



South Wales RIGS Group Site Record

RIGS Description

SECTION A

General	South Wales
Site Name: Cefn Onn Quarry 1	File Number: RAW_JRD_34
RIGS Number: 611	Surveyed by: R A Waters and J R Davies
Grid Reference: ST 1740 8515	Date of Visit: 19 th October 2010
RIGS Category: Scientific, educational	Date Registered: Owner: Unknown Planning Authority: Caerphilly County Borough Council
Earth Science Category: Stratigraphical, sedimentological	
Site Nature: Disused quarry	Documentation prepared by: R A Waters
Unitary Authority: Caerphilly County Borough Council	Documentation last revised: 2 nd February 2011
OS 1:50,000 Sheet: 171	Photographic Record: Attached
OS 1:25,000 Explorer Sheet: 151	
BGS 1:50,000 Sheet: 249	
<p>RIGS Statement of Interest:</p> <p>Cefn Onn Quarry 1 forms part of a network of sites that demonstrate the stratigraphy and geological history of the Carboniferous Limestone on the east crop of the South Wales Coalfield. It has been proposed as a RIGS as it is an accessible site, traversed by a public footpath, that provides excellent exposures for those interested in the stratigraphy, sedimentology and dolomitisation of the lower part of the Pembroke Limestone Group.</p> <p>Several key features in the lower part of the Pembroke Limestone Group, such as fossil soils/karst and contrasting styles of dolomitisation are well displayed in the quarry. The fossil soil at the top of the Friars Point Limestone provides a critical piece of evidence for understanding of the history of the Carboniferous Limestone in SE Wales.</p> <p>Not only does it offer an excellent locality for those interested in scientific research on the stratigraphy, sedimentology and dolomitisation of the Pembroke Limestone Group, it also offers a good site for students to study fossil soils/karst, dolomites with relict textures and types of dolomitisation</p>	

Geological setting/context:

Cefn Onn Quarry 1 is a large disused quarry exposing an excellent continuous section through key contacts in the lower part of the Pembroke Limestone Group. In the quarry the group is completely dolomitised. Previously described by Dixey and Sibly (1918) and Squirrell and Downing (1969) as simply undivided dolomite, the following formations may be recognised:

Gully Oolite	10.5 m +
Black Rock Limestone Subgroup	
Friars Point Limestone	85 m
Brofiscin Oolite	6m +

The early Couceyan Brofiscin Oolite is seen at the southern end of the quarry and comprises thick bedded, fine-grained, pale grey dolomite with relict oolitic texture. It represents a high energy shoal facies that records a widespread late early Courceyan regression and resultant progradation of oolitic facies across the inner part of the mid ramp.

The mid to late Courceyan, and possibly early Chadian, Friars Point Limestone comprises massive to thick bedded fine-grained pale to medium grey dolomite with scattered crinoid debris. Towards the top, crinoid material becomes very sparse. Most of the Friars Point limestone was deposited in a mid ramp, offshore environment, occasionally stirred by storms. At around 4.5 m below the top is a 3 cm-thick green to mauve mottled shaley mudstone resting on an undulatory surface with relief of up to 8 cm. It may represent a pressure solution seam or possibly a palaeokarst and a dolomitised palaeosol. It is overlain by 4.5 m of planar to low angle laminated, fine-grained dolomite with crinoid debris concentrated in thin beds. This cross bedded dolomite is capped by 1.25 m of pale greyish pink to red, medium to coarse-grained dolomite with low angle cross stratification. The dolomite contains abundant crinoid and shelly material as well possible relict peloidal and oolitic textures. It becomes coarser upwards and is capped by a pitted and scalloped palaeokarstic surface. The paleokarstic surface is overlain by 15 cm of purple/green/white mottled soapy clay paleosol that infills pipes into the underlying dolomite. The two paleokarsts separated by the cross bedded dolomites represent late Courceyan to early Chadian shallowing and emergence on the inner and proximal mid ramp (Waters and Lawrence, 1987).

The basal 20 cm of the Gully Oolite is a coarsely saccharoidal dolomite with well developed relict oolitic texture. The remainder comprises pale to medium grey, medium to coarse saccharoidal dolomite with abundant net veining and calcite vugs. Cross bedding can locally be discerned. The formation records renewed transgression in the mid Chadian, the oolite being deposited in a prograding shoal.

There is a major contrast in the style of dolomitisation of the two oolitic formations, the Gully Oolite being typified by coarse dolomites, the Brofiscin Oolite being fine grained.

The dolomitisation of the quarry succession is complex. The fine-grained dolomites of the Brofiscin Oolite and the Friars Point Limestone probably reflect the movement of a mixing zone of fresh and marine waters through the host sediment during emergence (Hird et al. 1987; Waters and Lawrence 1987), predominantly in the late Couceyan/early Chadian. The coarse-grained dolomites of the Gully Oolite are

thought to be the result of late stage 'burial' processes where the dolomitising fluids moved through joints and fissures (Hird et al 1987).

References:







DIXEY, F and SIBLY, T F. 1918. The Carboniferous Limestone Series on the south-eastern margin of the South Wales coalfield. *Quarterly Journal of the Geological Society of London*, Vol.73, 111-164

HIRD, K, TUCKER, M E and WATERS R A. 1987. Petrography, geochemistry and origin of Dinantian dolomites from South-east Wales. 359-77 *in* European Dinantian environments. Miller, J, Adams, A E and Wright, V P. (editors). *Geological Journal Special Issue* No 12. (Chichester: John Wiley).

SQUIRRELL H C and DOWNING R A. 1969. *Geology of the South Wales Coalfield, Part I, the country around Newport (Mon)* (third edition), Memoir of the Institute of Geological Sciences, sheet 249 (England and Wales). (London: HMSO).

WATERS, R A, and LAWRENCE, D J D. 1987. *Geology of the South Wales Coalfield, Part III, the country around Cardiff*. (Third edition). Memoir of the British Geological Survey, Sheet 263 (England and Wales). (London: HMSO).

SECTION B

PRACTICAL CONSIDERATIONS: Please score Accessibility and Safety Red Amber or Green			
Accessibility:			X 
Comment: Quarry is traversed by a public footpath.			
Safety:			X 
Comment: Quarry faces need examining for stability. Quarry floor is very open with no obstructions			
Conservation status: Not known.			

OWNERSHIP/PLANNING CONTROL: Owner/tenant: Not known Planning Authority: Caerphilly CBC Planning status/constraints/opportunities: Not known

CONDITION, USE & MANAGEMENT: Present use: Disused quarry Site condition: Quarry faces fairly free of vegetation. However, quarry floor adjacent to faces locally seeing growth of saplings and bushes. Potential threats: Increasing vegetation growth may begin to obscure faces Site Management: Suggest selected parts of the site are cleared of vegetation every few years.

SITE DEVELOPMENT: Potential use (general): Potential use (educational): Good site for those interested in scientific research on the stratigraphy, sedimentology and dolomitisation of the lower part of the Pembroke Limestone Group. Also good for students to study dolomitisation, fossil karst/soils and dolomites with relict textures

Other comments:

Photographic Record



General view of quarry showing pale weathering dolomites of the Friars Point Limestone overlain by browner weathering dolomites of the Gully Oolite on the extreme left.



Low angle cross-bedded dolomites at the top of Friars Point Limestone. The overlying red clay is a paleosol that is overlain by the dolomites of the Gully Oolite.