



**Galloper Wind Farm Project**  
Environmental Statement – Chapter 32: Conclusions  
October 2011  
Document Reference – 5.2.32

Galloper Wind Farm Limited

**RWE**  
npower renewables

**SSE**  
Renewables

**ROYAL HASKONING**  
Enhancing Society

Document title Galloper Wind Farm Project  
 Environmental Statement – Chapter 32:  
 Conclusions  
 Document short title Galloper Wind Farm ES  
 Document Reference 5.2.32  
 Regulation Reference APFP Regulations, 5(2)(a)  
 Version 4  
 Status Final Report  
 Date October 2011  
 Project name Galloper Wind Farm Project  
 Project number 9V3083  
 Client Galloper Wind Farm Limited  
 Royal Haskoning 9V3083/R01/303424/Exet  
 Reference

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## 32 CONCLUSIONS

### 32.1 Introduction

32.1.1 This Chapter of the Environmental Statement (ES) includes a summary table (**Table 32.1**) which details the outcomes of the Environmental Impact Assessment (EIA) for the Galloper Wind Farm (GWF). The potential environmental impacts of the GWF over the construction, operation and decommissioning phases have been fully assessed against the identified environmental receptors and detailed within the relevant technical Chapters. Furthermore, it also provides a description of the mitigation measures that Galloper Wind Farm Limited (GWFL) are committed to applying in order to reduce adverse impacts, or where required as part of standard industry best practice or by legislation. Residual impacts are assessed where mitigation is considered.

32.1.2 Further detail on the assessment of impacts is presented in the preceding Chapters of this ES:

- **Chapter 8 Nature Conservation Designations;**
- **Chapter 9 Physical Environment;**
- **Chapter 10 Marine Water and Sediment Quality;**
- **Chapter 11 Offshore Ornithology;**
- **Chapter 12 Marine and Intertidal Ecology;**
- **Chapter 13 Fish and Shellfish Resource;**
- **Chapter 14 Marine Mammals;**
- **Chapter 15 Commercial Fisheries;**
- **Chapter 16 Shipping and Navigation;**
- **Chapter 17 Military and Civil Aviation;**
- **Chapter 18 Other Human Activities;**
- **Chapter 19 Archaeology and Cultural Heritage;**
- **Chapter 20 Seascape, Landscape and Visual Character;**
- **Chapter 21 Socio-economics;**
- **Chapter 22 Geology, Hydrogeology, Land Quality and Flood Risk;**
- **Chapter 23 Terrestrial Ecology;**
- **Chapter 24 Land-use, Tourism and Recreation;**
- **Chapter 25 Traffic and Transport;**
- **Chapter 26 Noise;**

- Chapter 27 Air Quality;
- Chapter 28 Electric and Magnetic Fields;
- Chapter 29 Inter-relationships;
- Chapter 30 Cumulative Impact Assessment; and
- Chapter 31 Transboundary Effects.

## 32.2 Summary of Assessment of Potential Impacts

32.2.1 **Table 32.1** provides a summary of the significance of the potential impacts on all receptors assessed throughout the ES, as well as the mitigation measures which will be implemented and subsequent residual impact.

32.2.2 A summary of the assessment of cumulative impacts and potential impacts on European designated sites is provided in **Sections 32.3** and **32.4** respectively.

**Table 32.1 Summary of impacts and mitigation**

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
<b>Nature Conservation Designations (see Chapter 8 and the GWF Habitats Regulations Assessment Report for further detail)</b>			
<b>Construction Phase</b>			
<b>International designated sites and future designations</b>			
Minsmere to Walberswick SPA, SAC and Ramsar	No likely significant effect	N/A	N/A
Alde-Ore Estuary SPA and Ramsar	No likely significant effect	N/A	N/A
The Sandlings SPA	No likely significant effect	N/A	N/A
Flamborough Head and Bempton Cliffs SPA	No likely significant effect	N/A	N/A
Outer Thames Estuary SPA	No likely significant effect	N/A	N/A
Alde, Ore and Butley Estuaries SAC	No likely significant effect	N/A	N/A
Orfordness – Shingle Street	No likely significant effect	N/A	N/A
Margate and Long Sands cSAC	No likely significant effect	N/A	N/A
Recommended MCZ's: Sites NG1b and Ng1c	No impact	N/A	N/A
<b>OSPAR List of Threatened and/or Declining Species and Habitats</b>			
Dog whelk, flat oyster, allis shad, European eel,	Negligible	See Chapters 11, 12, 13 and 14	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
spotted ray, sea lamprey, salmon, <i>Sabellaria spinulosa</i> reefs			
Cod, thornback ray, spurdog, harbour porpoise	Minor adverse	See Chapters 13 and 14	Minor adverse
Black-legged kittiwake	Negligible – minor adverse	See Chapter 11	Negligible – minor adverse
<b>Statutory national and non statutory designations</b>			
Leiston-Aldeburgh SSSI	No Impact	N/A	N/A
Minsmere-Walberswick Heaths and Marshes SSSI	No Impact	N/A	N/A
Sizewell Marshes SSSI	Minor adverse (noise disturbance)	See Chapter 23	Minor adverse (noise disturbance)
Suffolk Coast and Heath AONB	Onshore: major significance (adverse but reducing rapidly further than 0.75km from the site) Offshore: negligible	See Chapter 20	No reduction in impact significance
Leiston Common CWS	No Impact	N/A	N/A
Sizewell Levels and Associated Areas CWS	No Impact	N/A	N/A
Southern Minsmere Levels CWS	No Impact	N/A	N/A
Sizewell Rigs CWS	Negligible	N/A	Negligible
Suffolk Shingle Beaches	Onshore: moderate adverse	See Chapter 23	Negligible (onshore)



Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
CWS	Offshore: no impact		
Suffolk Heritage Coast	Onshore: moderate significance (adverse but localised) Offshore: negligible	See Chapter 20	No reduction in impact significance
Dower House CWS	No Impact	N/A	N/A
Aldringham to Aldeburgh Disused Railway CWS	No Impact	N/A	N/A
<b>Operation Phase</b>			
<b>International, statutory national and non statutory designations</b>			
Suffolk coast and heaths AONB	Onshore (year 1) Up to 0.5km: major significance (adverse) Effects beyond will reduce rapidly to negligible Offshore: negligible	See Chapter 20	Onshore (year 15) Up to 0.5km: major-moderate significance (adverse) Effects beyond will reduce rapidly to negligible Offshore: negligible
Suffolk Heritage Coast	Onshore (year 1) Between Sandy Lane and trees west of Sizewell beach car park: Moderate significance (adverse) Effects beyond will reduce rapidly to negligible Offshore: negligible	See Chapter 20	Onshore (year 15) Fields east/ south-east of substation: Moderate-minor significance (adverse) Effects beyond will reduce rapidly Offshore: negligible
Alde-Ore Estuary SPA	No likely significant effect (see	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
	evidence provided in HRA Report)		
Sizewell Rigs CWS	Negligible	N/A	Negligible
All other sites of relevance to the onshore and offshore works	No impact / no likely significant effect	N/A	N/A
<b>OSPAR List of Threatened and/or Declining Species and Habitats</b>			
Dog whelk, flat oyster, cod, thornback ray, harbour porpoise, Sabellaria spinulosa reefs	Negligible	N/A	Negligible
Black-legged kittiwake	Negligible – minor adverse	See Chapter 11	Negligible – minor adverse
Allis shad, European eel, spotted ray, sea lamprey, salmon, spurdog	Minor adverse	See Chapter 13	Minor adverse
<b>Decommissioning Phase</b>			
All designated sites and species of relevance to offshore and onshore decommissioning	Onshore and offshore	Impacts during decommissioning will be no more significant than those detailed during construction. Where noise impacts represent a primary source of potential adverse impact (i.e. marine mammals/fish), the impact significance is likely to be reduced as a result of there being no piling required during decommissioning.	
<b>Physical environment (see Chapter 9 for further detail)</b>			
<b>Construction Phase</b>			
Potential effects on wave heights and periods	No effect	N/A	N/A
Potential effects on tidal	No effect	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
current velocities			
Potential effects on suspended sediment concentrations and transport due to installation of WTG foundations	Negligible	N/A	N/A
Potential effects on suspended sediment concentrations and transport due to cable installation processes	Negligible	N/A	N/A
Effects on sediment transport and coastal erosion from reception pit preparation and installation of intertidal cabling	No effect	N/A	N/A
<b>Operation Phase</b>			
Potential effects on wave regime	No effect	N/A	N/A
Potential effects on tidal regime	Negligible	N/A	N/A
Potential effects on sediment transport and morphology	Negligible	N/A	N/A
Scour effects at WTG foundations	Negligible	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
(without scour protection)			
Scour effects at WTG foundations	Negligible	Scour protection measures	No effect
(with scour protection)			
Scour effects around inter-array cables and export cables	No effect	N/A	N/A
Potential effects at the coast	No effect	N/A	N/A
<b>Decommissioning Phase</b>			
Potential effects on wave heights and periods	No effect	N/A	N/A
Potential effects on tidal current velocities	No effect	N/A	N/A
Potential effects on suspended sediment concentrations and transport due to installation of WTG foundations	Negligible	N/A	N/A
Potential effects on suspended sediment concentrations and transport due to cable installation processes	Negligible	N/A	N/A
<b>Marine water and sediment quality (See Chapter 10 for further detail)</b>			
<b>Construction Phase</b>			

