



greenwillows associates ltd

Green Willows Farm, First Turf Fen Drove, Warboys, Cambs PE28 2TZ

Tel: 01487 823198 Mobile: 07786 443802 Email: steveparnwell@greenwillowsassociates.co.uk

www.greenwillowsassociates.co.uk

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**PRELIMINARY ECOLOGICAL APPRAISAL
LAND EAST OF SEAGATE ROAD,
LONG SUTTON, LINCOLNSHIRE
(NGR: TF437223)**

Prepared by Ian Johnson BA MA PhD MCIEEM

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Author:	Ian Johnson BA MA (Cantab) PhD FRES MCIEEM
Scientific Check:	
Presentation Check:	
Date:	

0.0 Executive Summary

0.1 Rationale

Greenwillows Associates Ltd was commissioned to conduct a preliminary ecological appraisal of land east of Seagate Road, Long Sutton, Lincolnshire (NGR: TF437223). The aim of the ecological appraisal was to provide *inter alia*, a scoping assessment of the likely impacts a proposed scheme might have upon notable and/or protected species and habitats and where such features might be affected to identify the need for any follow up detailed/specialist surveys and/or mitigation to ameliorate the potential impacts.

The site proposals relate to the construction of between 210-250 residential units with associated infrastructure and landscaping.

0.2 Essential Evidence and Conclusions

Designated Sites

The Wash National Nature Reserve (NNR) lies 6.53km to the northeast of the site, with The Wash Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Site and The Wash and North Norfolk Coast Special Area of Conservation (SAC) (all within the NNR) located at a distance of 6.93km. These designations will not be directly impacted by the proposed development and the habitats within the target site are unsuitable for the features for which the SAC is designated. However, there is potential for indirect effects arising from increased levels of recreational access to these designations. This is considered in detail in a separate document prepared to inform a project level Habitats Regulations Assessment (HRA).

Nesting Birds

There are areas of suitable nesting bird habitat within the onsite vegetation.

There is a risk of killing/injuring nesting birds if works are undertaken during the nesting season.

Bats

No impact on roosting bats is anticipated by the proposed demolition of a single building. Nonetheless, a precautionary approach to this work is recommended, with supervised removal of Ivy growth being undertaken using hand tools prior to demolition of the building.

No long-term adverse impact is anticipated on commuting or foraging bats as a result of the proposals.

Herpetofauna

Reptiles

There are some areas of suitable habitat within the target development site for reptiles and areas of suitable habitat immediately bordering the site. However, these are limited in extent and isolated from other potential habitat, such that reptiles are considered likely to be absent from the site.

Amphibians

The site provides suboptimal habitat for amphibians and the European Protected Species (EPS) Great Crested Newt is likely to be absent from the site. As such, no significant effects are anticipated in respect of amphibians.

0.3 Recommendations

0.3.1 Best practice

Any works close to trees should be undertaken in accordance with the British Standard BS 5837: 2012 and National Joint Utilities Group Guidelines (NJUG 4).

0.3.2 Site Specific

Designated Sites

A document is required to inform a project level HRA.

Nesting Birds

It is recommended that works within habitat with potential to support nesting birds (including trees, shrubs and arable areas) should ideally avoid the bird breeding season (late February to August inclusive) to avoid damage to nesting species. If this is not practicable then a nesting bird survey should be undertaken by an experienced ecologist prior to direct impact on suitable nesting bird habitat to identify whether active nests are present. If any are found they should be clearly marked and avoided until after the young have fledged and left the nest. There is scope to enhance the site for nesting birds.

Bats

As a precautionary measure, the Ivy growing on the on-site building should be removed using hand tools under the supervision of an experienced bat worker. In the unlikely event that bats are found to be present then works must cease until a licence is obtained from Natural England to permit the works to progress further.

Care should be taken to avoid any unnecessary bright lights- both in regards to temporary security lighting during the construction phase and any long-term lighting plans for the site:

In general, there is scope to enhance the site for bats through the installation of extra habitat such as bat boxes and through the planting of nectar-rich vegetation.

Hedgehog

Fencing between residential gardens should incorporate small gaps to allow Hedgehogs to move freely between gardens.

1.0 Introduction and Terms of Reference

1.1 This report was commissioned to provide *inter alia*:

- A scoping assessment of the likely impacts the proposed development scheme might have upon notable and/or protected species and habitats and where such features might be affected to identify the need for any follow up detailed/specialist surveys.
- Recommendations to avoid potential adverse impacts upon notable and/or protected species and habitats identified as potential receptors within the construction footprint or the relevant zones of influence associated with each receptor.
- An informative document for use by the Local Planning Authority as part of the planning process.

1.2 Based on the JNCC (2010) guidelines an Extended Phase 1 Habitat Survey was undertaken by means of a walkover of the site and its immediate environs, including the licensable impact zone relative to the individual species.

1.3 The survey was based on plans provided by the client.

1.4 This report outlines the methodology employed to the survey, results obtained and a discussion of the implications arising there from.

1.5 Weather at the time of the walkover survey was warm and mostly sunny.

2.0 Site Location

The site is located to the east of Seagate Road, Long Sutton, Lincolnshire (NGR: TF 437223) - see Plan ECO1 (Appendix One). The main part of the town of Long Sutton is located to the north and northwest, while in the wider area arable farming is the predominant land use. The site is bound by roads (Seagate Road to the west, the B1359 Wisbech Road to the northeast) and by arable land to the south. Elsewhere the site adjoins established residential development including a small number of residential properties enclosed by the site.

3.0 Legislation and Policy

3.1 Statutory Legislation

The European Directive (92/43/EEC) of May 1992, on the Conservation of Natural Habitats and Wild Flora and Fauna (the Habitats Directive) sets out the means to protect exceptional rare, endangered or vulnerable natural habitats and species, within the European Community. The Directive requires EU Member States to create a network of protected wildlife areas, known as Natura 2000 sites. This network consists of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), the latter established to protect wild birds under the Birds Directive (Council Directive 79/409/EEC).

A Habitats Regulations Assessment (HRA) is required of land use plans under this Directive, as transposed into UK Law by the Conservation of Habitats and Species Regulations (The Habitats Regulations) 2010 in respect of any plan or project which:

- a. Either alone or in combination with other plans or projects would be likely to have a **significant effect** on a European Site, and
- b. Is not directly connected with the management of the site for nature conservation.

The Conservation of Habitats and Species Regulations 2010, or the 'Habitat Regulations 2010', transposes European Directives into English and Welsh legislation. Under these regulations, wild animals of a European Protected Species and their breeding sites or resting places are protected. It is an offence to deliberately capture, injure or kill any such wild animal and in the case of great crested newts, deliberately take or destroy their eggs. It is also an offence to deliberately damage or destroy a breeding site or resting place of any such wild animal.

Wild animals of a European Protected Species are also protected from disturbance. Disturbance of such wild animals includes in particular any disturbance which is likely:

(a) To impair their ability -

- *to survive, to breed or reproduce, or to rear or nurture their young; or*
- *in the case of animals of a hibernating or migratory species, to hibernate or migrate;*
or

(b) To affect significantly the local distribution or abundance of the species to which they belong.

The Wildlife and Countryside Act 1981 (as amended) adds further protection to wildlife in England and Wales under Part 1. It is unlawful to intentionally kill, injure or take any wild bird or take, damage or destroy the nest of any wild bird whilst the nest is in use or being built. If the bird is included on the Schedule 1 list, it is additionally an offence to intentionally disturb its nest during the breeding season.

Certain species of animal are protected under the Wildlife and Countryside Act 1981 (as amended) by being included in Schedule 5 in respect of certain offences under Section 9. Such offences include:

9(1) Intentional killing, injuring or taking of a Schedule 5 animal;

9(4a) Damage to, destruction of, obstruction of access to any structure or place used by a Schedule 5 animal for shelter or protection;

9(4b) Disturbance of a Schedule 5 animal occupying such a structure or place.

Badgers are primarily protected by The Protection of Badgers Act 1992, under which it is a criminal offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so and to intentionally or recklessly interfere with a sett.

Under the Hedgerow Regulations 1997 it is an offence to remove most hedgerows without permission from the Local Planning Authority. Permission for the removal of hedgerows may be refused if the Local Planning Authority determines any hedgerow to be 'Important' under criteria listed in Part II of Schedule 1 of the Regulations.

3.2 Planning Policy

The National Planning Policy Framework relating to biodiversity (NPPF) is both guidance for local planning authorities on the content of their Local Plans and material consideration in determining planning applications. The NPPF has replaced much existing planning policy guidance, including Planning Policy Statement 9: Biological and Geological Conservation. However, the government circular 06/05: Biodiversity and Geological Conservation- Statutory Obligations and their Impact within the Planning System, which accompanied PPS9 remains valid.

