



## South Wales RIGS Group Site Record RIGS Description

**SECTION A**

General	South Wales
<b>Site Name:</b> Bull Cliff	<b>File Number:</b> Site_RSK_4
<b>RIGS Number:</b> 656	<b>Surveyed by:</b> Elaine Burt
<b>Grid Reference:</b> ST 0920 6670	<b>Date of Visit:</b> 25 <sup>th</sup> October 2010
<b>RIGS Category:</b> Scientific, educational	<b>Date Registered:</b>
<b>Earth Science Category:</b> Stratigraphical, Sedimentological	
<b>Site Nature:</b> Cliff and foreshore	<b>Owner:</b> Vale of Glamorgan Council <b>Planning Authority:</b> Vale of Glamorgan Council
<b>Unitary Authority:</b> Vale of Glamorgan Council	<b>Documentation prepared by:</b> Elaine Burt
<b>OS 1:50,000 Sheet:</b> 171	<b>Documentation last revised:</b> 1 <sup>st</sup> February 2011
<b>OS 1:25,000 Explorer Sheet:</b> 151	<b>Photographic Record:</b> Attached
<b>BGS 1:50,000 Sheet:</b> E263	
<p><b>RIGS Statement of Interest:</b></p> <p>This site is a good place to examine the St Marys Well Bay Member of the Blue Lias Formation. It is also the type section of the Bull Cliff Bed. The boundary with the overlying Lavernock Shale member is also visible at the top of the cliff section.</p> <p>This site is a useful educational site because of the easy public access and hammering would be allowed here. (Hammering is not allowed at the designated GCR sites which form much of the coastal exposure of the Blue Lias Formation).</p>	

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

The sea cliff and foreshore at Bull Cliff display over 10m of stratigraphy belonging to the Blue Lias Formation of Jurassic age. The majority of the section comprises the St Mary's Well Bay Member, including the Bull Cliff Bed, of which this site is the type locality. At the top of the cliff the transition to the Lavernock Shales Member can be observed, although not directly examined.

The rocks at this locality comprise a succession of interbedded mudstones and limestone, which vary in proportion upwards through the stratigraphy. The Bull Cliff Bed lies at the base of the St Mary's Well Bay Formation in the *pre-planorbis* fossil zone. It comprises a 3.1 to 3.6m unit of parallel sided limestones with subordinate mudstones and is rich in oysters (Waters and Lawrence, 1987). It contains the distinctive 'Paper Shales', a thin unit of pale grey, calcareous and very finely laminated mudstones. The top of the Bull Cliff Bed is taken as the base of the first nodular limestone, referred to as the 'dual bed' (Water and Lawrence, 1987) because of the two mudstone partings within it. Above this level oysters are less common.

The St Mary's Well Bay Member is slightly dominated by mudstone, although the limestone beds form a significant part. The type section is further along the coast at St Mary's Well Bay (GCR site). The limestones are typically pale bluish grey and argillaceous, with shelly debris, comprising bivalves, brachiopods, echinoderms and ammonites. Burrows are present in places. The bed thicknesses range from 5 to 30cm. The character of the beds varies with the limestones being parallel bedded in some places and nodular in others. There is an increase in the proportion of nodular beds upwards through the sequence. Isolated nodules also occur within the mudstone beds. The mudstones range from pale, bluish grey to dark grey. They are often laminated and weather like a shale.

Marker beds within the section are the Planorbis Mudstones (Trueman, 1920), the Lower Laminated Beds and the Upper Laminated Beds (Waters and Lawrence, 1987). These horizons have been directly correlated with sections at St Mary's Well Bay, Lavernock Point and the St Fagans Borehole, with the laminated bed units also recognised in Dorset (Hallam, 1964).

The St Mary's Well Bay Member is mainly within the *planorbis* ammonite zone, although the top part is in the *liasicus* zone. The change to the overlying Lavernock Shales Member takes place towards the top of the cliff section and is gradational. This unit is comprises mainly bluish-grey, calcareous mudstone and is almost devoid of limestone (Strahan and Cantrill, 1902). This formation is almost entirely within the *liasicus* zone. The type section of this member is again the GCR site between St Mary's Well Bay and Lavernock Point.

**References:**

HALLAM, A. 1964. A sedimentary and faunal analysis of the Blue Lias of Dorset and Glamorgan. Philosophical Transactions of the Royal Society, London. Series B. Vol 243. 1-14.

STRAHAN, A. and CANTRILL, T.C. 1902. The geology of the South Wales Coalfield. Part III. The country around Cardiff. Memoir of the Geological Survey of Great Britain (2<sup>nd</sup> edition) Sheet 263.

TRUEMAN, A.E. 1920. The Liassic rocks of the Cardiff district. Proceedings of the Geologists Association. Vol. 131. 93-107.

WATERS, R A and LAWRENCE, D J D. 1987. Geology of the South Wales Coalfield, Part III, the country around Cardiff. 3<sup>rd</sup> edition. Memoir of the British Geological Survey, Sheet 263 (England and Wales).

## SECTION B

### PRACTICAL CONSIDERATIONS:

Please score Accessibility and Safety Red Amber or Green

#### Accessibility:



Comment: Parking at Porthkerry country park. Public paths lead to foreshore.

#### Safety:



Comment: Some slippage of material from the cliff, especially after rain. Care should be approaching the cliff- hard hats advised. Danger from high tides, but unlikely to be cut off at this locality if care taken. Access on falling tide and work within a safe margin of time around low tide.

#### Conservation status:

There are no known conservation designations of this RIGS

### OWNERSHIP/PLANNING CONTROL:

**Owner/tenant:** Vale of Glamorgan Council

**Planning Authority:** Vale of Glamorgan Council

#### Planning status/constraints/opportunities:

There are no known planning constraints or opportunities

### CONDITION, USE & MANAGEMENT:

**Present use:** Foreshore used for recreation. Public access.

**Site condition:** Good condition. Some landslip from cliff.

**Potential threats:** Coastal erosion and landslip from cliffs may change site over time

**Site Management:** No management issues at present time.

### SITE DEVELOPMENT:

#### Potential use (general):

#### Potential use (educational):

Good public access for groups, but hard hats and supervision needed. Access at falling and low tide only as foreshore sections covered by sea at times. Cliff sections mainly good to look at from afar, but foreshore sections good to examine close up at low tide.

#### Other comments:

## Photographic Record



















