South Wales RIGS Group Site Record
RIGS Description

SECTION A

General	South Wales
Site Name: Mwyndy Mine tip	**File Number:** Site_minescan_1
RIGS Number: 663	**Surveyed by:** Russell Society
Grid Reference: ST 0553 8163	**Date of Visit:** 28th August 2010
RIGS Category: Scientific	**Date Registered:**
Earth Science Category: Mineralogical, industrial	**Owner:** Unknown **Planning Authority:** Rhondda Cynon Taff County Borough Council
Site Nature: Old spoil tip	**Documentation prepared by:** Russell Society
Unitary Authority: Rhondda Cynon Taff County Council	**Documentation last revised:** 28th February 2012
OS 1:50,000 Sheet: 170	**Photographic Record:** Attached
OS 1:25,000 Explorer Sheet: 151	
BGS 1:50,000 Sheet: E262	

RIGS Statement of Interest:
The old Mwyndy Mine tip is proposed as a RIGS because the minerals within the tip areconsidered to be the best remaining material representative of the iron ores found along theonce important Llanharry to Taffs Well regional orefield.
The deposits offer excellent potential for scientific research. The deposits are still considered to require a substantial amount of work to fully understand their formation, and it is important therefore that the tip is protected, because many of the other mining areas in the orefield have been filled in, levelled, and/or developed; as a result, elsewhere remains are few.
Although at first sight the Mwyndy tip appears steep and overgrown, excavations have shown “the presence of all the major minerals and their textural varieties”. Indeed it can easily be dug into without excavators, and it has been known for interesting mineral finds over the years. Goethite and haemetite are the chief ore minerals, with quartz, calcite, baryte, pyrite and rare barytocalcite. Access is direct from an adjacent minor road, with no problems.The iron deposits of the district are “oxide-facies iron ores” which occupy fractures and cavities in Lower Carboniferous limestones, occasionally also in the overlying Triassic Dolomitic Conglomerate. Over the years, various theories for their formation have been put forward and discussion continues. In the recent GCR designation and description, these oxide-facies iron deposits are described as being “unusual in global terms”.
The site, on account of its significance, has recently been designated as a GCR site, the highest level of geological importance in the UK. This proposal for designation as a RIGS is made in anticipation of the site eventually becoming a SSSI

Geological setting/context:

The old Mwyndy iron mine site extends in total about 1km to the east of the A4119 road just south of Mwyndy Cross, up to 450m in extent N-S. Access is variable, paths and roads cross part of the old site area, but much is inaccessible.

It is the tip at the western end that is of particular interest, not only because it offers the best that is left of the old Mwyndy iron mine, but also because it offers a mineralogical assemblage that is the most representative remaining along the whole of the Taff's Well – Llanharry ore field. This extends for over 13 km from east to west. Hosted by Carboniferous Limestone, the origin of the iron ores has been keenly debated over the years. The Carboniferous Limestone outcrop lies to the south of the South Wales coalfield, and is overlain in part by rocks of the marginal Triassic Mercia Mudstone Group. The iron ore deposits "usually occur within 150m of the eroded surface of the tilted Carboniferous strata", the limestones having been dolomitised and hemetised (Bevins and Mason 2010).

The Mwyndy tip is steep, 8 to 10m high, totally overgrown, some mature trees, with some tipped rubbish at its base. It covers an area roughly 70m by 70m. Fragments of both Carboniferous Limestone and Triassic dolomitic conglomerate are present. However, it can be easily dug into, and minerals are soon found.

Good well-developed samples of the minerals present, goethite and hemetite with quartz, calcite, baryte, pyrite and rare barytocalcite, have been found over the years. They are described as showing a "straightforward paragenetic sequence" (Bevins and Mason 2010).

The iron ores are classified as "oxide-facies iron ores". Current thinking (Bevins and Mason 2010) is that the mineralisation "is controlled by the juxtaposition of (Carboniferous) limestones with …. Variscan structures and Triassic red beds. The iron was probably sourced by …. brines leaching Mercia Mudstone Group rocks and then entering the Variscan fractures via the more permeable" rocks. "Later, cavity fill minerals …. were deposited from hot hypersaline brines of Mississippi Valley type affinity." But "the deposits still require substantial work to fully understand their genesis".

In 2000 Bevins and Mason took a bulldozer to overturn a corner of the tip and they found "the presence of all the major minerals and their textural varieties" and anticipated that more serious excavation would have the potential to produce quality specimens. They selected the tip "to represent this important class of South Wales mineralisation" and recommended it for GCR status.

Mining may have started in Tudor times. Sibly (1927) indicated that the Mwyndy Mine was worked mainly from about 1855 until 1884, producing over one million tons of ore. Sibly (1919, 1929) gives the best account of the mine.