The NPPF places much emphasis on sustainable development and the need for the planning system to perform a number of roles including 'improving biodiversity' by veteran trees. The NPPF places more emphasis on ecological networks and their creation and states that:

The planning system should:

- Avoid, mitigate and compensate for significant harm to biodiversity and protect Sites of Special Scientific Interest and irreplaceable habitats such as ancient woodland.
- Provide a net gain for biodiversity wherever possible and contribute to the Government's commitment to halt the loss of biodiversity.

3.3 Notable Species and Habitats

3.3.1 The UK Biodiversity Action Plan (UK BAP) was drafted for 'Priority' species and habitats in which specific conservation targets were set and are regularly reviewed. UK BAP features do not receive any legal protection *per se* but have biodiversity value within a national context. The UK BAP also serves as a framework for local biodiversity conservation efforts. UK BAP priority species and habitats were those that were identified as being the most threatened and requiring conservation action under the UK BAP. The original lists of UK BAP priority species and habitats were created between 1995 and 1999, and were subsequently updated in 2007, following a 2 year review of UK BAP processes and priorities, which included a review of the UK priority species and habitats lists. As a result of new drivers and requirements, the 'UK Post-2010 Biodiversity Framework', published in July 2012, has now succeeded the UK BAP. The UK BAP lists of priority species and habitats remain, however, important and valuable reference sources.

Notably, they have been used to help draw up statutory lists of priorities in England and BAP species and habitats are still referred to at a local level (JNCC Website 2013).

3.3.2 The Natural Environment and Rural Communities (NERC) Act 2006 Section 41 of The Natural Environment and Rural Communities (NERC) Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England, as required by the Act. Hedgehogs are included on this list.

3.3.3 The Section 41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

4.0 Methodology

4.1 Desktop Study

A search of the Multi-Agency Geographic Information for the Countryside website was undertaken with regards to the presence of statutory nature conservation sites. In addition, a data search was undertaken with the Lincolnshire Environmental Records Centre (LERC) within a search area of 2km radius from the site.

4.2 Field Surveys

4.2.1 Extended Phase 1 Survey

A walkover of the site was undertaken by Ian Johnson on 8th September 2017 based on the JNCC (2010) Phase 1 Habitat Survey Guidelines.

The Phase 1 Survey was extended to include a search for signs of protected, principal importance and biodiversity priority action plan species and an assessment of the habitats present for their likelihood to support such species (see Annex One). The habitats and ecological features recorded during the survey are identified on Plan ECO3 (Appendix Three) and described in the text.

A building inspection bat survey (including an examination of the internal structures, roof spaces and, insofar as practicable, external spaces of the buildings on site) was also undertaken on the same date.

The survey was carried out to assess the current usage of the buildings by bats and to advise on the impact on bats and legal obligations prior to building work being carried out.

The building survey was carried out by Ian Johnson, a licensed bat worker (class licence- level 2). Equipment used for the building survey included a powerful torch and close focusing binoculars.

An assessment was made of the suitability of ponds within 250m of the site to support Great Crested Newt *Triturus cristatus*. The assessment was undertaken in accordance with ARG UK Advice Note 5, based on the Habitat Suitability Index (HSI) developed by Oldham *et al.* (2000).

4.3 Constraints

The single on-site building is very largely covered in dense Ivy growth. Access to the building was not possible at the time of the survey, but the interior was closely inspected through a broken window using a torch and binoculars. Given the small size of the building and the lack of any enclosed loft void or other features of high suitability for bats, it is considered that the survey was not greatly constrained.

5.0 Results

5.1 Background Data

5.1.1 Statutory and Non-Statutory Nature Conservation Sites

The following site has been identified within the 2km search radius (See Appendix Six for citations):

Table One

Site Name	Designation Status	Distance From Application Site
The Shrubberies	Local Nature Reserve (LNR)	1.1km northeast

5.1.2 Notable Species (Protected Species, and Species of Principal Importance)

The following notable species of relevance have been identified within the 2km data search radius:

Table Two

Species – Common Name	Latin Name	Species Category
Great Crested Newt	<i>Triturus cristatus</i>	Amphibian
Barn Owl	<i>Tyto alba</i>	Bird
Bewick's Swan	<i>Cygnus columbianus subsp. bewickii</i>	Bird
Bullfinch	<i>Pyrrhula pyrrhula</i>	Bird
Corn Bunting	<i>Emberiza calandra</i>	Bird
Dark-bellied Brent Goose	<i>Branta bernicla subsp. bernicla</i>	Bird
Grey Partridge	<i>Perdix perdix</i>	Bird
House Sparrow	<i>Passer domesticus</i>	Bird
Lapwing	<i>Vanellus vanellus</i>	Bird
Skylark	<i>Alauda arvensis</i>	Bird
Tree Sparrow	<i>Passer montanus</i>	Bird
Turtle Dove	<i>Streptopelia turtur</i>	Bird
Yellow Wagtail	<i>Motacilla flava</i>	Bird
Yellowhammer	<i>Emberiza citrinella</i>	Bird
Brown Hare	<i>Lepus europaeus</i>	Mammal
Brown Long Eared	<i>Plecotus auritus</i>	Mammal
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	Mammal
Daubenton's Bat	<i>Myotis daubentonii</i>	Mammal
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Mammal
Whiskered/Brandt's Bat	<i>Myotis mystacinus/brandtii</i>	Mammal
Butterfly-bush	<i>Buddleja davidii</i>	Flowering Plant
Winter Heliotrope	<i>Petasites fragrans</i>	Flowering Plant

5.2 Habitats (General)

The site largely comprises arable land, with limited areas of semi-improved grassland and hardstanding, with hedgerows and occasional trees to some boundaries. A single building is present within the site.

Characteristic plant species within each habitat are noted in the text below, while a full species list for the site is provided at Appendix Four.

5.2.1. Vegetation

5.2.1.1 Arable

The majority of the site comprises arable farmland, which was largely bare at the time of survey (see Photograph 1 at Appendix Three). A range of common and widespread species characteristic of arable and disturbed ground were recorded, including Small Nettle, Scentless Mayweed, Pineappleweed, Shepherd's Purse, Fat-hen, Cleavers, Black-bindweed and Redshank.

5.2.1.2 Semi-improved Grassland

Semi-improved grassland is present in the form of grassy margins to the arable land, a dry ditch to the west and a more extensive area of grassland (approximately 0.7ha) in the northeastern part of the site (see Photograph 2). The grass margin to the north of the site is the widest field margin, being approximately 5m in width (see Photographs 4 and 6). The grassland largely comprises coarse grasses including False Oat-grass, Yorkshire Fog, Tall Fescue and Cock's-foot, together with Timothy, Red Fescue and Creeping Bent. A range of common and widespread herb species were recorded, including locally dominant Nettle, Cleavers, and Creeping Thistle, together with Horseradish, Common Mallow, Broad-leaved Dock, Dandelion, White Clover, Ragwort, Ribwort Plantain, Hairy Tare, Red Clover, Creeping Buttercup, Field Bindweed and Common Vetch. A number of non-native species were recorded including Crown Vetch and Garden Asparagus. The non-native Winter Heliotrope forms a large, dense stand towards the eastern end of the northern field margin. Occasional patches of Bramble were also present within the grassland areas.

5.2.1.3 Hardstanding

Hardstanding is present in the form of a track way leading from Wisbech Road to the residential properties enclosed by the site (Photograph 3). This is sparsely vegetated with grasses including occasional Annual Meadow-grass, Yorkshire Fog and Rough Meadow-grass, together with herbs species including Bristly Ox-tongue, Dandelion, Dove's-foot Crane's-bill, Greater Plantain, Shepherd's Purse, Scentless Mayweed, Chickweed, Smooth Sow-thistle, Black Medick and Fat-hen.

5.2.1.4 Scrub

Scrub is present in the vicinity of the on-site building, along the northern and northeastern boundaries and occasionally within grassland areas. The scrub largely comprises Bramble, with more occasional Butterfly-bush, Hawthorn, Elder, Currant sp., Privet sp. and Ivy. A number of scrubby Willow species including Osier are present along the northern boundary of the site, associated with ditch D1 (Photograph 4).

