Galloper Wind Farm Eastern Super Grid Transformer Project

Environmental Statement – Chapter 5 Terrestrial Ecology

February 2014

Document Reference – GWF/20/02/2014

Galloper Wind Farm Limited

CONTENTS

Terrestrial Ecology Page

Figures

TERRESTRIAL ECOLOGY

5.1 Introduction

5.1.1 This chapter of the Environmental Statement (ES) assesses the potential impacts of the onshore infrastructure development associated with the Galloper Wind Farm (GWF) Eastern Super Grid Transformer (ESGT) on terrestrial ecology. Implications of the development on terrestrial habitats, including flora and fauna within the study area shave been addressed. This assessment includes both positive and negative impacts, for the construction, operation and decommissioning phases of the development. Details of proposed mitigation that will be undertaken by GWF are also provided.

5.1.2 This chapter provides a summary of potential terrestrial impacts arising from the proposed ESGT. The GWF ES did not identify any potentially significant effects on ecology and a large volume of information is already held on the ecology of the site. This chapter is an addendum to the GWF ES Terrestrial Ecology chapter (GWFL 2012).

5.1.3 A programme of ecological mitigation works has been undertaken on the GWF onshore site since the project was granted Development Consent in May 2013. A description of this activity is provided in section 5.5 of this chapter.

5.2 Guidance and Consultation

Legislation, Policy and Guidance

5.2.1 National Policy Statements (NPS), including the NPS for Energy (EN-1) and Electricity Network Infrastructure (EN-5) (DECC, 2011a and 2011b, respectively) have been consulted as appropriate guidance.

5.2.2 The UK Post-2010 Biodiversity Framework succeeds the UK BAP and identifies the activities needed to achieve global targets on biodiversity agreed in Aichi Province, Japan in 2010, and known as the Aichi targets. The Framework sets out five strategic goals designed to ensure the targets are met:

- Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- Reduce the direct pressures on biodiversity and promote sustainable use
- To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
- Enhance the benefits to all biodiversity and ecosystems
- Enhance implementation through participatory planning, knowledge management and capacity building

Consultation

5.2.3 Extensive consultation with statutory and non-statutory consultees regarding the associated onshore development of GWF was undertaken as part of the EIA process. Issues raised during the development of the GWF Development Consent Order (DCO) application are still considered relevant within the application for the ESGT. Full details of responses received regarding terrestrial ecology matters are presented in the IPC

Scoping Opinion report (IPC, 2010) and the Consultation Report that accompanied the GWF DCO application.

5.2.4 In November 2013, GWFL submitted a Scoping Report to SCDC requesting an opinion on the information to be provided in the Environmental Statement. A Scoping Opinion on the ESGT was received from SCDC in January 2014. Table 5.1 Lists the comments received in the Scoping Opinion which relate to Terrestrial Ecology.

Table 5.1 Summary of scoping report comments

Date	Consultee	Comment	Section of ES where comment is addressed
12/12/2013	Suffolk Wildlife Trust	We have read the ecology section of the Galloper Wind Farm Project Eastern Super Grid Transformer Scoping Report (Galloper Wind Farm Ltd, Nov 2013) and we are broadly satisfied with the scope of the assessment proposed. We acknowledge that a substantial volume of ecological survey information has been collected at the site over recent years and that this information supported the assessment of the larger substation scheme which has already received development consent as part of the Galloper Wind Farm project. We recommend that this existing information, including that collected in 2013, is used as the basis for an updated assessment of the potential impacts of the new proposals and identification of any necessary mitigation measures.	The baseline information collected for the GWF ES has been reused as the baseline information within this chapter and has been supplemented with information collected during ecological mitigation works in 2013.
13/12/2013	Suffolk County Council Economy, Skills, and Environment	**Approach to the EIA** We note the proposed updates to the information relating to noise, transport, terrestrial ecology, flood risk and archaeology. These will be importance to *verify* the reduced impact of the ESGT compared to the full works consented by the Order – for example it is stated that it is 'expected' that the ESGT will have a lesser impact and therefore a full assessment of ecology be scoped out. This expectation will need to be corroborated, particularly in relation to impacts on bats and reptiles.	This chapter of the ES contains an assessment of the potential impacts of the ESGT on terrestrial ecology, including on bats and reptiles.

5.3 Methodology

Study Area

5.3.1 The ESGT development footprint (as shown in Figure 1.1) is contained within the consented GWF onshore footprint. The ESGT compound will run north to south in alignment with the existing substation compounds. The study area includes the development footprint of the ESGT and the underground cable corridors required for electrical connections to the GWF and Leiston substations and any adjacent habitats that may potentially be impacted by the proposed development.

Characterisation of the Existing Environment

5.3.2 There is a substantial amount of available data associated with the ES submitted as part of the DCO application for GWF and the previous Greater Gabbard Offshore Wind Farm (GGOWF) studies, and their subsequent mitigation and monitoring programmes. The data available includes;

- Extended Phase 1 Habitat surveys (2005, 2006, 2010 (including detailed botanical assessments)) (CMACS, 2005; ESL, 2006; The Ecology Consultancy, 2010);
- Breeding bird surveys (2005, 2006 and 2008) (BTO, 2006; ESL, 2006);
- Great crested newt surveys (2005 and 2006) (CMACS, 2005; ESL 2006);
- Mammal surveys – including badgers, bats, water vole, otter and other protected mammals (2006) (ESL 2006);
- Reptile surveys (2006, 2007, 2010, 2011 and 2013) (ESL, 2006; ESL, 2007a; The Ecology Consultancy 2010; 2011 and 2013);
- Bat surveys (2006, 2007 and 2011 (including bat roost potential and activity)) (ESL, 2006; 2007b; The Ecology Consultancy, 2011);
- Badger survey 2010 (The Ecology Consultancy, 2010);
- Badger walkover survey 2011 (The Ecology Consultancy, 2011);
- Protected species mitigation surveys 2013 (The Ecology Consultancy, 2013b; 2013c).

5.3.3 Habitat and protected species surveys were undertaken to further inform proposals of the use of the area by protected species, as this factor could have the potential to be a constraint to development.

5.3.4 In addition to these surveys, baseline information for the area was compiled through a desk study and consultation with key stakeholders.

Assessment of Impacts

5.3.5 Impacts to terrestrial ecology have been assessed based on an approach adapted from the guidelines for Ecological Impact Assessment (EcIA), which have been drawn up by the Institute of Ecology and Environmental Management (IEEM) (2006).

5.3.6 The approach to the assessment of impacts on terrestrial ecology can be summarised as follows:

1. Identification of the resource (baseline conditions);

2. Evaluation of the resource (assessment of value);
3. Identification of potential impact;
4. Determination of the effect of the impact;
5. Determination of the magnitude of the effect;
6. Assessment of the significance of any identified effects; and
7. Identification of any necessary mitigation or monitoring measures.

