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Brief commentary on the document “Trefil Quarry – Photographed dolines”

1. A line is shown as the “Approx western edge of sandstone overburden”. This is misleading because there is abundant sandstone overburden to the west of the line. For example when doline CD1 (see **Trefil Quarry – Dolines photographed by JG**) was mapped it was noted that there are sandstone boulders in the doline.
2. The line appears to have been based on the eastern boundary of the Dowlais Limestone outcrop, as shown on BGS 1:50,000 sheet 232. However, the line appears to have been drawn to the east of several dolines as if to imply that they are outside the area of so-called “sandstone overburden” whereas they are clearly interstratal karst landforms.
3. A further complication is that on the older BGS 6” field sheet and on the BGS 1:250,000 base map used in the **Trefil Quarry – Dolines photographed by JG** document the boundary of the Dowlais Limestone outcrop is shown as being further to the west than it is on the 1:50,000 sheet. The uncertainty in placing the boundary reflects the complexity of the local geology, discussed in more detail by Thomas (1974). This formed part of the rationale for the pSSSI, as explained in paragraphs 3.8 and 3.9 of LRC report 2012/13 for CCW. In particular, “... this area is mapped by BGS as Dowlais Limestone but is better described as ‘Collapsed and Soliflucted Grit on Carboniferous Limestone’ and there are several dolines such as the one shown in Figure 26 that contain water bodies and hence are unlikely to be simple solution dolines” (para 3.9 of LRC report 2012/13).
4. In summary, the area between the present quarry and the yellow line shown on the document **“Trefil Quarry – Photographed dolines”** is one of complex geology and whilst there may be some simple solution dolines there are clearly also features of interstratal karst interest that support inclusion of the area in the pSSSI.
5. Doline D1 is in this area and no evidence is presented to support the claim that it is a solution doline on limestone. To emphasise this point, compare CD1 in **Trefil Quarry – Dolines photographed by JG** (which is southeast of D1) with CD2 in the JG document. CD2 is much closer to the BGS 1:250,000 boundary of the limestone outcrop and there is limestone bedrock in situ with dissolution runnels; in contrast at CD1 there is no limestone bedrock exposed and the boulders are all sandstone.

6. D2 is clearly a caprock doline and the air photo shows larger features to the northwest.
7. D3 was visited and photographed by JG. It is 3-5m deep and has extensive sandstone scree. The rushes show a line of drainage indicating that there is point recharge and a high probability of conduits beneath the doline.
8. D4 was also visited and photographed by JG. It has a well-defined sink point and is probably a focus for conduit flow to the south.
9. Doline D5 has a fresh rock-face providing evidence of ongoing evolution.
10. With respect to the photograph of an area with “no obvious dolines” it should be noted (a) that dolines are commonly not obvious on low angle surface photographs; (b) even if no dolines are present at surface this does not preclude sub-surface processes operating with potential for doline formation in the future and (c) in what I consider to be the unlikely possibility that there are no features of interstratal karst interest in this area, it would be necessary to destroy a zone containing significant features in order for quarrying to take place within it.

Professor John Gunn, 19th July 2012