EXTENDED PHASE 1 HABITAT SURVEY

LOWER BUCKLAND
DOCKLOW, HEREFORDSHIRE

A Report to Seren Energy

Middlemarch Environmental Ltd
Triumph House
Birmingham Road
Allesley
Coventry
CV5 9AZ

Tel: 01676 525880
Fax: 01676 521400

E-Mail: admin@middlemarch-environmental.com
Web Site: www.middlemarch-environmental.com

Report Number: RT-MME-109182-01

March 2011

EXTENDED PHASE 1 HABITAT SURVEY

LOWER BUCKLAND
DOCKLOW, HEREFORDSHIRE

CONTROLLED COPY

01 OF 02

01 SEREN ENERGY
02 MIDDLEMARCH ENVIRONMENTAL LTD

This report was compiled by:
Tim Hextell and Tom Docker MSc AIEEM

The contents of this report are the responsibility of Middlemarch Environmental Ltd.
It should be noted that whilst every effort is made to meet the client's brief,
no site investigation can ensure complete assessment
or prediction of the natural environment.

Contract Number C109182

March 2011

EXECUTIVE SUMMARY

Middlemarch Environmental Ltd was commissioned by Seren Energy to undertake an initial ecological appraisal of the site of a proposed single wind turbine and associated access track located at Lower Buckland in Docklow, Herefordshire. To fulfil this brief, an Extended Phase I Habitat Survey and ecological desk study were undertaken.

The ecological desk study identified no statutory nature conservation site within a 2km radius of the survey area. Two non-statutory nature conservation sites occur within a 2km radius, the closest of which is approximately 700 m from the surveyed area. The proposed works are considered to have no impacts upon the non-statutory nature conservation sites. In addition, the desk study included records of a number of notable and protected species, including badger, water vole, and a range of bat, bird, reptile and amphibian species.

The Extended Phase I Habitat Survey was undertaken on 28th April 2010 by Tim Hextell (Principal Technical Consultant) and Tom Docker (Ecological Consultant), with a further site visit undertaken on 22nd February 2011 to assess the ecological interest along the route where a trench will be laid to connect the proposed turbine to the National Grid.

The survey area was composed of mixed farmland with arable crops dominating and lesser amounts of improved livestock grazed grassland enclosed by highly maintained hedgerows. The survey area also included the western edge of Oak Wood, in addition to some scattered mature trees together with small copses and tree clumps. In terms of habitats, the surveyed area was considered to generally be of low ecological value with proposed site based activities confined to existing well used farm access tracks and fields occupied by arable crops and improved grassland. The arable and improved grassland areas are considered to be of little existing ecological value, although likely to support breeding birds within the boundary hedgerows. Oak Wood, the scattered trees and tree clumps are considered to provide some potential roosting locations for bats together with additional nesting sites for birds, as do the farm buildings towards the western end of the site. Middlemarch Environmental understands that a single turbine is proposed for the site to be located within the large arable field at the eastern end of the survey area, to be located in excess of 50m from field boundary features and in excess of 100m from the southern boundary of Oak Wood.

In order to ensure that the works proceed in compliance with the Wildlife and Countryside Act 1981 and local planning policy, the following recommendations are made:

- A desk based study to determine important bird species within the area and determine the likelihood of potential impacts to identified target species. Results of this assessment are provided in Middlemarch Environmental Ltd report no. RT-MME-108307;

- Any vegetation removal should be undertaken outside of bird nesting season, which extends from March to September inclusive. If this is not possible, vegetation should be checked by an experienced ecologist prior to removal.

Further bat surveys are not considered necessary at this stage as the turbine is located in excess of 50 metres from the nearest potential habitat features, and therefore falls outside of the buffer zone for further works identified by Natural England (2009). Should the scope of works change, however, the need for further bat surveys may need to be reassessed. It is understood that the project will not require any tree removal.

CONTENTS

1. INTRODUCTION

1.1 PROJECT BACKGROUND

On 9th April 2010, Seren Energy commissioned Middlemarch Environmental Ltd to undertake an initial ecological appraisal at the site of a proposed wind turbine and associated access track located at Lower Buckland in Docklow, Herefordshire. In February 2011 a further instruction was received to expand the scope of the survey to include a 50m radius either side of the proposed connection to the National Grid, as per comments received from Bridgit Symons (Herefordshire Council Senior Ecologist).

To fulfil the above brief to assess the existing ecological interest of the site, an ecological desktop study, Extended Phase 1 Habitat Survey and initial daytime bat survey were undertaken on 28th April 2010, with a further site visit on 22nd February 2011 to assess the area in which the connection to the National Grid will be made.

