

Hornsea Project Three
Offshore Wind Farm



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Preliminary Environmental Information Report:
Annex 3.3 – Hazel Dormouse, Red Squirrel and Freshwater Pearl Mussel Desk Study Report

Date: July 2017

Environmental Impact Assessment

Preliminary Environmental Information Report

Volume 6

Annex 3.3 – Hazel Dormouse, Red Squirrel and Freshwater Pearl Mussel Desk Study Report

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Red Squirrel, Hazel Dormouse and
Freshwater Pearl Mussel Desk Study
Hornsea Three Onshore ECR

For
DONG Energy

Project No.: FDEW112/011

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Figure 1 Site Location

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1. Summary

1.1 Summary

1.1.1 DONG Energy (UK) Ltd is promoting the development of the Hornsea Project Three Offshore wind farm including the approximately 55 km Onshore Export Cable Route (ECR). RPS Group Ltd carried out a Preliminary Ecological Appraisal (PEA) of the 200 m onshore ECR corridor in 2016, which included a Phase 1 habitat survey and desk study (see Figure 1). The PEA results were used to inform the scope and extent of further ecological surveys required to inform the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA).

1.1.1 The onshore cable corridor search area has been identified by DONG Energy and the location provided to Thomson Ecology. It is a broad 200 m wide cable corridor search area within which the refined onshore export cable corridor (80 m width) will be located. It is approximately 55 km in length running from Weybourne on the north Norfolk coast, southwards through Norfolk, and ending in the vicinity of Swardston, south-west of Norwich. The proposed development also includes onshore HVAC booster station, onshore HVDC converter/HVAC substation and interconnection with the Norwich Main National Grid substation. The above are hereafter referred to as the search area which is presented in Figure 1.

1.1.2 Thomson Ecology was commissioned to assess the presence or likely absence of red squirrel, hazel dormouse and freshwater pearl mussel within the search area based on a review of existing information, the species' distribution and the habitats present on site.

1.1.3 The desk study results, presented in the PEA (RPS Group Ltd, 2016) indicated an absence of red squirrel, hazel dormouse and freshwater pearl mussel records within the onshore ECR and a 2km search region. The species' distribution and known populations within the UK suggest none of these species is present in Norfolk. Although suitable habitat occurs in the search area, the lack of existing records within the region and absence of known populations indicate it is unlikely that red squirrel, hazel dormouse and freshwater pearl mussel occurs within the search area. As such no further surveys are recommended.



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2. Introduction

2.1 Development Background

2.1.1 DONG Energy (UK) Ltd. (hereafter referred to as DONG Energy), on behalf of DONG Energy Hornsea Three (UK) Ltd, is promoting the development of the Hornsea Project Three Offshore Wind Farm (hereafter referred to as Hornsea Three). Hornsea Three is a proposed offshore wind farm located in the southern North Sea, with a total generating capacity of up to 2,400 MW.

2.1.2 The onshore cable corridor search area has been identified by DONG Energy. It is a broad 200 m wide cable corridor search area within which the refined onshore export cable corridor (80 m width) will be located. It is approximately 55 km in length running from Weybourne on the north Norfolk coast, southwards through Norfolk, and ending in the vicinity of Swardeston, south-west of Norwich. The proposed development also includes the onshore HVAC booster station, onshore HVDC converter/HVAC substation and interconnection with the Norwich Main National Grid substation. The above are hereafter referred to as the search area which is shown on Figure 1.

2.2 Ecology Background

2.2.1 A Preliminary Ecological Appraisal (PEA) of the onshore components of the Hornsea Three project was undertaken in 2016 (RPS Group Ltd, 2016). This included a 500 m wide Phase 1 survey area (including the onshore cable corridor search area) and a desk study, whereby data from the local biological records centre was purchased and reviewed.

2.2.2 The results of the PEA have been used to inform the scope and extent of further ecological surveys.

2.2.3 The PEA desk study comprised the purchase of data from the Norfolk Biodiversity Information Service (NBIS) and Norfolk Reptile and Amphibian Group, although none was received from the latter. The data requested included records of protected species within 2km of the Phase 1 survey boundary (comprising the onshore ECR preferred route, totalling approximately 500m).

