Site Name: Nant-yr-arian Road Section

Grid Ref: SN 7101 8103 - SN 7188 8128

RIGS Category: Educational & Scientific
Earth Science Category: Structural Geology
1:50,000 Geological: BGS Sheet 163, Aberystwyth

RIGS Statement of Interest:

Nant-yr-arian Road Section is of regional geological importance because it provides a semi-continuous profile, nearly 1 km in length, through sedimentary rocks that were folded and cleaved during the Caledonian Orogeny, approximately 400 million years ago. Profiles of this length, oriented at a high angle to the regional strike, are exceptionally rare and offer a fine opportunity to examine the styles, sizes and orientations of small-scale folds which themselves are not common in the Welsh Basin. In this respect, the site is complementary to Cwm Rheidol Track Section SSSI which is located approximately 2 km to the south-east.

The section exposes a c.500 m thick succession of thinly bedded turbidites belonging to the upper part of the Lower Silurian (Llandovery Series) Devil's Bridge Formation. The succession is the right way up, based on evidence of cross-laminations and ripple marks, but sheet dip across the profile is variable reflecting the presence of large-wavelength folds on the south-western flank of the Plynlimon Dome. The section exposes spectacular examples of anticlinal and synclinal folds, particularly towards the western end of the profile. The folds are upright with subvertical NNE-striking axial planes, and are generally open to close, locally becoming tight with interlimb angles of less that 40^{o} and wavelengths of approximately 5 m. Cleavage is only weakly developed but, for example in fine-grained beds in the fold hinges, is clearly axial planar. The quality and length of exposure is probably sufficient to enable accurate determinations of the amount of crustal shortening responsible for the folding, a figure likely to be of the order of 17-23%. This is therefore a valuable cross-section through one of the major periclinal folds of Central Wales.

Surveyed by: Dr Bob Mathews