

**CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES**

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

CARDIFF

**CWARRAU TON MAWR A FFYNNON TAF -
TON MAWR AND TAFFS WELL QUARRIES**

Date of Notification:

7 February 2012

National Grid Reference:

ST 1199 8219

O.S. Maps:

1:50,000 Sheet number: 171

1:10,000 Sheet number: ST 18SW

Site Area:

43 ha

Cwarrau Ton Mawr a Ffynnon Taf – Ton Mawr and Taffs Well Quarries are of special interest for the several phases of spectacular mineralization exposed in the quarry walls.

The site comprises two adjacent working quarries situated on the Carboniferous Limestone ridge that lies to the north of Cardiff, approximately 250m north of, and 100m above, the village of Morganstown. The Carboniferous Limestone into which the quarries are excavated is overlain by a thin layer of glacial till in the west, whilst to the east it is covered by a thin calcareous soil. Surface water drains to the base of the quarries via surface flow and via fracture flow through the limestone.

This site is of exceptional value because it provides an excellent example of the carbonate-hosted, metasomatic cavity-fill mineralization that is developed to varying degrees throughout the Dinantian outcrop in south Wales. Paragenetic investigations have revealed several phases of calcite deposition, often with goethite inclusions and with intervening phases of barite precipitation. The spectacular, vuggy mineralization is attributed to the reaction between dolomitised and haematised Dinantian limestones and aggressive hydrothermal fluids which migrated through the tilted strata. Pre-dating the calcite are earlier iron-oxide deposits that, although of secondary interest, take the form of veins, flats and podlike bodies of massive goethite, with barite, quartz and late calcite and ankerite. The paragenetic sequence is complex, but suggests a general transition from iron-oxide to barite to calcite deposition, indicating a change from descending, iron-rich groundwaters in late Triassic times to laterally migrating Mississippi Valley-type fluids expelled from the rapidly-deepening Bristol Channel Basin in the Lower Jurassic. Base-metal ores are characteristically absent, suggesting that the curious cavity-fill assemblage must have developed after the oxide facies iron mineralization event, but was sealed before the later Mississippi Valley-type base-metal mineralization event seen elsewhere in south Wales.

The complex calcite mineralization, coupled with the opportunity to study the detailed and complex paragenesis, make these quarries nationally important in the study of mineralogy.

Remarks:

Cwarrau Ton Mawr a Ffynnon Taf – Ton Mawr and Taffs Well Quarries has been selected as a result of the former Nature Conservancy Council's Geological Conservation Review, a national survey and evaluation of sites of geological and geomorphological interest. The geological feature of interest is described in the GCR volume entitled *Mineralization of England and Wales* (Bevins *et al.*, 2010).