

## APPENDIX 7.2 ECOLOGICAL SURVEY FOR SMOOTH NEWT

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## **APPENDIX 7.2**

### **ECOLOGICAL SURVEY FOR SMOOTH NEWT**

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# **1 INTRODUCTION**

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## **1.1 INTRODUCTION**

RPS was commissioned by Northern Ireland Electricity (NIE) Networks to undertake an Ecological Survey for Smooth Newt along the route of a Proposed Development to construct a 33 kV Overhead Line (OHL) and Underground Cable (UGC) from Strabane Main Sub-Station to Curraghinalt 33 kV Connection, County Tyrone. The Proposed Development is an integral part of the proposed Curraghinalt mine which is currently under consideration under planning application LA10/2017/1249/F. A full description of the Proposed Development can be found in Chapter 2 Project Description of the Environmental Statement (ES).

## **1.2 ECOLOGICAL SURVEY FOR SMOOTH NEWT**

The aim of the report is to provide a description of the smooth newt survey methods used; to provide the detailed results of smooth newt surveys; and to provide an interpretation of the results. The Ecological Survey for Smooth Newt Report has been used to inform the Ecological Impact Assessment (EclA) in Chapter 7 Terrestrial Ecology and Ornithology of the ES. The EclA identifies the impacts associated with the Proposed Development, evaluates the likely significance of effects on smooth newt and applies the mitigation hierarchy to avoid, reduce or offset any significant negative effects on smooth newt.

## **1.3 LEGISLATION**

Smooth newt is protected under the Wildlife (Northern Ireland) Order 1985 (as amended). Under the Order it is illegal to intentionally or recklessly kill, injure or take a smooth newt or intentionally or recklessly; damage, destroy or obstruct access to any structure or place which smooth newt use for shelter or protection; damage or destroy anything which conceals or protects any such structure; or disturb smooth newt while it is occupying a structure or place which it uses for shelter or protection.

## **2 METHODOLOGY**

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### **2.1 STATEMENT OF AUTHORITY**

The author and eDNA surveyor, Dave Welsh, is an Ecologist with RPS and holds a BSc (Hons) in Marine Science, a MSc in Ecological Management and Conservation Biology with over seven years of experience in conservation and five years of experience in ecological consultancy. Dave has extensive experience of habitat and mammal survey and is a protected species licence holder. Dave is an Associate member of the CIEEM and a volunteer with the Northern Ireland Bat Group and Northern Ireland Badger Group.

The lead surveyor, Samuel O'Hara, is a Senior Ecologist with RPS and holds a BSc (Hons) in Ecology and has over five years of experience in the field of ecology. Samuel has experience of ecological field survey including habitat, mammal and bird survey and is a protected species license holder. Samuel is an Associate member of the CIEEM.

The assistant surveyor, Joseph Baird, is a Graduate Ecologist with RPS and holds a BSc (Hons) in Environmental Biology with over two years of experience in environmental and ecological consultancy. Joseph has experience of ecological field survey including habitat and mammal survey.

The information prepared and provided is true and accurate at the time of issue of the report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM, 2019). We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists.

### **2.2 CONSULTATION & DESK STUDY**

Consultation was undertaken with the Centre for Environmental Data and Recording (CEDaR) and the National Biodiversity Data Centre (NBDC) in order to identify the existence of any records of smooth newt within 1 km of the Proposed Development to provide historical information on the local distribution of smooth newt that may be present along the route of the Proposed Development and in the surrounding environment. The information gathered during consultation is third party controlled data purchased for the purposes of this report only. RPS cannot guarantee its accuracy and cannot be held liable for any inaccuracies.

A desk study was also undertaken to review the Curraghinalt Project Environmental Statement (ES) (SRK 2017), Curraghinalt Gold Project Addendum to Environmental Statement (SRK 2019) and Curraghinalt Gold Project Second Addendum to Environmental Statement (SRK 2020) associated with the Proposed Development.

### **2.3 HABITAT SUITABILITY INDEX**

The Phase 1 Habitat Survey was extended to include a Habitat Suitability Index (HSI) for smooth newt. The HSI is a numerical index that can be used to represent the capacity of waterbodies to support smooth newt. The HSI was originally developed for great crested newt (Oldham et al. 2000), which is not present in Northern Ireland. The National Amphibian and Reptile Recording Scheme (ARC 2013) however consider that it may also be used to provide information of relevance to other amphibian species including smooth newt. The HSI is a numerical index between 0 and 1, values close to 0 indicate unsuitable habitat while values close to 1 indicate optimal habitat. Waterbodies identified within the 80 m Working Area of the Proposed Development were evaluated to assess their suitability to provide terrestrial habitat for smooth newt using the Habitat Suitability Index (HSI) (ARGUK 2010).

