

# Ynysarwed Mine Water Treatment Works Pond GCN File Note

|                                   |                                     |                                                      |                                  |
|-----------------------------------|-------------------------------------|------------------------------------------------------|----------------------------------|
| <b>Project number</b><br>60624809 | <b>Client</b><br>The Coal Authority | <b>Subject</b><br>GCN File Note- Ynysarwed Farm Pond | <b>Date</b><br>April 2021        |
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## Introduction

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AECOM were commissioned by the Coal Authority to determine the presence or likely absence of great crested newt *Triturus cristatus* in the pond in the east of the Ynysarwed Mine Water Treatment Works ('the Site'), Neath Port Talbot.

Suitable great crested newt was identified in the pond by a previous consultancy; however, no records of great crested newt from within 1 km of the Site were returned from the local records centre (RSK, 2019).

Therefore, an estimation of a Habitat Suitability Index (HSI) to assess the suitability of the pond to support great crested newt and eDNA water sampling of the pond was undertaken by AECOM to determine the presence or likely absence of great crested newt.

This File Note provides a summary of background information, an outline of the methodology and results of the HSI and eDNA assessment in the Ynysarwed Farm Pond (hereafter 'the pond').

This File Note is for the pond only. A file note assessing the suitability of the reedbed has been produced separately (AECOM, 2021a). Please refer to the Ecological Constraints and Opportunities Report (AECOM, 2021b) for further recommendations.

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## Site Location and Description

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Ynysarwed Mine Water Treatment Works is located off the B4242, south west of Abergarwed in the county of Neath Port Talbot (NGR: SN 80863 01725). The pond is located towards the east of the Site and lies between the B4242 to the north and the River Neath and A465 to the South (NGR: SN 81168 01768) (Figure 1). The pond is approximately 100m<sup>2</sup> and surrounded by grassland and hedgerows with a wet ditch connecting to the west. (Appendix A: Photographs 1 and 2).

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## Quality Assurance

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The survey and subsequent report were undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to maintaining our certification to the international standards BS EN ISO 9001:2015 and 14001:2015 and BS ISO 45001 2018. In addition, our IMS requires careful selection and monitoring of the performance of all sub consultants and contractors.

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## Methodology

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### Habitat Suitability Index (HSI) Assessment for Great Crested Newt

An HSI assessment of the pond was undertaken on 19 June 2020. The HSI assessment was undertaken in line with the approach outlined in Amphibian and Reptile Group (ARG) UK Advice Note 5, 2010.

The HSI was developed by Oldham et al. (2000). It is a measure of habitat suitability for great crested newts. It is not a substitute for manual surveys. In general, water bodies with high HSI scores are more likely to support great crested newt than those with low scores. However, the system is not sufficiently precise to allow the conclusion that any particular water body with a high score will support newts, or that any water body with a low score will not do so. However, when used in conjunction with information collected from the ecological desk study and local record centres, HSI can provide a good indication of the likelihood for a pond to support great crested newt.

There is also a positive correlation between HSI scores and the numbers of great crested newt observed in water bodies. So, in general, high HSI scores are likely to be associated with greater numbers of great crested newt. However, the relationship is not sufficiently strong to allow predictions to be made about the number of newts in any particular water body.

HSI scoring can be useful in:

- Evaluating the general suitability of a sample of ponds for great crested newt;
- Comparing general suitability of ponds across different areas; and,
- Evaluating the suitability of receptor ponds in a proposed mitigation scheme.

### Categorisation of HSI Scores

ARG has developed a system for using HSI scores to define water body suitability for great crested newts on a categorical scale:

HSI Water Body Suitability:

- <0.5 = Poor;
- 0.5 – 0.59 = Below Average;
- 0.6 – 0.69 = Average;
- 0.7 – 0.79 = Good; and,
- > 0.8 = Excellent.

The HSI assessment was undertaken by experienced AECOM ecologists (MCIEEM).

