Nenthead Mine Water Treatment Scheme

Reptile Survey Report

Coal Authority

Project number: 60596575
MWTS-AEC-NC-XX-RP-Y-3113 P2

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Quality information

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Revision	Revision date	Details	Authorized	Name	Position
P1	3/11/2022	First Issue	LW	Lewis Wardle	Project Manager
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Executive Summary

Surveys of the Site at Nenthead were undertaken in May, June, July and August 2022 and could not find reptiles. This reaffirmed the results of a survey previously undertaken by AECOM for the Coal Authority at Nenthead in 2019, which also could not find reptiles.

The desk study returned one record of common lizard (*Zootoca vivipara*) within 1 km of the Survey Area, and anecdotal evidence of common lizard presence was provided to the surveyors by a member of the public. Despite the negative results from two surveys in the last four years, given the large areas of suitable reptile habitat, it is assumed that common lizard is present within the Survey Area and that adder (*Vipera berus*) and slow worm (*Anguis fragilis*) may also use the habitats.

A Precautionary Working Method Statement (PWMS) for reptiles will be prepared and will form part of a Construction Environmental Management Plan (CEMP) for vegetation clearance works in habitats suitable for reptiles, to ensure legislative compliance.

1. Introduction

1.1 Background

The Department for Environment, Food and Rural Affairs (DEFRA) set up the "Water and Abandoned Metal Mines" (WAMM) Programme in 2011 to begin to tackle pollution from the hundreds of metal mines across the country. The programme is delivered as a partnership between DEFRA, the Environment Agency and the Coal Authority.

The River Nent fails to achieve good status for cadmium, lead, zinc, fish and invertebrates. The Northumbria River Basin Management Plan (RBMP), published in 2015, includes steps for addressing pollution from abandoned mines and managing the impacts to 2027. The WAMM programme has ranked the River Nent as the lowest quality in the Northumbria RBMP, and one of the lowest quality rivers in England, with respect to mine water related pollution. The pollution from the River Nent contributes to pollution in the River South Tyne up to 60km downstream. Due to these impacts, the Nent Catchment has been a priority for investigation, assessment and targeted improvement measures.

AECOM has been appointed by the Coal Authority to undertake the feasibility and outline design for a mine water treatment scheme (MWTS) at the Caplecleugh Adit and Rampgill Adit which are two of the point source contributors to the failure of the River Nent under the RBMP. The aim is to reduce the metal loading (principally lead, zinc, cadmium) within the mine water discharge from the Caplecleugh Adit and Rampgill Adit by between 70% and 90%, providing betterment to the River Nent, whilst adhering to the conditions required for consents, licences and permits. The scheme will also incorporate surface water management across the site to limit the volume of water coming into contact with contaminants.

This Reptile Survey Report has been prepared by AECOM to assess the ecological constraints in connection with the proposed mine water treatment scheme (MTWS) (hereafter referred to as the Scheme) at Nenthead. The Scheme is located at the Nenthead Coal Mines, as shown by the red line boundary in Appendix A. All land situated within the red line boundary is hereafter referred to as the Site.

The assessment of reptile constraints has been undertaken with reference to current good practice[1, 2] and forms part of the technical information commissioned by the Coal Authority in connection with the Scheme. The report addresses relevant wildlife legislation and planning policy as summarised in Appendix B and is consistent with the requirements of *British Standard 42020:2013 Biodiversity. Code of Practice for Planning and Development.*

This report is intended for advice in respect of Scheme design, site layout and / or site investigation. Further ecological surveys and / or ecological impact assessment (EcIA) (including detailed mitigation measures) may be required in connection with a planning application or to contribute to an Environmental Impact Assessment (EIA) once the Scheme proposals have been finalised and any required surveys have been completed.

1.2 The Site

The Site is located at Nenthead Mines at Ordnance Survey national grid reference NY 78395 43287 and is approximately 50ha in size.

The Site comprises of a disused mine including adits and buildings, several ponds, a reservoir, and the River Nent.

[1] Natural England & Defra (2015). *Reptiles: Survey and Mitigation for Development Projects.* Natural England and Defra, https://www.gov.uk/guidance/reptiles-protection-surveys-and-licences.
[2] Froglife (1999). *Reptile Survey: An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation.* Froglife, Halesworth

1.3 The Scheme

The client proposes to design and construct a MWTS to remove metals from the water discharging from the Caplecleugh and Rampgill Adits before it reaches the River Nent. A single storey pumping station is proposed adjacent to the Nenthead car park, which would pump mine water via an underground pipeline to two new treatment ponds near to the Handsome Mea reservoir. The treated water will be returned to the River Nent via an underground pipe. The general location of the proposed MWTS is shown in Appendix A.

