A1 in Northumberland: Morpeth to Ellingham

Scheme Number: TR010059

Great Crested Newt Verification Survey Report

AFPF Regulation Rule 8(1)(c)

Planning Act 2008

Infrastructure Planning (Prescribed Forms and Procedure) Regulations 2009

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The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

The A1 in Northumberland: Morpeth to Ellingham

Development Consent Order 20[xx]

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EXECUTIVE SUMMARY

An application for a Development Consent Order (DCO) was made by Highways England (Applicant) on 07 July 2020 to the Secretary of State for Transport via the Planning Inspectorate (Inspectorate) under the Planning Act 2008 (2008 Act). If made, the DCO would grant consent for the A1 in Northumberland: Morpeth to Ellingham (Scheme). The Scheme comprises Part A: Morpeth to Felton (Part A) and Part B: Alnwick to Ellingham (Part B). This report relates to Part A only.

Due to the age of the original assessment (dating back to 2016 and 2017), a great crested newt verification survey was undertaken in 2020 for Part A to identify changes to baseline data (collected 2016 and 2017) and verify the impact assessment and mitigation detailed within **Chapter 9: Biodiversity Part A** of the Environmental Statement (ES) [**APP-048**].

The 2020 great crested newt verification survey involved a Habitat Suitability Assessment (HSI) assessment and eDNA survey of each of the waterbodies previously surveyed between 2016 and 2018, referenced as waterbodies A1 to A22 and Eshott Pond within this report. The scope of the verification survey has been discussed and agreed with Natural England.

Waterbodies A1, A2 and A8 were scoped out from an eDNA assessment in 2020 as they were unsuitable to support great crested newts. Further, waterbodies A5, A6 and A7 were dry at the time of survey and therefore not subject to an assessment. Waterbody A9 was no longer present in 2020.

The 2020 assessment confirmed the presence of great crested newt in waterbodies A11, A19, A21, which is consistent with the previous survey results. Likely absence of great crested newts was also verified by the eDNA results for waterbodies A3, A4, A10, A14, A15, A16, A20 and Eshott Pond, consistent with previous survey results. An inconclusive result was obtained for A17 in 2020, although great crested newts were recorded likely absent in 2017. Due to the deterioration in habitat suitability between 2017 and 2020 and an absence of other waterbodies within 500 m (where great crested newts may have dispersed from), it is considered that great crested newt remain likely absent from A17.

Access was not granted to waterbodies A12, A13, A18 and A22. A medium great crested newt population was recorded in waterbody A12 in 2017 and assumed to remain present and of the same size. Due to the proximity of waterbody A13 to known great crested newt ponds (A11 and A12), on a precautionary basis the waterbody shall be included within pre-construction update surveys that shall inform the subsequent EPS Licence for waterbodies A11 and A12. It is assumed that great crested newts remain absent from waterbodies A18 and A22.

The 2020 surveys identified no changes to the presence/likely absence of great crested newt within each of the surveyed waterbodies. As such, the results for the presence/likely

absence and population size class presented in **Table 9-11** of **Chapter 9: Biodiversity Part A** [**APP-048**] remain the same and the impact assessment and mitigation presented within **Chapter 9: Biodiversity Part A** [**APP-048**] remains valid.

1. INTRODUCTION

1.1. PROJECT BACKGROUND

1.1.1. An application for a Development Consent Order (DCO) was made by Highways England (Applicant) on 07 July 2020 to the Secretary of State for Transport via the Planning Inspectorate (Inspectorate) under the Planning Act 2008 (2008 Act). If made, the DCO would grant consent for the A1 in Northumberland: Morpeth to Ellingham (Scheme). The Scheme comprises:

a. Part A: Morpeth to Felton (Part A) is located along the A1 carriageway between Warrener's House Interchange at Morpeth and the existing dual carriageway at Felton. Part A is approximately 12.6 km in length.

b. Part B: Alnwick to Ellingham (Part B) starts approximately 15 km north of the northern extent of Part A and is located along the A1 carriageway between Alnwick and Ellingham and is approximately 8 km in length.

1.1.2. A detailed description of the Scheme as a whole can be found in **Chapter 2: The Scheme** of the Environmental Statement (ES) [**APP-037**].

1.1.3. Due to the age of the original assessment (dating back to 2016 and 2017), a great crested newt verification survey was undertaken in 2020 for Part A to verify the impact assessment and mitigation detailed within **Chapter 9: Biodiversity Part A** of the ES [**APP-048**].

1.1.4. The verification surveys detailed within this report were specific to Part A and did not include an assessment of Part B. A great crested newt survey for Part B was undertaken in 2018/19 and therefore the data is considered current. As such, a verification survey of Part B was not considered necessary. Natural England confirmed during a meeting on 15 December 2020 that the ecological surveys undertaken to date for the Scheme, including those for Part B, were appropriate, including methodologies, timing and extent. This is documented within the Natural England Statement of Common Ground.

1.2. ECOLOGICAL BACKGROUND

1.2.1. An assessment of Part A for great crested newt was completed in 2016, 2017 and 2018. This comprised identification of waterbodies within 500 m of Part A (hereby referred to as the Survey Area), an assessment of habitat suitability for great crested newt (Habitat Suitability Index (HSI) assessment) and, where required, surveys to establish presence/likely absence of the species (including environment DNA (eDNA) surveys and surveys using conventional techniques, such as bottle trapping or use of a torch).

1.2.2. The surveys undertaken between 2016 and 2018 identified 24 waterbodies within the Survey Area[1]. Following the completion of eDNA) and presence/likely absence surveys,

[1] A total of 22 waterbodies were identified in 2016 (A1 to A2), waterbody A20 was surveyed as two separate waterbodies in 2017 and an additional waterbody was identified in 2018 (Eshott Pond).

great crested newt populations were confirmed within four waterbodies: A11, A12, A19 and A21. Further surveys were conducted to enable a population size class assessment. Ponds A11 and A12 were assessed to support Medium and Low populations respectively, representing a Medium metapopulation. Ponds A19 and A21 both supported Low populations.

1.2.3. The findings of the 2016, 2017 and 2018 surveys are detailed within **Appendices 9.4** [**APP-230**]**, 9.5** [**APP-231**] and **9.6** [**APP-232**] of the ES.

1.3. BRIEF AND OBJECTIVES

1.3.1. The Applicant commissioned the following:

a. To undertake a HSI assessment of all waterbodies previously surveyed to review their habitat suitability for great crested newts;
b. To complete an eDNA survey of all waterbodies previously surveyed to verify the presence/likely absence of great crested newts.

1.3.2. The results of these surveys and comparison to the previous survey results are detailed within this report.

1.3.3. The scope of the verification survey was discussed with Natural England, who confirmed in an email dated 30 June 2020 that "*given that more or less all the surveys* [discussing the ecological surveys in general] *are less than three years old they would be considered to be valid and thus the scope of the verification surveys would appear to be appropriate particularly since there has not been any significant change in land use since the original surveys were undertaken*." This consultation will be documented within the Natural England Statement of Common Ground.

2. METHODS

2.1. HABITAT SUITABILITY INDEX (HSI) ASSESSMENT

2.1.1. Waterbodies within the Survey Area were assessed for their suitability to support great crested newt, using the standard HSI assessment method (ARG UK, 2010 (**Ref. 2**) based on Oldham et al. (2000) (**Ref. 1**)). Waterbodies were identified using 1:25,000 OS mapping; this was also cross referenced against aerial photography. The same Survey Area was used during the 2020 verification survey as for the 2016/17 surveys.