This report details the results of the ecological desk study and Extended Phase I Habitat Survey. The results of the initial daytime bat survey are provided in Middlemarch Environmental Ltd report no. RT-MME-109182-02. The site has also been subject to a desk based breeding bird assessment, the results of which are provided in Middlemarch Environmental Ltd report no. RT-MME-108307.

1.2 SITE DESCRIPTION

The surveyed area is located approximately 5 km east of Leominster at Docklow. The surveyed site is located immediately to the south of the A44 Leominster-Worcester Road and comprised the route of a proposed access track to a single turbine location to the south of Docklow Manor. A radius of approx 50m either side of the proposed access track and around the single turbine location was surveyed. The approximate centre point of the survey area is SO 564 566.

The majority of the study site comprised improved grassland grazed by sheep together with arable crops within a well defined field pattern within a noticeably undulating landscape liberally dotted with small broad-leaved woodlands. The proposed access track would utilise an existing farm track that runs due south from the A44 opposite Brick Cottage and extends through, and past, the farm buildings at Orchard Cottage and Lower Buckland before deviating in an easterly direction to a central point within a large arable field immediately to the south of Oak Wood at an approximate grid reference of SO 566 564. The proposed connection to the National Grid extends to the north of the proposed access track, adjacent to a field boundary hedgerow and the western edge of Oak Wood.

The surrounding landscape similarly consists of mixed arable/pastoral farmland with widely scattered farm complexes and homesteads. Small wooded blocks punctuate the area and a network of minor roads bisect the landscape.

2. METHODOLOGY

2.1 DESK STUDY

A desk study was undertaken to determine the presence of any designated nature conservation sites and protected species that have been recorded within a 2 km radius of the site. For bats and birds this radius was extended to 5 km as these species groups are considered to be of increased significance to wind power developments.

The desk study exercise involved contacting appropriate statutory and non-statutory organisations which hold ecological data relating to the survey area. Middlemarch Environmental Ltd then assimilated and reviewed the desk study data provided by these organisations. The consultees for the Desk Study were:

- Natural England - *MAGIC* website for statutory conservation sites;
- Herefordshire Biological Records Centre; and,
- National Biodiversity Network Gateway website.

The data collected from these consultees is discussed in Section 3. Raw data are provided in Appendix 1.

2.2 EXTENDED PHASE 1 HABITAT SURVEY

An Extended Phase 1 Habitat Survey was conducted following the methodology of the Joint Nature Conservation Committee (JNCC, 1993) as modified by the Institute of Environmental Assessment (IEA, 1995). Phase 1 Habitat Survey is a standard technique for classifying and mapping British habitats. The aim is to provide a record of habitats that are present on site. During the survey, the presence, or potential presence, of protected species was noted. Data recorded during the field survey is discussed in Section 4.

3. DESK STUDY RESULTS

3.1 INTRODUCTION

All relevant ecological data provided by the consultees has been reviewed. The results of these investigations are summarised in Sections 3.2 and 3.3. Data are provided in Appendix 1.

3.2 NATURE CONSERVATION SITES

Reference to the Multi Agency Geographical Information for the Countryside (MAGIC) website and the local biodiversity information provided indicates that no nature conservation sites with statutory protection occur within a 2km radius of the survey area. Two non-statutory local nature conservation sites occur within this radius. These are summarised in Table 3.1.

Site Name	Designation	Proximity to Survey Area	Description
Non-statutory Sites			
The Roughs and The Oaks (SO55/11)	LWS	700m WSW	An ancient woodland, which is still mostly semi-natural, but with a small amount of conifer. Ash and oak are dominant with hazel and hawthorn
Woodland Near Grendon Bishop (SO55/15)	LWS	950m ESE	A small area of ancient semi-natural woodland with a stream running through. Ash is dominant, with oak, hazel and hawthorn
Key: LWS: Local Wildlife Site			

Table 3.1: Summary of Non-statutory Nature Conservation Sites

3.3 PROTECTED SPECIES

Table 3.2 provides a summary of general protected species records within a 2 km radius of the study area. Records of bats and birds within a 5km radius of the study area are provided in Table 3.3. It should be noted that the absence of records should not be taken as confirmation that a species is absent from the search area. Records of UK and local Biodiversity Action Plan species have also been included within these tables.

