

# **Appendix 9.2:**

## **2018 Protected Species**

### **Survey Report**

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## **SHEPHERDS' RIG WIND FARM**

### **APPENDIX 9.2: PROTECTED SPECIES**

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Prepared By:

**Arcus Consultancy Services**

7th Floor  
144 West George Street  
Glasgow  
G2 2HG

**T** +44 (0)141 221 9997 | **E** [info@arcusconsulting.co.uk](mailto:info@arcusconsulting.co.uk)  
**W** [www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)

Registered in England & Wales No. 5644976



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## 1 INTRODUCTION

This Technical Appendix (TA) describes the methods and results of the Protected (Mammal) Species Surveys undertaken to obtain baseline ecological information, to inform the Environmental/Ecological Impact Assessment (EIA/EcIA) of the proposed Shepherd's Rig Wind Farm. This TA will present the methods and results of Protected Species Surveys undertaken in 2018, and supports the EIA Report - Chapter 9: Ecology in addition to:

- TA 9.1: Habitats & Botany 1
- TA 9.3: Bats<sup>2</sup>;
- TA 9.4: Fisheries<sup>3</sup>.

The aim of the Protected Species Surveys was to obtain detailed information regarding the occurrence and distribution of Protected Species within the Protected Species Survey Area (Figure 1, Appendix A), to provide an accurate and robust baseline on which to base an EcIA.

The following terminology is used throughout this TA:

- **The Development:** the whole physical process involved in the development of the land at Shepherd's Rig Wind Farm, including the wind farm construction and operation (not a piece of land);
- **The Site:** the area of land with the potential to support the Development (shown as red line boundary in Figure 1, Appendix A);
- **Protected Species Survey Area:** the land within which the Protected Species surveys were undertaken (shown as blue line boundary in Figure 1, Appendix A)

### 1.1 Site Background

The Site, centred on national grid reference NX 62306 94337, lies approximately 5 kilometres (km) east of the village of Carsphairn, Dumfries and Galloway. The Site is accessed through forestry gates in the south and east via the B729 between Carsphairn in the west and Moniave in the east.

Marscalloch Hill is located within the southern section of the Site and Craigengillan Hill in the northern section. Black Burn and Craigengillan Burn are situated within the northern section of the Site and Dry Burn is located in the south of the Site. Notable watercourses outwith the Site include; the Water of Deugh (situated approximately 1 km to the south-west), the Water of Ken (parallel to the eastern boundary of the Site) and Polifferie Burn (parallel to the north-eastern boundary of the Site). The Water of Deugh and the Water of Ken converge, forming Kendoon Loch, approximately 1.4 km south-west of the Site. Habitats within the Site are dominated by coniferous plantation woodland of various ages (included recently felled woodland), and the landscape surrounding the Site is comprised of primarily coniferous plantation and grassland habitats (including livestock pasture).

## 2 METHODS

### 2.1 Protected Species Survey Area

All Protected Species Surveys were undertaken within the Protected Species Survey Area as presented in Figure 1 (Appendix A). The Protected Species Survey Area encompassed all land within the Site, plus an additional buffer of up to 250 metres (m) informed by a review

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<sup>1</sup> Bear Environmental (2018) REPORT No. 1001-117: Shepherd's Rig Ecological Appraisal: Extended Phase 1 Habitat Report.

<sup>2</sup> Arcus (2018) Shepherd's Rig Technical Appendix 9.3: Bats

<sup>3</sup> Galloway Fisheries Trust (2018) Commissioned Report No. RMAD26: Electrofishing and habitat survey to cover the proposed Shepherd's Rig Wind Farm

of Scottish Natural Heritage (SNH) guidance<sup>4</sup>. Although the Protected Species Survey Area includes survey areas for all species assessed likely to be present, the area surveyed for each species varied depending on species specific survey guidelines<sup>4</sup>, as outlined below:

- Otter: Suitable riparian habitats within the Site and up to 200 m up and downstream of watercourses potentially impacted by the Development;
- Water vole: Suitable riparian habitats within the Site and up to 50 m up and downstream of watercourses potentially impacted by the Development;
- Badger: Suitable habitats within the Site and up to 100 m buffer outwith;
- Pine marten: Suitable habitats within the Site and up to 250 m buffer outwith; and,
- Red squirrel: Suitable habitats within the Site and up to 50 m buffer outwith.

