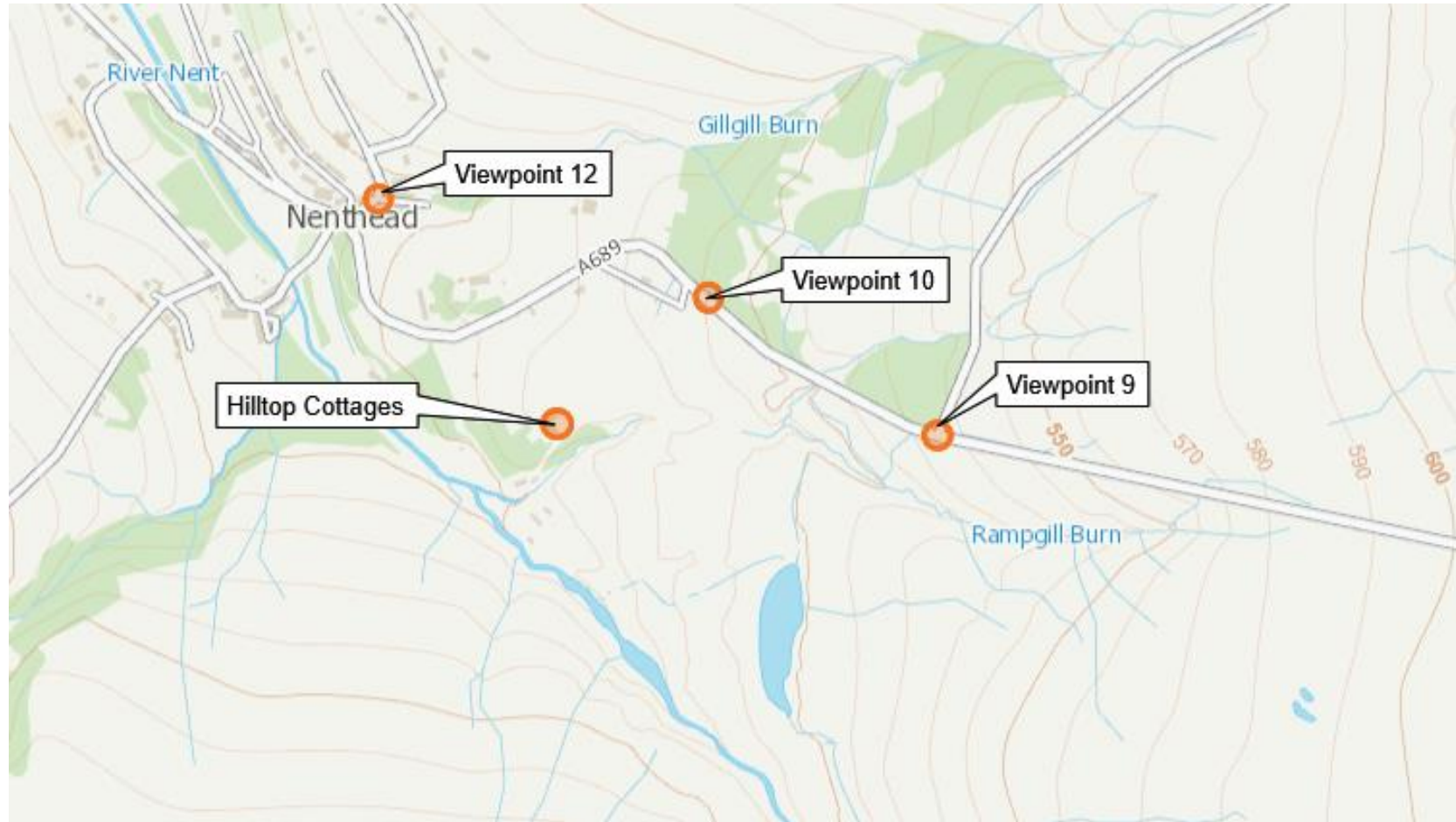


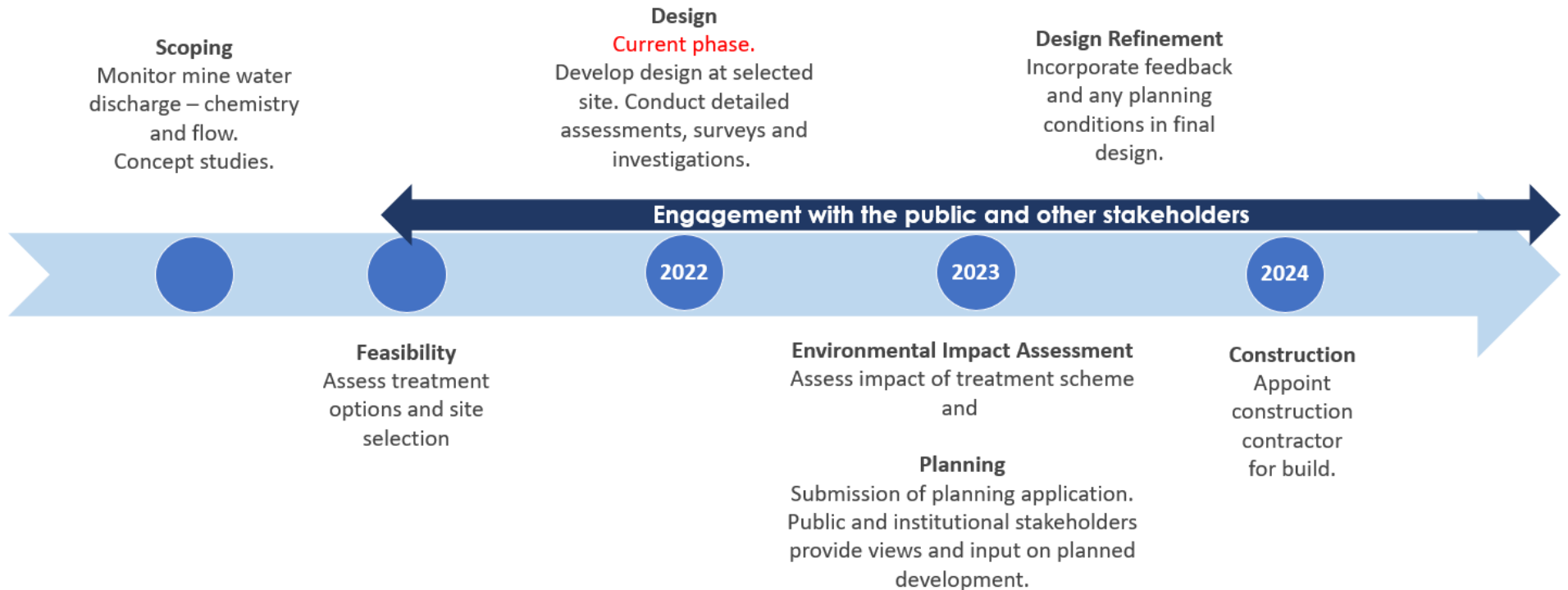
Visualisation Viewpoints

Location Map



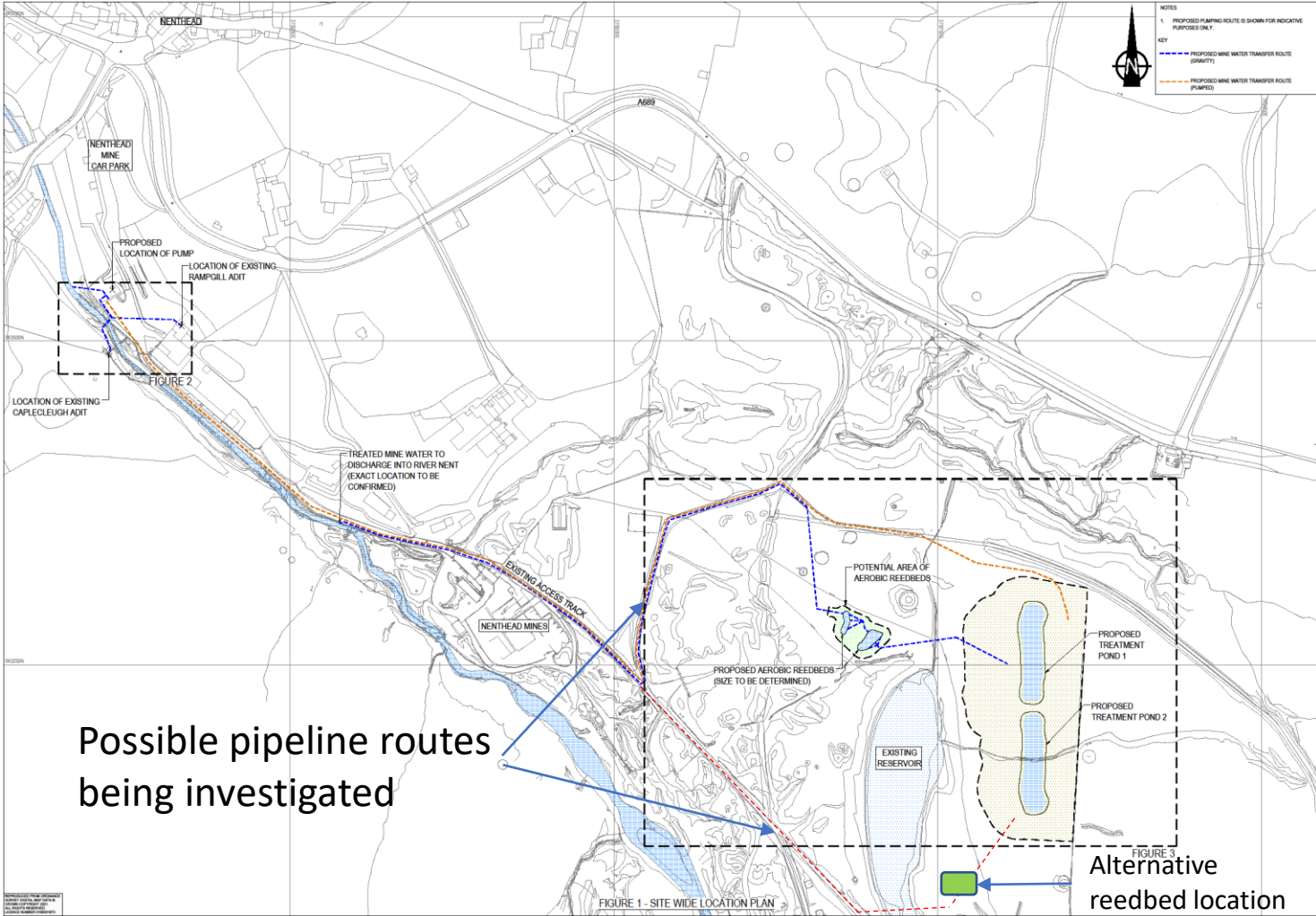
Indicative Project Timeline

subject to budget and permissions



Proposed Scheme Layout, May 2022

Potential options continue to be investigated for some elements

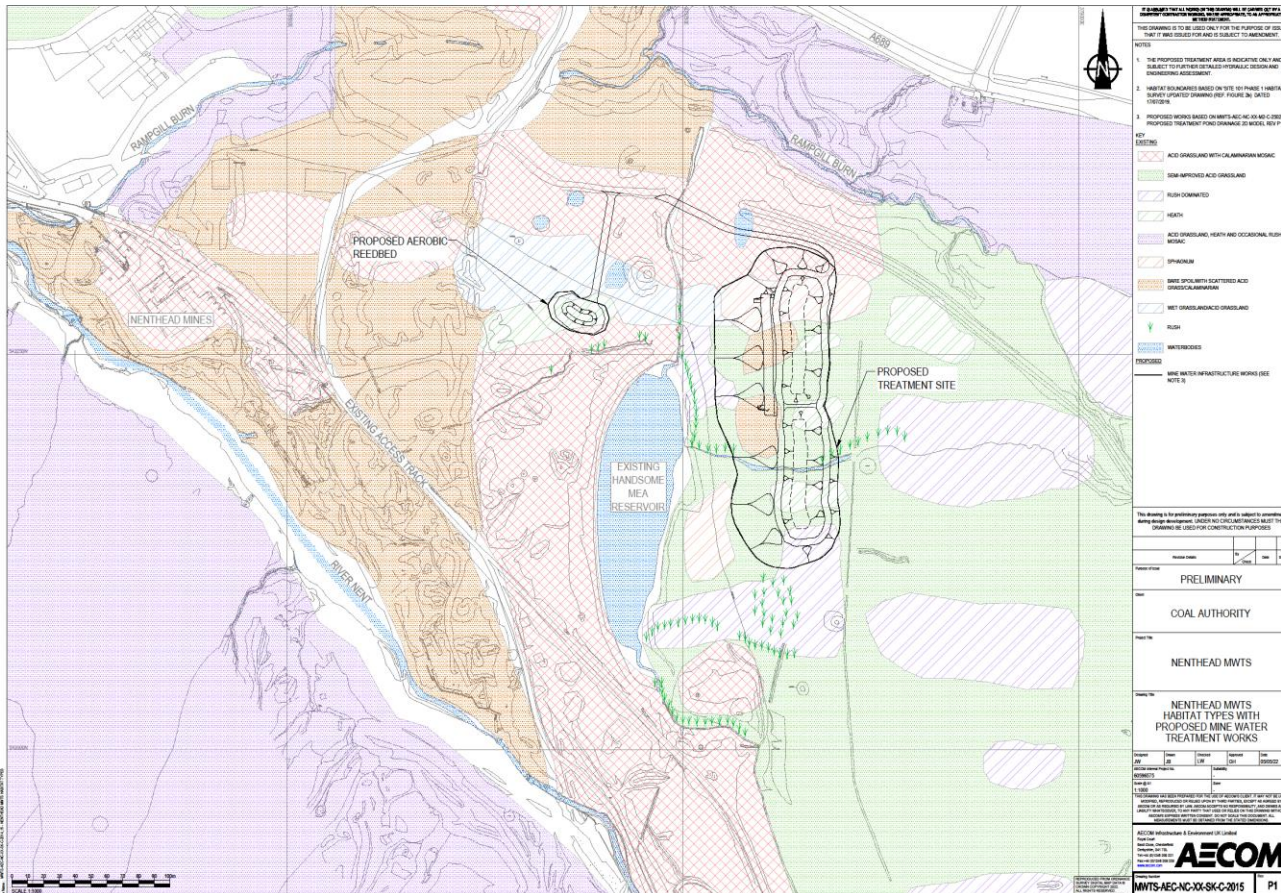


Possible pipeline routes being investigated

Nenthead Mine Site (Site 101)

Plants, animals and habitats

We have carried out several surveys to help us understand the existing ecological conditions at the site. We will do more surveys during 2022 to make sure the information is up to date. The proposed site is within the North Pennines AONB but falls mainly outside the Nenthead Mines Scheduled Monument and Site of Specific Scientific Interest. We recognise this is a special environment and want to minimise the impact of our proposed treatment scheme.



Flora

There are areas of calaminarian (metal-tolerant) grassland, rush, heath, sphagnum, bare spoil and acid grassland across the proposed site.

Fauna