### eDNA Sampling – Great Crest Newt Presence/Absence

eDNA sampling of the pond was undertaken on 19 June 2020 to determine the presence or likely absence of great crested newt. This was undertaken by an experienced AECOM Ecologist with a Natural Resources Wales (NRW) great crested newt licence.

eDNA sampling was completed following the methodologies provided in Biggs et al (2014). The eDNA kit was purchased from ADAS.

A total of 20 water samples were taken from five locations around the water body as described in the instructions provided by ADAS and Biggs et al (2014).

Samples were stored in accordance with the instructions provided by ADAS and sent to ADAS for analysis. Care was taken at all steps in the procedure to avoid contamination of samples.

## Limitations

Due to vegetation cover and steep banks in some places, surveyors were unable to access 25% of the pond perimeter for eDNA survey. This is not considered a significant limitation as a representative sample of all the habitats present at the pond was able to be taken.

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## Results

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### Habitat Suitability Index Assessment

The HSI score for the pond and its suitability categorisation is shown in Table 1.

**Table 1. HSI Assessment Score**

| Pond Name           | HSI Score | HSI Categorisation |
|---------------------|-----------|--------------------|
| Ynysarwed Farm Pond | 0.65      | Average            |

The HSI assessment indicates the pond has an 'average' suitability for supporting great crested newt.

In general, ponds with high HSI scores are more likely to support great crested newt than those with low scores. However, the system is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so.

### eDNA Sampling – Great Crested Newt Presence/Absence

The eDNA results were returned from the laboratory as 'negative' from the sample submitted. This suggests the likely absence of great crested newt from the pond.

A copy of the laboratory results sheet is included in Appendix B.

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## Conclusion

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The conclusion of the surveys for great crested newt in the pond are as follows:

- The HSI assessment score was 0.65 and indicates the pond has an 'average' suitability for supporting great crested newt. HSI is a measure of habitat suitability for great crested newts. However, the system is not sufficiently precise to allow the conclusion that any particular water body with a high suitability score will support newts, or that any water body with a low suitability score will not do so.
- The eDNA results were returned from the laboratory as 'negative' from the sample submitted. This supports the conclusion of likely absence of great crested newt from the pond. As there are also no connecting ponds in the area it is unlikely that there will be movement of great crested newt into the pond.

Taking all available information into account (eDNA, HSI, local desk study information), it is concluded that the pond and surrounding terrestrial habitat are unlikely to support great crested newt.

These results are considered to be valid for three years. No further surveys are recommended in the interim period to inform a proposed development at Ynysarwed Mine Water Treatment Works.

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## References

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- AECOM (2021a). Ynysarwed Mine Water Treatment Works Reedbed GCN eDNA & Manual Survey File Note. April 2021.
- AECOM (2021b). Ynysarwed Mine Water Treatment Works Ecological Constraint and Opportunities Report. April 2021.
- Amphibian and Reptile Groups of the United Kingdom (2020). ARG UK Advice Note 5 Great Crested Newt Habitat Suitability Index May 2010.
- Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford.
- Natural England (2013). Standing Advice Species Sheet: Great crested newts.
- Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10(4), 143-155.
- RSK (2019). Ynysarwed, Neath - Preliminary Ecological Appraisal.

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## Figure 1. Site Boundary

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## Appendix A Site Photographs

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Photograph 1: View of pond from the North

