

Hornsea Project Three
Offshore Wind Farm



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Environmental Statement:
Volume 6, Annex 3.12 – Badger Survey (non-confidential version)

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Date: May 2018

Environmental Impact Assessment

Environmental Statement

Volume 6

Annex 3.12 – Badger Survey (non-confidential version)

Liability

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Ørsted

5 Howick Place,

London, SW1P 1WG

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Prepared by: Thomson Ecology Ltd

Checked by: Sarah Drijaca

Accepted by: Sophie Banham

Approved by: Sophie Banham

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Glossary

Term	Definition
Annex Badger Set	Usually close to and linked to the main sett by worn out paths (runs). They contain multiple entrance holes, although not all may show signs of activity but some holes usually show signs of activity at most times of the year.
Badger Set	Any structure or place which displays signs indicating current use by a badger.
Latrine	A shallow pit where badgers will deposit dung.
Outlier Badger Set	Usually consist of one or two entrance holes but can have more. Not clearly linked to the main sett and may show little evidence of very recent use.
Phase 1 Habitat Survey	A field survey technique which provides a relatively rapid system to record and map semi-natural vegetation and other wildlife habitats.
Preliminary Ecological Appraisal	The first stage in any site ecological assessment. It has two main elements; an ecological desk study and an extended Phase 1 habitat survey.
Subsidiary Badger Set	Have a small number of holes (generally less than 5), a distance from the main sett often without clearly linked paths. Holes can be variable in signs of usage but generally show signs of recent use.

Acronyms

Unit	Description
DCO	Development Consent Order
EIA	Environmental Impact Assessment
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
NBIS	Norfolk Biodiversity Information Service
PEA	Preliminary Ecological Appraisal
PEIR	Preliminary Environmental Information Report

Units

Unit	Description
GW	Gigawatt (power)
ha	Hectare (area)
m	Metre (distance)
km	Kilometre (distance)

1. Introduction

1.1 Development background

- 1.1.1.1 Ørsted is promoting an application for a development consent order ('DCO') for the Hornsea Project Three Offshore Wind Farm (hereafter referred to as 'Hornsea Three') a proposed offshore wind farm located in the southern North Sea. This report focuses on the onshore components of Hornsea Three (as described in volume 1, chapter 3: Project Description).
- 1.1.1.2 At the time of ecological survey scoping in December 2016, a 200 m wide cable corridor search area had been identified by Ørsted. The 200 m wide search area included the locations of the proposed onshore cable corridor, HVAC booster station, HVDC converter/HVAC substation, Norwich Main National Grid substation and construction compounds and was the focus of the Preliminary Environmental Information Report (PEIR) submitted in July 2017. This search area is hereafter referred to as the 'PEIR onshore cable corridor search area'. Following this, some alternate route considerations were added. Ecological survey area boundaries were based on the PEIR onshore cable corridor search area and alternate routes considered, with an appropriate survey buffer added for some survey types where necessary. The survey area applicable to this report is shown in Appendix A, Figure 1.1.
- 1.1.1.3 Subsequently, a route refinement process has been undertaken to refine the Hornsea Three onshore cable corridor to an approximately 80 m wide corridor (referred to as the 'onshore cable corridor') as well as identify locations of compounds, access roads and storage areas. The location of permanent and temporary land take associated with the HVDC converter/HVAC substation and HVAC booster station has also been refined. This process is described in more detail in volume 1, chapter 4: Site Selection and Alternatives of the Environmental Statement.
- 1.1.1.4 A full description of Hornsea Three is provided in volume 1, chapter 3: Project Description.

1.2 Ecology background

- 1.2.1.1 A Preliminary Ecological Appraisal (PEA) of the onshore components of Hornsea Three was undertaken in 2016 (RPS, 2016). This included a Phase 1 habitat survey area comprising a 500 m wide corridor (encompassing the PEIR onshore cable corridor search area described above) and an ecological desk study, whereby protected species data was requested from the Norfolk Biodiversity Information Service (NBIS).

- 1.2.1.2 Records of badger (*Meles meles*) were returned as part of the desk study and the PEA identified suitable terrestrial and aquatic habitat for foraging badgers and sett creation within the Phase 1 survey area, including within the PEIR onshore cable corridor search area. Several badger signs and nine badger setts (including used and disused outlier, subsidiary and main setts) were recorded during the Phase 1 habitat surveys. Further survey for badgers was recommended.