2.1.2. Waterbodies were assessed and scored on ten key variables which are known to influence breeding populations of great crested newt, in accordance with standard methods (**Ref. 2**). This assessment followed the same standard methodology as the original assessment.

2.1.3. The ten key variables are:

a. Geographic location;
b. Waterbody area;
c. Waterbody permanence;
d. Water quality;
e. Waterbody shading;
f. Impact of waterfowl;
g. Fish stocks;
h. Number of waterbodies within 1km;
i. Terrestrial habitat around the waterbody; and
j. Macrophyte cover of the waterbody.

2.1.4. Scores for each of the above variables were used to calculate an overall HSI value for each waterbody. This was then cross referenced with the guidelines (**Ref. 1**) to assign a pond to one of five categories, ‘poor’, ‘below average’, ‘average’, ‘good’ or ‘excellent’. Index calculation is not a failsafe method of identifying whether a waterbody supports great crested newts or not; therefore, professional judgement and availability of records of great crested newt in the locality was also been used to inform the requirement for further survey.

2.2. ENVIRONMENTAL DNA ASSESSMENT

2.2.1. Waterbodies within the Survey Area were subject to an eDNA survey. This involved obtaining water samples using a kit provided by a Natural England approved supplier (Nature Metrics). Water samples were preserved on site in a buffer solution, stored in a cool box to avoid degradation of the sample and returned via courier to the laboratory for analysis. The sampling and analysis techniques were compliant with the approved protocol, as recognised by Natural England (**Ref. 3**). This verification survey followed the same standard methodology as the original surveys.

2.3. DATES OF SURVEY AND PERSONNEL

2.3.1. All surveys were undertaken between 29 May 2020 and 30 June 2020. Both survey techniques were conducted during the same visit to each waterbody.

2.3.2. Each survey was conducted by surveyors with experience of surveying for great crested newt, with lead surveyors having a minimum of two years' experience. At least one surveyor also held a Natural England class survey licence for great crested newt (2015-16685-CLS-CLS, 2017-32464- CLS-CLS, 2015-16952-CLS-CLS, 2015-17250-CLS-CLS).

2.4. NOTES AND LIMITATIONS

2.4.1. It has been assumed that, where the 2020 eDNA survey confirms the presence of great crested newt within a previously identified great crested newt waterbody (A11, A12, A19 and A21), the great crested newt population has remained the same. This is considered appropriate as the mitigation for Part A includes pre-construction update great crested newt surveys to inform the proposed European Protected Species (EPS) licences (refer to mitigation measure DM004 in **Table 9-23** of **Chapter 9: Biodiversity Part A** of the ES [**APP-048**].

2.4.2. Due to an increase in water levels, waterbody A20 was surveyed as a single waterbody in 2020 (previously surveyed as A20a and A20b in 2017 when water levels were low).

2.4.3. Due to the size of Eshott Pond, which comprises two adjacent large waterbodies, two eDNA kits were used to sample the water. These were labelled as Eshott Pond 1 and Eshott Pond 2 although are reported as a single waterbody within this report.

2.4.4. Access was refused to waterbodies A12 and A13 and could not be agreed in sufficient time for waterbodies A18 and A22. As such, these waterbodies were not subject to verification survey. This has been considered within **Section 4 Discussion and Evaluation** of this report.

2.4.5. Waterbody A1 was previously scoped out from an eDNA survey in 2018 due to it being a slurry pit. The waterbody was recorded in the same condition in 2020. Waterbody A2 was a running burn and the pond-like area of A2 previously recorded in 2016 was not located. Waterbody A8 was a brick walled pool that was at least 2m deep. All three waterbodies were considered unsuitable to support great crested newts and were scoped out from an eDNA assessment in 2020. Waterbodies A1, A2 and A8 are not discussed further within this report.

2.4.6. Waterbody A9, a ditch with standing water was not found during the 2020 survey. The waterbody had dried part way through the survey effort in 2017. It has been assumed that A9 is no longer present.

2.4.7. Waterbodies A5, A6 and A7 were dry at the time of survey and therefore not subject to assessment.

2.4.8. During the eDNA survey, the presence of a fence line along one side of waterbody A4, along with dense scrub, prevented the surveyor from sampling approximately 60% of the perimeter of the waterbody. In addition, access could be achieved to approximately 50% of the perimeter of waterbodies A19, A20 and A21 and 70% of Eshott Pond. Whilst it is aimed to achieve 80% access for the eDNA survey, the access constraints are not considered to have presented a significant impact to the overall assessment of these waterbodies (due to the historic information available).

2.4.9. The eDNA laboratory results for waterbody A17 came back 'inconclusive'. This means that no great crested newt DNA was detected in the sample, but the internal controls of the analysis failed to be effective. This could be caused as a result of degradation of the DNA within the sample or by inhibition of the reaction during the analysis, which can be caused by certain chemicals or organic compounds within the water sample. As such, there cannot be confidence in a negative result. The inconclusive result presents a limitation to the survey, although great crested newt were previously recorded absent from A17 in 2017.

2.4.10. **Table 2-1** below provides a summary of survey completion for each waterbody.

2.4.11. The above limitations are not considered to have a significant impact on the validity of the survey results or the ability of the ecologists to meet the objectives of this report.

Table 2-1 - Summary of Survey Completion

	2016, 2017, 2018 Surveys			2020 Surveys	
Waterbody Reference	**HSI Completed**	**eDNA Survey Completed**	**Presence/likely absence Surveys Completed**	**HSI Completed**	**eDNA Survey Completed**
A1	✓	Not surveyed	Scoped out	✓	Scoped out
A2	✓	Not surveyed	✓	Scoped out	
A3	✓	✓	✓ (partial)	✓	✓
A4	✓	Not surveyed	Access not granted – not surveyed	✓	✓
A5	✓	✓	✓	Dry – not surveyed	
A6	✓	Not surveyed	✓	Dry – not surveyed	

Waterbody Reference	2016, 2017, 2018 Surveys			2020 Surveys	
	HSI Completed	eDNA Survey Completed	Presence/likely absence Surveys Completed	HSI Completed	eDNA Survey Completed
A7	✓	Not surveyed	Dry – not surveyed	Dry – not surveyed	
A8	✓	✓	Scoped out	Scoped out	
A9	✓	✓	✓ (partial)	Not present	
A10	✓	✓	✓ (partial)	✓	✓
A11	✓	✓	✓	✓	✓
A12	✓	✓	✓	Access not granted – not surveyed	
A13	✓	✓	Dry – not surveyed	Access not granted – not surveyed	
A14	✓	Not surveyed	✓	✓	✓
A15	✓	✓	Scoped out	✓	✓
A16	✓	✓	Scoped out	✓	✓
A17	✓	✓	✓	✓	✓
A18	✓	Not surveyed	✓	Access not granted – not surveyed	
A19	✓	✓	✓	✓	✓
A20	✓	✓	Dry – only single visit	✓	✓
A21	✓	✓	✓	✓	✓
A22	✓	✓	Scoped out	Access not granted – not surveyed	
Eshott Pond	✓	✓	✓	✓	✓

3. RESULTS AND EVALUATION

3.1. HSI ASSESSMENT

3.1.1. A summary of the HSI results and location information for the waterbodies is included in **Table 3-1**. Waterbody numbers correspond to those in **Figure 2;** raw HSI data is provided in **Appendix A**.

