

## Chapter 12: Habitats and wildlife

### Introduction

- 12.1 Birds were dealt with as a primary issue in chapter 6 of this environmental statement. This chapter addresses the remaining habitat and wildlife topics, including vegetation types, plants, mammals, reptiles and invertebrates as relevant to the site and the proposals. Scoping suggested that this was a secondary issue.
- 12.2 In undertaking the assessment in this chapter, reference was made back to the Birds chapter to ensure any ecological interrelationships were recognised.
- 12.3 Jonathan Cox Associates undertook some preliminary habitat survey work in 2004, and made some incidental wildlife records during bird survey work at that time. The study area was slightly larger than shown in the current application, with a detached, additional parcel of land to the south-east of the current site and east of Shalcombe. More recently, Terence O'Rourke was assisted in completing and updating the field survey work by Ecosa: the surveys were carried out by qualified and experienced surveyors in optimum conditions in the recommended seasons during 2005 and 2006. Further details are in the Habitats and wildlife technical appendix.
- 12.4 For clarity, scientific names of species are omitted from this text, but a list may be found for reference in the Habitats and wildlife technical appendix that accompanies this environmental statement.
- 12.5 The main sources of data and references for this chapter are listed in table 12.1.

English Nature website: <a href="http://www.english-nature.org.uk">www.english-nature.org.uk</a>
JNCC website: <a href="http://www.jncc.gov.uk">www.jncc.gov.uk</a>
<a href="http://www.magic.gov.uk">www.magic.gov.uk</a>
Isle of Wight Council website: <a href="http://www.iwight.com/living%5Fhere/planning/Countryside/Ecology/">www.iwight.com/living%5Fhere/planning/Countryside/Ecology/</a>
UK BAP website: <a href="http://www.ukbap.org.uk/lbap.aspx?ID=452-4">www.ukbap.org.uk/lbap.aspx?ID=452-4</a>
Isle of Wight Biodiversity Action Plan Steering Group, July 2000. <i>Wildlife of the Isle of Wight – an audit and assessment of its biodiversity</i> .
Isle of Wight Bat Group records
Walsh, A.L and Harris S. (1996) Foraging habitat preferences of vespertilionid bats in Britain. <i>Journal of Applied Ecology</i> . Vol 33. No 3 pp508
Walsh, A.L and Harris S. (1996) Factors determining the abundance of vespertilionid bats in Britain: geographical, land class and local habitat relationships. <i>Journal of Applied Ecology</i> . Vol 33. No 3 pp519
Anon (2004) <i>Relationships between bats and wind turbines in Pennsylvania and West Virginia: An assessment of fatality search protocols, patterns of fatality, and behavioural interactions with wind turbines</i> . Bats and Wind Energy Cooperative.
Anon (2004) <i>Wind turbine interactions with birds and bats: a summary of research results and remaining questions</i> . Fact sheet: Second Edition. National Wind Coordinating Committee.
Johnson, G., Erickson, W., White, J & McKinney, R (2003) <i>Avian and bat mortality during the first year of operation at the Klondike Phase 1 wind project</i> , Sherman County, Oregon. Western Ecosystems Technology Inc. Wyoming.
<b>Table 12.1: references and sources of information</b>

## Methodology

### Baseline

- 12.6 Two related strands of survey work have been carried out to establish the baseline conditions at the site of the proposed wind farm:
- a desktop survey and consultation to collate existing available information
  - field surveys to identify and describe the range of habitats and species found on the site and in the area.

### *Desktop survey*

- 12.7 Details of the statutory and non-statutory designations in the area were obtained from English Nature, the IoWC and the English Nature, JNCC and Magic websites (table 12.1). Information on biodiversity action plan habitats and species was obtained from the Isle of Wight Council and the UK BAP website.

### *Field surveys*

- 12.8 A preliminary site visit, feedback from the two scoping exercises and the information from the desktop study were used to identify the detailed ecological studies required at the site by:
- highlighting gaps in the available ecological information where additional surveys were needed to provide a complete picture
  - identifying the limitations of available information where further surveys were required to enable an assessment to be undertaken using up-to-date and accurate information.