5.2.1.5 Ditches

Ditches are present on parts of the northern, western and southern boundaries of the site. Ditch D1, approximately 3-4m wide, adjoins the gardens of residential properties on the B1359 London Road to the north of the site. It is largely shaded by dense growth of Willows and other shrubs (see above). Under dense shade, vegetation is largely absent but in more open areas Bramble, Nettle and Bindweed sp. are prominent (see Photograph 5), with more local Silverweed. A short section holding standing water was recorded at the eastern end of D1. Vegetation was limited to Woody Nightshade, Sweet-grass sp. and Duckweed, suggesting the standing water is a temporary or seasonal feature. D2 is a shallow grassy ditch between the site and the verge of Seagate Road; its

vegetation is described under the Semi-improved Grassland section above. D3 is another shallow grassy ditch, also described above, separating part of the site from the arable land to the south.

5.2.1.6 Hedgerows

A number of hedgerows are present along the site boundaries. These are described below:

Hedgerow H1 (see Photograph 6) marks the boundary of the site with the curtilage of properties to the north. It is approximately 2.0m to 2.5m tall and comprises a range of woody species including frequent Field Maple, Privet sp., Dogwood and Hawthorn, with more occasional Beech, Buckthorn, Berberis and Wilson's Honeysuckle.

Hedgerow H2 marks the boundary of the site with residential properties on Seagate Road. It largely comprises mature Cypress sp cut to a height of approximately 2m, with a short section comprising Wilson's Honeysuckle and locally abundant Ivy.

Hedgerow H3 is a further garden hedgerow, comprising Beech to a height of approximately 5m, with occasional Bramble and Elder.

Hedgerow H4 comprises a mixture of Blackthorn, Bramble, Ivy and Ash to a height of approximately 5m, adjacent to an off-site tree line of Poplar.

Hedgerow H5 marks the boundary of the site with a residential property on Wisbech Road. To the south it comprises Cypress sp. growing to a height of approximately 4m. To the north of the property the hedgerow is lower, to approximately 1.5m tall, and comprises Garden Privet.

Hedgerow H6 marks most of the boundary of the site with the residential properties it encloses. It largely comprises Garden Privet to a height of up to 3m, together with some sections comprising Cypress spp.

5.2.1.7 Trees and Tree Lines

Tree Line TL1 comprises a number of young Ash trees growing over scrubby species including Hawthorn, Butterfly-bush, Elder, Bramble and Privet sp..

Occasional young to mature Ash trees are present adjacent to ditch D1 and on the southern boundary of the site, while two large, mature hybrid Poplars are present on the boundary with Seagate Road (see Photograph 7).

5.2.2 Buildings

A single building, B1, is present within the site (see Photograph 8). This is a small, redundant agricultural building, measuring approximately 5m by 8m, of brick construction under a pitched, corrugated panel roof on a wooden frame. The roof beams are of relatively modern construction. Skylights and a window opening allow some light to the interior, which was noted to be very cobwebby. The building is thickly covered in Ivy growth, preventing external inspection of three of the four walls.

5.3 Fauna

5.3.1 Bats

Boundary hedgerows provide some limited foraging and commuting opportunities for bats, but are very largely associated with residential properties and are therefore likely to be subject to some level of artificial lighting. The value of the site for foraging and commuting bats is considered to be very low.

Building B1 and two boundary Poplar trees provide some minor potential for roosting bats.

5.3.1.1 Buildings

Building B1 is described above. The interior is accessible through a window opening, while skylights allow further light to the interior. Access to the interior was not available, so it was not possible to undertake a search for bat droppings. However, inspection via the window opening revealed a lack of features of high suitability for roosting bats. In particular, the roof beams appeared to offer no opportunities for crevice-dwelling bats such as *Pipistrelle* species, while the panel roof itself offered none. However, dense Ivy growth over the exterior of the building may itself offer minor opportunities for roosting bats, most probably as an occasional summer roost for a low number of bat species. However, the building is set in a location of low suitability for bats. Overall suitability of building B1, including associated Ivy growth, is considered to be very low.

5.3.1.2 Trees

Two large Poplar trees on the boundary with Seagate Road are considered to have low potential for bats, on the basis that the trees are of a size where they cannot be fully assessed from ground level. However, no specific features of potential value to bats were identified during the survey.

5.3.2 Birds

A small number of common bird species were recorded during the Phase 1 survey. These were: Rook *Corvus frugilegus*; Jackdaw *Corvus monedula*; Carrion Crow *Corvus corone*; Wood Pigeon *Columba palumbus*; Collared Dove *Streptopelia decaocto*; Blackbird *Turdus merula*; and Goldfinch *Carduelis carduelis*. The arable land is considered to be of reduced potential to support wintering flocks of species such as Lapwing *Vanellus vanellus* or waterfowl due to the proximity of roads and housing to the site. Scope for nesting species such as Skylark *Alauda arvensis* and Lapwing is similarly reduced, although in the case of Skylark remains possible. Boundary hedgerows and trees also offer some opportunities for nesting birds, although most of these species adjoin existing residential development such that 'farmland specialist' species such as Linnet *Carduelis cannabina* and Yellowhammer *Emberiza cintrinella* are unlikely to be present. However, the hedgerows are likely to support species associated with residential development, such as thrushes and Dunnock *Prunella modularis*.

5.3.3 Great Crested Newts

A small area of standing water was recorded on site within ditch D1. However, its small size (less than 50m²) and lack of vegetation render it unsuitable for Great Crested Newts.

A larger pond, located approximately 80m from site to the north of the B1359 London Road. This was formally assessed for its potential to support Great Crested Newts and a Habitat Suitability Index (HSI) of 0.35 was calculated (Table Three). This equates to a 'poor' suitability for Great Crested Newts, with just 3% of such ponds actually supporting the species. This low HSI was the result of a number of factors including waterfowl numbers and lack of good quality terrestrial habitat in the surrounding area. Given the low suitability of the site itself for the species, and the barrier of the B1359 between the pond and the site, it is considered that Great Crested Newts are likely absent from the site.

Table Three. HSI Score for Off-site Pond

Location	Pond Area	Pond Drying	Water Quality	Shade	Fowl	Fish	Ponds in Wider Area	Terr'l Habitat	Macrophytes	HSI
1	0.4	0.9	0.33	0.5	0.01	0.67	0.37	0.33	0.5	0.35

5.3.4 Badgers

No evidence of Badger *Meles meles* presence, in the form of setts or of signs such as footprints, latrines, pathways, etc, was recorded during the Phase 1 survey. No background records for the species were returned by LERC and the habitats within the site are generally suboptimal for Badger. It is concluded that Badgers are likely absent from the site.

5.3.5 Reptiles

The site provides limited opportunities for reptiles in the form of an area of c. 0.7ha of rather rough semi-improved grassland. However, historical aerial photographs show this grassland is of relatively recent origin, not having been present in 1999, and is in a location remote from other suitable reptile habitat. Given also the absence of background records for this group, it is concluded that reptile species are likely absent from the site.

5.3.7 Hedgehog

The site offers limited opportunities for Hedgehog, but hedgerows and dry ditches may occasionally be utilised by Hedgehogs visiting nearby gardens. It is more likely that the site will be utilised by Hedgehog post-construction. Shrub and grassland planting would benefit this species, as would the provision of cut-outs within garden fencing to allow free movement of Hedgehogs between neighbouring gardens.

5.3.8 Invertebrates

The site has low potential to support invertebrate assemblages or species of note. The following species were noted to be present during the Phase 1 survey: Large White butterfly *Pieris brassicae*; Common Darter dragonfly *Sympetrum striolatum*; and Long Winged Conehead (bush

cricket) *Conocephalus discolor*. The last of these species was formerly a notable species restricted to a few coastal localities. However, in common with a number of other orthopteran species, it has undergone a major range expansion in recent decades and is now relatively frequently encountered in southern England up to The Wash. As such, its presence within the site is not considered to be of any elevated ecological significance.

6.0 Impact Assessment

The assessment of the impacts on valued ecological resources within the Zone of Influence (Zoi) of the Scheme has been based on the Institute of Ecology and Environmental Management (IEEM) guidelines. This process includes:

- Identifying those ecological features likely to be affected;
- Evaluating them to identify the important ones (i.e. those which, if their level of value reduced, national or local policies (or in some cases legislation) would be triggered; and
- Characterising the nature of the individual and combined impacts on each important feature, to determine their longevity, reversibility and consequences for the feature in terms of ecological structure and function.

6.1 Identifying the Zone of Influence (Zoi)

For most species the potential ecological impacts of the proposal are confined to the construction areas within the site and the immediately adjacent land. For great crested newts any breeding colonies within 250 metres of the construction activities could also be potentially affected.