- 1.2.1.3 Based on this recommendation, Thomson Ecology was commissioned in November 2016 to undertake survey for badger within a survey area that included the PEIR onshore cable corridor search area and alternative routes being considered, as shown in Appendix A, Figure 1.1.

1.3 Legislative background

- 1.3.1.1 The principal law protecting badgers is The Protection of Badgers Act 1992. The Act is primarily based upon the need to protect badgers from baiting and deliberate harm or injury. This statute makes it an offence to:
- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so;
 - Interfere with a sett by damaging or destroying it;
 - Obstruct access to, or any entrance of, a badger sett; or
 - Disturb a badger when it is occupying a sett.
- 1.3.1.2 It is an offence to wilfully kill, injure, take, cruelly ill-treat, or dig for a badger. Badger setts are protected from damage, destruction, obstruction, and disturbing an occupied badger sett.
- 1.3.1.3 On development sites, this effectively means that no construction activities or earthworks that would cause disturbance to badgers or active setts should take place within the close vicinity (<30 m) of active badger setts without licence. This zone should be extended for works causing severe disturbance. Badgers appear to be able to withstand significant amounts of noise or activity near to their setts without apparently being disturbed, i.e. building setts under roads and railways and urban gardens. As such, Natural England has taken the view that a licence is not required for low or moderate levels of disturbance akin to what badgers can generally tolerate. In cases of major disturbance, a licence can only be obtained for sett disturbance between 1 July and 30 November so to avoid the time of year when cubs are present in the sett. Where significant areas of foraging grounds are to be lost, a licence may be required as this can constitute disturbance and cruelty.
- 1.3.1.4 The badger is not a species of conservation concern nationally, and accordingly, is not considered a priority species for conservation in England. In an urban context and on the edges of its range, however, this species may be of local conservation concern.

1.4 The brief and objectives

- 1.4.1.1 The brief of the survey was to:

- Undertake a badger survey to search for the presence of setts and other signs of badger activity in line with survey guidelines (Clark, 2007);
- Record the location of badger setts on GPS-enabled digital mapping devices;
- Provide a report on the survey giving the methods and results of the survey; and
- Provide a digitised map of the survey results.

1.4.1.2 The objective of the survey was to identify the presence of badger populations by locating signs of badger within the Hornsea Three onshore cable corridor to enable an assessment of the impacts of Hornsea Three on badger within volume 3, chapter 3 (Ecology and Nature Conservation) of the Environmental Statement.

2. Methods

2.1 Survey area

- 2.1.1.1 A badger survey area was defined as the area within the PEIR onshore cable corridor search area plus the alternative routes considered, as shown in Appendix A, Figure 1.1. Within the survey area, suitable habitat parcels for badgers were identified from the PEA (RPS, 2016), 41 suitable habitat parcels were identified for survey.
- 2.1.1.2 The badger survey area is shown in Appendix A, Figure 1.1 and the badger habitat surveyed and the location of the Hornsea Three onshore cable corridor are shown on Figure 2.1 to 2.12 (REMOVED FOR CONFIDENTIALITY REASONS).
- 2.1.1.3 The main construction compound to the east of the Hornsea Three onshore cable corridor is outside of the survey area for this study and comprises existing hard standing with negligible ecological importance. Therefore, a detailed survey of baseline conditions was not required.

2.2 Field survey

- 2.2.1.1 Since badgers are principally nocturnal, the surveyor concentrated on searching for evidence of badgers. The suitable habitat parcels within the survey area was searched for evidence of badger, concentrating on sloping ground within woodland, scrub and along hedgerows, since these are the most likely locations for badger setts. The survey comprised a search for signs of badger including the following:
- Setts and day nests;
 - Paw prints;
 - Paths and “squat-marking”;
 - Latrines, droppings and urine;
 - Hairs caught on fences and vegetation;
 - Scratching posts;
 - Feeding signs and “snuffle-holes” in grassland;
 - Broken up wasp nests; and
 - Badger bones.
- 2.2.1.2 When a sett or entrance was encountered, its location was recorded on a mobile mapper. Each of the entrances and the sett itself was then classified as:
- Well-used;
 - Partially-used (showing signs of current use);

- Partially-used (not showing signs of current use); or
- Disused.

