

## South Wales RIGS Group Site Record RIGS Description

### SECTION A

General	South Wales
<b>Site Name:</b> Disgwylfa	<b>File Number:</b> Site_AH_11
<b>RIGS Number:</b> 686	<b>Surveyed by:</b> Rhian Kendall
<b>Grid Reference:</b> SN 99642 44341	<b>Date of Visit:</b> 24th January 2010
<b>RIGS Category:</b> Scientific, educational	<b>Date Registered:</b>
<b>Earth Science Category:</b> Stratigraphic, igneous	<b>Owner:</b> MOD <b>Planning Authority:</b> Powys County Council
<b>Site Nature:</b> Outcrops	<b>Documentation prepared by:</b> Rhian Kendall
<b>Unitary Authority:</b> Powys County Council	<b>Documentation last revised:</b> 1 <sup>st</sup> February 2011
<b>OS 1:50,000 Sheet:</b> 147	<b>Photographic Record:</b> Attached
<b>OS 1:25,000 Explorer Sheet:</b> 188	
<b>BGS 1:50,000 Sheet :</b> E196	
<b>RIGS Statement of Interest:</b>	
<p>This site has been recommended as a RIGS for a couple of reasons. First is because it is a tuff which is an uncommon rock type in South East Wales. Tuffs are deposits which form when the ash that is ejected from a volcano settles to form a layer. In this case, the ash fell across an area that was essentially water in which mud with ripples and trace fossils indicate that there were waves and life was abundant. The exact location of the volcano relative to the Epynt is not known, but when it erupted about 420 million years ago, the eruption was large enough to spread ash over a wide area, similar to Krakatoa in May 1883, and Mount Pinatubo in 1999.</p> <p>Secondly and more importantly this site is highlighted because the Townsend Tuff is an important regional marker, indicating the position of the Silurian-Devonian boundary. This is important for understanding the age of the rocks in this area.</p>	

### **Geological setting/context:**

Follow the footpath walk from visitors centre. Just before the second group of picnic tables and interpretation board, there is a small footpath off to the north (just before the main path turns right and steepens up the hill. The footpath heads NNW to the highest point and then NNE towards a small square clump of trees and an interpretation board. Just to the north of this, in deep valley, almost at the bottom, on south face. Bearing of 020° NE from viewpoint approx 30m.

The outcrop is greatly obscured by lichen and moss but could benefit from clearing. There are a few very small (largest approx 1.5m square) outcrops that possibly join up under vegetation. Very fractured appearance. Mid grey green, v fine grained, hard splintery (BGS bedding 300/105 10 °SSW) lithology which forms a slight ridge in valley bottom. A small water fall to the east of this supposedly exposes the tuff as well. Would need clearance as it is not visible at the time of writing.

The Townsend Tuff deposit is the result of a series of volcanic eruptions. It is aerially ejected ash, which was dispersed by wind and fell across an area that was essentially water in which mud with ripples and trace fossils indicate that there were waves and life was abundant.

Estimates from the distribution of outcrops of the Townsend Tuff indicate that ash was distributed over an area of at least 10<sup>4</sup> km<sup>2</sup>. Within the Tuff deposits there are three distinct layers. It is estimated that the explosions that gave rise to falls B and C represent at least 5-10km<sup>3</sup> of magma and fall A, a slightly smaller explosion of at least 0.5 to 1km<sup>3</sup>. The location of the vent is not known. The three eruptions did not immediately follow each other as between each tuff layer, mud deposition and reworking of the sediments suggest that there was time for normal sedimentation to resume between each fall. The intervals of time between each is not known but is thought to be a few years to a few tens of years. Enough time for life to re-establish as the tops surfaces of the ash layers are covered with faecal pellets.

The Silurian-Devonian boundary in Wales is difficult to pinpoint. This is because the fossil species used to mark the boundary at the international boundary stratatype, to which all other stratotypes are compared relies on the presence of a fossil (*Monograptus uniformis*) which is not found in these rocks in Wales. It has been established that the Townsend Tuff position is approximately equivalent to this and so provides a very useful marker. Allen and Williams 1981 have suggested that the boundary lies at the base of Fall B within the Townsend Tuff.





**References:**

ALLEN, J R L, WILLIAMS, B P J. 1981. Sedimentology and stratigraphy of the Townsend Tuff Bed (Lower Old Red Sandstone) in South Wales and the Borders. *Journal of the Geological Society* v 138 pp 15-29

SCHOFIELD, D I, DAVIES, J R, WATERS, R A, WILLIAMS, M, and WILSON, D. 2004. Geology of the Builth Wells district – a brief explanation of the geological map. Sheet explanation of the British Geological Survey. 1:50 000 Sheet 196 Builth Wells (England and Wales).

BGS field slip: SN 94 SE. WILBY, P R. 1999

## SECTION B

<b>PRACTICAL CONSIDERATIONS:</b> Please score Accessibility and Safety Red Amber or Green			
<b>Accessibility:</b>		X	
Comment: Difficult to find over uneven ground.			
<b>Safety:</b>		X	
Comment: VERY close the firing range. Care MUST be taken not to deviate from paths			
<b>Conservation status:</b> There are no known conservation designations of this RIGS			

<b>OWNERSHIP/PLANNING CONTROL:</b> <b>Owner/tenant:</b> MOD <b>Planning Authority:</b> Powys County Council <b>Planning status/constraints/opportunities:</b> There are no known planning constraints or opportunities
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<b>CONDITION, USE &amp; MANAGEMENT:</b> <b>Present use:</b> None <b>Site condition:</b> Very overgrown. <b>Potential threats:</b> Encroachment with vegetation <b>Site Management:</b> The site should be cleared of moss and periodically revisited to ensure that the outcrop is visible
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<b>SITE DEVELOPMENT:</b> <b>Potential use (general):</b> Scientific – research into the tuffs and usefulness as stratigraphic marker bed <b>Potential use (educational):</b> Important as educational resource to teach about volcanic ashflows.
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<b>Other comments:</b>
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## Photographic Record



Typical outcrop



Typical outcrop



Finely fractured appearance of Tuff



General view of location