

Site Name: Moriah Quarry

Grid Ref: SN 611796

RIGS Category: Educational & Scientific

Earth Science Category: Structural Geology and Silurian (Llandovery) Stratigraphy

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

RIGS Statement of Interest:

Moriah Quarry is located on the crop of a sequence of turbidites belonging to the Lower Silurian (Llandovery Series) Aberystwyth Grits Group. The rocks at this site are situated in the overturned limb of a recumbent fold and are therefore inverted, dipping at about 50° towards 130°. The site is of regional geological importance because inverted turbidite bedding planes exposed on the west face of the quarry display a spectacular series of sole structures, including flute and groove casts, in association with a variety of skip and roll marks. Studies suggest that the latter features, which consist principally of parallel impressions, were probably generated by the cylindrical-shaped shell of a cephalopod rolling down-current either about its own axis or skipping end-over-end, not always touching the seabed. Another interesting feature is that Moriah Quarry is one of the very few localities in mid-Wales which clearly exhibit fold structures that are superimposed upon and deform the main Caledonian structures. These younger folds, which are seen in profile in the south face of the quarry and are responsible for inverting the turbidites in the west face, have been attributed to the second phase of Caledonian deformation. Early studies suggested that the lower part of the recumbent fold is of tectonic origin whilst the upper part was attributed to superficial deformation produced by glacial drag. However, more recent investigations have shown that, together with similar structures exposed at Chwarel Ponterwyd SSSI, this recumbent fold with its associated flat-lying axial planar crenulation cleavage is possibly late Caledonian or younger. It is thought that these structures were generated by vertical shortening of overthickened crust under high load pressure.

Surveyed by: Ros Westgate