

Short Note: Palaeokarst in the East Pilbara, Western Australia

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Further to the note by Steve Appleyard in this issue of *Helictite* describing palaeokarst in the Proterozoic Moora Group of southwest Western Australia, I shall summarise here some published information on an extensive, but little studied, area of palaeokarst developed on Proterozoic dolomites in the East Pilbara. The area extends from Mount Newman north to the Rippon Hills.

The palaeokarst unit described below is shown on the 1:250 000 geological maps of the region as the (multi-aged?) Pinjian Chert Breccia that has developed on the Proterozoic Carawine Dolomite (e.g. Williams, 1989). Palaeokarst features may also be associated with other Proterozoic dolomite units in the Pilbara region, such as the Wittenoom Dolomite.

Some of the manganese ore bodies in the region are associated with palaeokarst cavity-fills. For example, Fetherston (1990) reports that part of the Woodie Woodie manganese deposit is in a large pipe-like cave filling that has been mined to a depth of 30m.

Williams (1989) described the palaeokarst in the Balfour Downs map area as follows:

“Several episodes of silicification are evident in the [Carawine] dolomite. Late-stage fractures and joints generally contain cavities lined with quartz crystals.”

“The Pinjian Chert Breccia ... overlies or replaces the Carawine Dolomite. The chert breccia forms casts of many large palaeokarst features where the pre-existing dolomite has been dissolved away. The chert breccia consists of angular chert fragments chaotically or crudely bedded, with a siliceous matrix locally enriched by iron and manganese oxides.”

“The chert breccia was a residual and replacement deposit on the Carawine Dolomite and was cemented by secondary silicification during subaerial exposure in the Precambrian and later in the late Tertiary to recent. The

Precambrian Pinjian Chert Breccia and later Tertiary siliceous capping can both be regarded as a silicified duricrust or silcrete. Although steep bedding traces are recorded, these are interpreted as primary dips associated with deposition on the steep karstic topography rather than deformation.”

“More recent karst features occur where residual blocks of Carawine Dolomite, preserved within the Pinjian Chert Breccia, have gradually dissolved causing the overlying Pinjian Chert Breccia to collapse and form a younger group of dolines and sinkholes.”

Williams' reports and maps led a group of WASG cavers to inspect some of the younger karst features (Webb, 1994). They found several small caves scattered through the area. The largest of the sinkholes was a spectacular steep-walled collapse doline 132m x 100m x 55m deep but it contained no accessible caves apart from several sloping rockpile chambers.

REFERENCES

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