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Re-suspension of sediments	Negligible	N/A	N/A
Re-suspension of contaminants	Negligible	N/A	N/A
Accidental spillage of construction materials	Minor Adverse	Project EMMP and relevant guidance adhered to.	No Impact
<b>Operation Phase</b>			
Accidental spillages	Minor adverse	Project EMMP and relevant guidance adhered to.	Negligible
Deterioration of water and sediment quality as a result of scour effects at the WTG structures	Negligible	N/A	N/A
<b>Decommissioning Phase</b>			
Re-suspension of sediments and contaminants	Negligible	N/A	N/A
Accidental spillages	Minor adverse	Project EMMP and relevant guidance adhered to.	Negligible
<b>Offshore Ornithology (see Chapter 11 (and associated technical appendices) for further detail)</b>			
<b>Red-throated diver</b>			
<b>Operational:</b> Barrier effects	Negligible	None	Minor adverse
<b>Operational:</b> Attraction to lit structures	Minor adverse Regional	Project EMMP will minimise disturbance impacts on birds and their prey	Minor adverse / Not significant

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
<b>Operational:</b>	Minor adverse Regional	Project EMMP applied prior to offshore construction activities commencing.	Minor adverse
In-direct effects	Negligible	None	Minor adverse / Not significant
<b>Operational:</b> Collision risk	Minor adverse Regional	None	Minor adverse / Not significant
<b>Construction:</b> Habitat loss	Negligible	None	Minor adverse / Not significant
<b>Construction:</b> Direct disturbance	Negligible	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards)	Negligible
<b>Construction:</b> Indirect disturbance	Minor adverse Regional and SPA	None	Minor adverse/ Not significant
<b>Operational:</b>	Negligible	Minimise lighting.	Minor adverse / Not significant
<b>Gannet</b>			
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Minor adverse Regional	Project EMMP to minimise disturbance impacts on birds and their prey	Minor adverse
Construction: Indirect disturbance	Minor adverse Regional	Project EMMP applied prior to offshore construction activities commencing.	Negligible
Operation: Attraction to lit structures	Negligible	Wherever possible and in keeping with legal requirements, lighting will be minimised	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
		(particularly those configurations directed outwards)	
Operation: Displacement	Minor adverse Regional	None	Minor adverse
Operation: Disturbance	Negligible	None	Negligible
Operation: Barrier effects	Negligible	None	Negligible
Operation: Collision risk	Minor adverse Regional and SPA	Minimise lighting.	Minor adverse / Not significant
<b>Fulmar</b>			
Construction: Habitat loss	Negligible	Less than 1% of habitat within GWF will be lost	Negligible
Construction: Direct disturbance	Minor adverse Regional	Species is wide ranging and tolerant of human activities	Minor adverse
Construction: Indirect disturbance	Minor adverse Regional	Species is wide ranging	Negligible
Operation: Attraction to lit structures	Negligible	Predominant flight of fulmar will be below rotor height and be at negligible risk of collision or disorientation.	Negligible
Operation: Displacement	Minor adverse Regional	Species is tolerant of wind turbines and wide ranging	Minor adverse
Operation:	Negligible	Disturbance due to maintenance vessels and activities will be of lower extent and intensity	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Disturbance		than construction disturbance	
Operation: Barrier effects	Negligible	Species is likely be able to pass between or under turbines; wide ranging	Negligible
Operation: Collision risk	Minor adverse Regional	<1% of flights at collision height	Negligible
<b>Arctic skua</b>			
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Negligible	Project EMMP to minimise disturbance impacts on birds and their prey	Negligible
Construction: Indirect disturbance	Negligible	Project EMMP applied prior to offshore construction activities commencing.	Negligible
Operation: Displacement	Minor adverse / not significant Migratory and SPA	None	Minor adverse / not significant Migratory and SPA
Operation: Attraction to lit structures	Minor adverse / not significant Migratory and SPA	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards)	Minor adverse / not significant Migratory and SPA
Operation: Disturbance	Negligible	None	Negligible



Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Operation: Barrier effects	Minor adverse / not significant Migratory and SPA	None	Minor adverse / Not significant
Operation: Collision risk	Negligible Migratory and SPA	Minimise lighting	Negligible / Not significant
<b>Great skua</b>			
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Minor adverse National and migratory	Project EMMP to minimise disturbance impacts on birds and their prey	Minor adverse / Not significant
Indirect disturbance	Negligible	Project EMMP applied prior to offshore construction activities commencing.	Negligible
Operation: Attraction to lit structures	Minor adverse/ not significant Migratory and SPA	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards)	Minor adverse/ not significant Migratory and SPA
Operation: Displacement	Minor adverse/ not significant Migratory and SPA	None	Minor adverse/ not significant Migratory and SPA
Operation: Disturbance	Negligible	None	Negligible
Operation: Barrier effects	Minor adverse National and SPAs	None	Minor adverse / Not significant

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Operation: Collision risk	Negligible Migratory and SPAs	Minimise lighting	Negligible
<b>Common gull</b>			
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Negligible	Project EMMP to minimise disturbance impacts on birds and their prey	Negligible
Construction: Indirect disturbance	Minor adverse regional	Project EMMP applied prior to offshore construction activities commencing.	Negligible
Operation: Displacement	Negligible	None	Negligible
Operation: Attraction to lit structures	Negligible	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards)	Negligible
Operation: Disturbance	Negligible	None	Negligible
Operation: Barrier effects	Negligible	None	Negligible
Operation: Collision risk	Negligible Regional	Minimise lighting	Negligible
<b>Lesser black-backed gull</b>			