## 2.2 Desk Study

To provide local context for the results of the Protected Species Surveys, existing biological records of protected and notable species were sought within and up to a 2 km radius of the Protected Species Survey Area. The desk study requested records from the following organisations:

- South West Scotland Environmental Information Centre (SWSEIC);
- Dumfries and Galloway Bat Group (DGBG);
- Scottish Wildlife Trust (SWT);
- Galloway Fisheries Trust; and,
- Nith District Salmon Fisheries Board.

A data search was undertaken for statutory and non-statutory designated sites of nature conservation interest for European Protected Species (EPS) was undertaken. The search criteria applied is provided in Table 1, and was sought through data requests as well as from publically available data sources such as the Scottish Natural Heritage (SNHi Information Service) SiteLink website<sup>5</sup> and the National Biodiversity Network<sup>6</sup> (NBN) database.

**Table 1: Search Criteria for Designated Sites**

| Protection    | Designation                                                                                                        | Search radius |
|---------------|--------------------------------------------------------------------------------------------------------------------|---------------|
| Non-statutory | Ancient Woodland Inventory (AWI)<br>Site of Interest for Nature Conservation (SINC)<br>Local Nature Reserves (LNR) | 2 km          |
| Statutory     | Sites of Special Scientific Interest (SSSI)<br>National Nature Reserves (NNR)                                      | 5 km          |
|               | Ramsar Sites<br>Special Area of Conservation (SAC)                                                                 | 10 km         |

## 2.3 Field Surveys

Protected Species Surveys were carried out by Laura Spence BSc (Hons) Grad CIEEM and Katie Allan BSc (Hons) of Arcus Consultancy Services Limited (Arcus) within June 2018. All surveys were undertaken within the Protected Species Survey Area and included surveys for the following protected species;

- Badger (*Meles meles*);

<sup>4</sup> Scottish Natural Heritage: Planning and development: protected animals. Available online at: <https://www.nature.scot/professional-advice/planning-and-development/natural-heritage-advice-planners-and-developers/planning-and-development-protected-animals/> [Accessed August 2018]

<sup>5</sup> Scottish Natural Heritage. SiteLink [Accessed August 2018]

<sup>6</sup> National Biodiversity Network (2016). Available at: <https://data.nbn.org.uk/> [Accessed August 2018]

- Otter (*Lutra lutra*);
- Pine marten (*Martes martes*);
- Red squirrel (*Sciurus vulgaris*); and,
- Water vole (*Arvicola amphibious*).

In addition to the targeted Protected Species Surveys, a watching brief for other notable species such as reptiles, amphibians and non-native invasive species was maintained by Arcus personnel whilst undertaking work within the Protected Species Survey Area and incidental records of protected species were maintained

Various guidance texts were consulted to ensure accuracy of the identification of field signs and appropriate application of guidance. The key utilised texts, and indicators of presence are summarised in Table 2..

**Table 2: Summary of Protected Species Indicators and Key Guidance Utilised.**

| Species      | Indicators of presence                                                                                                                                                    | Key guidance documents utilised                                                                                                                                |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Amphibians   | Sightings, suitable habitats, spawn                                                                                                                                       | Common Standards Monitoring Guidance for Reptiles and Amphibians <sup>7</sup><br>Evaluating the suitability of habitat for the Great Crested Newt <sup>8</sup> |
| Badger       | Setts (groups of burrows), paths, snuffle holes, feeding remains, scratching posts, latrines (dung pits used as territorial markers), prints, hairs and suitable habitats | Surveying Badgers <sup>9</sup>                                                                                                                                 |
| Otter        | Sprainting sites, prints, resting sites, paths, slides, feeding remains and suitable habitat                                                                              | Animal Tracks and Signs <sup>10</sup><br>How to find and Identify Mammals <sup>11</sup>                                                                        |
| Pine marten  | Dens, scats, prints and suitable habitats                                                                                                                                 | UK BAP Mammals Interim Guidance for Survey Methodologies, Impact Assessment and Mitigations <sup>12</sup>                                                      |
| Red squirrel | Watching brief maintained for sightings, feeding remains and dreys                                                                                                        | Practical Techniques for Surveying and Monitoring Squirrels <sup>13</sup>                                                                                      |
| Reptiles     | Sightings, suitable hibernacula.                                                                                                                                          | National Amphibian and Reptile Recording Scheme Reptile Habitat Guide <sup>14</sup>                                                                            |
| Water vole   | Droppings, prints, burrows, feeding stations, runs, 'nests', lawns of short vegetation around burrow entrances and suitable habitat.                                      | The Water Vole Mitigation Handbook <sup>15</sup>                                                                                                               |

