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Regional Geochemical Survey Programme (RGSP)

The RGSP was conceived to provide regional geochemical data for a wide range of elements, primarily as an aid for mineral exploration companies to select more prospective ground to complement the MEIGA and MRP programmes. It evolved from the uranium exploration programme of the 1950s and 60s that had developed the techniques for both sample collection and analysis. At the time these were in the forefront of geochemical exploration.

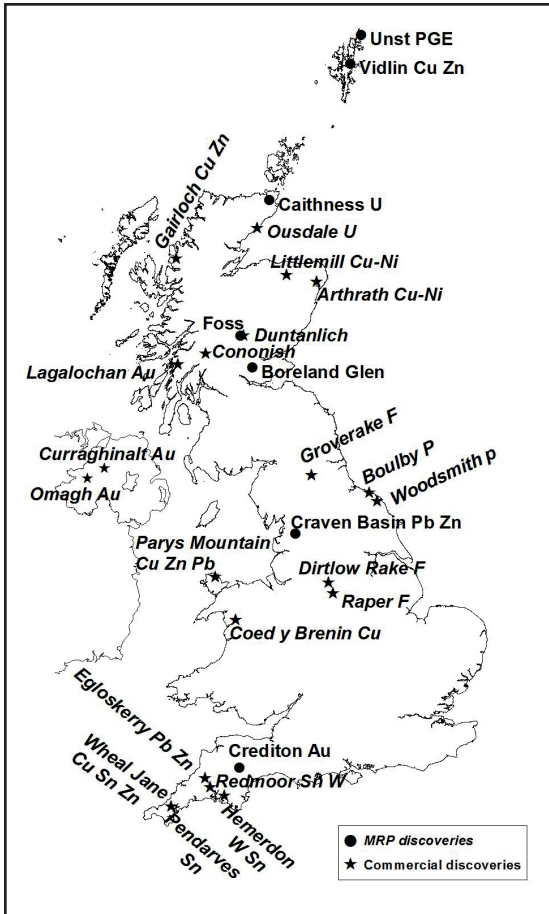


Figure 5. MRP and commercial discoveries.

The sample collection used a large (~5 kg) sample dug from the active stream bed and sieved through 2mm and 150µm mesh. The <150 µm sample was allowed to settle in a wooden dulang (Malaysian-derived pan), decanted into a Kraft bag and then dried. The <2mm and >150µm sample was then panned down to a standard size, visually checked for gold and other heavy minerals and contaminants such as lead shot, bagged and dried. This compares with the rapid sampling programme carried out by the Applied Geochemistry Group of Imperial College, London, to compile a geochemical atlas of England and Wales during 1969 (Webb et al., 1978). This used teams of students to collect grab samples from active streams at a density of 1 per 3km² for a total of 49,464 sites but did not sample urban areas or chalk or limestone uplands where there was no surface drainage. The samples were analysed by optical emission spectroscopy (OES) for Al, Ba, Co, Cr, Cu, Fe, Ga, Li, Mg, Mn, Ni, Pb, Sc, Si, Sr, Ti and V. Ag, Bi, Be, La, Zr and W were also analysed but rejected as

being of poor quality. Zn and Cd were analysed by atomic absorption spectrophotometry (AAS) and Mo and As were determined colorimetrically. The published atlas gave a snapshot of the entire country and highlighted several areas, including Shiphams in Somerset where zinc mining in the Mendip Hills led to high levels of cadmium in soils. It was also used for mineral exploration in Northern Ireland where it remained the only source of regional geochemical data until the BGS TELLUS programme was completed in 2007. The Imperial

Table 9. MRP boreholes.

