



South Wales RIGS Group Site Record

RIGS Description

SECTION A

General	South Wales
Site Name: Coed Duon	File Number: Site_DIS_2
RIGS Number: 641	Surveyed by: D I Schofield
Grid Reference: SN 7096 2553	Date of Visit: 2010
RIGS Category: Scientific, aesthetic	Date Registered: Owner: Unknown Planning Authority: Carmarthenshire County Council
Earth Science Category: Stratigraphic	
Site Nature: Craggs around hill	Documentation prepared by: D I Schofield
Unitary Authority: Carmarthenshire County Council	Documentation last revised: 26 th March 2012
OS 1:50,000 Sheet: 160	Photographic Record: Attached
OS 1:25,000 Explorer Sheet: OL12	
BGS 1:50,000 Sheet: E212	
<p>RIGS Statement of Interest:</p> <p>The site forms of a succession of sediments and volcanic of Middle Ordovician age (deposited between around 470 to 560 million year old) that are unique in the geological record of the UK and record a snapshot of environmental conditions at that time that are critical for the scientific understanding of Lower Palaeozoic geological process and evolution of southern Britain. The local succession is of historic interest, being first recognised as important by the seminal British geologist Sir Roderick Impy Murchison in his treatise 'The Silurian System' published in 1839, and forms the lower part of the former British stratotype of the Llandeilo Epoch (Williams, 1953).</p> <p>The rocks of this locality comprise intrusive and extrusive igneous rocks of the Coed Duon Volcanic Formation. Volcanic rocks of this age are not widely developed; hence this locality is proposed as a RIGS site as a unique example of value to scientific research.</p>	

Geological setting/context:

The site is underlain by rocks of middle Ordovician age that form part of the historical stratotype area for the Llandeilo Epoch in British Stratigraphy. The significance of these rocks, largely exposed within the Carn Goch Anticline and complex faulted syncline underlying Dynefor Park, was first recognised by Murchison in *'The Silurian System'* (1839). Subsequent work undertaken during the survey of the Ammanford district to the south by the Geological Survey of England and Wales (Strahan et al., 1907) established a stratigraphic framework for the area that was adopted by Williams (1953) in his seminal account of the geology of the Llandeilo area.

The type Llandeilo comprises a unique sedimentary succession deposited in shallow marine to near shore environments. It overlies earlier Ordovician offshore sediments and passes up into the thick, Late Ordovician to Early Silurian basinal succession that forms the main part of the lower Palaeozoic Welsh Basin. Recognition of this succession, entrained as it is within fault strands of the Welsh Borderland Fault System, has been critical in understanding the palaeoenvironmental and palaeogeographic evolution of the region. Subsequent studies from the type sections in Dynefor Park and the Ffairfach railway cuttings have largely focussed on biostratigraphy and palaeoecology (e.g. Williams et al., 1981; Wilcox & Lockley, 1981; Bergström et al., 1987). Largely as a result of the detailed study at these localities, the Ffairfach Railway cuttings and Dynefor Park have been established as GCR sites and as such are described in detail by Owens in Rushton et al. (1999).

Following the stratigraphy of BGS (2008) and Schofield et al. (2009) the general succession in the area comprises a lower Abergwilli Formation of anoxic and oxic facies mustones, overlain conformably by massive arkosic sandstone of the Ffairfach Grit Formation locally containing rhyolite and felsic tuff of the Coed Duon Formation in its upper part, in turn passing up into interbedded sandstone mudstone and limestone of the Llandeilo Flags Formation.

This site, located at Coed Duon, is the principal locality for the Coed Duon Volcanic Formation. It comprises a NE-elongate craggy ridge rising to 136m aod and lying along the axis of a series of elongate hills that form the complexly faulted southern limb of the Carn Goch anticline. At Coed Duon the formation dips moderately toward the south and comprises approximately 60m of green, fine-grained feldspathic tuff with abundant mafic crystal and rhyolitic lithic clasts that is well exposed along the crest of the hill and in a disused quarry on its NE termination. These are overlain by around 15m of white weathering, cryptocrystalline to fine-grained pink rhyolite with a distinctive blocky weathering surface texture that can be seen in crags on the southern flanks of the hill. At this site it can be seen to be a lateral equivalent of the Ffairfach Grit Formation and represents the products of local volcanic eruptions during the later stages of deposition of that unit, probably of Abereiddian age (*Didymograptus murchisoni* graptolite Biozone; Williams et al., 1983).