3.1.2. The HSI results are considered to be an accurate indication of the suitability of the surveyed waterbodies to support great crested newt.

3.1.3. For all waterbodies apart from A3, HSI suitability classifications recorded in 2020 were either the same or lower than those previously recorded. Of particular note was that of waterbody A17, which had reduced from Excellent to Below Average suitability. Whilst a change in HSI suitability category was recorded for waterbody A3 (Good to Excellent), the change in raw score was relatively small. For all other waterbodies, no significant change was recorded from previous survey results.

Table 3-1 - Summary of HSI Results

Waterbody Ref.	Grid Reference	Previous HSI Score and Category[2]	2020 HSI Score and Category
A1	NZ 18874 89427	0.57, Below Average	0.18, Poor
A2	NZ 18579 91256	0.54, Below Average	Scoped out
A3	NZ 18342 91548	0.79, Good	0.84, Excellent
A4	NZ 17888 91920	0.63, Average	0.34, Poor
A5	NZ 18718 93714	0.63, Average	Dry - not surveyed
A6	NZ 18581 95238	0.41, Poor	Dry – not surveyed
A7	NZ 17945 96410	0.79, Good	Dry – not surveyed
A8	NZ 18943 96534	0.63, Average	Scoped out
A9	NZ 18457 96835	0.52, Below average	No longer present
A10	NZ 18479 96848	0.59, Below Average	0.58, Below Average
A11	NZ 17649 97025	0.74, Good	0.62, Average

[2] Previous HSI scores were recorded in 2016 for all waterbodies except Eshott Ponds, which was recorded in 2018.

Waterbody Ref.	Grid Reference	Previous HSI Score and Category[2]	2020 HSI Score and Category
A12	NZ 17834 97104	0.70, Good	Access refused – not surveyed
A13	NZ 18083 97099	0.58, Below Average	Access refused – not surveyed
A14	NZ 18074 97116	0.73, Good	0.61, Average
A15	NZ 18064 97353	0.44, Poor	0.27, Poor
A16	NZ 17937 97867	0.51, Below Average	0.54, Below Average
A17	NZ 17593 98179	0.90, Excellent	0.56, Below Average
A18	NZ 17099 98657	0.53, Below Average	Access not granted – not surveyed
A19	NZ 17316 99994	0.89, Excellent	0.89, Excellent
A20	NU 16987 00556	0.81, Excellent	0.79, Good
A21	NU 17083 00520	0.74, Good	0.76, Good
A22	NU 18049 00359	0.48, Poor	Access not granted – not surveyed
Eshott Pond	NZ 18304 98949	0.70, Good	0.57, Below Average

3.2. ENVIRONMENTAL DNA ASSESSMENT

3.2.1. The eDNA analysis returned a positive result for waterbodies A11, A19 and A21, confirming the presence of great crested newt. Previous surveys in 2017 also recorded the presence of great crested newt within these waterbodies.

3.2.2. An inconclusive eDNA result was returned for waterbody A17 owing to an inhibition within the water sample, therefore presence/absence of great crested newt could not be determined from the sample.

3.2.3. Negative results were returned for all other surveyed waterbodies (A3, A4, A10, A14, A15, A16, A20 and Eshott Pond), indicating the likely absence of great crested newt from these waterbodies.

3.2.4. Laboratory reports confirming the great crested newt 2020 eDNA results are presented in **Appendix B**.

4. DISCUSSION AND EVALUATION

4.1.1. The verification survey in 2020 reported similar results to those of baseline surveys undertaken in 2016-18. No significant change in HSI scoring was recorded except for A17, which changed from Excellent to Below Average owing to poor macrophyte cover and unsuitable terrestrial habitat offering limited foraging and shelter opportunities.

4.1.2. The eDNA results verified the presence of great crested newt in waterbodies A11, A19 and A21 and the likely absence of great crested newt in all other surveyed waterbodies (A3, A4, A10, A14, A15, A16, A20 and Eshott Pond), except A17 for which an inconclusive result was obtained. Previous surveys for A17 in 2017 recorded a likely absence of great crested newt. Further, the 2020 HSI assessment showed a marked deterioration in the suitability of the waterbody since the 2016 HSI assessment. There are no other known waterbodies present within 500 m of A17 and therefore no natural routes by which great crested newt may colonise the waterbody. For these reasons, it is considered that great crested newts remain likely absent from A17.

4.1.3. Owing to survey limitations (as detailed in **Section 2.3**), data could not be obtained to verify the presence/likely absence of great crested newt for waterbodies A12, A13, A18 and A22.

4.1.4. In 2017, a Medium great crested newt population was recorded within waterbody A12 and A13 was recorded as a dry ditch. It has been assumed that the great crested newt population remains the same size as the results of the previous surveys. As the mitigation for Part A includes pre-construction update great crested newt surveys for A12 to inform the proposed European Protected Species (EPS) licence, the absence of a 2020 survey is not considered a significant limitation to the objectives of the verification survey.

4.1.5. Whilst access to waterbody A13 was not possible during 2020, owing to the waterbody's proximity to ponds with confirmed great crested newt presence (waterbodies A11 and A12), the waterbody shall be included within the suite of pre-construction update surveys required to inform the EPS Licence for waterbodies A11 and A12. This has been captured within the updated Outline Construction Environmental Management Plan (CEMP), measure A-B18, which is issued at Deadline 1.

4.1.6. No great crested newts were recorded within waterbody A18 during the 2017 survey. The lack of access in 2020 represents a limitation to the objectives of this survey, although a review of aerial imagery indicates the waterbody to be no longer present. For the purposes of this assessment, it is assumed that great crested newts remain absent from waterbody A18.

4.1.7. Waterbody A22 was recorded as of Poor suitability to support great crested newts in 2016, however, it is bordered by high suitability terrestrial habitat (woodland). The closest construction works are approximately 400m northwest of waterbody A22 (excavation of a detention basin), although separated by open, grazed grassland fields (considered to be of negligible to low terrestrial habitat suitability for great crested newt). Given the distance of the waterbody from the nearest construction activity and habitats between, no impacts are

predicted upon waterbody A22 or the amphibians it supports. As such, the lack of access is not considered a limitation to the objectives of the verification survey.

5. LEGAL AND PLANNING POLICY CONTEXT

5.1. LEGAL COMPLIANCE

GREAT CRESTED NEWTS

5.1.1. Great crested newts are afforded a high level of protection under the Conservation of Habitats and Species Regulations 2017 (as amended) (Habitats Regulations, **Ref. 4**), the legislation means that it is an offence to:

a. Deliberately capture, injure or kill a wild great crested newt;
b. Deliberately disturb wild great crested newts; '*disturbance of animals includes in particular any disturbance which is likely*:

(a) to impair their ability —

(i) to survive, to breed or reproduce, or to rear or nurture their young; or

(ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

(b) to affect significantly the local distribution or abundance of the species to which they belong.'

c. Damage or destroy a breeding site or resting place used by this species.

5.1.2. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) (**Ref. 5**) with respect to disturbance of animals when using places of shelter, and obstruction of access to places of shelter.