We have identified a number of animal species living in the vicinity of Nenthead including amphibians, curlew, common sandpiper, water voles, otters, red squirrels, hedgehogs, brown hares and bats. Our surveys in 2022 will gather more information to make sure we minimise impacts from our proposals.

Mitigating the impacts

Based on current information, our ecological experts do not believe the proposed scheme will have significant impacts on the existing environment.

We will set this out in an Environmental Impact Assessment that will be submitted with the application for planning permission.

The River Nent

River Quality

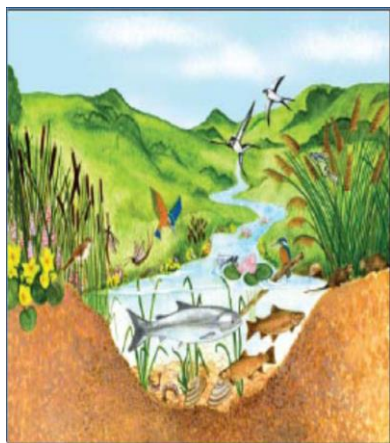
Rivers, lakes, coastal waters and groundwaters are a vital resource and support industry, wildlife, tourism and recreation. Good quality of our waters is fundamental to their continued usefulness. We need to protect them from pollution and manage them so that they reach and maintain “good ecological status” and “good chemical status”.

Under the Water Environment Regulations (2017), the Environment Agency monitors all rivers and other waters in England and compares the results to standards set by Government. The results for the Tyne catchment are