



East Anglia TWO Offshore Windfarm

Appendix 23.2

Onshore Ornithology Cumulative Impact Assessment with the Proposed East Anglia ONE North Project

Environmental Statement Volume 3

Applicant: East Anglia TWO Limited
Document Reference: 6.3.23.2
SPR Reference: EA2-DWF-ENV-REP-IBR-000915_002 Rev 01
Pursuant to APFP Regulation: 5(2)(a)

Author: Royal HaskoningDHV
Date: October 2019
Revision: Version 1

Revision Summary

Rev	Date	Prepared by	Checked by	Approved by
01	08/10/2019	Paolo Pizzolla	Julia Bolton	Helen Walker

Description of Revisions

Rev	Page	Section	Description
01	n/a	n/a	Final for Submission

Table of Contents

23.2	Onshore Ornithology Cumulative Impact Assessment with the proposed East Anglia ONE North Project	1
23.1	Introduction	1
23.2	Construction Scenarios Realistic Worst Case	1
23.3	Cumulative Impact Assessment during Construction	9
23.4	Cumulative Impact Assessment during Operation	11
23.5	Summary	11

Appendix 23.2 is supported by the tables listed below.

Table Number	Title
Table A23.1	Scenario 1 Realistic Worst Case Assumptions
Table A23.2	Scenario 2 Realistic Worst Case Assumptions
Table A23.3	Summary of Scenario 1 and Scenario 2 Realistic Worst Case Assumptions

Glossary of Acronyms

CCS	Construction Consolidation Sites
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
ES	Environmental Statement
HDD	Horizontal Directional Drilling
IOF	Important Ornithological Features
PEIR	Preliminary Environmental Information Report
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

Glossary of Terminology

Applicant	East Anglia TWO Limited.
Cable sealing end compound	A compound which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
Cable sealing end (with circuit breaker) compound	A compound (which includes a circuit breaker) which allows the safe transition of cables between the overhead lines and underground cables which connect to the National Grid substation.
Construction consolidation sites	Compounds associated with the onshore works which may include elements such as hard standings, lay down and storage areas for construction materials and equipment, areas for vehicular parking, welfare facilities, wheel washing facilities, workshop facilities and temporary fencing or other means of enclosure.
Development area	The area comprising the onshore development area and the offshore development area (described as the 'order limits' within the Development Consent Order).
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction, operation and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive, as defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017 and regulation 18 of the Conservation of Offshore Marine Habitats and Species Regulations 2017. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas.
Horizontal directional drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
HDD temporary working area	Temporary compounds which will contain laydown, storage and work areas for HDD drilling works.
Jointing bay	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.
Link boxes	Underground chambers within the onshore cable route housing electrical earthing links.
Mitigation areas	Areas captured within the Development Area specifically for mitigating expected or anticipated impacts.

National electricity grid	The high voltage electricity transmission network in England and Wales owned and maintained by National Grid Electricity Transmission
National Grid infrastructure	A National Grid substation, cable sealing end compounds, cable sealing end (with circuit breaker) compound, underground cabling and National Grid overhead line realignment works to facilitate connection to the national electricity grid, all of which will be consented as part of the proposed East Anglia TWO project Development Consent Order but will be National Grid owned assets.
National Grid overhead line realignment works	Works required to upgrade the existing electricity pylons and overhead lines (including cable sealing end compounds and cable sealing end (with circuit breaker) compound) to transport electricity from the National Grid substation to the national electricity grid.
National Grid overhead line realignment works area	The proposed area for National Grid overhead line realignment works.
National Grid substation	The substation (including all of the electrical equipment within it) necessary to connect the electricity generated by the proposed East Anglia TWO project to the national electricity grid which will be owned by National Grid but is being consented as part of the proposed East Anglia TWO project Development Consent Order.
National Grid substation location	The proposed location of the National Grid substation.
Natura 2000 site	A site forming part of the network of sites made up of Special Areas of Conservation and Special Protection Areas designated respectively under the Habitats Directive and Birds Directive.
Onshore cable corridor	The corridor within which the onshore cable route will be located.
Onshore cable route	This is the construction swathe within the onshore cable corridor which would contain onshore cables as well as temporary ground required for construction which includes cable trenches, haul road and spoil storage areas.
Onshore cables	The cables which would bring electricity from landfall to the onshore substation. The onshore cable is comprised of up to six power cables (which may be laid directly within a trench, or laid in cable ducts or protective covers), up to two fibre optic cables and up to two distributed temperature sensing cables.
Onshore development area	The area in which the landfall, onshore cable corridor, onshore substation, landscaping and ecological mitigation areas, temporary construction facilities (such as access roads and construction consolidation sites), and the National Grid Infrastructure will be located.
Onshore infrastructure	The combined name for all of the onshore infrastructure associated with the proposed East Anglia TWO project from landfall to the connection to the national electricity grid.
Onshore preparation works	Activities to be undertaken prior to formal commencement of onshore construction such as pre-planting of landscaping works, archaeological

