



12th May 2016

Paper Title:	Addressing the Impacts from Abandoned Metal Mines
Paper Reference:	NRW B 30.16
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Purpose of Paper:	To agree the proposed approach for prioritising and progressing work and seeking resources
Recommendation:	<p>Abandoned Metal Mines are one of the principal causes of failures of Water Framework Directive (WFD) standards in Wales. Progress to tackle this issue, often using external funding sources and innovative approaches, has been limited.</p> <p>To help achieve the WFD good ecological status target required by 2027 the Board is asked to approve a more proactive approach to securing a dedicated funding source to support the delivery programme set out in the Metal Mine Strategy.</p>

Impact: To note – all headings might not be applicable to the topic	<p>How do the proposals in this paper help NRW achieve the Well-Being of Future Generations Act principles in terms of:</p> <p>Looking at the <u>long term</u>: We are committed to looking for long term solutions to metal mine pollution. In the absence of secure funding to tackle metal mine pollution our approach has concentrated on developing and testing innovative remediation techniques, facilitating ideas exchanges e.g. the mine exchange, providing guidance to landowners and developing a network of delivery partners.</p> <p>Taking an <u>integrated</u> approach: Local communities will be a focus for any remediation schemes. The environmental and associated benefits would be targeted through use of local contractors and supply chains for materials; keeping funds in the community. Schemes will improve water and air quality, ecosystem resilience, health and safety issues on sites and, where</p>
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possible, health through improved access and associated business and heritage opportunities.

Involving a diversity of the population:

Facilities with appropriate access arrangements were used as part of our communication engagement programme for the remedial works at Frongoch mine. The local community were invited to an open day to talk with NRW staff about any concerns. The community had the opportunity to visit the restored site. This approach will be adopted for any further remediation schemes.

The mine exchange allows us to capture thoughts from civil society organisations, academia and industry to help shape any future proposals. Metal mine remediation provides environmental benefits for all sectors of society.

Working in a collaborative way:

Collaborative work on abandoned mines is the only solution as the numbers and uniqueness of each site mean we can't tackle the issue alone. Through the work of the mine exchange we are able to discuss, capture and act on the feedback from all group members and interested parties. We are also well placed to influence academia and industry through identifying to them the need for low cost, low energy, innovative and sustainable solutions required at most locations.

Preventing issues from occurring:

By working with landowners, innovative companies, academia and recognised experts such as the Coal Authority we can produce good practice guidance and sustainable cost effective solutions for the highest risk sites across Wales.

Issue

1. Our valuable ecosystem services are currently compromised by the legacy of abandoned metal mines. Once the source of prosperity; these mines are now a source of pollution which limits our waters achieving the targets set by the Water Framework Directive. Although there has been some recent progress, more action is needed to implement our Metal Mines Strategy for Wales if rivers and groundwater bodies in Wales are to achieve the Good Ecological Status (GES) required by 2021 and 2027.
2. Rivers affected by metal mine water pollution-will fail to meet their potential as valuable ecosystem services providing sustainable environmental, economic and wellbeing benefits to local and national communities. The impact will grow as climate change adds to the risk through increased mine water discharge and erosion.
3. Abandoned metal mines are a major pressure and a principal cause of failure in the Water Framework Directives' River Basin Management Plans in Wales. There are 1,300 mines impacting on 67 Welsh water bodies which contain 700Km of river. Drainage from underground workings, and leaching and erosion of mining spoil are the key sources causing iron, zinc, lead and cadmium failures. Nine of the ten worst metal mine polluted catchments in the UK are in Wales.
4. The discharges account for half of the total national flux of cadmium, arsenic, lead and zinc.
5. NRW is responsible for tackling these issues and has a track record of delivering cost effective solutions, sourcing external funds, employing innovative solutions and working with partners. However the availability of funding will constrain the rate at which sites can be tackled and the opportunities for wider benefits from this work.

Background

6. Wales has 67 surface and groundwater bodies failing under WFD due to pollution from metal mines, representing nearly 8% of failures in Wales. NRW is required to put a "Programme of Measures" in place to bring these water bodies back into GES or better.
7. Approximately 10% of the 1,300 metal mines are located on the Welsh Government Woodland Estate.
8. Our Metal Mines Strategy focuses on the top fifty Welsh mines. Funding restrictions have limited work to the top 10 sites. The rugged upland terrain and poor access to energy and transport infrastructure precludes the use of traditional treatment approaches on most sites. To resolve this, there is a need to research, develop and implement techniques tailored for the Welsh landscape. We seek cost-effective,

sustainable, self-financing methods for a broad range of sites.

