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## Mermaid Inn RIGS

NRW RIGS no. 139 [SH 47230 64364]

[GeoMôn Global Geopark original webpage](#)

### RIGS Statement of Interest:

Mermaid Inn RIGS provides a fine section through Quaternary sediments along part of Anglesey's Menai Strait coast where exposure is generally poor. It provides a representative and easily accessible section through glacial sediment derived from the Welsh mainland, Irish Sea Basin and local sources. The 500m-long coastal section has resulted from progressive coastal erosion of a rock-cored drumlin parallel to its long axis which can be traced for almost 1km north-east to south-west. The section reaches about 20m maximum height, thinning progressively towards both ends. It reveals a core 2.5–3m thick of Carboniferous/Permian 'Red Measures' (see RIGS 0000), overlain by a coarse, sandy red diamicton (probably lodgement till) rich in clasts derived from the underlying bedrock. This is overlain by an intermittent lag of large erratic boulders, and then by up to 14m of crudely stratified gravels and sands. Surprisingly, the section has not been studied in any detail. The lowest layers of Quaternary sediment appear to be derived more or less in situ from the soft marly red-beds beneath. The poorly sorted gravelly drift above contains materials from various sources including Anglesey, the Welsh mainland (Roberts, 1958) and the Irish Sea Basin. The drumlin comprises debris which appears to be partially sorted by glacial meltwater. These glaciofluvial sediments appear then to have been streamlined by a relatively rapid flow of confluent Welsh and Irish Sea ice moving north-east to south-west along the area of the present Menai Strait.

**Geological setting/context:** About 2.4 million years ago there was a general cooling of the Earth's climate, heralding the onset of the Quaternary "Ice Age", a period of geological time extending to the present day. In reality, the period has seen a number of cold 'glacial' periods interspersed with warmer 'interglacial' periods such as the one in which we now live. Since about 450,000 years ago there have been at least four intensely cold periods during which large parts of upland Britain were covered by ice sheets for long periods. Although Anglesey was probably overrun by ice on these occasions, only evidence from the last major glacial phase – the Late Devensian – is known. Possible evidence from the warm interglacial period before the Late Devensian may locally have escaped the destructive erosional and depositional effects of the last glaciation. During the Late Devensian, around 20,000 years ago, Anglesey was completely submerged by ice. Two ice sheets from different sources were involved. The Snowdonian mountains were the source of ice streams that moved broadly northwards towards Anglesey, while a massive Irish Sea ice sheet, fed by glaciers from Scotland, Ireland and Cumbria, moved onto the island from the north. The Irish Sea ice stream was dominant, and travelled north-east to south-west across the island, broadly in keeping with its NE–SW-trending, structurally controlled rock ridges. The Welsh and Irish Sea ice streams met in the region of the present-day Menai Strait and produced a confluent south-westward flow. Deposits from the Irish Sea ice tend to contain a wide range of rock types from its diverse source areas and from the varied geology of the seafloor traversed. A red colouration is common, being derived partly from Permian-Triassic rocks offshore. The Irish Sea sediments commonly contain unconsolidated seafloor debris, including sand and shell fragments, dredged from the seafloor by the ice. Tertiary lignite, coal fragments and flint are also a characteristic component of the Irish Sea deposits. Alternatively, deposits from the Welsh ice sheet reflect the geology of its source areas, with a high proportion of Cambrian slates and mudstones, varied Ordovician igneous materials and a blue-grey colouration. Although the broad pattern of the island's glaciation has been understood for nearly 100 years, the exact timing of the arrival and retreat of the different ice masses is poorly understood, as is the relative extent of both ice masses during the Late Devensian. Anglesey contains an exceptional range of Quaternary evidence, in the form of coastal sediment exposures, glacial landforms and erratic boulders, which can be used to reconstruct the glacial history of the island, and elucidate regional variations in ice movement and sedimentary processes.

Three separate networks of RIGS have been selected to demonstrate the glacial history of the island. These are: 1) sedimentary sequences; 2) erratic boulders and; 3) glacial/glaciofluvial landforms. Selected sites may belong to more than one of these networks.

**Network context of the site:** Mermaid Inn Section belongs to Network 1, 'Sedimentary sequences' although it also provides a good example of a drumlin. Significant areas of Anglesey are covered by Quaternary deposits, and the island's coastline provides an unusually high degree of exposure. Key sections have been selected as RIGS to demonstrate the most important lithological and sedimentological characteristics of the island's glacial and glaciofluvial deposits. The sites therefore provide important evidence for understanding the origins and patterns of movement of the ice masses that affected the island during the Late Devensian.

## **References:**

CAMPBELL, S. & BOWEN, D.Q. (1989). Quaternary of Wales. Geological Conservation Review Series No. 2. Nature Conservancy Council, Peterborough, 237pp.

GREENLY, E. (1919). The geology of Anglesey. Memoirs of the Geological Survey of Great Britain. HMSO, London, 980pp. (2 vols)

GREENLY, E. (1920). 1:50,000 (and 1 inch to 1 mile) Geological Map of Anglesey. Geological Survey of Great Britain, Special Sheet No. 92 and (93 with parts of 94, 105 and 106).

ROBERTS, E. (1958). The County of Anglesey: Soils and Agriculture. Memoir of the Soil Survey of Great Britain. HMSO, London.

WHITTOW, J.B. & BALL, D.F. (1970). North-west Wales. In: Lewis, C.A. (ed.) The Glaciations of Wales and adjoining regions. Longman, London, 21–58.

WILLIAMS, A.J. (2003). The sedimentology of Late Devensian glacial deposits in Anglesey, North-West Wales. Unpublished Ph.D. thesis, University of Liverpool.

**Site geometry:** Site boundary