5.1.3. Due to the high level of protection afforded to great crested newts and their habitat, mitigation for this species is governed by a strict licensing procedure administered by Natural England. A licence may be granted for the preservation of public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment, provided:

a. '*There is no satisfactory alternative'*; and
b. The proposals '*will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'*.

5.1.4. The great crested newt is also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England in accordance with Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006) (**Ref. 6**) public bodies (including the Secretary of State) have a duty to have regard for the conservation of SPI when carrying out their functions, including determining planning applications.

5.2. PLANNING POLICY COMPLIANCE

5.2.1. At the national level, the Scheme is governed by the National Policy Statement for National Networks (NPS NN) (2014) (**Ref. 8**). The NPS NN states that, "*as a general principle, … development should avoid significant harm to biodiversity … conservation interests, including through mitigation and consideration of reasonable alternatives… Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought*". In addition, the National Planning Policy Framework (NPPF) (**Ref. 9**) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including great crested newt. The ODPM circular 06/2005 (**Ref. 10**) (referenced within the NPS NN) also provides supplementary guidance, including confirmation that '*the presence of a protected species is a material consideration when a planning authority is considering a development proposal*'.

5.2.2. The NPPF sets out, amongst other points, how at an overview level '*planning policies and decisions should contribute to and enhance the natural and local environment by:*

a. *…recognising … the wider benefits from natural capital and ecosystem services; and*
b. *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*…'

5.2.3. A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF, and includes the following:

a. '*if significant harm resulting from a development cannot be avoided…adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; and*
b. *opportunities to incorporate biodiversity improvements in and around developments should be encouraged …*'

5.2.4. In addition, planning policy at the local level is informed by the following:

a. Northumberland County Council (NCC) Consolidated Planning Policy Framework May 2019 (**Ref. 11**)
b. Northumberland Local Plan – Draft Plan for Regulation 18 Consultation (**Ref. 12**)
c. Northumberland Local Biodiversity Action Plan (LBAP) (**Ref. 13**)

5.2.5. Under the Northumberland Consolidated Planning Policy Framework, the Former Castle Morpeth District Local Plan (**Ref. 14**) is applicable to Part A.

5.2.6. Full details of the local planning policies relevant to Part A are detailed in **Table 9-3** of **Chapter 9: Biodiversity Part A** of the ES [**APP-048**].

6. CONCLUSIONS

6.1.1. The original great crested newt surveys for Part A were completed between 2016 and 2018 (refer to **Appendices 9.4** [**APP-230**]**, 9.5** [**APP-231**] and **9.6** [**APP-232**] of the ES). Due to the age of the original assessment, a great crested newt verification survey was undertaken in 2020 to verify the impact assessment and mitigation detailed within **Chapter 9: Biodiversity Part A** of the ES [**APP-048**].

6.1.2. The 2020 great crested newt verification survey involved a HSI assessment and eDNA survey of each of the waterbodies previously surveyed between 2016 and 2018 within the Survey Area.

6.1.3. Waterbodies A2 and A8 were scoped out from HSI assessment as well as eDNA assessment in 2020 whereas waterbody A1 was scoped out from eDNA assessment in 2020 as they were unsuitable to support great crested newt. Further, waterbodies A5, A6 and A7 were dry at the time of survey and therefore not subject to an assessment. Waterbody A9 was no longer present in 2020.

6.1.4. The 2020 assessment confirmed the presence of great crested newts in waterbodies A11, A19, A21, which is consistent with the previous survey results. Likely absence of great crested newt was verified by the return of negative eDNA results for waterbodies A3, A4, A10, A14, A15, A16, A20 and Eshott Pond; which is consistent with previous survey results.

6.1.5. An inconclusive result was obtained for A17 in 2020, however, great crested newt were recorded likely absent in 2017. Due to the deterioration in habitat suitability between 2017 and 2020 and an absence of other waterbodies within 500 m (where great crested newts may have dispersed from), it is considered that great crested newts remain likely absent from A17.

6.1.6. Access was not granted to waterbodies A12, A13, A18 and A22. A Medium great crested newt population was recorded in waterbody A12 in 2017 and it has been assumed that a medium population remains present and of the same size. Due to the proximity of waterbody A13 to known great crested newt waterbodies (A11 and A12), A13 will be included within pre-construction update surveys that shall inform the EPS Licence for waterbodies A11 and A12. This has been captured within A-B18 of the updated Outline Construction Environmental Management Plan (CEMP), which is issued at Deadline 1. It is assumed that great crested newts remain absent from waterbodies A18 and A22.

6.1.7. The 2020 surveys identified no changes to the presence/likely absence of great crested newt within each of the surveyed waterbodies. As such, the results for the presence/likely absence and population size class presented in **Table 9-11** of **Chapter 9: Biodiversity Part A** [**APP-048**] remain the same and the impact assessment remains valid.

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- **Ref. 5** HMSO (1981). Wildlife and Countryside Act (as amended by the Countryside and Rights of Way Act 2000).
- **Ref. 6** HMSO (2006) Natural Environment and Rural Communities Act.
- **Ref. 7** Ministry for Housing, Communities and Local Government (2019), National Planning Policy Framework. Ministry for Housing, Communities and Local Government, London.
- **Ref. 8** Department for Transport (2014). National Policy Statement for National Networks. Department for Transport, London.
- **Ref. 9** Ministry of Housing, Communities and Local Government (2019). National Planning Policy Framework (NPPF).
- **Ref. 10** Office of the Deputy Prime Minister (ODPM) (2005). Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System. Circular 06/2005 HMSO, Norwich.
- **Ref. 11** Northumberland County Council (2019). Northumberland Consolidated Planning Policy Framework. Version 27, May 2019.
- **Ref. 12** Northumberland County Council (2019). Northumberland Local Plan – Draft Plan for Regulation 19 Consultation. January 2019.
- **Ref. 13** Northumberland Wildlife Trust (NWT). http://www.nwt.org.uk/northumberland-BAP [Accessed 01 September 2020]
- **Ref. 14** Former Castle Morpeth Borough Council (2003). Castle Morpeth District Local Plan, 1991 – 2006. Adopted February 27th, 2003, Published July 2003. 9.

Figure 1 - Scheme Location Plan

User Name: INAR022551 Date Saved: 30/07/2020 11:48:56

Figure 2-8

Figure 2-7

Figure 2-6

Figure 2-5

Figure 2-4

Figure 2-3

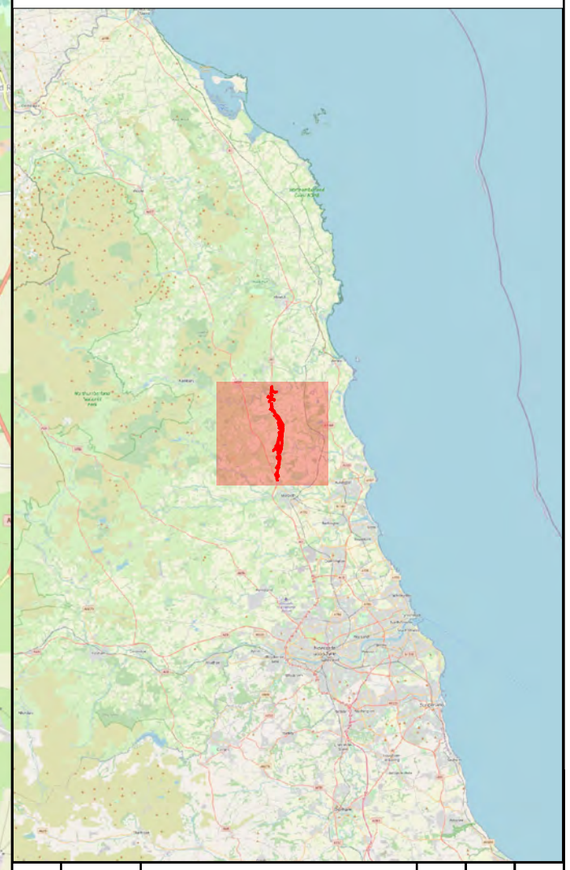
Figure 2-2

Figure 2-1

N

Key

- Order Limits
- Sheet Extents
- Survey Area (500 m buffer)



Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE-1: SCHEME LOCATION PLAN

Scale	Drawn	Checked	Approved	Authorised
1:50,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number HE PIN: HE551459 M2F

Originator: WSP

Volume: 6.8

Type: RP

Role: LE

Number: 1942

Location

Revision: 01

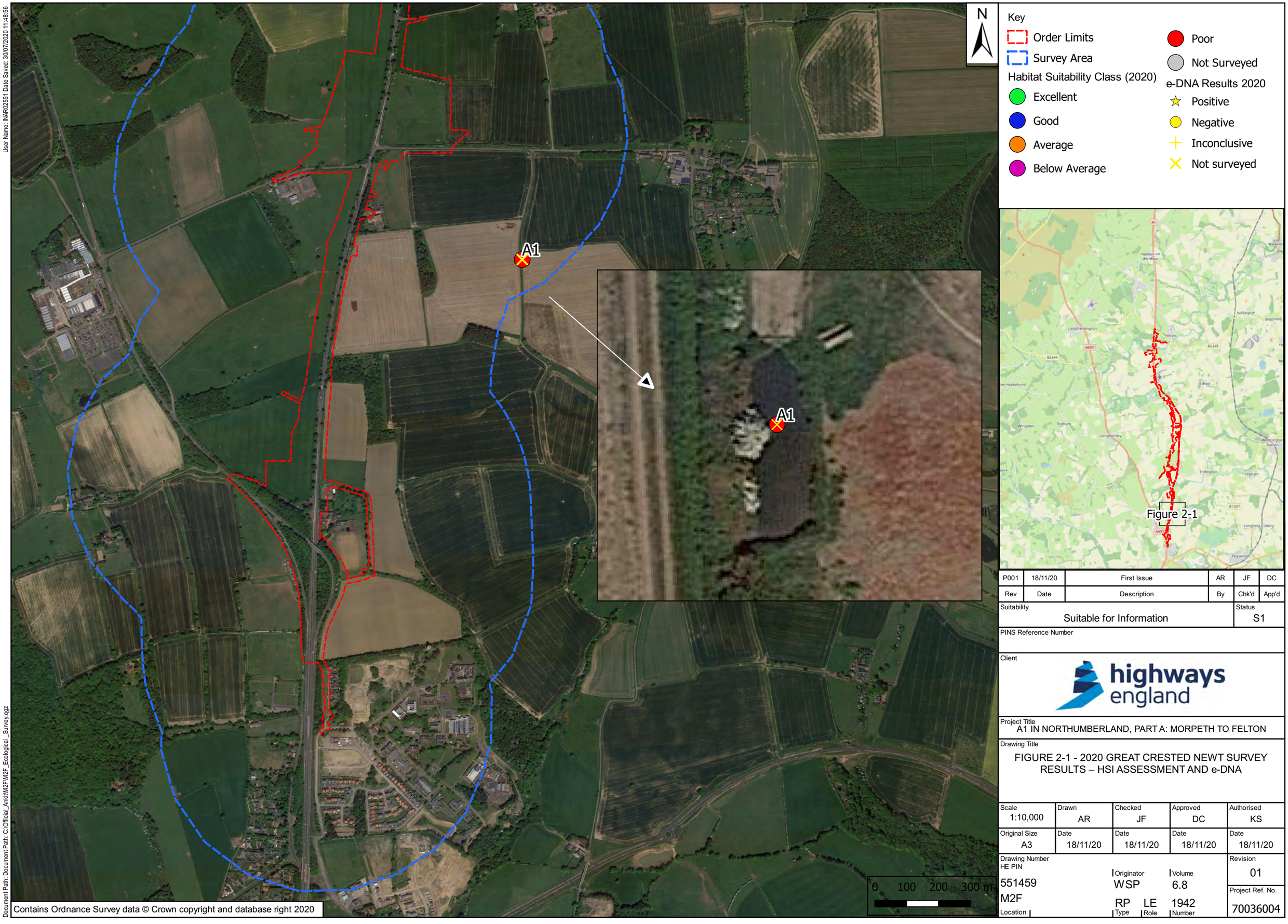
Project Ref. No.: 70036004

0 1,000 2,000 3,000 m

Document Path: Document Path: C:\Official_Ankit\M2F\M2F_Ecological_Survey.qgz

Figure 2 - 2020 Great Crested Newt Survey Results – HSI Assessment and eDNA

User Name: INAR022551 Date Saved: 30/07/2020 11:48:56



Key

- Order Limits
- Survey Area

Habitat Suitability Class (2020)

- Excellent
- Good
- Average
- Below Average
- Poor
- Not Surveyed

e-DNA Results 2020

- Positive
- Negative
- Inconclusive
- Not surveyed

Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number:

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE 2-1 - 2020 GREAT CRESTED NEWT SURVEY RESULTS – HSI ASSESSMENT AND e-DNA

Scale	Drawn	Checked	Approved	Authorised
1:10,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number: HE PIN 551459 M2F (Location) | Originator: WSP | Volume: 6.8 | Type: RP | Role: LE | Number: 1942

Revision: 01

Project Ref. No.: 70036004

Document Path: C:\Official_Ankit\M2F\M2F_Ecological_Survey.qgz

User Name: INAR022551 Date Saved: 30/07/2020 11:48:56

Key

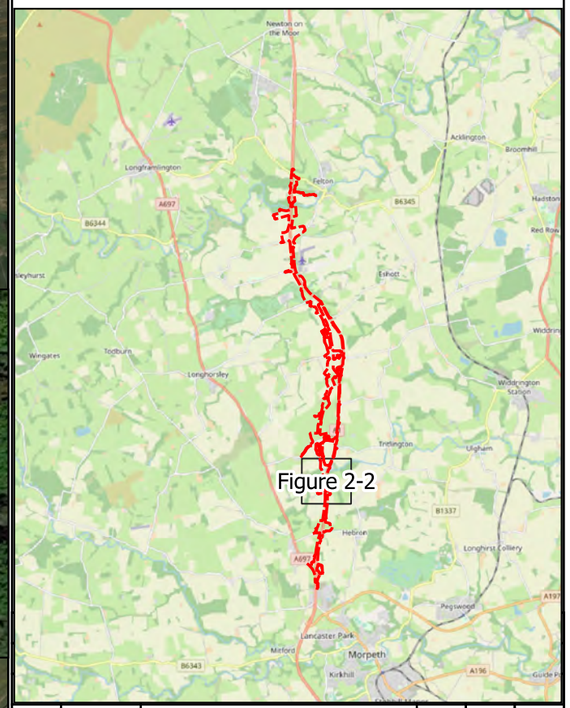
- Order Limits
- Survey Area

Habitat Suitability Class (2020)

