

2.0 BACKGROUND AND DRIVERS

2.1 History

Mining in Wales has taken place from the Bronze Age right up to the present day. Metals played an important role in attracting the Romans to Britain and it has been recorded that they worked lead in north-east Wales, gold at Dolaucothi, and possibly copper at Llanymynech and on Anglesey. It is probable that other sites were worked during their occupation but the evidence has either not been recognised or is lost beneath later workings.

The strength of the mining industry in Wales during the medieval period is unclear. Lead was worked extensively in the north-east during the 13th and early 14th century but declined dramatically in the aftermath of the Black Death and during the 15th century. A small number of lead mines are known to have been active in mid and south Wales during this period but there is scant documentary and archaeological evidence on which to establish their impact or the techniques employed.

In 1568 the Society of Mines Royal was established and was to have a great impact on Welsh mining for over a century. Silver has been worked since the 1590's and large amounts were sent to London at the end of the 16th century largely from the great vein at Cwmsymlog Mine. The Mines Royal continued to hold a monopoly on mines containing gold and silver (this included most of the working Welsh mines) until an Act of Parliament was passed in 1693 which removed the Crown ownership of base metal mines containing gold or silver. This Act allowed local landowners to develop or lease mines on their own initiative.

While early methods of ore extraction involved the digging of open trenches and shallow shafts, the demand on resources initiated by the search for silver required deeper working below the water table. The development of pumps and effective use of free draining deep adits from the mid 17th century onwards aided development, as did the introduction of explosives and, much later, mechanised drilling. Mining activities have always been labour intensive and within the majority of Welsh ore fields the use of steam power came relatively late due to the costs and difficulties of transporting coal from South Wales to the Mid Wales mines. This resulted in the long reliance on waterpower to drive pumps and processing machinery, and the location of mines associated with the supply of water. Various processes including sieving and water separation techniques were applied to separate the host rock and concentrate the ore. Smelting of the ore took place at a limited number of mine sites.

The second half of the 19th century saw the peak in lead and zinc mining activity in Wales due to improved mining techniques and the unquenchable demand of the industrial revolution. As a measure of the importance of the Welsh ore fields between 1845 and 1938 lead production accounted for 25% of the total United Kingdom output and for zinc Wales contributed 43% to total UK production (Lewis, 1967). The largest producers of these ores were the counties of Flintshire, Denbighshire and Ceredigion. Many other minerals were mined, including silver, copper, manganese and gold. However, towards the end of the century large deposits of lead and copper were discovered in Spain, South America and Australia and it became

cheaper to import these than buy the home produced product.

From the beginning of the 20th century metal mining underwent decline exacerbated by the discovery of new metal reserves abroad and the sudden downturn in the market price for zinc in 1921. Consequently most mines in Wales had closed by the early 1920's, with limited mining activity continuing at only select locations. Lead mining was re-started in 1952 at the Parc mine near Llanrwst but ceased production in 1954. Some specialist mining, particularly for gold, has continued intermittently and exploration for gold endures to this day with five leases and two licenses currently in existence. Such activity is especially aided by the fact that verified Welsh gold commands a significant premium from the jewellery trade, which allows what would otherwise be sub grade material to be worked economically.

This long period of industrial activity has resulted in an indelible mark left on the landscape of Mid and North Wales. The current landscape associated with these former metal mining areas now consists of numerous spoil heaps of excavated host rock, spoil heaps of waste process material (high in metals), adits and shafts and various derelict structures including processing areas, power houses and drainage channels. The number of actual mines is extensive with the Agency's database holding records for over 1,300 mine sites.

2.2 Impact

A table highlighting the names and locations of the 50 mine sites, along with the receiving river water quality compliance downstream of each mine is presented in Appendix A.

Compliance is measured against an objective to meet a certain target water quality depending on the uses for which that river stretch should be suitable. In reality, rivers are used for many purposes, so as a surrogate, if the quality is suitable for a certain type of 'river ecosystem' then it is likely that the other uses will also be met.