5.3.7 The criteria presented in Table 5.2 provides a guidance framework that indicates the likely level of significance.

Table 5.2 Effect of significance matrix

		Sensitivity / Value				
		International	**National**	**County**	**Local**	**Negligible**
Magnitude	**High**	*Major*	*Major*	*Major*	*Moderate*	*Negligible*
	Medium	*Major*	*Major*	*Moderate*	*Minor*	*Negligible*
	Low	*Moderate*	*Moderate*	*Minor*	*Negligible*	*Negligible*
	Negligible	*Minor*	*Negligible*	*Negligible*	*Negligible*	*Negligible*

5.3.8 This approach to assessment has been fully implemented into the GWF ES Chapter 23 Terrestrial Ecology. Full details of the approach to the assessment can be found from Paragraph 23.3 onwards (GWF ES, 2011).

5.4 Existing Environment

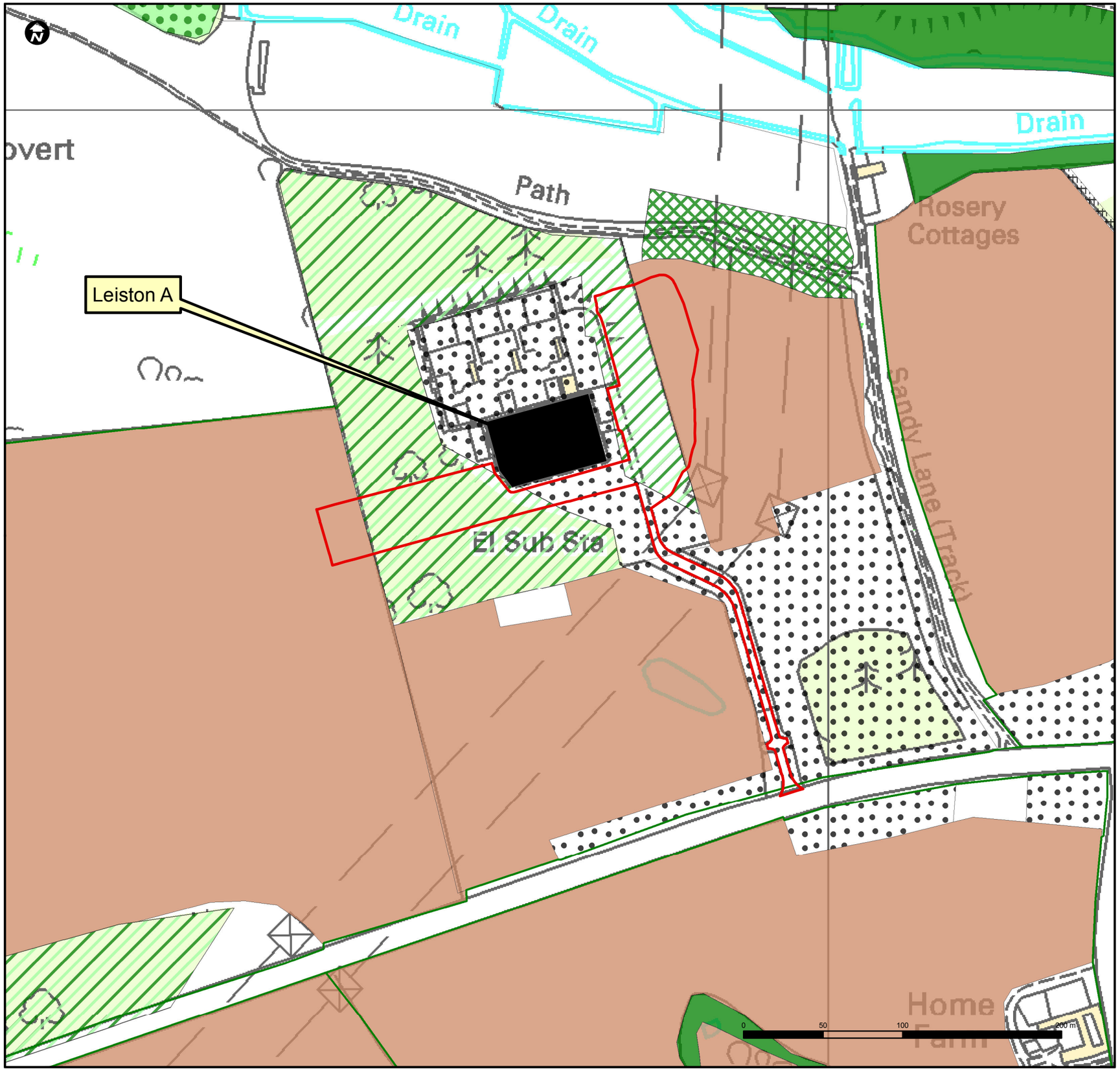
5.4.1 This section describes the current situation with regard to the habitats and species recorded at the proposed ESGT.

Habitats and Flora

5.4.2 The predominant habitats in the study area are arable farmland, semi-natural broadleaved and mixed woodland, plantation woodland and semi-improved grassland. The proposed ESGT is located largely on plantation broadleaved woodland and arable land. Additional arable land is found to the west of the proposed ESGT site, with an area of bare ground to the south and dense continuous scrub to the north east. Figure 5.1 identifies the habitats present within the ESGT application area.

5.4.3 Previous surveys of the woodland have found that species such as mature and young Scots pine *Pinus sylevstris*, sycamore *Acer pseudoplanatus*, beech *Fagus sylvatica*, pedunculate oak *Quernus robor*, with occasional sweet chestnut *Castanea sativa* and an understorey of hawthorn, elder *Sambucus nigra*, and very occasional honeysuckle *Lonicera periclymenum*. The ground flora was sparse, characterised by: occasional common nettle *Urtica dioica*, ground-ivy *Glechoma hederacea*, red campion *Silene dioica*, and earthstar *Geastrum fimbriatum*.

5.4.4 The woodland is regarded as having a habitat value of local importance and a habitat value of negligible importance is considered appropriate for areas of arable land.