published in the statutory Northumbria River Basin Management Plan. This plan explains the current condition of all water bodies, the reasons why any water body is polluted, and that usually, the objective is for all water bodies to reach good status by 2027.

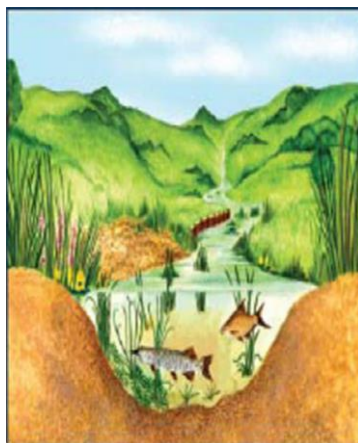
The Nent is the second most metal polluted river in England and is currently classed as poor for fish (so between moderate and bad) and moderate for invertebrates.

Through the Environment Act 2021, the Government is proposing a target that by 2037, we should reduce the length of rivers polluted by abandoned mines by 50% so as to reverse the damage our mining legacy continues to cause our river environments.

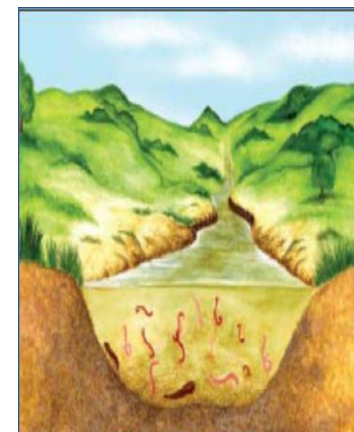
Good



Moderate



Bad



Ecology Survey Schedule

We have carried out several surveys to help us understand the existing ecological conditions at the site. The table below indicates when we will do more surveys during 2022 to make sure the information is up to date. This information will be used to minimise the impacts of our proposals to address pollution in 60km of the River Nent and South Tyne.

