



South Wales RIGS Group Site Record

RIGS Description

SECTION A

General	South Wales
Site Name: Llanbradach Kame Terrace	File Number: AH_31
RIGS Number: 755	Surveyed by: AJ Humpage / R Kendall
Grid Reference: ST 15534 89188 to 15641 91617	Date of Visit: 9 June 2011
RIGS Category: Scientific, educational	Date Registered: Unknown
Earth Science Category: Geomorphological, sedimentological	
Site Nature: Mainly arable farmland	Documentation prepared by: AJH
Unitary Authority: Caerphilly CBC	Documentation last revised: 19 August 2011
OS 1:50,000 Sheet: 171	Photographic Record: See images attached to this report
OS 1:25,000 Explorer Sheet: 166	
BGS 1:50,000 Sheet: 249 (Newport)	

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

The Llanbradach Kame Terrace is an impressive, well-featured kame terrace on the east bank of the Rhymney River over 10 m in height above the floodplain. NCC records from 1975 indicate there are locations where sections reveal collapse structures, basal till and outwash gravels and laminated silts and pebble bands, both at the top and base of the terrace feature, although none were observed during the site visit. The RIGS site incorporates not only the terrace forms, but the boundary with the Holocene river alluvium to the west, and the boundary with the Pennant Sandstone bedrock to the east.

However, the site does contain well-developed geomorphological features typical of a kame terrace including dry channels, mounds of glacial material and kettle holes. There is some suggestion of two levels to the terrace – an outer higher terrace against the valley side and a lower terrace towards the valley centre, which may be indicative of ongoing phases of downwasting of the Rhymney Valley glacier.

Designation of the Llanbradach Kame Terrace as a RIGS is an important component in the glacial history of the Rhymney valley and the South Wales Coalfield as a whole.

Geological setting/context:

Remarkably, little has been written on the glacial evolution of the Rhymney Valley, the most relevant account being within the BGS memoir (Squirrel and Downing 1969). Charlesworth (1929) referred to the valleys east of the Taff being buried by “Brecon ice” and this is reinforced by Bowen (1970) who highlighted the presence of Old Red sandstone, Carboniferous limestone and Millstone Grit erratics in the area west of Ystrad Mynach, where ice is entering the Rhymney valley via the windgap through Nelson. (Bowen (1970) also records the presence of a kettle hole and “esker” in the Rhymney valley south of Ystrad Mynach (almost certainly on the Llanbradach Kame Terrace).

There is uncertainty regarding ice halt or minor readvance stages in the Rhymney valley. Bowen (1970) refers to a Bedwas Moraine, but Bowen (2005) refers to a moraine at Llanbradach. If they are present, neither exhibit a distinct geomorphological expression, although dead ice features are present in the northern outskirts of Caerphilly. More convincing evidence for morainic landforms in the Rhymney valley is found further east between Machen and Rhiwderin.

Kame terraces are often referred to as kame-moraine assemblage as landform features are often similar and in many instances, kame terraces and cross-valley moraines run into each other. The assemblage consists of tracts of hummocky topography comprising ridges, mounds, basins and intervening channel systems. Individual tracts occur either as arcuate bands running across valley (cross-valley moraines) or as irregular borders (kame terraces and / or lateral moraines to the valley floor. They are composed of sand and gravel overlying basal diamict and bedrock. The hummocky topography was formed at, or immediately in front of an ice-margin during temporary retreat, still-stand or minor readvance, by deposition of ice-marginal sedimentation on top of dead and decaying ice. When the glacier retreated and the buried ice melted, the resultant surface was left as a series of irregular ridges, mounds and basins marking the former arcuate ice margin. Much of this topography was later removed by meltwater erosion as the glacier retreated, or was buried by subsequent meltwater sedimentation and post-glacial alluviation.

References:

British Geological Survey (1969). *Newport. England and Wales Sheet 249. Solid and Drift Geology. 1:50,000*. British Geological Survey, Keyworth, Nottingham.

Bowen, D.Q. (1970). South-east and Central South Wales. In: CA Lewis (Ed). *The Glaciations of Wales and Adjacent Regions*. Longman, London.

Bowen, D.Q. (2005). South Wales. In: CA Lewis and A.E. Richards (Eds). *The Glaciations of Wales and Adjacent Regions*. Logaston Press, Logaston, Herefordshire.

Charlesworth, J.K. (1929). The South Wales End Moraine. *Quarterly Journal of the Geological Society of London*. 85, p335-358.

Squirrell, H.C. and Downing, R.A., 1969. Geology of the South Wales Coalfield, Part I, the country around Newport, (Mon.). *Memoir of British Geological Survey, Sheet 249*, HMSO, 3rd edition, 333pp.

PRACTICAL CONSIDERATIONS: Please score Accessibility and Safety Red Amber or Green			
Accessibility:		X	
Comment: Accessible where crossed by public rights of way - features to be viewed from the minor road between Bedwas and Ystrad Mynach. Otherwise, permission will be required to access land. No access alongside dual carriageway.			
Safety:			X
Comment: Open farmland, narrow road with fast moving traffic.			
Conservation status: There are no known conservation designations on this RIGS.			

OWNERSHIP/PLANNING CONTROL: Owner/tenant: Unknown / various Planning Authority: Caerphilly County Borough Council Planning status/constraints/opportunities: There are no known planning constraints or opportunities
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CONDITION, USE & MANAGEMENT: Present use: Pasture farmland Site condition: This site is largely open pastureland with hedgerows dividing the fields. Although the terrace is more extensive, the best featured part of the terrace is between Glyn Rhymney House and Coed Margaret-Shon and it is this section which is recommended for designation. Potential threats: Alteration to dual carriageway could damage front face of terrace Site Management: The road cutting in the A469 could be maintained so sediments and structures could be visible.
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SITE DEVELOPMENT: Potential use (general): This site could be useful to show the downwasting of a valley glacier in terms of the geomorphological "signal" However, access would have to be obtained from landowners as there are few public rights of way. The front of the terrace has in parts been damaged by the construction of the A469 dual-carriageway and at one point has been cut through. Potential use (educational): Good accessible site to view and explain glaciofluvial deposition and landform modification. With schools in nearby towns, a range of activities could be developed to exploit this site for educational purposes, provided landowner permission were to be forthcoming.

Other comments:

Detailed scientific research and geomorphological mapping, would benefit this site

Photographic Record



Meltwater channel in kame terrace looking west. Note higher surface in foreground





Meltwater channel descends right to left and exits terrace onto floodplain to left of hedgerow on left





Undulating kame terrace surface with showing higher and lower surfaces.



Pennant Sandstone Formation (Hughes Member) bedrock exposed at rear of terrace adjacent to former railway line View looking north at [315375 190285].



View across terrace adjacent to Pathway Bungalow [315622 190825]





Views towards Coed Margaret-Shon just north of Pathway Bungalow



Kettle hole in terrace – note low ridge to left of hole



View of section in Llanbradach Kame Terrace c.1975 along minor road looking NNE (from NCC files)