Overview map

Legend

- Eastern SGT red line boundary
- Leiston A NG substation
- J2.1.2 Intact hedge - species-poor
- A1.1.1 Broadleaved woodland - semi-natural
- A1.1.2 Broadleaved woodland - plantation
- A1.3.1 Mixed woodland - semi-natural
- A1.3.2 Mixed woodland - plantation
- A2.1 Scrub - dense/continuous
- B2.2 Neutral grassland - semi-improved
- B6 Poor semi-improved grassland
- C3.1 Other tall herb and fern - ruderal
- H6.4 Dune slack
- H6.5 Dune grassland
- H6.8 Open dune
- J1.1 Cultivated/disturbed land - arable
- J1.2 Cultivated/disturbed land - amenity grassland
- J2.4 Fence
- J2.6 Dry ditch
- J4 Bare ground

Cartographic information

Coordinate System: British National Grid
Map Datum: OSGB1936
Background data: Reproduced from Ordnance Survey digital map data

Licence number 0100031673

Map information

Galloper Wind Farm Ltd

RWE npower renewable - Auckland House Lydiard Fields, Great Western Way, SWINDON Wiltshire, SN5 8ZT	**PROJECT** Offshore Windpark **GALLOPER WINDFARM LTD**

TITLE

FIGURE 5.1 - HABITATS PRESENT WITHIN THE ESGT APPLICATION AREA

DRAWN	DATE	SCALE	SIZE
RE57046	14.02.2014	1:2.500	@DIN A3

DRAWING No.	REV
GWF_1115_R2	02

Path: \\S060A0361\Maps_offshore\ProjectSpecificMaps\MajorProjects\11_UK_Galloper\06_Interconnection\02_RWE\Scoping_Report\GWF_1115_R2 - Figure 5.1 Habitats present within the ESGT application area.mxd

Reptiles

5.4.5 All four common reptile species found in the UK, common lizard *Zootoca vivipara*, adder *Vipera berus*, grass snake *Natrix natrix*, and slow worm *Anguis fragilis* were recorded in low numbers during the course of the 2006, 2007, 2010, 2011 and 2013 surveys. All common reptiles are subject to partial protection under the Wildlife and Countryside Act 1981 (as amended); are priority UK Biodiversity Action Plan (UK BAP) species and also Species of Principal Importance under the Natural Environment and Rural Communities (NERC) Act 2006.

5.4.6 Reptile surveys undertaken in 2006 and 2007 concluded that the woodland interior was not suitable reptile habitat given the dense shade and lack of suitable cover (ESL 2007a). It was established that the woodland edge habitat and other boundary features, such as hedge-filled paths did support populations of reptiles. This was confirmed during a reptile translocation exercise undertaken in 2007 prior to the GGOWF substation works. Further surveys in 2011 confirmed again that the woodland edge habitats still supported reptiles within an absence of reptiles in the woodland interior. During a programme of reptile translocation was undertaken in 2013 as part the ecological mitigation works for GWF, 16 reptiles were caught within the area of the proposed ESGT (4 common lizard, 5 grass snake, 6 slow worm). A description of the ecological mitigation works undertaken in 2013 is provided in Section 5.5 of this chapter.

5.4.7 All common reptiles are priority UK Biodiversity Action Plan (UK BAP) species and Species of Principle Importance under the Natural Environment and Rural Communities (NERC) Act 2006 on account of their recent decline in numbers across the UK. All four common reptile species found on the site are afforded partial protection under the Wildlife & Countryside Act 1981 (as amended) making it an offence to:

- Intentionally kill or injure any reptiles; and
- Trade any reptiles (i.e. sell, barter, exchange, transport for sale, and advertise to sell, or buy).

5.4.8 There are provisions in the legislation to allow actions to take place under licence, which would otherwise contravene the law.

Bats

Bat roost potential

5.4.9 Sizewell Wents woodland was assessed for its potential to support roosting bats in 2006, 2007, 2011 and 2013. Survey work undertaken in May 2013 confirmed 38 trees with bat roost potential (The Ecology Consultancy, 2013a), none of which are in the area proposed for the ESGT. Species found in Sizewell Wents include common pipistrelle *Pipistrellus pipistrellus*, noctule *Nyctalus noctula*, soprano pipostrelle *Pipistrellus pygmaeus* and natterer's bat *Myotis nattereri*. Sizewell Wents and the surrounding land are likely to provide suitable foraging habitat and linkage between potential roost sites and/or foraging sites.

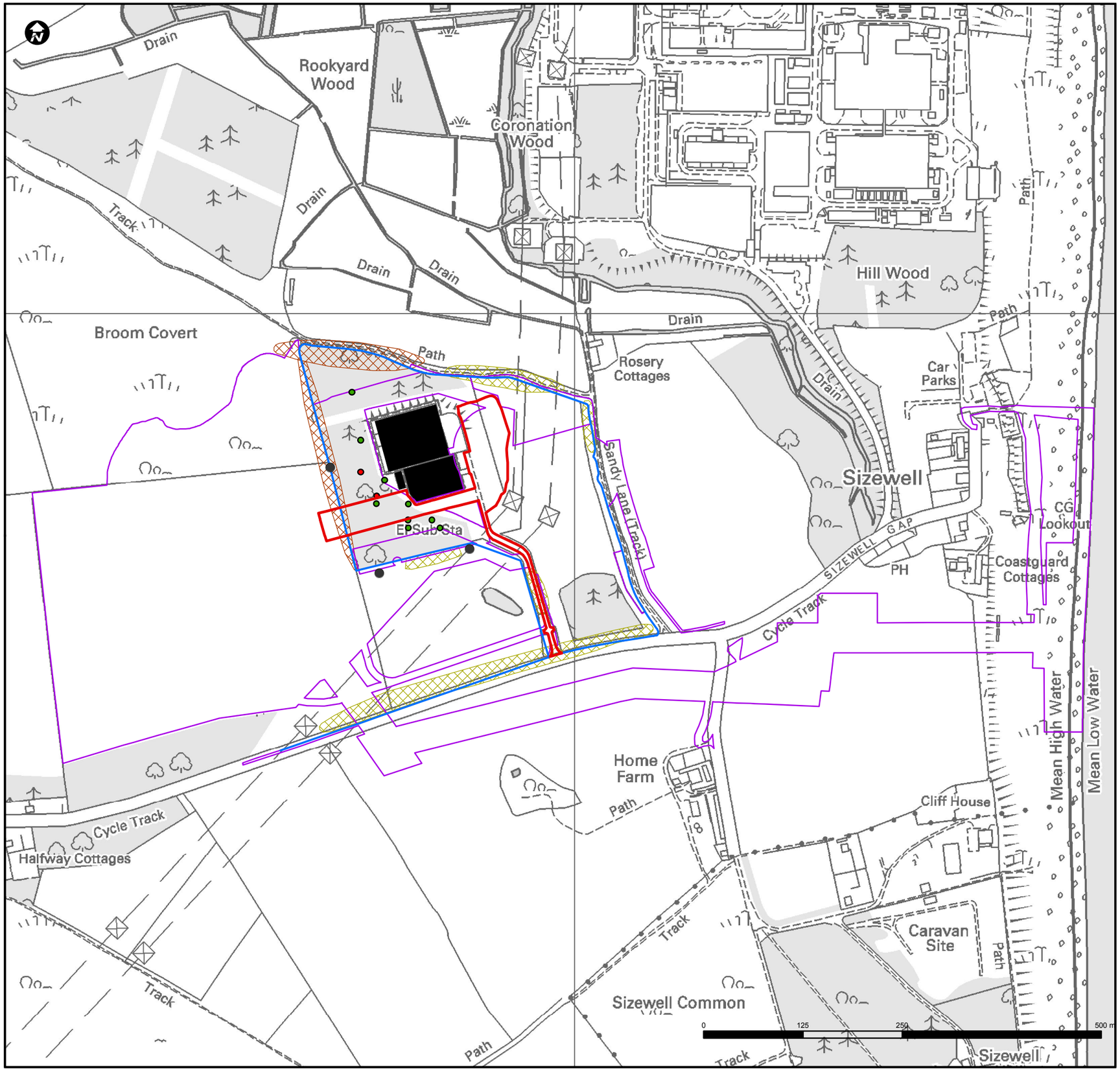
5.4.10 Figure 5.2 identifies the location of trees with bat roost and trees with potential bat roosts from the 2011 survey (GWF ES, 2012). A description of the ecological mitigation works undertaken in 2013 for the GWF site, including bat works, are provided in Section 5.5 of this chapter.