Survey	Scope of Survey	Survey Timing - Months	Survey Frequency	Survey Extent	Programme 2022																		
					Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec									
Ecology and Biodiversity																							
Ecological desk study	Collation of existing data from online sources and Cumbria Biodiversity Data Centre.	Anytime	n/a	2km from site boundary																			
Phase 1 Habitat Survey	Phase 1 Habitat Survey in accordance with the published method (JNCC, 2010). Also: Record of Invasive Non-Native Species (INNS) of plants; Incidental records of protected or priority species/ habitats or their field signs.	Apr-22	1 survey visit	Site plus a 50m buffer																			
Bat roost potential of Caplecleugh and Rampgill adits	Methodology will be based upon the Bat Conservation Trust's <i>Bat Surveys for Professional Ecologists: Good Practice Guidelines</i> (Collins, 2016).	Apr-22	1 survey visit - to be completed concurrently with the Phase 1 habitat survey	External assessment only.																			
Habitat Suitability Index (HIS) of waterbodies within 250m	Methodology based upon Oldham et al (2000). To be completed during Phase 1 habitat survey	Apr- 22	1 survey visit - to be completed concurrently with the Phase 1 habitat survey.	Waterbodies within 500m of site.																			
Breeding Bird surveys	Five survey visits shortly after dawn to identify evidence of nesting species within and adjacent to the Site.	April to June 2022	-Visit 1 – Fri 8th April -Visit 2 – Thurs 28th April -Visit 3 – Fri 13th May -Visit 4 – Thurs 16th June -Visit 5 – Thurs 30th June	Site and adjacent areas where appropriate.																			
Great Crested Newt eDNA surveys	Survey by GCN licensed surveyor, with reference to Natural England eDNA sampling protocol.	Completed between 15 th May and 30 th June.	1 survey visit (daytime) to each pond to collect water samples	We have allowed for the survey of nine ponds within 250 m of the site.																			
NVC survey	Survey by experienced botanist with reference to Rodwell (2006).	Optimum season for botanical surveys.	1 survey visit - June 2022	Areas of botanical interest identified during the PH1 habitat survey.																			
Otter and Water Vole	Waterbodies and habitats to be affected by the development with reference to monitoring the Otter (Chanin, 2003).	Between April & September inclusive	Up to 2 survey visits. One visit in each of mid-April to end June 2021 and one July to end of September 2021.	Suitable habitats and watercourses 250m upstream and downstream of any proposed works. Access will be required to both banks and up to 10m from the bank edge.																			
Reptiles	Any suitable terrestrial habitat will be identified during the desk study and Phase 1 Habitat Survey. Presence/absence surveys will be undertaken with reference to guidance provided in FrogLife Advice Sheet 10: Reptile Surveys (1999).	If required: Optimal - April to October depending on the weather.	One visit to set out refugia and 7 survey visits to confirm presence / likely absence.	Suitable habitat within the site.																			
Aquatic Macrophyte survey and fish habitat walkover	Representative reaches of the River Nent and receiving watercourses, and in the reservoir. Assessment of aquatic macrophytes for WFD status equivalent, and invasive Non-Native Species (INNS)	May - September	Single visit	Representative reaches of River Nent and receiving watercourses; Nenthead Reservoir																			
Fish eDNA sampling	eDNA survey for fish in the Handsome Mea Reservoir, River Nent and various leats (TBC) to establish fish community present	Any time (concurrent with above) Note: There is a minimum 6-8 week processing time by the external eDNA laboratory	Single visit	Handsome Mea Reservoir, River Nent and various leats (TBC)																			

Proposed location for the treatment ponds



You Said, We Listened

You said

You were concerned about the meteorological data we were using.

What we've done

We have arranged for a temporary weather station to be installed to gather site specific data.

You said

You wanted us to hold a formal minuted meeting.

What we've done

We have arranged for a formal minuted meeting to be held tonight between 6pm and 8pm here in Nenthead Village Hall.

We have asked for the support of independent facilitators to help run the meeting and take minutes.

You said

Ecology surveys should be done during different times of the year to reflect the higher altitude conditions in Nenthead.

What we've done

Surveys are planned throughout 2022 to update previous reports. We will ensure that surveys are done at appropriate times of the year to reflect the climatic conditions in Nenthead

You said

You would like us to share information about the project better

You said

You would like to see visualisations from Hilltop Cottages

What we've done

We have now set up a project specific website available at

<https://consult.environment-agency.gov.uk/north-east/nenthead-mwts/>

We have posted three newsletters to more than 300 properties in the Nenthead area. These outline 'the story so far' including:

- Why we want to clean up the polluted river
- How a treatment scheme works
- Where to get more information

What we've done

We have used a photo taken from near Hilltop Cottages to show the view now, and what the proposed scheme would look like over time. We hope this will give a better idea of the likely change in views from local residences.

The new visualisation is available to view on the display boards here today.

Visualisation Viewpoint 9

From junction between A689 and Carrshield road

Now



BASELINE

AECOM

Visualisation Type: 4
Projection: Cylindrical
Enlargement Factor: 100%
Paper Size: A1
Date / Time: 18/03/2019 11:40

Camera:
Lens: Canon 50mm
Horizontal Field of View: 90°
Direction of View: SW
Location: E378923, N643417

Ground Level: 532.2m AOD
Distance to Site: 137m
Height of Camera: 1.5m

Note:
Images to be viewed at a comfortable arm's length.

NENTHEAD MINE WATER TREATMENT SCHEME
Viewpoint 9

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1 year after construction is complete



PROPOSED YEAR 1 PHOTOMONTAGE

AECOM

Visualisation Type: 4
Projection: Cylindrical
Enlargement Factor: 100%
Paper Size: A1
Date / Time: 18/03/2019 11:40

Camera:
Lens: Canon 50mm
Horizontal Field of View: 90°
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Location: E378923, N643417

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3 years after construction is complete



PROPOSED YEAR 3 PHOTOMONTAGE

AECOM

Visualisation Type: 4
Projection: Cylindrical
Enlargement Factor: 100%
Paper Size: A1
Date / Time: 18/03/2019 11:40

Camera:
Lens: Canon 50mm
Horizontal Field of View: 90°
Direction of View: SW
Location: E378923, N643417

Ground Level: 532.2m AOD
Distance to Site: 137m
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Note:
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NENTHEAD MINE WATER TREATMENT SCHEME
Viewpoint 9

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Visualisation Viewpoint 12

From above Nenthead

Now



BASELINE

AECOM

Visualisation Type: 4
Projection: Cylindrical
Engagement Factor: 100%
Paper Size: A1
Date / Time: 18/03/2019 12:39

Camera:
Lens: Horizontal Field of View
Direction of View: SE
Location: E378284_N643940

Canon EOS 6D
Canon 50mm
50°
SE
E378284_N643940

Ground Level: 437.9m AOD
Distance to Site: 347m
Height of Camera: 1.5m

Note:
Images to be viewed at a comfortable arm's length.