<sup>7</sup> Joint Nature Conservation Committee (2004) *Common Standards Monitoring Guidance for Reptiles and Amphibians*, Version February 2004. JNCC, Peterborough.

<sup>8</sup> 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.

<sup>9</sup> Harris, S., Cresswell, P. and Jefferies, D. (1991) *Surveying Badgers* The Mammal Society, London

<sup>10</sup> Bang, P. and Dahlström, P. (2001). *Animal Tracks and Signs*. Oxford University Press, Oxford.

<sup>11</sup> Sargent, G. and Morris, P. (2003). *How to find and Identify Mammals*. The Mammal Society, London.

<sup>12</sup> Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trehwella, W.J., Wells, D. and Wray, S. (2012). UK BAP Mammals Interim Guidance for Survey Methodologies, Impact Assessment and Mitigations. The Mammal Society, Southampton

<sup>13</sup> Gurnell, J. Lurz, P. and Pepper, H. (2009). *Practical Techniques for Surveying and Monitoring Squirrels*. Forestry Commission, Surrey.

<sup>14</sup> The Herpetological Conservation Trust (2007). National Amphibian and Reptile Recording Scheme, Habitat Recording Guide

<sup>15</sup> Dean, M., Strachan, R., Gow, D., and Andrew, R. (2016) *The Water Vole Mitigation Handbook* (The Mammal Society Mitigation Guidance Series). The Mammal Society, London.

The location of field signs, habitats and notable features identified during the Protected Species Surveys were recorded with a handheld Global Positioning System (GPS) or using the Esri Collector App for ArcGIS mobile application. Where appropriate, photographs were taken to visually document evidence and habitat features to assist interpretation of results, and inform reporting and assessment (see Appendix B: Photographs).

## 2.4 Survey Constraints and Limitations

### 2.4.1 Otter and Water Vole Survey Limitations

Due to the nature of the terrain and the watercourses present, it was not possible to survey the full extent of all watercourses and wetland areas within the Protected Species Survey Area in detail, for health and safety reasons. It is not considered however that this limitation affected the accuracy of the survey, or the robustness of the data recorded.

### 2.4.2 Other Limitations

The dense nature of much of the plantation forestry significantly limited access to some areas of woodland, reducing the ability to survey in detail. Access to some areas, including areas of wind-blown trees and areas inundated with water, was not possible for health and safety reasons. This was a survey limitation for those protected species more likely to be associated with woodland habitat such as badger, red squirrel and pine marten. However it is also worth noting that dense and waterlogged stands of coniferous woodland generally provide less favourable resources to these species.

## 3 RESULTS

### 3.1 Desk Study Results

Table 3 below summarises the protected species data obtained from SWSEIC and the National Biodiversity Network<sup>6</sup> within approximately 2 km of the Protected Species Survey Area. Data was not received from any other requested sources, this was partly as data collected by these organisation is either submitted to SWEIC or to NBN.