Species	No. of Records	Most Recent Record	Proximity of Nearest Record	UK BAP?	Local BAP?	NERC S.41?	Legislation / Conservation Status
Mammals							
Brown hare *Lepus europeaus*	2	2004	1km NNW	Y	N	Y	-
Badger *Meles meles*	1	2002	200m SE	N	N	N	PBA
Key: PBA: Protection of Badgers Act 1992							

Table 3.2: Summary of Protected/Notable Species Records Within 2 km Radius of Study Site (continues)

Species	No. of Records	Most Recent Record	Proximity of Nearest Record	UK BAP?	Local BAP?	NERC S.41 ?	Legislation / Conservation Status
Herpetofauna							
Great crested newt *Triturus cristatus*	12	2006	450m	Y	N	Y	ECH 2,4, WCA 5
Smooth newt *Triturus vulgaris*	7	2006	700m	N	N	N	WCA 5
Palmate newt *Triturus helveticus*	2	2004	700m	N	N	N	WCA 5
Common frog *Rana temporaria*	8	2004	450m	N	N	N	WCA 5
Common toad *Bufo bufo*	3	2003	150m	Y	N	Y	WCA 5
Slow worm *Anguis fragilis*	1	2005	700m	Y	N	Y	WCA 5
Grass snake *Natrix natrix*	1	2003	700m	Y	N	Y	WCA 5
Invertebrates							
Buff ermine *Spilosoma luteum*	1	2004	400m	Y	N	Y	-
Grey dagger *Acronicta psi*	1	2004	400m	Y	N	Y	-
White ermine *Spilosoma lubricipeda*	1	2004	400m	N	N	N	-
Noble chafer *Gnorimus nobilis*	2	2004	700m	Y	Y	Y	-
Damselfly spp.	4	2002	Within 1km	Y*	N	Y*	-
Vascular plants							
Bluebell *Hyancinthoides non-scripta*	4	2006	700m	N	N	N	-
Cowslip *Primula veris*	3	2006	700m	N	N	N	
Daffodil *Narcissus pseudonarcissus*	1	2006	700m	N	N	N	-
Meadow saffron *Colchicum autumnale*	2	2006	700m	N	N	N	-
Mistletoe *Viscum album*	3	1993	Within 1km	N	N	N	-
Corn spurrey *Spergula arvensis*	1	1992	Within 1km	N	N	N	-
Good King Henry *Chenopodium bonus-henricus*	1	1993	Within 1km	N	N	N	-
Scot's pine *Pinus sylvestris*	1	1993	Within 1km	N	N	N	-
Box *Buxus sempervirens*	1	1990	Within 1km	N	N	N	-

Key:
ECH 2: European Habitats Directive – Animals whose conservation requires the designation of Special Areas of Conservation (SACs)
ECH 4: European Habitats Directive – Animal and plant species of community interest in need of strict protection.
WCA 5: Wildlife and Countryside Act - Protected animals (other than birds).

Table 3.2 (cont): Summary of Protected/Notable Species Records Within 2 km Radius of Study Site

Species	No. of Records	Most Recent Record	Proximity of Nearest Record	UK BAP?	Local BAP?	NERC S.41?	Legislation / Conservation Status
Bats							
Common pipistrelle *Pipistrellus pipistrellus*	22	2009	2.4km	N	Y	N	ECH 4. WCA 5,6
Soprano pipistrelle Pipistrellus pygmaeus	16	2009	1.5km	Y	Y	Y	ECH 4. WCA 5,6
Whiskered bat *Myotis mystacinus*	2	2009	2km	N	Y	N	ECH 4. WCA 5,6
Natterer's bat *Myotis natereri*	8	2008	2km	N	Y	N	ECH 4. WCA 5,6
Daubenton's bat *Myotis daubentonii*	2	2007	4km	N	Y	N	ECH 4. WCA 5,6
Serotine *Eptesicus serotinus*	1	2007	4km	N	Y	N	ECH 4. WCA 5,6
Brown long-eared bat *Plecotus auritus*	10	2007	700m	Y	Y	Y	ECH 4. WCA 5,6
Noctule *Nyctalus noctula*	1	2007	4km	Y	Y	Y	ECH 4. WCA 5,6
Birds							
House sparrow *Passer domesticus*	4	2007	800m	N	N	N	-
Tree sparrow *Passer montanus*	1	2002	4km	N	Y	N	-
Swallow *Hirundo rustica*	4	2007	2km	N	N	N	-
Raven *Corvus corax*	1	2007	4km	N	N	N	-
Starling *Sturnus vulgaris*	1	2007	4km	N	N	N	-
Barn owl *Tyto alba*	14	2008	350m	N	Y	N	WCA 1
House martin *Delichon urbica*	3	2007	4km	N	N	N	-
Yellowhammer *Emberiza citrinella*	5	2005	2.5km	Y	N	Y	-
Sky lark *Alauda arvensis*	1	2004	3km	Y	N	Y	-
Kestrel *Falco tinnunculus*	3	2004	4km	N	N	N	-
Kingfisher *Alcedo atthis*	1	2008	900m	N	N	N	WCA 1
Spotted flycatcher *Muscicapa striata*	1	2008	900m	Y	N	Y	-
Bullfinch *Pyrrhula pyrrhula*	1	2008	900m	Y	N	Y	-

