



## South Wales RIGS Group Site Record

### RIGS Description

**SECTION A**

General	South Wales
<b>Site Name:</b> Taffs Well	<b>File Number:</b> Site_minescan_7
<b>RIGS Number:</b> 666	<b>Surveyed by:</b> Russell society, Lynda Garfield
<b>Grid Reference:</b> ST 1230 8230	<b>Date of Visit:</b> 23 <sup>rd</sup> March 2010 & 4 <sup>th</sup> September 2010
<b>RIGS Category:</b> Scientific, educational	<b>Date Registered:</b>
<b>Earth Science Category:</b> Mineralogical, industrial, structural	
<b>Site Nature:</b> Large working quarry	<b>Owner:</b> Cemex
<b>Unitary Authority:</b> Cardiff Council Council	<b>Planning Authority:</b> Cardiff Council Council
<b>OS 1:50,000 Sheet:</b> 171	<b>Documentation prepared by:</b> Russell society, Lynda Garfield
<b>OS 1:25,000 Explorer Sheet:</b> 151	<b>Documentation last revised:</b>
<b>BGS 1:50,000 Sheet:</b> E249 & E263	<b>Photographic Record:</b> Attached
<p><b>RIGS Statement of Interest:</b></p> <p>Taffs Well Quarry has been proposed as a RIGS because it offers a large accessible well exposed outcrop of Carboniferous Limestone which hosts mineralisation of types widespread along the outcrop of Carboniferous Limestone in South Wales. Some of this mineralisation is of regional importance, indeed it was once of economic importance in South Wales, not least in the old Garth Iron Mine workings immediately to the north-west of Taffs Well quarry.</p> <p>Described as “oxide-facies iron ore and associated cavity-fill mineralisation”, the quarry hosts local masses of the iron minerals haematite, goethite and limonite, with quartz. Veining is widespread, with calcite, baryte and iron minerals. Last but not least, sporadic cavities show superb “Taffs Well” type calcite crystals probably related to more recent karst development in the limestone. The quarry also provides a good section through the Friars Point Limestone, which has been extensively dolomitised and which shows interesting Variscan structures. Although well known over the years for its mineralisation and for good mineral specimens, the 2010 visits to this quarry highlighted the extent of visible veining and evidence for multi-phase mineralisation, and the potential it offers for further research into the relationships, age and genesis of this mineralisation, important across South Wales. Taffs Well is recommended as a RIGS site, as a backup to the adjacent Ton Mawr quarry (separately recommended as a GCR/SSSI site).</p>	

**Geological setting/context:**

Taffs Well Quarry works the Friars Point Limestone; this passes up into the Gully Oolite in the upper part of the north of the quarry. It lies towards the northern boundary of the Variscan front in South Wales, with thrusting and other structures evident in the quarry. Overall the limestone dips to the north but can be quite variable, as well shown in the north-east quarry face. It is at least 300m by 600m in extent, probably over 50m deep.

The different types of mineralisation include:

- extensive dolomitisation of the limestone, showing occasional characteristic voids and textures with “zebra” or “brush” textures.
- oxide-facies iron ore comprising sporadic masses and veins of haemetite/goethite/limonite, often with quartz (some excellent quartz crystals). These masses may be several metres across.
- later metasomatism of the limestone, with widespread veining with calcite, baryte, quartz and iron minerals, described as “more abundant cavity-fill mineralisation” (Bevins and Mason 2000)
- some veining considered to be related to the regional “Mississippi Valley” type (MVT) hydrothermal mineralisation. Very minor copper and lead minerals have been found in the past.

- as with nearby localities, the quarry is also renowned for beautiful scalenohedral calcite crystals with rhombohedral overgrowths (“Taffs Well calcite”) which are probably more recent in origin and related to karst development in the limestone. Although the more interesting mineralisation has been considered to be in the higher part of the quarry, there are interesting mineral occurrences on the middle benches, not least associated with relatively widespread veining. The veining comprises more or less vertical, often irregular (but not always) thin veinlets up to a few cm in width. Calcite with baryte, quartz, and iron minerals are found in these veins. The veining appears to be multi-phase ie the veins have penetrated the limestone on more than one occasion.

Although not dominant in the quarry – the management said that the mineralisation is overall only a minor part of the product and does not detract from it – on a regional scale Taffs Well and the adjacent Ton Mawr quarries do offer good mineral localities. Not only have many excellent mineral specimens been found here, but also it is considered that the fresh exposures and changing quarry faces offer plenty of potential for research into the relationships between the different phases of mineralisation, their ages, and their genesis, about which there are still unanswered questions.

**References:**

BEVINS, R E and MASON, J S. 2000. Welsh Metallophyte and Metallogenic Evaluation Project. Results of a mineralogical site survey of Glamorgan and Gwent compiled by the National Museums and Galleries of Wales (for CCW).

Russell Society Wales & West (March 2004) Taffs Well and Ton Mawr Quarries; Report on mineral finds

## SECTION B

<b>PRACTICAL CONSIDERATIONS:</b> Please score Accessibility and Safety Red Amber or Green			
<b>Accessibility:</b>			X
Comment: Permission must be obtained from the quarry management; it has not always been granted in the past.			
<b>Safety:</b>		X	X
Comment: This is a working quarry and quarry requirements must be adhered to. Quarry faces can be dangerous.			
<b>Conservation status:</b>			

<b>OWNERSHIP/PLANNING CONTROL:</b>
<b>Owner/tenant:</b> Cemex
<b>Planning Authority:</b> Cardiff County council
<b>Planning status/constraints/opportunities:</b>
The quarry now plans to expand to the west/south-west, offering exposure towards Ton Mawr quarry which does host slightly more interesting mineralisation.