- 2.2.1.3 For those setts and entrances assessed as partially-used, an additional assessment was made to determine whether each sett and entrance displayed signs of badgers and therefore met the definition of current use.
- 2.2.1.4 The setts were then classified as either a main, annex, subsidiary or outlier sett based on the number of entrances, apparent level of use and proximity to other setts.
- 2.2.1.5 The classification of badger setts used in this survey is based on definitions given in Clark (2007) and are as follows:
- Main sett: A number of entrances used and disused with large spoils heaps, always active and with well-used paths. Used for breeding and it is occupied throughout the year.
 - Annex sett: may have many well-used entrances and worn paths to the main sett, 50 -150 m away but not always in use. Close to main sett, are smaller and not necessarily used all year round.
 - Subsidiary sett: Variable number of entrances and not connected to other setts by obvious paths and not always in use.
 - Outlier sett: With one or two holes and no defined path, used only sporadically.
- 2.2.1.6 The locations of all other badger signs were recorded on a mobile mapper and photographs were taken of all signs of badger activity that were recorded.
- 2.2.1.7 The surveys were undertaken between 17 January 2017 and 8 June 2017.

2.3 Surveyors

- 2.3.1.1 The badger survey was undertaken by Ecologists Philip Joyce BSc MSc, Kathryn Jones MBiolSci GradCIEEM, Sarah Hawes BSc MSc GradCIEEM, Robert Allen BSc MSc, Kate Philpott BSc MSc, Emily Wallace BSc MSc GradCIEEM and Charlotte Hewitt BSc MSc GradCIEEM, and Senior Ecologists Felicity Andruszko BSc MSc GradCIEEM and Daniel Sidoli BSc MRes GradCIEEM.

2.4 Limitations

- 2.4.1.1 The survey area for this study was based on the PEIR onshore cable corridor search area and some alternative route options considered after issue of the PEIR. Following completion of the survey the locations of the 80 m onshore cable corridor, construction compounds, access roads and storage areas have been finalised. At some locations the finalised cable corridor and associated infrastructure fall outside of the survey area. As these areas were identified in November 2017 and outside of the survey season it was not possible to undertake badger surveys in these areas which amount to 52.15 ha (9.80% of the onshore cable corridor and associated infrastructure area).

- 2.4.1.2 Although the status of landowner permission was reviewed on a weekly basis during the survey period, land access permission was not available for four habitat parcels identified for survey. These no access areas are shown in Appendix A, Figure 2.10 and 2.11 (REMOVED FOR CONFIDENTIALITY REASONS).
- 2.4.1.3 Although it was not possible to survey the areas listed above in 2017, they were mostly covered by the PEA (RPS, 2016) providing ecological data on habitat types and species desk study records, which combined with the ability to characterise from the large volume of data collected in the remainder of the survey area, is considered sufficient to inform the impact assessment reported in volume 6, chapter 3: Ecology and Nature Conservation of the Environmental Statement. It is assumed that target species will be present where suitable habitat exists, where desk study records and/or survey information from other parts of the route indicate likely presence.
- 2.4.1.4 The areas where survey could not be completed, that will be impacted by the development, will be checked during pre-construction surveys enabling amendment of mitigation or the application of further mitigation, to that specified in volume 6, chapter 3: Ecology and Nature Conservation of the Environmental Statement.
- 2.4.1.5 It should also be noted that this survey provides a snapshot of conditions at the time the surveys were carried out. New badger setts may be created by badgers at any time, therefore pre-construction surveys will be carried out to ensure impacts are avoided or mitigated. If setts are recorded during pre-construction surveys that will be impacted by the development a licence mitigation method statement, approved by Natural England, will be required to enable the development to proceed in accordance with legislation.

3. Results

3.1 Badger setts

3.1.1.1 Seven badger setts were identified within the survey area with four of those setts (BC1, BE1, BE2, BE5) being located within the Hornsea Three onshore cable corridor. It should be noted that although some setts appear in Appendix A, Figure 2.1 to 2.12 (REMOVED FOR CONFIDENTIALITY REASONS) to be on the boundary or just outside of the Hornsea Three onshore cable corridor (BE1 and BE5), the underground area of the setts may extend within the Hornsea Three onshore cable corridor. Impacts of the works on these setts will be fully considered in volume 3, chapter 3: Ecology and Nature Conservation. Details of the setts recorded are provided in Table 3.1 and their location is shown in Appendix A, Figure 2.1 to 2.12 (REMOVED FOR CONFIDENTIALITY REASONS), with photographs shown on Figure 3.1 to 3.2 (REMOVED FOR CONFIDENTIALITY REASONS).

