WRITTEN REPRESENTATION FOR SPR EA1N and EA2 PROJECTS (DEADLINE 1)

ONSHORE ECOLOGY

Interested Party: SASES **PINS Refs:** 20024106 & 20024110

Date: 30 October 2020 **Issue:** 5

Summary

1. The proposals result in the permanent removal of approx. 30 acres of wildlife habitat across the substation site. Although mostly arable farmland, the site includes copses, pits, ditches and hedgerows, all of which support wildlife, including bats and badgers. Hares, rabbits, birds and insects are all common in the arable farmland.

2. Grove Wood is being offered as mitigation habitat. It is already a Local Wildlife Site and Ancient Woodland, but critically Felling Licences have been granted by the Forestry Commission in early 2020 *(Annex 1 – felling licences)*. This will see the wood subject to significant tree removal and coppicing. Both these issues point to Grove Wood not being considered as adequate mitigation habitat. *(Annex 2 – photo following felling May 2020)*

3. The following protected species are recorded by SPR as being present on the substation site: badgers (4 setts); 15 skylarks; barn owls (1 pair); 5 species of bat (*common pipistrelle*, *soprano pipistrelle, serotine, nyctalus noctual* and the rare *barbastelle*)

4. During the lengthy construction period all types of wildlife along the cable route will be disrupted and/or displaced. SPR have not yet undertaken to re-instate all features along the cable route making it unlikely that wildlife will return in the same way. SPR recognise that the magnitude of effect is high.

5. The onshore cable route crosses the Sandlings SPA and SPR have not committed to either HDD or open-cut crossing techniques, both of which will impact in different ways on this habitat. If HDD is chosen then the works will be undertaken over a two-year period, which will be very disruptive.

6. The permanent presence of the underground cables will prevent re-instatement of trees for a width of 12M along the route. This will further impact on wildlife returning to the area.

7. The landfall site has a unique character and provides a habitat for many species of birds (including breeding sand martins and migrating kittiwakes) reptiles, maritime plants etc. Although HDD drilling is proposed in this location,

no assessment has been made by SPR of the potential for disturbance to wildlife and vegetation by this method.

8. Paragraph 58 of SPR's Chapter 22 6.1.8 Onshore Ecology (APP-070) states that 15.2% of the onshore development area was inaccessible during the survey periods and will be subject to survey post-consent. This is unacceptable as important wildlife may well have been missed and not recorded.

9. SPR do not commit to any enhancement of habitats and only state at paragraph 241 (APP-070) that "*following the construction phase, habitats will be fully reinstated as far as possible"* (emphasis added). A greater commitment to habitat enhancement and re-instatement is required.

10. There are no further details regarding re-instatement in the Outline Landscape & Ecological Management Strategy (APP-584) and no commitment to specific mitigation to benefit individual species.

11. No botanical survey has been carried out in the onshore development area. Specifically rare lichens are known to exist within the wood adjacent to Aldringham Court, where trees are proposed to be felled.

12. Given the extent and complexity of the total onshore works, the appointment of one Environmental Clerk of Works is insufficient to monitor the many species under threat.

13. Notably the following, very varied, UK Habitats of Principal Importance are present within the onshore development area: Ancient woodland; Lowland dry acid grassland; Lowland heathland; Deciduous woodland; Traditional orchards and Wood pasture and parkland.

14. EN1 deals with Biodiversity and geological conservation at 5.3 and in relation to SPR's proposals, the following have not been fully complied with:- 5.3.3 *The Environmental Statement should clearly set out any effects on protected species and on habitats and on other species identified as being of principle importance for the conservation of biodiversity.* SPR have not given due significance to badgers, bats, water voles, otters and several species of Red List birds as protected species, nor to invertebrates and reptiles, which are of importance in the onshore development area.

15. EN1 5.37 states as a general principle that the development *"should aim to avoid significant harm to biodiversity including through mitigation and consideration of reasonable alternatives".* SPR have chosen the most western site of the sites which were considered, which in turn has led to the harm being caused over the maximum area, including SSSIs (which should be given a high degree of protection under 5.3.10), Nature Reserves, Ancient Woodland and veteran trees, plus the species that reside along the cable route. It has been noted by SPR that bats are more prolific in the western areas.

16. EN1 5.3.14 deals with Ancient Woodland and Veteran Trees. Under this clause the Applicant *"should set out proposals for their conservation or, where*

their loss is unavoidable, the reasons why". The decision to route the cable corridor through Aldringham includes the removal of both Ancient Woodland and Veteran Trees and no justification has been made for this or alternatives proposed. At the substation site in Friston, a wooded pit of very mature trees is proposed to be lost to the development, when it offers potential substantial screening to the site, as well as being a haven for wildlife. Simple micrositing of the development or the consideration of alternatives would have avoided this.

17. EN1-5.3.18 deals with mitigation and states *"the Applicant should demonstrate that opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals".* There is no enhancement of existing habitats, let alone creation of any significant new habitats within SPR's proposals. The proposals simply destroy existing habitats and wildlife, which may never be able to be restored.

Badgers

18. The proposals necessitate the permanent removal of four badger setts on the substations site. SPR have also identified additional signs of badgers in the vicinity of the substation site consisting of a disused sett, two latrines and seven further signs of badger presence such as pathways or snuffle holes. SPR emphasize that they will avoid interference with Badger setts in the full knowledge that, of the five identified badger setts, four are within the permanent substation site and will be removed. *(Annex 3 –photographs of badger setts at the substation site)*

19. Badgers are a protected species under the Protection of Badgers Act 1992. SPR recognise the effect of magnitude as **high** (APP-070, paragraph 209) , but appear to suggest that the creation of artificial setts (paragraph 211) and precautionary methods of working will reduce the effect from high to low in the medium to long term on what they assess to be a "low importance receptor" and therefore to be of **minor adverse significance** . *(APP-070: Onshore Ecology 22.6.1.8 paragraphs 207-212).* How can SPR make this value judgement of a "low importance receptor" on a protected species?

