



## South Wales RIGS Group Site Record

### RIGS Description

#### SECTION A

General	South Wales
<b>Site Name:</b> Cefn Crai	<b>File Number:</b> AH_14
<b>RIGS Number:</b> 731	<b>Surveyed by:</b> AJ Humpage
<b>Grid Reference:</b> SN 88800 28265	<b>Date of Visit:</b> 16 February 2011
<b>RIGS Category:</b> Scientific	<b>Date Registered:</b> Unknown
<b>Earth Science Category:</b> Stratigraphical, Sedimentological	
<b>Site Nature:</b> Kettle hole	<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> 160	<b>Photographic Record:</b> See images attached to this report
<b>OS 1:25,000 Explorer Sheet:</b> OL12	
<b>BGS 1:50,000 Sheet:</b> 213 (Brecon)	

**RIGS Statement of Interest:** This site forms part of a network of important scientific sites within the upper Usk valley that span the Late Glacial – Interglacial Transition.

Cefn Crai [SN 889 282] lies within an extensive area of hummocky glacial deposits on the south bank of the Usk one kilometre south-east of Trecastle. These deposits are probably morainic deposits associated with a northerly readvance of the Crai tributary glacier into the Usk valley following the early collapse of the Usk valley glacier in this area.

The area was mapped in 2005 (BGS 2005) and was cored to a depth of 300cm using a Russian pattern core in February 2007. From the geomorphological context of the kettle basin, and the sedimentary sequence found within it, it is suggested that the sequence at Cefn Crai reflects a tripartite sequence characteristic of sites beyond the limits of the Loch Lomond stadial (Younger Dryas) glaciation, overlain by a Holocene peat sequence.

This site potentially extends a transect of 'Late glacial' core sites in the Usk valley system, from Llanilid (near the ice margin), Traeth Mawr (mid Usk) up into the headwaters of the Usk. As such, this site is likely to have become ice free later than the other sites, and thus offers potential to constrain the final deglaciation of the Brecon Beacons subsequent to the Late Glacial Maximum.

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

The deposits of this area, which lies on the western (upstream) side of the confluence of the Crai with the Usk valley, are formed into a series of ridges and mounds within which are a number of small basins and hollows which are interpreted as kettle holes. Whilst most are small and do not contain any appreciable organic material, at Cefn Crai the British Geological Survey (2005) mapped a peat-filled basin up to 150m in diameter. Whilst constrained on three sides by ridges of morainic deposits, there is a narrow outlet to the east with a small stream draining eastwards towards Rhyd-Owen isaf [SN 898 281]. Some attempt has been made in recent years to drain the basin, and whilst this has been relatively successful on its western margin, waterlogged conditions persist at its centre.

Preliminary investigation indicated that this area is a ponded alluvial basin largely dammed within glacial morainic drift although there is a small stream outlet draining eastwards into the Afon Crai. A series of morainic ridges and mounds constrain the kettle basin, which is filled at surface with peat.

The 2007 coring identified facies as follows (full details in Humpage *et al* 2007):

- 1) 241- 300cm – finely laminated red clays (? rhythmites) with low organic content. It is suggested this is minerogenic deposition associated with the early development of the kettle hole following the retreat of the Crai tributary glacier from the vicinity.
- 2) 241 – 173cm – gradual transition to a series of clayey-silt sediments with increased organic content. It is suggested that these reflect the Late Glacial Interstadial complex when compared with Traeth Mawr (Walker 1980).
- 3) 173 – 133cm – a sharp change to grey lake clay with low organic content. This sediment suggests landscape instability and reduced vegetation typical of the Loch Lomond (Younger Dryas) glaciation.
- 4) 127 – 133cm – a diffuse change to organic-rich lake mud which represents the transition from the Younger Dryas to the early Holocene.
- 5) 127 – 29cm – Organic woody peat overlain by a clayey peat layer and herbaceous peat (29 – 0cm) which is suggested to be a Holocene peat sequence, the upper 29cm reflecting land clearance and drainage in recent years.

Further work, including magnetic and carbon isotope analyses have been undertaken by Swift (2008).

This site thus highlights the rapid environmental oscillations associated with the LGIT with the transition from inorganic sedimentation after deglaciation to organic rich lake clays in the Windermere Interstadial; a return to cold inorganic sedimentation during the Younger Dryas followed by organic rich sedimentation during the Holocene.

## References:

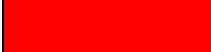





Barclay, W.J., Davies, J.R., Humpage, A.J., Waters, R.A., Wilby, P.R., Williams., M. and Wilson, D. (2005). Geology of the Brecon district – a brief explanation of the geological map. *Sheet Explantion of the British Geological Survey*. 1:50 000 Sheet 213 Brecon (England and Wales).

British Geological Survey (2005). *Brecon. England and Wales Sheet 213.Solid and Drift Geology*. 1:50,000. British Geological Survey, Keyworth, Nottingham.

Humpage, A.J., Parker, A.G. and Carr, S.J. (2007). Cefn Crai. In: S.J. Carr, C.G. Coleman, A.J. Humpage and R.A. Shakesby (Eds). *The Quaternary of the Brecon Beacons: Field Guide*. Quaternary Research Association, London. P.95-97.