There are five river ecosystem (RE) classes, from RE1 (excellent water quality) to RE5 (poor water quality). The objective for each river stretch must be met at all times and compliance is reported on an annual basis. Where river quality does not meet the objective set, then a clear improvement plan must be made. To meet this improvement it may be necessary to make improvements to discharges to the river. Hence, river water quality compliance is an important part of the prioritisation process, which the Agency uses to focus its remediation efforts.

Appendix A lists twelve mine sites out of the 50, which discharge to river stretches that last year complied with their river quality objective. In such circumstance further investigations are necessary so as to ascertain whether the site has been incorrectly prioritised or if there is a reason why the true impact of the mine site is not being accurately portrayed by compliance results. For example, it is known that in a few instances the routine monitoring point used to represent the water quality of a river stretch are many kilometres downstream of where a mine discharges to the river. In these circumstances it is not uncommon for inputs from other tributaries between the mine and the monitoring point to dilute the metal

contamination to such a degree that it is suddenly able to comply with the river quality objective. However such compliance is not a true reflection of the water quality immediately downstream of the mine. Therefore sites in the top 50 list which were previously believed to be having an adverse impact but that are currently compliant, will require further investigation to ensure these levels are truly representative of the water quality immediately downstream of the mine discharges. Examples of the impacts of non-compliance are presented in Section 2.2.1 below.

2.2.1 Aquatic Environment

This strategy deals with the top 50 water polluting sites considered by the Agency as conducted by the 1996 R&D Project (Kitts & Smith, 1996). Even allowing for instances involving considerable river dilution, discharges from these sites can significantly impact water quality, which in turn results in failures in water quality objectives and impacts fish and wildlife populations.

Run off and leachate from old spoil tips and discharges from underground workings can contain very high concentrations of heavy metals including zinc, copper, aluminium, cadmium, nickel and lead. It is not unusual for the metal concentrations in these discharges to be hundreds of times greater than those required in rivers to comply with European Quality Standards (EQSs) and River Quality Objectives. Of the 5042 kilometres of monitored river stretches in Wales, in 1999, 505.8 kilometres of river failed to comply with its river quality objectives and of those 108 kilometres of those failures were directly attributable to mine pollution.

As a result of the dumping of wastes from the milling process in or near rivers there is often the occurrence of finely divided sulphides in riverbed sediments. These sulphide grains suffer constant abrasive attrition, with continuously fresh surfaces available for dissolution of metals by the regionally slightly acidic river waters.

Aquatic organisms acquire metal ions or salts by transporting them, either actively or passively, across cell membranes into intra or inter cellular media, from where they are either incorporated in molecules within the organism or excreted actively into the external medium again. In the case of freshwater fish, the main inward route for heavy metals is via the respiratory surface of the gill structure, whilst the route out may be by secretion into the gut, transport in a reverse direction across gill membranes or excretion via the kidney. If there is no easy route out, then the metal may be stored in the body of the fish. Whereas fish have a metabolic requirement for zinc, copper and iron, metals such as lead, cadmium, mercury, chromium and nickel have no known metabolic function and consequently metabolic pathways are ill-equipped to deal with them, and if necessary, dispose of them. This is reflected in the fact that, unlike zinc, both lead and cadmium can be cumulative poisons at very low environmental concentrations (Alabaster & Lloyd, 1980; Milne et al, 1981).

Zinc, copper and cadmium all cause damage to gill tissue, and one effect of chronic exposure to a mixture of these metals may be an increased sensitivity to low dissolved oxygen levels. Lead, zinc, copper and cadmium were also found to accumulate to a significant extent in trout, during studies on the river Clarach in 1982. The significance of the

concentrations found in fish tissues is not fully known, and with a mixture of poisons, it is difficult to attribute specific actions to one particular pollutant (Howell, 1982). However, blackening of the posterior third of the body, usually from between the dorsal and adipose fin to the caudal peduncle, has been noted in salmonids exposed to sublethal concentrations of lead over long periods. Dorsal and lateral spinal curvatures (lordoscoliosis) and erosion of the caudal and anal fins were also associated with the later stages of chronic exposure of fish to lead (Davies et al, 1976, in Milne et al, 1981).