6.2 Evaluation

6.2.1 *Valuing Ecological Features and Resources*

The CIEEM Guidelines acknowledge that ecological evaluation is a complex and subjective process but provides key considerations to take into account when applying professional judgement to assign values to ecological features and resources. These include consideration of geographic frames of reference; legal protection; site designations and features; biodiversity value; large populations or important assemblages of species; potential value, secondary or supporting value; social/community value and economic value.

Focusing on assessments of biodiversity value, there are various characteristics that can be used to identify ecological resources or features that are likely to be important in terms of biodiversity. These include:

- Rare or uncommon species in the local, national or international context;
- Endemic or locally distinct sub-populations of a species;
- Species on the edge of their distribution;
- Notably large populations of animals or concentration of animals considered uncommon or threatened in a wider context;
- Species-rich assemblages of plants or animals;
- Ecosystems and their component parts which provide the habitats required by the above species, populations and/or assemblages;
- Plant communities (and associated animals) considered typical of valued natural/semi-natural vegetation types;
- Habitat diversity, connectivity and/or synergistic associations.

This assessment also measures the contribution to nature conservation interest from non-statutory sites of nature conservation interest and the presence of habitats and species which although not specially protected are considered to be of local, regional or national conservation importance.

This latter category includes identification of flora and fauna that are listed as Species of Principal Importance under the Natural Environmental and Rural Communities Act 2006 (NERC), priorities under the UK Biodiversity Action Plan (UK BAP) and Local Biodiversity Action Plans (LBAP) and Red Data Book Species.

In this report all ecological resources or features are assigned to a value relating to their legal status and/or any other ecological interest within the immediate ZoI only (which might be the site or a larger area e.g. up to 250 metres for great crested newts) using the criteria set out in Table Four.

Table Four. Valuation of Species and Habitats

Level of Importance	Examples
International importance	Special Areas of Conservation; Special Protection Areas; Ramsar sites; European Protected Species.
National importance	Sites of Special Scientific Interest (SSSI); Species listed within Wildlife and Countryside Act 1981.
Regional/County importance	Local Nature Reserves; County Wildlife Sites (CWS); Ancient woodlands; Species/Habitats of Principal Importance (NERC).*
Local (parish) importance	Undesignated sites of some local Biodiversity and earth heritage interest.
Negligible importance	Would usually be applied to areas of built development, active mineral extraction, or intensive agricultural land.

*The NERC list also include some species/habitats protected under European and/or domestic legislation and therefore may be valued at a higher level.

6.2.2 Prediction and Evaluation of Effects

This assessment has considered both immediate on site impacts as well as those which may occur in adjacent areas of ecological value. Resultant effects can be permanent or temporary, direct or indirect, and cumulative.

6.2.3 Significance of Potential Impacts

The significance of an adverse effect (or a beneficial result) is determined by the magnitude of the impact and the value and sensitivity of the nature conservation resources affected. There is no definitive method for assessing the significance of adverse impacts on nature conservation receptors/features. Nevertheless, a high significance would generally be ascribed to large impacts on receptors/features of high nature conservation value and low significance would generally be ascribed to small impacts on receptors/features of low nature conservation value. The criteria used for assessing the significance of adverse and beneficial impacts are set out below in Table Five. These significance criteria are used for guidance, and professional judgement is required in their application to take account of the particular circumstances of a project.

The following factors are considered in determining whether ecological impacts are significant:

- Extent;
- Magnitude;
- Duration;
- Reversibility;
- Timing;
- Cumulative effects.

Table Five Significance Criteria

Significance Category	Criteria
Substantial Adverse	Loss of, permanent damage to, or adverse effect on, integrity of any part of a site of international or national importance; Loss of a substantial part or key feature of a site of county importance; Loss of favourable conservation status (FCS) of a legally protected species; Loss of or damage to a population of nationally rare or scarce species.
Moderate Adverse	Temporary disturbance to a site of international or national importance, but no permanent damage; Loss of, or permanent damage to, any part of a site of county importance; Loss of a key feature of local importance; A substantial reduction in the numbers of legally protected species such that there is no loss of FCS but the population is significantly more vulnerable; Reduction in the amount of habitat available for a nationally rare or scarce species, or species that is notable at a regional or county level.
Minor Adverse	Temporary disturbance to a site of county value, but no permanent damage; Loss of, or permanent damage to, a feature with some ecological value in a local context but that has no nature conservation designation; A minor impact on legally protected species but no significant habitat loss or reduction in FCS; A minor impact on populations of nationally rare or scarce species or species that is notable at a regional or county level.
Negligible	No impacts on sites of international, national or county importance; Temporary disturbance or damage to a small part of a feature of local importance; Loss of or damage to land of negligible nature conservation value; No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional/county level) species on the site or its immediate vicinity.
Neutral	No impacts either adverse or beneficial.

Minor Beneficial	A small but clear and measurable gain in general wildlife interest, e.g. small-scale new habitats of wildlife value created where none existed before, or where the new habitats exceed in area the habitats lost.
Moderate Beneficial	Larger scale new habitats (e.g. net gains over 1ha in area) created leading to significant measurable gains in relation to the objectives of Biodiversity Action Plans.
Substantial Beneficial	Major gains in new habitats (net gains of at least 10ha) of high value for biodiversity being those habitats, or habitats supporting viable species populations, of national or international importance cited in Annexes I and II of the Habitats Directive or Annex I of the Birds Directive.

Following the characterisation of effects, an assessment of the ecological significance of an effect is made. The guidelines promotes a transparent approach in which a beneficial or adverse effect is determined to be significant or not, in ecological terms, in relation to the integrity of the defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, which relates to the level at which it has been valued. The decision about whether an effect is significant or not, is independent of the value of the ecological feature; the value of any feature that will be significantly affected is then used to determine the implications, in terms of legislation, policy and/or development control.

The Guidelines advise that it is important to consider the likelihood of a predicted impact, along with the degree of confidence in the assessment of the effect on ecological structure and function. The decision on confidence levels is based on professional judgement; the scale of confidence levels used for this report is as follows:

- Certain/near-certain: probability estimated at 95% chance or higher;
- Probable: probability estimated between near-certain and 50:50;
- Unlikely: probability less than 50:50 but above 5%; and
- Extremely unlikely: probability estimated at less than 5%.

The concepts of 'ecological integrity' and 'conservation status' should also be considered when evaluating a feature of ecological interest. The Guidelines refer to 'integrity' 'the coherence of the ecological structure and function, across a site's whole area, that enables it to sustain that habitat, complex of habitats and/or the levels of populations of species for which it was classified'. The term 'conservation status' relates to the viability, rarity and condition of habitats and species. It is defined in the Guidelines to ensure that it can be 'applied to sites, habitats or species within any defined geographical area. If an effect is found not be significant at the highest geographical level at which the resource or feature has been valued, it may be significant at a lower geographical level'.

The Guidelines also state that: 'Significant effects on features of ecological importance should be mitigated (or compensated for) in accordance with guidance derived from policies applied at the scale relevant to the value of the feature or resource' and that: 'Any significant effects remaining after mitigation (the residual effects), together with an assessment of the likelihood of success in

the mitigation, are the factors to be considered against legislation, policy and development control in determining the application.

6.2.4 Potential Impacts and Proposed Mitigation

Based on the results outlined in Section Five, Table Six provides a summary of the species and habitats that are known to be present or potentially likely to be significantly affected by the proposed construction. Table Seven summarises the likely ecological impacts on these potential receptors (if present) and the recommended mitigation to minimise the likely impacts. Species not likely to be significantly affected are not included in this in depth evaluation but are referred to in the general summary in Table Eight.

Table Six

Potential Receptor
The Wash/North Norfolk Coast SPA, Ramsar, SAC and SSSI*
Hedgerows and Mature Trees
Bats
Nesting Birds

*These designations are not considered further within this report as they are subject to a separate HRA.