In comparison with Bute, close by to the west, also recommended as a RIGS, Bute is a site for public interpretation and interest. Mwyndy is, in contrast, a site for serious scientific research.

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).

BEVINS, R E and MASON, J S. 2010. Mwyndy Mine in Mineralization of England and Wales (Bevins RE, Young B, Mason JS, Manning DAC and Symes RF), Geological Conservation Review Series, No 36, Joint Nature Conservation Committee, Peterborough, p351-356.

SIBLY, T F. 1919. Special Reports on the Mineral Resources of Great Britain. Vol X The Haematites of the Forest of Dean and South Wales. Memoir of the Geological Survey

SIBLY. 1929. –ditto— second edition revised by Lloyd W.

SECTION B

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

Accessibility:			X
Comment: It is totally accessible, open space, from the immediately adjacent road and The Barn pub car park			
Safety:			X
Comment: The site is steep and overgrown, care does need to be taken if moving away from the lower part of the tip			
Conservation status:			
The site is already designated a GCR site			

OWNERSHIP/PLANNING CONTROL:

Owner/tenant: Unknown

Planning Authority: Rhondda Cynon Taff County Borough Council

Planning status/constraints/opportunities:

There are no known planning constraints or opportunities

CONDITION, USE & MANAGEMENT:

Present use: None

Site condition: Steep and overgrown (but parts could be cleared fairly easily)

Potential threats: The owners might wish to develop the site

Site Management: Periodic clearance of parts

SITE DEVELOPMENT:

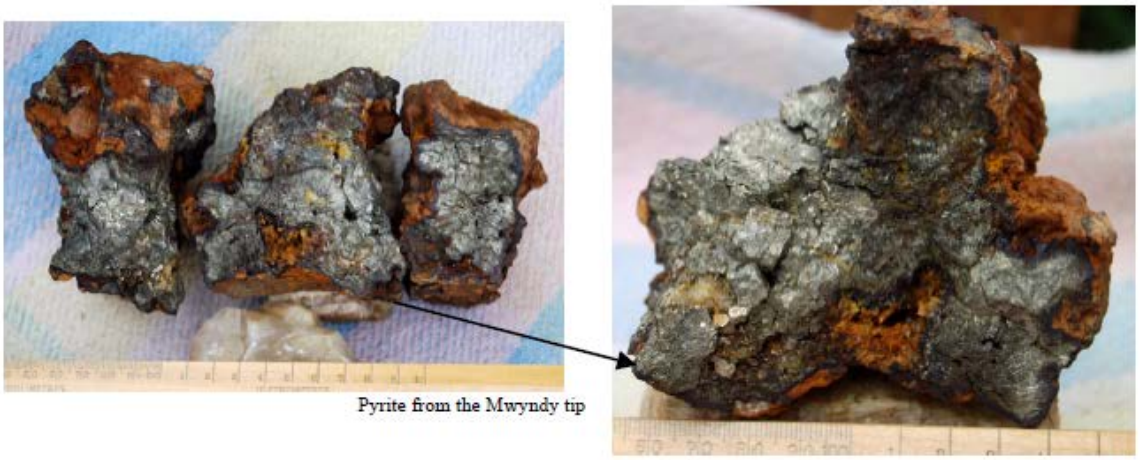
Potential use (general):

Potential use (educational): Good site for those interested in the study of oxide-facies iron ore mineralisation especially its mineralogy, age and genesis

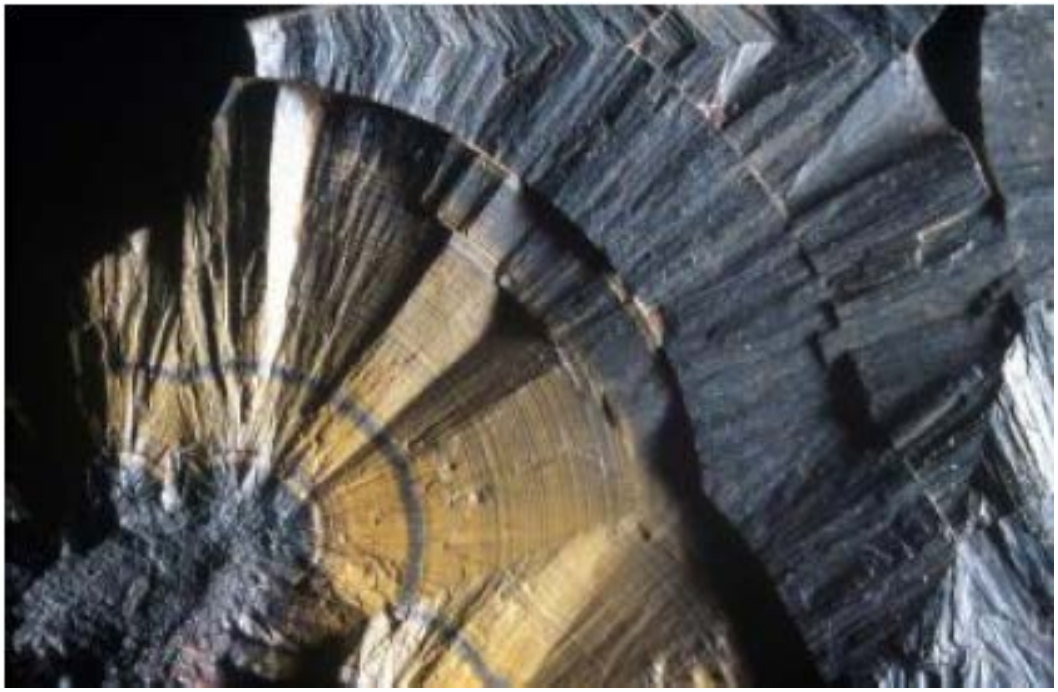
Other comments:

Photographic Record

Two views of the Mwyndy tip, looking upwards



Pyrite from the Mwyndy tip



•Radiating goethite from Mwyndy Mine, Llantrisant, Mid Glamorgan. Vertical field of view 12 mm. National Museum of Wales Collection (NMW 85.131) donated to Cardiff Museum in 1885 by S. Vivian. Photo M.P. Cooper, © National Museum of Wales.
•Goethite was an important ore at Mwyndy during the later half of the 19th Century.
•An old specimen from the Vivian collection (NMW 85.131) displays attractive banded fibrous brown to golden goethite (Mineralogy of Wales website)

Appendix

Citation for Mwyndy Mine from Bevins and Mason (2000)

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

SITE NAME: Mwyndy Mine
MINESCAN REF No: M807

1:50000 OS map no Landranger 170
1:25000 OS map no Explorer 151
NGR: ST 055 819

LOCATION: Llantrisant, South Wales
TYPE of SITE: Old mine tips

SITE SCORE: 400
RANKING: SSSI

SITE INSPECTION:
DATE: Sept 1999

SURVEYED BY:
J.S. MASON for Dept of Geology, NMGW

GCR STATEMENT OF INTEREST:
Although very overgrown, the area of tips at Mwyndy, between the flooded opencast and the Barn public house contains adequate samples of both ore and gangue and has thus been selected to represent this important class of South Wales mineralisation - the oxide-facies iron ore deposits. Material on show in 1999 (after a bulldozer had disturbed a corner of the tip) revealed the presence of all the major minerals and their textural varieties, while more serious excavation, if permitted, would have the potential to produce quality specimens.

GEOLOGICAL/MINERALOGICAL DETAILS:
GEOLOGICAL SETTING AND PRIMARY MINERALOGY:
The oxide-facies iron ore deposits occupy fractures and cavities in Lower Carboniferous limestones, and occasionally in the overlying Triassic Dolomitic Conglomerate. These strata were formerly overlain by the Keuper Marl, which has been eroded away in most cases. The fractures which host the iron-ores are generally of an E-W trend, and are enlarged Variscan joints and faults. Extensive wall-rock alteration occurs in the vicinity of the iron deposits, and comprises pervasive dolomitisation and hematisation, the latter grading into pods of iron oxides. Goethite (some pseudomorphous after pyrite) and hematite form the chief ores, and occur as dense, microbotryoidal and stalactitic masses. Frequent cavities are lined with specular iron oxides, quartz, calcite, baryte and rare barytocalcite. Research undertaken on these deposits over the years has indicated that the iron ores were formed from hypersaline, alkaline brines generated in a Triassic sabkha-type palaeoenvironment, which leached iron from the red marls and found pathways through the Carboniferous limestones, where the ore formation and alteration occurred. However, the deposits still require substantial work to fully understand their genesis.
SECONDARY MINERALOGY:
Limonite is the chief secondary phase and is common.

PRACTICAL CONSIDERATIONS:

ACCESSIBILITY:

The land ownership of this overgrown area is unclear and needs to be established, as although frequently visited by amateur collectors, permission should first be obtained, particularly if excavations to obtain research material are contemplated. A car can be driven virtually onto the site.

SAFETY:

No particular safety issues. The mine working itself, a large opencast, is the expanse of tree-lined water on the other side of the lane from the tips.

CONSERVATION STATUS:

Like the other iron mines, centuries of overgrowth have obscured the site to a great extent. However, there clearly remains here a major resource of research material from this unusual type of ore deposit.

RECOMMENDATION:

Work should continue to establish site ownership and notification. If this proves problematic, researchers are reminded that iron mineralisation, albeit on a much smaller scale, is exposed in Ton Mawr and Taff's Well Quarries at most times.