



## South Wales RIGS Group Site Record

### RIGS Description

#### SECTION A

General	South Wales
<b>Site Name:</b> Llanfellte	<b>File Number:</b> AH_05 / AB_46
<b>RIGS Number:</b> 757	<b>Surveyed by:</b> AJ Humpage
<b>Grid Reference:</b> SO 12415 21715	<b>Date of Visit:</b> 18 June 2011
<b>RIGS Category:</b> Scientific	<b>Date Registered:</b> Unknown
<b>Earth Science Category:</b> Geomorphological	
<b>Site Nature:</b> Farmland	<b>Documentation prepared by:</b> AJH
<b>Unitary Authority:</b> Powys CC	<b>Documentation last revised:</b> 19 August 2011
<b>OS 1:50,000 Sheet:</b> 161	<b>Photographic Record:</b> See images attached to this report
<b>OS 1:25,000 Explorer Sheet:</b> OL 13	
<b>BGS 1:50,000 :</b> Sheet 214 (Talgarth)	

**RIGS Statement of Interest:** This site forms part of a network of important scientific sites within the South Wales RIGS area associated with the last (Devensian) Ice Age.

Llangorse Lake is the largest natural body of water in southern Wales and lies in a large basin at c.160m O.D. elevation to the north of the Usk valley. South of the lake, Yr Allt at 380m O.D. forms a major barrier between the Llynfi basin and the River Usk, and drainage into and out of the lake, the Afon Llynfi, is directed northwards into the Wye catchment.

However, during the Late Devensian, the northward drainage was blocked and the lake deepened, and extensive Lacustrine deposits were laid down beneath the expanded lake. The lake overflowed to the south at Pennorth and Bwlch. And whilst both channels are well-developed, the most visible is that at Bwlch.

The deglaciation history is extremely complex and not understood. To form the enlarged lake, the Llangorse basin must have been ice free, yet, Wye valley ice must have been present just to the north to block the Llynfi valley outlet. At the same time, the Usk valley ice must have been rapidly retreating to allow the overflow channel to cut down to the Usk valley floor and form the alluvial fan adjacent to the Llandetti moraine (Coleman 2007). Perhaps initially the overflow was onto Usk valley ice, but even so, the chronology of deglaciation continues to require careful research. Recent work has suggested that the Llangorse Lake Basin may have been deglaciated relatively early compared to the surrounding valleys (Palmer et al 2007).

### **Geological setting/context:**

The glacial evolution of the middle and lower Usk valley is not well understood, but as this area lies on the margin of the Devensian ice sheet, it is increasingly being recognised as an important area to research system responses to environmental change (Carr et al 2007).

The glaciation of the Llangorse Lake basin has long been the subject of much debate. Some initial work in the area was undertaken by Williams (1968), but the first detailed study was by Lewis (1970) who argued for the early dominance of mid-Wales ice pushing southwards from the Wye valley into the Llynfi Basin and thence into the Usk prior to the development of an Usk valley glacier. With the subsequent relatively early decay of the Usk glacier, the Llynfi Basin could again be over-ridden by ice moving southwards from the Wye valley, with mid-Wales ice advancing into the Usk valley as far as the Llandetti moraine, the "Hay Stage of Lewis (1970).

Lewis (1970) argued for a phased retreat of mid-Wales ice from the Llynfi Basin (Figure 1), with four readvances forming morainic deposits within the Basin. During the Stage 2 readvance, a large ice-dammed proglacial lake formed (Figure 1), with a shoreline at c.190m O.D. This lake overflowed at Pennorth and at Bwlch, and at both locations well-developed glacial meltwater channels are present. The Geological Survey recorded extensive lake deposits over much of this area (BGS 2004), extending as far south as Blaenllynfi and it is these features which are recorded in this RIGS

The Stage 4 readvance of Lewis (1970) blocked the Llynfi valley south of Talgarth, and also pushed south-westwards into the Dulas valley, the two lobes separated by Llanfilo Hill [SO 115 330] and a large moraine on which is sited the village of Bronllys. This marked the last phase of significant mid-Wales ice advance, and the ice front subsequently retreated into the Wye valley to form the Llyswen moraine.