5.4.11 Based on the data gathered during surveys in 2006. 2007, 2011, and 2013, the site is considered to be used for foraging and commuting for up to ten species of bat. The site is currently likely to provide suitable foraging habitat for common species, particularly pipistrelles, as well as providing linkage between potential roost sites and/or foraging grounds for common and less frequently recorded species.

5.4.12 None of the bat roosts identified from the extensive survey effort are located within the proposed ESGT development footprint. There are however 4 bat roosts identified, with a further 38 trees with the potential to house bat roosts within the nearby area. Surveys undertaken in 2011 and 2013 identified areas of bat activity recorded on remote detectors within the ESGT area, but no bat activity was observed by the surveyors in this area.

Bat legislation

5.4.13 All bats in the UK are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and schedule 2 of the Habitats Regulations. As such, GWFL has obtained a EPSM licence from Natural England for the tree felling necessary for the main GWF onshore site, as described in section 5.5 of this chapter.



Overview map

Legend

- Eastern SGT red line boundary
- Galloper Wind Farm Onshore Development Footprint/Order Limits
- Greater Gabbard Onshore Substation
- Route of bat transect
- Area of frequent activity
- Area of occasional activity
- Location of static detector
- Trees with Bat roost potential
- Trees with confirmed Bat roosts

Cartographic information

Coordinate System: British National Grid
Map Datum: OSGB1936
Background data: Reproduced from Ordnance Survey digital map data

Licence number 0100031673

Map information

Galloper Wind Farm Ltd

RWE npower renewable - Auckland House Lydiard Fields, Great Western Way, SWINDON Wiltshire, SN5 8ZT	**PROJECT** Offshore Windpark **GALLOPER WINDFARM LTD**

TITLE

FIGURE 5.2 - LOCATION OF BAT ROOSTS AND POTENTIAL BAT ROOSTS WITHIN THE GWF ONSHORE FOOTPRINT IDENTIFIED DURING 2011 SURVEYS

DRAWN	DATE	SCALE	SIZE
RE57046	13.02.2014	1:5.000	@DIN A3

DRAWING No.	REV
GWF_1116_R1	01

Path: \\S060A0361\Maps_offshore\ProjectSpecificMaps\MajorProjects\11_UK_Galloper\06_Interconnection\02_RWE\Scoping_Report\GWF_1116_R1 - Figure 5.2 Location of Bat Roosts and potential bat roosts within the GWF onshore footprint identified during 2011 surveys.mxd

Nesting Birds

5.4.14 A breeding bird survey was undertaken in Sizewell Wents in 2008 (ESL 2008), immediately prior to the construction of the GGOWF and Leiston substations. A total of 21 bird species were recorded using the Sizewell Wents woodland. The most frequently encountered species were woodpigeon, goldcrest, and chaffinch. Table 5.3 lists the species identified during the 2008 survey, along with their conservation status. The survey data not record the position within the woodland that the species were recorded so it is not possible to say if they were seen within the proposed ESGT area.

Table 5.3 Bird species identified in Sizewell Wents during 2005 survey

Species	**Wildlife and Countryside Act 1991 Schedule 1 species**	**Birds of Conservation Concern Red List**	**Birds of Conservation Concern Amber List**	**Suffolk BAP**
Grey partridge *Perdix perdix*		X		X
Pheasant *Phasianus colchicus*				
Grey Heron *Ardea cinerea*				
Woodpigeon *Columba palumbus*				
Great spotted woodpecker *Dendrocopos major*				
Skylark *Alauda arvensis*		X		X
Pied wagtail *Motacilla alba*				
Wren *Troglodytes troglodyte*				
Dunnock *Prunella modularis*				
Robin *Turdus migratorius*				
Blackbird *Turdus merula*				
Fieldfare *Turdus pilaris*	X	X		
Song Thrush *Turdus philomelos*		X		X
Goldcrest *Regulus regulus*				
Long-tailed tit *Aegithalos caudatus*				
Blue tit *Cyanistes caeruleus*				
Great tit *Parus major*				
Magpie *Pica pica*				
Carrion crow *Corvus corone*				
Chaffinch *Fringilla coelebs*				
Goldfinch *Carduelis carduelis*				

5.4.15 Previous surveys, undertaken in 2005 and 2006 identified a number of other species within the overall bird survey area, although this stretched to a much wider area than the Sizewell Wents woodland. Species included grey heron *Ardea cineria*, sparrowhawk *Accipiter nisus*, and yellowhammer *Emberiza citrinell*.

5.4.16 All wild bird species in the UK are protected under the Wildlife and Countryside Act 1981. Birds listed in Schedule 1 of the Wildlife and Countryside Act 1981 are protected

at all times, and in addition to the protection from killing or taking that all birds, their nests, and their eggs have under the Act, Schedule 1 birds and their young must not be disturbed at the nest.

Water Vole and Otter

5.4.17 The habitats within the GWF works footprint are a mix of woodland and arable fields and do not support any water bodies. Consequently the site, including the ESGT compound is not considered suitable habitat for water vole or otter. In addition, the GWF footprint, including the ESGT compound is considered too far from any water bodies, including the Sizewell Marshes SSSI, to be suitable as potential habitat for an otter holt although there remains the potential for otter, being a wide ranging species, to traverse the area.

5.4.1 Given this information, there is no scope for there to be a potential impact on otter and water vole and therefore they have not been discussed further in this assessment.

Badger

5.4.2 During surveys in 2010, 2011 and 2013, no evidence of recent badger activity was found to the north of Sizewell Gap other than a disused sett.

5.4.3 Given this information, there is no scope for there to be a potential impact on badger and therefore they have not been discussed further in this assessment.