<b>CONDITION, USE &amp; MANAGEMENT:</b>
<b>Present use:</b> Working quarry
<b>Site condition:</b> Much fresh exposure
<b>Potential threats:</b> The management has not always allowed permission to enter
<b>Site Management:</b> All in hands of the quarry

<b>SITE DEVELOPMENT:</b>
<b>Potential use (general):</b>
<b>Potential use (educational):</b> Good site for those interested in the mineralisation of the Carboniferous Limestone, especially for scientific research. Good site for students to study mineralisation, structures, limestone as well as a continuous section of the Friars Point Limestone.
Potential for good parking, access and relative safety.

<b>Other comments:</b>
See also the 2000 Minescan recommendation by Bevins and Mason (attached). Recent changes to the position of the plant and the new access tunnel mean that Taffs Well quarry is likely to be operative for many years to come

## Photographic Record



Some of the current workings on the west/west north west side, very fresh exposure. Taken from ST 11931 82190



Closer views of the west north west workings, showing mineral veining and limonite masses (March 2010)





Closer views of the west north west workings, showing mineral veining and limonite masses (March 2010)



Cavity with calcite crystals. Field of view about 1.5m. Photo Paul Thompson 2003

**Taffs Well Quarry - examples of minerals found (mostly 2000 to 2010)**



Interbedded limestone (dolomitised), calcite, limonite



Partial dolomitised on and insignificant color boundaries



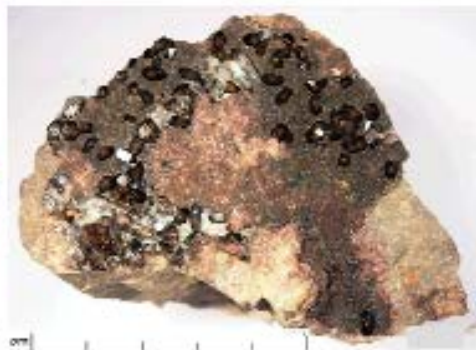
"Taffs Well" calcite with limonite coating



Massive limonite with goethite and limonite, minor calcite/carbonate



Blackish dolomite with red goethite and quartz, minor yellow limonite



Carboniferous limestone with dolomite, goethite, limonite, quartz, calcite (in that order of general)



Ballinacraig Carboniferous limestone. Probably dolomite, pink calcite, pink limonite, goethite, minor limonite. Domes.



Dolomite with small limonite aggregates



## Annotated Sketch

## Appendix

*Not SSSI or GOR.*

### Citation for Taff's Well RIGS from Bevins and Mason (2000)

#### GCR REVIEW OF METAL MINES AND MINERAL SITES in GLAMORGAN/GWENT SITE CITATION

<b>SITE NAME:</b> Taff's Well Quarry <b>MINESCAN REF No:</b> Q8  <b>1:50000 OS map no</b> Landranger 171 <b>1:25000 OS map no</b> Explorer 151 <b>NGR:</b> ST 123 823  <b>LOCATION:</b> Taff's Well, South Wales <b>TYPE of SITE:</b> Large working limestone quarry	<b>SITE SCORE:</b> 725 <b>RANKING:</b> RIGS  <b>SITE INSPECTION:</b> <b>DATE:</b> Nov 1999  <b>SURVEYED BY:</b> J.S. MASON for Dept of Geology, NMGW
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**RIGS STATEMENT OF INTEREST:**  
A backup site to the more compact proposed GCR site at Ton Mawr, Taff's Well Quarry is a busy working site. The upper benches of the quarry intersect sporadic oxide-facies iron ores and more abundant cavity-fill calcite-baryte mineralisation. Attractive specimens of calcite, baryte, quartz and goethite have been collected by parties when permitted to enter the quarry.

**GEOLOGICAL/MINERALOGICAL DETAILS:**  
**GEOLOGICAL SETTING AND PRIMARY MINERALOGY:**  
Lower Carboniferous limestones have been pervasively dolomitised and locally hematized, with local segregations of oxide-facies iron ore containing hematite, goethite and late quartz. Later and abundant metasomatism of the limestones resulted in the formation of cavities lined with calcite and baryte with further quartz in places. The site is well-known for the large, stepped calcite crystals that line the more substantial cavities, but has also produced some excellent baryte crystals and well-crystallised quartz associated with the iron ores.  
**SECONDARY MINERALOGY:**  
Limonite after goethite is frequent. Traces of cerussite were found some years ago, representing minor MVT mineralisation that must have been intersected at some point.

**PRACTICAL CONSIDERATIONS:**

**ACCESSIBILITY:**

This is one of the largest and busiest working quarries in South Wales and permission to view the mineralisation must be sought in advance. This has not always been granted in the past.

**SAFETY:**

Standard safety gear must be worn and the quarry manager's instructions obeyed without question if access is permitted.

**CONSERVATION STATUS:**

Quarrying at this site is likely to continue for many years to come. The site is currently quite productive, especially along the top benches in the northern part.

**RECOMMENDATION:**

It is recommended that, when quarrying ceases, the site is reassessed to determine what is exposed and what may be preserved (as at the neighbouring Ton Mawr Quarry). From one of these two sites, a permanent SSSI should thereby be created. For the time being, Ton Mawr Quarry is the better site in terms of practicability and accessibility, hence Taff's Well Quarry is regarded as a duplicate backup.