NENTHEAD MINE WATER TREATMENT SCHEME
Viewpoint 12

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1 year after construction is complete



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AECOM

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Paper Size: A1
Date / Time: 18/03/2019 12:39

Camera:
Lens: Horizontal Field of View
Direction of View: SE
Location: E378284_N643940

Canon EOS 6D
Canon 50mm
50°
SE
E378284_N643940

Ground Level: 437.9m AOD
Distance to Site: 347m
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NENTHEAD MINE WATER TREATMENT SCHEME
Viewpoint 12

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3 years after construction is complete



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Ground Level: 437.9m AOD
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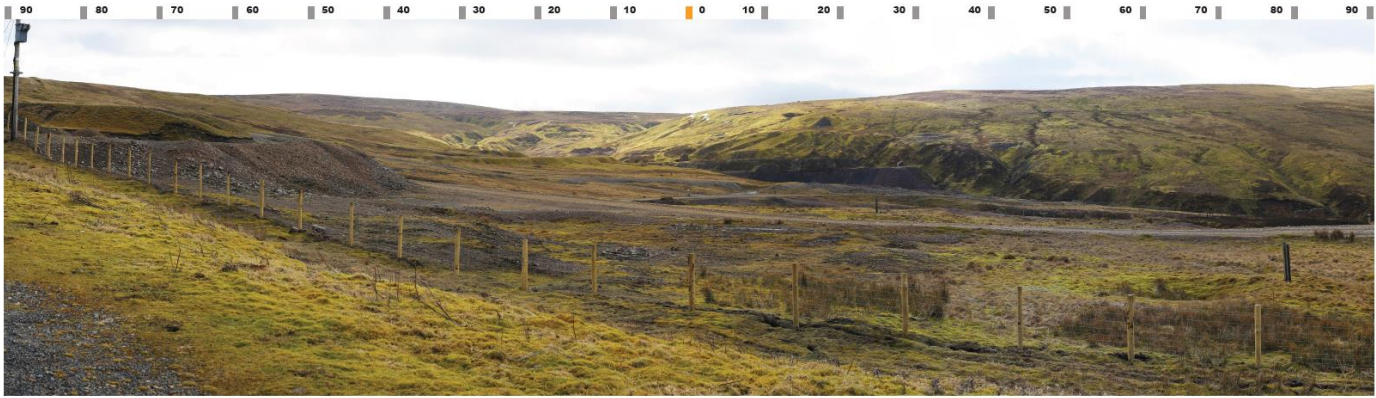
NENTHEAD MINE WATER TREATMENT SCHEME
Viewpoint 12

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Visualisation Viewpoint 10

From quarry track at A689

Now



BASELINE

AECOM

Visualisation Type: 4
Projection: Cylindrical
Enlargement Factor: 100%
Paper Size: A1
Date / Time: 19/03/2019 11:54

Camera:
Lens: Canon 50mm
Horizontal Field of View: 50°
Direction of View: S
Location: E378636, N643899

Camera: Canon EOS 6D
Canon 50mm
S
E378636, N643899

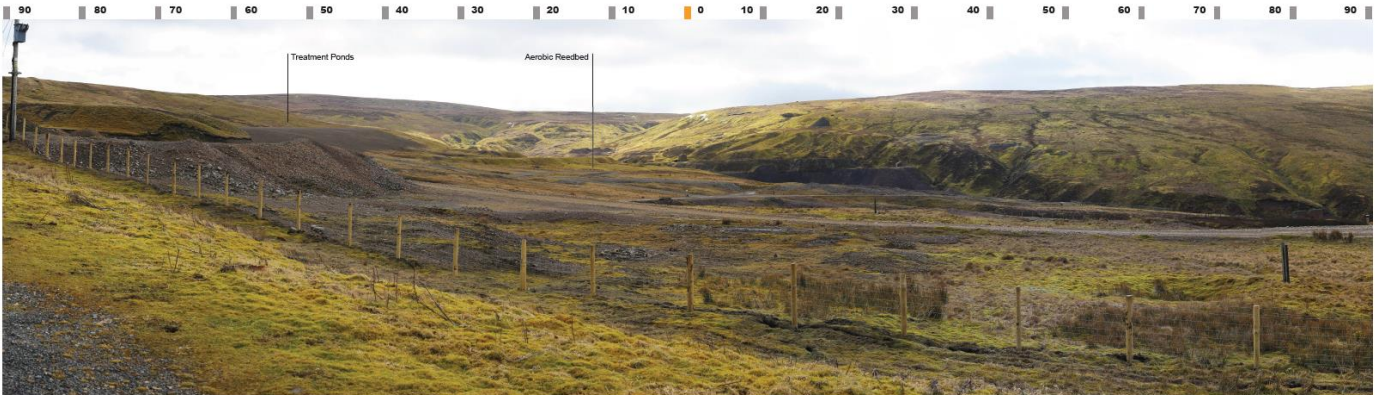
Ground Level: 503.3m AOD
Distance to Site: 317m
Height of Camera: 1.5m

Note:
Images to be viewed at a comfortable arm's length.