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Minor adverse regional/ SPA	Project EMMP to minimise disturbance impacts on birds and their prey	Minor adverse / Not significant
Construction: Indirect disturbance	Minor adverse Regional / SPA	Project EMMP applied prior to offshore construction activities commencing.	Minor adverse / Not significant
Operation: Attraction to lit structures	Minor adverse Regional / SPA	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards))	Minor adverse / Not significant
Operation: Disturbance	Minor adverse Regional / SPA	None	Minor adverse / Not significant
Operation: Displacement	Minor adverse Regional / SPA	None	Minor adverse / Not significant
Operation: Barrier effects	Minor adverse regional / SPA	None.	Minor adverse / Not significant
Operation: Collision risk	Moderate regional/ SPA	Minimise lighting  Continued onshore management of SPA will help encourage long-term site to favourable condition for breeding lesser black-backed gull	Moderate but tolerable / Not significant
<b>Herring gull</b>			

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Minor adverse Regional and SPA	Project EMMP to minimise disturbance impacts on birds and their prey	Minor adverse / Not significant
Construction: Indirect disturbance	Minor adverse Regional and SPA	Project EMMP applied prior to offshore construction activities commencing.	Minor adverse
Operation: Displacement	Negligible Regional and SPA	None	Negligible / Not significant
Operation: Disturbance	Negligible Regional and SPA	None	Negligible / Not significant
Operation: Attraction to lit structures	Negligible Regional and SPA	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards)	Negligible / Not significant
Operation: Barrier effects	Negligible Regional and SPA	None.	Negligible / Not significant
Operation: Collision risk	Negligible Regional / SPA	None. Minimise lighting  Continue with current onshore management of SPA to help encourage long-term site favourable condition for herring gull	Negligible / Not significant
<b>Great black-backed gull</b>			

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Minor adverse Regional	Project EMMP to minimise disturbance impacts on birds and their prey	Minor adverse
Construction: Indirect disturbance	Minor adverse National and regional	Project EMMP applied prior to offshore construction activities commencing.	Minor adverse
Operation: Displacement	Minor adverse National and regional	None	Minor adverse
Operation: Disturbance	Negligible	None	Negligible
Operation: Barrier effects	Negligible not significant National and regional	None	Negligible not significant National and regional
Operation: Attraction to lit structures	Negligible	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards)	Negligible
Operation: Collision risk	Minor adverse National and regional	Minimise lighting	Minor adverse
<b>Kittiwake</b>			
Construction: Habitat loss	Negligible	None	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Construction: Direct disturbance	Minor adverse Regional	Project EMMP to minimise disturbance impacts on birds and their prey	Minor adverse
Construction: Indirect disturbance	Minor adverse	Project EMMP applied prior to offshore construction activities commencing.	Negligible
Operation: Displacement	Minor adverse	None	Minor adverse
Operation: Disturbance	Negligible	None	Negligible
Operation: Attraction to lit structures	Negligible	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards)	Negligible
Barrier effects	Negligible	None.	Negligible
Collision risk	Minor adverse Regional	Minimise lighting	Minor adverse
<b>Common guillemot</b>			
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Moderate Regional	Project EMMP to minimise disturbance impacts on birds and their prey	Moderate but tolerable
Construction: Indirect disturbance	Minor adverse Regional	Project EMMP applied prior to offshore construction activities commencing.	Minor adverse
Operational displacement	Moderate Regional	None	Moderate but tolerable

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Operational: Disturbance	Negligible	None	Negligible
Operation: Attraction to lit structures	Negligible	Wherever possible and in keeping with legal requirements, lighting will be minimised (particularly those configurations directed outwards)	Negligible
Operation: Barrier effects	Minor adverse Regional	None	Minor adverse
Operation: Collision risk	Negligible	Minimise lighting	Negligible
<b>Razorbill</b>			
Construction: Habitat loss	Negligible	None	Negligible
Construction: Direct disturbance	Moderate Regional	Project EMMP to minimise disturbance impacts on birds and their prey	Moderate but tolerable
Construction: Indirect disturbance	Minor adverse Regional	Project EMMP applied prior to offshore construction activities commencing.	Minor adverse
Operation: Displacement	Moderate Regional	None	Moderate but tolerable
Operation: Disturbance	Negligible	None	Negligible
Operation: Attraction to lit	Negligible	Wherever possible and in keeping with legal requirements, lighting will be minimised	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
structures		(particularly those configurations directed outwards)	
Operation: Barrier effects	Minor adverse Regional	None	Minor adverse
Operation: Collision risk	Negligible	Minimise lighting	Negligible
<b>Decommissioning Phase</b>			
No impacts on any species of principle concern			
<b>Marine and intertidal ecology (See Chapter 12 for further detail)</b>			
<b>Construction Phase – intertidal</b>			
Direct impact due to physical disturbance	Negligible	Minimise footprint of directional drilling reception pit.  Excavated shingle layers will be segregated and stored separately and replaced in the same sequence.	Negligible
<b>Construction Phase – subtidal</b>			
Direct impact due to physical disturbance on subtidal ecology	Negligible	Micrositing of equipment / cables if any areas of <i>S. spinulosa</i> reefs are identified.	Negligible on benthic communities. No impact on <i>S.spinulosa</i> reef.
Direct impact due to loss of habitat	Negligible	N/A	N/A
Indirect impact due to increased suspended sediments	Negligible	N/A	N/A



Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Indirect impact due to re-mobilisation of contaminated sediments	Negligible	N/A	N/A
<b>Operation Phase – intertidal</b>			
Direct impacts due to maintenance activities	Negligible	N/A	N/A
Direct impacts due to changes in current regime	No Impact	N/A	N/A
<b>Operation Phase - subtidal</b>			
Direct impacts due to maintenance activities	Negligible  Minor adverse ( <i>S.spinulosa</i> )	N/A  Best practice followed to minimise any impacts on sensitive habitats, Project EMMP	Negligible  Minor adverse
Direct impacts due to changes in current regime	Negligible	N/A	N/A
Indirect impact through habitat alteration	Negligible	N/A	N/A
Indirect impact through alteration to existing human activity	Negligible	N/A	N/A
<b>Decommissioning Phase – intertidal</b>			
Impact on ecology	Negligible	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
<b>Decommissioning Phase – subtidal</b>			
Direct impact due to physical disturbance on subtidal ecology	Negligible	Jack up barge movements kept to a minimum. Micrositing of equipment if any areas of <i>S. spinulosa</i> reefs are identified.	Negligible
Direct impact due to loss of habitat	Minor adverse	Should surveys show that benthic assemblages have developed to such an extent that the decommissioning process would result in unacceptable levels of impact, then GFWL will explore the potential for a Decommissioning Plan that allows some structures to remain on the seabed.	Negligible
Indirect impact due to increased suspended sediments	Negligible	N/A	N/A
Indirect impact due to re-mobilisation of contaminated sediments	Negligible	N/A	N/A
<b>Fish and Shellfish Resource (See Chapter 13 for further detail)</b>			
<b>Construction Phase</b>			
Noise and vibrations - Lethal, physical and traumatic auditory injury effects	Minor adverse - negligible	Soft start piling	Minor adverse - negligible
Noise and vibrations – behavioural responses	Minor adverse - negligible	Piling activity will be restricted to a maximum overlap of two spawning seasons for herring and sole species over the 56 month construction window.	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Physical disturbance of intertidal and subtidal habitats	Negligible	N/A	N/A
Indirect loss of fish as a prey resource	Negligible	N/A	N/A
Suspended sediment concentrations	Negligible	N/A	N/A
Re-mobilisation of contaminated sediments	Negligible	N/A	N/A
Impacts due to loss of habitat and benthic prey resource	Negligible	N/A	N/A
<b>Operation Phase</b>			
Operational noise and vibration	Negligible	N/A	N/A
EMF	Minor adverse	Best practice measures including burial to a representative average minimum burial depth of 0.6m.	Minor adverse
Aggregation effects	Negligible beneficial	N/A	N/A
Indirect impact of loss of prey resource and habitat from changes in current regime	Negligible	N/A	N/A
<b>Decommissioning Phase</b>			
Loss of habitat	Negligible – no impact	N/A	N/A
Loss of prey resource	No impact	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
<b>Marine mammals (See Chapter 14 for further details)</b>			
<b>Construction Phase</b>			
Geophysical surveys	Harbour porpoise: negligible All other cetaceans and pinnipeds: no impact	N/A	N/A
Construction related noise – <i>lethal effect and physical injury</i>	All marine mammals: Minor adverse	Outlined in the Marine Mammal Mitigation Protocol (MMMP) and include the use of a Marine Mammal Observer/Passive Acoustic Monitoring Operator and mechanical soft starts	Harbour porpoise: minor adverse All other cetaceans and pinnipeds: negligible
Construction related noise – <i>behavioural response</i>	All marine mammals: Minor adverse	N/A	N/A
Collision risk	Pinnipeds: minor adverse All other cetaceans: negligible	Vessels made aware of the risk of potential collision. Protocol developed as part of the MMMP	Pinnipeds: minor adverse All other cetaceans: negligible
Loss of prey species	All marine mammals: negligible	See Chapter 13	All marine mammals: negligible
<b>Operation Phase</b>			
Noise and vibration	All marine mammals: negligible	N/A	N/A
Collision risk	All marine mammals: negligible	Vessels made aware of the risk of potential collision. Protocol developed as part of the MMMP	All marine mammals: negligible
Barrier effect	All marine mammals: negligible	N/A	N/A
Electromagnetic fields	All marine mammals:	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
	negligible		
<b>Decommissioning Phase</b>			
Impacts during decommissioning are anticipated to be broadly similar to those outlined during construction, however without piling activities impacts the are likely to be less significant			
<b>Commercial fisheries (See Chapter 15 for further details)</b>			
<b>Construction and Decommissioning Phase</b>			
<b>Temporary loss of access during construction and decommissioning</b>			
Potting vessels identified on GWF / cable corridor	Minor adverse – Two vessels operating from Sizewell and Aldeburgh	Fisheries liaison and pre-construction discussions to agree suitable mitigation measures	Negligible
Passive gear sector (Cable corridor)	Minor adverse	Fisheries liaison and pre-construction discussions to agree suitable mitigation measures	Negligible
Passive gear sector (Offshore)	Moderate adverse	Fisheries liaison and pre-construction discussions to agree suitable mitigation measures	Negligible
UK trawl (Cable corridor)	Negligible	Fisheries liaison	Negligible
UK trawl (GWF)	Negligible	Fisheries liaison	Negligible
Belgian beam trawl sector (Cable corridor)	Negligible	Fisheries liaison	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Belgian beam trawl sector (GWF)	Minor adverse	Fisheries liaison	Minor adverse
Dutch beam trawl sector (Cable corridor)	No impact	Fisheries liaison	No impact
Dutch beam trawl sector (GWF)	Minor adverse	Fisheries liaison	Minor adverse
French trawl sector (Cable corridor)	Negligible	Fisheries liaison	Negligible
French trawl sector (GWF)	Minor adverse	Fisheries liaison	Minor adverse
Other sectors	No impact	Fisheries liaison	No impact
<b>Displacement of excluded vessels onto other fishing grounds</b>			
Potting vessels	Negligible	Fisheries liaison	Negligible
Offshore passive gear sector	Negligible	Fisheries liaison	Negligible
Other sectors (towed gear)	Negligible	Fisheries liaison	Negligible
<b>Increased steaming times for fishing vessels due to ongoing construction works</b>			
All sectors	No impact	Fisheries liaison	No impact
<b>Potential impacts from seabed objects and obstructions</b>			
Regional sector	Negligible	Fisheries liaison	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
UK demersal / drift net vessels – excluding UK site based trawling	Minor adverse	Locating and recovering any lost objects and large spoil mounds would be levelled upon completion of construction phase	Minor adverse
<b>Potential impacts on fishing vessel safety</b>			
Increased collision risk with wind farm structures	Moderate adverse ('tolerable')	Appropriate lighting of the structures, which will comply with the IALA standards and the additional requirements of MGN 371	As Low As Reasonably Practicable (ALARP)
<b>Indirect impacts to commercial fisheries</b>			
Impacts as a result of a reduction in fish stocks	Negligible	Fisheries liaison	Negligible
<b>Operation Phase</b>			
<b>Restricted access to traditional fishing grounds</b>			
Inshore passive gear sector	Negligible	Fisheries liaison	Negligible
Offshore passive gear sector	Minor adverse	Fisheries liaison and pre-construction discussions to agree suitable mitigation measures	Negligible
Belgian, Dutch and French trawl fleet	Minor adverse	Fisheries liaison	Minor adverse
<b>Displacement of Fishing Vessels onto other Fishing Grounds</b>			
European trawl sector (Belgian, Dutch and French)	Negligible	Fisheries liaison	Negligible
Offshore passive gear sector	Minor adverse	Fisheries liaison and pre-construction discussions to agree suitable mitigation measures	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
<b>Effects of operational support vessels to fishing patterns</b>			
All fishing vessels	Negligible	Fisheries liaison	Negligible
<b>Indirect effects on commercial fisheries as a result of changes in fish distribution</b>			
All fishing vessels	Negligible	N/A	Negligible
<b>Potential effect on fishing vessel safety</b>			
All fishing vessels	Moderate adverse ('tolerable')	Appropriate lighting of the structures, which will comply with the IALA standards and the additional requirements of MGN 371	As Low As Reasonably Practicable (ALARP)
<b>Indirect effects due to changes in existing shipping patterns and navigation routes</b>			
All fishing vessels	No impact	N/A	N/A
<b>Decommissioning Phase</b>			
Potential impacts to commercial fisheries during decommissioning are considered to be broadly in line within those experienced during construction, (given the anticipated mobile 500m exclusion zone around decommissioning activity. Exclusion zones will be applied for prior to decommissioning).			
<b>Shipping and navigation (see Chapter 16 for further information)</b>			
<b>Construction Phase</b>			
Collision risk /structures	8 (Tolerable)	Operating Procedures Selection of vessels Lessons learnt from other projects Marking / Lighting Emergency Response Cooperation Plan Compliance with MCA MGN 371	ALARP



Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Collision Risk/Other Vessels	9 (Tolerable)	Export cable route refinement to avoid dredging area unless agreed with operators. Guard Vessel Passage Planning Marking / Lighting Safety Zones (to be applied for) Notices to Mariners Hazard / risk assessment workshops Emergency Response Cooperation Plan Compliance with MCA MGN 371	ALARP
<b>Operation Phase</b>			
Re-Routeing of shipping	Moderate adverse	TSS Extension Notices to Mariners Aids to Navigation	Minor adverse
Ship to Ship collision risk	N/A	TSS Extension Marking and Lighting Notices to Mariners Emergency Response Cooperation Plan Compliance with MCA MGN 371	6 (Broadly Acceptable)
Ship collision with Structures	N/A	TSS Extension Marking and Lighting Notices to Mariners	9 (Tolerable)