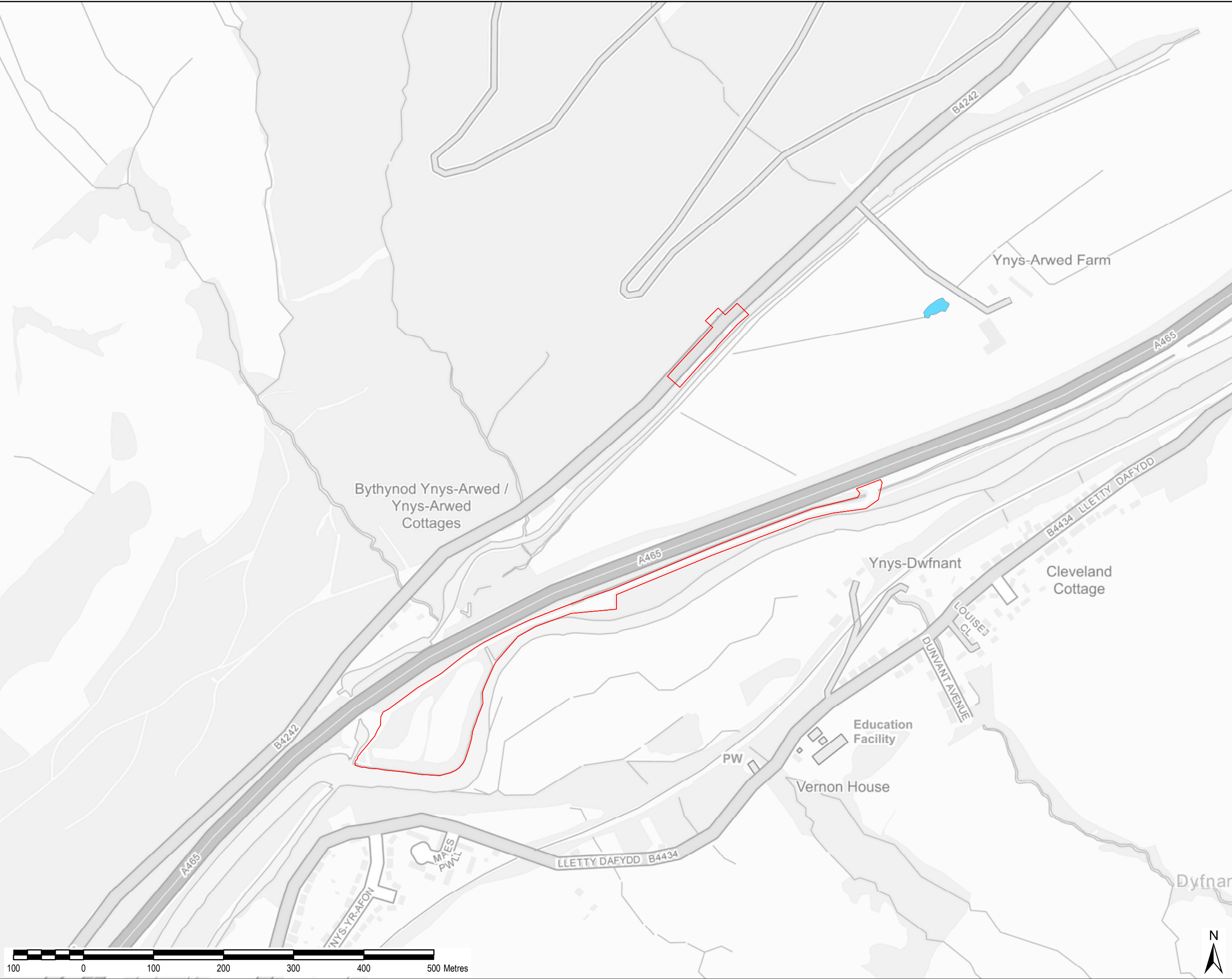


Photograph 2: View of pond from the South

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## Appendix B eDNA Results

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**Project Title:**

**YNYSARWED MINE  
WATER TREATMENT  
SCHEME**

**Client:**

**THE COAL AUTHORITY**

**LEGEND**

- Project Boundary
- Pond

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**AECOM Internal Project No:**

60624809

**Drawing Title:**

**SITE LAYOUT**

**Scale at A3:** 1:5,000

**Drawing No:** **Rev:**

FIGURE 1 A

**Drawn:** **Chk'd:** **App'd:** **Date:**

GM ST AP 12/04/21