Swift, O.J.H. (2008). *Characterising the late glacial environment of Cefn Crai in the Brecon Beacons, South Wales*. Unpublished BSc Thesis. Oxford Brookes University.

## SECTION B

<b>PRACTICAL CONSIDERATIONS:</b> Please score Accessibility and Safety Red Amber or Green			
<b>Accessibility:</b>			
<b>Comment:</b> Private Property. Access to the site is strictly limited and requires permission from the landowner.			
<b>Safety:</b>			
<b>Conservation status:</b> This RIGS is within the boundary of the Brecon Beacons National Park. The River Usk channel and banks to the north is within the River Usk SSSI.			

<b>OWNERSHIP/PLANNING CONTROL:</b> <b>Owner/tenant:</b> Private Property <b>Planning Authority:</b> Brecon Beacons National Park Authority <b>Planning status/constraints/opportunities:</b> There are no known planning constraints or opportunities
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<b>CONDITION, USE &amp; MANAGEMENT:</b> <b>Present use:</b> Pastureland and rough grazing <b>Site condition:</b> Generally good. <b>Potential threats:</b> Draining and / or infilling of kettle hole. <b>Site Management:</b> Current usage should be maintained.
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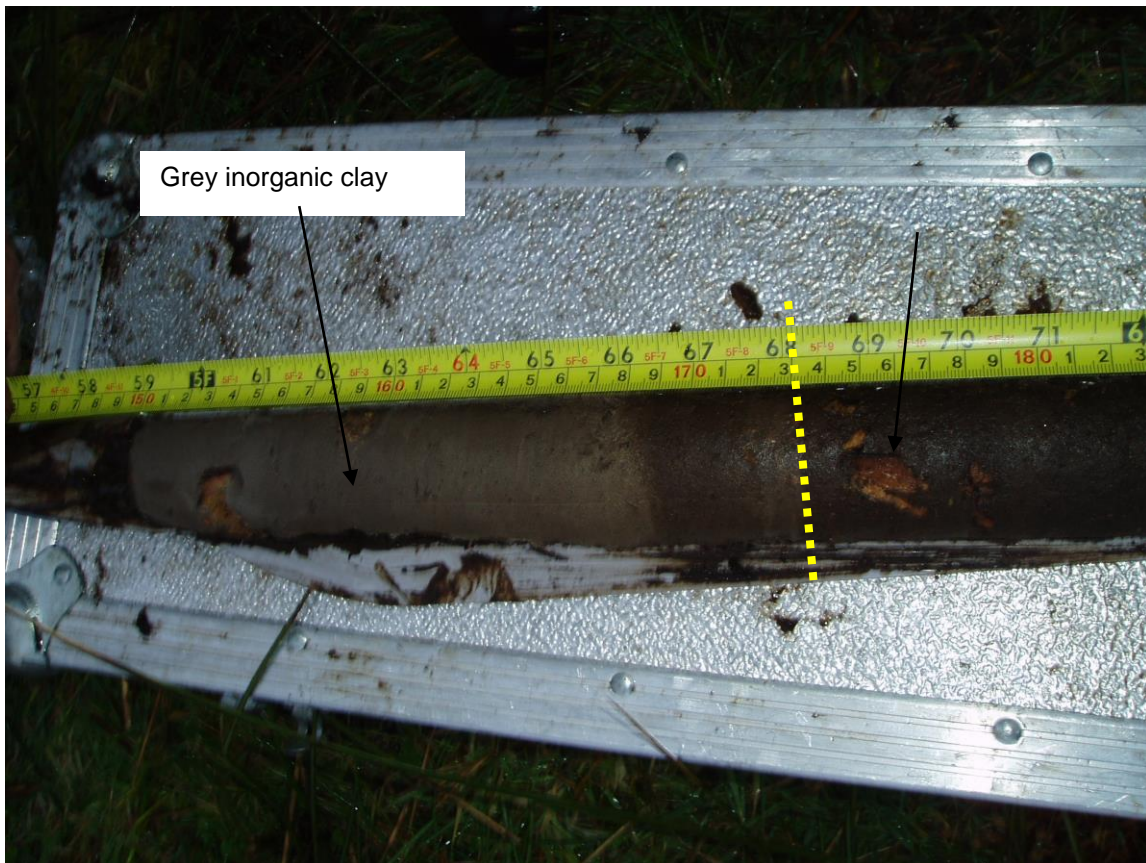
<b>SITE DEVELOPMENT:</b> <b>Potential use (general):</b> An important in situ LGIT lowland site. <b>Potential use (educational):</b>
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<b>Other comments:</b> The suggested designated area for this RIGS incorporates not only the kettle basin, but also the morainic features which surround it.
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## Photographic Record



View north-eastwards across the kettle basin at Cefn Crai [SN 889 282]. Poorly drained conditions persist in the scrubby area to the right of the left-hand telegraph pole in the centre of the kettle hole.  
*Photograph: A. Humpage*



Cefn Crai core showing the transition from organic rich lake clays (right) to inorganic deposition of grey clay (left) at 173cm.