	investigations, environmental and engineering surveys, diversion and laying of services, and highway alterations.
Onshore substation	The East Anglia TWO substation and all of the electrical equipment within the onshore substation and connecting to the National Grid infrastructure.
Onshore substation location	The proposed location of the onshore substation for the proposed East Anglia TWO project.
Transition bay	Underground structures at the landfall that house the joints between the offshore export cables and the onshore cables.

23.2 Onshore Ornithology Cumulative Impact Assessment with the proposed East Anglia ONE North Project

23.1 Introduction

1. This appendix covers the Cumulative Impact Assessment (CIA) of the proposed East Anglia TWO project with the proposed East Anglia ONE North project in relation to onshore ornithology.
2. The East Anglia ONE North offshore windfarm project (the proposed East Anglia ONE North project) is also in the application phase. The proposed East Anglia ONE North project has a separate Development Consent Order (DCO) which has been submitted at the same time as the proposed East Anglia TWO project. The two projects share the same landfall location and onshore cable corridor and the two onshore substations are co-located, and connect into the same National Grid substation.
3. The proposed East Anglia TWO project CIA for onshore ornithology will therefore initially consider the cumulative impact with only the East Anglia ONE North project against two different construction scenarios (i.e. construction of the two projects simultaneously and sequentially). The realistic worst case of each impact is then carried through to the main body of the CIA which have been screened into the CIA.
4. For a more detailed description of the CIA please refer to **Chapter 5 EIA Methodology**.

23.2 Construction Scenarios Realistic Worst Case

5. This appendix considers the proposed East Anglia TWO project and the proposed East Anglia ONE North project under two construction scenarios:
 - Scenario 1 - the proposed East Anglia TWO project and proposed East Anglia ONE North project are built simultaneously; and
 - Scenario 2 - the proposed East Anglia TWO project and the proposed East Anglia ONE North project are constructed sequentially.

6. As discussed in **section 23.1**, the realistic worst case (based on the assessment of these two construction scenarios) for each impact is then carried through to the wider CIA which considers other developments, projects or plans which have been screened into the CIA for the proposed East Anglia TWO project.
7. It should be noted that the operational phase impacts on onshore ornithology will be the same irrespective of the construction scenario. Therefore, operational impacts identified in scenario 1 will be the same as those for scenario 2.
8. Embedded and additional mitigation measures for the proposed East Anglia TWO project and proposed East Anglia ONE North project will be the same. These are detailed in **Chapter 23 Onshore Ornithology**.
9. It should be noted that under scenario 1 and scenario 2, using an open cut or HDD technique, both projects would however be subject to the seasonal restriction (i.e. construction outside of the breeding bird season) for the onshore cable route to cross the SPA.

23.2.1 Scenario 1

10. **Table A23.1** presents the realistic worst case parameters of scenario 1. In this instance, the proposed East Anglia TWO project and proposed East Anglia ONE North project are built simultaneously. Areas provided for onshore infrastructure are maximum footprints with indicative dimensions provided in brackets.

Table A23.1 Scenario 1 Realistic Worst Case

Impact	Parameter	Notes
Construction		
Impacts related to the landfall	HDD temporary working area: 13,300m ² (70m x 190m) Transition bay temporary working area (for 4 transition bays): 3,108m ² (37m x 42m) Landfall Construction Consolidation Site (CCS) (x1): 14,080m ² (88m x 160m)	
Impacts related to the onshore cable route	Onshore cable route: 581,824m ² (9,091m x 64m) Jointing bay temporary working area: 570m ² (30.6m x 18.6m). Total for 76 jointing bays: 43,320m ² (570m ² x 76) HDD (retained as an option to cross SPA / SSSI): Entrance pit temporary working area (x1): 12,250m ² (175m x 70m)	Refer to Chapter 23 Onshore Ornithology section 23.3.3 for instances of onshore cable route adopting a narrower width

