

Gwynedd & Môn RIGS Group Site Record

General		Gwynedd & Môn	
Site Name:	Pen-y-bryn (Seiont Brickworks)	File Number:	GM/Q/0006
RIGS Number:	0008	Surveyed by:	Dr K. Addison
Grid Reference:	SH 492614	Date of visit:	24.07.01
Type of Site :	Quaternary	Date Registered: Owner: 31.07.01 Planning Authority: 31.07.01	
Unitary Authority:	Gwynedd Council	Documentation prepared by: Dr K. Addison & Dr S. Campbell	
Site Nature:	EA: active quarry	Documentation last revised:	31.07.01
1:50,000:	Sheet 115, Snowdon		
1:10,000:	SH 46SE		

RIGS Statement of Interest:

Pen-y-bryn provides unique evidence in Britain for several temperate episodes during the early part of the Devensian Stage (c. 110-70 ka BP) followed by an Early Devensian ice advance. The latter occurred prior to the last main hemispheric glaciation shortly after 25 ka BP (Late Devensian). The site is the stratotype for four members of the Eryri and St Asaph formations (Bowen, 1999). The Quaternary deposits at Pen-y-bryn overlie Ordovician shales which are extracted for brick-making. The Quaternary sequence is laterally highly variable, but can be generalised (from the base) as follows: 1. gravels and sands; 2. organic deposits; 3. Welsh till; 4. gravels and sands largely of Irish Sea provenance; 5. till of Welsh and Irish Sea provenance; and 6. Irish Sea till. Unit 1 was deposited by an ancient precursor of the Afon Seiont which flowed north-west from the Snowdon area, possibly during interglacial conditions (c. 125 ka BP). The organic deposits (Unit 2) are highly fossiliferous (e.g. wood fragments, cones, pollen, beetle remains) and indicate separate (boreal) forest and heath episodes at c. 100 ka and 80 ka BP, respectively. The succeeding Welsh till (Unit 3) contains reworked organic deposits, and is believed to have been deposited by an Early Devensian (c. 70 ka BP) Welsh ice sheet which 'bulldozed' trees, peat, gravels and other deposits in its path. The succeeding deposits (Units 4, 5 & 6) date from the Late Devensian glaciation, sometime after 25 ka BP, when Irish Sea and Welsh ice masses fought for supremacy along the coastal fringe. Pen-y-bryn is a site of national importance for reconstructing Late Pleistocene events in Britain. Evidence from the site accords well with the known record elsewhere in northern Europe, and challenges existing views on Late Pleistocene glaciation in Great Britain.

Geological setting/context:

Extensive spreads of glacial, fluvioglacial and periglacial deposits occur around the coastal fringe of north-west Wales, making it a core area for studying Quaternary (Ice Age) deposits and landforms. Excellent coastal sections through these deposits have given rise to a protracted history of research and, less frequently, inland exposures (cuttings and quarries) have also provided important data on the sequence and nature of Quaternary events.

The area was overrun on a number of occasions by glaciers or ice sheets which had sources in North Wales and the Irish Sea Basin. The precise timing and extent of these glacial events and the interpretation of the sedimentary and landform evidence are still a matter of controversy. The sequence at Pen-y-bryn complements evidence from 11 Quaternary stratigraphical sites on Anglesey, Llŷn and the Gwynedd coastal fringe which have been selected as GCR sites/SSSI. Pen-y-bryn forms part of a potentially extensive network of RIGS which provide further important evidence on the Quaternary history of the region, but it is the only site in these networks to contain organic deposits of a pre-glacial age.

References:

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PRACTICAL CONSIDERATIONS:

Accessibility:

The site is reached from the A487(T) Caernarfon - Porthmadog road where it crosses the Afon Seiont, on the southern outskirts of Caernarfon. Permission to enter the quarry (known formally as Caernarfon Quarry, but informally as Seiont Brickworks or 'Pen-y-bryn') must first be sought from Hanson Brick Limited. At the discretion of the quarry operators, vehicles may be left near the quarry office.