1.4 Scope of the Report

This report presents ecological information obtained during the following:

- A desk-study undertaken in June 2022 to obtain records of protected and notable species[3] (including reptiles) within 2km of the Site (the area covered by the desk study is hereafter referred to as the Study Area); and,
- Reptile surveys were undertaken in May and August 2022 on selected areas of habitat identified as suitable for reptiles (detailed in Section 3).

1.5 Survey Aims and Objectives

The aims and objectives of the survey work and the subsequent report presented here were to:

- review existing ecological data to identify any records of reptiles within the Study Area;
- assess waterbodies within the Survey Area for the suitability for reptiles;
- evaluate the survey results to determine the nature conservation value of any reptiles identified within the survey area; and
- determine the status (presence/likely absence) of reptiles within the Survey Area in order to inform the EcIA for the Proposed Development.

[3] Notable species are taken as principal species for the conservation of biodiversity listed under Section 41 of the *Natural Environment and Rural Communities Act 2006*; any species listed in an IUCN Red Data Book; and any other species listed under the Northumberland BAP.

2. Relevant Legislation and Planning Policy

This section sets out the legislative and policy framework within which sites, habitats and species have been identified by government and conservation organisations as the key focus for biodiversity conservation in the UK and which therefore are the focus of ecological assessment with respect to proposed developments.

2.1 Legislation

There are four widespread species of British native reptile, and these are the only native species that occur in Cumbria. These species are adder (*Vipera berus*), grass snake (*Natrix helvetica*), common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*).

The following wildlife legislation, planning policy and guidance is specifically relevant to the identification and assessment of potential constraints posed by the presence of the named reptiles. At this stage of assessment, this legislation, policy and guidance is primarily listed to demonstrate that an appropriate level of survey and assessment has been undertaken to meet likely data requirements for future decision-making regarding these material considerations.

The named reptile species are afforded legal protection through their inclusion on Schedule 5 of the Act. It is an offence under this legislation to intentionally or recklessly kill or injure these species. However, as they are not European protected species their habitat does not receive legal protection.

There is also Government Standing Advice in regards to reptiles. The purpose of standing advice is to guide decision-makers on the determination of proposals with potential to affect protected species such as reptiles. The guidance sets out responsibilities and minimum requirements for survey and mitigation, including requirements for reptiles[4].

2.2 National Planning Policy

The Natural Environment and Rural Communities (NERC) Act (2006), as amended, put an obligation on public bodies to have regard, so far as is consistent with the proper exercise of their functions, to the purpose of conserving biodiversity. Under the terms of the Act, conserving biodiversity includes restoring or enhancing populations and/or habitats. The local planning authority (LPA) or other determining authority must therefore consider the effects of planning applications upon biodiversity and how it can be mitigated for or enhanced.

A list of species and habitats 'of principal importance for the purpose of conserving biodiversity' is published under Section 41 of the NERC Act (2006). The list which includes 56 habitats and 943 species has been drawn up in consultation with Natural England and draws upon the previous UK Biodiversity Action Plan (BAP) List of Priority Species and Habitats which is now obsolete. All named species of reptile are listed as a priority species on the NERC Act, 2006.

The revised National Planning Policy Framework (NPPF) published on 21st July 2021 sets out the government's planning policies for nature conservation in England and how these are expected to be applied. This revised Framework replaces the previous NPPF published in July 2018.

The NPPF states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. It specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this it to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.

[4] Natural England & Defra (2015). *Reptiles: Survey and Mitigation for Development Projects.* Natural England and Defra, https://www.gov.uk/guidance/reptiles-protection-surveys-and-licences.

2.3 Local Planning Policy

The relevant local planning policies specifically applicable to reptiles are provided in the Eden Local Plan and the Eden Biodiversity Action Plan (LBAP). Table 1 provides a brief summary of these policies and strategies. For the precise wording of each, please refer to the source document.

Table 1. Summary of Relevant Local Planning Policies Applicable for Reptiles.