Impact	Parameter	Notes
	<p>Exit pit temporary working area (x1): 5,250m² (175m x 30m)</p> <p>Onshore cable route large CCS (1): 33,000m² (165m x 200m).</p> <p>Onshore cable route medium CCS (2): 28,160m² total (88m x 160m per each medium CCS)</p> <p>Onshore cable route small CCS (2): 12,000m² total (120m x 50m per each small CCS)</p> <p>Total footprint of all onshore cable route CCS: 73,160m²</p> <p>Onshore cable route laydown area: 1,000m²</p> <p>Onshore cable route haul road between landfall and Snape Road (7,331m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 40,435m²</p> <p>Onshore cable route and substation access haul road (1,570m in length x 9m wide): 14,130m²</p> <p>Temporary access roads (957m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,231m²</p>	
Impacts related to the onshore substations	<p>Onshore substation CCS (x2): 34,200m² (190m x 90m per each onshore substation)</p> <p>Permanent footprint (used as CCS during construction) (x2): 72,200m² (190m x 190m per each onshore substation)</p> <p>Substation operational access road: 13,600m² (1,700m x 8m)</p>	
Impacts related to the National Grid Infrastructure	<p>National Grid CCS: 23,350m²</p> <p>National Grid operational substation (AIS technology) (used as a CCS during construction): 44,950m² (310m x 145m)</p> <p>Temporary pylon/mast temporary working area (x4): 10,000m² (2,500m² per each temporary pylon)</p> <p>Permanent pylon permanent footprint (x4): 1,600m² (400m² per each permanent pylon)</p> <p>Permanent pylon temporary working area (x4): 8,400m² (2,100m² per each permanent pylon)</p>	<p>AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in Chapter 6 Project Description.</p>

Impact	Parameter	Notes
	<p>Overhead line realignment temporary working area: 5,000m²</p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds permanent footprint: 10,000 m² (total for three compounds)</p> <p>Cable sealing end/Cable sealing end (with circuit breaker) compounds temporary working area: 30,000m² (for three compounds)</p> <p>Temporary access road (for pylon works): (1,100m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,629m²</p> <p>Permanent access road to sealing end compound: 1,850m² (500m x 3.7m)</p>	
Operation		
Impacts related to the landfall	No above ground infrastructure	
Impacts related to the onshore cable route	No above ground infrastructure	
Impacts related to the onshore substation	<p>Operational footprint (x2): 72,200m² (190m x 190m)</p> <p>Substation operational access road: 13,600m² (1,700m x 8m)</p>	The operational footprint does not include the additional landscaping footprint.
Impacts related to the National Grid Infrastructure	<p>National Grid operational substation (AIS technology): 44,950m² (310m x 145m)</p> <p>Pylon operational footprint (x4): 1,600m² (20m x 20m per each permanent pylon)</p> <p>Cable sealing end compound operational footprint: 10,000m² (for three sealing end compounds)</p> <p>Permanent access road to sealing end compound: 1,850m² (500m x 3.7m)</p>	<p>Four permanent pylons include up to three reconstructed/relocated pylons and up to one additional new pylon.</p> <p>The operational footprint does not include the additional landscaping footprint.</p> <p>AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in Chapter 6 Project Description.</p>

Impact	Parameter	Notes
Decommissioning		
<p>No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.</p>		

23.2.2 Scenario 2

11. Scenario 2 represents the realistic worst case in the eventuality that the proposed East Anglia TWO project and proposed East Anglia ONE North project are constructed sequentially. It is intended that the construction of the proposed East Anglia TWO project will be progressed prior to commencing construction of the proposed East Anglia ONE North project. presents the realistic worst case parameters for scenario 2. Areas provided for onshore infrastructure are maximum footprints with indicative dimensions provided in brackets.
12. Under scenario 2, either the proposed East Anglia TWO project or the proposed East Anglia ONE North project would be constructed first. However, there will be no difference in impact regardless of which project is constructed first. The CIA presented in this ES is presented using the intended development strategy of the proposed East Anglia TWO project being constructed first. However, in the eventuality that the proposed East Anglia ONE North project is constructed first, the impacts presented would be the same. Further detail regarding the sequential construction is provided in **Chapter 5 EIA Methodology**.