Key:
ECH 4: European Habitats Directive – Animal and plant species of community interest in need of strict protection.
WCA 1: Wildlife and Countryside Act – Bird species with increased protection whilst nesting.
WCA 5: Wildlife and Countryside Act - Protected animals (other than birds).
WCA 6: Wildlife and Countryside Act - Animals which may not be killed or taken by certain methods

Table 3.3: Summary of Bat and Bird Records Within 5km of Study Site

4. EXTENDED PHASE 1 HABITAT SURVEY

4.1 INTRODUCTION

The results of the Extended Phase 1 Habitat Survey are presented in Section 4.2. An annotated Extended Phase 1 Habitat Survey Drawing (Middlemarch Environmental Ltd Drawing Numbers C107289-01-01, C107289-01-02 and C109182-01-01) is attached in Appendix 2. This drawing illustrates the location and extent of all habitat types recorded on site. Any notable features or features too small to map are detailed using target notes.

The survey of the access track and area around the proposed turbine was carried out on 28th April 2010 by Tim Hextell (Technical Principal Consultant) and Tom Docker (Ecological Consultant), with a subsequent survey undertaken by the same surveyors on 22nd to assess the ecological interest of the route of the proposed connection to the National Grid.

.Table 4.1 details the weather conditions at the time of the survey visits.

Parameter	28th April 2010	22nd February 2011
Temperature (°C)	15	7
Cloud (%)	10-25	10
Wind	F 3	F 1
Precipitation	Dry	Dry

Table 4.1: Weather Conditions During Survey Visits

4.2 SURVEY CONSTRAINTS

The survey was not subject to any constraints. All areas of the site could be fully accessed on both survey visits.

4.3 HABITATS

The following habitat types were recorded on site during the field survey:

- Arable;
- Bare ground;
- Boundaries;
- Ephemeral/short perennial;
- Orchard;
- Plantation woodland;
- Running water;
- Scattered trees;
- Scrub; and,
- Semi-natural woodland.

These habitats are described below. They are described alphabetically, not in order of ecological importance.

Arable

The proposed access track follows the edges of perimeters of several arable fields, which at the time of survey were occupied by a young cereal crop. The majority of the route of the proposed connection to the National Grid runs through the middle of an arable field occupied by a young cereal crop, terminating at a wooden telegraph-pole type pylon.

A 15m wide strip of game cover, dominated by sunflower *Helianthus* sp. and kale *Brassica* sp. ran along the northern boundary of Oak Wood, forming a buffer between the woodland and the adjacent cereal field.

The location of the proposed single turbine is within a moderately-sized arable field occupying an east-facing slope at the eastern extent of the survey area.

Bare Ground

The existing access track, extending between the A44 and Lower Buckland Farm, comprised compacted stone/aggregate and bare ground with adjacent patches of bare ground around farm buildings and where vehicles/plant was stored.

Boundaries

The majority of site boundaries comprised tightly clipped hedgerows between 1.6 and 1.8 m in height. Hedgerows were dominated by hawthorn *Crataegus monogyna* with lesser amounts of common woody species such as blackthorn *Prunus spinosa*, hazel *Corylus avellana* and holly *Ilex aquifolium*. Generally hedgerow structure was good, although in some cases there was evidence of basal degradation through sheep grazing. A limited range of common floral species was noted within hedge bottoms with nettle *Urtica dioica*, cleavers *Galium aparine* and coarse grasses predominating. A small amount of cowslip *Primula veris*, dog's mercury *Mercurialis perennis* and arum lily *Arum maculatum* was noted in places. Scattered mature oak *Quercus robur* and ash *Fraxinus excelsior* trees occurred within field boundaries sparingly.

The hedgerow to the west of connection to National Grid consisted primarily of tightly clipped hawthorn *Crataegus monogyna* with some blackthorn *Prunus spinosa* and a small amount of gorse *Ulex europeaus*. Wooden post and stock-netting fencing was also evident within the hedgerow and a limited basal flora largely contained common grasses and tall ruderal species such as cocksfoot *Dactylis glomerata*, nettle *Urtica dioica* and cleavers *Galium aparine*.

Other boundary features included sections of wooden post and stock-netting fencing, often in tandem with Leyland cypress tree screens to 10 m in height.

Ephemeral/short perennial

Sparsely vegetated areas were noted in the vicinity of the main access track at the northern extent of the survey area within the vicinity of Stephens Cottage. Such areas were typically small in spatial extent and were vegetated by a limited selection of common forbs and grasses typified by plantains *Plantago* spp,

buttercups *Ranunculus* spp, docks *Rumex* spp, perennial rye grass *Lolium perenne,* annual meadow grass *Poa annua* and Yorkshire fog *Holcus lanatus*.