MRP Report	Name	No of holes	Total length m	Area
1	Parbola & Bosworgy	2	879.66	SW England
3	Lairg	52	401	N Scotland
4	Vidlin	6	513.31	Shetland Islands
9	Kilmelford	2	358.83	W Scotland
13	McPhun's Cairn	3	62.83	W Scotland
15	Meall Mhor	6	217.59	W Scotland
17	Westwater	13	502.21	S Scotland
26	Aberfeldy	12	1,143.32	NE Scotland
30	Black Stockarton Moor	12	1,099.41	S Scotland
35	Unst	7	134.58	Shetland Islands
41	Lutton	10	371.72	SW England
43	Ballachulish	1	176.2	W Scotland
45	Tremayne	2	104.19	SW England
46	Glenhead	7	393.91	SW Scotland
48	Wheal Prosper	4	384.66	SW England
53	Alva	3	491.12	Central Scotland
59	Glendinning	4	486.76	SW Scotland
62	Newborough	4	698.9	NE England
66	Craven Basin	10	1,185.0	NW England
68	Hilderston	5	380.83	Central Scotland
69	Penkiln Burn	9	400.6	Central Scotland
77	Brown Moor	4	273	NE England
78	Llandeloy	9	398.63	SW Wales
79	Ladywell	3	617.06	SW England
86	Treffgarne1	3	518.56	SW Wales
88	Allt an Daimh1	6	488.07	NE Scotland
89	Budleigh Salterton1	3	877.99	SW England
92	Builth Wells	4	185.3	Central Wales
93	Auchtertyre1	4	654.25	Scotland
99	Carmel Head1	15	917.26	Anglesey
100	Chapel of Garioch	7	379.14	NE Scotland
103	Wadebridge1	8	859.63	SW England
104	Allt an Loch1	8	55	Scotland
107	Belowda1	2	275.34	SW England
116	Ochil Hills	7	527.71	Central Scotland
121	Brownstone	4	388.3	SW England
NP	Chillaton	2	240.67	SW England
NP	Claymires	4	378.25	NE Scotland
Total		267	1,8420.79	

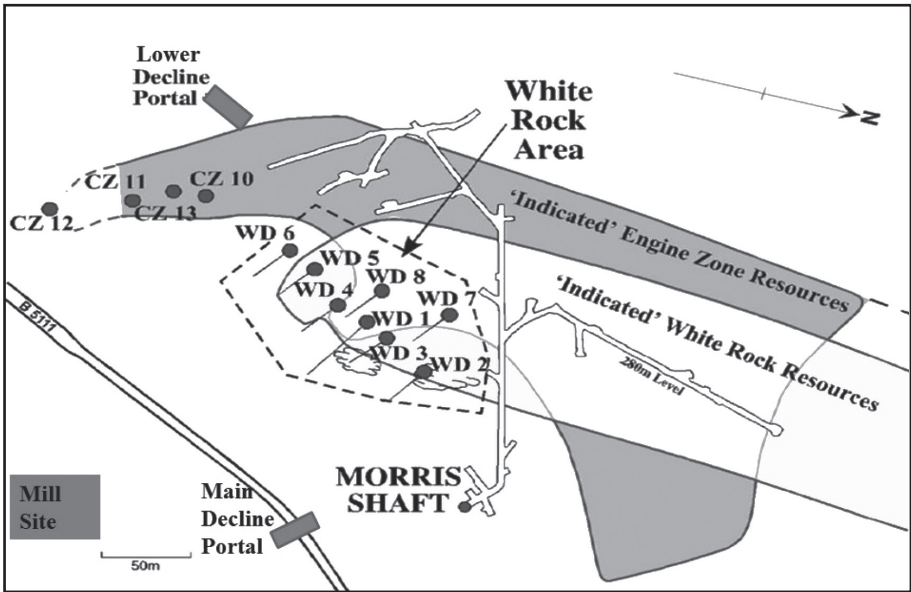


Figure 63. Parys Mountain - plan of 280 m level from 2008 report [© Anglesey Mining].

showed that the Parys volcanics, previously described as various types of ‘cherty tuffites’ could be split into at least four rhyolite lava units (Rhyolites A to D) and that Rhyolite B was the one associated with most of the mineralisation (Barrett et al., 2001). This work was of great utility in understanding and correlating the geology with the mineralisation. Radiometric dating also showed that the Parys volcanics are of Lower Silurian age (436 Ma) and not Ordovician as previously assumed. The structure of the area was examined by Steve Westhead and then by Peter Tyler who was unhappy with the overturned syncline model originally proposed by Greenly in his 1919 Anglesey memoir and developed a homoclinal model with the entire volcanic and shale package surrounding the mineralisation being of Lower Silurian age within the remnants of a volcanic caldera which formed the northern and western boundaries of the deposit area (Tyler, 2003).