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
		<p>Marked on Hydrographic Charts</p> <p>Site boundary modification</p> <p>Monitoring of vessels by MCC</p> <p>Continuing discussions with HHA and Dover Coastguard about establishing suitable measures at GWF in order to maintain and enhance VTS coverage of the area, including the extended TSS. This may involve fitting equipment to one of the GWF structures to relay back suitable information</p> <p>Minimum blade clearance</p> <p>Formulation of an Emergency Response Cooperation Plan (ERCoP), to include for drifting vessels</p> <p>Compliance with MCA MGN 371</p>	
Collision of drifting vessels with structures	N/A	<p>TSS Extension</p> <p>VTS coverage of the area</p> <p>Monitoring of vessels by MCC</p> <p>Formulation of an Emergency Response Cooperation Plan (ERCoP), to include for drifting vessels</p> <p>Marking and lighting</p> <p>Anchoring by drifting vessel</p> <p>Minimum blade clearance</p> <p>Compliance with MCA MGN 371</p>	9 (Tolerable)

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Recreational vessel collision	N/A (see above)	Minimum Blade Clearance TSS Extension Marking and Lighting Notices to Mariners Marked on Hydrographic Charts Monitoring of vessels by MCC Continuing discussions with HHA and Dover Coastguard about establishing suitable measures at GWF in order to maintain and enhance VTS coverage of the area, including the extended TSS. This may involve fitting equipment to one of the GWF structures to relay back suitable information Compliance with MCA MGN 371 Formulation of an Emergency Response Cooperation Plan (ERCoP), to include for drifting vessels	6 (Broadly Acceptable)
Fishing vessel collision	N/A	Marking and Lighting Notices to Mariners Marked on Hydrographic Charts Compliance with MCA MGN 371 Formulation of an Emergency Response Cooperation Plan (ERCoP), to include for drifting vessels Monitoring of vessels by MCC	9 (Tolerable)

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Cable route interaction	N/A	Cable Burial Anchor penetration study Marked on Hydrographic Charts Notices to Mariners Kingfisher notifications Periodic inspection / surveying of route Compliance with MCA MGN 371 Formulation of an Emergency Response Cooperation Plan (ERCoP), to include for drifting vessels	6 (Broadly Acceptable)
Interference with marine radar	Moderate adverse	Marking and Lighting TSS Extension Monitoring of vessels by MCC Continuing discussions with HHA and Dover Coastguard about establishing suitable measures at GWF in order to maintain and enhance VTS coverage of the area, including the extended TSS. This may involve fitting equipment to one of the GWF structures to relay back suitable information Site boundary modification (already implemented) Compliance with MCA MGN 371 Formulation of an Emergency Response Cooperation Plan (ERCoP), to include for drifting	Minor adverse

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
		vessels	
Search and Rescue	Moderate adverse	Compliance with MCA MGN 371 Formulation of an Emergency Response Cooperation Plan (ERCoP), to include for drifting vessels Marking and Lighting Alignment of turbines TSS Extension 24 hour manned control room or single contact point	Minor adverse
<b>Decommissioning Phase</b>			
Impacts as construction	Tolerable	Similar to those implemented during the construction phase	ALARP
<b>Military and civil aviation (See Chapter 17 for further information)</b>			
<b>Construction Phase</b>			
Impacts on military and civil aviation radar coverage and activity areas	No Impact	N/A (however, standard aviation management measures will be carried out in accordance with CAA requirements (see <b>Section 17.6</b> ))	N/A
<b>Operation Phase</b>			
Impacts on military and civil aviation radar	No Impact	N/A Standard aviation management measures will be carried out in accordance with CAA requirements (see <b>Section 17.6</b> )	N/A
Impacts on military activity	No Impact	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Impacts on Helicopter activity	No Impact	N/A	N/A
Impacts resulting from WTGs acting as obstacles	No Impact	N/A	N/A
<b>Decommissioning Phase</b>			
Impacts on military and civil aviation coverage and activity areas	No Impact	N/A Standard aviation management measures will be carried out in accordance with CAA requirements (see <b>Section 17.6</b> )	N/A
<b>Other human activities (See Chapter 18 for further details)</b>			
<b>Construction Phase</b>			
Impacts on other offshore wind farms	Negligible	N/A	N/A
Impacts on oil and gas operations and ancillary structures	No Impact	N/A	N/A
Impacts on other energy installations	No Impact	N/A	N/A
Disruption to port operations	No Impact	N/A	N/A
Damage to subsea cables	Moderate adverse	Cable burial protection measures Cable crossing agreements Adherence to. appropriate guidance	Negligible
Impacts on military	No Impact	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
exercise areas			
Health and safety risk due to UXO	Major adverse	Pre-construction UXO survey Site safety instructions prepared in the event of UXO being discovered Munitions awareness training Locations of any UXO mapped and recorded, and MOD/emergency services consulted	Minor adverse
Disruption to aggregate extraction activity	Negligible	N/A	N/A
Disruption to marine disposal activity	No Impact	N/A	N/A
Disturbance to capital and maintenance dredging activity	No Impact	N/A	N/A
<b>Operation Phase</b>			
Impacts on other offshore wind farms	Negligible	N/A	N/A
Impacts on oil and gas operations and ancillary structures	No Impact	N/A	N/A
Impacts on other energy installations	No Impact	N/A	N/A
Disruption to port operations	No Impact	N/A	N/A
Damage to subsea cables	Minor adverse	See construction detail (Section 18.6 of Chapter 18)	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Impacts on military exercise areas	No Impact	N/A	N/A
HSE risk due to unexploded ordnance	Negligible	N/A	N/A
Disruption to aggregate extraction activity	Minor adverse	N/A	Minor adverse
Disruption to marine disposal activity	No Impact	N/A	N/A
Disturbance to capital and maintenance dredging activity	No Impact	N/A	N/A
<b>Decommissioning Phase</b>			
Impacts on other human activities	Negligible	N/A	N/A
<b>Archaeology and cultural heritage (See Chapter 19 for further details)</b>			
<b>Construction Phase</b>			
Onshore - direct impacts to statutory and local designations	Negligible	N/A	N/A



Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Onshore - direct disturbance to archaeological resource	Minor to moderate adverse	WSI established, and watching briefs; and recording of sites where disturbance is unavoidable;  A Protocol for Unexpected Discoveries of Archaeological Importance will be developed; and  Archaeological features at the site will effectively be preserved by record.	Minor adverse
Onshore - disturbance to historic landscape	Negligible	N/A	N/A
Offshore - direct and indirect disturbance to features of archaeological interest	Major adverse (direct impacts) and negligible (indirect impacts)	Exclusion zones/buffers around known wrecks (if deemed necessary), further investigations to identify anomalies, excavation and recording carried out prior to construction, protocols and WSI established, watching briefs, additional surveys.	Negligible
Offshore – impact on the setting and perception of the historic environment	Minor adverse (Suffolk Heritage Coast) Negligible (historic seascape)	N/A	Minor adverse (Suffolk Heritage Coast) Negligible (historic seascape)
<b>Operation Phase</b>			
Onshore - indirect impacts to statutory and local designations	Negligible	N/A	N/A
Onshore – direct disturbance to archaeological resource	No impact	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Onshore –disturbance to historic landscapes	Negligible	N/A	N/A
Offshore -direct and indirect disturbance to features of archaeological interest	Major adverse (direct impacts) and negligible (indirect impacts)	Where necessary those measures outlined for use during construction phase will be used.	Negligible
Offshore – impact on the setting and perception of the historic environment	Minor adverse (Suffolk Heritage Coast) Negligible (historic seascape)	N/A	Minor adverse (Suffolk Heritage Coast) Negligible (historic seascape)
<b>Decommissioning Phase</b>			
Onshore - indirect impacts to statutory and local designations	Negligible	N/A	N/A
Onshore – direct disturbance to archaeological resource	No impact	N/A	N/A
Onshore - disturbance to historic landscape	Negligible	N/A	N/A
Offshore - disturbance to features of archaeological interest	Major adverse	Provision made for methods of removal which minimise further impact to a wider area, other methods will follow those which are used during construction.	Negligible
Offshore – impact on the setting and perception of	Negligible	N/A	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
the historic environment			
<b>Seascape, landscape and visual character (SLVC) (see section Chapter 20 for further details)</b>			
<b>Construction Phase</b>			
<b>Impacts associated with the onshore development</b>			
Coastal Dunes and Shingle Ridges	Moderate (adverse) (cable corridor) No impact (substation) Negligible at the scale of the Character Area	The cable corridor and substation have been located as close as possible to the GGOWF consented area to avoid landscape disturbance beyond areas already affected; Existing vegetation will be retained wherever practicable; and Directional drilling techniques will ensure that disturbance within the dune / beach area and hedgerows will be minimised..	Due to limited opportunities for incorporating mitigation measures at construction and the considerations which have already been undertaken during the design phase, the residual impacts are anticipated to be of the same significance as the pre-mitigation impacts identified in column two of the table.
Coastal Levels	Moderate-minor (adverse) (cable corridor) Moderate (adverse) (substation) Negligible at the scale of the Character Area		
Estate Sandlands	Major-moderate (adverse) (cable corridor) Major-moderate (adverse) (substation) Negligible at the scale of the Character Area		
Ancient Estate Claylands	No impact (cable corridor) Negligible (substation)		
Suffolk Coast AONB	Moderate to major (adverse)		