20. However, in the Outline Landscape and Ecological Management Strategy (APP-584) regarding Badgers at paragraph 5.9 onwards, there is no mention of artificial setts, only detail on the exclusion of badgers from the setts prior to construction. What is suggested as mitigation in Chapter 22 Onshore Ecology is not committed to in the Outline Landscape and Ecological Management Strategy. This is unacceptable and infers that the badgers will either be culled or merely left to wander off to create new setts. Without the proposal to create artificial setts the effect of magnitude reverts to high.

21. There is one badger sett identified by SPR along the cable route, which will likely need to be destroyed. SPR also recognise that the installation of the cables will represent the temporary loss of a substantial area of arable and hedgerow foraging habitat.

22. SPR state that there will a protection buffer zone of 30M around each remaining sett outside the onshore infrastructure and that any trench over 1M deep will be covered at the end of each working day. There is however no mechanism to ensure that appropriate precautions are actually undertaken in practice.

Bats

23. Figure 22.7f of the Environmental Statement 6.2.22.7 (APP-280) reveals at least 6 bat-roosting sites as having been identified as suitable in the substations site, together with hedgerows and parcels of land forming commuting and foraging routes, the majority of which will be lost to the development. The sightings of bats in this area include the rare Barbastelle bat.

24. There is insufficient information provided by SPR regarding the effect of the removal of hedgerows at the substation site will have on the foraging routes of bats. Even if replanted, these hedgerows will take many years to mature. It is not known how many other projects will also apply for a connection at this location, which would extend the period until re-planting could take place.

25. Several bat roosts exist within Grove Wood, which is very close to the proposed substation buildings. Both the construction and operation of the substations will interfere with the foraging routes of these bats.

26. Roosting sites for bats will be disturbed by noise and lighting associated with the substations and this can cause bats to abandon roost sites. Roosts will also be lost by the felling of trees or alterations to bridges, culverts etc. *(Information from Suffolk Biodiversity Information Service).*

27. There will be fragmentation of foraging and commuting habitats in the removal of vegetation, hedges etc along the cable route. This includes a reduction in insect population on which bats rely.

28. Areas that have lighting, such as at the substation site and along the cable route, can form barriers between roosting sites and foraging areas. Lighting can cause a delay in emergence of bats from roosts, cutting foraging time and therefore affecting the health of the bat population.

29. SPR have identified the presence of a **Lesser Horseshoe Bat** in Transect 3, in the vicinity of Billeaford Hall (Sheet 22.8c of 6.2.22.8/APP-281), very close to the cable route. *(Annex* 4 *– map).* This is a very rare species and there has been only one other sighting in Suffolk in the last 100 years. *(Information from Suffolk Wildlife Trust).* SPR have been asked to investigate this sighting in more detail, but have declined to do so. There should be a proper investigation before a decision on this Application is made.

30. SPR acknowledge that there were errors in the bat detection equipment used, resulting in gaps in the recording. Of the 220 days that were recorded, there are 58 days with no data, with the result that 26% of the survey has no data. Weather conditions are also known to affect the data collected.

31. In addition to the above there were two transects which were inaccessible during late summer, when bats are active. It is therefore not considered that the Bat Survey is complete and cannot be fully relied upon.

32. SPR have identified a higher density of bats within the western portion of the onshore development area (Transects 1 – 4) *Chapter 22, Onshore Ecology, (APP-070), paragraph 218 refers: "The 2018 activity transects show that there is a higher density of bats using the transect areas within the western portion of the onshore development area. However, foraging/commuting bats were observed albeit in lower densities within the transect areas near to the coastline. Given the sensitivity of this receptor there is the potential for significant impacts during construction without mitigation. "* (emphasis added)

33. Core Sustenance Zones are an area around the bat roost where the habitat will have an effect on the resilience of the colony using that roost. The zone is different for each species but ranges from 1km to 6km. *(Information from the Bat Conservation Trust's – Core Sustenance Zones and Habitats of Importance).* This can indicate that development work can impact the colony in terms of foraging and commuting and suggests the 50 metre buffer zone adopted by SPR is insufficient. The Bat Conservation Trust should be consulted on these Applications.

Invertebrates

34. SPR have not sufficiently investigated invertebrates in Chapter 22, Onshore Ecology, of the Environmental Statement and say that there is no evidence of suitable habitat to support significant populations of invertebrates and that these species will not be considered further. *(APP-070-Chapter 22 5.3.8, paragraph 155 refers).* This cannot be correct when this part of Suffolk is teeming with insect life.

35. Suffolk Biodiversity Information Service has 140 records of invertebrates within (and up to 2km from) the onshore development area, of which the *Lunar-yellow underwing moth* is on the Suffolk priority species list. It is a rare species in the UK and is only found in a very few locations, which include the Suffolk Sandlings, notably in the Aldringham Walks location. SPR must investigate this important species further.

36. Glow-worms have been seen by residents in the vicinity of the cable-route in Aldringham.

37. SPR have not consulted BugLife (The Invertebrate Conservation Trust). Had they done so, they would have been advised that a B-Line has been established both north/south and east/west in the same location as the proposed cable route. B-Lines are migration corridors for bees and other pollinators and are funded by Natural England. *(Annex 5 – map of Norfolk/Suffolk B-Line)*

Great Crested Newts

38. SPR have not fully surveyed the 38 waterbodies, which they have identified in the onshore development area. Six waterbodies have not been surveyed. Paragraph 147 of 22.5.3.5 (APP-070) states that three ponds have returned a positive result for Great Crested Newts. SPR then go on to say that further surveys will be undertaken prior to construction. This again is totally unsatisfactory and further investigative work is necessary during the Examination period.

39. Suffolk Biodiversity Information Services (SBIS) have a record of Great Crested Newts within a pond in Grove Wood close to the substation site. SPR's waterbody location maps can be found at Figure 22.4a-f (APP-278). This pond is included within an area designated for habitat mitigation, but it is unclear whether there is a conflict between the resident Great Crested Newts and any other species proposed to relocated from the substation site.