## 2.4 ENVIRONMENTAL DNA SAMPLING AND ANALYSIS

### Water Sample Collection

eDNA sample kits were purchased from SureScreen Scientifics Ltd. Water sample collection was carried out at the end of April 2020. A total of 20 subsample water collection sites were identified around the perimeter of each pond surveyed from within both emergent vegetation and in more open areas of water. The samples were collected as per the manufacturer's instructions. A new, sterile pond sampling kit was used at each pond. Sterile gloves were worn when collecting water samples and a sterile 30ml ladle was used to collect each subsample at least 5-10cm from each of the 20 subsample sites around each pond, whilst ensuring that the sediment was not disturbed. The water was transferred into a sterile whirl-Pak bag, the bag was then sealed and shaken vigorously for 10 seconds to mix any DNA within the sample equally. Using a sterile pipette, the water sample was transferred into six preservative filled tubes, each being filled to 50ml. Each tube was sealed and shaken for 3 seconds and placed in a protective box rack.

### eDNA Analysis

eDNA analysis was carried out by SureScreen Scientifics Ltd who are ISO9001 accredited and participate in Natural England's proficiency testing scheme for great crested newt eDNA testing.

eDNA analysis is conducted in two phases. The sample first goes through an extraction process where each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then tested via real time PCR (also called q-PCR) for each of the selected target species. This process uses species-specific molecular markers (known as primers) to amplify a select part of the DNA, allowing it to be detected and measured in 'real time' as the analytical process develops. qPCR combines amplification and detection of target DNA into a single step. With qPCR, fluorescent dyes specific to the target sequence are used to label targeted PCR products during thermal cycling. The accumulation of fluorescent signals during this reaction is measured for fast and objective data analysis. The primers used in this process are specific to a part of mitochondrial DNA only found in each individual species. Separate primers are used for each of the species, ensuring no DNA from any other species present in the water is amplified.

If target species DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If target species DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported.

### Presence of eDNA (Positive/Negative/Inconclusive)

**Positive** - Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for species presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. Even a score as low as 1/12 is declared positive. 0/12 indicates negative species presence.

**Negative** - eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of species absence, however, does not exclude the potential for species presence below the limit of detection.

**Inconclusive** - Controls indicate inhibition or degradation of the sample, resulting in the inability to provide conclusive evidence for species presence or absence.

## 2.5 SMOOTH NEWT SURVEY

A licence to survey for smooth newt was obtained from the NIEA and a survey was undertaken in accordance with the NIEA specific requirements for Smooth Newt Surveys (DAERA, 2017). The aim of the survey was to identify the presence of smooth newt along the route of the Proposed Development. The surveys were carried out over a period of three visits between May and June 2020. Details of dates and meteorological conditions at the time of survey can be found below in Table 2. Surveys were carried out at Pond 1 and 2 (Meenadoo Road).

**Table 2: Dates & Meteorological Conditions of Smooth Newt Surveys**

Date	Temperature	Weather Conditions	Notes
26/05/20	14°C	Partial cloud, dry	Pond 1 Large Subsection: some water present but drying out Pond 1 Small Subsection: clear, water present Pond 2: Dried out
02/06/20	15°C	Cloudy, dry	Pond 1 Large Subsection: some water present but drying out Pond 1 Small Subsection: clear, water present but decreasing Pond 2: Dried out
09/06/20	15°C	Cloudy, dry	Pond 1 Large Subsection: only wet mud present Pond 1 Small Subsection: clear, water present but decreasing Pond 2: Dried out

### Terrestrial Search

A terrestrial habitat search was carried out within 200 m of identified waterbodies in accordance with NIEA Specific Requirements for Newt Survey (NIEA 2017). All objects with potential to provide refugia were checked for the presence of newts at the start of each survey. The search involved lifting and searching underneath rocks, debris and other materials for the presence of newts.

### Netting Survey

A visual inspection of each pond or feature was undertaken to identify and count the number of newts observed in each pond prior to netting. A netting survey of each pond was undertaken before dusk. A long-handled dip net was used to sample the accessible area around the margins of each pond. The perimeter of each pond was walked by two surveyors with a minimum of 15 minutes of netting per 50m of shoreline.

### Torch Light Survey

A torch light survey was undertaken after dusk, using a 1,000,000 candlepower spotlight torch, when the night time temperature was >5°C with little or no wind and no rain. The survey involved shining the torch into each pond to search for the presence of newts. The entire perimeter of each pond was walked by two surveyors.

## 3 RESULTS

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### 3.1 CONSULTATION & DESK STUDY

Consultation with CEDaR identified no historical records of smooth newt within 1 km of the Proposed Development. A review of the Curraghinalt Project highlighted the presence of smooth newt within the site of the Curraghinalt mine (SRK 2017, 2019 & 2020).