2.2.4 The desk study records included:

- 14 flora species
- 2973 invertebrate species, of which 93% were moth species, and none included fresh-water pearl mussel
- One aquatic invertebrate species (white-clawed crayfish)
- Six herpetofauna, including two amphibian and four reptile species
- 71 bird species
- 19 mammal species, including 12 bat species, and one record of red squirrel (this record is discussed further in section 4).

2.3 The Brief and Objectives

2.3.1 Thomson Ecology was commissioned on 1st December 2016 to undertake a desk study that assesses the presence or likely absence of hazel dormouse (*Muscardinus avellanarius*) and red squirrel (*Sciurus vulgaris*) within the search area. The original brief was to:

- Obtain biological records of the three target species within the search area from the local biological records centre, or other third-party sources;
- Evaluate the suitability of the site to support the target species using the habitat descriptions from the extended Phase 1 habitat survey and aerial photography; and
- Make an assessment of the likelihood of the target species being present on the site.

2.3.2 Following a conversation with DONG Energy and RPS Group Ltd, on 9th January 2017 and the Stakeholder responses included in the Planning Inspectorate Scoping Opinion (2016), it was agreed that the desk study would also include an assessment of the likely presence or absence of and freshwater pearl mussel (*Margaritifera margaritifera*) in the search area and a literature review of publically available data would be reviewed as part of the desk study. Furthermore, biological records had already been purchased during the original PEA and given its contemporary nature, no further data was purchased.

2.4 Limitations

2.4.1 The species data collated during the desk study is mainly derived from records submitted by members of the public and *ad hoc* surveys undertaken by volunteers. Therefore, it should not be taken as a definitive list of the protected species and other species of conservation concern that occur in the local area.

3. Methodology

- 3.1.1 The desk study was undertaken within the search area with an extended 2 km whereby records of the most protected and notable species was purchased (RPS Group, 2016).
- 3.1.2 A literature review of publically available research papers was also undertaken, and these sources are presented in Section 6 of this note. The habitat descriptions from the extended Phase 1 habitat survey and onsite surveys undertaken by Thomson Ecology as part of the Phase 2 surveys were used to further appraise these and their potential to support these three protected species.
- 3.1.3 Additional sources of information that were reviewed included:
- The Multi-Agency Geographical Information for the Countryside (MAGIC);
 - The National Biodiversity Network (NBN) Gateway; and
 - Norfolk Biodiversity Information Service (NBIS).
- 3.1.4 Factors considered in ascertaining whether these three species are present include:
- Distribution; and
 - Habitats available on site and their suitability to support the species.

4. Results

Red squirrel (*Sciurus vulgaris*)

- 4.1.1 The red squirrel is an arboreal, omnivorous rodent, widespread across most of Europe. It is most abundant in large tracts of coniferous forest, preferring Scots pine (*Pinus sylvestris*), and Norway spruce (*Picea abies*). Small populations also occur in deciduous woodland, mixed forest, parks, gardens, and small stands of conifers. Its diet is mainly vegetarian, consisting of seeds, acorns, fungus, bark, and sapwood, but may also include animal prey such as young birds and eggs.
- 4.1.2 Red squirrel is protected under Schedule 5 and 6 of the Wildlife and Countryside Act 1981, as amended. This makes it an offence to intentionally kill or injure a red squirrel or intentionally or recklessly damage or destroy any structure or place a red squirrel uses for shelter or protection, or disturb a red squirrel while it occupies such a place.
- 4.1.3 Although described as common throughout most of its European range, there have been well-documented population declines and range contractions in the United Kingdom, Ireland and Italy. Population densities vary geographically and show large annual fluctuations in response to tree seed crop availability (Lurz *et al.*, 2000). Local extinctions are associated with the introduction of the invasive eastern grey squirrel (*Sciurus carolinensis*) from North America.
- 4.1.4 Red squirrels in the UK are now mainly present only on the Isle of Wight, in north England, south and central Scotland, Wales and Northern Ireland (Gurnell and Pepper, 1991). The distribution of the species is presented in Plate 1. Only records from the last 20 years have been presented. Sixteen records exist within the Norfolk area, dating between 1997 and 2016.