Table Seven Potential Impacts and Proposed Mitigation

Habitat/Species	Hedgerows and Mature Trees
Factors on which its integrity or conservation status depends	Hedgerows and trees require protection of root zones and hedgerows also require ongoing sympathetic management.
Ecological Value Policy and legal framework	Valued at site/parish level. Hedgerows are priority habitats as listed in accordance with S.41 of the NERC Act 2006. However, the majority of hedgerows within the site mark the boundary of domestic cartilages and to a greater or lesser extent comprise non-native species. None are considered to be of any elevated ecological value.
Proposed Activity	The proposals relate to the construction of residential development with associated landscaping and infrastructure.
Biophysical change	Change of land use from agricultural to residential.
Relevance to receptor in terms of ecosystem structure and function	There is potential for damage, particularly to root zones, during construction works and change of long term management of hedgerows. It is not known who is currently responsible for hedgerow management (i.e. the site owner/occupier or the owners of the associated residential properties).
Characterisation of unmitigated impact on the feature	It is anticipated that mature trees and all hedgerows will be retained. Provided works are carried out in accordance with best practice (BS5837: 2012) no significant construction effects are anticipated. In the absence of ongoing management hedgerow structure could ultimately be lost.
Duration	During construction and post-construction.
Reversibility	Hedgerow management could be reinstated at any time.
Ecologically significant: At what scale?	Potentially minor adverse-neutral at the site/parish scale.
Impact on integrity or conservation status	Potentially minor adverse/neutral.
Confidence in this Assessment Rationale	Probable. It is anticipated that all mature trees and boundary hedgerows will be retained and can be suitably buffered from built development to ensure their long-term retention post-construction.
Mitigation/ Compensation/ Enhancement	There is scope for new tree and hedge planting within greenspace associated with the proposed new development. This should utilise locally native species appropriate to the site.
Residual Impact	Minor beneficial at the site/parish level with provision of new tree and hedge planting.

Habitat/Species	General Nesting Birds (Particularly Farmland and Hedgerow Dwelling Species)
Factors on which its integrity or conservation status depends	There are a variety of bird species that utilise the types of habitats and features present within the site for nesting and as a food resource. Loss of nesting habitat, climate change and loss of food resources in the wild have all contributed to the decline of some of these species.
Ecological Value Policy and legal framework	Assemblage valued at site level. All are protected under the Wildlife and Countryside Act 1981 from killing and injuring and damage/destruction to their active nests and eggs.
Proposed Activity	The proposals relate to the construction of residential development with associated landscaping and infrastructure
Biophysical change	Loss of arable habitat from site and loss of some scrub and woody vegetation.
Relevance to receptor in terms of ecosystem structure and function	Arable land and small amounts of scrub are to be lost to the proposed development. In ecological terms, these are of negligible ecological value. However, if nesting birds are killed or injured, or active nests destroyed this would represent an offence under the wildlife legislation.
Characterisation of unmitigated impact on the feature	If hedgerow and/or tree works/building removal are conducted within the bird nesting season, then there is a risk of causing injury or death to any young present within any birds' nests present. There could also be a minor loss of habitat through the loss of some scrub and woody vegetation.
Duration	The risk of killing and injuring young would be present throughout any works conducted on buildings and woody vegetation within the bird nesting season (late February to August inclusive).
Reversibility	Any death to young would be permanent; loss of nesting and foraging habitat could be compensated through the installation of bird boxes and/or new planting of trees and shrubs. The loss of arable nesting habitat specifically could not be compensated, but the extent of the loss is considered negligible in the local context.
Ecologically significant: At what scale?	Minor adverse at the site scale.
Impact on integrity or conservation status	Minor adverse at the site scale.
Confidence in this Assessment Rationale	Near-certain. The area of nesting and foraging habitat to be lost is relatively small within the wider landscape and significant areas of greenspace are proposed. However, as there will certainly be some removal of suitable nesting habitat, there is a high risk to active nests if any are present at the point of clearance.
Mitigation/Compensation/ Enhancement	It is recommended that removal of vulnerable vegetation should ideally avoid the bird breeding season (late February to August inclusive) to avoid damage to nesting species. If this is not practicable then a nesting bird survey should be undertaken by an experienced ecologist prior to direct impact on suitable nesting bird habitat to identify whether active nests are present. If any are found they should be clearly marked and avoided until after the young have fledged and left the nest. Habitat replacement and enhancement for this group of species could also be achieved through the installation of bird boxes (see Appendix Five for examples), potentially including boxes for Swift <i>Apus apus</i> .
Residual Impact	Minor beneficial with provision of mitigation and enhancements.

Habitat/Species	Bats
Factors on which its integrity or conservation status depends	Bats are nocturnal, insectivorous species requiring roost sites such as hollows and cracks in trees and buildings to shelter, hibernate and breed in. They also require suitable habitat to feed in and often use linear features such as hedgerows within the landscape to navigate and commute to and from roost to feeding sites as well as using these features as a source of insects in their own right. Some species are particularly light sensitive and will not utilise areas illuminated even at low levels by artificial lighting. Many bat species have declined significantly nationally in recent decades due to loss/degradation of feeding habitat and potentially also to loss of roost sites.
Ecological Value Policy and legal framework	Protected at international level, although any bats utilising the site are likely to be of value at no more than the parish level. Bats are Listed under Schedule 5 of the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2010 it is an offence to <i>inter alia</i> : 1) intentionally or recklessly, damage, destroy or obstruct access to any structure or place which bats use for shelter or protection; 2) disturb bats while they are using such a place.
Proposed Activity	The proposals relate to the construction of residential development with associated landscaping and infrastructure
Biophysical change	Loss of a single building considered to be of negligible - low value to bats. Minor loss of scrub. Increased level of lighting within the site.
Relevance to receptor in terms of ecosystem structure and function	There is low potential for bats to utilise building B1 or its extensive Ivy cover as an occasional summer roost, while there may be very low levels of bat foraging along hedgerows and over grassland and arable areas.
Characterisation of unmitigated impact on the feature	There is a low risk of impact on roosting bats from the proposed demolition. Increased lighting from the proposed development could have a minor deterrent effect on use of the site by commuting or foraging bats.
Duration	During construction and post-construction.
Reversibility	Should any bats be found during demolition of building B1 a licence would be required from Natural England to complete the works. A requirement of the licence would be that there would be no loss of favourable conservation status. As such, any loss would be fully mitigated. Lighting impacts from the development could theoretically be reversed but in practice this is considered unlikely.
Ecologically significant: At what scale?	Negligible - minor adverse at the local scale.
Impact on integrity or conservation status	Negligible at the local scale.
Confidence in this Assessment Rationale	Probable. Although the site has not been subject to bat activity surveys, from the habitats present the low value of the site to bats is apparent.
Mitigation/Compensation/ Enhancement	Lighting provision within the new development should be kept to the minimum required and should utilise LED lighting sensitively position to minimise light spill on to boundary hedgerows and trees of potential value to foraging or commuting bats. The development proposals include the provision of substantial areas of greenspace. This could incorporate habitats of value to foraging bats including native trees, shrubs and areas of wildflower grassland. Bat boxes could be provided within the built development (see Appendix Five for examples).
Residual Impact	Minor beneficial at the local level.

7.0 Conclusions and Recommendations

Table Eight Summary of Conclusions and Recommendations

Potential Receptor	Conclusions	Recommendations
Designated Sites The Wash / North Norfolk Coast SPA, Ramsar, SAC and SSSIs.	A project level HRA is required.	Information to be provided to enable competent authority to undertake an appropriate assessment.
The Shrubberies LNR	No effects are anticipated.	No further action required.
Hedgerows and Mature Trees	It is anticipated that these can be retained with suitable buffers within the completed development.	New tree and shrub, potentially including hedgerow, planting is recommended within areas of greenspace within the new development.
Bats	The site is considered to be of no more than low value to bats at the local level. There is some scope for minor adverse effects through increased lighting within the site. No impact on roosting bats is anticipated by the proposed demolition of the single on-site building.	As a precautionary measure, Ivy should be stripped from building B1 under ecological supervision and using hand tools, prior to demolition of the building. In the unlikely event that bats are found to be present then works must cease until a licence is obtained from Natural England to permit the works to progress further. Care should be taken to minimise lighting levels - both in regards to temporary security lighting during the construction phase and any long-term lighting plans for the site: Any potential new lighting impacts associated with the proposed development should be minimised by the use of LED or other directional lighting units, minimising light spill on to hedgerows, trees and any other features of potential value to bats New tree and shrub planting is recommended; this will increase the amount of suitable foraging habitat, and potentially roosting habitat in the future as well as minimising any lighting impacts. Consideration should also be given to provision of bat roost boxes within the development (see Appendix 5 for examples).

Nesting Birds	The site has potential to support nesting birds within trees and shrubs around the site boundaries and some potential to support ground nesting species within the arable area. The potential nesting resource to be lost is relatively small within the wider landscape. However, as there will certainly be some removal of suitable nesting habitat, there is a high risk to active nests if any are present at the point of clearance.	It is recommended that removal of vulnerable vegetation should ideally avoid the bird breeding season (late February to August inclusive) to avoid damage to nesting species. If this is not practicable then a nesting bird survey should be undertaken by an experienced ecologist prior to direct impact on suitable nesting bird habitat to identify whether active nests are present. If any are found they should be clearly marked and avoided until after the young have fledged and left the nest. Habitat replacement and enhancement for this group of species could also be achieved through the installation of bird boxes (see Appendix Five for examples).
Great Crested Newts	No impact is anticipated on this species.	No further action is necessary.
Reptiles	No impact is anticipated on this species group.	No further action is necessary.
Hedgehogs	The site is likely to be used by Hedgehogs on no more than an occasional basis. However, levels of use may rise post-construction.	Shrub planting and grassland creation, particularly diverse native grassland planting, has the potential to benefit this species. It is recommended that garden fencing panels should include small gaps to allow Hedgehogs to move freely between neighbouring gardens.

