



South Wales RIGS Group Site Record

RIGS Description

SECTION A

General	South Wales
Site Name: Gwaelod-y-Garth Kame Terrace	File Number: AH_50
RIGS Number: 799	Surveyed by: AJ Humpage / R Kendall
Grid Reference: ST 11600 84190 to 11290 85530	Date of Visit: 9 June 2011
RIGS Category: Scientific / Educational	Date Registered: Unknown
Earth Science Category: Geomorphological, Sedimentological	
Site Nature: Mainly pasture farmland	Documentation prepared by: AJH
Unitary Authority: Cardiff CBC / Rhondda Cynon Taf	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: 151	
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 Gwaelod-y-Garth Kame Terrace is an impressive, well-featured kame terrace on the west bank of the River Taff over 10 m in height above the floodplain. The RIGS site are incorporates not only the terrace forms, but the boundary with the Holocene river alluvium to the east, and the boundary with the Pennant Sandstone bedrock, including some well-features outcrops of sandstone to the west.

Well-developed geomorphological features typical of a kame terrace including dry channels, mounds of glacial material and small kettle holes are visible at its southern end, and an excellent section to the east of the railway line at ST 311918 184970 which illustrates a range of sediments which comprise these terraces. There is some suggestion of two levels to the terrace – an outer higher terrace surface against the valley side and a lower terrace towards the valley centre, which may be indicative or ongoing phases of downwasting of the Taff Valley glacier. However, the largest feature, a large kettle basin to the south of the access track to Ynys Gau Farm at [ST 311650 184760] has been infilled with power station ash and colliery waste to create a level field. Notwithstanding this, designation of the Gwaelod-y-Garth Kame Terrace as a RIGS is an important component in the glacial history of the Taff valley and the South Wales Coalfield as a whole.

Geological setting/context:

Remarkably, little has been written on the glacial evolution of the Taff Valley, the most relevant account being within the BGS memoir (Waters and Lawrence 1987), although the deposits of the terrace were all mapped as glacial till. Bowen (1970, 2005) makes virtually no reference to the deposits of the River Taff other than noting that “kame terraces,....., are rare in South Wales.” Thus the landforms of the terrace surface, combined with the excellent sedimentary section, provide a rare opportunity to study one of these kame terraces in South Wales in three dimensions.

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 (1977). *Cardiff. England and Wales Sheet 263. 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.

Waters, R.A. and Lawrence, D.J.D. 1987. Geology of the South Wales Coalfield, Part III, the country around Cardiff. *Memoir of British Geological Survey, Sheet 263,* HMSO, 3rd edition, 114pp.

SECTION B**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 Gwaelod-y-Garth and Maes Mawr. Otherwise, permission will be required to access land.

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: Cardiff County Borough Council / Rhondda Cynon Taff

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

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 Gwaelod-y-Garth village and Ynys Gau Farm.

Potential threats: Redevelopment or further infill of features

Site Management: Current management

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.

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



Well developed hummocky ground in upper surface at southern end of kame terrace. View looking south towards Garth Hill.



Upper terrace surface – bedrock in trees to left.



View across terrace looking south – note two levels with higher surface to right (west)



View looking north showing well-featured southern end of terrace.



Continuation to left of photograph above.



Continuation to left of photograph above.



View north-east looking towards Ynys Gau Farm over well featured ridges.



View looking south towards the Taff gorge showing the hummocky topography at the southern end of the terrace.



Erratic block of Pennant sandstone on trackside leading to Ynys Gau Farm.



Erratic block on track side.



View north from farm track, showing possible kettle basin.



Eastern edge of terrace falling towards Holocene alluvium (Taff floodplain). View looking south from farm track.



Section in kame terrace sediments at entrance to farm yard. View looking north-west.



Close view of section above (note pencil for scale). Sediments here are dominated by sand overlain by well-rounded gravel.



Section immediately east of the railway line on the terrace front. View looking north-east.



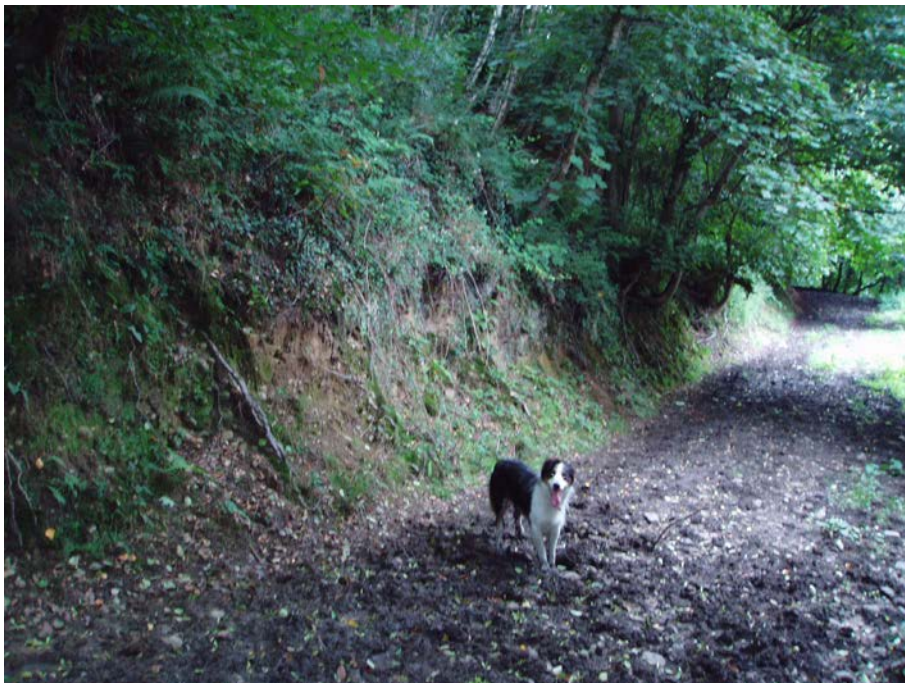
In some places, the sediments are dominated by coarse sand and gravel with thin interbedded sand lenses.



Elsewhere, the deposit is predominantly sandy, with occasional cobble sized clasts.



Angular cobble clasts of sandstone in massive sandy bed.



View southwards showing length of section (c. 300m).



Large erosive based sand and gravel filled channel cutting into bedded and massive sands.



Detail of channel base.



Channel sediments become increasingly coarse towards south. Note boulder in lower right foreground.



Coarse sand and gravel at southern end of section.



Area of infilled ground immediately south of farm access track. View looking south.



Power station ash infilling kettle basin immediately south of the farm access track to Ynys Gau Farm.