Great Crested Newts and other Amphibians

5.4.4 A desk study and consultation with local groups concluded that there were no records of great crested newt *Triturus cristatus* in the immediate area (CMACS, 2005; ESL, 2006). Surveys in 2005 and 2010 revealed no evidence of the species in the immediate area. The wider area does support common species of amphibian including smooth newt *Lissotriton vulgaris*, common toad *Bufo bufo*, and common frog *Rana temporaria*. However, as the ESGT compound is located on broadleaf woodland and arable land and lacks water bodies, it is considered to be of negligible value for amphibians.

5.4.5 Given this information, there is no scope for there to be a potential impact on amphibians and therefore they have not been discussed further in this assessment.

Other Species of Conservation Importance

5.4.6 Biological records and sightings during surveys indicated the presence of a number of other notable species in the study area including hedgehog *Erinaceus europaeus*, and brown hare *Lepus europaeus*, all listed within the Suffolk and UK BAP and adopted as species of Principal Importance in England under Section 41 of the NERC Act 2006). No other BAP or NERC species were recorded during the surveys.

5.4.7 Given these listings the area is regarded as of local value for these species.

5.5 Galloper Wind Farm Ecological Mitigation Works

5.5.1 A programme of ecological mitigation works was undertaken in 2013 as part of pre-construction works for the Galloper Wind Farm onshore site. The works undertaken are described in the following paragraphs:

Bats

5.5.2 A survey in May 2013 identified 38 trees within the Sizewell Wents woodland which had potential to host roosting bats. The 38 trees were within the area identified for the construction of the Leiston B substation and thus GWFL applied for, and later received a European Protected Species Mitigation (EPSM) licence on 15th August 2013. Soft felling commenced in September 2013 in line with the methodology proposed in the bat licence Method Statement (Reference EPSO 212-5178 D) along the access track which will run through the lower section of the Sizewell Wents woodland. During the works, a further bat species, Natterer's bat M*yotis nattereri*, was identified roosting during an endoscopic inspection of a beech tree. An amendment to the licence was applied for to include this species (The Ecology Consultancy, 2013c).

5.5.3 The remainder of the trees on the access track through Sizewell Wents will be felled in February 2014, prior to the start of construction of the main GWF onshore elements. The trees will be checked for the presence of bats before they are felled, and if a bat is found, the tree will not be felled and a bat licence amendment will be applied for.

Nesting Birds

5.5.4 Habitat and protected species surveys were undertaken in 2013 during which evidence of use of the site by nesting birds was found. In March 2013, 15 bird boxes were installed in areas of retained woodland to compensate for the loss of nesting habitat associated with tree felling in Sizewell Wents. Although the area of tree felling in the woodland will be reduced if the ESGT is built in place of Leiston B, the 15 bird boxes will remain in the woodland to provide additional nesting habitat.

Reptiles

5.5.5 Following the granting of the DCO, ecological mitigation works for reptiles began at the GWF onshore site. A reptile translocation area which had been identified in the original GWF EIA was fenced off from the rest of the site and artificial hibernacula were constructed using brash and logs. The pile was sown with a wildflower seed mix and turf and moss added to ensure the habitat was suitable for reptiles. Reptile fences were put up around the perimeter of the GWF site and internal compartments were created with extra reptile fencing.

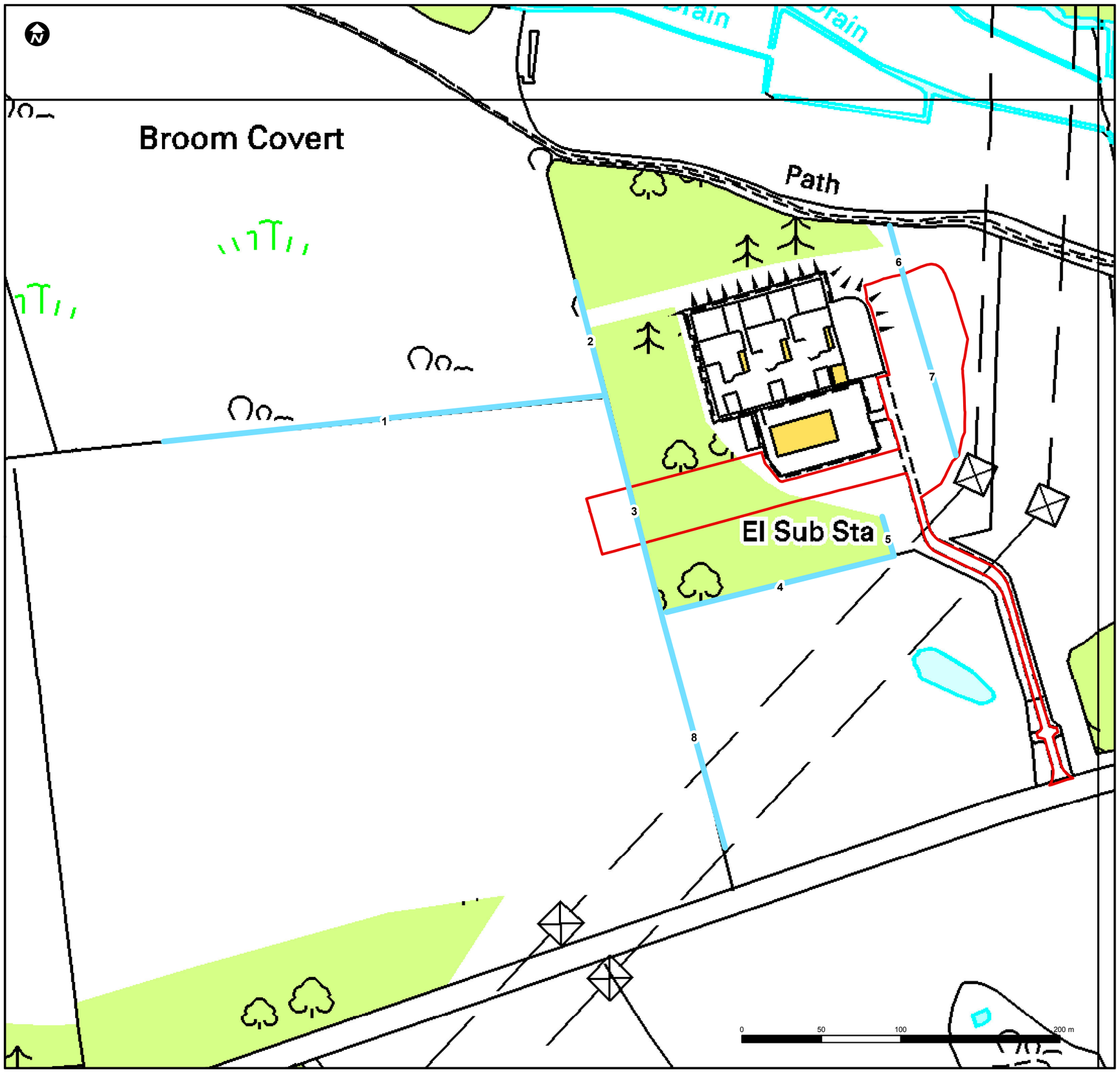
5.5.6 Following the fencing, a programme of reptile translocation began in June 2013 to trap and translocate reptiles from within the construction area to the reptile translocation area. A total of 71 visits were undertaken in total but due to the hot weather, animals were still being caught occasionally at the end of the visiting period. Some vegetation clearance was undertaken under ecological supervision in order to aid the trapping process. By mid-August, after 71 visits, it was decided that the trapping and translocation process could be considered complete. As a precaution, the fencing and artificial refugia (in this case, pieces of roofing felt) were left in situ to be checked on an ad-hoc basis until the destructive search is completed.