Long stretches of river can be impacted by a metal mine site, examples of impacted rivers include:

- The discharge from the Dylife mine near Llanidloes affects the water quality for over 20 km of the River Twymyn.
- Parys Mountain metal mine workings on Anglesey severely affects the water quality along 10 km of the Afon Goch Dulas and Afon Goch Amlwch. Studies have shown that the fluvial input of copper and zinc to the Irish Sea is over twice as much as the combined totals emanating from the Mersey, Dee, Conwy, Ribble, Wyre and Duddon rivers (Hemsworth, 1995).
- For catchments such as the Rheidol, which have a legacy of metal mining, the impacts of run off and leachate from old spoil heaps, and discharges from underground workings on salmon populations is well documented. Here the discharge from the Cwm Rheidol mine alone results in the water quality to fall below its objective for 16 km of the Afon Rheidol.
- The Salmon Action Plan (SAP) for the Rheidol, which reviews the status of the stock and fisheries of the river, and seeks to identify the main issues limiting performance, outlines that much of Rheidol is affected by acidification and abandoned metal mines, causing low pH values and elevated metal levels. The acidic and poorly drained organic soils covering most of the upper catchment naturally produce poorly buffered acidic drainage and surface water run-off. Coniferous forestation can further exacerbate this problem in sensitive areas.

2.2.2 Human Health

Old workings, including shafts and surface buildings, present a safety hazard due to their structural integrity, possible subsidence and the uncontrolled public access to many of these sites. In addition, spoil tips can provide a source of metal rich dust that can be blown in the wind and ingested and inhaled by nearby communities.

An example of this latter impact is the Cwmsymlog mine site where elevated lead concentrations were found in the blood of inhabitants (including children) in the village in the mid 1970's. The village is situated adjacent to a complex of metal mine spoil tips. These tips consisting of heavily contaminated 'fines' were a particular problem as they contained up to 1.4 percent lead.

The capping by the District Council in 1981 funded by a WDA land reclamation grant, was successful in controlling the dust but the disturbance of the spoil during re-profiling exposed previously covered material to oxidation and resulted in the release of acid drainage waters containing

high levels of dissolved zinc. The work reduced particulate lead and zinc from washing into the nearby stream. However, the enhanced levels of dissolved zinc continued for over 10 years, gradually declining. Experience at this site led to the encapsulation in lined pits of heavily contaminated 'fines' at other sites remediated in the area (e.g. Cwm Erfin Mine in the adjacent valley). However, where possible the introduction of lead tolerant flora should be considered as a means to effective controlling air-borne pollution, which avoids the adverse impact of disturbance to spoil heaps.

There have been occasions where private water supplies have been drawn from metal mine workings. Where these have been identified during the examination of mine sites they have been notified to the Local Authority Environmental Health Department who have the responsibility for private water supplies. Unfortunately it is not possible to get any accurate information regarding private water supplies due to the fact that these are not licensed. It is likely that private water supplies are used extensively throughout rural Wales. It has, however, been found that none of the top 50 metal mines exist within any designated groundwater source protection zones. Although this does not preclude the possibility that metal mines are affecting drinking water supplies from private wells.

2.2.3 Costs of Remediation

The costs associated with remediation of metal mine sites will vary greatly depending on the type of remediation and the scale of the site involved. Based on past experiences, the costs at Cwmbwrwyno mine for reprofiling, and capping contaminated spoil was in the region of £300,000. However, at the other extreme the installation of an active lime dosing and sludge disposal treatment plant at Wheal Jane tin mine in Cornwall cost £3.5 million to build and costs around £1 million per year to run and maintain. Taking into account the need for maintenance costs will be an important issue that needs to be addressed at all remediated mine sites.