### *Habitat survey*

- 12.9 Phase 1 habitat surveys were undertaken in July 2004 and again in May 2006. The site was walked and all habitats mapped according to the standard methodology adopted for phase 1 habitats surveys, devised and recommended by the Nature Conservancy Council, now English Nature. The results of these surveys suggested that no detailed vegetation surveys were necessary as none of the vegetation types affected by the proposals were of botanical or conservation interest.

### *Newt survey*

- 12.10 The possibility of the protected great crested newt being present on the site was raised during scoping consultations. There were also reports that palmate newts had been recorded in Prospect Quarry SSSI nearby. Pond surveys were therefore carried out in the spring of 2006, with specific attention given to newts. A standard methodology was adopted, with four visits between March and May. Egg strips, eggs search in suitable vegetation, torch search and netting were all carried out.
- 12.11 Two ponds have been surveyed in detail, one near to the centre of the site, to the east of Hummet Copse (pond 1), and the other in the extreme south-east corner of

the site (pond 2). Newt searches were also made of the old wheel-wash in Prospect Quarry (off-site).

*Red squirrel and dormouse survey*

- 12.12 Red squirrel and dormouse are both protected species with a stronghold on the Isle of Wight. Surveys were carried out in March and April 2006 for signs of dormouse and red squirrel activity on site. While not the ideal time, it is considered acceptable for such surveys. Woodland, hedgerow and scrub habitats were evaluated for suitability, and searches were made for signs such as gnawed hazel nuts and nests.

*Badger survey*

- 12.13 A full walkover survey of the site and its immediate surrounds took place in early spring 2006 to check for signs of badger activity such as paths, latrines, feeding signs and setts.

*Bat survey*

- 12.14 Bats are fully protected by domestic and European law, and their potential presence in the area was raised during scoping. However, much of the site itself was considered poor quality habitat for them. A study was undertaken through desk top information gathering and field habitat surveys to assess any potential risk to bats.
- 12.15 Full details of the study and references are provided in the Habitats and Wildlife Technical Appendix, together with more details of the ecology of the species found in the area.
- 12.16 The field survey was undertaken on the afternoon of 13th March 2006 to evaluate the suitability of the site to support feeding and roosting bats. There are no buildings in the survey area, but mature trees were evaluated for their suitability to support roosting bats. The survey was undertaken during the winter to ensure that any suitable cracks and crevices in trees would be located.

**Assessment of significance**

- 12.17 The significance of potential effects has been determined using criteria developed from best practice techniques and expert knowledge. Significance has been derived from two measures: sensitivity of receptors (figure 12.1) and the magnitude of change (figure 12.2).
- 12.18 There are no known published ‘standard’ criteria for determining the significance of effects on habitat and wildlife interests, although the Institute for Ecology and Environmental Management (IEEM) is currently in the process of developing guidelines that will assist the standardisation of ecological impact assessment. In determining whether an effect on a receptor is significant, reference has therefore been made to a wide range of criteria relating to species and communities such as productivity, growth, competitive ability and reproduction. Feeding the two sets of criteria (magnitude and sensitivity) into the significance matrix generates the generic definitions of the significance of potential effects as set out in figure 12.3.

- 12.19 Nature conservation designations are not considered an ecological receptor in their own right, but highlight the importance of individual species or ecosystems, both of which can be a receptor. An assessment of the implications of the scheme for any relevant designations is therefore given at the end of the assessment, when it is clear how the scheme will affect the ecological receptors that the designations have been established to recognise and protect.

## **Baseline**

### **Introduction**

- 12.20 The Isle of Wight has an unusually rich and complex variety of habitats and species. Approximately 11% of the land is notified as various sites of special scientific interest, (43 in total) and many of these are also covered by European level of conservation protection as special protection areas or special areas of conservation. There is also an extensive list of more than 300 non-statutory sites of more local importance for nature conservation, known as sites of importance for nature conservation. The Island supports some 54 species of national nature conservation priority, and a further 180 of importance at the national scale.
- 12.21 The baseline section aims to describe the site in the context of this rich local variety of habitats and wildlife, and to evaluate the importance of the features found at the site.