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
	for the cable corridor Major (adverse) for the substation		
Suffolk Heritage Coast	Moderate (adverse)		
Viewpoint 1 – PRoW north-west of site	Major-moderate (adverse)		
Viewpoint 2 – PRoW north of site	Major (adverse)		
Viewpoint 3 – Sizewell Beach car park	Negligible		
Viewpoint 4 – Sizewell Gap	Major (adverse)		
Viewpoint 5 – Sizewell Gap	Major-moderate (adverse)		
Viewpoint 6 – PRoW south of site	Moderate (adverse)		
Viewpoint 7- Junction between King George's Way and Lover's Lane	Negligible		
Viewpoint 8 – Abbey Lane	Negligible		
<b>Impacts associated with the offshore development</b>			
Impacts associated with seascape	Negligible	None proposed	Negligible
<b>Operation Phase Onshore Landscape</b>			
Estate Sandlands	Major-moderate (adverse) - within 0.5km; negligible at the	Lowering the finished floor level of the substation;	Moderate (adverse) - within 0.5km; negligible at the scale of the overall character type.

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
	scale of the overall character type.	Minimise the loss of existing trees;	
Coastal Levels	Major-moderate (adverse) - within 0.5km; negligible at the scale of the overall character type.	Providing a profiled screening landform;	Moderate-minor (adverse) - within 0.5km; negligible at the scale of the overall character type.
Ancient Estate Claylands	Negligible	Providing a wider continuous belt of woodland around the substation development;	Negligible
Suffolk Coast AONB	Major (adverse) - within 0.5km, rapidly reducing to negligible.	Low level planting to avoid gaps in the woodland screening;	Major-moderate (adverse)- within 0.5km; rapidly reducing to negligible.
Suffolk Heritage Coast	Moderate (adverse) – within 0.5km, rapidly reducing to negligible.	Extend woodland planting southwards from the substation to screen oblique views of the development;	Moderate-minor (adverse); rapidly reducing to negligible;
Viewpoint 1 – PRoW north-west of site	Major-moderate (adverse)	Reinstate trees, shrubs and hedgerows where they can be included in the completed development;	Moderate (adverse)
Viewpoint 2 – PRoW north of site	Major (adverse)	Replace existing gaps in hedgerows;	Moderate (adverse)
Viewpoint 3 – Sizewell Beach car park	Negligible	Use dull, recessive colours for structures including buildings, equipment and fencing; and	Negligible
Viewpoint 4 – Sizewell Gap	Major-moderate (adverse)	Contributions to a fund to provide landscape and access improvements within the AONB.	Major-moderate (adverse)
Viewpoint 5 – Sizewell Gap	Major-moderate (adverse)		Moderate (adverse)
Viewpoint 6 – PRoW south of site	Moderate (adverse)		Moderate (neutral)
Viewpoint 7- Junction between King George's Way and Lover's Lane	Negligible		Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Viewpoint 8 – Abbey Lane	Negligible		Negligible
<b>Operation Phase - Seascape</b>			
All landscape character types	Negligible	Careful consideration to the colour of the turbine structures in order to ensure that they remain relatively visually recessive.	Due to limited opportunities for incorporating mitigation measures and the considerations which have already been undertaken during the design phase, the residual impacts are anticipated to be of the same significance as the pre mitigation impacts identified in column two of the table.
Historic environment associated with coastal areas	Minor		
All other designated landscapes, historic environment and PROW	Negligible		
Regional Seascape Unit - Walberswick to Thorpe Ness	Minor		
Regional Seascape Unit - Aldeburgh Bay	Minor		
Regional Seascape Unit - Hollesley Bay	Minor		
Regional Seascape Unit - Felixstowe/Deben Estuary	Negligible		
Regional Seascape Unit - Stour and Orwell Estuaries	Negligible		
Viewpoint 1 – Orford Castle	Negligible		
Viewpoint 2 –Old	Negligible		

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Felixstowe Seafront			
Viewpoint 3 –Aldeburgh Seafront	Minor		
Viewpoint 4 –North of Alderton	Negligible		
Viewpoint 5 –Orford Ness near Lighthouse	Minor		
Viewpoint 6 –Shingle Street near Martello Tower	Negligible		
Viewpoint 7- View from the cliff top, The Naze	Negligible		
Viewpoint 8 – The Promenade, Southwold	Negligible		
Visual receptor groups in the wider area	Negligible		
Visual receptor groups in the wider area (offshore receptors)	Moderate – negligible (depending on proximity)		
<b>Decommissioning Phase</b>			
Landscape and seascape impacts	Negligible	None proposed	Negligible
<b>Socio-economics (see Chapter 21 for further details)</b>			
<b>Construction Phase</b>			

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Increased expenditure in local economy	Negligible	N/A	Negligible
Increased direct local employment	Negligible	N/A	Negligible
Increased indirect local employment	Negligible	N/A	Negligible
<b>Operation Phase</b>			
Direct and indirect employment	Negligible	N/A	Negligible
<b>Decommissioning Phase</b>			
Decommissioning impacts	Potentially minor beneficial	N/A	N/A
<b>Geology, hydrology and land quality (see Chapter 22 for further information)</b>			
<b>Construction Phase</b>			
Impact to local geology	No impact	n/a	
Contamination of secondary aquifer (hydrogeology)	Minor adverse	A Construction Code of Practice will be developed that adheres to the EA Pollution Prevention Guidance (PPG) notes, as well as general good construction practice.	
Contamination of	No impact	n/a	



Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
principal aquifer (hydrogeology)			
Pollution of hydrological receptors (hydrology)	Minor adverse	A Construction Code of Practice will be developed that adheres to the EA Pollution Prevention Guidance (PPG) notes, as well as general good construction practice.	
Risk to site workers health (land quality)	Negligible		
Mobilisation of contaminants by rainfall (land quality)	Negligible		
Generation of waste materials	Negligible	N/A	N/A
Increased flood risk	Negligible	N/A	N/A
<b>Operation Phase</b>			
Geology, hydrology and land quality	Negligible	N/A	N/A
Pollution of hydrological receptors (hydrology)	Negligible	N/A	N/A
Flood risk and increased surface water runoff	Negligible	A drainage strategy will be implemented incorporating SUDS to ensure that a Greenfield runoff rate is maintained at the site.	Negligible
<b>Decommissioning Phase</b>			
As Construction Activities	As above	Impacts are considered to be similar to those of the construction phase	As above

