South Wales RIGS Group Site Record
RIGS Description

SECTION A

General	South Wales
Site Name: Thornhill Road	**File Number:** SITE_CCC_77
RIGS Number: 688	**Surveyed by:** South Wales Geologists' Association
Grid Reference: ST 2156 8408 to ST 2142 8412	**Date of Visit:** 17th March 2009
RIGS Category: Scientific, Educational	**Date Registered:**
Earth Science Category: Scientific, Sedimentological	Owner: Cardiff County Council Planning Authority: Cardiff County Council
Site Nature: Road Side cutting	**Documentation prepared by:** Rhian Kendall
Unitary Authority: Cardiff County Council	**Documentation last revised:** 22nd May 2009
OS 1:50,000 171	**Photographic Record:** Attached
OS 1:25,000 151	
BGS 1:50,000 E263	

RIGS Statement of Interest:

This site has been proposed as a RIGS as it provides opportunity to study the Brownstones Formation (within the Lower Old Red Sandstone). Here, sandstones and marls which dip steeply northwards can be seen in the northern bank of the road. It is the best site, identified within the County of Cardiff to study the characteristics of this formation. It is also a good location to use for educational purposes as it displays sedimentary features typical of proximal alluvial fan environments and a relatively safe and easily accessible environment.

Geological setting/context:

The Brownstones Formation is a predominantly sandy unit at the top of the Lower Old Red Sandstone. In the region, the sequence comprises “drab brown to purple, fine to coarse grained sandstones with numerous thin intraformational conglomerates and scattered beds of red siltstones and mudstones”. It is underlain by the Llanishen Conglomerate and over lain by the Cwrt-yr-ala Formation.

The Brownstones outcrop in the northern limb of the Cardiff – Cowbridge anticline, where it forms an escarpment of higher land through the district.

The lithologies are arranged in fining upwards cycles, made up of sandstones, capped by siltstones and mudstones but generally, across the whole formation, the Brownstones sequences in South Wales coarsen upwards. This trend is interpreted as “the southerly migration of a fall line during the Lower Devonian which resulted in the deposition of an increasingly proximal alluvial facies”. Each fining upwards sequence is a channel fill, each representing channel cutting and infilling by sandy river sediments in a low sinuosity river system.

Ref: Waters and Lawrence 1987

The section at Thornhill is approx 250m long and in places 3 to 4 m high and forms a series of outcrops along the eastern side of the main road over Caerphilly Mountain, south of the Travellers Rest Pub.

The section shows sandstones and marls of the Brownstones Formation. Dominated by sandstones, they are red brown, and vary from fine to medium to coarse grained in different places along the section, sub-rounded and well sorted with a hard, brittle fracture. They are well bedded, and in places laminated. The rock weathers, in a patchy manor, to a pale reddish grey. In places, the rock is very micaceous and in others there are rip up clasts of red clays. The clasts are all well rounded ranging size from 3mm to 40mm. The marls are red and very fine grained.

Dips measured along the section were 54º at 343N, 49deg at 340N, 50º at 332N and 52º at 336N

Accessibility to this site is presently good because of the recent clearance of trees. It is thought that this access will degrade in time.

References:

WATERS, R A, LAWRENCE, D J D. 1987. Geology of the South Wales Coalfield, Part III, the country around Cardiff. BGS

SECTION B

PRACTICAL CONSIDERATIONS:
Please score Accessibility and Safety Red Amber or Green

Accessibility:			X
Comment: Good access with parking at the Travellers Rest Pub and a good footpath along side of outcrop.			
Safety:			X
Comment: Access to the rocks is often steep but there is sufficient close to the footpath to examine the characteristics of this rock unit			
Conservation status:			

OWNERSHIP/PLANNING CONTROL:

Owner/tenant: Cardiff County Council

Planning Authority: Cardiff County Council

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

CONDITION, USE & MANAGEMENT:

Present use: Road Cutting

Site condition: Tree coverage has recently been removed so the outcrop is now more easily visible. It still has a covering of soil in places though.

Potential threats:

Site Management: Site will become less visible when the recently cut trees and vegetation re-establishes.

SITE DEVELOPMENT:

Potential use (general):

Potential use (educational): Good teaching location because of its easy parking and good pavement. Shows a variety of sedimentary features and typical habit of Brownstones.

Other comments:

Photographic Record

Fallen block illustrating conglomeratic nature of Brownstones in places. This example shows red claystone “rip up” clasts

Montage of photographs to show Thornhill Brownstones Formation locality. Car for scale.
Photographs by Rhian Kendall