### **Desktop survey and evaluation**

- 12.22 Very little existing information about habitats and wildlife at the site was found. This was not considered particularly unusual given the arable and therefore rather unpromising nature of the site for wildlife. Most recorded field data is gathered by amateur naturalists, who tend to concentrate on what are perceived to be the more interesting habitats such as the coastal cliffs, estuaries, downlands and woodland. Some anecdotal reports of brown hare at the site suggested this species should be targeted for survey, and some information about the neighbouring Prospect Quarry was obtained from the English Nature citation.
- 12.23 The principal interest of Prospect Quarry is geological, though it is also of importance because of the fragments of limestone grassland on the quarry floor and a small calcareous pond that supports palmate newts. The full citation is included in the technical appendix.
- 12.24 The desktop survey also included a collation and analysis of the current state and disposition of areas of interest under the national and local Biodiversity Action Plans, and areas designated for their conservation interest, in relation to the site.

### ***Biodiversity Action Plan***

- 12.25 Following guidance from the UK Steering Group, the Isle of Wight BAP Steering Group has conducted an audit of the Island's biodiversity, and is preparing a biodiversity action plan. So far, detailed action plans have been produced for

species such as red squirrel and Glanville fritillary, and for the habitats listed on table 12.2.

<i>Local habitats</i>	<i>Priority habitats</i>
Farmland	Coastal and floodplain grazing marsh
Freshwater systems and wetlands	Coastal saltmarsh
Woodland	Coastal sand dunes
	Lowland calcareous grassland
	Lowland dry acid grassland
	Lowland heathland
	Lowland meadows
	Lowland wood-pasture and parkland
	Maritime cliff and slopes
	Mudflats
	Saline lagoons
	Seagrass beds

**Table 12.2: BAP habitats**

12.26 Of the habitat types listed in the Island BAP, the following are found on the site and have been considered as part of the assessment. The remaining types are distant and not considered vulnerable to impact.

*Semi-natural broadleaved woodland*

12.27 Several small semi-natural copses occur around the site, and Hummet Copse lies within it. Such woodlands on the Island can support a rich variety of groundflora, and notable animals such as red squirrel, dormouse, various bat species, nightingale, and the pearl-bordered fritillary butterfly.

*Farmland*

12.28 Much of the site is in arable production. The BAP defines this habitat type as ‘land under cultivation, set-aside or temporary grassland, tilled at least once every five years.’ The phase 1 habitat map shows the extent of such habitats across the site. Arable land is not generally of high nature conservation significance, but the BAP notes that rare annual plants can still be found on headland areas, and also that the habitat may be important for some ground nesting birds. Surrounding hedgerows and other margins may also be rich in invertebrates and other wildlife. Cereal field margins are therefore a priority habitat in the BAP. Key species include small-flowered catchfly, cornflower, brown hare, skylark, grey partridge, corn bunting and turtle dove.

*Statutory designated areas*

12.29 The desktop study identified a number of statutory and non-statutory sites of nature conservation importance in the general area of the wind farm site. The statutory sites are shown on figure 12.4 and listed on table 12.3.

*Non-statutory listed areas*

12.30 The Register of Sites of Importance for Nature Conservation maintained by the Isle of Wight Council shows that one site, Hummet Copse, lies within the study area and close to the proposed development. This is a small (1.52 hectare) copse

of Monterey pine, ash, beech, sycamore and elm, with a hazel, blackthorn and hawthorn understorey. It may have ancient origins. The Register citation is included in the technical appendix.