8.0 References

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9.0 Photographs



1 - Arable



2 – Semi-improved grassland



3 – Hard standing



4 – Scrub on northern boundary



5- Vegetation within ditch D1



6 – Hedgerow H1 viewed from the north



7 – Hybrid Black Poplar adjacent to Seagate Rd



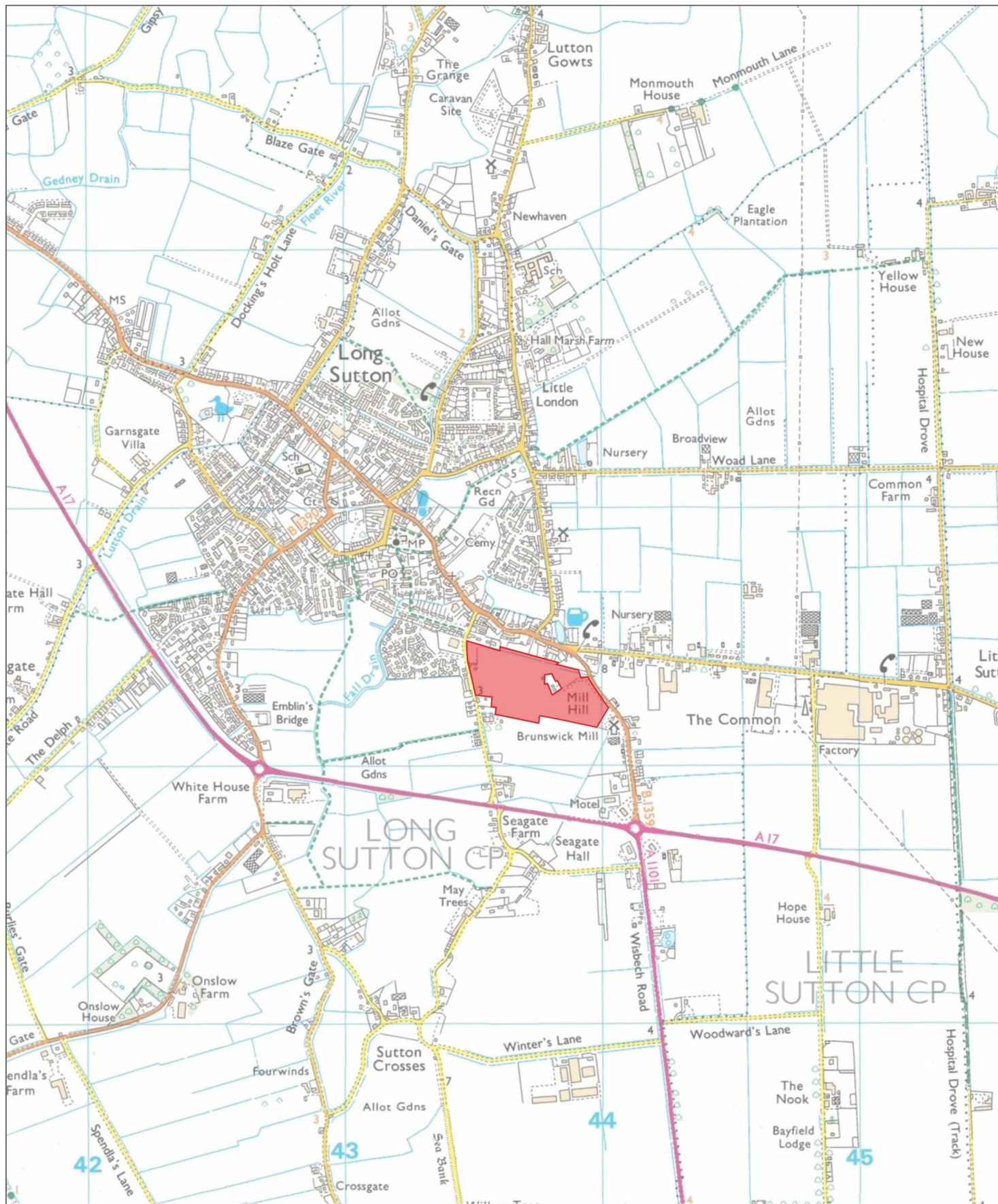
8 – Ivy-covered building B1

10.0 Appendices

Appendix One -	Site Location
Appendix Two -	Ecological Designations
Appendix Three -	Habitats and Ecological Features
Appendix Four -	Plant Species Recorded on Site
Appendix Five -	Examples of Potential Bat and Bird Enhancements
Appendix Six -	Designation Citations
Annex One -	Standard Survey Methodologies

APPENDIX ONE

Site Location



Key



Site Location

Land at Long Sutton,
Lincolnshire
Site Location

Site Name

Title

ECO1

Plan Ref.

September 2017

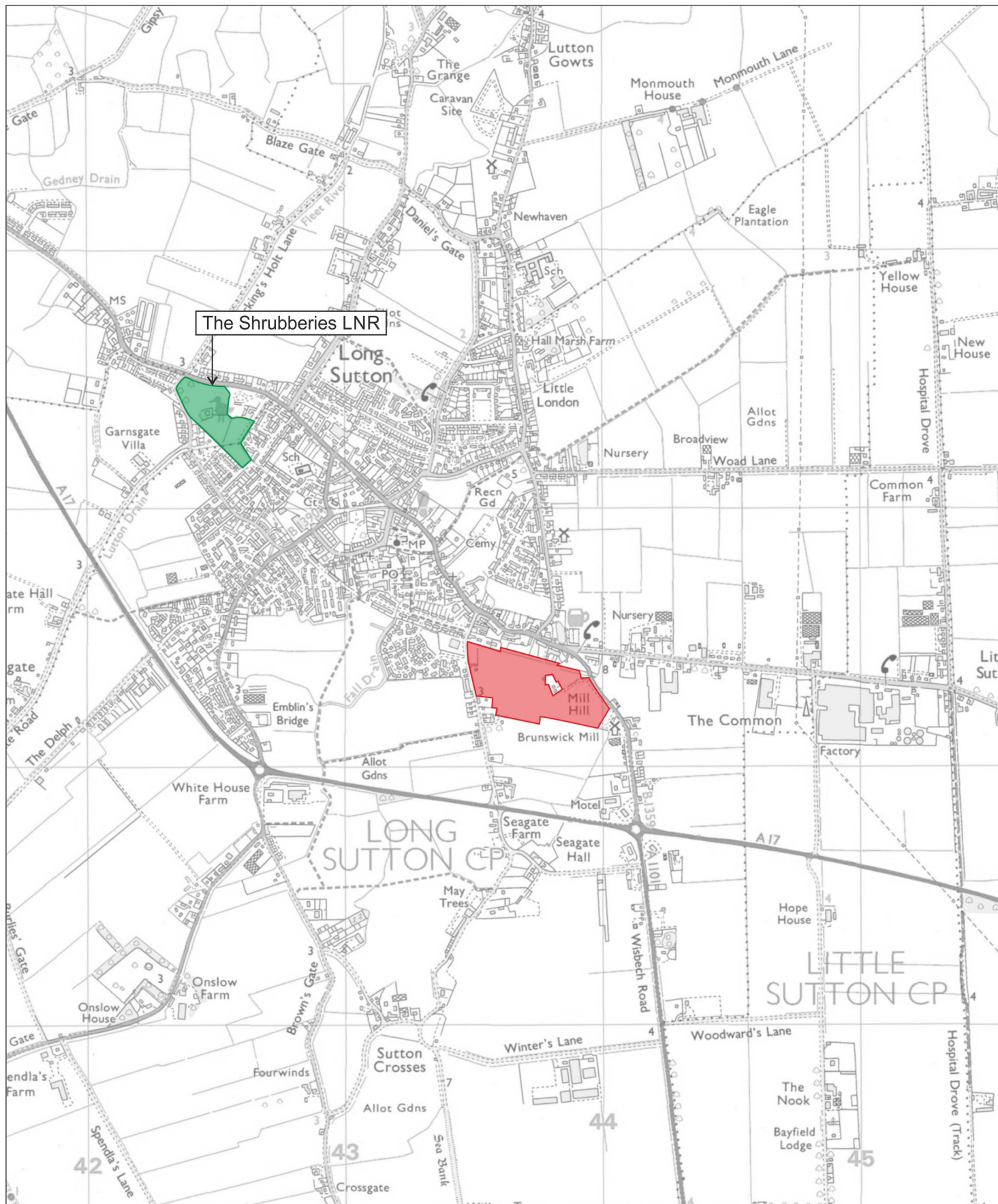
Date

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APPENDIX TWO

Ecological Designations



Key



Site Location

Local Nature Reserve (LNR)

Land at Long Sutton,
Lincolnshire
Ecological Designations

Site Name

Title

ECO2

Plan Ref.