NENTHEAD MINE WATER TREATMENT SCHEME
Viewpoint 10

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1 year after construction is complete



PROPOSED YEAR 1 PHOTOMONTAGE

AECOM

Visualisation Type: 4
Projection: Cylindrical
Enlargement Factor: 100%
Paper Size: A1
Date / Time: 19/03/2019 11:54

Camera:
Lens: Canon 50mm
Horizontal Field of View: 50°
Direction of View: S
Location: E378636, N643899

Camera: Canon EOS 6D
Canon 50mm
S
E378636, N643899

Ground Level: 503.3m AOD
Distance to Site: 317m
Height of Camera: 1.5m

Note:
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NENTHEAD MINE WATER TREATMENT SCHEME
Viewpoint 10

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3 years after construction is complete



PROPOSED YEAR 3 PHOTOMONTAGE

AECOM

Visualisation Type: 4
Projection: Cylindrical
Enlargement Factor: 100%
Paper Size: A1
Date / Time: 19/03/2019 11:54

Camera:
Lens: Canon 50mm
Horizontal Field of View: 50°
Direction of View: S
Location: E378636, N643899

Camera: Canon EOS 6D
Canon 50mm
S
E378636, N643899

Ground Level: 503.3m AOD
Distance to Site: 317m
Height of Camera: 1.5m

Note:
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NENTHEAD MINE WATER TREATMENT SCHEME
Viewpoint 10

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Visualisation Viewpoint

From Hilltop Cottages

Now



1 year after construction is complete



3 years after construction is complete



Keeping In Touch

We are keen to hear your thoughts about the proposals and help you stay up to date with the project.

You can do this by:



Signing up to our [email newsletters](#) by leaving your email details with a member of the project team here today.



Checking out our [website](#) at - <https://consult.environment-agency.gov.uk/north-east/nenthead-mwts/>



Asking any questions via nent@coal.gov.uk or calling 0345 762 6848.

We will also continue to post details of key updates relating to the proposed scheme to properties in Nenthead.

Nent Hags Mine Water Scheme

Progress Update, May 2022

The Nent Hags mine water discharge pollutes up to 60km of river with about 3 tonnes of zinc and cadmium each year. Construction continues on the treatment scheme that will remove at least 70% of the metals from the mine water.

The scheme is expected to start operating in late 2022.



We recognise that the construction of this scheme has taken longer than anticipated and that this has caused disruption to the local community. Unfortunately, we must close a section of the A689 road between Nentsberry and Nenthall this summer to complete repairs to the road surface.

The Pipeline and Pumping Station

Mine water flows by gravity in a buried pipeline from the Hags adit in Nentsberry to the pumping station on the Horse and Wagon field (site 38). It is then pumped to the treatment ponds near Foreshield Bridge.

We have installed approximately 2.3km of pipe to take the mine water to the treatment ponds.

The last section of pipeline is due to be installed beneath the B6294 in May 2022.



The Treatment Ponds and Reedbeds

In 2021, we formed the shape of the treatment ponds and reedbeds, and later this year impermeable liners will be installed.

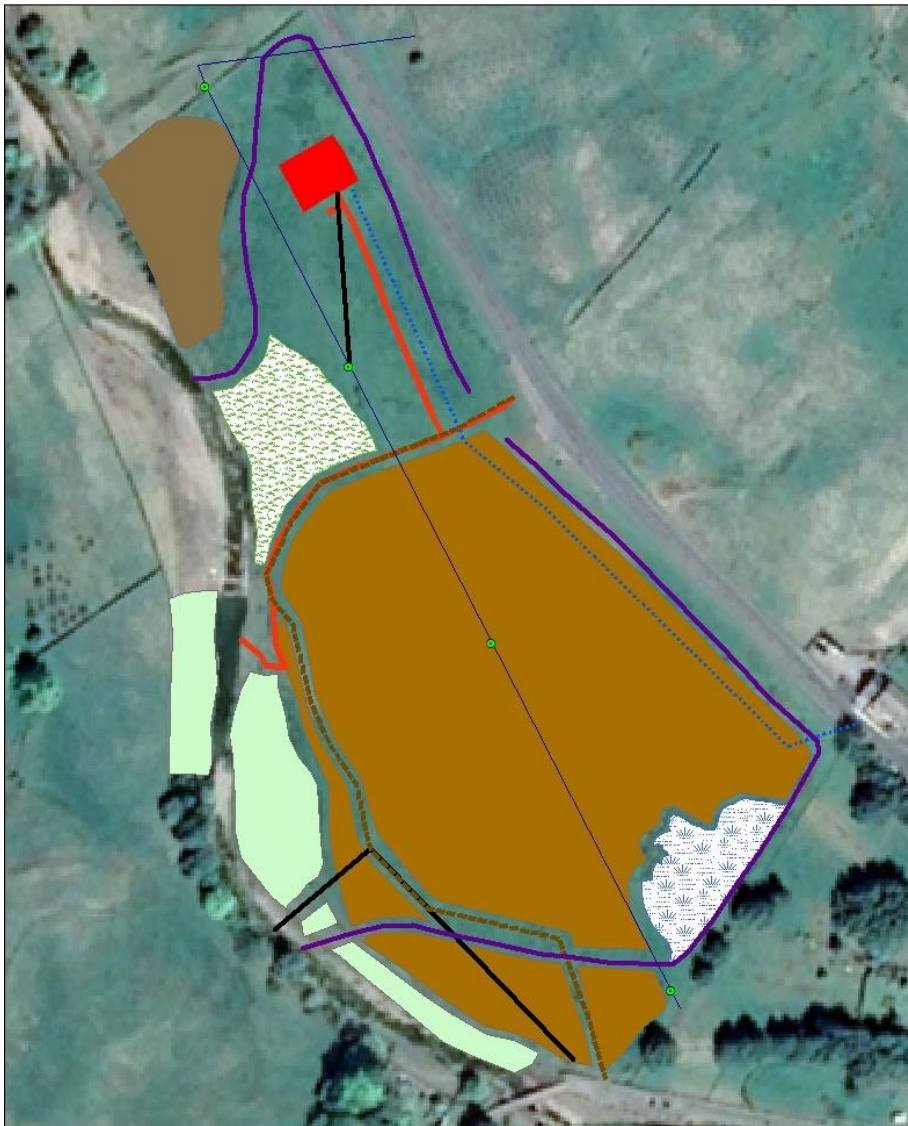
The treatment media will be added to the ponds in Autumn 2022 so that the scheme can start cleaning up the river.

Nent Hagggs Scheme

Proposed improvements to Horse and Wagon field

At Site 38 (also known as the Horse and Wagon field) which contains the mine water pumping station, we are working with Tyne Rivers Trust to develop plans that will improve and enhance the field for wildlife and local use.

