

Site Name: Carn Owen

Grid Ref: SN 732882

RIGS Category: Educational & Scientific

Earth Science Category: Ordovician (Ashgill) Stratigraphy and Structure

Geology 1:50,000: BGS Sheet 163, Aberystwyth

RIGS Statement of Interest:

Carn Owen RIGS provides one of the most spectacular and accessible examples of large-scale soft sediment deformation in mid-Wales and is of particular importance for studies into the mode of formation of this type of feature. On the northern side of the Hafan Fault, west of Nant-y-moch, the NNE-trending Carn Owen periclinal inlier provides a spectacular section through one of the thickest late Ordovician channel sandstone deposits in the Aberystwyth district. Well-bedded, massive sandstones, belonging to the Pencerrigtwion Member of the Drosgol Formation are exposed in a small, disused quarry on the eastern limb of the pericline. These sandstones, which are up to 90 m thick, pass westwards across the hinge of the fold into highly disturbed strata which are well-exposed in a large disused quarry on the fold hinge and in natural rock outcrops on the western fold limb, north of the Hafan incline. Large rolls and contorted rafts of sandstone, tens of metres in length and many metres thick, and which frequently retain their original bedding fabric, lie within a matrix of dark-grey structureless mudstone.

The formation of the intense soft-sediment deformation features at Carn Owen has been the subject of debate with gravity-driven subaqueous slumping being the preferred mode of origin. According to this model, a large volume of sand was transported south-westwards along a submarine channel onto the floor of a deepwater basin where founded debris derived from the levéed south-eastern margin of the channel was incorporated into the sand body. An alternative model involving post-burial sediment failure resulting from fluidisation of the sand body beneath a silty mud aquaseal is rejected because of the lack of symmetry of sandstone types about the fold axis.

Surveyed by: R. Mathews