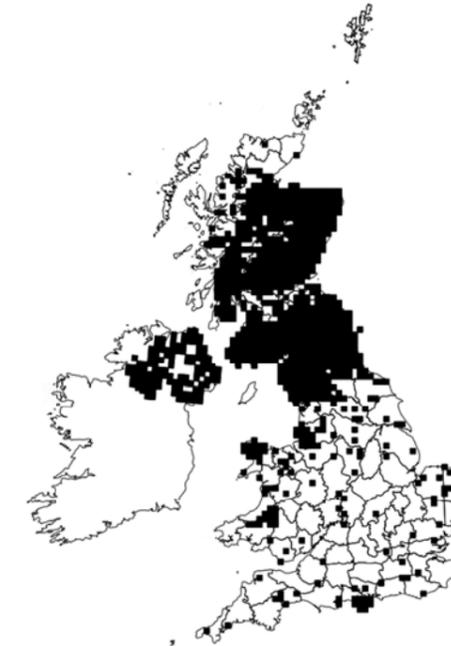


Plate 1: Distribution of Red Squirrel from 1997 to 2017 source NBN Gateway (data.nbn.org.uk/) accessed 2nd March 2017

- 4.1.5 A single record of red squirrel from Swardston (500 m east and west of the onshore ECR) dating from 2006 was returned during the desk study (RPS Group Ltd, 2016). The sighting was recorded in a residential garden, habitat unsuitable for a wild red squirrel population. The note accompanying this record states that the animal was partially tame and was assumed to be an escaped or released animal which was not expected to survive. As such this record is not considered to be a wild red squirrel.
- 4.1.6 Semi-natural broadleaved woodland with some patches of remnant broadleaved woodland and plantation pine woodland occur within the onshore ECR, providing suitable habitat for the species. Thetford Forest, located 35 km south-west of the search area, was previously a stronghold for the species (Natural England, 1997). A small population may remain within this area, although there is no significant connectivity between this and the onshore ECR, making it unlikely that any individuals present in Thetford Forest could utilise the habitats present within the onshore ECR.
- 4.1.7 As part of a national conservation initiative, there are currently 15 enclosures in Norfolk and Suffolk taking part in a captive breeding programme for red squirrels. Young have been released in the north of England and Wales to augment established colonies. As with the potential population in Thetford Forest, it is unlikely that individuals from these populations would use the habitats within the onshore ECR.
- 4.1.8 Based on the habitats present, and current distribution of the species, it is considered unlikely that a red squirrel population is present in the search area. Further surveys are therefore not recommended.

Hazel dormouse (Muscardinus avellanarius)

- 4.1.9 Whilst they are traditionally associated with hazel (*Corylus avellana*), hazel dormouse occurs in a wide variety of woody habitats from semi-natural woodlands to hedgerows and areas of species-rich scrub. Hazel dormouse is a mostly arboreal and nocturnal animal that feeds amongst the branches of trees and shrubs on a variety of food sources including flowers, fruits, nuts and some insects. Hazel dormouse rarely descends to the ground, except for hibernation.
- 4.1.10 Hazel dormouse is protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2010, as amended, and Schedule 5 and 6 of the Wildlife and Countryside Act 1981, as amended. Hazel dormouse is also afforded some protection under the Countryside and Rights of Way Act 2000 and is a Species of Principal Importance under the Natural Environment and Rural Communities Act 2006. Taken together, these make it an offence to deliberately capture, kill or disturb a hazel dormouse or to intentionally or recklessly damage, destroy or obstruct access to a breeding site or resting place of a hazel dormouse.
- 4.1.11 The hazel dormouse has declined both in terms of population and distribution during the 20th century, largely due to loss and fragmentation of woodland habitat as a result of forestry, urbanisation and agriculture. The UK population was estimated to be 45,000 individuals in 2005, and is still thought to be declining (Battersby, 2005). The distribution of the hazel dormouse is now primarily in southern England and Wales and is confirmed as being absent in Scotland. Within Norfolk, Bright and Morris (1996) demonstrated the species was likely to be extinct, although they were known to be present in Norfolk in the late 19th century
- 4.1.12 The National Biodiversity Network (NBN) distribution map, presented in Plate 2 indicates that the species is largely absent from the Norfolk region. This distribution map is based on data collected by local biological record groups.