Table A23.2 Scenario 2 Realistic Worst Case

Impact	Proposed East Anglia TWO Project Parameters	East Anglia ONE Project Parameters (on the assumption that the proposed East Anglia TWO project is post-construction)	Notes
Construction			
Impacts related to the landfall	HDD temporary working area: 7,000m ² (70m x 100m) Transition bay temporary working area (for 2	HDD temporary working area: 7,000m ² (70m x 100m) Transition bay temporary working area (for 2 transition bays): 1,554m ² (37m x 42m)	

Impact	Proposed East Anglia TWO Project Parameters	Proposed East Anglia ONE North Project Parameters (on the assumption that the proposed East Anglia TWO project is post-construction)	Notes
	transition bays): 1,554m ² (37m x 42m) Landfall Construction Consolidation Site (CCS) (x1): 7,040m ² (88m x 80m)	Landfall Construction Consolidation Site (CCS) (x1): 7,040m ² (88m x 80m)	
Impacts related to the onshore cable route	Onshore cable route: 290,912m ² (9,091m x 32m) Jointing bay temporary working area: 570m ² (30.6m x 18.6m). Total for 38 jointing bays: 21,660m ² (570m ² x 38) HDD (retained as an option to cross SPA / SSSI): Entrance pit temporary working area (x1): 6,300m ² (90m x 70m) Exit pit temporary working area (x1): 2,700m ² (90m x 30m) Onshore cable route large CCS (1): 16,500m ² (165m x 100m). Onshore cable route medium CCS (2): 14,080m ² total (88m x 80m per each medium CCS) Onshore cable route small CCS (2): 6,000m ² total (60m x 50m per each small CCS) Total footprint of all onshore cable route CCS: 36,580m ² Onshore cable route laydown area: 1,000m ² Onshore cable route haul road between landfall and Snape Road (7,331m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 40,435m ²	Onshore cable route: 290,912m ² (9,091m x 32m) Jointing bay temporary working area: 570m ² (30.6m x 18.6m). Total for 38 jointing bays: 21,660m ² (570m ² x 38) HDD (retained as an option to cross SPA / SSSI): Entrance pit temporary working area (x1): 6,300m ² (90m x 70m) Exit pit temporary working area (x1): 2,700m ² (90m x 30m) Onshore cable route large CCS (1): 16,500m ² (165m x 100m). Onshore cable route medium CCS (2): 14,080m ² total (88m x 80m per each medium CCS) Onshore cable route small CCS (2): 6,000m ² total (60m x 50m per each small CCS) Total footprint of all onshore cable route CCS: 36,580m ² Onshore cable route laydown area: 1,000m ² Onshore cable route haul road between landfall and Snape Road (7,331m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 40,435m ² Onshore cable route and substation access haul road (1,570m in length x 9m wide): 14,130m ²	Refer to Chapter 23 Onshore Ornithology section 23.3.3 for instances of onshore cable route adopting a narrower width

Impact	Proposed East Anglia TWO Project Parameters	Proposed East Anglia ONE North Project Parameters (on the assumption that the proposed East Anglia TWO project is post-construction)	Notes
	<p>Onshore cable route and substation access haul road (1,570m in length x 9m wide): 14,130m²</p> <p>Temporary access roads (957m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,231m²</p>	<p>Temporary access roads (957m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,231m²</p>	
Impacts related to the onshore substation	<p>Onshore substation CCS: 17,100m² (190m x 90m)</p> <p>Permanent footprint (used as CCS during construction): 36,100m² (190m x 190m)</p> <p>Substation operational access road: 13,600m² (1,700m x 8m)</p>	<p>Onshore substation CCS: 17,100m² (190m x 90m)</p> <p>Permanent footprint (used as CCS during construction): 36,100m² (190m x 190m)</p>	Substation operational access road will be constructed as part of the proposed East Anglia TWO project
Impacts related to the National Grid Infrastructure	<p>National Grid CCS: 23,350m²</p> <p>National Grid operational substation (AIS technology) (used as a CCS during construction): 44,950m² (310m x 145m)</p> <p>Temporary pylon/mast temporary working area (x4): 10,000m² (2,500m² per each temporary pylon)</p> <p>Permanent pylon permanent footprint (x4): 1,600m² (400m² per each permanent pylon)</p> <p>Permanent pylon temporary working area (x4): 8,400m² (2,100m² per each permanent pylon)</p> <p>Overhead line realignment temporary working area: 5,000m²</p> <p>Cable sealing end/ Cable sealing end (with circuit breaker) compounds permanent footprint:</p>	<p>National Grid infrastructure will be constructed as part of the proposed East Anglia TWO project</p>	<p>AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in Chapter 6 Project Description.</p>