Designation	Name
SSSI	Prospect Quarry
	Compton Down
	Yar Estuary
	Bouldor & Hamstead Cliffs
	Newtown Harbour
	Cranmore
	Compton Chine to Steephill Cove
	Mottistone Down
	Freshwater Marshes
	Calbourne Down
	North Park Copse
	Headon Warren & West High Down
	Colwell Bay
	Rowridge Valley
	Locks Farm Meadow
Lacey's Farm Quarry	
Special Protection Area	Solent & Southampton Water
Ramsar Site	Solent & Southampton Water
Special Area of Conservation	Isle of Wight Downs
	Solent Maritime

**Table 12.3: statutory nature conservation sites locally**

### *Evaluation and analysis*

- 12.31 Of these designated areas, only one (Hummet Copse SINC) is located within the site. With very minor land take, no sensitive areas along the access route, little or no impact on hydrology (see chapter 14) and no significant emissions, the construction and operation of a wind farm are not considered to have any potential to directly affect the interest of any of the other designated or listed sites. The nearest SSSI, Compton Down is more than 700 metres from the study area, and some 1.5 kilometres from the nearest turbine. Direct effects on these sites are therefore not considered further.
- 12.32 However, many of the sites support mobile species that could also use or cross the development site. Some may be vulnerable to harm or disturbance through the construction or operation of the wind farm, so further analysis is necessary.
- 12.33 The statutory sites in the area are principally designated for their downland or coastal interests. In the case of downlands, the citations note important flora and invertebrates, none of which are mobile and vulnerable to the wind farm proposals at the distances involved. The English Nature citations for Mottistone Down and Compton Down SSSIs are included in the technical appendix as the nearest relevant examples, along with information on the corresponding Isle of Wight Downs SAC.

- 12.34 The coastal sites cover a variety of interests including geological exposures, cliff, saltmarsh and estuarine habitats and vegetation, and the invertebrates and birds that these support. Between them, local estuarine sites support internationally important flocks of waterfowl. The English Nature citations for the Newtown Harbour, Bouldner & Hampstead Cliff and Yar Estuary SSSIs are included in the technical appendix as the nearest examples, along with information on the Solent Maritime SAC. Only one type of these interest features could potentially be affected by the proposals, the others being sedentary and too distant from the site. Birds based in the coastal areas could also use the proposed development site at certain times, and this is covered in detail in chapter 6 of this ES as a primary issue.
- 12.35 Only one issue relating to a species from a designated site therefore needs to be covered in this assessment. Palmate newts breeding in Prospect Quarry SSSI could potentially use terrestrial habitat on the site at other times of year and this has been investigated through the survey process.

### **Field surveys**

#### ***Phase I habitat survey***

- 12.36 Figure 12.5 shows the habitats as mapped in 2006. Most of the 300 hectares (approximately) of the survey area are arable, with very few field boundaries. Although some of the arable land is in set-aside, the phase 1 habitat classifications do not differentiate between productive and non-productive arable parcels of land. The disused Prospect Quarry is adjacent to the southern boundary of the site. The following sections briefly outline the habitats present within the site boundary and in Prospect Quarry.

#### *Arable land*

- 12.37 The arable land use varies from year to year, but is usually mostly cereal crops, with some oilseed rape and rotational set-aside.

#### *Hedgerows*

- 12.38 The site has very few hedgerows, with the main examples being those located along the edge of the bridleway running from Wellow. They are species-poor, but largely intact, dominated by blackthorn, with some ivy, elder, hawthorn and holly. Some of the site boundaries are marked by defunct, species-poor hedgerows. The hedgerow to the northern end of the western boundary (by Stoneovers) has a richer species diversity and is largely intact.

#### *Semi-natural broad-leaved woodland*

- 12.39 Five areas (approximately 2.8 hectares) of semi-natural broad-leaved woodland are present within the survey area, all of which are dominated by ash with some pedunculate oak. Ivy dominates much of the ground layer of these copses.

#### *Ruderal vegetation*

- 12.40 The land beside the bridleway that crosses the land from Wellow is predominantly tall ruderal vegetation and rough grassland. Coarse grasses dominate the area, with common nettle along the edges of the ditch. Barer ground within this area supports broad-leaved plantain. Other species present include field scabious,

black knapweed, field bindweed, scentless mayweed, smooth and perennial sow thistles.

#### *Running water*

- 12.41 Several small streams run from the centre of the site to the northern boundary. They tend to be of relatively poor quality as they receive any run-off from the arable fields.