2.3 The Environment Agency's Role and Regulations

2.3.1 Water Quality - The Water Resources Act 1991 and The Environment Act 1995

Under the 1991 Act, water discharges from mines are controlled by consents from the Agency. If there is no consent, or consents are exceeded, the owner or operator of the mine is liable to prosecution under Section 85 if a person:

"causes or knowingly permits any poisonous, noxious or polluting matter or any solid waste matter to enter any controlled waters"

However, the 1991 Act provided only limited control over water discharges from abandoned mines because under Section 89:

"person shall not be guilty under Section 85 by reason only of his permitting water from an abandoned mine to enter into controlled waters"

The Environment Act 1995 amended the Water Resources Act 1991 by inserting two new sections, relating to water pollution from abandoned mines. These were:

- Section 58 of the 1995 Act requires mine operators to give the Agency six months' notice of their intention to abandon a mine or part of a mine after 31 December 1998.
- Section 60 of the 1995 Act removes statutory protections from the owners and former operators of mines abandoned after 31 December 1999, where a polluting discharge is permitted to flow from an abandoned mine.

What these changes in regulation have done is to make it a legal obligation on mine operators to provide specific information on the proposed abandonment with enough advance notice to enable the Agency to avoid unexpected mine water breakout. This information not only allows the Agency to prevent pollution, but also makes it much easier to prove causation if the operator does undertake measures to prevent pollution.

2.3.2 Contaminated Land-Part IIA of the Environment Protection Act 1990.

The Part IIA Contaminated Land regime came into force in Wales during 2001 and provides a statutory definition of what constitutes Contaminated Land and places new roles and responsibilities on both the Agency and Local Authorities who are joint regulators under the regime. Local Authorities are the principal regulators with the responsibility to inspect their areas to identify land that may meet the definition of Contaminated Land following a methodology set out in a published inspection strategy, only a Local Authority can determine land as Contaminated Land under the regime.

Once land is determined as Contaminated the regime requires the enforcing authority to follow a series of steps to determine who is responsible for clean up, what actions should be taken and how liabilities should be apportioned.

The Agency provides advice with respect to the pollution of controlled waters and becomes the enforcing authority for a separate category of Contaminated Land sites known as Special Sites. The Special Site categories are based on land use or certain types of water pollution.

With regard to metal mine sites, the Part IIA regime may be applicable to areas of spoil tips that could be presenting an unacceptable impact to human health and the environment, direct discharges from adits are exempt from the regime. In addition, metal mine sites may also be designated as Special Sites if they fit one of the Special Site definitions, of particular relevance is regulation 3b, which defines a Special Site as:

Controlled waters are being affected by the land and, as a result those waters do not meet or are not likely to meet the criterion for classification applying to the relevant description of waters specified in regulations made under section 82 of the Water Resources Act 1991.

Therefore to designate a special site, it is necessary to demonstrate that the water quality objective specified in the Regulations are breached or are at risk of being breached as a result of pollution arising from contaminated

land. The demonstration can take the form of water quality data obtained by the Agency or another party, by modelling studies, or a combination of both.

The Part IIA regime also presents a number of exemptions for those that may be liable for the cost of clean up of Contaminated Land sites. If no liable person or group can be identified or the exemptions from liability apply the site is considered 'orphan' and the cost of remediation falls to the enforcing authority. That is the Local Authority in the case of 'ordinary' Contaminated Land sites and the Agency for Contaminated Land Special Sites.

2.4 Links with Other Strategies and Initiatives

It is important to recognise that this Metal Mine Strategy has not been developed in isolation. The development and implementation of this strategy is linked to numerous other strategies, initiatives and actions at local, regional and national level. Key links are outlined below.

2.4.1 Water Framework Directive

The Water Framework Directive (WFD) reforms European Union (EU) water legislation by introducing a new model for water management. It was officially adopted by the EU decision-making bodies in September 2000, but it did not enter into force until 22 December 2000.