Impact	Proposed East Anglia TWO Project Parameters	Proposed East Anglia ONE North Project Parameters (on the assumption that the proposed East Anglia TWO project is post-construction)	Notes
	<p>10,000 m² (total for three compounds)</p> <p>Cable sealing end/ Cable sealing end (with circuit breaker) compounds temporary working area: 30,000m² (for three compounds)</p> <p>Temporary access road (for pylon works): (1,100m in length x 4.5m wide with additional 4m for passing places at approximately 90m intervals): 5,629m²</p> <p>Permanent access road to sealing end compound: 1,850m² (500m x 3.7m)</p>		
Operation			
Impacts related to the landfall	No above ground infrastructure	No above ground infrastructure	
Impacts related to the onshore cable route	No above ground infrastructure	No above ground infrastructure	
Impacts related to the onshore substation	<p>Operational footprint: 36,100m² (190m x 190m)</p> <p>Substation operational access road: 13,600m² (1,700m x 8m)</p>	Operational footprint: 36,100m ² (190m x 190m)	<p>The operational footprint does not include the additional landscaping footprint.</p> <p>Substation operational access road will be constructed as part of the proposed East Anglia TWO project</p>
Impacts related to the National Grid Infrastructure	<p>National Grid operational substation (AIS technology): 44,950m² (310m x 145m)</p> <p>Pylon operational footprint (x4): 1,600m² (20m x 20m per each permanent pylon)</p>	National Grid infrastructure will be constructed as part of the proposed East Anglia TWO project	<p>Four permanent pylons include up to three reconstructed/ relocated pylons and up to one additional new pylon.</p> <p>The operational footprint does not include the</p>

Impact	Proposed East Anglia TWO Project Parameters	Proposed East Anglia ONE North Project Parameters (on the assumption that the proposed East Anglia TWO project is post-construction)	Notes
	<p>Cable sealing end compound operational footprint: 10,000m² (for three sealing end compounds)</p> <p>Permanent access road to sealing end compound: 1,850m² (500m x 3.7m)</p>		<p>additional landscaping footprint.</p> <p>AIS technology is assessed as the worst case due to a larger footprint. Further detail regarding GIS technology is provided in Chapter 6 Project Description.</p>
Decommissioning			
<p>No decision has been made regarding the final decommissioning policy for the onshore infrastructure as it is recognised that industry best practice, rules and legislation change over time. An Onshore Decommissioning Plan will be provided, as secured under the requirements of the draft DCO. The onshore substation will likely be removed and be reused or recycled. It is anticipated that the onshore cable would be decommissioned (de-energised) and either the cables and jointing bays left <i>in situ</i> or removed depending on the requirements of the Onshore Decommissioning Plan approved by the Local Planning Authority. The detail and scope of the decommissioning works will be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator. As such, for the purposes of a worst-case scenario, impacts no greater than those identified for the construction phase are expected for the decommissioning phase.</p>			

23.3 Cumulative Impact Assessment during Construction

13. The following sections discuss which of the two construction scenarios detailed in **section 23.2** will be the realistic worst case in terms of impacts to onshore ornithology.

23.3.1 Impact 1: Habitat Loss

14. The results from baseline onshore ornithology surveys presented in **section 23.5** of **Chapter 23 Onshore Ornithology** and in **Figures 23.3** to **23.16**, and the subsequent assessment of construction impacts in **section 23.6.3** of **Chapter 23 Onshore Ornithology** show that in general the onshore development area has relatively little suitable habitat for most Important Ornithological Features (IOFs), with few breeding territories recorded within this area. Most IOF territories were recorded within the adjacent Sandlings Special Protection Area (SPA) and Leiston-Aldeburgh Site of Special Scientific Interest (SSSI), and so direct habitat loss is not considered to be significant for any IOFs at a regional population level.
15. There does remain a possibility that a loss of foraging or nesting habitat would occur for some IOFs, e.g. turtle dove and nightingale, particularly where there is a potential for open-cut trenching where the onshore cable corridor crosses the

SPA/SSSI. In this respect, it is considered that although a smaller amount of habitat would be unavailable at any one time compared to scenario 1 (simultaneous construction), scenario 2 (sequential construction) would represent the worst-case due to an increased duration of temporary habitat loss, including associated reinstatement time.

