



South Wales RIGS Group Site Record

RIGS Description

SECTION A

General	South Wales
Site Name: Clawdd Brythonig track section	File Number: Site_RAW_JRD_18
RIGS Number: 711	Surveyed by: R A Waters and J R Davies
Grid Reference: SN 8633 3687 to 8683 3661	Date of Visit: 8 th February 2011
RIGS Category: scientific	Date Registered:
Earth Science Category: Stratigraphical, palaeontological, sedimentological	Owner: MoD/Army/SENTA Planning Authority: Powys County Council
Site Nature: Track section	Documentation prepared by: R A Waters
Unitary Authority: Powys County Council	Documentation last revised:
OS 1:50,000 Sheet: 160	Photographic Record: Attached
OS 1:25,000 Explorer Sheet: 187	
BGS 1:50,000 Sheet: E213	
<p>RIGS Statement of Interest:</p> <p>Clawdd Brythonig track section is part of a network of sites demonstrating the evolution of the south-east margin of the Lower Palaeozoic Welsh Basin during the mid to late Silurian. It has been proposed as a RIGS as it provides a semi-continuous section through the late Wenlock to early Ludlow succession in the south-western part of the Myddfai Steep Belt. This succession demonstrates the major changes in sea level that occur at the Wenlock/Ludlow boundary. Although it is situated on the MOD Sennybridge Training Area (SENTA), where access is restricted, it is considered a key site with unique features, for interpreting the stratigraphy, sedimentology and palaeontology of this time interval.</p> <p>It shows a semi-continuous section from the late Wenlock Sawdde Sandstone Formation to the mid Ludlow Hafod Fawr Formation. In detail, the succession records the change from shallow water nearshore sandstones to offshore mudstones and then to deepwater graptolitic mudstones. A return to shallower sediments is seen in the upper part of the section.</p> <p>The site provides a key section for those interested in scientific research into the stratigraphy, palaeontology and sedimentology of the sea level changes across the Wenlock/ Ludlow/ boundary along the Myddfai Steep Belt. It is not considered suitable for students because of its location on SENTA.</p>	

Geological setting/context:

The Clawdd Brythonig track section provides an accessible, semi-continuous section through the late Wenlock to early Ludlow succession of the central part of the Myddfai Steep Belt. The Ludlow part of the section was first described by Potter and Price (1965), but the stratigraphy has since been revised (Barclay et al. 2005; British Geological Survey 2005). The section demonstrates the major movements in sea level around the Wenlock - Ludlow boundary.

The section comprises:

Hafod Fawr Formation.....	185 m+
Cwm Graig Ddu Formation.....	55 m
Irfon Formation.....	55 m
Halfway Farm Formation.....	55 m
Sawdde Sandstone Formation.....	115 m

The late Wenlock, Sawdde Sandstone Formation is seen in cutting either side of the stream near the base of the section. It comprises interbedded thin sandstones, siltstones and grey mudstones with scattered thicker, sheet sandstones up to 0.2m thick. The thin sandstones are laminated and cross-laminated and commonly bioturbated. The sheet sandstones are parallel-laminated and in places exhibit HCS.

The latest Wenlock, Halfway Farm Formation forms a slack beyond which is a prominent scarp. There are no exposures in the slack, the first occurring in the floor of the track towards the upper part of the escarpment. These comprise green grey, thinly bedded silty mudstones with abundant thin beds and laminae of sandstone and siltstone to 5 mm thick, which increase in abundance upwards. Burrowing is widely developed. Brachiopods, bryozoa and crinoid debris are abundant and commonly occur in clots as a result of the bioturbation. The top 4 m of the formation is a thick bedded, sandy mudstone overlain by green silty mudstones with fossiliferous rottenstone nodules containing brachiopods, trilobites, ostracods and bryozoa. The ostracods are late Wenlock in age.

The Irfon Formation forms a narrow bench at the top of the Halfway Farm Formation escarpment. It comprises olive-weathered, grey, silt laminated mudstones with sparse dark grey, laminated hemipelagites up to 1 mm thick. This lithology is best seen in the spoil/scree of the now degraded quarry (SN 8655 3668) on an adjacent forestry track, to the south of the main track section. This quarry yields early Ludlow graptolites referable either to the *nilssoni* or *scanicus* Biozone. At higher levels in the formation, as seen in the floor of the main track, sparse bioclastic material, including crinoid and brachiopod, appears as do rare small burrows.

The early Ludlow Cwm Graig Ddu Formation comprises grey, buff weathering mudstones with abundant lenticular and streaky, silt and sand laminae to 3 mm thick. Small sand-filled burrows become commoner upwards. Rare anoxic hemipelagites are locally present and yield early Ludlow graptolites.