- Excellent
- Good
- Average
- Below Average
- Poor
- Not Surveyed

e-DNA Results 2020

- Positive
- Negative
- Inconclusive
- Not surveyed



Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number:

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE 2-2 - 2020 GREAT CRESTED NEWT SURVEY RESULTS – HSI ASSESSMENT AND e-DNA

Scale	Drawn	Checked	Approved	Authorised
1:10,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number: HE PIN 551459 M2F

Location	Originator	Type	Role	Volume	Number	Revision
	WSP	RP	LE	6.8	1942	01

Project Ref. No.: 70036004

Document Path: Document Path: C:\Official_Ankit\M2F\M2F_Ecological_Survey.qgz

Key

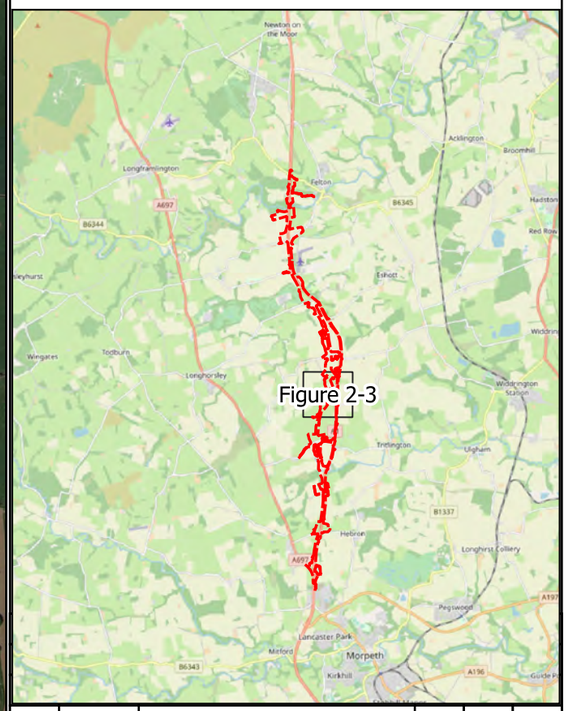
- Order Limits
- Survey Area

Habitat Suitability Class (2020)

- Excellent
- Good
- Average
- Below Average
- Poor
- Not Surveyed

e-DNA Results 2020

- Positive
- Negative
- Inconclusive
- Not surveyed



Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE 2-3- 2020 GREAT CRESTED NEWT SURVEY RESULTS – HSI ASSESSMENT AND e-DNA

Scale	Drawn	Checked	Approved	Authorised
1:10,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number HE PIN: 551459 M2F

Location

Originator: WSP

Volume: 6.8

Type: RP

Role: LE

Number: 1942

Revision: 01

Project Ref. No.: 70036004

User Name: INAR022551 Date Saved: 30/07/2020 11:48:56

N

Key

- Order Limits
- Survey Area

Habitat Suitability Class (2020)

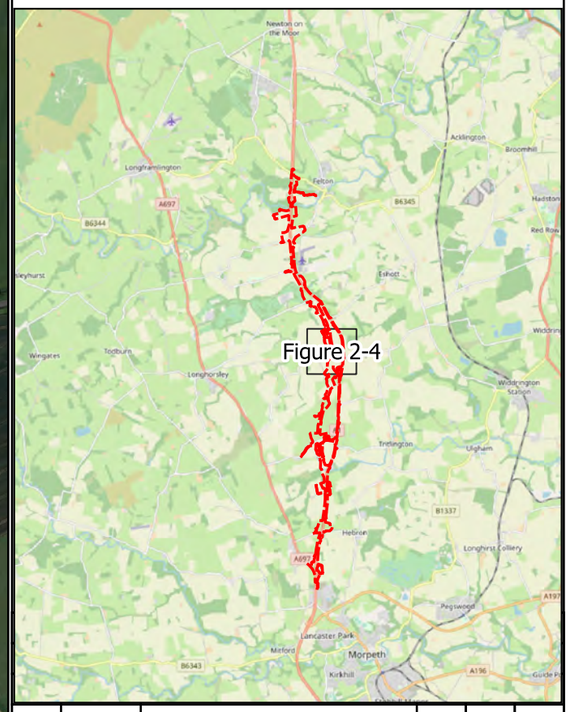
- Excellent
- Good
- Average
- Below Average
- Poor
- Not Surveyed

e-DNA Results 2020

- Positive
- Negative
- Inconclusive
- Not surveyed

A6

A6



0 100 200 300 m

Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE 2-4- 2020 GREAT CRESTED NEWT SURVEY RESULTS – HSI ASSESSMENT AND e-DNA

Scale	Drawn	Checked	Approved	Authorised
1:8,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number HE PIN: 551459 M2F

Originator	Volume		Revision
WSP	6.8		01
Location	**Type**	**Role**	**Number**	**Project Ref. No.**
	RP	LE	1942	70036004

Document Path: Document Path: C:\Official_Ankit\M2F\M2F_Ecological_Survey.qgz

User Name: INAR02551 Date Saved: 30/07/2020 11:48:56

Key

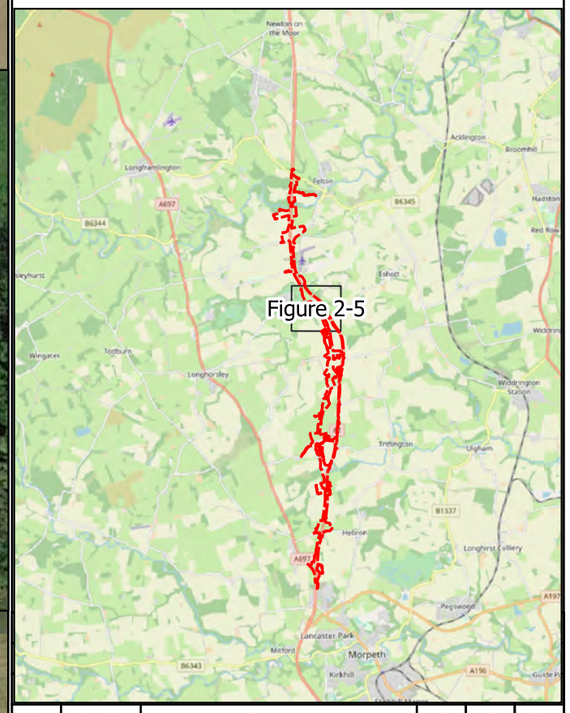
- Order Limits
- Survey Area

Habitat Suitability Class (2020)

- Excellent
- Good
- Average
- Below Average
- Poor
- Not Surveyed

e-DNA Results 2020

- Positive
- Negative
- Inconclusive
- Not surveyed



Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number:

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE 2-5- 2020 GREAT CRESTED NEWT SURVEY RESULTS – HSI ASSESSMENT AND e-DNA

Scale	Drawn	Checked	Approved	Authorised
1:6,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number HE PIN: 551459 M2F (Location | Originator: WSP | Volume: 6.8 | Type: RP | Role: LE | Number: 1942)