From an environmental point of view, the WFD's ultimate aim is preventing further deterioration and achieving 'good status' in all waters. The WFD's managerial approach - integrated water management at the river basin level - aims at ensuring overall co-ordination of water policy in the EU.

Being a 'framework', the Directive focuses on establishing the right conditions to encourage efficient and effective water protection at the local level, by providing for a common approach and common objectives, principles, definitions and basic measures. However, the mechanisms and specific measures required to achieve 'good status' will take place at the local level and are the responsibility of competent (national, regional, local, or river basin) authorities.

The implementation of the WFD should lead to a more rational water protection and use, to reduced water treatment costs, to increased amenity value of surface waters and to a much more co-ordinated administration of waters. The ultimate benefit is that the sustainability of water use should be ensured.

The WFD is, therefore, much needed as the different pieces of EU water legislation - as developed over the past 25 years - have been fairly unrelated, often lacking consistency with one another, and not designed for sustainability but mainly for pollution control in certain waters or by certain pollutants.

2.4.2 Diffuse Pollution Strategy

The Agency is currently developing a Diffuse Pollution Strategy. Within it, metal mines are recognised as a key diffuse pollution source. The production of this strategy is driven by the recognition of the increasing importance diffuse pollution has in relation to surface water quality.

In terms of just diffuse pollution within Wales, over 60 percent of the River Quality Objective (RQO) failures are believed to be due to diffuse pollution sources, with a

quarter of these failures due to metal mine pollution. Statistically this means that 75 percent of the RQO failures due to mine pollution can be attributed to diffuse sources, such as run-off and leachate from land contamination. Diffuse pollution sources are difficult to identify and regulate, compared to point source emissions such as sewage treatment works or industrial discharge points. As such the Diffuse Pollution Strategy needs to influence land use policy and practice and adopt a partnership approach to progress solutions, of which this Metal Mine Strategy will form a part.

2.4.3 Objective One

With regard to regional development in Wales the Objective One programme is seen as one of the most significant sources of funding in recent years and is a key enabling initiative if socio-economic benefits can be shown. Within the Single Programming Document the remediation of metal mine sites are considered as an aim and objective under Priority 6 Measure 4, Environmental Infrastructure, with the need to address the industrial legacy of Wales and facilitate economic development including tourism.

In addition, the Programme Compliment Document sets a target of funding 25 mine water treatment schemes during the period of Objective One. The Infrastructure Strategy document, which sets out how projects should be prioritised, and sets other criteria including the requirement that the site should be consistent with the Agency's top 50 list presented in this strategy and that no person or group can be considered statutorily liable for clean up costs.

2.4.4 Habitats Directive

Within a legislative framework the Habitats Directive, that is currently being implemented in Wales by NAW, the Agency and CCW, will require site issue briefing notes to be prepared by CCW for designated candidate Special Area of Conservation sites (SACs). These notes require an assessment of impacts at SACs and outline possible solutions. Undoubtedly these notes will need to consider the impacts metal mines may have and once published CCW is required to start working on implementing any actions.

2.4.5 Salmon Action Plans

The National Salmon Strategy, launched by the National Rivers Authority in February 1996 and inherited by the Environment Agency sets out four objectives for the management of salmon fisheries in England and Wales:

- Optimise the number of salmon returning to home water fisheries;
- Maintain and improve fitness and diversity of salmon stocks;
- Optimise the total economic value of surplus stocks;
- Ensure beneficiaries meet necessary costs.

The basic principle of the strategy is that its implementation is intimately tied to management of individual rivers and the active participation of user groups (such as the anglers and others interested in the salmon's well-being). This will be achieved through the preparation and implementation of local Salmon Action Plans (SAPs) in which the aspirations for the catchment, the issues limiting their achievement (including metal mine discharges) and the means to resolve problems are set out clearly and unambiguously. The importance of metal mine discharges on water quality

fishery issues resulting from acidified surface waters and metal mine contamination will be an important issue for many SAPs.