**Table 3: Summary of Records of Protected & Notable Species**

| Species      | Latin name              | Date of Record | No of Record | Conservation Status                  | Closest Proximity to Site |
|--------------|-------------------------|----------------|--------------|--------------------------------------|---------------------------|
| Badger       | <i>Meles meles</i>      | 2006           | 1            | UK <sup>16</sup> , SBL <sup>17</sup> | 5 km                      |
| Red squirrel | <i>Sciurus vulgaris</i> | 2001-2017      | 17           | UK, LBAP <sup>18</sup> , SBL         | 2.0 km                    |
| Adder        | <i>Vipera berus</i>     | 2003-2016      | 6            | SBL, LBAP                            | 3.0 km                    |
| Common frog  | <i>Rana temporaria</i>  | 1998-2008      | 2            | SBL                                  | 3.4 km                    |
| Common Toad  | <i>Bufo bufo</i>        | 1999-2008      | 2            | SBL                                  | 3.4 km                    |

<sup>16</sup> Wildlife and Country Side Act (as amended in Scotland). Available online at <https://www.legislation.gov.uk/ukpga/1981/69> Accessed September 2018

<sup>17</sup> Scottish Biodiversity List Available online: <https://www.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL> Accessed September 2018

<sup>18</sup> Dumfries and Galloway Local Biodiversity Action Plan: Available at: [https://www.dumgal.gov.uk/media/19945/Local-Biodiversity-Action-Plan/pdf/Local\\_Biodiversity\\_Action\\_Plan.pdf](https://www.dumgal.gov.uk/media/19945/Local-Biodiversity-Action-Plan/pdf/Local_Biodiversity_Action_Plan.pdf) Accessed September 2018

Only one statutory designated site was located within 5 km of the Protected Species Survey Area; Cleugh Site of Special Scientific Interest (SSSI), which is designated for its assemblage of lowland neutral grassland species.

No non-statutory designated sites were found within the Protected Species Survey Area or surrounding 2 km.

### 3.2 Protected Species Survey Results

#### 3.2.1 Otter

The Water of Ken, which flows adjacent to the eastern boundary of the Site (Table 4: Watercourse 7) has particular suitability for otter foraging and commuting due to the size and flow rate of this watercourse, coupled with the suitability of this watercourse to support fish species the main source of prey upon which otter would feed<sup>19</sup>. Fish species recorded within this watercourse during protected species surveys included

All other watercourses within the Protected Species Survey Area have potential to support commuting otter, however many were considered to be lesser value resource for foraging otter. It is unlikely that many of the watercourses within the Site sustain notable fish populations, however some of the larger watercourses within the Site, such as Craigengillan Burn, Black Burn and Dry Burn have the potential to support small population of fish, including juvenile salmonids. As the survey visit coincided with the peak period for amphibian spawning (primarily common frog), it is feasible that the Site was temporally being utilised by foraging otter to feed on amphibian prey species<sup>20</sup>.

The watercourses are identified on Figure 1, Appendix A, and the physical attributes for each of the watercourses are presented in Table 4 below.

Presence of otter was established in four of the seven watercourses surveyed (see Table 4, below). Within the site, the Dry Burn, Black Burn and Craigengillan Burn all displayed evidence of otter usage in the form of spraints and feeding remains. Outwith the Site boundary, as well as spraints and feeding remains two otter couches were confirmed within the Water of Ken. Additionally, an otter holt was identified within the bank of the Water of Ken. The holt, a tunnel within the bank, extended more than 0.5 m backwards into the bank. The tunnel entrance was approximately 0.3 m wide, narrowing to 0.25 m within.

<sup>19</sup> Harris, S. & Yalden, D. W. eds. (2008). Mammals of the British Isles: Handbook, 4th Edition.

<sup>20</sup> Weber, J.M. (1990) Seasonal exploitation of amphibians by otters (*Lutra lutra*) in north-east Scotland. Journal of Zoology. Volume 220. Issue 4. April 1990. Pages 641-651