#### *Road verges*

- 12.42 The northern road boundary comprises of a bank between 0.5 metres and 2 metres above the road surface. The western site boundary consists of a 2 metre high bank in the north corner, gradually reducing in height to less than 0.5 metres, 300 metres to the south. Vegetation on the roadside of the banks is regularly mowed, with the top left unmanaged. Species present include common nettle, cleavers, cow parsley and dandelion.

#### *Prospect Quarry*

- 12.43 Prospect Quarry is notified as a site of special scientific interest for its geology and calcareous grasslands. A small pool is present within the base of the quarry, and the exposed faces and internal floor of the quarry are devoid of vegetation. Areas of former bare ground around the quarry are in the early stages of succession, with typical pioneering and chalk downland species such as restharrow and kidney vetch. The small banks to the edge of the grassland are dominated by perennial sow-thistle with occasional spear thistle.

- 12.44 Small areas of more established semi-improved grassland surround the Quarry, with common species such as perennial rye-grass, smooth meadow grass, annual meadow grass, field foxtail, cocks-foot, Yorkshire fog, white clover, broad-leaved dock, curled dock and ragwort. Beyond this there is also a small area of scattered scrub on the east side of the quarry, with a further small area of continuous scrub in its south-eastern corner.

#### *Species surveys*

##### *Brown hare*

- 12.45 Brown hare is not a protected or rare species, but is included in the national and local Biodiversity Action Plans. No systematic surveys were carried out but notes were made when hares were seen during the bird and other wildlife surveys on and around the site.
- 12.46 Table 12.4 sets out the numbers of hare recorded during the bird surveys of 2003/2004, while figure 12.6 shows their locations.
- 12.47 It was notable that brown hare records in early spring were mostly in the southern parts of the study area (around Shalcombe). Later in the spring the emphasis shifted towards the woodlands (and especially Hummet Copse) and the parts of the site that were set aside. Numbers were higher in the winter with approximately 30 hare being seen across the site on each visit.



Survey visit	Date	Number of hare
AS	10 April 2003	12
BS	17 April 2003	5
CS	23 April 2003	4
DS	30 April 2003	9
ES*	5 May 2003	5
FS	9 May 2003	16
GS	19 May 2003	1
HS	29 May 2003	5
IS*	2 June 2003	2
JS	6 and 7 June 2003	4
KS	13 June 2003	9
LS	21 June 2003	10
AW	18 November 2003	10
BW	8 December 2003	13
CW	20 January 2004	34
DW	19 February 2004	31
EW	3 March 2004	32
FW	26 March 2004	30

**Table 12.4: brown hare sightings during the 2003/2004 bird surveys**

\*Visits ES and IS were only 1 hour long. All other surveys of comparable time (6 hours approximately)

#### *Newt survey*

- 12.48 The pond to the east of Hummet Copse (pond 1) is generally shallow but the northern area dips to approximately 45cm deep. It is fed by a trickling stream entering from the west. The water is clear but some silt is brought in by the stream. Marginal species include yellow iris but much of the pond is dominated by creeping bent. There are numerous rabbit holes around the bank that could provide suitable hibernacula for any amphibians present. The banks were dominated by stinging nettle with scattered bramble and willow, the latter forming a 25% canopy over the pond. The surveys found smooth newt and common frog in this pond.
- 12.49 Habitat linkage was generally good although the site is surrounded by arable fields, habitat that is generally of lower suitability for amphibians. A strip of rough grassland links the pond to Hummet Copse and to another copse to the south-east.
- 12.50 The banks of the south-eastern pond 2 are largely clear of vegetation. Marginal vegetation consists of hemlock water-dropwort and great willowherb with much brooklime, yellow iris and creeping bent in the shallows. The pond appears to be moderately deep and there are fairly extensive silty margins. Up to 6 mallard were present on the pond at the time of the survey creating some disturbance. Common frog and smooth newt were present.

- 12.51 No evidence of great crested newt was found in either of the ponds on the site during any of the site visits. The pool in Prospect Quarry held a population of palmate newt, confirming the desktop study findings.

*Red squirrel and dormouse surveys*

Hummet Copse

- 12.52 Hummet Copse is a pedunculate oak and ash dominated woodland. Ivy dominates the ground layer and extends into the canopy. The understorey contains hawthorn, elder and hazel is considered a little too sparse for dormouse. The copse is isolated, preventing any movement of dormouse, although red squirrel may be able to reach the copse across more open ground.