Policy Document	Planning Policy	Purpose
Eden Local Plan 2018	Policy – Biodiversity and Geodiversity	New development will be required to avoid any net loss of biodiversity and geodiversity, and where possible enhance existing assets. Should emerging proposals identify potential impacts upon designated sites, regard should be given to the objectives for each of the hierarchy of sites. The following designations are of international importance and will be afforded the highest level of protection: International/European Sites • Special Areas of Conservation (SAC). • Special Protection Areas (SPA). • Candidate SACs or SPAs. • Ramsar sites. Where harm cannot be avoided, development will only be permitted where mitigation measures would result in no significant harm being caused. Where the proposal cannot rule out possible significant effects, no alternatives exist, and the proposal is deemed to be of overriding public interest, the proposals will only be permitted if adequate compensatory measures can be put in place.
Eden Biodiversity Action Plan 2018	Reptiles (all species)	Ensure biodiversity targets are met and specific conservation objectives are achieved with respect to reptiles.

3. Methodology

3.1 Desk Study

An initial data search was undertaken in 2022. This search requested records for reptiles within the Study Area from the Cumbria Biodiversity Data Centre.

The desk study was restricted to data within the last 10 years (post 2012), so that the data collated would be more likely to reflect the current baseline conditions associated within the Study Area.

Reports from previous ecological surveys of the Site were also reviewed for relevant data, and the results summarised to assist with the conclusions and evaluation where appropriate.

3.2 Field Survey

The reptile survey was undertaken following good practice guidance as detailed in Froglife (1999)[5], with reference to Gent and Gibson (1998). The methods employed comprised a combination of Artificial Refuge Survey (ARS) and Visual Encounter Surveys (VES). A total of seven visits were undertaken during suitable weather conditions to meet the minimum requirements for determining presence, as detailed in Table 2. Survey times reflect the temperature conditions on each visit.

Table 2. Dates and Weather Conditions for the Seven Survey Visits

Visit	Survey Date	Maximum Temperature	Wind Speed (Beaufort)	Cloud Cover (Oktas)	Weather	Survey Times
1	27/05/2022	12	2	4	Mild dry and cloudy	10:00 – 11:00
2	31/05/2022	14	2	3	Mild dry and calm	10:00 – 11:00
3	07/06/2022	13	1	6	Mild dry and cloudy	09:45 – 10:45
4	23/06/2022	16	1	1	Warm dry and bright	09:45 – 10:45
5	29/06/2022	15	1	4	Warm dry and cloudy	09:45 – 10:45
6	11/07/2022	20	0	1	Hot dry and bright	09:30 – 10:30
7	02/08/2022	18	0	1	Hot dry and bright	09:30 – 10:30

Source: <Source>

For the purposes of ARS, a total of 150 artificial reptile refuges (roofing felt tiles measuring approximately 0.5 m^2) were placed in suitable reptile habitat. They were positioned where they would receive direct sun in the morning to warm up. The locations of the refuges are shown on Figure 1 in Appendix B. The refuges were set out on 10th May 2022 and left for a period of 2 weeks to allow them to bed in prior to the first reptile survey being undertaken.

The VES involved surveyors slowly walking along predetermined transects between the locations of the artificial refuges and scanning the vegetation present for reptiles. The walked transects were designed to include, where possible, a range of suitable vegetation types, south facing banks and suitable natural and artificial refuges and basking areas.

A total of seven survey visits were undertaken between May and August 2022, during suitable weather conditions (ideally with temperatures between 9 and 20°C, and sunny with no rain or strong

[5] Froglife (1999). *Reptile Survey: An Introduction to Planning, Conducting and Interpreting Surveys for Snake and Lizard Conservation.* Froglife, Halesworth

winds) (Froglife, 1999). The survey was undertaken by two ecologists to ensure all mats were inspected on each visit while temperatures and weather conditions remained optimal for survey.

3.3 Survey Limitations

There are no limitations to the survey work undertaken. The surveys were completed in appropriate weather conditions and were spread across spring and summer period. Although the optimum recommended period for undertaken reptile surveys is April/ May and September, surveys were undertaken in May, June, July and August. This is not considered to represent a constraint to the survey because of the localised climate of the Survey Area, which is over 400 m above sea level, meaning that the standard recommended survey period was adjusted to take this into account.

Survey refuges were set in all locations in exceedance of the minimum survey effort of 5 to 10 refuges per hectare of suitable habitat, providing a safeguard against any losses of mats over the survey period, and maximising the likelihood of reptiles being detected.

3.4 Quality Assurance

Surveys were undertaken by suitably qualified ecologists with previous experience in undertaking reptile surveys.