**Table 4: Otter and Water Vole (*Watercourse reference numbers refer to locations shown in Figure 1, Appendix A*)**

| Watercourse Ref./Name   | Av. Width (m)  | Av. Depth (m) | Flow Rate        | Substrate Type  | Bankside Vegetation                                                          | Habitat Suitability | Species Recorded | Evidence Record                                                                                                                           | Additional Notes                                                                                                                                                                 |
|-------------------------|----------------|---------------|------------------|-----------------|------------------------------------------------------------------------------|---------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                       | Varies 0.3 - 1 | 0.2           | Slow             | Bedrock, gravel | Watercourse passes through mature plantation – bankside vegetation sparse.   | Otter               | None             | N/A                                                                                                                                       | Southern fork of this watercourse was mostly dry at the time of survey. No evidence of protected species was recorded.                                                           |
| 2<br>Dry Burn           | 1              | 0.2           | Slow to moderate | Bedrock, gravel | Watercourse passes through mature plantation and felled woodland.            | Otter               | Otter            | Spraints;<br>NX 62569 91732                                                                                                               | Channel depth and flow rate vary throughout the length of the watercourse.                                                                                                       |
| 3<br>Black Burn         | 0.5            | 0.3           | Slow             | Earth           | Marshy grassland, also passes through areas of mature and felled plantation. | Otter<br>Water vole | Otter            | Spraints;<br>NX 63179 93730<br>NX 61987 93077                                                                                             | Where the watercourse passes through open areas marshy grassland and rushes dominate. There are some deeper pools present in places.                                             |
| 4<br>Craigengillan Burn | 3              | 0.3           | Moderate to fast | Bedrock, gravel | Marshy grassland                                                             | Otter               | Otter            | Spraints;<br>NX 61987 93077<br>NX 63335 93821<br>NX 62921 94011<br>NX 62841 94053<br>Feeding remains;<br>NX 63318 93842<br>NX 63166 93920 | Passes through some areas of felled woodland. Flow rate varies along the length of the watercourse but generally faster flow. Vegetated banks along majority of the watercourse. |

| Watercourse Ref./Name | Av. Width (m) | Av. Depth (m) | Flow Rate | Substrate Type      | Bankside Vegetation                                                                                                                            | Habitat Suitability | Species Recorded | Evidence Record | Additional Notes                                                                                                   |
|-----------------------|---------------|---------------|-----------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------|-----------------|--------------------------------------------------------------------------------------------------------------------|
| 5                     | 0.5           | 0.1           | Slow      | Compact earth banks | Watercourse passes through mature plantation, mosses dominate the ground flora present                                                         | Otter<br>Water vole | None             | N/A             | Water is very shallow, banksides 1m high in places with steep gradient. No evidence of protected species recorded. |
| 6                     | 0.2           | 0.1           | Slow      | Compact earth banks | Within open sections the channel is choked with vegetation, where the watercourse passes through planation there is little vegetation present. | Otter<br>Water vole | None             | N/A             |                                                                                                                    |

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Shepherd's Rig Wind Farm

| Watercourse Ref./Name | Av. Width (m) | Av. Depth (m) | Flow Rate        | Substrate Type                                    | Bankside Vegetation     | Habitat Suitability | Species Recorded | Evidence Record                                                                                                                                                                                                                                                                    | Additional Notes                                                                                                                                          |
|-----------------------|---------------|---------------|------------------|---------------------------------------------------|-------------------------|---------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7<br>Water of Ken     | 12            | 0.5           | Slow to moderate | Bedrock , gravel, limited sections of earth banks | Marshy grassland, rocks | Otter<br>Water vole | Otter            | Spraints;<br>NX 63265 96219<br>NX 63460 95733<br>Feeding signs;<br>NX 63265 96219<br>NX 63460 95733<br>NX 63484 93852<br>NX 63509 93816<br>NX 63502 93515<br>NX 63491 93006<br>NX 63519 92952<br>NX 63502 95504<br>Otter couch:<br>NX 63502 95504<br>Otter holt:<br>NX 63500 92882 | Some areas of the channel too deep to walk through. Brown trout ( <i>Salmo trutta</i> ) and signal crayfish ( <i>Pacifastacus leniusculus</i> ) recorded. |



### **3.2.2 Water Vole**

Watercourses within the Protected Species Survey Area varied in their ability to support water vole due to variation in bankside vegetation and substrate (Table 4, cross-referenced with Figure 1, Appendix A). Four watercourses within the Protected Species Survey Area were generally considered to be sub-optimal for water vole, having stony or rocky substrate and banksides with limited opportunity for water vole burrow construction.

Watercourses 3, 5, 6 and 7 (see Table 4) displayed better suitability for water vole, due to the suitability of the bankside gradient and composition for burrow construction, well-vegetated banks (providing both food (rushes) and shelter), slowly flowing water, and lack of shade from nearby trees<sup>21</sup>.