40. SPR have omitted to record that a pit on the substation site, where EA1N is proposed to be built, is seasonally flooded and this therefore adds a further waterbody which has not been surveyed. A survey should be carried out in the winter 2020/21. *(Annex 6 – flooded pit on substation site)*

41. Natural England's new District Level Licensing (DLL) for Great Crested Newts for Suffolk Coastal District was due to launch in September 2020. No reference is made to this DLL in SPR's application and a more detailed survey will need to be carried out. The DLL requires that compensation ponds are provided and give guidance on how this is to be achieved *(Annex 7- Calculation of compensation ponds for Great Crested Newts)* Note the 250M dispersal area from the pond and the ratio of compensation required. No such compensation has been put forward by SPR in respect of the ponds where Great Crested Newts have been identified.

Reptiles

42. SPR's habitat survey discloses that Suffolk Biodiversity Information Service holds 77 records of reptiles within (and up to 2km from) the indicative onshore development area, with adder, common lizard, grass snake and slow-worm being recorded.

43. In Chapter 22 on Onshore Ecology (APP-070) SPR have identified seven areas of suitable reptile habitat, however they have not carried out any reptile surveys as they say in paragraph 152 that the areas are considered to be of an inappropriate size to support large populations. This must be untrue as this part of east Suffolk with its heathland, sandy scrubland and grassland is well known for its high numbers of adders, lizards and slow-worms.

44. SPR propose to deal with reptiles by a Precautionary Method of Working outlined in Appendix 22.3 (APP-503) paragraph 130 on page 26. This relies completely on the operatives being responsible for not harming reptiles and is unsatisfactory.

45. The presence of reptiles cannot be dismissed by SPR as being i**nsignificant** in the onshore development area.

Water voles and otters

46. SPR's Appendix 22.5 (APP-506) Water Vole and Otter Presence/Absence Survey concludes that the only suitable habitat for these species is the Hundred River. The survey acknowledges that access to the Hundred River was limited due to overgrowth of vegetation and also limited landowner consent. Despite this, the survey concludes that there are no water voles or otters present in the River Hundred. This is categorically not the case as the presence of otters and water voles in this location is well-known in the local population.

47. SPR also acknowledge that Suffolk Biodiversity Information Service has 3 records of water vole and 5 records of otters, both in the vicinity of the Hundred River.

48. The Suffolk Otter Survey of 2016 contains the following statement:
"Otters are resident on the Hundred River and 'The Fens', an area of reed-beds providing excellent cover. Spraint, footprints and remains of meals are regularly found along the Hundred River".

49. There is strong evidence that SPR's findings on water voles and otters are unreliable and they should be required to make a full re-assessment of the presence of water voles and otters along the Hundred River before a decision on the Application is made.

50. Attached to this report at *Annex 8* is a description of the wildlife which will be affected by the bi-section of the River Hundred. The author is Dr. Gillian Horrocks who is a resident of Aldringham, close to the River Hundred.

Birds

51. There will be permanent effects on birds and wildlife due to light and noise pollution from the substations, when in operation. Our understanding is that security lighting will be motion sensitive and therefore react to movement from animals and birds.

52. The agricultural land lost at the substations site has not been given proper significance in relation to the birds associated with this area. In particular Red List species such as skylarks and yellowhammers are known to frequent this location. SPR recorded 15 skylarks at the substation site but yet have given their presence no significance.

53. Barn owls are a Schedule 1 species however SPR have given little information about the abundance and distribution of this species and what effect the substations and cable corridor will have on their population or available prey. SPR admit to one pair of nesting barn owls on the substation site at Friston however consider it of **negligible** significance. Barn owls are also known to be

present near the Hundred River and Fitches Lane within the onshore development area.

54. According to SPR's 2018 Other Target Species Observations (APP-292) a Spotted Flycatcher, which is on the Red List, was sighted near the substations site.

55. Much of the information on onshore ornithology in SPR's submission has been redacted, including all information on Schedule 1 birds. Whilst it can be argued that the intention is to protect these species, it prevents people with local knowledge from making observations on the correctness of these surveys.

56. Nightingales are a known feature across this part of East Suffolk yet SPR do not properly acknowledge their presence, concentrating instead only on nightingales resident in the SSSIs. Proper account should be taken of this species in other locations, such as Fitches Lane in Aldringham, and give proper significance to these.

57. SPR only commit to halting construction work due to breeding birds within the SPA. There is no commitment to preventing disturbance to breeding birds elsewhere in the Onshore Development Area.

58. The landfall site and offshore works will also have a detrimental effect on marine life. Attached as a final appendix at *Annex 10* is a report by local resident and naturalist, Gillian Horrocks, on the Effects on Marine Life, focussed on Thorpeness and the local population of Kittiwakes at Sizewell.

Trees

59. The cable route will involve the removal of countless trees, including many which will be effectively irreplaceable for hundreds of years. For example, a veteran oak tree (TM 44784 60407), estimated to be 196 years old and a beech tree (TM 44654 60484) estimated to be 158 years old, near Gypsy Lane in Aldringham, will be lost due to the cable route. *(Annex 9 – photos of mature oak and beech trees near Gypsy Lane)*

60. No trees can be planted for a width of 12M above the buried cables and this will leave a tunnel effect across the landscape and interconnection between habitats will be lost.

61. There is a group Tree Preservation Order on the woodland surrounding Aldringham Court (Grade II Listed). A large swathe of these trees is proposed for removal. This woodland supports many species and includes rare lichens.

62. A wooded pit in the substation site will be built over, removing an unspoilt and hidden habitat for many creatures, especially badgers, birds and bats.

Cumulative Impact

63. SPR recognise that the impact on ecology will be made more significant due to the combined effects with other proposed projects in the area. These would include Sizewell C and the Nautilus and Eurolink Interconnector projects, as well as Galloper and Greater Gabbard extensions etc. SPR have only taken account of Sizewell C and not the other projects which will cumulatively have an effect on ecology in terms of duration of time and extent of disturbance.