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Generation of waste	Minor adverse	Appropriate site waste management plan developed for decommissioning phase	Negligible
<b>Terrestrial ecology (see Chapter 23 for further information)</b>			
<b>Construction Phase</b>			
Physical damage to designated habitats (Sizewell Marshes SSSI)	Minor adverse	A Construction Code of Practice will be developed in consultation with Natural England to avoid impacts on Sizewell Marshes SSSI and Suffolk Shingle Beaches CWS.	Negligible
Physical damage to designated habitats (Suffolk Shingle Beaches CWS)	Moderate adverse	Directional drilling will be used to avoid sensitive foreshore habitats (CWS).  Work compounds and access tracks will not be located in, or adjacent to, habitats of ecological value e.g. water courses, shingle / dune habitats and hedgerows.  Where possible existing access tracks will be used. Access tracks along the foreshore will be protected with gridded matting ahead of any foreshore works.  Where possible, areas temporarily affected by works will be restored to at least their original condition through planting, smoothing of tracks and/or natural regeneration.	Negligible
Indirect disturbance to designated sites (noise)	Minor adverse	Best practice noise control and management techniques will be employed as detailed within <b>Chapter 26 Noise</b> .	Minor adverse
Indirect disturbance to designated sites (air quality)	Minor adverse	Best practice noise control and management techniques will be employed as detailed within <b>Chapter 27 Air Quality</b> .	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Damage to habitats and flora (arable)	Negligible	N/A	N/A
Damage to habitats and flora (pasture)	Minor adverse	The new landscape mitigation area will include grassland and transitional plant communities to offset grassland losses.	Minor adverse
Damage to habitats and flora –(woodland)	Minor adverse	The design will include new landscape planting to offset any losses and will comprise native species within a range of woodland and connecting habitats. .	Minor adverse reducing to negligible
Damage to habitats and flora –(hedgerow)	Minor adverse	Directional drilling will be used to avoid four of the five lengths of hedgerow within the development footprint.	Negligible
Indirect impact to habitats and flora (air quality)	Minor adverse	Best practice air quality control and management techniques will be employed as detailed within <b>Chapter 27 Air Quality</b> .	Negligible
Reptiles (associated with dune habitats)	Moderate adverse	Directional drilling will avoid dune and hedgerow habitats known to support reptiles.	No impact
Reptiles (associated with hedgerows along the cable corridor)	Moderate adverse		No impact
Reptiles (associated with woodland edge within the substation footprint)	Moderate adverse	The 0.65ha of woodland edge habitats known to support reptiles will be subject to a dedicated reptile mitigation strategy that will be developed in consultation with NE.  A 0.85ha reptile receptor site has been identified and will be enhanced ahead of any reptile	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
		translocation.	
Direct disturbance to roosting bats	Major adverse	An EPS licence will be obtained to ensure that bat features are carefully removed ahead of works without any harm to the bats themselves.	Negligible
Indirect disturbance to foraging bats	Minor to moderate adverse	Light pollution sources will be minimised. Mitigatory planting will include night-flowering and nectar-rich plant species. Bat boxes will be provided in the site. Directional drilling will avoid loss of hedgerow habitats (an important linear feature for commuting bats)	Negligible
Direct disturbance to breeding birds (habitat loss)	Minor adverse	Directional drilling will be used to avoid sensitive foreshore habitats. Any vegetation clearance will be undertaken outside of the breeding bird season. Mitigatory planting will provide nesting areas. Nest boxes will be provided.	Negligible
Indirect disturbance to breeding birds	Minor adverse	Best practice noise control and management techniques will be employed as detailed in <b>Chapter 26 Noise</b> . Construction lighting will be low intensity and appropriately located / directed in order to minimise lighting disturbance. Permanent lighting associated with the new substation will be minimal.	Negligible
Amphibians	No impact	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Otters	Minor adverse	Good site housekeeping to minimise the risk of otters becoming trapped.	Negligible
Water voles	No impact	N/A	N/A
Badgers	Negligible	A pre-construction survey will be undertaken to confirm badger usage.  If a main badger sett is subsequently identified within the works footprint a NE badger licence will be required to close that sett.	No impact
Terrestrial invertebrates	Minor adverse	Directional drilling will be used to avoid sensitive foreshore habitats.	Negligible
Other notable species	Negligible	Suitable hibernation habitat (for hedgehogs) will be hand searched ahead of construction to ensure that.	Negligible
<b>Operation Phase</b>			
Operational impacts	Negligible	N/A	N/A
<b>Decommissioning Phase</b>			
Decommissioning impacts	At worst as per construction	As per construction	As per construction
<b>Land-use, tourism and recreation (See Chapter 24 for further details)</b>			
<b>Construction Phase</b>			
Disruption to existing land use (arable)	Minor adverse	Appropriate compensation to landowners; and  Considerate use of shared access points in agreement with landowner.	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Disruption to existing land use (grassland)	Minor adverse	Introduce appropriate heathland plant species with the areas identified for landscape screening.	Minor adverse
Disruption to existing land use (woodland)	Minor adverse	Introduce native tree species within the area identified for screening; and appropriate heathland plant species along this part of the cable corridor	Minor adverse
Disruption to existing land use (beach / dune)	Minor adverse	Where access is required across the beach / dune temporary gridded matting, or similar, will be placed along all such access routes to minimise disturbance from vehicles;  Works will be supervised by an Environmental Clerk of Works and liaison with the key stakeholder will be maintained throughout the construction phase; and  Areas temporarily affected by works will be restored to at least their original condition through planting, smoothing of tracks, and/or natural regeneration.	Negligible
Disruption to existing land use (other energy infrastructure)	No impact to negligible	N/A	N/A
Disruption to tourism destinations of high sensitivity	Negligible	N/A	Negligible
Disruption to tourism destinations of medium	No impact	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
sensitivity			
Disruption to tourism destinations of low sensitivity	Negligible	<p>Where access is required across the beach / dune temporary gridded matting, or similar, will be placed along all such access routes to minimise disturbance from vehicles;</p> <p>Works will be supervised by an Environmental Clerk of Works and liaison with the key stakeholder will be maintained throughout the construction phase; and</p> <p>Areas temporarily affected by works will be restored to at least their original condition through planting, smoothing of tracks, and/or natural regeneration.</p>	Negligible
Reduced access to public rights of way (national trails)	Short-term minor adverse	Where directional drilling works take place on the foreshore the construction footprint will be fenced from the public in such a location that users of the coastal paths do not experience any severance to access along the foreshore;	Negligible
Reduced access to other public rights of way	Short-term minor adverse	<p>During brief periods where vehicles need to access the foreshore this will be undertaken with additional supervising banksmen to ensure the safety of other users of the coastal footpath;</p> <p>Residents groups will be contacted (in writing) in advance of the proposed works. This information will include a timetable of works, a schedule of working hours, the extent of the works, and a contact names, address and telephone number in case of complaint or query;</p>	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
		<p>An information board will be displayed at the site containing the same information as detailed above; and</p> <p>Any PRowS disturbed by working areas will be re-instated to their pre-construction condition upon completion of the works.</p>	
Disruption to angling	Negligible	N/A	N/A
Reduced access for fishing boats on Sizewell Beach	Minor adverse	Fishermen will be contacted in advance of the works with details of the programme.	Negligible
Disruption to diving	Negligible	N/A	N/A
<b>Operation Phase</b>			
Change in land use (arable)	Minor adverse	Appropriate compensation relating to loss of income on agricultural land during operation.	Negligible
Change in land use (grassland)	Minor adverse	<p>Where practicable, areas of grassland impacted will be replanted with species in keeping with the character of the area; and</p> <p>A grassland management plan will be implemented to ensure that the grassland is managed to best meet the long-term aims for heathland restoration..</p>	Minor adverse reducing to negligible over the subsequent years.



Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Change in land use (woodland)	Minor adverse	Native tree and woodland species will be planted within the proposed landscaping / screening landform; and  A woodland management plan will be implemented to ensure that the grassland is managed to best meet the long-term aims for heathland restoration.	Minor adverse reducing to negligible over the subsequent years
Change in land use (beach / dune)	No impact	N/A	N/A
Change in land use (other energy infrastructure – GGOWF, Sizewell A and B)	No impact	N/A	N/A
Change in land use (other energy infrastructure – Sizewell C)	Potential moderate adverse	Discussions / negotiations will continue with EDF to determine the potential use of the field adjacent to Sandy Lane in regard to the Sizewell C proposals.	Negligible
Disruption to tourism	No impact	N/A	N/A
Disruption to onshore recreation	No impact	N/A	N/A
Disruption to offshore recreation	No impact	N/A	N/A
<b>Decommissioning Phase</b>			
Disruption to land use and local recreation from the decommissioning works	No impact to negligible	N/A	N/A

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
<b>Traffic and transport (See Chapter 25 for further details)</b>			
<b>Construction Phase</b>			
Driver delay at priority junctions	Negligible	A construction Traffic Management Plan will be developed in agreement with Suffolk County Council (the Highways Authority). This will include: <ul style="list-style-type: none"> <li>• Ensure that HGV movements are evenly spread through the day;</li> <li>• Ensuring HGVs and abnormal loads use the prescribed construction traffic route;</li> <li>• Timing of continuous pours to avoid known periods of peak traffic activity and to avoid major community activities; and</li> <li>• Introduction of traffic calming measures (speed restrictions) along Lover's Lane and Sizewell Gap.</li> </ul>	Negligible
Pedestrian severance – peak construction period	Minor adverse		Minor adverse
Pedestrian severance (during the rest of construction)	Negligible		Negligible
Pedestrian amenity – peak construction period	Minor adverse		Negligible
Pedestrian amenity (during the rest of construction)	Minor adverse		Negligible
Reduction in Highway safety	No effect		N/A
<b>Operation Phase</b>			
Operational impacts	No impact	N/A	N/A
<b>Decommissioning Phase</b>			
Decommissioning impacts	Negligible	A decommissioning Traffic Management Plan will be developed in agreement with Suffolk County Council (the Highways Authority).	Negligible
<b>Noise (See Chapter 26 for further details)</b>			

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
<b>Construction Phase</b>			
Construction noise (daytime working).	Negligible	<p>Implementing best practice noise control and management techniques, which include:</p> <p>If noisy plant cannot be located away from sensitive receptors, temporary screening or an enclosure should be provided;</p> <p>Using silenced equipment where possible, in particular silenced power generators if night time power generation is required for site security or lighting; and</p> <p>Ensuring plant machinery is turned off when not in use.</p>	Negligible
Construction noise (unsociable hours).	Short-term significant adverse	<p>The timing of these activities will be agreed in advance with SCDC;</p> <p>Silenced equipment will be used where practicable</p> <p>Local residents that may be affected by noise from the construction works will be contacted in advance of the works.</p> <p>Contact details for a site representative will be provided to local residents who may potentially be affected by construction noise.</p>	Short-term significant adverse
Construction traffic related noise	Negligible	<p>Ensuring that vehicles and mobile plant are well maintained such that loose body fittings or exhausts do not rattle or vibrate;</p> <p>Ensuring that vehicles do not park or queue for long periods outside residential properties with</p>	Negligible

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
		engines running unnecessarily; and Ensuring, where practicable, that access routes are in good condition with no pot-holes or other significant surface irregularities.	
<b>Operation Phase</b>			
Operational impacts	Negligible	A screening landform surrounding the north, south and western sides of the substation has been incorporated into the design to offer additional noise attenuation.	Negligible
<b>Decommissioning Phase</b>			
Decommissioning impacts	Negligible	As construction	N/A
<b>Air quality (See Chapter 27 for further detail)</b>			
<b>Construction Phase</b>			
Construction related dust	Negligible to minor adverse	A range of environmental management controls developed with reference to the Building Research Establishment (BRE) guidance and the Greater London Authority and London Councils Best Practice Guidance. These will be detailed within the Construction Code of Practice	Negligible
Construction related vehicle emissions	Negligible	A range of construction site best practice, which will be detailed within the Construction Code of Practice.	Negligible
<b>Operation Phase</b>			
Operational impacts	No impact	N/A	N/A
<b>Decommissioning Phase</b>			

Description of impact	Impact significance	Potential mitigation measure	Residual impact significance
Construction related dust	Negligible to minor adverse	A range of environmental management controls developed with reference to the Building Research Establishment (BRE) guidance and the Greater London Authority and London Councils Best Practice Guidance. These would be monitored on site by the Environmental Clerk of Works.	Negligible
<b>Electric and Magnetic Fields (See Chapter 28 for further detail)</b>			
<b>Construction Phase</b>			
Health impacts from electric and magnetic fields	No impact	N/A	N/A
<b>Operation Phase</b>			
Health impacts from electric and magnetic fields	No impact	N/A	N/A
<b>Decommissioning Phase</b>			
Health impacts from electric and magnetic fields	No impact	N/A	N/A

### 32.3 Cumulative Impact Assessment

32.3.1 An assessment of potential cumulative impacts for each EIA parameter is provided within the relevant technical Chapters (Chapters 8 to 28) of this ES, and Chapter 30 provides a holistic summary of the cumulative effects, where identified.

32.3.2 Given the scale of the GWF project and its position relative to adjacent wind farm developments and other developments and or activities in the region, there is scope for cumulative impacts to occur. The majority of the potential cumulative impacts associated with GWF are not considered to be significant, as detailed in Chapter 30. However, there are some exceptions, those being:

- Potential significant impacts on the Alde-Ore Estuary SPA as a result of cumulative collision impacts on lesser black-backed gulls for which the site is designated;
- Potential minor adverse to negligible impact from noise disturbance on marine mammals should piling activity of GWF, London Array Phase II and East Anglia ONE overlap;
- Potential minor adverse impact from the loss of fishing ground (with other wind farms and Marine Conservation Zones (MCZs)) for international trawling fleets during construction and operation;
- Potential minor adverse impact on aggregate extraction activity (associated with cable snagging risk posed by GGOWF and GWF);
- Potential minor adverse impact on aggregate steaming times as a result of GWF and East Anglia ONE;
- Potential minor adverse visual impact of Sizewell C combined with GWF (during both construction and operation); and
- Potential moderate adverse cumulative impact should the peak construction traffic associated with GWF occur at the same time as the peak traffic for the construction of the Sizewell B Dry Fuel Store and the decommissioning of Sizewell A. This can be reduced to negligible with the implementation of a construction traffic management plan.

### 32.4 Transboundary Effects

32.4.1 Potential transboundary effects have been assessed based on a review of the detailed EIA presented in this ES and for each of the topics considered. Transboundary issues have been considered in light of the potential for likely significant effects on:

- Impacts that might occur on the environment within other European Economic Area (EEA) member states (i.e. not within the UK Renewable Energy Zone (REZ)); and

- Impacts that might occur on interests of another EEA member state within the UK REZ.

32.4.2 Through the assessments presented it has been concluded that there would be no likely significant effect on the environment of another EEA member state nor on the interests of any such states within the UK REZ.