No water vole burrows or latrines were found within the Protected Species Survey Area and therefore the presence of the species cannot be confirmed. However, potential water vole foraging signs (characteristically chewed vegetation at an angle of 45 degrees) were identified along the western section of the Black Burn.

### **3.2.3 Badger**

Coniferous plantation forestry can provide suitable habitat in which badgers can excavate setts; however, if present, these were difficult to detect due to the restricted access this habitat presented surveyors. Whilst areas of mature plantation forestry provide possible habitat for badgers; the majority of these areas were surrounded by bog/marshy grassland areas and felled planation, which limits accessibility for badgers to these habitats. Badgers are most commonly associated with deciduous woodland, arable farmland and intensive grassland<sup>22</sup>; therefore, it is considered that the habitats within the Protected Species Survey Area offer low potential to support badgers.

No evidence or sightings of badger were recorded during the protected species surveys, however as some habitats of limited suitability to the species exist within the Protected Species Survey Area and the surrounding environment, their presence in low densities cannot be ruled out.

### **3.2.4 Pine Marten**

The large areas of coniferous plantation forestry within the Protected Species Survey Area provide potential denning habitat for pine marten. Wind-blown trees, particularly their root plates can provide features (for example cavities), which pine martens could use for dens or refuge<sup>23</sup>. Non-forest habitats (such as felled areas and forest rides) within the Protected Species Survey Area offer suitable foraging habitat for pine marten.

No evidence or sightings of pine marten were recorded during the Protected Species Surveys, however as suitable habitat for the species exists within the Protected Species Survey Area and the surrounding environment, their presence in low densities cannot be ruled out.

### **3.2.5 Red Squirrel**

Large sections of forestry within the Protected Species Survey Area were considered to be sub-optimal for red squirrel, as extensive areas of coniferous plantation have been felled or are juvenile (lacking pine cones). However, areas of more mature plantation do exist:

<sup>21</sup> Dean, M., Strachan, R., Gow, D., and Andrew, R. (2016) The Water Vole Mitigation Handbook, 3rd Edition (The Mammal Society Mitigation Guidance Series). The Mammal Society, London.

<sup>22</sup> Rainey, E., Butler, A., Bierman, S., and Roberts, A.M.I. (2009) Scottish Badger Distribution Survey 2006 – 2009: estimating the distribution and density of badger main setts in Scotland. Scottish Badgers and Biomathematics and Statistics Scotland

<sup>23</sup> Hanniffy, R. (2016). A native enigma: the pine marten. Vincent Wildlife Trust

these are considered to be of optimal suitability to red squirrel, providing an abundant food source, with many cones evident.

The Protected Species Survey Area was considered to have moderate potential to support red squirrel. The Site is within the known range of the species (see Desk Study) and coniferous plantation provides suitable drey habitat and a seed food supply, however red squirrel favour habitat with mixture of tree species which provides a more reliable food resource. Additionally the coniferous plantation is dominated by Sitka spruce which is less favourable to this species compared to woodland dominated by pine species<sup>19</sup>.

Observations of pine cones which showed characteristics of being eaten by squirrel were found throughout areas of mature conifer forestry within the Site. However, no sightings of red squirrel were made, nor were any squirrel dreys identified.

### **3.2.6 Other Species**

#### **3.2.6.1 Amphibians**

Prevailing wet underfoot conditions throughout the Protected Species Survey Area provides ample aquatic habitat for breeding amphibians including both common frog and common toad. No ponds were present within the Protected Species Survey Area and therefore the potential for breeding great crested newt (*Triturus cristatus*) did not exist.

A number of observations of common frog and common toad were made during the protected species surveys.

#### **3.2.6.2 Reptiles**

Marshy grassland, felled plantation and forest rides are present throughout the Protected Species Survey Area, all of which offer foraging, refuge and hibernation resources for reptiles<sup>14</sup> including adder and common lizard (*Zootoca vivipara*). One common lizard was sighted within the Protected Species Survey Area (at NX 62708 91952).