64. This part of Suffolk is prized for its wildlife and many people are drawn to the area for this reason. The effect of the implementation of the combined projects planned for the "Suffolk Energy Coast" on an area currently known as the "Suffolk Heritage Coast" is overwhelming and is counter to the aims of conservation implicit in the battle to prevent Climate Change.

Conclusion

65. SPR have not carried out any proper surveys of Invertebrates and Reptiles and these are likely to suffer significant harm during the construction period.

66. There has been no assessment of the presence and diversity of botanical species.

67. SPR's surveys of Bats, Great Crested Newts, Voles and Otters are inadequate and incomplete. It is imperative that the sighting of the Lesser Horseshoe Bat is further investigated.

68. SPR consistently underestimate the significance of the wildlife and plant life in the area, as well as its contribution to the whole character of this part of East Suffolk.

69. It is clear from SPR's various survey maps that there is an abundance of wildlife in the proposed substation site, which will be permanently displaced.

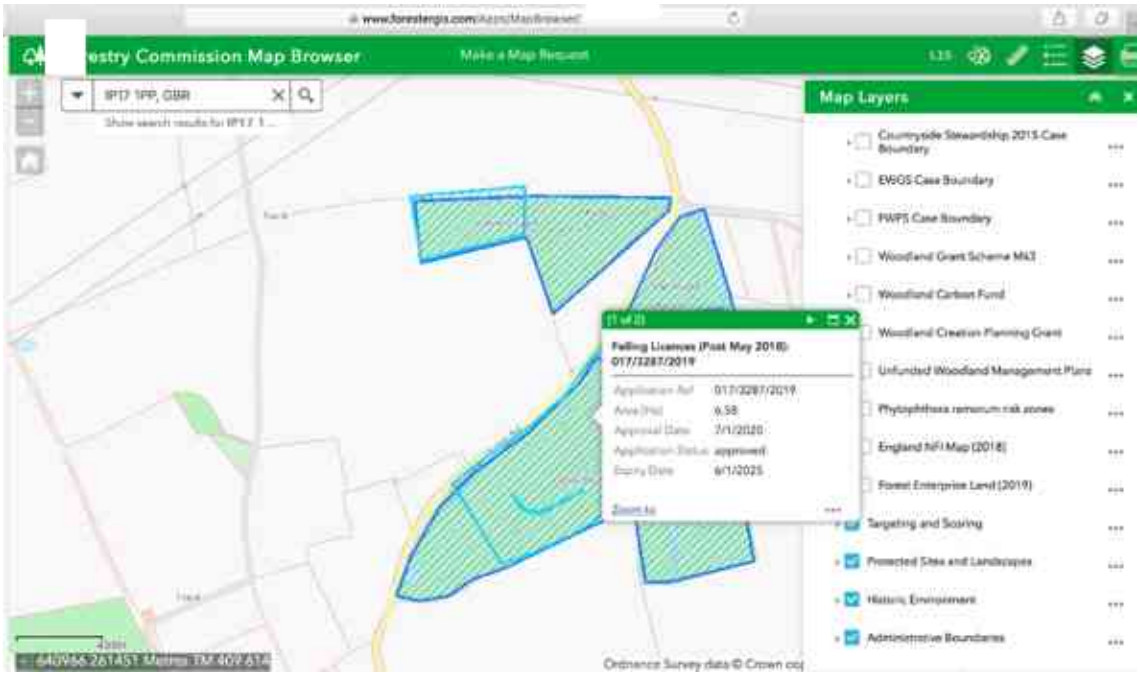
70. The choice of site to the extreme west of the onshore search area results in the maximum about of disruption to wildlife, trees and plants across the 5-mile cable route.

71. The proposed development cannot be properly described as "green" when the damage to the onshore ecology and environment is so high.

72. None of the above is compliant with EN1-5.3, specifically with regard to giving due significance to protected species, the proper consideration of alternatives, or the enhancement of existing habitats.

Annexes to this submission appear on the following pages

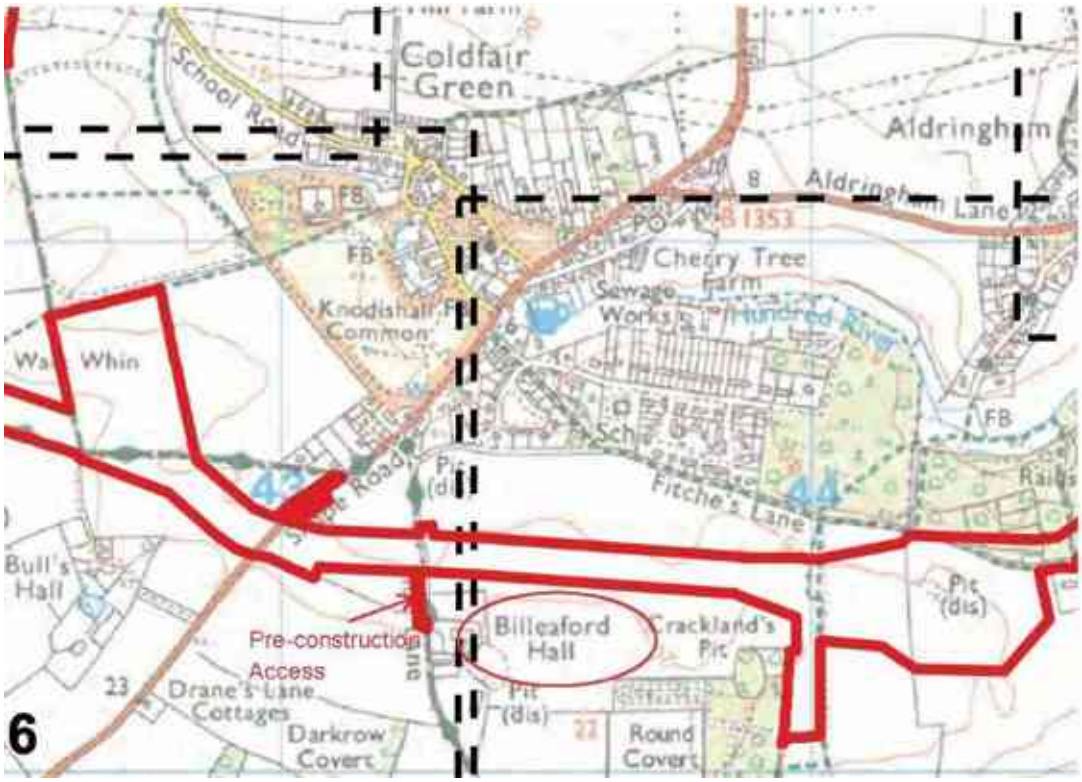
Annex 1. Felling Licences for Grove Wood & Broom Covert 2020