4. Results

4.1 Desk Study

The local records centre returned one recent record of common lizard (*Zootoca vivipara*) dated 2012 within the Study Area at NY 806 425, which is in upland habitat contiguous with the Site approximately 2 km east.

The Cumbria BDC datasheet on reptiles in the county states that common lizard and slow worm are "*..likely to occur on most lowland previously developed land sites and lightly-managed grassland*"; adders "*..occur at low density over much of Cumbria in natural or semi-natural habitats*" and grass snakes "*…are probably confined to south Cumbria and the coastal strip*".

A previous survey of habitats within the Survey Area was undertaken by AECOM on behalf of the Coal Authority in April, May and June 2019; a total of 240 refuges (at an estimated density of 16 refuges per hectare of suitable habitat) were placed in upland areas around Handsome Mea reservoir and around existing tracks where suitable potential reptile basking, foraging and refuge habitat was identified. The survey did not record reptiles, but the report concluded that "*Given the range of habitats such as heathland and open communities, there is potential that reptiles such as adder and common lizard could be present on site but there are no local records for these species and the survey undertaken did not record any reptiles. If reptiles are present, they would be in small numbers and low density given the amount of suitable habitat within and beyond the site and as such significant populations would not be expected within the site*".

4.2 Field Survey

No reptiles were recorded during the seven reptile surveys undertaken in 2022, and this reaffirmed the results of the 2019 surveys.

During the course of the surveys anecdotal evidence of common lizard presence within the Study area was given by a member of the public. The Survey Area offers ideal habitat for reptiles especially common lizard, as well as potentially adder (*Vipera berus*) and slow worm (*Anguis fragilis*).

Given the altitude of the Survey Area, which is greater than 400 m above sea level, it is concluded that grass snake (*Natrix helvetica*) is unlikely to be present despite the presence of potentially suitable habitat (including ponds and ditches/ watercourses).