Open Water

To the north-east of Orchard Cottage, and east of the main access track, was a small pond feature. This waterbody was noted to be very shallow, approximately 0.2 m deep, with a clay/silt substrate and large amounts of brash and debris in the water column from surrounding trees. The surrounding trees provided extensive shading with some sallow *Salix* sp growing within the water. No aquatic vegetation was visible.

Orchard

Small top fruit orchards were noted to the east and west of Lower Buckland farmhouse containing mature stock and with improved, grazed grassland beneath.

Plantation woodland

This habitat type was noted to the east of Orchard cottage, occurring as a narrow band between the cottage and access track. Mature Scots pines *Pinus sylvestris* were the dominant species, although many had been recently felled resulting in abundant brash scattered across the ground with stands of tall ruderals dominating the field layer typified by cow parsley *Anthriscus sylvestris* but also including yellow archangel.

Additional small areas of plantation woodland were noted to the north of Orchard cottage and on either side of the primary access track. A selection of semi-mature and mature tree species were noted including sycamore *Acer pseudoplatanus*, oak *Quercus robur*, ash *Fraxinus excelsior*, poplar *Populus* sp and Scots pine *Pinus sylvestris*. A limited shrub layer was evident containing regenerating sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior* and elder *Sambucus nigra* with an unremarkable ground flora present.

Running water

The survey area was bisected by two small watercourses. One in the central section of the surveyed area and draining in a south-westerly direction below Lower Buckland farmhouse and the second forming the eastern extent of the study site and flowing in a southerly direction.

The Lower Buckland stream drained a small, narrow channel with a substrate consisting of scattered stones over clay and with a depth of no more than 0.2 m. Much of the channel was well shaded by semi-natural woodland and scrub.

The eastern watercourse was a small sinuous channel, approximately 0.5 m in width and 0.1 m in depth with a moderate flow. The banksides were frequently high and vertical and the channel was generally heavily shaded by adjacent trees and shrubs.

Scattered trees

Scattered trees occur within the various field boundaries with several examples also present within the arable and improved grassland fields. Oaks *Quercus robur* were the dominant species with some mature ash *Fraxinus excelsior* also present. These trees were seen to possess features that may be suitable for use by bats i.e. splits, fissures, rotting branches and large hollows within the main boles. Some of the oaks were considered to be veterans.

Scrub

A small clump of gorse *Ulex europeaus* and bramble *Rubus fruticosus* agg.was recorded at the western edge of Oak Wood. This vegetation extended to a maximum height of 1.8m, and was located approximately 10m to the east of the line of the proposed connection to the National Grid.

Semi-natural woodland

This habitat type was confined to narrow bands within the surveyed area, with the primary locations being along the eastern extent of the survey area; either side of the small watercourse immediately south of Lower Buckland farmhouse; and, on the western side of the access track to the north of Orchard cottage.
The narrow strip present along the eastern boundary was dominated by common alder *Alnus glutinosa* with areas where tall poplars *Populus* dominated the canopy towards its northern extent near the junction with Oak Wood (at which point several mature oaks *Quercus robur* were noted). Additional canopy trees noted along the linear strip included willow *Salix fragilis* and ash *Fraxinus excelsior* with a reasonably well established understorey of hawthorn *Crataegus monogyna*, holly *Ilex aquifolium*, hazel *Corylus avellana* freely regenerating poplar *Populus* sp and alder *Alnus glutinosa*. A small but steep sided watercourse bisected this wooded corridor with relatively rich bankside vegetation including such species as red campion *Silene dioica*, lesser celandine *Ranunculus ficaria*, bluebell *Hyacinthoides non-scripta*, dog's mercury *Mercurialis perennis*, figwort *Scrophularia* sp and a selection of common fern species, primarily *Dryopteris* spp.

Flanking a small south-westerly draining watercourse to the south of Lower Buckland farm the banksides were vegetated by a mixture of broad-leaved woodland and scrub. Common alder *Alnus glutinosa* and ash *Fraxinus excelsior* appeared to be co-dominants within the canopy with hawthorn *Crataegus monogyna*, hazel *Corylus avellana* and willow *Salix* spp creating a rich shrub layer, although in some areas the canopy was less well defined and dense scrub habitat created a valuable mosaic. The ground flora largely appeared to be relatively luxuriant with broad swathes of both nettle *Urtica dioica* and cow parsley *Anthriscus sylvestris* dominating.

To the south of Stephens Cottage, close to the main access off the A44, is a narrow belt of oak *Quercus robur* woodland on the western side of the primary access track. An understorey of *Crataegus monogyna*, holly *Ilex aquifolium*, hazel *Corylus avellana* and elder *Sambucus nigra* occurs with a rather limited field layer comprising abundant ivy *Hedera helix* with some bluebell *Hyacinthoides non-scripta* and wood dock *Rumex sanguineus*. A bank and ditch feature was evident in places and an amount of brash was noted in places.