## **4 DISCUSSION**

Watercourses within the Protected Species Survey Area provide suitable commuting and foraging opportunities for otter: the Water of Ken, located approximately 0.2 km east of the Site, was assessed to offer the greatest potential for otter due to the size of this watercourse and availability of foraging opportunities. As well as numerous spraints and feeding remains, two confirmed and a potential third otter resting place were recorded along the Water of Ken. Evidence, in the form of spraints, was also found within the Site. Numerous spraints were recorded along Craigengillan Burn and Black Burn and a single spraint was noted on Dry Burn. All three burns within the Site where otter field signs were found connect to the Water of Ken. Due to the greater suitability offered by the Water of Ken, as well as the lack of resting places found within the Site, it is likely that otters are primarily utilising the Water of Ken and merely using burns within the Site for commuting purposes.

Some of the watercourses within the Protected Species Survey Area also provided suitable water vole habitat: potential foraging signs were recorded within the Site in one location at the southern end of Black Burn. As no water vole burrows or latrines were found the presence of the species within the Site cannot be confirmed. However, as suitable habitat exists both within the Site and the wider landscape the presence of water vole within the Site cannot be ruled out.

Pine cones showing markings indicative of squirrel foraging were identified inside conifer plantation forestry within the Site. As the Site is located within the geographical range of red squirrel and records of the species within 2 km of the Site were found during the desk study, it is likely that this species is present.

No evidence of badger or pine marten was discovered during the Protected Species Surveys and the Desk Study returned no records of either within 2 km of the Site. However, areas of mature coniferous plantation across the Protected Species Survey Area provide suitable habitat for these species. Connectivity exists with other plantations in the wider landscape, thus providing a large connected area in which these species could roam.

Numerous sightings of amphibians (common frog and common toad) were made within the Protected Species Survey Area. A single observation of a common lizard was also made. Suitable habitat for amphibians and reptiles is widespread throughout the Site and the wider area; it is therefore concluded that both are present throughout these habitats.

## **5 CONCLUSION**

Habitats within the Protected Species Survey Area offered moderate to low levels of suitability to support protected species, however it is considered that otter, amphibians and reptiles are all present, and that water vole and red squirrel are likely present. No evidence of badger or pine marten could be established, although suitable habitat for both species exists within the Site. Due to the inaccessibility of areas of coniferous plantation and the availability of suitable habitats in the wider landscape, the presence of these species within the Protected Species Survey Area cannot be discounted.

Protected species confirmed to be present within the Site was limited to otter.

## **APPENDIX A: FIGURES**

- Figure 1 - Protected Species Survey Results



- Developable Area
- Protected Species Survey Area
- Watercourses
- Red Squirrel
- Water Vole
- Otter
- Amphibian
- Reptile
- Fish

1:25,000

Scale @ A3

0

0.45

0.9 km

NORTH

|                 |                   |
|-----------------|-------------------|
| Produced By: LS | Ref: 2966-REP-014 |
| Checked By: NW  | Date: 14/08/2018  |