The overlying mid Ludlow, Hafod Fawr Formation comprises thinly interbedded

mudstones, siltstones and fine-grained sandstones to 3 cm thick. Bioturbation is well developed. The formation is characterised by the presence of thin to medium bedded well jointed, parallel-sided, sheet sandstones up to 10 cm thick. The sheet sandstones increase in abundance upwards.

The Sawdde Sandstone represents the acme of the progradation that affected the Myddfai Steep Belt (Barclay et al. 2005; Schofield et al 2009) during the Wenlock. The sheet sandstones represent storm generated event beds. Shallowing, as a result of the progradation, was to within storm wave base, but below fair weather wave base. The formation was probably deposited in a lower shoreface setting. The Halfway Farm Formation records a minor transgressive deepening at the top of the progradation. It represents muddy offshore deposition within storm wave base, in which an infauna and shelly benthos flourished.

Apart from the topmost part, all of the subsequent, early Ludlow progradation (Barclay et al. 2005; Schofield et al. 2009) is represented in the section and comprises the Irfon, Cwm Graig Ddu and Hafod Fawr formations. It begins with a major deepening represented by the Irfon Formation, which sees the deposition of anoxic graptolitic hemipelagic mudstones and silt/mud turbidites in a mid ramp setting. The Cwm Graig Ddu Formation represents a slight shallowing, with more silt and sand being deposited and burrowing increasing. Deposition however, was still below storm wave base. Continued shallowing saw the onset of the offshore shelf Hafod Fawr Formation. The upward increase in the number of storm generated sheet sandstones reflects deposition at increasing heights above storm wave base.

References:

BARCLAY, W J, DAVIES, J R, HUMPAGE, A J, WATERS, R A, WILBY, P R, WILLIAMS, M and WILSON, D. 2005. *Geology of the Brecon district - a brief explanation of the geological map. Sheet explanation of the British Geological Survey. 1:50 000 Sheet 213 Brecon (England and Wales).* (Keyworth, Nottingham: British Geological Survey).

British Geological Survey. 2005. Brecon. *England and Wales Sheet 213, Bedrock and Superficial deposits, 1: 50 000.* British Geological Survey: Nottingham .

POTTER, J F, and PRICE, J H. 1965. Comparative sections through rocks of Ludlovian-Downtonian age in the Llandovery and Llandeilo districts. *Proceedings of the Geologists Association*, Vol. 76, 379-402.

SCHOFIELD, D I, DAVIES, J R, JONES, N S, LESLIE, A B, WATERS, R A, WILLIAMS, M, WILSON, D, VENUS, J, HILLIER, R D. 2009. Geology of the Llandovery district – a brief explanation of the geological map. *Sheet explanation of the British Geological Survey. 1:50 000 Sheet 212 Llandovery (England and Wales).*

SECTION B

PRACTICAL CONSIDERATIONS:

Please score Accessibility and Safety Red Amber or Green

Accessibility:

X

Comment: Site is on the MOD Sennybridge Training Area (SENTA) and in one of the Dry training areas, which is not subject to live firing. Access is only available with SENTA permission, apart from the western half of the track section which forms part of the public footpath known as the Epynt Way.

Safety:

X

Comment: Access only allowed after MOD safety briefing.

Conservation status:

There are no known conservation designations of this RIGS

OWNERSHIP/PLANNING CONTROL:

Owner/tenant: Ministry of Defence/Army/SENTA

Planning Authority: Powys County Council

Planning status/constraints/opportunities:

Not known

CONDITION, USE & MANAGEMENT:

Present use: track section

Site condition: Some cuttings good, others degraded. Track floor sections variable depending on soil wash and grasscover. Forestry quarry in middle of section now degraded.

Potential threats: Further degradation of faces and track floor by soiling and grass growth.

Site Management: Forestry quarry needs clearing of soil wash/ scree; track floor needs weed killer periodically.

SITE DEVELOPMENT:

Potential use (general):

Potential use (educational): The site provides a key section for those interested in scientific research into the stratigraphy, palaeontology and sedimentology of the sea level changes across the Wenlock/ Ludlow/ boundary along the Myddfai Steep Belt. It is not considered suitable for students because of its location on SENTA.

Other comments:

Photographic Record



Sawdde Sandstone Formation showing prominent well jointed sheet



General view of track section, looking upsection (south)



Thin bedded mudstones of the Halfway Farm Formation



Degraded quarry (SN 8655 3668) in the Irfon Formation, located on a forestry track, to the south of the main track section.



Hafod Fawr Formation showing well jointed sheet sandstones in thinly interbedded mudstones, siltstones and sandstones.