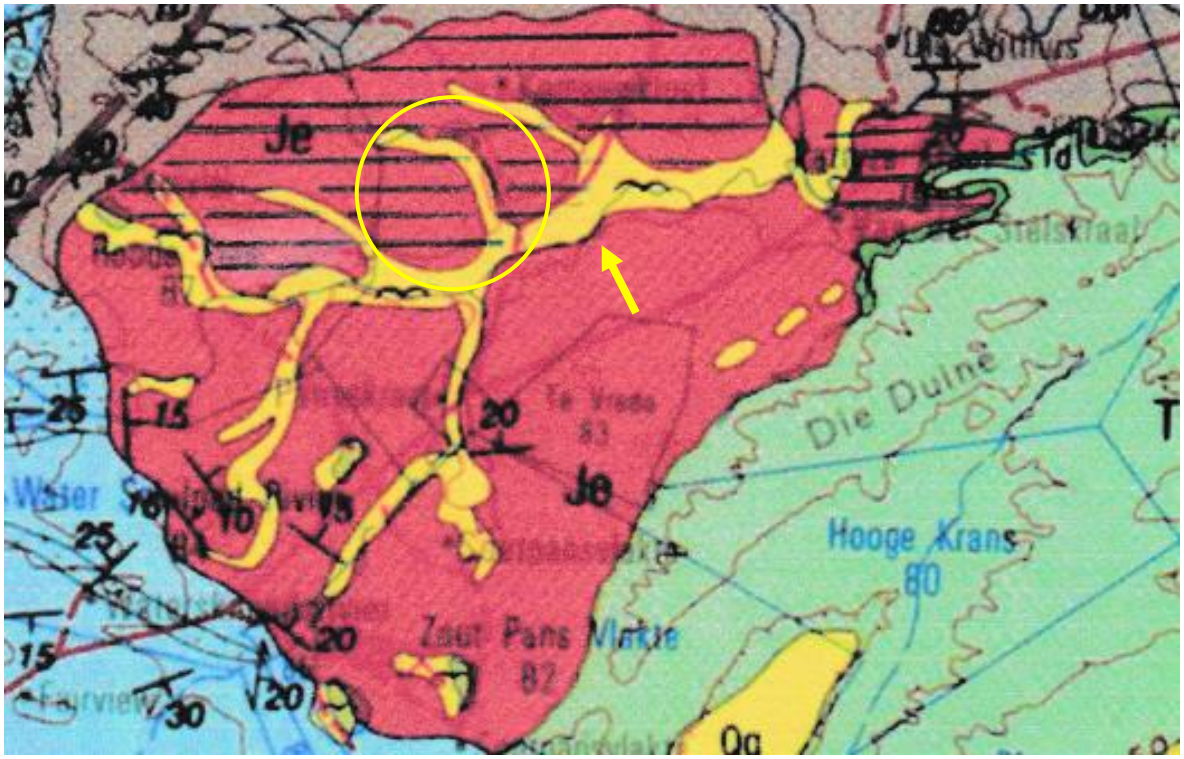

Figure 10. Provisional map of the Soutpansvlakte Basin. The hills (hachured) north of the Waterskilpadrivier (arrow) are of Bokkeveld shales. Circle point to boreholes (Figure 11).

Figure 11. Geology map, showing that boreholes (arrows) in the basin, south of Kamasiekraal, hit clay and gravel (Enon Fm?). The locations are doubted, as according to owners there have never been boreholes in these locations.

Enon Fm deposits were mapped northeast and southwest of the basin (Field Notes C6f and C6g).