3.2 Badger activity

3.2.1.1 Badger activity was recorded near sett areas and within other areas of suitable habitat, including along hedgerows and field margins, woodlands, arable and coarse grassland. The location of the badger activity signs is presented in Appendix A, Figure 2.1 to 2.12 (REMOVED FOR CONFIDENTIALITY REASONS) and photographs are shown on Figure 3.1 to 3.2 (REMOVED FOR CONFIDENTIALITY REASONS).

3.3 Other mammal signs

During the surveys, fox (*Vulpes vulpes*) droppings and activity signs were recorded near sett BE2.

Table 3.1: Badger survey results.

Sett ID	Type of sett	Number of entrances	Entrance usage	Description
BA1	Outlier	1	Well-used	The sett is located [REDACTED]. A well-used entrance was identified, and signs of badger activity included a latrine. Several badger paths were recorded.
BC1	Outlier	1	Partially-used (signs of current use)	The sett is located in a hedgerow. A run was observed running north-east/south-west.
BE1	Outlier	3	Partially-used (signs of current use)	The sett is located [REDACTED]. Signs of badger activity include hairs in fence lines, snuffle-holes and exploratory digging.
BE2	Outlier	2	Disused	The sett is located in semi-natural broadleaved woodland with two disused entrances. Fox signs were observed in the area.
BE3	Subsidiary	6	Partially-used (no signs of current use)	No badger signs were recorded in the area. Runs were recorded in the area, however this is not considered likely to be badger. One entrance was partially used, likely by fox, whilst the others were disused. The sett was [REDACTED].
BE4	Outlier	1	Partially-used (no signs of current use)	The sett is located [REDACTED]. Entrance to the sett showed no signs of recent use by badgers.
BE5	Outlier	3	Well-used	The sett is located on [REDACTED]. One entrance was well used, with spoil heaps from recent excavation present. The two other entrances had partial-use, but no signs of recent use by badgers.

4. Conclusion

- 4.1.1.1 Seven badger setts were identified during the badger survey: two were well-used outlier setts, two were partially-used outlier setts with signs of current use, one was a partially-used outlier sett with no signs of current use, one was a subsidiary sett partially-used with no signs of current use and one was a disused outlier sett. Numerous badger signs including runs, latrines, snuffle-holes and badger hairs were recorded. Four setts are located within the Hornsea Three onshore cable corridor (BC1, BE1, BE2 and BE5).
- 4.1.1.2 Results of the survey have been used to inform the final location and design of the Hornsea Three onshore cable corridor (see volume 1, chapter 4: Site Selection and Alternatives) and enable the assessment of the impacts of Hornsea Three on badgers, reported in volume 3, chapter 3: Ecology and Nature Conservation. Where impacts are identified, appropriate mitigation is specified in volume 3, chapter 3: Ecology and Nature Conservation of the Environmental Statement.

5. References

Clark, M. (2007) Badgers. Whittet Books, London.

DONG Energy (2016) Hornsea Three PIER Boundary (Document No.: HOW030093).

Natural England (2009) Interpretation of Disturbance in Relation to Badgers Occupying a sett.

Natural England (2016) Badgers: Protection and Licences website: <https://www.gov.uk/guidance/badgers-protection-surveys-and-licences> Accessed 14th February 2017.

RPS (2016) Hornsea Offshore Wind Farm, Preliminary Ecological Appraisal (on behalf of DONG Energy).

Appendix A Figures

A.1 Badger survey area



 Badger Survey Area

It is drawn to the readers attention that the survey area depicted in this figure is not representative of the final project boundary. The relationship between the final project boundary and the survey area, as well as any implications for the baseline information as it relates to the EIA is discussed in the limitations section of this annex (see Section 2).

Reference System : OSGB36 Scale@A3:1:250,000
 Projection : BNG Vertical reference: Newlyn



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01	Initial Issue	22/08/2017

Hornsea Project Three
 Figure 1.1:
 Badger Survey Area

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A.2 Badger survey results (REMOVED FOR CONFIDENTIALITY REASONS)

A.3 Photographs of badger survey results (REMOVED FOR
CONFIDENTIALITY REASONS)