Revision: 01

Project Ref. No.: 70036004

Document Path: Document Path: C:\Official_Ankit\M2F\M2F_Ecological_Survey.qgz

User Name: INAR022551 Date Saved: 30/07/2020 11:48:56

Key

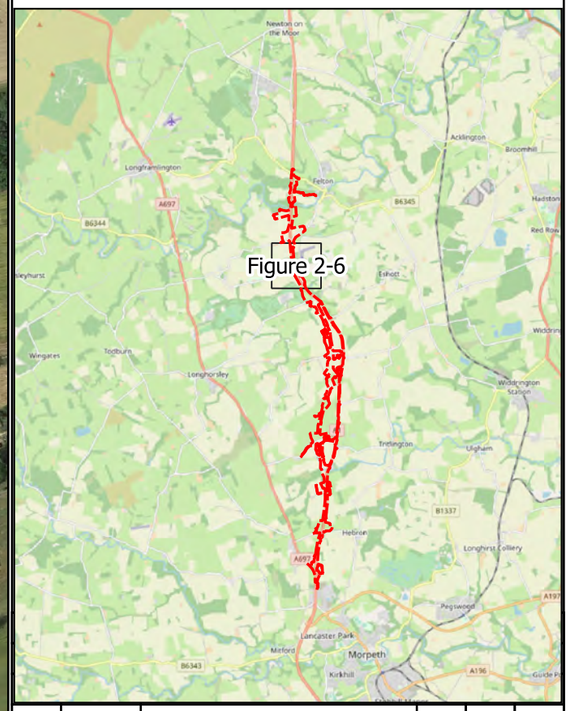
- Order Limits
- Survey Area

Habitat Suitability Class (2020)

- Excellent
- Good
- Average
- Below Average
- Poor
- Not Surveyed

e-DNA Results 2020

- Positive
- Negative
- Inconclusive
- Not surveyed



Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number:

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE 2-6- 2020 GREAT CRESTED NEWT SURVEY RESULTS – HSI ASSESSMENT AND e-DNA

Scale	Drawn	Checked	Approved	Authorised
1:5,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number HE PIN: 551459 M2F

Originator: WSP

Volume: 6.8

Location

Type: RP

Role: LE

Number: 1942

Revision: 01

Project Ref. No.: 70036004

Document Path: Document Path: C:\Official_Ankit\M2F\M2F_Ecological_Survey.qgz

User Name: INAR02551 Date Saved: 30/07/2020 11:48:56

N

Key

- Order Limits
- Survey Area

Habitat Suitability Class (2020)

- Excellent
- Good
- Average
- Below Average
- Poor
- Not Surveyed

e-DNA Results 2020

- Positive
- Negative
- Inconclusive
- Not surveyed

A19

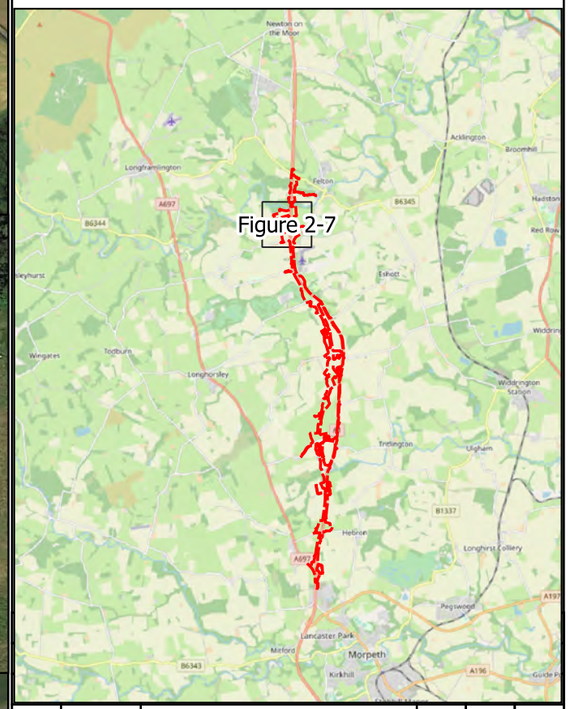
A18

A17

Eshott Pond 1

Eshott Pond 2

0 100 200 300 m



Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number:

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE 2-7- 2020 GREAT CRESTED NEWT SURVEY RESULTS – HSI ASSESSMENT AND e-DNA

Scale	Drawn	Checked	Approved	Authorised
1:8,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number HE PIN: 551459 M2F

Location

Originator: WSP

Volume: 6.8

Type: RP

Role: LE

Number: 1942

Revision: 01

Project Ref. No.: 70036004

Document Path: Document Path: C:\Official_Ankit\M2F\M2F_Ecological_Survey.qgz

Key

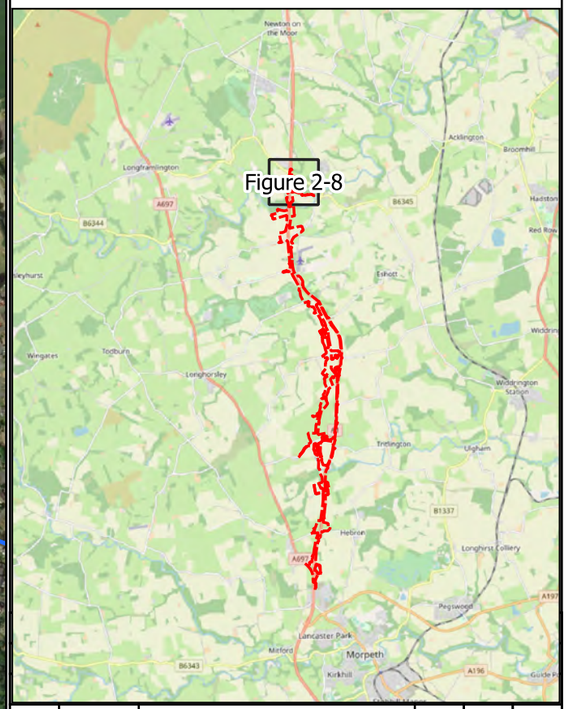
- Order Limits
- Survey Area

Habitat Suitability Class (2020)

- Excellent
- Good
- Average
- Below Average
- Poor
- Not Surveyed

e-DNA Results 2020

- Positive
- Negative
- Inconclusive
- Not surveyed



Rev	Date	Description	By	Chk'd	App'd
P001	18/11/20	First Issue	AR	JF	DC

Suitability: Suitable for Information

Status: S1

PINS Reference Number:

Client: highways england

Project Title: A1 IN NORTHUMBERLAND, PART A: MORPETH TO FELTON

Drawing Title: FIGURE 2-8- 2020 GREAT CRESTED NEWT SURVEY RESULTS – HSI ASSESSMENT AND e-DNA

Scale	Drawn	Checked	Approved	Authorised
1:8,000	AR	JF	DC	KS
Original Size	**Date**	**Date**	**Date**	**Date**
A3	18/11/20	18/11/20	18/11/20	18/11/20