Although more extensive volcanic successions are present along the Welsh Borderland Fault System, such as the Builth Wells Volcanic Inlier, Llanwrtyd Wells Volcanic Inlier and Shelve Volcanic Inlier, there is little of equivalent age with the possible exception of the Asaphus Ash Formation, developed approximately along strike to the southwest near Carmarthen. Hence this locality provides an important link for understanding the volcanic evolution of the region during Middle Ordovician

times.

References:

BERGSTRÖM, SM, RHODES, FHT and LINDSTRÖM, M. 1987. Conodont biostratigraphy of the Llanvirn-Llandeilo and Llandeilo-Caradoc series boundaries in the Ordovician System of Wales and the Welsh Broderland. In *Conodonts: Investigative Techniques and Applications*. (ed. R Austin) Ellis Horwood, Chichester, pp 294-315.

BRITISH GEOLOGICAL SURVEY. 2008. Llandovery. England and Wales Sheet 212. Bedrock and superficial deposits. 1:50 000.

MURCHISON, R I. 1839. *The Silurian System*. (London: John Murray)

RUSHTON, A W A, OWEN, A W, OWENS, R M, and PRIGMORE, J K. 1999. *British Cambrian to Ordovician Stratigraphy*. Geological Conservation Review Series, 18. (Peterborough: Nature Conservancy Council).

SCHOFIELD, DI, DAVIES, JR, JONES, NS, LESLIE, AB, WATERS, RA, WILLIAMS, M, WILSON, D, VENUS, J and HILLIER, RD. 2009. Geology of the Llandovery district –a brief explanation of the geological map. Sheet explanation of the British Geological Survey. 1:50 000 Sheet 212 Llandovery(England and Wales).

STRAHAN, A, CANTRILL, T C, DIXON, E E L, and Thomas, H H. 1907. Geology of the South Wales Coalfield, Part VII, the country around Ammanford. *Memoir of the Geological Survey of England and Wales*, Sheet 230 (England and Wales). (London: HMSO).

WILCOX, C J, and LOCKLEY, M G. 1981. A reassessment of facies and faunas in the type Llandeilo (Ordovician), Wales. *Palaeogeography, Palaeoclimatology, Palaeoecology*, Vol. 34, 285-314.

WILLIAMS, A. 1953. The geology of the Llandeilo district, Carmarthenshire. *Quarterly Journal of the Geological Society, London*, Vol. 108, 177-205.

WILLIAMS, A, LOCKLEY, M G, and HURST, J M. 1981. Benthic Palaeocommunities represented in the Ffairfâch Group and coeval Ordovician successions of Wales. *Palaeontology*, Vol. 24, 661-694.

SECTION B

PRACTICAL CONSIDERATIONS:

Please score Accessibility and Safety Red Amber or Green

Accessibility:

X

Comment: located on private land, permission of the landowner should be sought before entering. Coed shon is also quite steeply sloping

Safety:

X

Comment: care should be taken because of the possibility of slipping on steep slopes and of the hazard associated with entering disused quarries.

Conservation status:

There are no known conservation designations of this RIGS

OWNERSHIP/PLANNING CONTROL:

Owner/tenant: Unknown

Planning Authority: Carmarthenshire County Council

Planning status/constraints/opportunities:

There are no known planning constraints or opportunities

CONDITION, USE & MANAGEMENT:

Present use: Agriculture

Site condition: steep slopes, partly wooded

Potential threats: None at present time..has potential as a source for crushed rock or building stone

Site Management: None required

SITE DEVELOPMENT:

Potential use (general):

Potential use (educational): Has a good potential for interpretation of volcanism in the region

Other comments:

Photographic Record



View of Coed Duon ridge from the northeast



Rhyolitic lava of Coed Duon Volcanic Formation