4.4 FAUNA

Birds

Thirty-one bird species were recorded during the initial site visit. These are listed in Table 4.2. This table also includes details of the status of each species.

No additional bird species (i.e. species not identified during the first site visit) were identified during the second site visit in February 2011.

COMMON NAME	SCIENTIFIC NAME	STATUS
Blackbird	*Turdus merula*	
Blackcap	*Sylvia atricapilla*	
Blue Tit	*Cyanistes caeruleus*	
Bullfinch	*Pyrrhula pyrrhula*	National BAP Species. Amber Listed Species.
Carrion Crow	*Corvus corone*	
Chaffinch	*Fringilla coelebs*	
Common Buzzard	*Bute buteo*	
Common Whitethroat	*Sylvia communis*	Amber Listed Species.
Dunnock	*Prunella modularis*	National BAP Species. Amber Listed Species.
Goldcrest	*Regulus regulus*	
Goldfinch	*Carduelis carduelis*	
Great Tit	*Parus major*	
House Sparrow	*Passer domesticus*	National BAP Species
Jackdaw	*Corvus monedula*	
Linnet	*Carduelis cannabina*	National BAP Species Red Listed Species
Long-tailed Tit	*Aegithalos caudatas*	
Magpie	*Pica pica*	
Mallard	*Anas platyrhnchos*	Amber Listed Species
Pheasant	*Phasianus colchicus*	
Pied Wagtail	*Motacilla alba yarrelli*	
Raven	*Corvus corax*	
Robin	*Erithacus rubecula*	
Rook	*Corvus frugilegus*	
Sky Lark	*Alauda arvensis*	National BAP Species Red Listed Species.
Song Thrush	*Turdus philomelos*	National BAP Species. Red Listed Species.
Stock Dove	*Columba oenas*	Amber Listed Species.
Swallow	*Hirundo rustica*	
Swift	*Apus apus*	
Wood Pigeon	*Columba palumbus*	
Wren	*Troglodytes troglodytes*	
Yellowhammer	*Emberiza citrinella*	National BAP Species. Red listed Species.

Table 4.2: Bird species recorded at Lower Buckland, Docklow May 2010

The survey area supported a range of common farmland bird species and it is presumed that the majority of those species recorded are likely to be breeding on, or adjacent to, the survey area. With regard to the erection of the proposed turbine two species are deemed to be of significance, common buzzard and raven.

Mammals

Rabbits *Oryctolagus cuniculus* were noted to be widespread within the survey area and several brown hares *Lepus europaeus* were observed within the cereal fields during the initial survey visit. Mole *Talpa europaea* hills were recorded within areas of grazed pasture.

Badger latrines and evidence of foraging behaviour were noted within the hedge bottom of the boundary feature located to the west of Oak Wood. In addition, ground disturbance, potentially created by badgers, was recorded within Oak Wood.

The potential for the site to provide roosting locations, foraging areas and commuting corridors for bats is discussed in Middlemarch Environmental Report RT-MME-109182-02.

Invertebrates

A range of common butterfly species were recorded during the first field survey, comprising orange tip *Anthocharis cardamines*, small tortoiseshell *Aglais urticae*, green veined white *Pieris napi*, peacock *Inachis io* and speckled wood *Pararge aegeria*.

5. DISCUSSIONS AND CONCLUSIONS

5.1 NATURE CONSERVATION SITES

No nature conservation sites with statutory protection occur within a 2km radius of the survey area.

A total of two non-statutory local wildlife sites were noted within a 2km radius of the survey area. These two areas of ancient woodland, The Roughs and the Oaks and woodland near Grendon Bishop, are located 700 m and 950 m from the proposed works area respectively and as such no adverse impacts on either site is perceived.

5.2 HABITATS

The ecological importance of the habitats present on site is assessed against their presence on the UK and Local BAPs and on Section 41 of the NERC Act and their ability to support protected or notable species. Those habitats which meet any of these criteria and are considered likely to be impacted by the proposals are highlighted as notable considerations. This is summarised in Table 5.1 and further discussed in the text below.

