



South Wales RIGS Group Site Record

RIGS Description

SECTION A

General	South Wales
Site Name: Afon y Waen	File Number: Site_GOCCW_01
RIGS Number: 694	Surveyed by: Gareth Owen
Grid Reference: SN 9711 1565 to SN 9747 1392	Date of Visit: 6 th July 2010
RIGS Category: Scientific, aesthetic	Date Registered: Owner: Not known Planning Authority: Powys County Council
Earth Science Category: Stratigraphy, palaeontology	
Site Nature: Stream-bed exposures, small cliffs and crags along the length of Afon y Waen and tributary.	Documentation prepared by: Gareth Owen
Unitary Authority: Powys County Council	Documentation last revised: 7 th February 2011
OS 1:50,000 Sheet: 160	Photographic Record: Attached
OS 1:25,000 Explorer Sheet: OL12	
BGS 1:50,000 Sheet: 231	
<p>RIGS Statement of Interest:</p> <p>This site comprises a stream section that can be followed along Afon y Waen and its tributary, Nant y Cwrier, exposing one of the best sections through the Upper Devonian (Frasnian – Famennian) Plateau Beds Formation and up into limestones of the Lower Limestone Shales (Lower Carboniferous). The strata dips in roughly the same direction that the streams flow – from north to south. As the dip is steeper (approximately 5-10°) than the fall of the stream, the rocks young downstream.</p> <p>The heterolithic strata exposed in the river bed and small river cliffs comprise interbedded, channelised, pebbly and conglomeratic sandstones, fine-grained sheet sandstones and mudstones. These are believed to represent marginal marine deposits, with evidence for supratidal, tidal-flat and possibly sub-tidal environments. These become noticeably more calcareous downstream from SN9763,1431 grading into a red calcareous gritstone/ gritty limestone that forms the limestone pavement seen just upstream of the former bridge at SN9748,2139. These beds, and those that are exposed just downstream, are adjudged to belong to the Lower Limestone Shales. In addition to the stratigraphic interest, the site is also the type locality for the Afon y Waen Fish Bed, a lenticular conglomerate horizon of limited lateral extent that has yielded fragments of the late Devonian fish genera <i>Bothriolepis</i> and <i>Holoptychius</i>.</p>	

Geological setting/context:

Afon y Waen is an important component of a network of 25 sites selected by Barclay *et al.* (2005) as representative of the non-marine Devonian of the Anglo-Welsh Basin. The Anglo-Welsh Basin formed on the southern margin of the newly amalgamated Laurussian (Old Red Sandstone) continent and the northern margin of the Rheic Ocean. Palaeomagnetic data suggests that the basin lay in sub-tropical latitudes of $17 \pm 5^\circ\text{S}$ during Lower Devonian times, whilst the abundance of calcrete palaeosols within the basin fill indicates 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 originally had a much greater aerial extent, with deposition extending to the Anglesey, Long Mountain and Clun Forest outliers. The subsequent mid-Devonian Acadian inversion event caused erosion of much of this Lower ORS cover, prior to the resumption of fluvial, lacustrine and marginal marine sedimentation in the Upper Devonian.

Against this background, the Plateau Beds Formation at Afon y Waen provides an important record of late Devonian marginal marine environments in early Carboniferous times.

This section is also important for late Devonian fish remains. The Afon y Waen Fish Bed is probably the most continuous and productive vertebrate-bearing unit in the Upper Plateau Beds of South Wales (Dinley and Metcalf, 1999).

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

DINLEY, D L & METCALF, S J. 1999. Geological Conservation Review Series Vol. 16; *Fossil fishes of Great Britain*. JNCC

SECTION B

PRACTICAL CONSIDERATIONS:

Please score Accessibility and Safety Red Amber or Green

Accessibility:

X

Comment: There are no paths or tracks to the site. Access requires an 800m walk from the A4059 across thick molinia heath and peat bog, or a similar length walk along a track from the A4059 followed by a further 500m across open heath and bog if approached from the south. The site is on Open Access land.

Safety:

X

Comment: The site comprises exposures in, or along, a large stream. Care is required to ensure safe access, and many exposures will be inaccessible at times of flood.

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: Brecon Beacons National Park Authority

Planning status/constraints/opportunities: Open Access land

CONDITION, USE & MANAGEMENT:

Present use: Open upland – rough grazing

Site condition: Excellent

Potential threats: Reduced grazing leading to increased scrub cover

Site Management: Continued grazing

SITE DEVELOPMENT:

Potential use (general): This site is an excellent resource for scientific research, in stratigraphy, palaeo-environmental studies and vertebrate palaeontology.

Potential use (educational): Due to its remote location the site may have value as an undergraduate teaching site, but is of little value for other educational uses.

Other comments:

Photographic Record



Plate 1: Cliff at the confluence of Afon y Waen and Nant y Cwrier where the Fish Bed is exposed.



Plate 2: Channel bedding in the stream-side cliff above the waterfall just below the confluence of Afon y Waen and Nant y Cwrier



Plate 3: Ripple marks on a bedding plane in the bed of Nant y Cwrier



Plate 4: Limestone pavement formed in gritty limestone at the base of the Lower Limestone Shales just downstream of the former bridge



Plate 5: Interbedded limestone and mudstone of the Lower Limestone Shales at the downstream end of the site