16. The impacts of the increased duration of temporary habitat loss described under scenario 2 (considered to be long-term rather than medium-term as they would, combined, last for more than one year, as per **Table 23.11** of **Chapter 23 Onshore Ornithology**) would mean that birds may be affected for at least two breeding or non-breeding seasons (and potentially more than one consecutive season for each project if habitats do not have time to be fully reinstated between projects), which would increase the possibility of breeding territories or wintering sites being abandoned beyond the construction period and over the long-term.
17. Although the duration of impact is therefore extended under scenario 2 from medium-term to long-term, the overall significance of impacts on regional or Leiston-Aldeburgh SSSI populations are unchanged for each IOF from those predicted in **section 23.6.3.1** of **Chapter 23 Onshore Ornithology** for the proposed East Anglia TWO project alone, because in both cases it is assumed as a worst-case, that the territories that would potentially be lost to the population due to the proposed East Anglia TWO project would be the same as those potentially affected by the proposed East Anglia ONE North project.
18. Therefore, **no additional residual cumulative impacts** above those predicted for the proposed East Anglia TWO project alone are predicted (i.e. minor adverse and Not Significant for all IOFs if similar mitigation measures (for example habitat management as detailed in **sections 23.6.3.1.3.5** and **23.6.3.1.4.5** of this chapter) are implemented for both the proposed East Anglia TWO and proposed East Anglia ONE North projects).

23.3.2 Impact 2: Construction Disturbance

19. Although temporary, unmitigated construction disturbance has the potential to affect IOFs over a wider spatial extent than direct habitat loss, and therefore has a greater potential to result in a significant impact on the IOFs. It is considered that scenario 2 would have a greater potential for an unmitigated significant impact due to the increased duration of construction activities (two breeding seasons), despite a slightly larger footprint associated with scenario 1.
20. The impacts of the increased duration of construction activities described under scenario 2 (considered to be long-term rather than medium-term, as per **Table 23.11** of **Chapter 23 Onshore Ornithology**) would mean that breeding birds may be affected for two breeding seasons, which would increase the possibility of

territories being abandoned beyond the construction period and over the long-term. Similarly, non-breeding birds may be affected for two winter periods, increasing the likelihood of abandonment of fields used for feeding or roosting.

21. Although the duration of impact is therefore extended under scenario 2 from medium-term to long-term, the overall significance of impacts on regional or Leiston-Aldeburgh SSSI populations are unchanged for each IOF from those predicted in **section 23.6.3.2 of Chapter 23 Onshore Ornithology** for the proposed East Anglia TWO project alone. In both cases, it is assumed as a worst-case that the territories that would potentially be lost to the population due to the proposed East Anglia TWO project, would be the same as those potentially affected by the proposed East Anglia ONE North project.
22. Therefore, **no additional residual cumulative impacts** above those predicted for the proposed East Anglia TWO project alone are predicted (i.e. negligible or minor adverse and Not Significant for all IOFs if similar mitigation measures are implemented for both projects).

23.4 Cumulative Impact Assessment during Operation

23. When considering the proposed East Anglia TWO and proposed East Anglia ONE North projects cumulatively, although all National Grid infrastructure will be constructed as part of the proposed East Anglia TWO project, there will be an additional footprint associated with the proposed East Anglia ONE North project's onshore substation.
24. As outlined in **section 23.6.4 of Chapter 23 Onshore Ornithology**, unmitigated disturbance from maintenance activities and operational lighting associated with the proposed East Anglia TWO project alone is considered to be of no more than minor adverse significance for all IOFs. With the exception of barn owl, a species tolerant of human presence, no IOFs are likely to be found in proximity to the substation or National Grid infrastructure. Therefore, **no additional residual cumulative impacts** above those predicted for the proposed East Anglia TWO project alone are predicted (i.e. minor adverse and Not Significant for all IOFs).

23.5 Summary

25. **Table A23.3** gives an overarching summary of which of the two construction scenarios, detailed above, will be the realistic worst case in terms of impacts relating to onshore ornithology.

Table A23.3 Summary of Scenario 1 and Scenario 2 Realistic Worst Case Assumptions

Impact	Worst Case	Notes
Construction Impact 1: Impacts relating to habitat loss	Scenario 2	Scenario 2 is deemed a worst case due to the longer construction duration, therefore potentially disrupting more breeding seasons of IOFs.
Construction Impact 2: Impacts relating to construction disturbance	Scenario 2	Scenario 2 is deemed a worst case due to the longer construction duration, therefore potentially disrupting more breeding seasons of IOFs.
Operational Impacts	N/A	Both scenarios would be the same during the operational period.

26. Overall, construction scenario 2 creates a realistic worst case in terms of impacts to onshore ornithology. Therefore, scenario 2 will be carried through into the wider CIA with other developments, see **section 23.7** in **Chapter 23 Onshore Ornithology**.