- 12.53 Few hazel nuts were found, possibly indicating that there has been little fruiting in the copse in recent years. The few acorns found appeared to have been opened by jay or wood mouse and there was no evidence of red squirrel. However, it was extremely difficult to locate either acorns or hazel due to the dense cover of ivy on the field layer and in total only 12 hazelnut and 24 acorns were located during a 1 hour search.

Copse 1

- 12.54 This copse is approximately 250 metres east of Hummet Copse and is generally of similar character, being a pedunculate oak and ash dominated stand with abundant ivy on both the ground and in the canopy. However, there is a higher density of hazel, particularly along the western edge. Many of these hazel had catkins at the time of the survey and in total 53 hazelnuts were found although again many may have been missed due to the dense cover of ivy on the ground floor. Of these at least two had been opened by red squirrel, whilst 21 showed evidence of consumption by wood mouse and nine by bank vole. Many of the others showed signs of some gnawing but had not been fully opened. Of the 38 acorns found, all appeared to have been opened by jay or wood mouse.

- 12.55 A hedge extends 150 metres south from copse 1 to copse 2, and contains much hazel and hawthorn. The hedge is more or less continuous, although there is a significant gap in the middle that is almost filled by bramble, and in the summer the gap would be completely closed by great horsetail, great willowherb and stinging nettle as was indicated by dead stalks. This growth of herbaceous species would allow movement of dormouse between copse 1 and copse 2, if present.

Copse 2

- 12.56 This small copse is similar in character to copse 1 but there is very little hazel. Only five nuts and 11 acorns were found, all of which had been consumed by wood mouse.

- 12.57 The hedge running another 150 metres south from copse 2 to copse 3 is dominated by willow. There is a significant break at the southern end of this hedge but this break is filled by stinging nettle, great willowherb and great horsetail in the summer providing an adequate dispersal route for any dormice.

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Copse 3

- 12.58 This is again similar in character to Hummet Copse. In the north-west of the copse, and to a lesser extent along its western edge, is a moderate amount of hazel, which shows evidence of past coppicing. A significant number of hazel nuts were found in this area. Of 52 nuts found most showed some evidence of having been gnawed by wood mouse or bank vole, but a single nut was found that showed the distinctive feeding remains left by dormouse. This nut was located in the north-west corner of the copse. In addition, 3 nuts were found that had been opened by red squirrel. 43 acorns were found, all of which appeared to have been opened by jay or wood mouse.
- 12.59 The hedge extending to the south of this copse contains scattered willow and hawthorn. Much of the hedge is defunct but stands of great willowherb, great horsetail and stinging nettle and a strip of MG1 grassland may form a summer link to the block of scrub to the south.

Scrub

- 12.60 The patch of scrub to the south of copse 3 is a dense willow and ivy dominated stand. No hazel was found to be present and this area was not surveyed in detail.

*Badger survey*

- 12.61 Four badger setts were noted in the general area during a survey in March 2006. (Due to the sensitivity of the data and mapping, this is not set out in detail here, but is available to *bona fide* consultees on request.) These include an extensive and obviously well-established sett. Three small outlier setts were also recorded. One is located in a ditch bank, another in a hedgebank, and the third outlier is located in the bank of a stream near a small copse; signs of recent activity were recorded at this outlier.
- 12.62 Across the wider area, signs of badger activity were numerous with feeding signs, latrines, footprints and hairs recorded along many of the hedgerows and ditches within the site boundary. The field evidence would suggest there is only one group of badgers on the site at the present time. There is extensive evidence of badger activity within Hummet Copse and parts of the fields adjacent to it. There are many well-worn trails through the ivy on the floors of the Copse and much evidence of badger foraging, mainly around the woodland margins.