2.4.6 Ceredigion Local Plan

The Ceredigion Council has 38 of the 50 priority mine sites within its area. The local authority's planning policies clearly reflect the need to acknowledge the general landscape value of metal mine sites in the county as well as the particular archaeological and nature conservation interests. There are several sustainable development policies and environment conservation policies in the Ceredigion Local Plan, which will relate to the mine strategy. These include policies ESD04, ESD05, ENV01 and ENV22. Policy ENV22 relate specifically to metal mines and states:

Land reclamation, capping or works associated with the restoration or the development of derelict metal mines will only be permitted where:

- *There is no significant adverse effect on the nature conservation, scientific or archaeological interest of the site;*
- *The works will not result in pollution of either groundwater or surface waters;*
- *There is no loss of visual amenity;*
- *There is a significant danger to the public from the land in its existing state and urgent works are required to alleviate the danger;*
- *Adequate and acceptable arrangements have been made for the survey of the site, and the recording and preservation of any features, and or items of interest.*

A similar policy (ENVP3.3) has been included in the Ceredigion Unitary Development Plan, soon to be adopted at deposit stage.

2.4.7 Local Initiatives

During the undertaking of this strategy the Agency identified numerous local initiatives and working groups that have been set up to either address specific issues at particular sites or provide a forum for interested persons to discuss their own personal interest presented by historic metal mine sites. The information provided by such groups has been invaluable in the preparation of this strategy and in some cases has identified sites where collaborative projects could be progressed for mutual benefit.

Two examples of these initiatives include the:

- Welsh Mines Preservation Trust which was set up to effect the conservation of surviving physical evidence for mining in Wales, it has been instrumental in channelling local funds and grant aid to the restoration and protection of important structures on a number of mines.
- Amlwch Industrial Heritage Trust that has been set up to address the specific issues presented by the Parys Mountain site on Anglesey and is seeking to preserve and promote the site as a tourist attraction and research location.

2.5 Stakeholder Drivers and Values

The input from various stakeholders has been an essential aspect of the development of this Metal Mine Strategy.

The Agency would like to thank all those involved and the contributions made. Stakeholder interests at metal mine sites varies considerably. The Agency's own objectives at these sites is to seek the reduction in contaminant loading of streams and rivers. However, on a site by site basis other stakeholders interests can vary from CCW's aims to conserve wildlife and protect habitats, Local Councils objectives to protect and enhance community environments, through to local groups who value metal mine sites for their unique historic and archaeological features.

This section summarises the aims and objectives of each of the stakeholders involved in this strategy.

Amlwch Industrial Heritage Trust

The aims of the trust are to:

- Conserve the natural and industrial landscape of Parys Mountain and Amlwch Port;
- Promote scientific and historical research and a fuller understanding of the two sites;
- Present sites for the appreciation of the public.

The Trust co-operates closely with the Parys Underground Group whose aims are to explore, research and conserve the underground workings.

www.angleseymining.co.uk/ParysMountain/AHT.htm

Anglesey Mining plc

Has mining interests at two properties:

Parys Mountain on the island of Anglesey in north Wales. Possibly the only undeveloped polymetallic mineral deposit in the United Kingdom. Contains an important identified geological resource of 6.5 million tonnes with a combined average grade of over 10% zinc, copper and lead with gold and silver. Positive independent feasibility study completed full planning permission for a 1,000 tonne per day mine. Exploration is planned with the objective of developing a significantly larger deposit, which should support a higher production rate.

Dolaucothi Gold located near Lampeter in South Wales. Anglesey Mining plc leases the mineral rights for gold and silver for part of the site. While there is potential is for a small gold mining operation that would attract the premium for Welsh gold, such plans are currently on hold pending new exploration with the objective of discovering new gold zones. At present Anglesey Mining has no surface rights and does not own any plant or buildings on the site.

www.angleseymining.co.uk

Archaeological Trusts

The four Welsh Archaeological Trusts, were established in the mid 1970s to respond to the rapidly increasing demands of *rescue archaeology* and to provide a uniform local archaeology service across the whole of Wales.

