



South Wales RIGS Group Site Record RIGS Description

SECTION A

General	South Wales
Site Name: Dyffryn Crawnnon	File Number: Site_232_242
RIGS Number: 683	Surveyed by: Gareth Owen
Grid Reference: SO 0950 1500 to SO 9060 1550	Date of Visit: 14 th July 2010
RIGS Category: Scientific, Educational	Date Registered:
Earth Science Category: Stratigraphy, sedimentology, palaeontology	
Site Nature: Natural crag and tramway cutting.	Owner: Unknown Planning Authority: Powys County Council/ Brecon Beacons National Park Authority
Unitary Authority: Powys County Council/ BBNPA	Documentation prepared by: Gareth Owen
OS 1:50,000 Sheet: 160	Documentation last revised: 14 th February 2011
OS 1:25,000 Explorer Sheet: OL12	Photographic Record: Attached
BGS 1:50,000 Sheet: E232	
RIGS Statement of Interest:	
<p>Dyffryn Crawnnon is the type locality of the late Devonian Plateau Beds Formation – it is the reference locality for studying these rocks. The site provides a complete transect through the entire Formation, including both the lower and upper boundaries of the unit. A basal alluvial mudflow deposit is overlain by a lower sandstone-dominated unit in which, uniquely within Wales and South West England (the Anglo-Welsh Basin in Devonian times), an aeolian (wind-blown desert) environment is represented. This lower unit passes up into variable deposits interpreted as deposited in a marginal marine environment, with evidence for supratidal, tidal-flat and possibly subtidal environments. The presence of fossil fish fragments provides important dating evidence for the Plateau Beds Formation, giving them a Frasnian-Famennian age. Sporadic occurrence of a shallow marine fauna provides additional value to this site.</p> <p>Towards the southern end of the site, the transition from the Plateau Beds up into the Grey Grit Formation and up again into the Castell Coch Limestone Formation can be seen providing a good opportunity to assess the changing rock-types across the Devonian – Carboniferous boundary.</p>	

Geological setting/context:

Dyffryn Crawnnon is an important component of a network of 25 registered and proposed Non-marine Devonian GCR sites located within the Anglo-Welsh Basin. All the sites have been fully documented in the published GCR volume entitled 'The Old Red Sandstone of Great Britain' (Barclay *et al.*, 2005). The Anglo-Welsh Basin formed on the southern margin of newly amalgamated Laurussian (Old Red Sandstone) continent and the northern margin of the Rheic Ocean, and lay in an external setting relative to the main Caledonian Orogen during late Silurian and early Devonian times. Palaeomagnetic data suggest that the basin lay in sub-tropical latitudes of $17 \pm 5^\circ\text{S}$ during Lower Devonian times, whilst the abundance of calccrete palaeosols within the basin-fill indicate a warm semi-arid climate with seasonal rainfall. Present-day limits of the Anglo-Welsh Basin are defined by structural elements of the Benton-Llandyfaelog-Welsh Borderland fault systems, although it is likely that the basin formerly had a much greater aerial extent with Lower ORS deposition extending to the Anglesey, Long Mountain and Clun Forest outliers. The subsequent mid-Devonian Acadian inversion event led to erosion of much of this ORS cover, with sediment recycled southwards into the North Devon Basin, prior to the resumption of fluvial, lacustrine and marginal marine sedimentation in the Upper Devonian. The network of non-marine Devonian sites in the Anglo-Welsh Basin includes representatives of all the constituent formations, and illustrates various ORS red-bed facies ranging in age from the late Silurian to early Carboniferous. These sites also demonstrate the wide range of ORS deposits, including those of marginal marine, coastal floodplain, fluvial, alluvial plain, aeolian and lacustrine environments. Within this framework, Dyffryn Crawnnon contains the type locality of the Plateau Beds Formation, a late Devonian unit containing aeolian sandstones (possibly evidence for a coastal dune sequence) that may be unique in the Anglo-Welsh Basin. These are overlain by heterolithic marginal marine deposits that have yielded important fossil fish fragments which constrain the age of the sequence to the late Frasnian-Famennian.

References:

BARCLAY, W J, BROWNE, M A E., MCMILLAN, A A, PICKETT, E A , STONE, P & WILBY, P R. 2005. Geological Conservation Review Series Vol. 31; *The Old Red Sandstone of Great Britain*. JNCC

SECTION B

PRACTICAL CONSIDERATIONS:

Please score Accessibility and Safety Red Amber or Green

Accessibility:



Comment: The entire site is easily accessed from the disused tramway, or across the fields immediately above.

Safety:



Comment: Whilst small cliffs (up to 10m) are present, the rock is competent and can be examined safely with care.

Conservation status: This site has been highlighted as a proposed GCR site, and as such will become a proposed SSSI with successful GCR registration. Designation as RIGS will provide awareness of the importance of this site until such time as SSSI status is achieved.

OWNERSHIP/PLANNING CONTROL:

Owner/tenant: Unknown

Planning Authority: BBNPA

Planning status/constraints/opportunities: None known

CONDITION, USE & MANAGEMENT:

Present use: Sheep grazing

Site condition: Good

Potential threats: Increased vegetation growth should grazing levels drop.

Site Management: Continued grazing

SITE DEVELOPMENT:

Potential use (general): This site is an excellent scientific resource, providing easy access to the entirety of the Plateau Beds succession.

Potential use (educational): The site's easy access and multiple different sedimentary facies means that the site has value for use in all levels of geology education.

Other comments:

Photographic Record



Plate 1: Cross bedding within the Grey Grits Formation in the bed of the ephemeral stream adjacent to the tramway.



Plate 2: Channel bedded sandstones interbedded with mudstones in the Plateau Beds alongside the tramway.



Plate 3: Plateau Beds Formation exposed at the point the tramway crosses the Nant Ddu towards the northern end of the site.



Plate 4: General view along the tramway with exposures of the Plateau Beds.