Habitat Type	UK BAP?	Local BAP?	NERC Act?	Protected/Notable Species Potential?	Is Habitat a Notable Consideration?
Arable	Y*	Y*	Y*	Nesting Birds	No
Bare Ground	N	N	N	-	No
Boundaries	Y**	Y**	Y**	Nesting birds & foraging/commuting bats	Yes
Ephemeral/short perennial	N	N	N	-	No
Open Water	Y	Y	Y	Amphibians	Yes
Orchard	Y	Y	Y	Nesting Birds & roosting bats	No
Plantation woodland	N	N	N	Nesting Birds & roosting bats	Yes
Running water		Y	N	Foraging/commuting bats	No
Scattered Trees	N	N	N	Nesting Birds & roosting bats	Yes
Scrub	N	N	N	Nesting birds	Yes
Semi-natural woodland	Y	Y	N	Nesting birds & foraging/commuting and roosting bats	No

*Arable field margins

** Hedgerows

Table 5.1: Summary of Ecological Importance of Habitats on Site

It is understood that the proposed works will entail the provision of an access track extending to the proposed single turbine location within the large arable field towards the eastern edge of the site below Oak Wood. At present an existing wide access track composed of crushed aggregate/hardcore extends from the A44 up to

the outbuildings just to the east of Lower Buckland farmhouse. From this point, and continuing eastwards almost to the proposed turbine location, is a compacted farm access track. Discussion with the farmer on site indicates that the existing track will be retained and in some places will be complimented with additional material but will not be significantly widened (Thomas, 2010). A new length of access track will be laid on the existing farm track to the east of Lower Buckland farm up to the turbine location. Based upon these initial designs/discussions it is anticipated that there will be limited loss of existing habitat, and those habitats that may be impacted will be primarily improved pasture and arable crops. At the point where the access track crosses the small watercourse below Lower Buckland farm, there may be some indirect impacts to the watercourse if measures are not implemented to prevent this.

A cable easement will be required in order to connect the proposed turbine with the National Grid. This easement will run north-eastwards from the western edge of oak wood to a wooden telegraph pole within the centre of the arable field approximately 200 m north of Oak Wood. Provision of this feature will require the excavation of a trench which will result in the temporary loss of existing arable habitat which is considered to be of no ecological value. However, there may some impact to a very small area of scrub habitat on the western edge of Oak Wood which provides some potential nesting bird habitat.

5.3 Protected/Notable Species

Table 5.2 summarises which of those species noted in the desk study (plus others if relevant) are notable considerations for any development of the survey area. It also states whether these species are targeted by national or local Biodiversity Action Plans (BAPs) or afforded some protection under the NERC Act 2006.

Species	UK BAP?	Local BAP?	NERC Act?	Is Species/Group a Notable Consideration?
Bat species	Y*	Y	Y*	Yes
Bird species	Y*	Y*	Y*	Yes
Badger *Meles meles*	N	N	N	Yes
Brown Hare *Lepus europaeus*	Y	N	Y	No
Common amphibians	Y*	No current plan	Y*	No
Great crested newt *Triturus cristatus*	Y	No current plan	Y	No
Reptiles	Y	No current plan	Y	No
Key: * = Species dependent.				

Table 5.2: Summary of Ecological Importance of Species on Site

Bird species are considered to be a notable consideration as they are likely to nest within a variety of habitats within the study area. Any works within these areas e.g. removal of vegetation to enable upgrading works to the access track, may result in disturbance to breeding birds. In addition, some of the larger and less

manoeuvrable species, considered to be 'target species' in relation to turbine erection and windfarm developments e.g. raptors, wildfowl and wading birds, could potentially be impacted by the erection of a wind turbine. Impacts to birds may be through direct disturbance or displacement both during and post construction.

Bats are also considered to be a notable consideration as they are likely to use a variety of features/habitats on site for roosting, commuting and foraging purposes. It is noted, however, that the proposed turbine location is over 50 metres from the nearest habitat features (mature trees, hedgerows etc) in accordance with Natural England Technical Information Note TIN059 (Natural England, 2009), therefore the risk posed by the proposed turbine is considered to be limited. Bat issues are discussed more fully in Middlemarch Environmental Report RT-MME-107289-02.

The desk study identified the presence of badgers within 200 m of the surveyed area and field signs were recorded during the updated site visit in March 2011. No badger setts were located within a 30 m radius of the proposed working areas. However, there is a potential for badgers to become trapped within any excavations associated with cabling works and therefore this species is a notable consideration.

The desk study highlighted a number of records of amphibians and reptiles from within the 2 km search radius with the majority of records in excess of 450 m from the proposed works area. Habitat within the survey area for reptiles was considered to be minimal and initial site proposals indicate that this faunal group will not be a notable consideration. The vast majority of the surveyed area was similarly considered to be of little or no value for amphibians either during their aquatic or terrestrial states. A small waterbody was noted on the eastern side of the main farm access track to the north-east of Orchard Cottage. An initial appraisal of this feature considered it to sub-optimal for amphibians although likely to support common species such as common frog and common toad. Initial proposals concerning the proposed turbine development indicate that the existing well used farm access track will be utilised for transportation of materials and it is therefore considered unlikely that amphibians will be adversely impacted by site activities.