Archaeological Trust stakeholders for this project are:

- Cambria Archaeology (Dyfed Archaeological Trust); www.acadat.com

- Clwyd-Powys Archaeological Trust;
www.cpat.org.uk
- Gwynedd Archaeological Trust.
www.heneb.co.uk

Trusts provide a broad range of archaeological and heritage services in their respective areas from the maintenance of Sites and Monument Records and the provision of archaeological management advice and educational services to field survey, excavation and heritage interpretation. The Trusts are independent limited companies with charitable status, employing professional archaeological staff with a wide range of expertise, and receiving financial support from both national and local government, commercial contract work and even private donation.

Cadw

Cadw's mission is to protect, conserve, and to promote an appreciation of the built heritage of Wales.

The full title of the organisation is Cadw: Welsh Historic Monuments Executive Agency, and it is a part of the National Assembly for Wales. Created in 1984, Cadw carries out the complete range of responsibilities for the conservation, presentation, and promotion of the built heritage of Wales on behalf of the National Assembly for Wales.

These duties include:

- Securing the preservation of ancient monuments and historic buildings;
- Grant aiding the repair of ancient monuments and historic buildings;
- Managing 129 ancient monuments in Wales, which are in direct State care.

www.cadw.wales.gov.uk

Countryside Council for Wales (CCW)

The Countryside Council for Wales advises the Government, the National Assembly for Wales, local authorities and others on sustaining the natural beauty, wildlife and the opportunity for outdoor enjoyment. CCW is the national wildlife conservation authority.

www.ccw.gov.uk

Environment Agency Wales

The Agency enforces environmental legislation; including the regulation of the disposal of wastes, industrial discharges, maintenance of water quality and is a joint regulator of Contaminated Land. In addition, the Agency assesses water quantity and demand and manages a programme of flood defence works and provides monitoring and warnings of flood events.

www.environment-agency.gov.uk

Forest Enterprises

Manage the following forest estates in Wales:

- Canolbarth Forest
- Dolgellau Forest
- Llanrwst Forest
- Llanymddyfri Forest

www.forestry.gov.uk

Local Authorities

Stakeholder objectives in relation to metal mines include public health and safety, long term risks to human health, lead regulator under Part IIA Contaminated Land regime, local economic development and planning authority.

Local Authority have a number of different interests in metal mines: as a landowner, as charged with protection of the cultural and natural environment, as promoter of tourism etc. Authorities also have the overarching obligation to improve economic and social conditions within its area.

Local authority stakeholders for this project are:

- Anglesey Council
- Carmarthenshire County Council
- Ceredigion Council
- Conwy Council
- Gwynedd Council
- Pembrokeshire County Council
- Powys Council
- Wrexham County Borough Council

www.outwood.com/localgov/wales.htm

Llywernog Mine Museum

Privately owned and operated since 1973, the mine site has been utilised as a museum of lead and silver mining with public underground access. It is the only properly registered and managed mine within the Cardiganshire district.

www.silverminetours.co.uk

Mineral Agents for the Crown Estate - Wardell Armstrong Ltd

Wardell Armstrong is currently acting as the Mineral Agents for the Crown Estate

www.wardell-armstrong.com

Welsh Assembly Government

The Welsh Assembly Government develops and implements policies, which reflect the particular needs of the people of Wales. Decisions about local issues are made by politicians who are accountable to voters in Wales. The Assembly decides on its priorities and allocates the funds made available to Wales from the Treasury. Its key role is as secondary legislative function, with responsibility for a sustainable development scheme, and overall policy responsibility for economic development, social policy, planning and environmental protection for Wales. All of this is achieved by sponsorship of a range of agencies within Wales.

www.assembly.wales.gov.uk

National Trust

The National Trust works to preserve and protect the coastline, countryside and buildings of England, Wales and Northern Ireland. The Trust does this in a range of ways, through practical caring and conservation, through educating and informing, and through encouraging millions of people to enjoy their national heritage.