In 2007 additional drilling was completed in the White Rock Zone and preparatory work started for a decline to access the mineralisation (Figure 63). The company then anticipated five years production from the White Rock Zone followed by rehabilitation of the Morris Shaft and development of the Engine Zone deposit before extending east to the Garth Daniel and Deep Engine Zone areas. In April 2008 Western Metals of Australia became interested in Parys Mountain and agreed terms with Anglesey Mining for its sale to Western Metals for 29.136 million Australian dollars (~£13.75 million). Western Metals paid Anglesey a non-refundable deposit of A\$270,000 dollars to secure an exclusive right, for a period of up to 120 days, to carry out the due diligence review of the property. However, following the severe downturn in metal prices during the summer of that year Western Metals did not proceed and the property reverted to Anglesey Mining. However, they did produce a

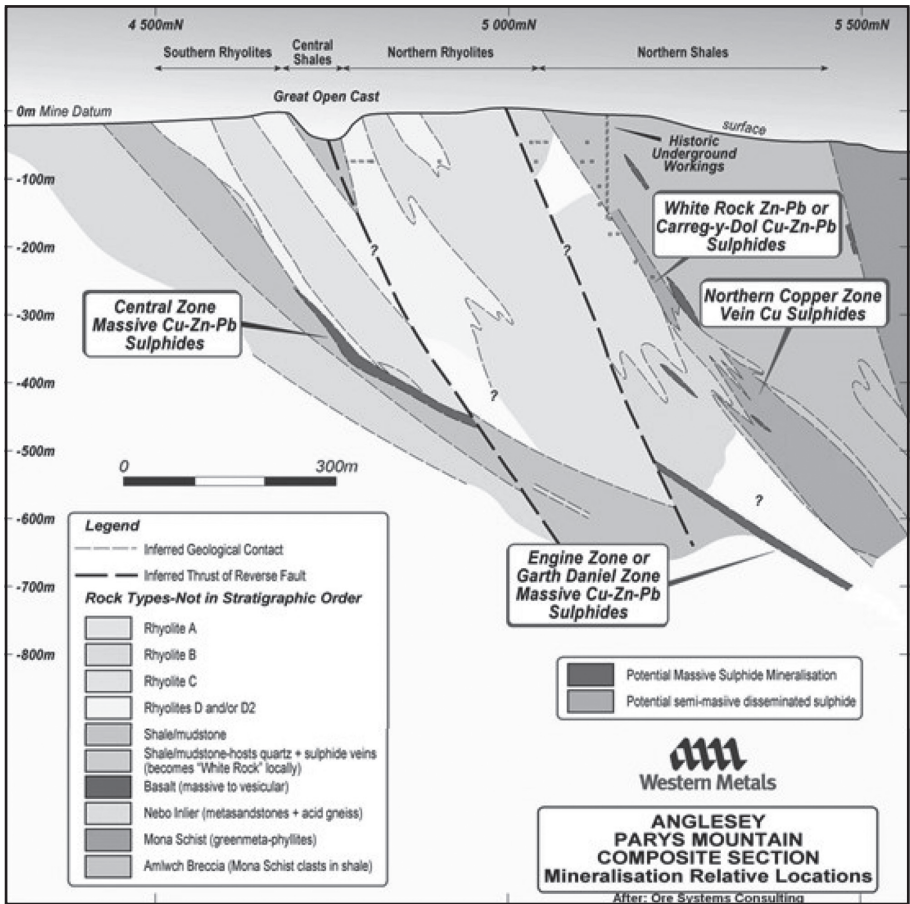


Figure 64. Parys Mountain composite N-S section [Western Metals website 12 May 2008].

useful cross-section of the deposit (Figure 64) showing the various rhyolite units identified by Tim Barrett and the main sulphide units.

Anglesey Mining continued low-level studies of the deposit through the years of low metal prices and commissioned a review of the project in 2010. Drilling was restarted in 2012 to explore the possible extension of the Engine Zone to surface, provide information on the area below the Great Open Cast and explore the eastern boundary of the property to investigate the Northern Copper Zone near the New Pearl Engine House. The Engine Zone was shown to continue at good grades to within 180 m of the surface. The holes beneath the opencast intersected thin zones of low grade mineralisation and the holes into Northern Copper Zone proved the continuation of this mineralisation. In November 2012 Micon International produced a revised resource estimate as shown in Table 22.