9. Currently our direct budget is around £45k GIA each year; this enables some monitoring, planning and feasibility work to prepare for capital projects. Delivering our most recent mine remediation site at Frongoch cost £1.15M. A single monitoring and reporting programme for one site can cost £25k to £45K. Remediation costs, such as a treatment system, will be in the region of £600K to £1.2M.
10. To date we have completed one major remediation scheme, at Frongoch Mine near Aberystwyth, and pilot treatment trials at two other sites: Cwm Rheidol, Aberystwyth, and Parys Mountain, Anglesey. We have also carried out extensive investigations, feasibility studies and/or minor remedial works at several other mine sites, including Dylife, Cwmystwyth, Pandora, Nant y Mwyn, Esgair Mwyn and Abbey Consols.
11. The Frongoch Mine Project, delivered in 2015, is the largest scheme in the UK. We accessed European Regional Development Funds (ERDF). The 3 hectare site has been re-profiled and the waste capped to minimise water ingress, and new drainage channels convey clean runoff through a series of ponds, creating a wetland habitat.
12. We consulted widely at the design stages. Working with our own ecologists we considered how to enhance the special ecology and biodiversity. Dyfed Archaeological Trust were commissioned to provide supervision. The project demonstrated how water quality improvements can be achieved whilst accommodating statutory designations and providing local biodiversity and landscape benefits.
13. We have undertaken other initiatives: The “Mine Exchange” concept creates a Centre of Excellence for metal mine remediation in Wales and has brought many stakeholders and experts together. To continue to support the initiative and draw down ERDF Funding of up to £2million we are looking at options for match funding and staff resources. A project via Welsh Government’s Innovation programme supports the development of two new products to tackle mine pollution. This has received £250k funding; with 80% coming from the Welsh Government EST Department.
14. A short information paper *Abandoned Metal Mines in Wales – Pilot Programme* was submitted to Welsh Government in 2014. It outlined the challenge we face and proposes a 5 year pilot programme for metal mine treatment, at a cost of £10million, delivered by working in partnership with the Coal Authority. This was not successful but dialogue between NRW, Welsh Government and the Coal Authority is continuing. We need to consider further opportunities for wider discussion with other beneficiaries, industry, third sector, research and academic partners to maximise opportunities to find technical and funding solutions to remediation.

Assessment

15. Abandoned metal mines are the principal cause of failures of WFD standards in Wales. We have a proven track record demonstrating the capability to set up and run projects to deliver improvements. Progress to tackle this issue is being restricted due to the lack of a long term dedicated and stable funding programme. Progress has been made using external funding sources and innovative approaches. This approach has yielded some success. In order to achieve WFD GES targets by 2027 a more progressive programme supported by a dedicated long term fund is needed.
16. We propose to work with Welsh Government to assess the opportunity for funding from some of their funding programmes. For example their capital funding programmes and Rural Development Plan programmes. We are already highlighting the links between these programme objectives and the benefits from mine remediation. Discussions have been positive and Welsh Government is considering allocating some capital funds. We would look to use any funds to lever in additional wider funding streams from such sources as European environmental funds and Rural Development Funding.
17. We recently appointed the Coal Authority in a contract funded by Welsh Government to use their expertise, knowledge and in-house skills to identify those discharges that could potentially be remediated to improve watercourses where the benefits are greater than the whole life costs of the remediation scheme. This will ensure we have the information to focus future work efficiently and effectively to address obligations under the WFD. The Coal Authority will present their findings to us in May 2016.
18. We have yet to secure a long term external funding source, such as LIFE or ERDF. However, given the work could deliver against so many EU Directive targets, not just water quality, we plan to investigate the multiple benefits of a targeted mine remediation work plan to assess prioritisation for secured match funding against other programmes.

Recommendation(s)

19. Approve the need for NRW to lead on the development and delivery of the Metal Mines Strategy.
20. Advise on the current approach being taken to secure a dedicated funding programme to support a more progressive programme to deliver the Metal Mines Strategy.
21. Support the approach to establish match funding sources to support external funding bids.
22. Support the approach of working more collaboratively with industry, research institutions, beneficiaries, land managers and the third sector to find innovative

technical solutions and wider funding opportunities.

23. Provide comment on the Mine Exchange concept and the potential ambition through this approach for Wales to establish itself as a world leader in metal mine research, development and sustainable remediation solutions.

Key Risks

24. Not delivering the Programme of Measures will see us fail to achieve the objectives of the Water Framework, Environmental Quality Standards and Habitats Directives.
25. This will also lead to a failure to deliver the ecosystems services which the Programme of Measures can help achieve.
26. Without a strategic programme to address metal mine pollution in Wales we will need to secure derogations from Europe on the grounds of technical or financial feasibility. As a minimum we will need to gather the evidence to support these applications in the current WFD planning cycle.

Financial Implications

27. A stable long term financial commitment is required to build internal resilience and to manage, direct and support assessment, remedial and strategic project work.
28. We need to establish, along with Welsh Government, funding for up to 5 years from 17/18 to support external funding opportunities to remediate metal mine pollution.
29. Currently metal mine remediation relies on a year by year bidding exercise. This creates a risk that we will be unable to complete works or to maintain sites into the future. Developing the link to wider service provision and benefits through a more integrated approach and through new and different partnerships is being pursued.

Equality impact assessment (EqIA)

30. At this stage of considerations an EqIA is not required.

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1. Metal Mines Newsletter
2. Frongoch Remediation Scheme – Case Study.
3. Strategy