This work is funded by the WAMM programme and Northumbrian Water's South Tyne Holistic Water Management Project. We have discussed the proposals with local residents, the North Pennines AONB Partnership and Cumbria County Council.



The plans include planting a wildflower meadow and trees along with creating a wetland in the swale that helps to take surface water from the A689 to the river.

Work to create the new nature reserve is expected to happen in summer 2022. We will return to plant trees in the autumn.

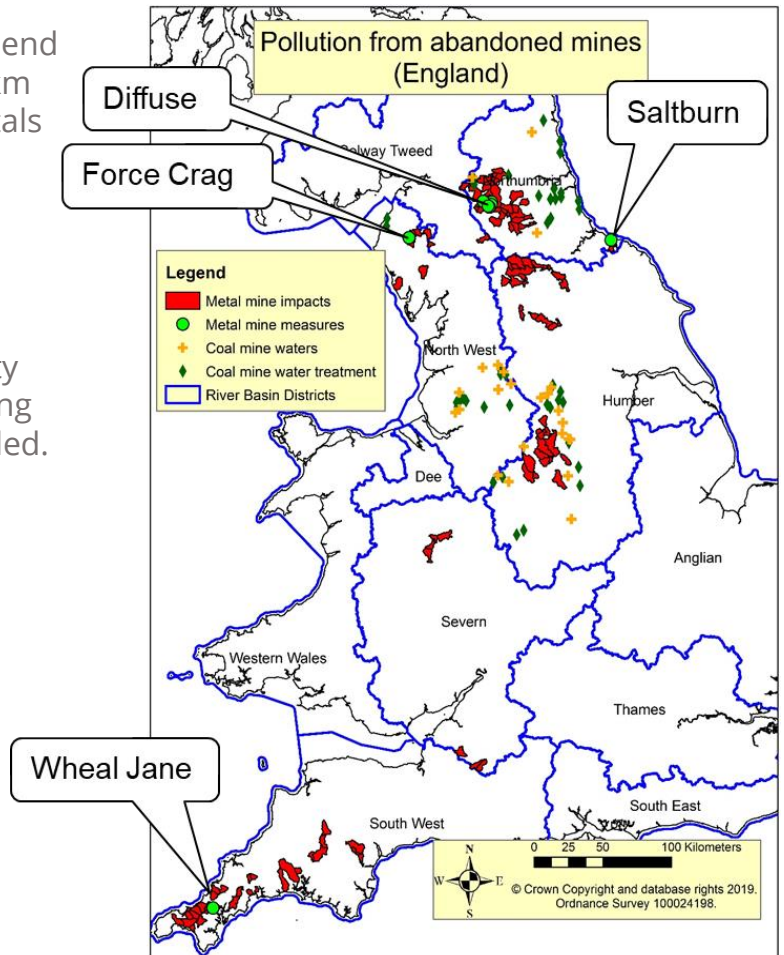
The long-term management of the site will be carried out by the Tyne Rivers Trust and their volunteer network.

The WAMM Programme

Britain has a long industrial history of mining for minerals. Despite most mines closing towards the end of the 19th Century, about 1500km of rivers are still polluted by metals such as cadmium, lead and zinc. These metals cause harm to fish and other river wildlife.

Before 2000, mines could be abandoned with no responsibility on the owner to deal with ongoing water pollution after mining ended.

If Government does not take action, thousands of tonnes of metals will continue to pollute rivers for hundreds more years. The WAMM programme was set up by the Environment Agency, the Coal Authority and the Department for Environment, Food and Rural Affairs (Defra) to tackle this polluting legacy of the industrial revolution.



Map showing the main areas in England affected by metal mine discharges

The WAMM Programme supports the Government's 25 Year Environment Plan which aims to improve the environment within a generation and leave it in a better state than we found it.

Pollution from abandoned metal and coal mines is one of the top ten challenges for the water environment. The WAMM Programme will help achieve the objectives of statutory River Basin Management Plans to clean up polluted rivers by 2027.

The Government has recently proposed long-term targets under the Environment Act 2021. One of the water targets is to reduce by half the length of rivers and estuaries polluted by cadmium, nickel, lead, zinc, copper and/or arsenic from abandoned metal mines by 2037. The WAMM Programme is the main mechanism to achieve this target.

Our Responsibility to the Environment

We all have a responsibility to our environment, and this is becoming more and more prominent as we understand more about the impacts our activities have on our planet.

The way we think about our environment is changing and it's changing for the better. More and more people are getting involved in initiatives such as beach cleans, reducing the amount of plastic they use, cutting down on waste, making better transport choices and using our spaces better to support wildlife.

There is more we can do though, and the new Environment Act will deliver the biggest legislative changes since 1995, addressing the government's ambition to leave the environment in a better state.

The Act focuses on 4 key areas of change. Within this is a commitment to improve water quality standards in our rivers. The WAMM programme has a big role to play in this.

Proposed Environment Act target

"to reduce the length of rivers and estuaries polluted by target substances from abandoned mines by 50% by 2037"

The WAMM Programme

The WAMM programme aims to clean up the 1,500km of English rivers that are polluted by abandoned metal mines, in support of the Government's 25 Year Environment Plan and statutory River Basin Management Plans.

It's the only programme that will help to meet the government's proposed target to remove metal pollution from our rivers.

Reducing Waste

Improving our Water Quality

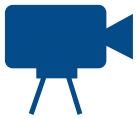
Protecting Nature and Biodiversity

Improving our Air Quality

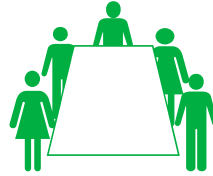


Our Engagement

Throughout the development of proposals for a scheme at Nenthead we have:



Developed information videos to help explain what we're trying to achieve.



Held several face to face events in Nenthead, to introduce and discuss proposals.



Received and responded to more than **50** questions and queries relating to the proposals.



Issued around **15** email updates via our Mailchimp system and **5** village wide postal updates.