Safety:

The site is not unduly hazardous, but some of the quarry faces and benches are unstable, and 'quicksand' occurs locally. Normal Health and Safety practices, including the wearing of a hard hat, should always be observed. Students/parties should not be left to work unattended. Many vehicles use the brick-making and storage facilities, and great care should be taken while traversing the site. The operator's instructions and Health and Safety requirements must be observed at all times.

Conservation status:

The site has no formal conservation status, although it has been considered for selection as a Geological Conservation Review (GCR) site (see **Other comments**). It lies adjacent to Afon Seiont SSSI (Ordovician stratigraphy).

OWNERSHIP/PLANNING CONTROL:

Owner/tenant:

Most of the area covered by Planning Permission is owned by Hanson Brick Limited. Two small areas, at the northern and southern ends of the site respectively, lie outside the ownership of Hanson Brick Limited, but the owners of these areas have not been identified.

Planning Authority:

Gwynedd Council.

Planning status/constraints:

The site was originally granted planning permission for minerals extraction on 22.11.1951. It is currently subject to statutory review under the Environment Act 1995, and an Application for Determination of Conditions (Planning Permission Reference: C00A/04411/14/MW) has recently been made by Hanson Brick Limited. The latter entails proposals for continued working and quarry restoration.

CONDITION, USE & MANAGEMENT:

Present use:

Brick-making has been carried out in the vicinity of the present planning permission area for over 100 years. The present brickworks was opened in 1966. The site is still an active quarry, where 'weathered' Ordovician shales are extracted by mechanical digger and processed on-site for brick-making. Approximately two-thirds of the planning permission area has been, or is currently being, quarried. The workings extend below the local watertable, and a small lake now occupies the central area of workings. The workings are expanding into an area of unquarried land (semi-improved pasture) to the south-east.

Site condition:

The geological interest at the site lies in the Quaternary overburden, not the underlying Ordovician shale. Quarry operations are undertaken in phases, when the overlying Quaternary materials are 'stripped' to gain access to the commercially valuable shales. In the intervals between these 'stripping' operations, the Quaternary sediments are well exposed in a series of readily accessible faces. Hanson Brick Limited, and its forerunners at the site, have generously allowed access to the faces and indeed facilitated much research. The quarrying process inevitably destroys the Quaternary stratigraphic sequence but at the same time provides periodically fresh exposures.

Potential threats:

The principal threat to the site would come from complete infill at the end of the quarry's operational life, which would deny access permanently to the Quaternary sequence. However, such an end-use is not part of the current planning application, which proposes landscaping of disused faces and creation of a quarry-floor lake and woodland. Also, face stability concerns may lead to degradation and result in restricted access for Health and Safety reasons. It is hoped, however, that through co-operation with quarry owners, this issue can be managed to achieve common benefits.

Site Management:

Quarrying is expected to continue for approximately 30 years. During this time, fresh faces are likely to be created with each operation to strip away the Quaternary 'overburden'. Continued liaison between the operators and the scientific research community should ensure appropriate access to the geological features of interest. Restoration plans, being considered as part of the current Determination of Conditions, provide an excellent opportunity to dovetail geological, commercial and planning requirements.

SITE DEVELOPMENT:**Potential use (general):**

Because the site is a working quarry, an on-site interpretation initiative for the general public is not considered appropriate.