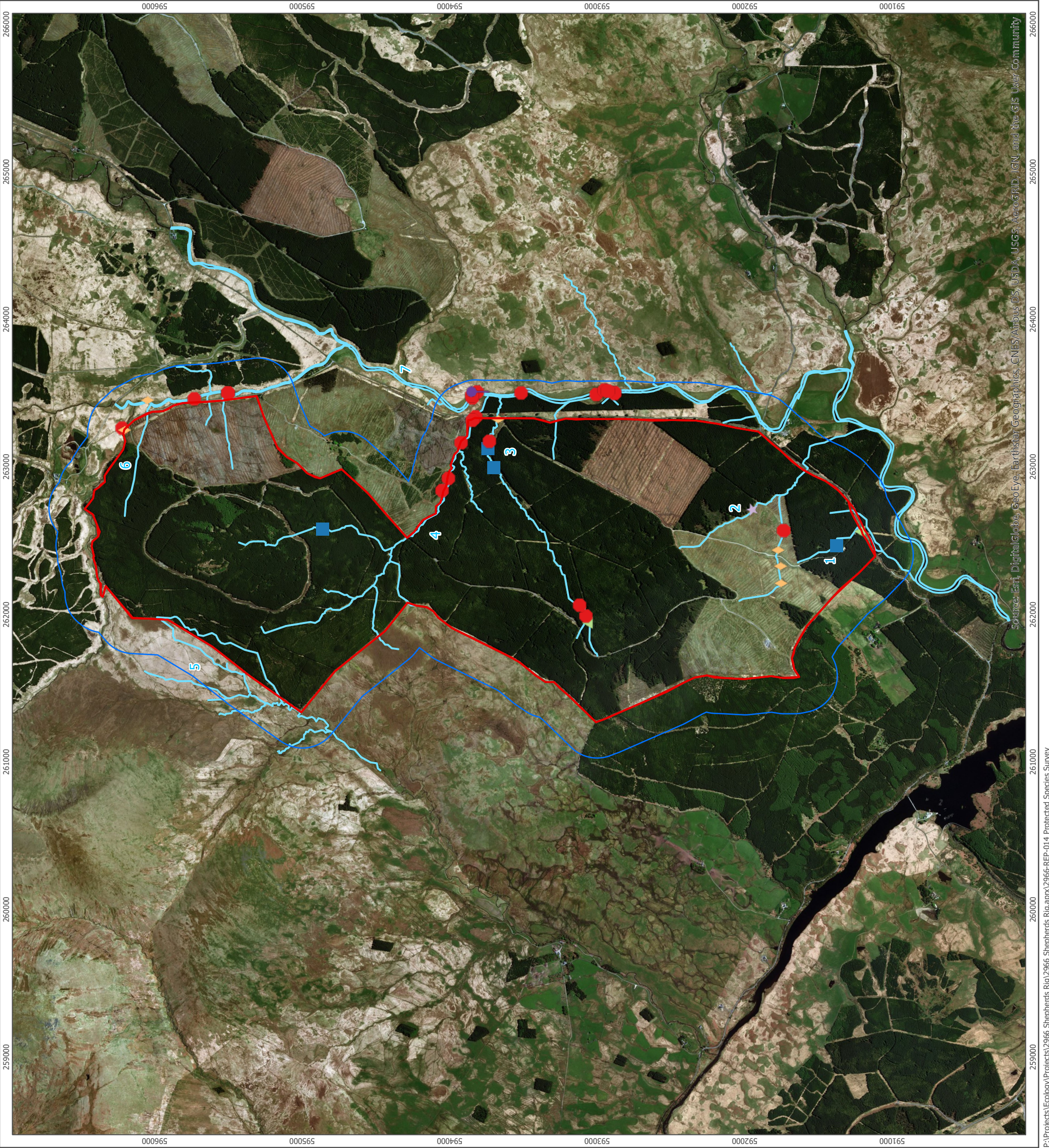
Protected Species Survey Results

Figure 1

Shepherd's Rig Wind Farm

Protected Species Technical

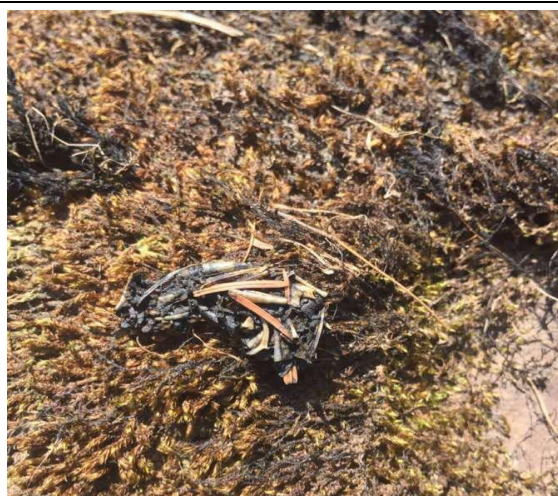
Appendix





## APPENDIX B: PHOTOGRAPHS

### Appendix Table 1: FIELD SURVEY PHOTOGRAPHS

|                                                                                                   |                                                                                      |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                  |    |
| <p>Photograph 1: Conifer plantation woodland habitat</p>                                          | <p>Photograph 2: Marshy grassland habitat</p>                                        |
|                 |   |
| <p>Photograph 3: Potential water vole feeding remains showing characteristic 45° chew pattern</p> | <p>Photograph 4: Common lizard found within a forestry ride</p>                      |
|                |  |
| <p>Photograph 5: Otter couch with spraints present</p>                                            | <p>Photograph 6: Otter spraint close up</p>                                          |