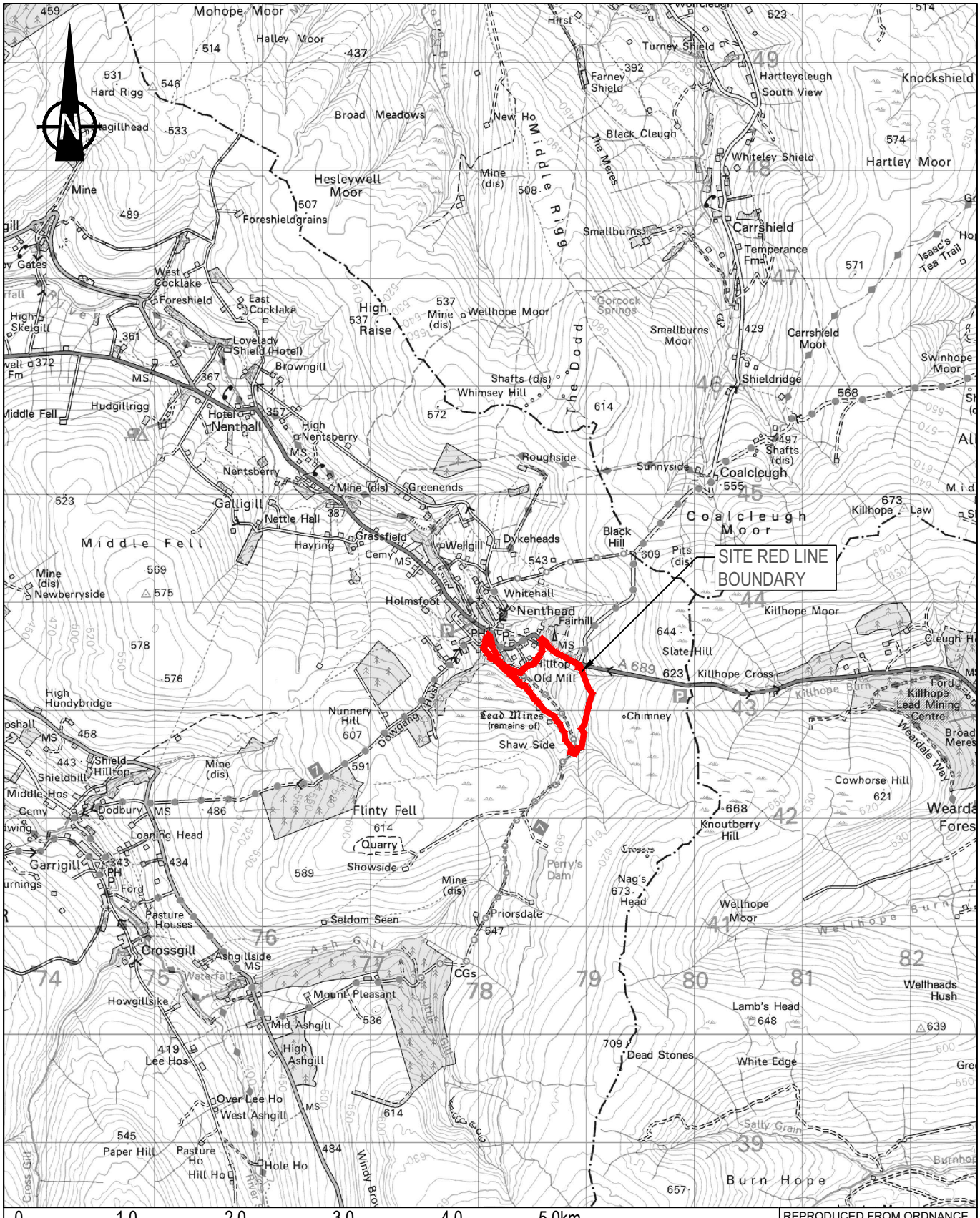
5. Conclusions

No reptiles were found during two previous surveys of habitats at Nenthead, however there is a desk study record, and anecdotal evidence, of common lizard presence. Given the large areas of suitable reptile habitat, it is assumed that common lizard is present within the Survey Area and that adder and slow worm may also use the habitats, although as previously concluded, it is reasonable to assume that any populations would be spread throughout the large expanses of suitable habitat within the wider local area, and significant numbers of reptiles would therefore not be expected to be present within the relatively small areas of habitat directly impacted by the Proposed Development.

All common species of reptile receive protection from deliberate harm under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Therefore as a precaution, standard measures to avoid harming reptiles would be included within a Precautionary Working Method Statement (PWMS) that would form part of a Construction Environmental Management Plan (CEMP) for vegetation clearance works in habitats suitable for reptiles. This would be simply managing the habitat to be affected to be unsuitable for reptiles and leaving a few days for any reptiles present to move into unaffected habitat outside the site.

Given the limited impacts of the Proposed Development on reptile habitats, and taking into account the wider availability of suitable alternative habitat, it is not considered that there will be any requirement for reptile translocation or the provision of alternative compensatory habitats. Opportunities to provide enhancements for reptiles e.g. creation of log pile refuges, should be considered as the design of the Proposed Development progresses.