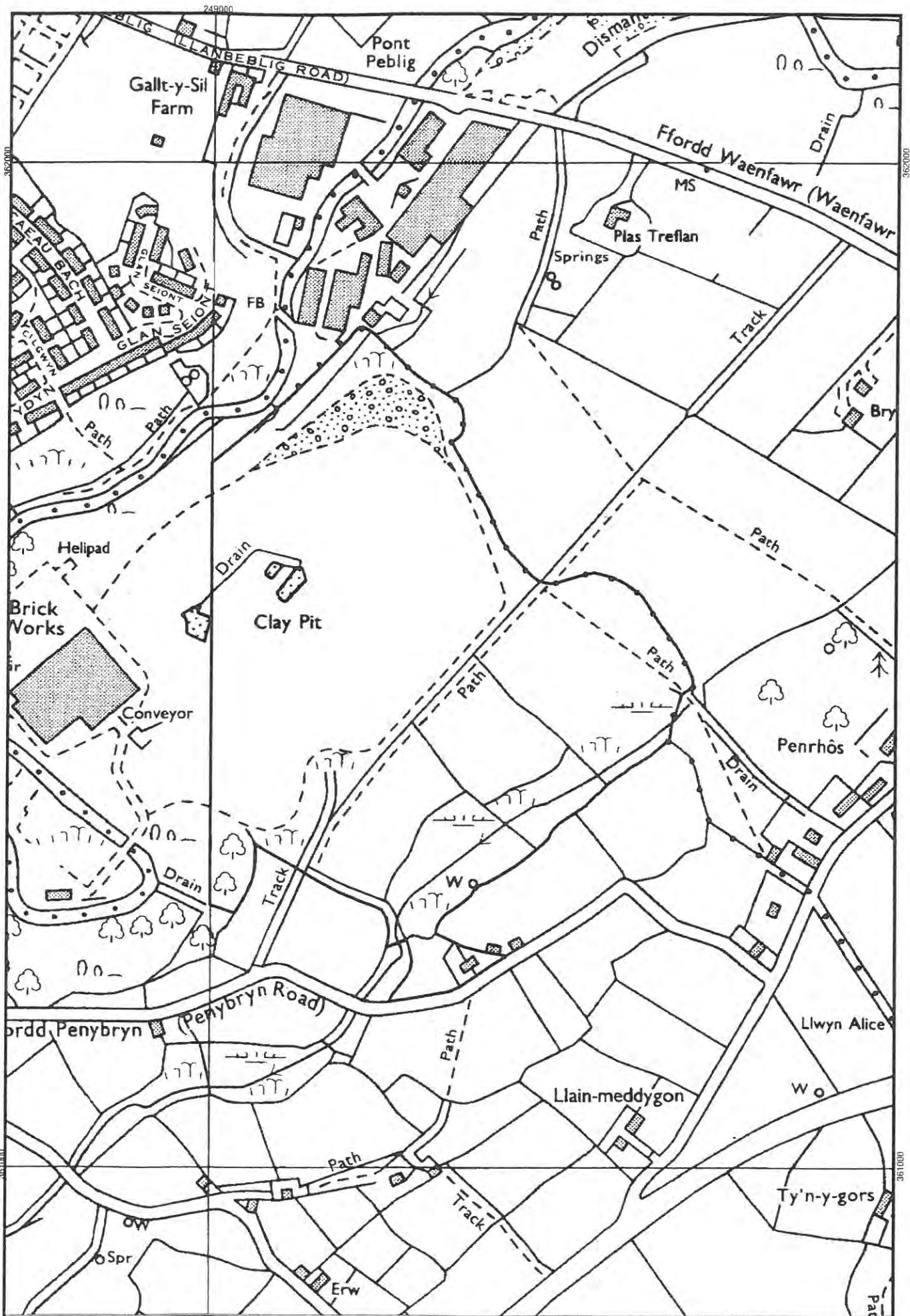
Potential use (educational):

The site is frequently used by students and researchers, and appropriate liaison with the owners and operators should allow this to continue. The site has an unusually high scientific profile, and the possibility of providing on-site information (perhaps located in the site offices and tailored primarily for use by students), should be explored with the owners.

Other comments:

The site has become internationally famous for its Quaternary organic sediments. These, however, are extremely localised, and *in situ* conservation is not practicable - an important pre-requisite for Geological Conservation Review (SSSI) status. The stratigraphical sequence predicted in the quarry faces at the end of planned working, however, fully merits RIGS status.

Pen-y-bryn (Seiont Brickworks)



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Scale 1:5000

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