9+ social media posts



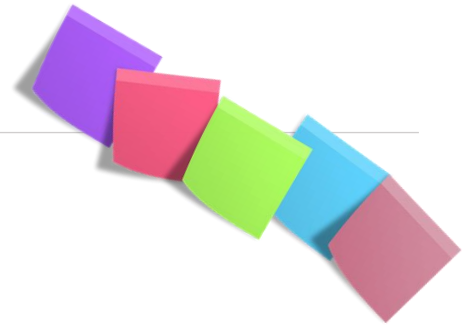
Set up a Nenthead scheme website:

<https://consult.environment-agency.gov.uk/north-east/nenthead-mwts/>

If you have any other suggestions of how you would like to be kept informed and involved in the development of these proposals, please let us know.

Tell us your thoughts

Use post-its or write directly on the paper below.



Water and Abandoned Metal Mines (WAMM) programme
Cleaning up rivers polluted by abandoned metal mines



Tell us your thoughts

Use post-its or write directly on the paper below.



Water and Abandoned Metal Mines (WAMM) programme
Cleaning up rivers polluted by abandoned metal mines



Nenthead Scheme Proposals

Progress Update: May 2022

Over the past few months, we have been gathering more information to help us to develop the proposed treatment scheme to clean up mine water from the Caplecleugh and Rampgill Levels. The basic layout has not substantially changed but we are continuing to explore different options for some elements.

The Pumping Station

We need to pump the mine water up to the treatment ponds. The electrically powered pumps will be put inside a small stone building near the Nenthead carpark.

After feedback at the October event, we are considering four new locations. We are reviewing potential impacts on the local environment, practicality and cost before deciding on our preferred location.



(www.googlemaps.com)

The Footbridge to Caplecleugh Level

We need to take the mine water from the Caplecleugh Level to the pumping station. The best way to do this is to attach a pipe to the footbridge. This means we are proposing to replace the existing footbridge that crosses the River Nent from the carpark to the Caplecleugh Level.

After speaking to Historic England and the Nenthead Mines Conservation Society, we have developed three potential options that would be strong enough to carry the new pipeline whilst remaining in keeping with the local area.



Nenthead Scheme Proposals

Progress Update: May 2022

The Treatment Ponds

We are proposing to build two open-water treatment ponds to the east of the Handsome Mea reservoir. The total surface area of water in the treatment ponds will be a bit smaller than the reservoir. We will be treating up to 20 litres per second of mine water which will make a huge improvement to water quality, particularly at lower river flows when the environmental damage is worst.

We are reviewing if the treatment ponds can be moved slightly south and if the layout can be changed so that the treated water comes out further away from the village. We need to carry out some more investigation of the ground conditions which will be done over the next few months.



Handsome Mea reservoir

We are also reviewing the location and size of the polishing reedbeds through which the treated water will flow before going back into the River Nent.

We have completed a risk assessment of the underground mines which concluded that the proposed site is suitable to support the construction of a mine water treatment scheme.

Alongside the engineering design work, we are carrying out ecological surveys to confirm our understanding of the plants and wildlife that may be impacted by our proposals.

The Mine Water Pipeline

We need to install a pipeline to take the mine water up to the treatment ponds and then return the treated water back to the river. Our current proposal is to put this beneath the track that runs from the carpark up to the mine site where possible.

Since October, we have been investigating if we can take advantage of a disused pipeline that is already in the track. If we can put a new pipe inside the existing one, it would mean much less digging and disruption along the route. We need to complete some more surveys before we can decide if this is the best option. We are also reviewing the best route for the pipeline to go around the Handsome Mea reservoir to the treatment ponds. In October we showed it going to the north of the reservoir. However, it may be less disruptive for it to stay in the main track and go round the south side. We expect to decide on a preferred option in the next few months.

The River Nent: fish surveys

Environment Agency monitoring

Between 2017 and 2019, the Environment Agency monitored fish and invertebrate (river fly) populations along the River Nent to provide baseline data for the WAMM project.

Monitoring was undertaken at several locations along the River Nent, as well as from the Deepdale Beck, a tributary of the River Tees, which is similar to the Nent except that it isn't polluted by abandoned metal mines.

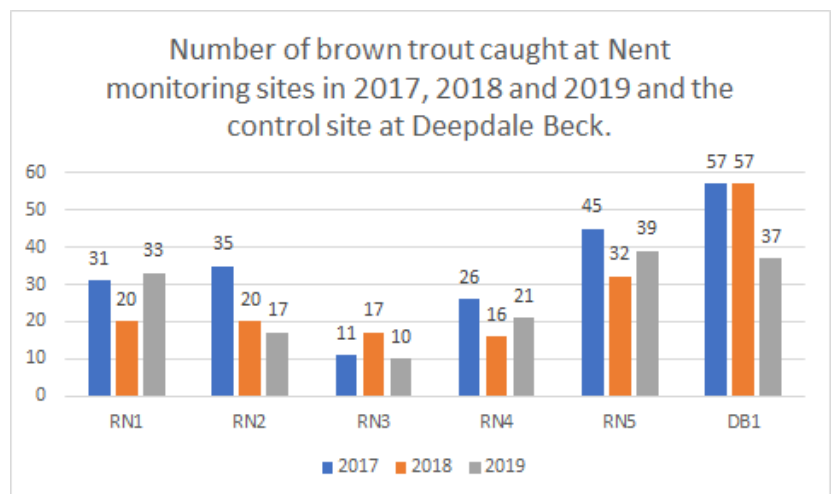
Results

In Deepdale Beck, we found a diverse fish population with Brown Trout, Atlantic Salmon, Grayling, Bullhead, Stoneloach and Minnow recorded, as well as a healthy river-fly population.

Across the 3 years, the only fish found in the River Nent were Brown Trout (migratory fish like salmon are not expected because the Nent Force waterfall is a natural barrier). There were only about half as many trout in the Nent compared to the Deepdale Beck. We found no juvenile fish (less than a year old) in the main River Nent channel and we believe this is because the younger fish live in tributaries where the metal concentrations are lower.

This graph shows the number of fish recorded at the 5 sample sites along the River Nent, and the control site on the Deepdale Beck.

It is likely that these populations have developed some tolerance to the extremely high levels of zinc, cadmium and lead which would normally be acutely toxic to fish.



A similar story was found for river-flies with the surveys recording a lower number and less diverse population. Overall, these results illustrate that aquatic wildlife in the River Nent is heavily impacted by the high metal concentrations and is less resilient and abundant than in similar un-polluted rivers.