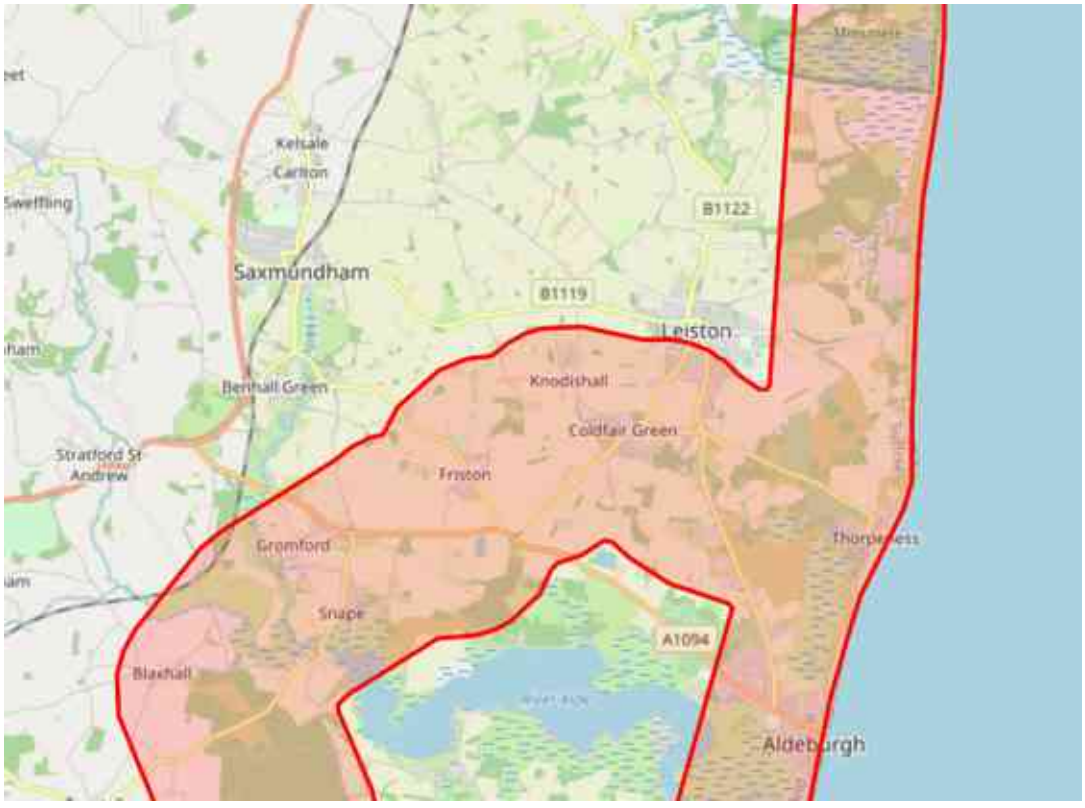
Annex 2. Photograph of part of Grove Wood after felling May 2020

Annex 3. Badger setts in the wooded pit on the proposed substations site

Annex 4. Proximity of Billeaford Hall to the cable route (Lesser Horseshoe Bat sighted in this area)

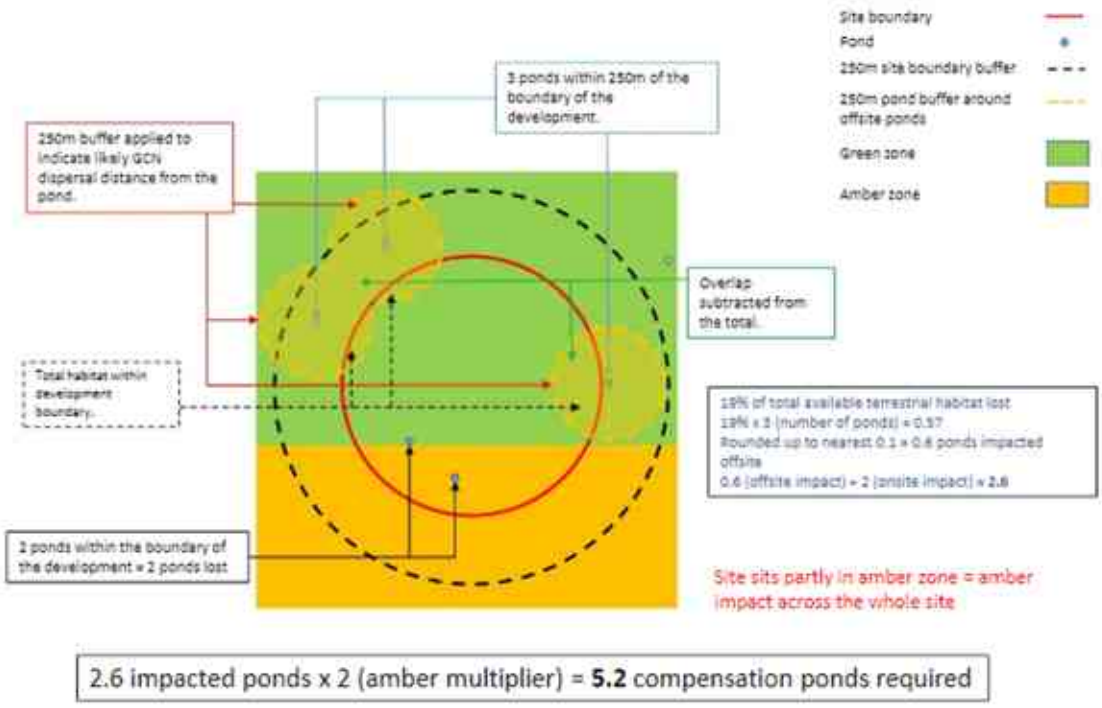


Annex 5 – Norfolk/Suffolk B-Line (BugLife pollinator corridor)