Appendix A Site Location Plan



Drawing Title

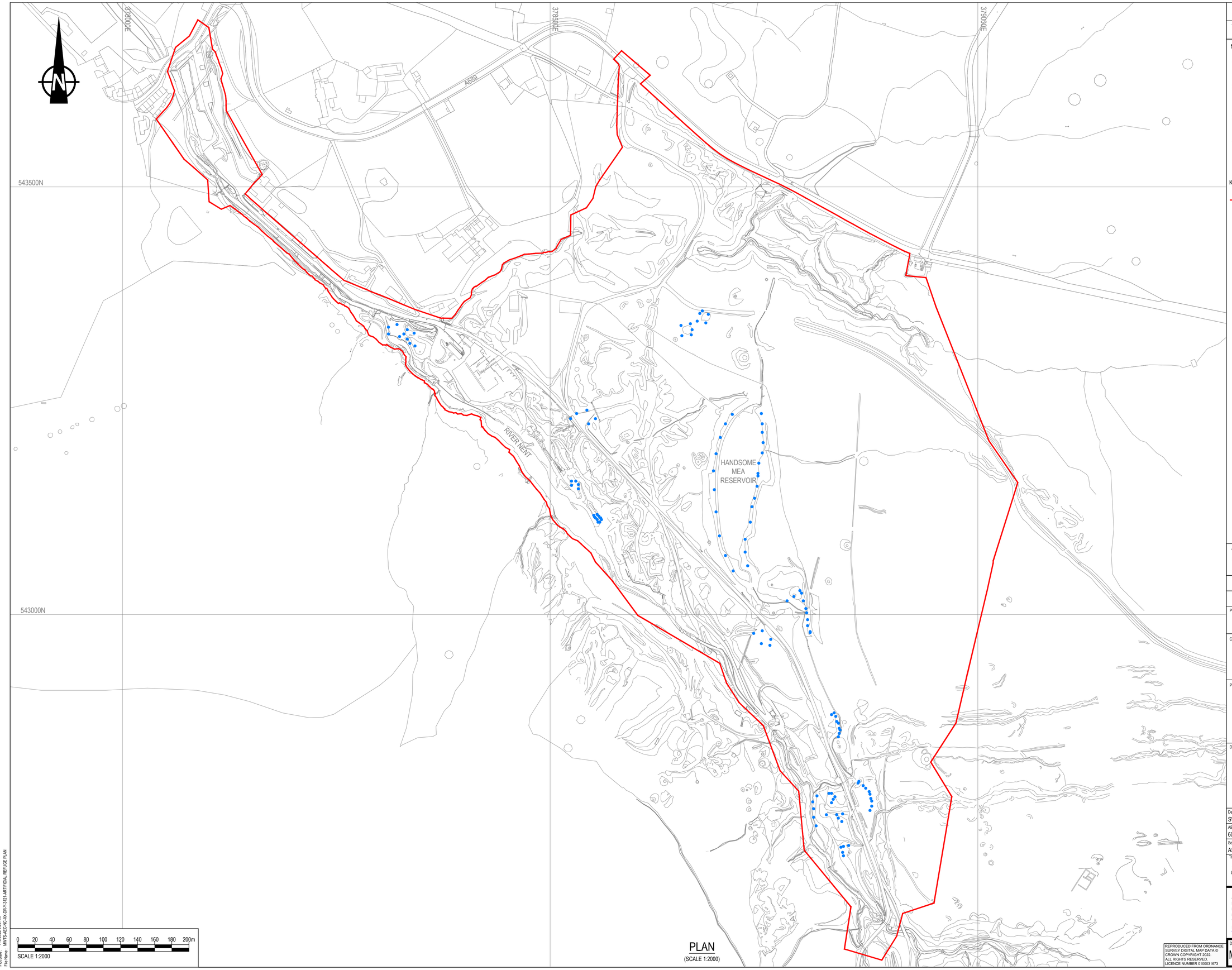
FIGURE 1 -
NENTHEAD MWTS
SITE LOCATION PLAN

Purpose of issue		
PRELIMINARY		
Drawn	Checked	Approved
SDW	AR	JA
Date	Scale @ A4	Rev
25/10/2022	1:50,000	P1
Drawing Number		
MWTS-AEC-NC-XX-DR-Y-3120		

AECOM

Plot Date : 26/10/2022
File Name : MWTS-AEC-NC-XX-DR-Y-3120-NENTHEAD_MWTS_SITE_LOCATION_PLAN

Appendix B Artificial Refuge Plan



PLAN
(SCALE 1:2000)

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED
2. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISED DRAWINGS, DETAILS AND SPECIFICATIONS.
3. ANY DISCREPANCIES ON SITE ARE TO BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY.
4. TOPOGRAPHICAL SURVEY IS BASED ON RPS DRAWINGS 'TOPOGRAPHICAL SURVEY' SHEETS 1-6 REF UAM3149_A DATED JULY 2019 AND PMC SURVEYS LTD DRAWINGS 'RIVER NENT CATCHMENT METAL MINE REMEDIATION' REF 600/1 TO 600/3 DATED 08/10/2013.

KEY

RED LINE BOUNDARY

ARTIFICIAL REPTILE REFUGE LOCATION

This drawing is for preliminary purposes only and is subject to amendment during design development. UNDER NO CIRCUMSTANCES MUST THIS DRAWING BE USED FOR CONSTRUCTION PURPOSES

Revision Details	By / Check	Date	Suffix

Purpose of issue

PRELIMINARY

Client

COAL AUTHORITY

Project Title

NENTHEAD MWTS

Drawing Title

FIGURE 2 - ARTIFICIAL REFUGE PLAN

Designed	Drawn	Checked	Approved	Date
SW	SW	AR	AR	25/10/22

AECOM Internal Project No.	Suitability
60596575	-
Scale @ A1	Zone
AS SHOWN	-

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Drawing Number	Rev
MWTS-AEC-NC-XX-DR-Y-3121	P1

Plot Date: 11/2/2022 9:25 AM
File Name: MWTS-AEC-NC-XX-DR-Y-3121-ARTIFICIAL REFUGE PLAN

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