5.5.7 During the reptile translocation, a total of 96 individuals were caught throughout the GWF onshore site, including in the proposed ESGT area. Table 5.4 shows the number,

species and area in which each individual was caught. Figure 5.3 shows the location of the reptile trapping areas within the GWF site.

Table 5.4 Number of captures across 71 visits per location and species

Location	Species				
	Adder	Common Lizard	Grass Snake	Slow Worm	Total
1	3	18	3	35	59
2	0	0	0	3	3
3	1	1	3	5	10
4	0	3	1	2	6
5	0	1	0	0	1
6	0	0	0	2	2
7	0	5	5	4	14
8	0	1	0	0	1
Total	4	29	12	51	96



Overview map

Legend

- Reptile capture locations
- Eastern SGT redline boundary

Cartographic information

Coordinate System: British National Grid
Map Datum: OSGB1936
Background data: Reproduced from Ordnance Survey digital map data

Licence number 0100031673

Map information

Galloper Wind Farm Ltd

RWE npower renewable - Auckland House Lydiard Fields, Great Western Way, SWINDON Wiltshire, SN5 8ZT	**PROJECT** Offshore Windpark **GALLOPER WINDFARM LTD**

TITLE

FIGURE 5.3 REPTILE MITIGATION SURVEY CAPTURE LOCATIONS

DRAWN	DATE	SCALE	SIZE
RE57046	18.02.2014	1:2.500	@DIN A3

DRAWING No.	REV
GWF_1117_R1	01

Path: \\S060A0361\Maps_offshore\ProjectSpecificMaps\MajorProjects\11_UK_Galloper\06_Interconnection\02_RWE\Scoping_Report\GWF_1117_R1 - Figure 5.3 Reptile Mitigation survey capture locations.mxd

5.6 Assessments of Impacts – Worst Case Definition

5.6.1 The worst case definition for the ESGT is that the construction of the compound will lead to a loss of 0.17ha of the Sizewell Wents woodland and 0.4ha of arable land. It should be noted however that the proposed ESGT will replace the consented Leiston B substation and associated cable corridors which would have led to a loss of 1.2ha of the Sizewell Wents woodland. The underground cables required to connect the GWF compound with Leiston substation and the ESGT to Leiston substation will not require any further tree felling.

5.7 Assessment of Impacts during Construction

5.7.1 In the following section, all assessments of significance are concluded as a result of the information provided and assessments of significance reached within Chapter 23 Terrestrial Ecology of the GWF ES (2012), alongside the terrestrial ecology update provided within this Chapter, as an addendum to the GWF ES.

Habitats and Flora

5.7.2 The proposed ESGT development footprint will take up 0.4ha of arable land which is considered to be of negligible ecological value, therefore, given the small area lost to the development, the effect of habitat loss will be of **negligible significance**.

5.7.3 0.17ha of the proposed ESGT development footprint encompasses woodland. Sizewell Wents is a young plantation woodland of relatively low ecological value but still represents a habitat of local importance. The underground cable which is required to connect the GWF substation with Leiston substation run along the north of the access road through Sizewell Wents and will not require any further trees to be felled above those to be felled for the access road corridor. Only a small portion of the Sizewell Wents woodland will be directly impacted and represents an impact of no more than **negligible significance**.

5.7.4 Beyond direct habitat loss, there are no potentially significant effects requiring further consideration. There are no predicted significant impacts associated with the ESGT and therefore no mitigation is proposed. It should be noted that the ESGT is proposed to replace the consented Leiston B substation which, including the associated cable corridors, would have led to a loss of 1.7ha of mixed plantation woodland.

Reptiles

5.7.5 Vegetation clearance and destructive works associated with the construction phase will have the potential to kill or injure reptiles using these areas, which are offences under the Wildlife and Countryside Act (1981). The works have the potential to result in the permanent loss of potential feeding, basking, refuge, and hibernating areas. The ESGT access and gravelled areas of the compound have the potential to create a net increase in basking opportunities for reptiles.

5.7.6 Although the ESGT footprint area is predominantly located on arable land, areas of woodland edge associated with the footprint have the potential to be affected by the construction works.

5.7.7 The low capture rate experienced during the translocation programme (The Ecological Consultancy 2013) has demonstrated the low intrinsic value with regard to reptiles. With the habitat value of County level importance and the small extent of habitat loss, the potential impact on reptiles is predicted to be no more than a **minor adverse impact.**

Mitigation and residual impacts

5.7.8 Mitigation will be employed during the construction phase of the main GWF onshore site, in line with plans already agreed with the local authority. The planned mitigation measures will also provide mitigation for the ESGT, due to the close proximity of the areas. Agreed mitigation includes the following:

- Further habitat improvements (to improve the reptile carrying capacity) will be undertaken at the identified reptile receptor site, including creating wood piles to provide reptile refugia and improving habitat connectivity between the receptor site and Sizewell Wents

5.7.9 In addition, the following best practice measures will be implemented to ensure the potential impacts on reptiles is minimised:

- All works on site that could potentially cause harm to reptiles (e.g. installation and removal of exclusion fencing and habitat manipulation) will be supervised by a suitably qualified ecologist (a watching brief).
- The ESGT area will be checked for reptiles and a programme of translocation carried out if necessary, prior to the commencement of works.

Bats

Direct disturbance to roosting bats

5.7.10 None of the bat roosts identified from the extensive survey effort are located within the proposed ESGT development footprint, therefore the ESGT project will not result in direct impacts to bats.

Indirect disturbance to bats

5.7.11 The works will lead to the permanent loss of 0.17ha of woodland within Sizewell Wents. As Sizewell Wents woodland is situated within arable land on the outskirts of the larger Sizewell Estate, there is limited connectivity between wider bat habitats. Works conducted outside of daylight hours have the potential to indirectly disturb or displace bats through the use of lights, noise and general site presence. There is however, an abundance of optimal bat foraging and commuting habitat within the wider area.

5.7.12 Given the limited potential for disturbance to key commuting/foraging corridors, even though the bat assemblage in and around the ESGT compound is of national value, the predicted significance of impact is considered to be no more than **negligible**.