Annex 6. Seasonally flooded pit on substation site

Annex 7. Calculation of compensation ponds for Great Crested Newts



Annex 8. Wildlife affected by the bisection of the River Hundred

The River Hundred is now a slow-moving, narrow, water course, although its flood plain, and the Bronze Age burial mounds situated high on the ridged edges of this, show that it was once a navigable river with its estuary somewhere south east of Thorpeness Mere.

SPR's trenching plans will bisect River Hundred just over 1000m north of the lush, marshy areas that it irrigates in its valley, where horses, cattle and sheep graze. Once beyond Bird's Farm and River Hundred (House), the river creates a fen (including North Warren RSPB reserve), before feeding Thorpeness mere, and the water meadows between Thorpeness and Aldeburgh where migrating birds overwinter and cattle graze.

Despite its narrow aspect, the River Hundred is able to support kingfishers, otters, grass snakes, and other hunting aquatic species as well as water voles, very close to, or at the bisection point. An absence of ***records*** of fish, crustaceans and European eels (another endangered species) does not mean that fish, crustaceans and eels are absent: the predators would not survive without them. In any case, the rich diversity of wildlife in the marshes and in the fen plainly will not stay there when there is a watercourse to explore.

Dr.Gillian Horrocks
of Leiston Road, Aldringham
September 2020

Annex 9. Mature oak and beech trees near Gypsy Lane, Aldringham proposed to be felled

Oak

Beech

Annex 10 – Effects on Marine Life by Gillian Horrocks of Aldringham

Effects on Marine Life 1

Kittiwakes, just clinging on
Kittiwakes are now rated as vulnerable on the International Union for the Conservation of Nature's red list. Their decline as a species is seen as indicative of the environmental pressures under which we place them. Seabird populations are at risk from offshore development, especially now that multiple large areas of development are proposed, which overlap with many seabird species' ranges. Risks to the birds include disturbance, displacement, loss of habitat, loss of food, and collision.

Thorpeness and Sizewell
The migration of kittiwakes is an important feature of the beach and cliffs at Thorpeness. The headland formed by the cliffs is important for monitoring migration numbers.[1] Many rare and globally important species can be seen at this location, which is favourable for nesting as well as and migration, and consequently for seasonal counts by monitors. Day counts of Kittiwake at Thorpeness, by Suffolk Naturalists Society, have shown their numbers remain high year round (between 400-500 per day in winter and 200 per day in summer)[2]

Sand Martins breeding in Thorpeness Cliffs

Kittiwakes have established a breeding colony of about 500 pairs of birds on the derelict Sizewell rig (see image)s. This is only about 2000m north of the Thorpeness migration point. Another kittiwake colony has become established in Lowestoft, with the harbour and pier hosting around 320 nests,[3] and a further 100 birds in the church tower.[4] The more northerly migration observation point is Kessingland, around 4000 metres south of Lowestoft's colony. Sizewell

[1] https://wardenstrust.org/birds-around-ness-house/

[2] Suffolk Naturalists Society, Vol 62, Systematic list, 100-102, https://issuu.com/suffolknaturalistssociety/docs/sb62b/70

[3] *ibid.*

[4] https://www.rcdea.org.uk/lowestoft-church-provides-home-to-rare-kittiwakes/

and Lowestoft are the only two breeding colonies in Suffolk.[5] The kittiwakes' colonisation of abandoned human structures on our coast reflects catastrophic species decline further north, and pressure on habitat everywhere.[6]

Kittiwakes are known to be at risk of collision with offshore wind farms.[7] Their established migration points on the Suffolk Coast show them vulnerable to the EAN1 and EA2 sites which are very close by (EAN1 is only 26 miles out[8] and EA2 is 19 miles out[9] — see charts, p.5). To reduce potential connectivity of kittiwake breeding colonies and both marine and onshore development, specific protective strategies are required, which currently seem limited to proposing the eradication of predatory mammals in the vicinity of their breeding grounds,[10] and are not guaranteed to work.[11] No compensation strategy exists to mitigate the threats to these endangered birds at Sizewell and Thorpeness, nor at Lowestoft and Kessingland.

Sandeels
The plight of the kittiwake has been debated in Parliament[12] with the result that some attempts have been made to protect the food source of the kittiwake (which is also the food source of many other valued species on the East Coast, like salmon), by limiting industrialised fishing of their prey.

The kittiwake's food source, sitting at the base of the food chain, and thereby supporting the whole marine eco-system, is the sandeel. The decline of sandeels has a clear link to industrialised fishing and climate change.[13] Sandeels have become a source of supply for human exploitation: food for farmed trout, farmed salmon, pets, and for cosmetics, as well as for oil for power stations. Unfortunately, the breeding success of kittiwakes is now clearly established as dependent on sandeel plenitude.[14]

Meagre research has been carried out to track the foraging of kittiwake populations. One study tracked birds by GPS from the colonies in Filey and Flamborough in Yorkshire. They fly as far as

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[5] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010079/EN010079-002882-ExA;%20AS;%2010.D7.21_Offshore%20Ornithology%20Cumulative%20and%20In-combination%20Collision%20Risk%20Assessment.pdf

[6] Katz, C., National Geographic, April 6 2020 https://www.nationalgeographic.com/science/2020/04/norwegians-building-boutique-hotels-threatened-arctic-kittiwakes-gulls/