### 3.2 HABITAT SUITABILITY INDEX

Standing water, consisting of two ponds occur within the 80 m Working Area of the Proposed Development where UGC along Meenadoo Road connects to Terminal Pole 2251. These appear to be manmade and are heavily vegetated in appearance with limited open water. Pond 1 is located immediately upstream of the lower pond (Pond 2). Pond 2 adjoins what is now recently felled conifer plantation. These features previously scored a HSI of >7 which indicates good pond suitability. Pond 2 completely dried out in 2020. **Figure 1** illustrates the location of ponds at Meenadoo Road.

Three adjacent depressions, which intermittently hold water following prolonged periods of rainfall, can be found west of Poles 2142-2143. All the features are poorly defined given the high abundance of soft rush and willow which conceal the area of standing water. They were not found to support any other wetland species with the exception of submerged moss resembling sphagnum. The three depressions previously scored a HSI of 0.59 which indicates below average pond suitability. In 2020, these depressions were entirely dry and considered to be unsuitable for breeding smooth newt, and therefore no further surveys were carried out.

Four boundary drainage ditches were assessed to determine breeding potential for smooth newt at Pole 2006, between Poles 2036-2036A and Poles 2264-2265 and at Pole 2266. None of the ditches supported water levels considered permanent or supported aquatic vegetation other than ubiquitous sweet-grass and small abundances of water starwort *Callitriche* spp. Increasing abundances of sweet-grass were seen to trap sediment leading to infilling. The retention of water and/or infilling may be due to a lapse in maintenance. Routine maintenance of existing drainage ditches was noted in autumn 2019. The drainage ditch at Pole 2006 scored a HSI of 0.39 which indicates poor pond suitability. The drainage ditch between Poles 2036-2036A scored a HSI of 0.42 which indicates poor pond suitability. The drainage ditch between Poles 2264-2265 (a broad drainage ditch in-filled with sweet-grass supporting a narrow channel of slow moving water) scored a HSI of 0.42 which indicates poor pond suitability. A small depression with impeded drainage supporting free-floating duckweed *Lemna* sp., immediately adjacent to Pole 2266 scored a HSI of 0.35 which indicates poor pond suitability. Each of the aforementioned waterbodies at field boundaries had a HSI score of <0.5 indicating poor pond suitability and have therefore been excluded from any further assessment.

### 3.3 SMOOTH NEWT eDNA ANALYSIS

Two pond sample kits were used at Pond 1 to try to optimize the likelihood of encountering smooth newt eDNA. One sample kit was used in a larger subsection of the pond which was heavily vegetated, and this subsection returned a Negative (0/12 Positive Replicates) result for smooth newt. The second sample kit was used in a smaller subsection of the pond which was more open and this subsection returned as Positive (12/12 Positive Replicates) result for smooth newt.

Pond 2 was completely dried out in 2020 and was therefore not subject eDNA analysis.

### **3.4 SMOOTH NEWT SURVEY**

There were no smooth newts confirmed within Pond 1 or Pond 2 during terrestrial refugia searches, torch light surveys or netting. The larger subsection of Pond 1 dried out over the course of newt surveys and by the third visit it was not possible to carry out netting at this section of the pond. Pond 2 was completely dried out in 2020 and was therefore not subject to netting survey however the area was subject to torch light survey.

## 4 DISCUSSION & ANALYSIS OF RESULTS

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Pond 1 and Pond 2 at Meendao Road were previously considered to have suitable habitat to support breeding smooth newt. Both ponds were subject to drying over the period of the newt survey. The larger subsection of Pond 1 which is heavily vegetated contained water in May but by June 2020 had largely dried out to wet mud. The smaller subsection of Pond 1 dried out between May and June 2020 but retained water. Pond 2 was found to be completely dried out in 2020.

Pond 1 was subject to eDNA analysis, terrestrial refugia searches, torch light surveys and netting. eDNA analysis was carried out at two subsections of Pond 1. The eDNA results were negative for smooth newt in the larger subsection which is heavily vegetated and positive for smooth newt in the smaller subsection with more open water. There were no smooth newts confirmed in either subsection of Pond 1 during terrestrial refugia searches, torch light surveys or netting. The results suggest the presence of either transient smooth newt or a very low population of smooth newt.

Pond 2 despite having dried out was subject to terrestrial refugia searches and torch light surveys. There was no smooth newt recorded in the area Pond 2 during surveys.

Chapter 7 Terrestrial Ecology and Ornithology of the ES identifies the impacts associated with the Proposed Development, evaluates the likely significance of effects on smooth newt and sets out mitigation measures in relation to smooth newt.



## 5 REFERENCES

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## FIGURES

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**Figure 1: Smooth Newt Survey Locations**

Figure 1: Smooth Newt Survey Location