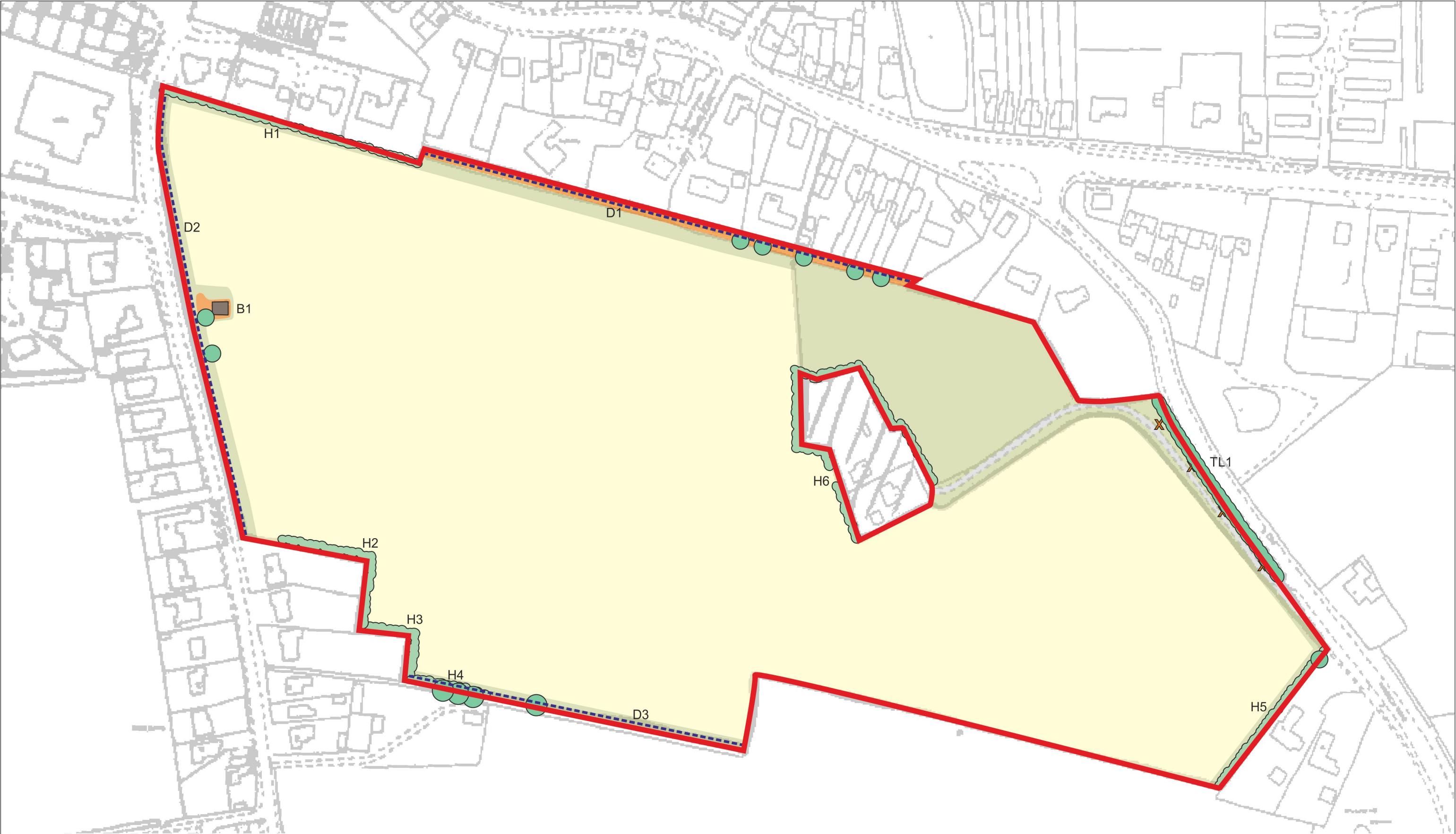
September 2017

Date



APPENDIX THREE

Habitats and Ecological Features



Key

- | | | | | | |
|--|-------------------------|---|-----------------|---|--------------|
|  | Site Boundary |  | Tree |  | Ditch |
|  | Arable |  | Hedgerow |  | Building |
|  | Semi-improved Grassland |  | Scrub |  | Hardstanding |
|  | Tree Line |  | Scattered Scrub | | |

Land at Long Sutton,
Lincolnshire

Habitats and Ecological
Features

ECO3
September 2017



Site Name

Title

Plan Ref.

Date

APPENDIX FOUR

Plant Species Recorded on Site

Plant species	Scientific name	Habitat(s) where recorded*
Annual Meadow-grass	<i>Poa annua</i>	HS
Ash	<i>Fraxinus excelsior</i>	D, TL
Barberry	<i>Berberis</i> sp.	H
Beech	<i>Fagus sylvatica</i>	H
Black-bindweed	<i>Fallopia convolvulus</i>	A
Black Medick	<i>Medicago lupulina</i>	HS
Blackthorn	<i>Prunus spinosa</i>	H
Bindweed species	<i>Calystegia</i> sp.	D
Bramble	<i>Rubus fruticosus</i> agg.	G, S, H, D
Broad-leaved Dock	<i>Rumex obtusifolius</i>	G, A
Bristly Oxtongue	<i>Picris echioides</i>	HS
Buckthorn	<i>Rhamnus cathartica</i>	H
Butterfly-bush	<i>Buddleja davidii</i>	HS, TL, S, G
Canadian Fleabane	<i>Conyza canadensis</i>	HS
Chickweed	<i>Stellaria media</i>	HS, A
Cleavers	<i>Galium aparine</i>	A,G
Cock's-foot	<i>Dactylis glomerata</i>	G
Common Field Speedwell	<i>Veronica persica</i>	HS, A
Common Hawk's-beard	<i>Crepis capillaris</i>	G
Common Mallow	<i>Malva sylvestris</i>	A
Common Vetch	<i>Vicia sativa</i>	G
Creeping Buttercup	<i>Ranunculus repens</i>	G
Creeping Thistle	<i>Cirsium arvense</i>	G, A
Crown Vetch	<i>Securigera varia</i>	G
Currant species	<i>Ribes</i> sp.	S, H
Cypress	<i>Cupressus</i>	H
Dandelion	<i>Taraxacum</i> agg.	HS, G
Dog-rose	<i>Rosa canina</i>	S
Dogwood	<i>Cornus sanguinea</i>	H
Dove's-foot Crane's-bill	<i>Geranium molle</i>	HS
Duckweed	<i>Lemna</i> sp.	D
Elder	<i>Sambucus nigra</i>	H, S
Fat-hen	<i>Chenopodium album</i>	HS, A
Field Bindweed	<i>Convolvulus arvensis</i>	G

Field Horsetail	<i>Equisetum arvense</i>	G
Field Maple	<i>Acer campestre</i>	H
Fool's Parsley	<i>Aethusa cynapium</i>	A
Garden Asparagus	<i>Asparagus officinalis</i>	G
Garden Privet	<i>Ligustrum ovalifolium</i>	H
Greater Plantain	<i>Plantago major</i>	HS, A
Groundsel	<i>Senecio vulgaris</i>	HS, A
Hairy Tare	<i>Vicia hirsute</i>	G
Hawthorn	<i>Crataegus monogyna</i>	H, S
Hazel	<i>Corylus avellana</i>	S, H
Hogweed	<i>Heracleum sphondylium</i>	H
Holly	<i>Ilex aquifolium</i>	H,S
Horse Chestnut	<i>Aesculus hippocastanum</i>	D
Horse-radish	<i>Armoracia rusticana</i>	G, A
Ivy	<i>Hedera helix</i>	S,T L, H
Nettle	<i>Urtica dioica</i>	G, D
Nipplewort	<i>Lapsana communis</i>	A
Osier	<i>Salix viminalis</i>	D
Perennial Sow-thistle	<i>Sonchus arvensis</i>	G
Pineappleweed	<i>Matricaria discoidea</i>	A
Poplar (hybrid)	<i>Populus X</i>	G
Privet species	<i>Ligustrum sp.</i>	S
Ragwort	<i>Senecio jacobaea</i>	HS, G
Red Clover	<i>Trifolium pratense</i>	G
Red Dead-nettle	<i>Lamium purpureum</i>	A
Red Fescue	<i>Festuca rubra</i>	G
Redshank	<i>Persicaria maculosa</i>	A
Ribwort Plantain	<i>Plantago lanceolata</i>	HS, G
Rough Chervil	<i>Chaerophyllum temulum</i>	G, A
Rough Meadow-grass	<i>Poa trivialis</i>	HS, G
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	HS, A
Shepherd's Purse	<i>Capsella bursa-pastoris</i>	HS, A
Silverweed	<i>Potentilla anserina</i>	D
Small Nettle	<i>Urtica urens</i>	A
Smooth Sow-thistle	<i>Sonchus oleraceus</i>	HS
Sun Spurge	<i>Euphorbia helioscopia</i>	HS, A, G
Sweet grass species	<i>Glyceria sp.</i>	D