[7] Bradbury et al. 2014, Mapping Seabird Sensitivity to Offshore Wind Farms. PLoS ONE 9(9): e106366.doi:10.1371/journal.pone.0106366

[8] https://www.scottishpower.com/news/pages/scottishpower_renewables_agrees_thirty_year_deal_with_port_of_lowestoft.aspx

[9] https://www.scottishpowerrenewables.com/pages/east_anglia_two.aspx

[10] For instance, https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010080/EN010080-003191-HOW03_CON02_Appendix2B_KittiwakeCompensationStrategy.pdf

[11] https://renews.biz/61381/orsted-confident-of-securing-hornsea-3-consent/

[12] https://api.parliament.uk/historic-hansard/lords/1994/nov/01/sand-eels-and-drift-net-fishing

[13] https://www.theguardian.com/environment/2018/jun/03/shetland-seabirds-climate-change-catastrophe-terns-kittiwakes-puffins

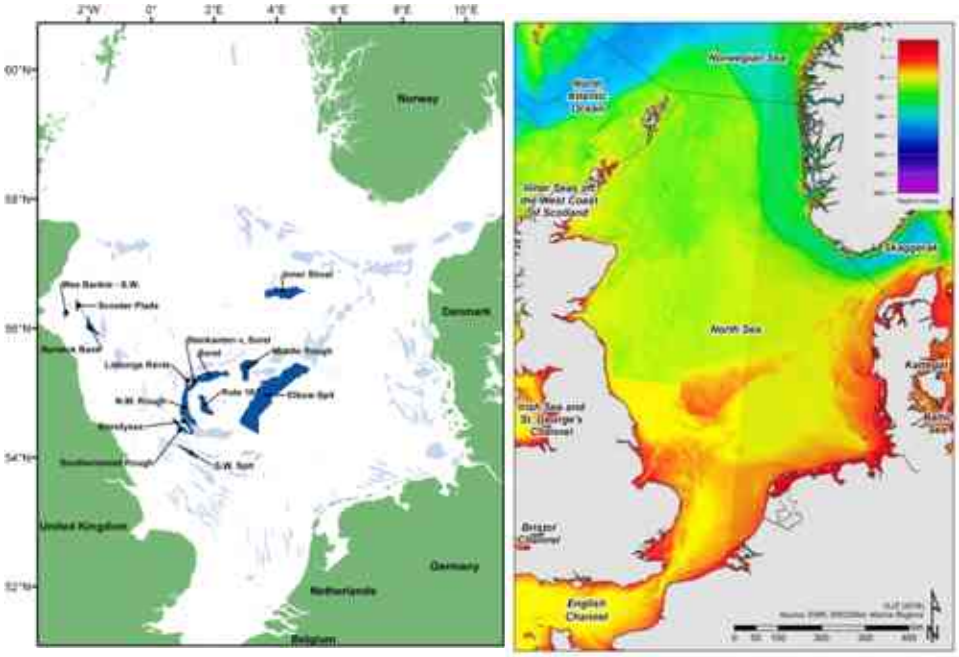
14 Matthew J. Carroll Mark Bolton Ellie Owen Guy Q.A. Anderson Elizabeth K. Mackley Euan K. Dunn Robert W. Furness, 'Kittiwake breeding success in the southern North Sea correlates with prior sandeel fishing mortality' *Aquatic Conservation,* Wiley, 2017 https://doi.org/10.1002/aqc.2780

Dogger Bank to forage for their chicks — a round trip of around 200km.[15] This means that the feeding grounds of Yorkshire's kittiwakes overlap with an industrial fishing zone for sandeels[16], as well as with a proposed wind farm site. It is the shallowness of Dogger Bank that makes it an attractive location for sea-bed fixed turbines.[17]

Breeding locations of sandeels
Little firm evidence has been collected on the comprehensive distribution of sandeels and the dispersal of their young. Fortunately, there exists a formal study of known locations of sand-eel fisheries, which was pulled together with the help of captains of fishing trawlers (shown below). Many more minor breeding grounds are suggested from the trawler captains' experience.[18] From the charts, there appears to be a correlation between the distribution of sandeel fisheries and the shallow areas of the North Sea (see below).

Map of sandeel fisheries; distribution in blue with the darker shades being the richest pickings (Ref. Note 9)

Bathymetry of the North Sea



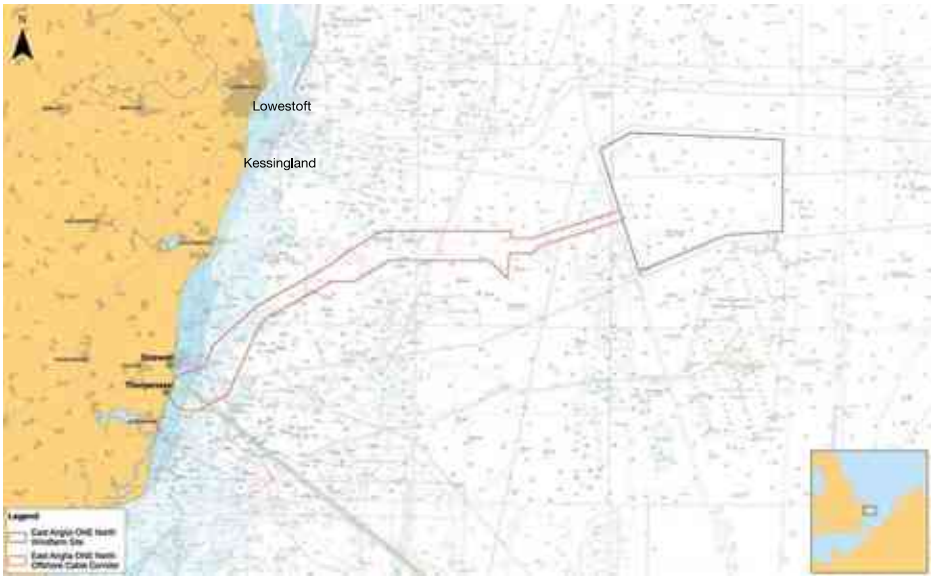
[15] http://ww2.rspb.org.uk/our-work/rspb-news/news/442657-sandeels-and-seabirds-protecting-our-seas-in-postbrexit-waters