Mitigation and residual impacts

5.7.13 Mitigation, to ensure that the construction activities do not contravene wildlife protection laws, has been employed into the area of the main GWF onshore site including the

installation of bat boxes, and soft felling of trees under supervision. Mitigation which has been agreed for the overall GWF onshore site includes;

- Tree planting which, after maturing, will offer alternative suitable habitat;
- Bat boxes will be introduced in to the retained woodland to increase the potential for the area to support roosting bats in the future;
- Lighting used will be sensitive towards foraging and commuting bats.

5.7.14 Given the mitigation already employed residual impacts for indirect disturbance is predicted to be of **negligible significance**.

Nesting Birds

5.7.15 Nesting birds may experience both direct impacts from a loss of habitat and indirect impacts associated with disturbance during the construction works.

5.7.16 Given that the ESGT development footprint includes suitable nesting habitat, there is the possibility of damaging an active nest site during construction, such as with vegetation clearance. This represents an impact of low magnitude and a **negligible impact** is predicted in the absence of mitigation.

5.7.17 The potential effects of disturbance during construction work are in most instances short-term; however any disturbance to nesting birds as a result of construction activities would represent an impact of medium magnitude due to the low bird population in the immediate area. Given that the study area is considered to be of local sensitivity for breeding birds, an impact of **minor significance** is predicted in the absence of mitigation.

Mitigation and residual impact

5.7.18 Mitigation to be adopted during the construction, which will extend to cover activities related to ESGT compound works, includes;

- Vegetation clearance, including tree felling, where possible will be undertaken outside of breeding season;
- Measures taken to discourage nesting within the area and prevent nesting within felled/cleared vegetation;
- All trees to be cleared will be checked for the presence of breeding birds immediately before clearance and if a nest is found, the tree will not be felled and a buffer zone will be implemented and maintained until the birds have fledged;
- All clearance works will be undertaken under the supervision of an ecologist;
- Best practice noise control and management measures such as those set out in the Construction Code of Practice (see Appendix 3.1) to be implemented;
- Lighting will be sensitive towards nesting birds; and
- Bird boxes have been installed on retained trees within Sizewell Wents.

5.7.19 With the outlined mitigation in place and the temporary and localised habitat losses will result in impacts of **negligible residual significance**.

5.8 Assessment of Impacts during Operation

5.8.1 There will be limited operational disturbance as a result of human presence as for the majority of operational time, the ESGT will be unmanned. The electrical cables required to connect the ESGT to Leiston substation and Leiston substation to the GWF compound will be underground and therefore will have no operational impact on terrestrial ecology. An overall **negligible impact** is anticipated upon receptors.

5.8.2 As the site will be unmanned, there is no need for permanent lighting of the ESGT compound or plant. Lighting will only be used when the ESGT is undergoing maintenance. Without mitigation, lighting has the potential to disturb the terrestrial species considered in this chapter.

5.8.3 There are unlikely to be any other additional operational impacts on terrestrial ecology once the ESGT is installed.

5.8.4 There may be limited disturbance associated with the operational noise of the substation, however this is expected to be below levels expected to disturb any species identified on site.

5.8.5 Overall the anticipated significance of impact during the operational phase is **negligible**.

Mitigation and Residual Impact

5.8.6 Lighting provisions will be sensitive towards terrestrial species, mirroring commitments made within the construction mitigation proposed for the already consented Leiston B substation. This mitigation combined with the sporadic need for site maintenance, an overall **negligible impact** is anticipated.

5.8.7 With the outlined mitigation in place, the operational phase of the ESGT is expected to result in **negligible impacts**.

5.9 Assessment of Impacts during Decommissioning

5.9.1 When GWF is decommissioned it will adhere to any future or modified legislation relevant at that time.

5.9.2 The demolition of the ESGT will lead to temporary disturbance, of at worse a similar scale and magnitude to that of the construction phase, albeit without the removal or earthworks. As such the relevant impacts in the construction section of this assessment should be referred to along with any proposed mitigation.

5.9.3 Given the temporary disturbance associated with demolition works a **negligible effect** on terrestrial ecology is anticipated following mitigation.

5.10 Inter-relationships

5.10.1 Inter-relationships which are considered relevant to terrestrial ecology include noise.

Noise

5.10.2 Construction noise is expected to arise during the construction phase and will represent a temporary disturbance for birds and could result in some short-term displacement of birds closest to the works. The potential effects of disturbance during the construction work are short-term; however, any disturbance to nesting birds as a result of construction activities would represent an impact of high magnitude. The study area is considered to be of local value to nesting birds and a temporary **minor adverse** impact is anticipated in the absence of mitigation.

5.10.3 The ESGT will contain one super grid transformer (SGT) while the consented Leiston B substation (which the ESGT will replace) was going to contain two SGTs. The second SGT will now be housed within the existing GGOWF substation building. Therefore, the ESGT will result in an overall reduction in noise on the overall GWF site because it will contain less plant. The potential impact of noise on terrestrial ecology is therefore expected to reduce in comparison to the consented GWF project.

Mitigation and residual impacts

5.10.4 A range of mitigation measures will be employed during the construction phase of the development. These will include those listed in within the Construction Code of Practice (appendix 3.1) for GWF, which is expected to be applied to the ESGT.

5.10.5 Implementation of the noise control measures outlined in Chapter 6 will ensure that construction related noise is maintained below the accepted 65dB threshold. However, there will still be the potential for the short-term displacement of birds closest to the works. As such minor adverse residual impact remains.

5.10.6 During the operational phase, there may be limited disturbance associated with the operational noise of the ESGT, however the compound will contain less plant than the consented Leiston B substation and therefore the noise levels will be lower. The potential noise impacts arising from decommissioning are expected to be of similar magnitude to those predicted during the construction phase.

5.11 Cumulative Impacts

5.11.1 The impacts identified during the construction of the ESGT that have the potential to result in cumulative effects comprise:

Construction

5.11.2 The construction of the ESGT will take place at the same time as the construction of the GWF onshore site. The GWF ES states that the following cumulative effects may arise from during the construction period:

- Damage and disturbance to designated habitats and associated species within Sizewell Marshes SSSI and Suffolk Shingle Beaches CWS
- Damage and loss of BAP habitats of conservation importance
- Temporary and permanent disturbance/loss to area of optimal reptile habitat
- Disturbance to key bat commuting/foraging corridors
- Damage or disturbance to nesting bird species
- Disturbance to badge foraging habitat and low probability of disturbing any active sets
- Temporary and permanent loss of small areas of suitable terrestrial invertebrate habitat; and
- Potential harm to hibernating hedgehogs

5.11.3 It is expected that the ESGT construction period may have the following effects:

- Permanent disturbance/loss of areas of optimal reptile habitat
- Damage or disturbance to nesting bird species

5.11.4 The impact of the above effects is expected to be **minor** for the ESGT and mitigation measures will be put in place which is expected to reduce the potential impact further.