However, this chronology has been complicated by recent work at Tregunter north-east of Llanfilo Hill in the north-west of the Lake basin. Lewis and Thomas (2005) described a large ice-contact ridge [SO 135 339],. A pit in this ridge in 2002, exposed four metres of faceted and striated Old Red Sandstone clasts in a sandy and finer matrix. No clasts that may have come from the Wye Valley were identified (Lewis & Thomas 2005).

Traditionally, the Usk valley glacier was assumed to reach its maximum extent c 20-22ka and to have disappeared, along with the Welsh ice cap by c.16ka (Thomas 1997). However, more recently, doubt has been cast on this model based on dating evidence from the uplands around Abergavenny, which suggests deglaciation may have been initiated earlier than traditionally thought. Coleman and Parker (2007) suggest ice free conditions may be prevailing in the uplands above Abergavenny as early as 19420+/-64 Cal BP.

## References:

British Geological Survey (2004). *Talgarth. England and Wales Sheet 214. Solid and Drift Geology. 1:50,000*. British Geological Survey, Keyworth, Nottingham.

Carr, S.J., Coleman, C.G., Humpage, A.J. and Shakesby, R.A. (2007). *Quaternary of the Brecon Beacons: Field Guide*. Quaternary Research Association, London.

Coleman C.G (2007). The Llandetti Moraine. In: S.J. Carr, C.G. Coleman, A.J. Humpage and R.A. Shakesby (Eds). *Quaternary of the Brecon Beacons: Field Guide*. Quaternary Research Association, London.

Coleman C.G and Parker A.G (2007) Waun Ddu Bog. In: S.J. Carr, C.G. Coleman, A.J. Humpage and R.A. Shakesby (Eds). *Quaternary of the Brecon Beacons: Field Guide*. Quaternary Research Association, London.

Lewis, C.A. (1970b) The Upper Wye and Usk Regions. In: CA Lewis (Ed). *The Glaciations of Wales and Adjacent Regions*. Longman, London.

Lewis, C.A. and Thomas, G.S.P. (2005). The Upper Wye and Usk Regions. In: CA Lewis and A.E. Richards (Eds). *The Glaciations of Wales and Adjacent Regions*. Logaston Press, Logaston, Herefordshire.

Thomas, G.S.P. (1997). Geomorphology of the Middle Usk valley. In: S.G Lewis and D. Maddy (Eds). *The Quaternary of the South Midlands and Welsh Marches: Field Guide*. Quaternary Research Association, London.

Williams, G.J. (1968). *Contributions to the Pleistocene Geomorphology of the Middle and Lower Usk*. Unpublished PhD thesis. University of Wales.

**SECTION B****PRACTICAL CONSIDERATIONS:**

Please score Accessibility and Safety Red Amber or Green

**Accessibility:**

X

Comment: features can be viewed from B4558 above Ashford Tunnel. Otherwise, permission will be required. Buckland House is strictly private.

**Safety:**

X

Comment:

**Conservation status:**

Site is within Brecon Beacons National Park

Part of the site along the river channel and banks is scheduled as part of the River Usk SSSI.

**OWNERSHIP/PLANNING CONTROL:**

**Owner/tenant:** Unknown / various

**Planning Authority:** Brecon Beacons National Park Authority

**Planning status/constraints/opportunities:** There are no known planning constraints or opportunities

**CONDITION, USE & MANAGEMENT:**

**Present use:** Farmland

**Site condition:** Generally good

**Potential threats:** Land modification for agricultural practices..

**Site Management:**

**SITE DEVELOPMENT:**

**Potential use (general):** Ongoing detailed scientific research and geomorphological mapping, would benefit this site.

**Potential use (educational):**.

**Other comments:**

## Photographic Record



Well developed outflow channel at 190m OD north of A40 a Bwlch – view looking north-east



Well developed channel at 190m OD north of A40 a Bwlch – view looking north towards Llangorse Lake. Drainage was towards the camera.



Views towards channel over Llanfelle Farm







Lower end of outflow channel where alluvial fan has developed behind Llandetti Moraine