www.nationaltrust.org.uk

North Wales Caving Club

Underground exploration for historical and leisure purposes.

www.lake22.demon.co.uk

Pentir Pumlumon Tourism

Pentir Pumlumon is a tourism association whose aim is to develop and market the Plynlimon Upland area sustainably for the benefit of the local community and of visitors.

www.pumlumon.org.uk

Royal Commission on Ancient and Historical Monuments in Wales (RCAHMW)

The Royal Commission on the Ancient & Historical Monuments of Wales was established in 1908 to make an inventory of the ancient and historical monuments of Wales. RCAHMW carries out surveys, maintains an archive, library and national database (NMRW), supplies archaeological information to the Ordnance Survey for mapping purposes, and publishes information about ancient, historical and maritime sites, structures and landscapes.

www.rcahmw.org.uk

Snowdonia National Park Authority

The purposes of national park designation are set out in the Environment Act 1995. The purposes are to:

- Conserve and enhance the natural beauty, wildlife and cultural heritage of the Park;
- Promote opportunities for the understanding and enjoyment of the special qualities of the Park by the public;
- Seek to foster the social and economic well being of the local communities within the Park area.

The Authority does this by providing a range of services, including information and education, agriculture, forestry, archaeology and ecology. The Authority is the local planning authority for the area, with responsibilities for producing development plans and development control.

www.eryri-npa.gov.uk

Welsh Development Agency (WDA)

The Welsh Development Agency is committed to helping existing businesses expand and thrive and to encouraging inward investment, the relocation of industry and the creation of jobs. The WDA is also charged with improving the Welsh Environment. Reclamation of derelict land has been one of the main methods of achieving this

improvement. The order of priorities has been safety, development then environmental improvement. Much of the work to date on metalliferous mines has been to remove hazards and environmental threats, but has also assisted with tourism and heritage developments.

www.wda.co.uk

Welsh Gold Plc

Owners of Gwynfynydd Mines Royal, Dolgellau, Gwynedd, North Wales. The underground part of the mine recently closed but a small supply is still available for a short while from the reworking of old surface tips.

www.welshgoldplc.co.uk

Welsh Mines Society

Since 1979 the Welsh Mines Society has brought together those interested in past mining activity in Wales. Under the general heading of 'mining history' the society encompasses members from many disciplines - archaeology, history, and geography - professional and amateur, along with some commercial interests. As a member of the National Association of Mining History Organisations (NAMHO) the society works with other organisations to address the problems associated with our mining heritage; access, conservation and interpretation.

NAMHO was formed in 1979 to promote mining history interests and represent the diverse groups seeking to conserve and interpret past mining activity. It has provided a point of contact with the statutory bodies responsible for mines and currently represents over 90 organisations in Britain and Ireland, 12 of which are based in Wales. Members of NAMHO include the Welsh Mine Society, Welsh Mine Preservation Trust, Royal Commission on Ancient and Historical Monuments in Wales, National Trust (Dolaucothi), North Wales Caving and the Llywernog Mining Museum.

www.mike.munro.cwc.net/mining/wms/wmsoc_hp.htm

Welsh Mines Preservation Trust

The Welsh Mines Preservation Trust was formed in 1992 with the support of members of the Welsh Mines Society. It has preserved a number of sites and buildings associated with mining, either with grant aid from Cadw and other bodies, or from its own resources. Its most notable achievement to date has been the restoration of the Pearl Shaft engine-house on Parys Mountain, Anglesey. The trust is also able to support work on mine sites by providing research, expertise and advice.

www.xs4all.nl/~jorbons/wmpt_uke.html

Wildlife Trusts

The Wildlife Trusts protect a multitude of habitats and species. The Wildlife Trusts campaign for better protection of our precious wildlife and habitats. Raising awareness of threats to wildlife is central to the Wildlife Trusts' role. Through monitoring and collecting data they demonstrate an accurate picture of the health of the UK's wildlife, and those habitats and species that need protection.

www.wildlifetrusts.org