*Bat survey*

- 12.63 Table 12.5 lists the species of bats thought to occur in the general area. The Isle of Wight Bat Group provided records of nine species within 5km of the wind farm site, and a further three common species are likely to occur.
- 12.64 The site consists of large, open arable fields that generally offer poor feeding habitat for bats, though some of the linear features could provide more suitable foraging, especially the ditches, streams, hedgerows and copses situated along the shallow valleys. Although there is limited woodland, the small copses offer potential foraging and roosting areas for some bat species.
- 12.65 Landscape level studies have shown that bats will actively avoid arable land when foraging. Avoidance of arable is also shown at a local level and is thought to

relate to a low abundance of insects found in these habitats. A few species of bats are likely to commute across the arable area. High flying and wide ranging species such as noctules are likely to cross the site when travelling between roosting and foraging sites, and generalist feeders such as common and soprano pipistrelles may cross arable areas to reach more favourable foraging. The other species found locally are considered most unlikely to use the arable areas, due to their more exacting habitat requirements.

<b><i>Records from Isle of Wight Bat Group</i></b>
Noctule
Nathusius' pipistrelle
Serotine
Whiskered bat
Brandt's bat
Grey long-eared bat
Barbastelle
Bechstein's bat
Natterer's bat
<b><i>Other common species assumed to be present</i></b>
Common pipistrelle
Soprano pipistrelle
Brown long-eared bat
<b>Table 12.5: bat species that occur in the area</b>

- 12.66 Woodland edges are strongly selected by bats at a landscape level and the copses offer good feeding and limited roosting opportunities. The small streams, bordered by conservation headlands, provide some good links between the copses on and around the site. This will increase their attractiveness to foraging bats as they will commute between roosting and foraging sites along linear landscape features. Only one of the streams provides an unbroken link across the site, with the others issuing from the underlying chalk in the middle of the most westerly arable field. The streams are all bordered by rough grassland with some bramble scrub. While these ditches are not open enough to be used by riparian specialist bats, they are likely to be used to some degree by other species.
- 12.67 The copses comprise predominantly young trees with only small numbers of more mature specimens with loose bark, woodpecker holes or other cracks and crevices that offer roosting opportunities. These are also ivy-covered trees that could be used as summer roost sites by individual bats. The species considered most likely to roost in the woodland are noctules, common and soprano pipistrelles. The copses are not suitable for rarer species. While the only UK records of maternity roosts of Nathusius' pipistrelle are from buildings, this species is almost exclusively found in trees in mainland Europe.
- 12.68 The areas of rough grassland bordering many of the fields could also offer some foraging. Many border watercourses, hedgerows or woodland, increasing the insect biomass available.

- 12.69 Hedgerows perform two key functions for bats. They are used by many species for foraging, and also provide key flight lines that allow bats to move between feeding and roosting sites. However, most of the hedgerows on this site are too young, small or fragmented to be of any significant value to foraging bats.
- 12.70 There are no buildings in the study area but there are suitable roost sites in the houses and buildings of Thorley Street and Wellow for species such as serotine and brown long-eared bat.

## **Potential effects**

### **During construction**

- 12.71 The temporary and permanent access tracks and the other infrastructure associated with the wind farm will affect small areas of very low quality habitat. Most of this will be arable land, though there will be a crossing of a watercourse and the associated tall ruderal vegetation. No hedgerows, woodland or other more valuable vegetation will be affected, including Hummets Copse, a SINC. The proposals will not affect the beneficial wildlife effects of set aside areas or game crops that are currently a feature of the wider farm, and so will not detract from the higher value farmland BAP features.
- 12.72 The watercourse crossing will be designed to minimise disruption to the stream and its banks, as described in the water environment chapter. The stream itself has no particularly interesting aquatic species. Overall, this represents a small loss of habitat of negligible value, so no significant effect is predicted.
- 12.73 None of the protected species included in the study (bats, newts, badger, red squirrel, dormouse) will be affected during construction. All activities will take place away from the areas that they use on or around the site. A temporary access track will be built across a field close to the badger sett, but a minimum buffer of 30 metres has been retained to ensure that there will be no disturbance to the occupants. Palmate newts in the Prospect Quarry SSSI are some 500 metres away from construction areas, and there are only very weak terrestrial habitat links (grassy strips) between the two areas. They are likely to use the banks, scrubby and coarse grassy vegetation around the quarry during hibernation and terrestrial phases of their life cycle. While the protected species are receptors of high sensitivity, the predicted change is negligible and therefore no significant effects are expected.
- 12.74 Some construction activity is likely to take place in areas used by brown hare, a BAP species of medium sensitivity. The permanent access track comes close to Hummet Copse on two sides, an area known to be frequented by the species, especially in late spring and early summer. However, the hare is a mobile species and individuals range across wide areas. The local construction disturbance will be temporary and hares will retain the refuge of the copse itself, so any impact on the population is predicted to be negligible. No significant effect is predicted.

