

The Metal Mine Programme

November 2023

Background

Abandoned metal mines cause significant pollution in Wales, harming river ecology with metals like cadmium, lead, zinc and copper. There are approximately 1,300 abandoned metal mines across Wales that have been estimated to impact over 700km of rivers.

Natural Resources Wales (NRW) and the Coal Authority (CA) are working together on the Metal (Non-Coal) Mine Programme to address this polluting legacy. The Programme is funded by Welsh Government.

The primary aim of the Programme is, where technically and financially feasible, to reduce pollution from abandoned metal mines to improve the health of our rivers, benefiting the environment, people and the economy.

In doing so, this will directly contribute to the sustainable management of natural resources in Wales, and enhance community well-being benefits, as detailed in the Environment (Wales) Act 2016 and the Well-being of Future Generations (Wales) Act 2015.

Project context

The former Nant y Mwyn mine is located close to the village of Rhandirmwyn in Carmarthenshire; approximately 10 km to the north of Llandovery.

The mine has been identified as a major source of metals to the Nant y Mwyn and Nant y Bai streams, contributing approximately 13 tonnes of zinc, 2 tonnes of lead and 40 kg of cadmium to the environment each year.

This results in the River Tywi failing its Water Framework Directive standards for zinc and cadmium, with zinc remaining elevated for approximately 25 km

downstream of the mine. These ecotoxic metals cause significant environmental and ecological damage, reducing fish populations and the diversity of invertebrate fauna.

Nant y Mwyn mine is therefore one of our high priority sites and subject of a specific project to reduce this pollution.

The project will also consider the various environmental sensitivities and constraints on site, including heritage, habitat, landscape and aims to work proactively with communities and our partners to achieve this.

Project progress

Over the past few years we have been gathering information to better understand the pollution sources from Nant y Mwyn mine, and to identify potential remediation options.

In 2020 we completed a review of mining and mine water hydrology, including the discharges of mine water from the Lower Boat Level, Upper Boat Level and Pannau Adit.

This review recommended additional work to improve our understanding of the mine system.

We subsequently installed flow monitoring structures on the three discharges and continue to monitor the water quality monthly.

We have also completed archaeological, ecological and landscape assessments, topographical surveys, and commissioned an updated and expanded Scoping Study to identify a long list of possible mitigation options to improve the water quality in the Afon Tywi.

It is likely that a combination of the high-level potential mitigation options presented below, will be needed to successfully manage the range of pollution sources at Nant y Mwyn mine.

We welcome your input as we continue to develop our options, as well any wider environmental, social and economic opportunities available.



Cambrian environmental technologies - site trial

The Programme is conducting a separate research project with Cambrian Environmental Technologies to trial their novel mine water treatment system. The AeroBlast system has successfully removed zinc, lead and cadmium from a range of Welsh mine waters during laboratory trials.

The next stage of the project is to undertake field trials and Nant y Mwyn Mine is the preferred location. There will be two rounds of field trials, one in winter conditions and one in summer conditions, each of approximately three weeks' duration.

Mine water from Nant y Mwyn's Lower Boat Level will be captured and transferred to the treatment system, housed in two container units adjacent to the adit, with the treated water being returned to the original watercourse.

The data generated by these trials will enable the Programme to assess whether the treatment technology is a viable option for mine water clean-up in Wales.

Mining heritage and ecology

The Nant y Mwyn mine sits within an area of high archaeological and ecological sensitivity relating to the mine and its associated spoil heaps.

These include ecological features of interest within the Mwyngloddiau Nantymwyn Site of Special Scientific Interest (SSSI).

A number of rare plants are present that grow on the metal rich mine spoil heaps, including lichens and bryophytes which form 'Calaminarian Grassland' habitat.

Nationally rare metallophyte mosses including lead moss and tongue-leaved copper moss are also present, with copper moss only known in three sites in Wales.