Operation

5.11.5 No impacts with effects above negligible are anticipated for the operational phase of the ESGT. The GWF ES did not predict any operational impacts above negligible for the

GWF site, therefore no cumulative impacts are predicted to arise from the operation of both the ESGT and the rest of the GWF onshore site.

Decommissioning

5.11.6 It is likely that the ESGT and the rest of the GWF compound would be decommissioned at the same time when the operational lifetime of GWF comes to an end. Assessments of the potential impacts during decommissioning arising from both the ESGT and the GWF onshore site predicted impacts of negligible significance. It is expected that the ESGT decommissioning period may have the following effects:

- Permanent disturbance/loss of areas of optimal reptile habitat
- Damage or disturbance to nesting bird species

5.12 Monitoring

5.12.1 Due to the predicted absence of a significant impact of the ESGT on terrestrial ecology, no specific monitoring or mitigation is proposed.

5.12.2 A long term landscape maintenance and management plan has been agreed as part of the mitigation plan for the GWF onshore site. The plan will be implemented to ensure the successful establishment of any new planting associated with the new landform. The management of the woodland will include measures to maintain diversity of flora (e.g. control of sycamore regeneration and selective thinning to encourage a diverse ground flora). Although the landscape maintenance and management plan has been designed to mitigate for the GWF onshore site, the establishment of new planting will benefit the whole onshore site, including the proposed ESGT area.

5.12.3 The ESGT construction project will be subject to the same site management controls as the main GWF onshore site, as set out in the Construction Code of Practice. Section 9 of the Construction Code of Practice (Appendix 3.1) sets out the control measures which relate to terrestrial ecology.

5.12.4 No other monitoring is proposed for terrestrial ecology.

5.13 Summary

5.13.1 Table 5.5 provides a summary of the predicted impacts associated with the construction, operation and decommissioning of the ESGT upon the terrestrial ecology resource.

Table 5.5 Summary of impacts upon terrestrial ecology

Description of Impact	Impact	Potential Mitigation Measures	Residual Impact
Construction Phase			
Habitats and flora	Negligible	No specific mitigation measures are proposed in the absence of significant impact	n/a
Reptiles (woodland edge within the ESGT footprint)	Minor adverse	All works on site that could potentially cause harm to reptiles (e.g. installation and removal of exclusion fencing and habitat manipulation) will be supervised by a suitably qualified ecologist (a watching brief). The ESGT area will be checked for reptiles and a programme of translocation carried out if necessary, prior to the commencement of works.	Negligible
Bats (bat roosting)	No impact	N/A	N/A
Bats (indirect disturbance)	Negligible	Mitigation measures agreed for GWF: • Bat boxes will be introduced in to the retained woodland to increase the potential for the area to support roosting bats in the future. • Lighting used will be sensitive towards foraging and commuting bats. • Tree planting which, after maturing, will offer alternative suitable habitat;	Negligible
Nesting Birds	Minor adverse	• Vegetation clearance, including tree felling, will avoid the breeding season. • Measures will be taken to discourage nesting within the affected area • All clearance works will be undertaken under the supervision of an ecologist; • Best practice noise control and management measures such as those set out in the Construction Code of Practice (see Appendix A3.1) to be implemented; • Lighting will be sensitive towards nesting birds; and • Bird boxes have been installed on retained trees within Sizewell Wents.	Negligible
Other species of Conservation Importance	Negligible	No specific mitigation measures proposed in the absence of significant impact	No effect
Operational Phase			
Operational Impacts	Negligible	Lighting provision to be sensitive towards ecological receptors. Site personnel to be briefed on appropriate conduct when on site.	Negligible
Decommissioning Phase			
Decommissioning Impacts	As per construction	As per construction.	As per construction

5.13.2 The unmitigated impacts identified for the ESGT Project comprise minor adverse to negligible impacts during construction and decommissioning, although these are expected to be lesser effects than those assessed for the already consented Leiston B substation.

5.13.3 As a result of the change in location, size and extent of the development, a smaller area of ecologically important habitat would be removed during the ESGT construction in comparison to the consented Leiston B substation. Therefore the resultant direct impact and indirect disturbance to terrestrial ecology receptors will be of a lesser extent. It has been identified that there will be **no significant terrestrial ecology impacts** associated with other potential development in the area. Therefore, there are **no anticipated cumulative impacts**.

5.14 References

British Trust for Ornithology (2006) The Potential Effects on Birds arising from the Onshore Infrastructure of the Proposed Greater Gabbard Offshore Wind Farm. September 2006.

Centre for Marine and Coastal Studies (2005) Characterisation of Intertidal and Terrestrial Ecology in Relation to Onshore Works for the Proposed Greater Gabbard Offshore Wind Farm Development.

Department of Energy and Climate Change (2011a) Overarching National Policy Statement for Energy (EN-1)

Department of Energy and Climate Change (2011b) National Policy Statement for Electricity Network Infrastructure (EN-5)

The Ecology Consultancy (2010) Ecological Survey for Galloper Wind Farm Survey.

The Ecology Consultancy (2011) Galloper Wind Farm. Ecological Surveys 2011.

The Ecology Consultancy (2012) Galloper Wind Farm Reptile Mitigation Strategy. Unpublished report for Galloper Wind Farm Ltd.

The Ecology Consultancy (2013a). Galloper Wind Farm, Bat licence application – Method statement. Unpublished licence application to Natural England.

The Ecology Consultancy (2013b). Galloper Wind Farm, Pre-construction protected species report. Unpublished report for Galloper Wind Farm Ltd.

The Ecology Consultancy (2013c) Galloper Wind Farm. Protected Species Mitigation Report. Unpublished report for Galloper Wind Farm Ltd.

ESL (Ecological Services) Ltd (2006) Ecological Baseline Surveys of Land at Sizewell Wents, Suffolk.

ESL (Ecological Services) Ltd (2007a) Exclusion and Relocation of Reptiles from Land at Sizewell Wents Suffolk Close Out Report.

ESL (Ecological Services) Ltd (2007b) Pre Works Bat Surveys in Association with the Greater Gabbard Offshore Wind Farm Ltd (GGOWL) Development at Sizewell Wents, Suffolk. Close Out Report.

ESL (Ecological Services) Ltd (2008) Sizewell Wents Breeding Bird Check.

GWFL (2012) Galloper Wind Farm Environmental Statement.

GGOWL (2005) GGOWF Environmental Statement.

GGOWL (2006) GGOWF Sizewell Wents Onshore ES.

Institute of Ecology and Environmental Management (2006) Guidelines for Ecological Impact Assessment in the United Kingdom.

JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). 2012. UK Post-2010 Biodiversity Framework.