Recommendations to prevent adverse ecological impacts on bats and birds are made in Section 6.3.

Providing the proposed development is confined to the existing site footprint and utilises the existing access track from the A44 past Lower Buckland Farm to the proposed turbine location, no impacts on any other species are perceived.

6. RECOMMENDATIONS

6.1 NATURE CONSERVATION SITES

As no statutory nature conservation sites were identified within a 2 km radius of the proposed works area no recommendations are necessary. Furthermore, as the two non-statutory sites are located in excess of 700 m from the proposed works areas it is considered that they will suffer no impacts and therefore no recommendations are considered necessary.

6.2 HABITATS

As the proposed works are understood to incorporate the existing access track with some upgrading of the rough farm track at the eastern extent of the site, together with installation of the single turbine within the existing arable field south of Oak Wood, it is considered that there will be negligible habitat loss associated with the project. Therefore with the current available information the following recommendations are made regarding the habitats that are likely to be impacted on site:

- **Habitat Loss:** In accordance with the provision of Planning Policy Statement 9 (Biodiversity & Geological Conservation) and Local Planning Policy, a habitat/species enhancement scheme should be incorporated into the landscaping scheme of any proposed works to maximise the ecological value of the site. This will involve, for example, the planting of native seed/fruit bearing species which will be of value to wildlife. It should be noted however that the proposed locations of the wind turbine is within an area of existing arable habitat and that the haul route will be along existing farm tracks for the majority of its length. Therefore it is anticipated that the loss of habitat will be minimal and that this habitats to be impacted are considered to be ecologically of low value. The requirement for any habitat and species enhancement can be determined when full details of the scheme and proposed working methods are available.

- **Habitat Protection:** In order to prevent run-off into the small watercourse south of Buckland Farm measures should be employed to prevent materials be washed into the watercourse during upgrading of the adjacent access track or through the passage of vehicles associated with access track and turbine installation.

- **Trees:** Any trees on site, or overhanging the site, which are not to be removed as a part of any proposed works should be protected in accordance with British Standard "Trees in relation to construction - Recommendations" BS5837:2005. Protection should be installed on site prior to the commencement of any works on site.

6.3 PROTECTED / NOTABLE SPECIES

The following recommendations are made regarding protected species that are potentially present on site:

- **Amphibians:** No adverse impacts on amphibian species are perceived based upon the existing understanding of the proposed turbine location, access route and National Grid connection. If, however, the scope of the proposed access route changes it may pose a risk to amphibian species, and a method statement may be required to control works.

- **Badger:** Any deep excavations should either be securely covered overnight or possess a suitable means of escape for any badgers that may become trapped within them.

- **Birds**: It is recommended that a desk-based study be combined with field results obtained during the Extended Phase 1 Habitat Survey to determine the risks posed by the construction and operation of the proposed turbine with respect to identified target species. The results of this study are provided in Middlemarch Environmental Ltd report RT-MME-108307.

- **Nesting Birds:** Any vegetation removal should be timed to occur outside of the nesting bird season. This is weather dependent, but generally extends from March to September inclusive. If vegetation removal is necessary in this period, all vegetation should first be checked by an experienced ecologist.

- **Bats:** The desk study identified records of eight species of bat with the closest record being 700 m distant, although the majority of records were in excess of 2 km from the survey area. An initial bat survey has been undertaken within the survey area and is reported in Middlemarch Environmental Report RT-MME-107289-02. Providing the proposed turbine location remains in excess of 50 metres from potential habitat features, and assuming any works to the access track are designed to avoid impacting potential habitat features (hedgerows, mature trees etc.), no further bat activity surveys are considered necessary. Should the proposed scope of works change, however, the requirement for further bat surveys may need to be reassessed.

REFERENCES AND BIBLIOGRAPHY

IEA. (1995). *Guidelines for Baseline Ecological Assessment, Institute of Environmental Assessment.* E&FN Spon, An Imprint of Chapman and Hall. London.

JNCC, (1993). *Handbook for Phase 1 Habitat Survey: A technique for environmental audit (reprint).* Joint Nature Conservation Committee, Peterborough.

Natural England (2009). *Bats and Single Large Wind Turbines: Joint Agencies Interim Guidance*. Natural England Technical Information Note TIN059. Natural England, Peterborough.

Planning Policy Statement 9: Biodiversity and Geological Conservation. (2005). Available: http://www.communities.gov.uk/publications/planningandbuilding/planningpolicystatement12

Thomas, R (2010). *Pers comm*. Farmer.

UK Biodiversity Partnership. (no date). 'UK Biodiversity Action Plan'. Available: http://www.ukbap.org.uk