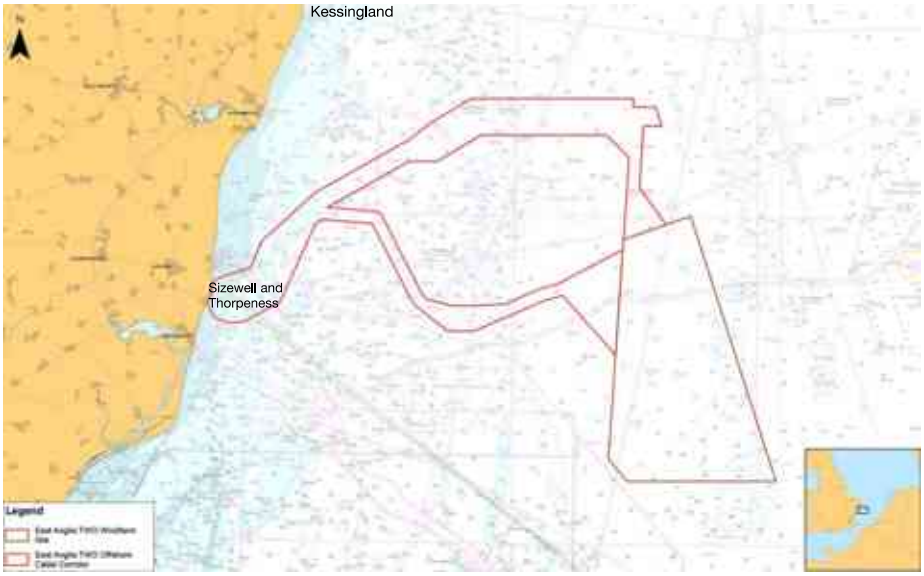
[16] Bolton *et al.*, 'Kittiwake breeding success in the southern North Sea correlates with prior sandeel fishing mortality' *Aquatic Conservation: Marine and Freshwater Ecosystems* (**http://onlinelibrary.wiley.com/doi/10.1002/aqc.2780/full**)

[17]https://en.wikipedia.org/wiki/Dogger_Bank_Wind_Farm

[18] Henrik Jensen, Anna Rindorf, Peter J. Wright, Henrik Mosegaard
'Inferring the location and scale of mixing between habitat areas of lesser sandeel through information from the fishery' ICES Journal of Marine Science, Volume 68, Issue 1, January 2011, Pages 43–51, https://doi.org/10.1093/icesjms/fsq154

Despite not currently knowing precisely where Suffolk's kittiwakes forage, we can be fairly certain that the location of the sandeels on which they depend will be in shallow waters. Unfortunately, EA1N and EA2 also select for shallower sea beds (see charts, below) and as they are geographically close, they are likely to sit within, atop, or, indeed, between the kittiwakes' foraging routes and foraging zones. In fact, the full array of windfarms proposed, or under construction, will create a something like a wall along coastal waters against the free passage of sea birds. Wind farms therefore constitute a threat to red list coastal species, not just because of the acknowledged danger from their blades,[19] but also because of their disruption to the shallow sea bed and its marine ecology, thereby threatening and depleting the foundations of the marine food chain in the North Sea.





Conclusions

1. The vulnerability of bird life to SP's landfall in the Thorpeness area is illustrated by the impact on the kittiwake — only one of many globally important and threatened species that breed, forage and migrate there. Compromising the beach and cliffs, which are an important migration point, will be disastrous. Industrial equipment used in building windfarms and establishing landfall close by their colony also poses a dangerous risk. Local disruption from noise, traffic, vibration, heavy plant, and sea traffic, including helicopters, will harm the breeding cycle and the migration of these globally important birds.

2. Kittiwake are at risk from collision with turbine blades at sea. EAN1 and EA2 will form a continuous field of blades within 20 miles of their breeding colonies and their known migration points. EAN1 and EA2 will also join the more southern and northern windfarms to create a continuous barrier to sea birds.

3. The kittiwake's primary food source is under threat from the developments undersea, namely, construction of wind turbines from the sea bed, and hauling cables across the sea bed. These developments take advantage of the shallowest waters for easier construction. Unfortunately, these shallow waters appear to be the locations in which the vital sandeels breed, and which we now know are the foundation of much of marine life in the North Sea.

4. No adequate studies exist to show either the extent of the marine disruption or any possible mitigation with our current state of knowledge and technology.

5. Predicted impacts from the wind farm added to those from other wind farms already approved will be cumulatively harmful.

6. Although floating wind farms, which cause less disruption to the sea bed, are considered more versatile in that they can be sited even in deep water (and manufacturing costs are falling with economies of production scale), they have not been considered by SP. In fact, the cheapest option — from repeated and destructive landfall excavations onshore,[20] to siting turbines in the shallowest and most vitally nourishing waters[21] — has always been selected.

7. Development should be halted until a fuller, accurate set of surveys can be achieved and a more complete picture drawn of all at stake, from which safer solutions can be found.[22]

"If decision-makers continue to ignore the bigger picture resulting from adding more and more turbines into already crowded seas we risk losing our seabirds to 'a thousand cuts' where no individual scheme is responsible but collectively the impact is devastating."[23]

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[20] https://www.insightenergynews.co.uk/renewable-energy/offshore-station-study-ordered-amid-wind-farm-plans-11658

[21] https://www.popularmechanics.com/science/energy/a19136723/the-first-floating-wind-farm-is-ridiculously-efficient/

[22] https://www.eadt.co.uk/business/suffolk-and-norfolk-mps-call-for-offshore-ring-main-for-wind-farms-1-6424713

[23] RSPB conservation director Martin Harper, July 2020