Tall Fescue	<i>Festuca arundinacea</i>	G
Timothy	<i>Phleum pratense</i>	G
White Clover	<i>Trifolium repens</i>	G
White Dead-nettle	<i>Lamium album</i>	G
Willow species.	<i>Salix spp.</i>	D
Wilson's Honeysuckle	<i>Lonicera nitida</i>	H
Winter Heliotrope	<i>Petasites fragrans</i>	G
Woody Nightshade	<i>Solanum dulcamara</i>	
Yarrow	<i>Achillea millefolium</i>	G
Yorkshire Fog	<i>Holcus lanatus</i>	HS, G

***A=Arable; HS=Hard Standing; H=Hedgerows; G=Semi-improved Grassland; S=Scrub;
D=Ditch; TL=Tree Line**

APPENDIX FIVE

Examples of Potential Bat and Bird Enhancements



Example of Sparrow Terrace



Example of Starling Box



Example of Blackbird Box

Recommended Bat Boxes and Bricks





Schwegler 1FF Module bat box. A minimum of three boxes should be placed in a south to south westerly orientation and all lighting should be angled away to avoid direct illumination of the box. Branches should be cleared to provide an unrestricted flight path to and from the box.

The Schwegler 1FE module should be incorporated into the fabric in each new build on a south-east to south-west orientation to allow bat access into the internal wall cavity – insulation foam/wool at these location points should be omitted.



Schwegler 1FW Bat Hibernation Box to be placed on north facing aspect.

APPENDIX SIX

Designation Citations

ANNEX ONE

Standard Survey Methodologies

ANNEX ONE
Standard Survey Methodologies

A site walkover is undertaken to identify potential habitats suitable for protected species and/or evidence of field signs indicating presence of protected species and invasive plants.

Species Specific Methodologies

Great Crested Newts: A habitat suitability assessment for newts is undertaken taking due note of the presence of water bodies within 250 metres of the site (based on English Nature (2001) now Natural England) guidelines and potentially suitable terrestrial resting and shelter habitat.

At certain times of the year and/or in some years but not others ponds may be seasonally dry but these are not necessarily ruled out as ephemeral ponds can be important 'stepping stones' from one pond to another and/or refuges from the ravages of fish populations that can build up in permanent ponds.

Ponds are assessed using a combination of professional judgment and applying the nationally accepted Habitat Suitability Index (HSI) for Great Crested Newts based on Oldham *et al* 2001 which uses nationally accepted formulae based on a number of factors which are assigned a score ranging from 0 to 1 with a score of <0.5 assessed as poor, 0.5 to 0.59 below average, 0.6 to 0.69 average, 0.7 to 0.79 good and >0.8 excellent.

If appropriate follow up pond surveys are undertaken in the spring to cover all ponds within 250 metres (or further where professional judgment dictates) of the construction footprint to determine presence/absence of this species. Night torch surveys, egg searching, netting and funnel trapping are the main methods employed where practicable.

Bats: A habitat suitability assessment for bats is undertaken by identifying buildings and trees likely to be affected by the proposed construction works.

The tree assessments involve looking for the following signs:

- Holes
- Fissures
- Broken Limbs
- Loose Bark
- Urine Staining
- Fur Rubbing
- Dense Ivy

A scoring system is applied to the buildings and trees using the following criteria.

- **Low/Negligible probability of bat interest.** Buildings in this category fall in to two main types: Generally well maintained without cracks and crevices, no gaps between bargeboard or soffit and wall or without an attic space. Or those which contain some or all of the above features, but are both draughty and thick in cobwebs or contain strong odours such as solvents, diesel etc.

It must be borne in mind that a building from this latter group can become suitable for bats due to refurbishment. This often happens to houses once the attic space has been cleaned and under-felted prior to timber treatment.

No licence is required for development to a building classified as Low probability of bat interest.

Trees with low bat interest are usually young trees without any deadwood or holes. Most conifers fall into this category as they are usually planted as a crop and are then felled prior to becoming old, although once maturity is attained as in a landscape tree, suitable bat roosts may develop.

- **Medium probability of bat interest.** The buildings in this category contain many sites suitable for roosting bats although no obvious signs were recorded during the survey. In exposed conditions on large buildings the signs of bat usage such as droppings and urine marks can be obliterated by heavy rain.

Occasionally a light scattering of droppings will be recorded in an attic or a semi-derelict building, which is considered by the surveyor unsuitable for use as a bat roost. The medium probability of bat interest category can be used based on the surveyor's experience.

Whilst no licence is required for development to a building classified as Medium probability of bat interest, it is often best practice to conduct sensitive roof stripping or architectural salvaging to minimize any possible disturbance.

Trees in this category will have holes, cracks and crevices and lose bark suitable for roosting bats but no obvious roost signs such as staining and droppings at entrances.

- **High probability of bat interest.** This group includes buildings with known roosts or signs of bat occupancy such as droppings and staining at a roost entrance. The description of high probability buildings will also contain an indication as to the time of the year when it will be occupied by bats i.e. summer– nursery roost, winter– hibernation. A licence is normally required for development to a building classified as High probability of bat interest.

Trees within this category will contain all the obvious roost features such as holes, cracks and crevices and loose bark and will also contain staining and droppings at the roost entrance or have been identified as a roost via a visual sighting of an existing bat.

If appropriate, follow-up surveys are undertaken incorporating detailed inspections of the buildings/trees by a licensed bat worker and where necessary bat activity surveys are also undertaken to determine presence/absence of this group of species.

Reptiles: A habitat suitability assessment for reptiles is undertaken looking for *inter alia* areas of rough scrub, tussocky/rank grassland, areas of structural diversity offering short open areas of grassland and bare soil for basking with taller vegetation and habitat edges offering shelter and rapid escape routes, natural refugia such as brash piles and rubble heaps.

Where appropriate, follow up surveys are undertaken utilizing artificial refugia to determine presence/absence of this species.

Badgers: Field signs are searched for including setts, runs, prints, dung pits, hairs and feeding signs.

Otters: Field signs are searched for including holts, prints, spraints, haul out points and feeding signs.

Water Voles: A habitat suitability assessment for water voles is undertaken within riparian habitat. Assessment factors include *inter alia* water levels and seasonal longevity of water table, seasonal flash floods, bank profiles and substrates, vegetation for cover and suitable food sources, over shading, and evidence of the presence of mink. Where appropriate, follow up surveys are undertaken where field signs are searched for including burrows, prints, runs, droppings, latrines and feeding signs.

White Clawed Native Crayfish: A habitat suitability assessment for white clawed crayfish is undertaken within riparian habitat. Assessment factors include *inter alia* water levels and quality seasonal longevity of water table, water flow, underlying geology, bank and water course substrates, suitable submerged refugia and known presence of signal crayfish. Where appropriate, follow up surveys are undertaken to search for presence of this species by stone turning in the stream bed, netting and searching for burrows in the stream banks. Humane trapping may also be employed.

Notable Flora and Invasive Weeds: A habitat suitability assessment for notable flora (rare and protected) is undertaken and species are recorded. Evidence of the presence of invasive weeds included within Schedule 9 of the Wildlife and Countryside Act 1981 as amended is searched for.

Harvest Mouse: A habitat suitability assessment for harvest is undertaken within rough grassland and tall ruderal vegetation. Harvest mice build breeding nests in dense vegetation by weaving a nest out of leaves which will be at the top of a tussock of grass or around half way up the stem of cereals. To search for these nests surveyors walk transects of the target habitat checking within tussocks of grass and on stems. All areas of suitable vegetation are checked.