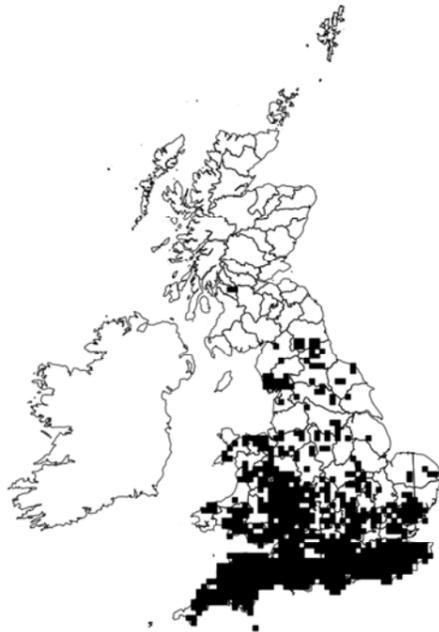


Plate 2: Distribution of Hazel Dormouse source NBN Gateway (data.nbn.org.uk/) accessed 2nd March 2017

- 4.1.13 Three records of hazel dormouse exist within Norfolk, however these are dated 1959 and 1998. Based on the records purchased from the local biological records centre as part of the PEA, no records of hazel dormouse within the last 10 years exist in the search area (RPS Group Ltd, 2016).
- 4.1.14 Suitable habitat for hazel dormouse does exist in the search area in the form of semi-natural broadleaved woodland, dense scrub and species-rich hedgerow. In some areas, these habitats are relatively isolated, being surrounded by intensively managed farmland. Despite suitable habitat being present, the known distribution of the species indicates that it is unlikely for hazel dormouse to be present in the search area and as such no further surveys are recommended.

Freshwater pearl mussel (Margaritifera margaritifera)

- 4.1.15 Freshwater pearl mussel is an invertebrate that can live up to 100 years (Bauer, 1992). They live buried or partially buried in sandy substrates or between boulders and pebbles, in fast-flowing, oligotrophic and unpolluted rivers and streams. As larvae the mussels attach themselves to the gills of salmonid fish species (Skinner *et al.*, 2003).
- 4.1.16 Freshwater pearl mussel receives protection under Schedule 5 of the Wildlife and Countryside Act (1981), as amended, and is also listed on Annexes II and V of the EU Habitats and Species Directive, and Appendix III of the Bern Convention.
- 4.1.17 The freshwater pearl mussel is distributed from the Arctic and temperate regions of western Russia through Europe to the north-eastern seaboard of North America. Within the UK the species was once widely distributed and abundant. However surveys carried out in England and Wales have found most former populations to be extinct or with very little active recruitment (presence of juveniles) (Chesney & Oliver, 1998). In Scotland, freshwater pearl mussel is now confined to a limited number of Highland rivers (Cosgrove *et al.*, 2000). Sixty-six populations of freshwater pearl mussel remain in the UK (JNCC 2013). Their location is presented in Plate 3, below.

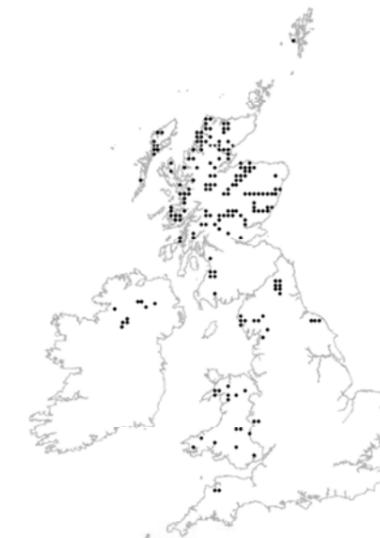


Plate 3: Distribution of Freshwater Pearl Mussel source JNCC (2013)

- 4.1.18 Despite the presence of suitable habitat within the onshore ECR and surrounding areas, the species' known distribution and life history make it highly unlikely to be present within the search area. Therefore, no further surveys are recommended.

5. Conclusion

- 5.1.1 Following a review of desk study data, available literature, the known distribution of red squirrel, hazel dormouse and freshwater pearl mussel and habitats present in the search area it is considered unlikely that they are present. Further survey is therefore not recommended for these species.

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