MT NICHOLAS – PERMIAN LIMESTONE KARST OF NORTH-EAST TASMANIA

– Adrian Slee*

Permian rocks containing limestone beds are common throughout central and eastern Tasmania. However only in the St Marys region are the limestone horizons sufficiently thick and calcareous to accommodate actively developing karst landforms.

Recently the author explored a small limestone gorge first described by Sharples (1994). In the upper Durham Creek catchment north of the Mt Nicholas Range a small tributary has cut a gorge through thinly bedded Permian limestone and massive sandstone of the Lower Parmeener Supergroup.

Figure 1: Peering in to Cave 1. Note the deep water-fliled rift. Photo: P. McIntosh.

Sharples documented the existence of a small cave at the top of the limestone formation at this site. During the field survey reported in this article the original cave (cave 1, Figure 1) was identified adjacent to a deep solutional rift in the main stream channel and one 'new' cave (cave 2, Figure 3) was described.

The new cave comprises two narrow parallel fissure passages in the side of a 6 m tall limestone cliff. The smaller passage is approximately 8 m long and at the time of observation on a hot dry summer day a stream entering from a small rift near the cave roof was flowing at an estimated rate of 2 L/s – a surprising amount of water considering most of streams in the area are ephemeral.

The second entrance comprises an 8m long drafting rift leading to a small square chamber approximately 4m wide containing a large population of the Tasmanian cave spider *Hickmania troglodytes.*

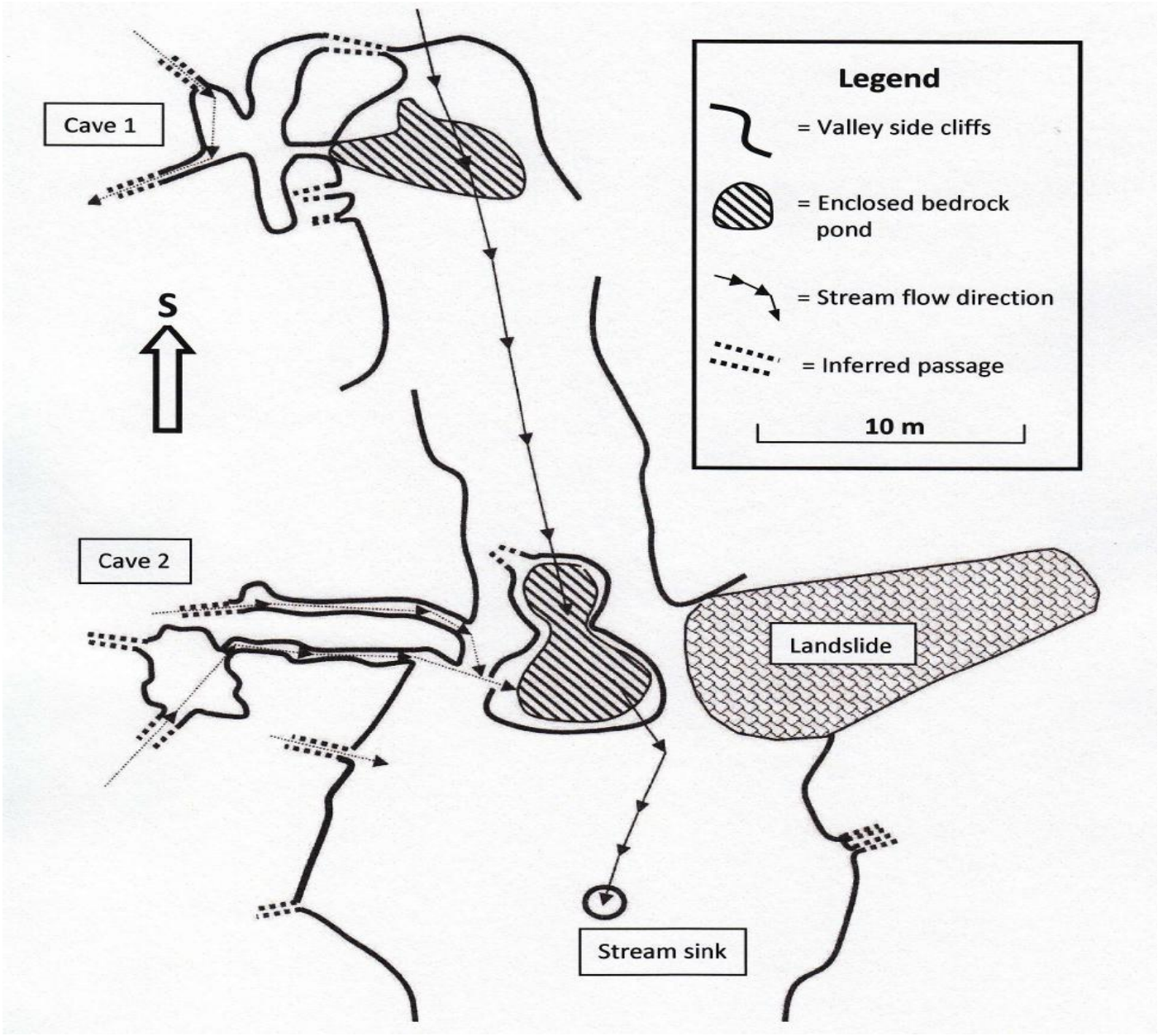
Within this chamber a small stream enters from the north while a low tunnel extends from the chamber to the south east. Several other impenetrable narrow fissures are located further along the cliff face to the north (Figure 2).

The stream exiting the cave joins the main stream (a tributary of Durham Creek) in a large deep oval pool that is likely to be of solutional origin, before continuing down the main channel for 10m to a diffuse stream sink (Figure 3).

The presence of multiple stream discharges, a diffuse stream sink and a chambered cave indicate that a complex underground drainage system could be present within this area, although extensive cave systems are unlikely.

The steep-sided gorge may have formed by collapse of an old cave system and the deep vertical sided pools may represent karst windows of an old subsurface drainage feature which the stream sink within the main creek channel may be a part.

Figure 2: Narrow solutional rifts on the valley margin cliff-line.



The Durham Creek catchment has had a long history of forestry operations and coal mining and was impacted by the Scamander wildfires of 2006, and yet this small isolated karst complex contains an abundant population of *H. troglodytes* which indicates that karst processes have not been significantly affected by the catchment disturbances to date. The site is listed on the Tasmanian Geoconservation Database (TGD) in recognition of its value as one of the more highly developed karst landform assemblages in Permian limestone known in Tasmania.

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REFERENCES

Sharples C., 1994, *A Reconnaissance of landforms and geological sites of geoconservation significance in the north-eastern Tasmanian forest districts*, Forestry Tasmania Report, Volume 2, pp 86 – 88.
Tasmanian Geoconservation Database: <www.dpiw.tas.gov.au/inter.nsf/WebPages/LBUN-6TY32G?open>