Drawing Number HE PIN: 551459 M2F

Location	Originator	Volume	Type	Role	Number	Revision
	WSP	6.8	RP	LE	1942	01

Project Ref. No.: 70036004

Appendix A

HSI RESULTS

Table 2 - HSI Results

Pond Ref.	S1: Geographic location	S2: Water body area	S3: Water body permanence	S4: Water quality	S5: % Shade (1m from bank)	S6: Impact of waterfowl	S7: Fish stocks	S8: Number of waterbodies <1km	S9: Terrestrial habitat	S10: Macrophyte cover (%cover)	HSI SCORE	HSI CATEGORY
A1	1	0.1	1	0.01	1	1	1	0.01	0.01	0.3	0.18	Poor
A2	Scoped Out											
A3	1		0.9	1	1	0.67	1	1	1	0.3	0.84	Excellent
A4	1	0.2	1	0.33	1	0.01	0.33	1	0.33	0.3	0.34	Poor
A5	Dry- not surveyed											
A6	Dry- not surveyed											
A7	Dry- not surveyed											
A8	Scoped Out											
A9	No longer present											
A10	1	0.1	0.5	1	0.3	1	1	1	1	0.3	0.58	Below Average
A11	1		0.5	0.67	0.2	0.67	1	1	0.67	0.3	0.62	Average
A12	Access refused- Not surveyed											
A13	Access refused- Not surveyed											
A14	1	0.1	0.9	0.33	1	1	1	1	0.33	0.7	0.61	Average
A15	1	0.1	0.9	0.67	1	0.01	0.01	1	1	0.3	0.27	Poor
A16	1	0.1	0.9	0.67	0.5	0.67	1	1	0.33	0.3	0.54	Below Average
A17	1	0.1	0.9	0.33	1	1	1	1	0.33	0.3	0.56	Below Average

Pond Ref.	S1: Geographic location	S2: Water body area	S3: Water body permanence	S4: Water quality	S5: % Shade (1m from bank)	S6: Impact of waterfowl	S7: Fish stocks	S8: Number of waterbodies <1km	S9: Terrestrial habitat	S10: Macrophyte cover (%cover)	HSI SCORE	HSI CATEGORY
A18	Access not granted- not surveyed											
A19	1	0.8	1	0.67	0.3	1	1	2	1	1	0.89	Excellent
A20	1	0.2	0.5	1	1	0.67	0.67	2	1	1	0.79	Good
A21	1	0.1	0.5	1	1	0.67	1	2	1	1	0.76	Good
A22	Access not granted- not surveyed											
Eshott Pond	1	0.8	0.9	0.67	1	0.01	0.67	2	1	0.55	0.57	Below average

Appendix B

EDNA SURVEY RESULTS

Report: 101347-1 Order number: 101347

Great Crested Newt eDNA Results

Company:	WSP Global Inc.
Project code|Task code:	M2F eDNA 2020
Date of Report:	8 June 2020
Number of samples:	5

Thank you for sending your sample(s) for analysis by NatureMetrics. Your sample(s) have been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014).

DNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using the primers and probe described by Biggs et al. (2014), in the presence of both positive and negative controls.

Results indicate GCN presence in 'A11', 'A19', and 'A21'. No GCN were detected in 'A3' and 'A20'. All controls performed as expected and so the results are conclusive.

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

Sample	Pond ID	Arrived	Inhibition	Degradation	Score	GCN status
948	'A3'	02-Jun	No	No	0	Negative
944	**'A11'**	**02-Jun**	**NA**	**No**	**4**	**Positive**
946	**'A19'**	**02-Jun**	**NA**	**No**	**10**	**Positive**
949	'A20'	02-Jun	No	No	0	Negative
945	**'A21'**	**02-Jun**	**NA**	**No**	**1**	**Positive**

End of report

Report issued by: Dr. CT (Cuong Q. Tang)

Contact: gcn@naturemetrics.co.uk | 01491 829042

Understanding your results

Positive	GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has been amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12).
Negative	No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.
Inconclusive	No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by the degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.

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inhibitors	Naturally-occurring chemicals/compounds that cause DNA amplification to fail, potentially resulting in false-negative results. Common inhibitors include tannins, humic acids and other organic compounds. Inhibitors can be overcome by either diluting the DNA (and the inhibitors), but dilution carries the risk of reducing the DNA concentration below the limits of detection.
negative control	Used to determine if PCR reactions are contaminated.
positive control	Used to determine whether the assay is working correctly.
primers	Short sections of synthesised DNA that bind to either end of the DNA segment to be amplified by PCR.
probe	A short section of synthesised DNA that binds to a specific section of the target species' DNA within the section flanked by the primers. The probe is designed to be totally specific to that species. The probe is labelled such that it fluoresces during amplification, which is used to infer the presence of the target species' DNA in the sample.
qPCR	Stands for 'quantitative PCR', sometimes also known as 'real-time PCR'. A PCR reaction incorporating a coloured dye that fluoresces during amplification, allowing a machine to track the progress of the reaction. Often used with species-specific Primers where detection of amplification is used to infer the presence of the target species' DNA in the sample. If the species is not present in the sample, no fluorescence will be detected.

Report: 101357-1 Order number: 101357

Great Crested Newt eDNA Results

Company:	WSP Global Inc.
Project code|Task code:	M2F eDNA 2020
Date of Report:	20 July 2020
Number of samples:	8

Thank you for sending your sample(s) for analysis by NatureMetrics. Your sample(s) have been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014).

DNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using the primers and probe described by Biggs et al. (2014), in the presence of both positive and negative controls.

Results indicate GCN absence in 'A10', 'A14', 'A15', 'A16', 'A4', 'Eshott 2' and 'Eshott Ponds 1'. All controls performed as expected and so the results are conclusive. Inhibition was detected in 'A17', which was not resolved with multiple rounds of DNA dilution as prescribed by Biggs et al. (2014), we therefore return this result as inconclusive.

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

Sample	Pond ID	Arrived	Inhibition	Degradation	Score	GCN status
947	'A4'	13-Jul	No	No	0	Negative
1108	'A10'	13-Jul	No	No	0	Negative
1105	'A14'	13-Jul	No	No	0	Negative
1109	'A15'	13-Jul	No	No	0	Negative
1114	'A16'	13-Jul	No	No	0	Negative
1112	'A17'	13-Jul	Yes	No	0	Inconclusive
1111	'Eshott 2'	13-Jul	No	No	0	Negative
1107	'Eshott Ponds 1'	13-Jul	No	No	0	Negative

End of report

Report issued by: Dr. Narin Kirikyali

Contact: gcn@naturemetrics.co.uk | 01491 829042

Understanding your results

Positive	GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has been amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12).
Negative	No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.
Inconclusive	No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by the degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.

---

inhibitors	Naturally-occurring chemicals/compounds that cause DNA amplification to fail, potentially resulting in false-negative results. Common inhibitors include tannins, humic acids and other organic compounds. Inhibitors can be overcome by either diluting the DNA (and the inhibitors), but dilution carries the risk of reducing the DNA concentration below the limits of detection.
negative control	Used to determine if PCR reactions are contaminated.
positive control	Used to determine whether the assay is working correctly.
primers	Short sections of synthesised DNA that bind to either end of the DNA segment to be amplified by PCR.
probe	A short section of synthesised DNA that binds to a specific section of the target species' DNA within the section flanked by the primers. The probe is designed to be totally specific to that species. The probe is labelled such that it fluoresces during amplification, which is used to infer the presence of the target species' DNA in the sample.
qPCR	Stands for 'quantitative PCR', sometimes also known as 'real-time PCR'. A PCR reaction incorporating a coloured dye that fluoresces during amplification, allowing a machine to track the progress of the reaction. Often used with species-specific Primers where detection of amplification is used to infer the presence of the target species' DNA in the sample. If the species is not present in the sample, no fluorescence will be detected.

This document is also available on our website at **www.gov.uk /highways**

If you have any enquiries about this document
A1inNorthumberland@highwaysengland.co.uk
or call **0300 470 4580***.