### **During operation**

12.75 Once operational, the wind farm will have no additional effects on habitats and has little potential for impact on any of the protected species, other than bats. The turbine structures themselves will be remote from the habitats used by protected species, and the access tracks will be essentially similar in nature to farm tracks, which are of no concern for brown hare or badger. The use by maintenance vehicles will be very occasional and does not present a significant risk. Hence the only potential effect is on bats in flight.

### ***Impacts of wind farms on bats***

12.76 It is thought that the use of the site by bats is low, as the arable habitats generally offer very poor foraging. Furthermore, the turbines are located in the arable fields, away from the habitat features such as copses and hedgerows that have been highlighted as having more potential for use by roosting, feeding and commuting bats.

12.77 Some species of bat are known to be vulnerable to collisions with man-made structures, including wind turbines, in some circumstances. This is despite their ability to echolocate, and studies that show that bats actually avoid collisions with moving objects more successfully than stationary objects.

12.78 Most documented bat fatalities are from North America, with others at wind farms in Australia, Sweden and Germany. The nature and timing of the fatalities at wind farms in the US suggest that a small number of species of migratory tree bats are the most vulnerable to collisions with turbines. These species migrate together in very large numbers, and while absolute casualty numbers may appear high, the percentage of the total passing through the area is actually thought to be very low. The small number of European studies also found that the majority of fatalities were migratory species. The reasons for this are not fully understood, but it is thought that these bats may not echolocate whilst flying at higher altitudes during migration and this could potentially make them more susceptible to hitting tall, vertical structures.

12.79 In the absence of large-scale migratory movements of bats at this site (and indeed in the UK generally), any significant risk of collision is therefore considered to be limited to foraging bats or those moving between feeding and roosting sites. While Nathusius' pipistrelles and noctules could possibly undertake migratory movements in the area, their behaviour is not sufficiently understood to make any reliable predictions, and hence whether they might be any more susceptible than at any other time. At most, only very small numbers would be involved and the risk of migrating bat collision with the turbines is considered to be extremely remote and the consequent impact on bat populations negligible.

12.80 The feeding ecology of the species recorded close to the site makes it most unlikely that they will be feeding in the areas where the turbines are located. Species that are occasionally recorded foraging over arable land, such as pipistrelles, predominantly feed between 5 and 10 metres above the ground, well below the area swept by the blades. High-flying aerial feeders such as serotines

and noctules potentially have the highest risk of entering the area swept by the blades. However it is unlikely that these bats will be foraging over the arable fields around the turbines. Any risks to foraging and commuting bats are therefore considered extremely low, and the consequent impact on bat populations negligible.

- 12.81 As protected species, all bats are considered receptors of high sensitivity and importance, but with a negligible magnitude of change, no significant impacts are predicted.

## **Mitigation measures**

### **During construction**

- 12.82 The design and construction of the watercourse crossing will take due account of the need to maintain water quality and to prevent any indirect effect on habitats and wildlife downstream. The water environment chapter and its appendix detail the mitigation that will be put in place. The residual effect will be negligible and no significant effect is predicted.

### **During operation**

#### ***Bats***

- 12.83 The wind farm layout has already taken into account the likely use of the wider site by bats, and no significant impacts are predicted. The turbines are located on arable land, away from the features used for foraging and movement. The careful siting of access routes has also maintained the connectivity of the existing hedgerows and other linear features to ensure that established foraging routes within the site and the wider area are retained.

## **Residual effects**

- 12.84 No residual adverse effects on habitats or wildlife are predicted.