The Upper Mine site has significant archaeological value with the Engine House and Chimney designated as a Scheduled Monument.



Next steps

We will now undertake a Feasibility Study to assess the technical, environmental and economic suitability of the various possible mitigation options.

This will lead to a short list of feasible options from which a preferred remediation strategy for the site will be selected.

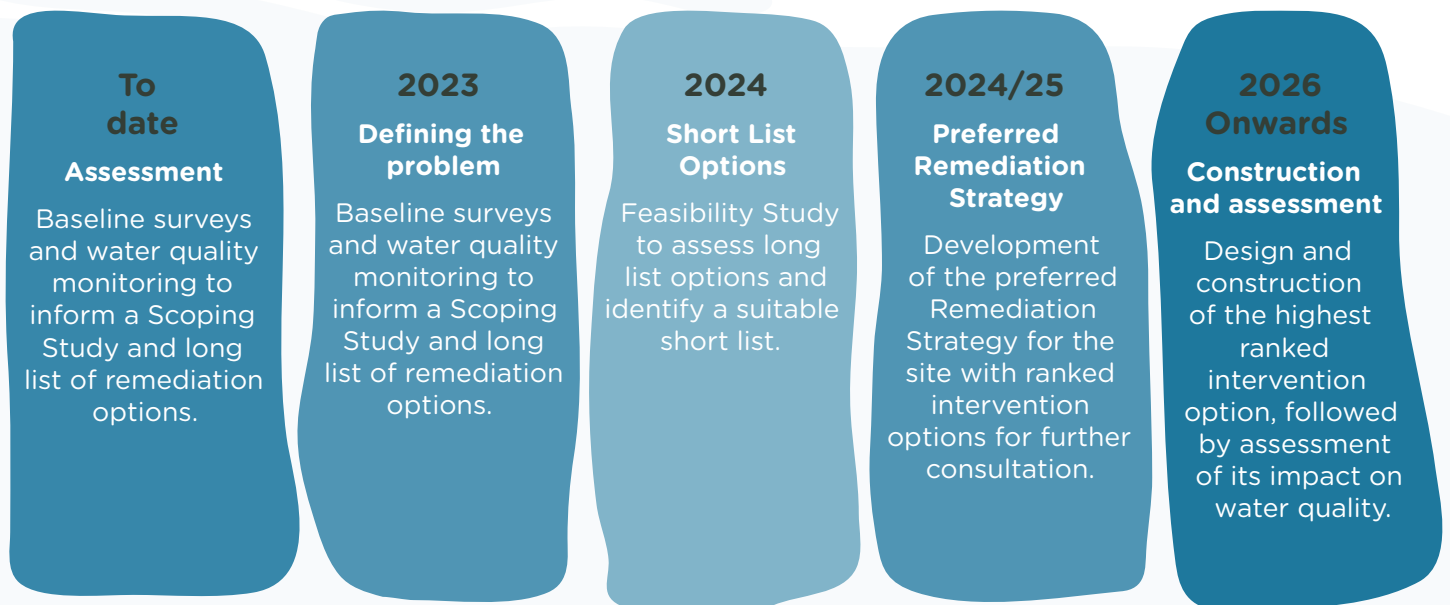
It is likely that this will be a phased strategy, targeting specific pollution sources over a number of years, allowing design, construction and then assessment of each intervention.

We would like the local community and other stakeholders to play a key part in this process.

We will be holding public consultation events later in the project, and issuing newsletters to communicate progress on the project.

An indicative timeline is presented below, which is subject to securing the required funding.

Timeline



Keeping in touch and how to get involved

We want to hear from you as we progress the Nant y Mwyn mine project and explore the wider environmental and social opportunities that can be developed as part of any preferred strategy for this site.

If you'd like to find out more information, please see the Citizen Space page link below.

Please get in touch if you'd like to find out more; be added to an email mailing list or share your views and comments.

If you have any feedback on the project so far, or any of the points in this newsletter, please get in touch.



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