



Extended Phase 1 Habitat Survey

Land at Chalks Farm, Sawbridgeworth, Hertfordshire.

On Behalf of:

Barratt Homes

May 2014

© SES 2014

www.ses-eco.co.uk

Author	Sean Crossland BSc BCA
Technical Review	Stuart Pankhurst MIEEM BSc MSc DipIC
Report Status	Final Rev A
Date of Issue	09.05.14

Professional Service • Pragmatic Solutions
Ecology, Arboriculture, Countryside Management

Phone: 01268 711 021 Email: team@ses-eco.co.uk website: www.ses-eco.co.uk
Address: Unit 1, The Sudbury Stables, Sudbury Road, Downham, Essex, CM11 1LB

Executive Summary

The land at Chalks Farm, Sawbridgeworth, Hertfordshire, is being promoted for development by Barratt Homes. It is considered that with respect to ecology there are no overriding constraints to development and that the scheme is wholly deliverable.

The proposed development site is dominated by intensively managed arable land considered to be of low ecological value. Habitats of significant ecological value are largely restricted to the boundaries of site (hedgerows and their associated features). These hedgerows have the potential to be of value to several protected species as well as being of general biodiversity value themselves. In addition these hedgerows can be classed as a habitat of principle importance under the United Kingdom Biodiversity Action Plan (UK BAP)/ Natural Environment and Rural Communities (NERC) Act.

Although the majority of site is of low ecological value, the proposed development has the potential to adversely impact upon the ecologically valuable boundary features present. As such further works have been recommended and subsequently undertaken to establish an ecological baseline. Notwithstanding this, any potential direct impacts upon the ecologically valuable features onsite will be mitigated for through design of the master plan to ensure that all hedgerows are retained and protected. Indirect impacts (edge effects) upon these features will also be mitigated for through extensive boundary plantings (as well as employing pollution prevention methods) which will, in addition, provide an enhancement to the existing boundary habitats as well as create new ecologically valuable habitats on site (woodland and woodland edge).

As such it is considered that any adverse impacts associated with development can be wholly mitigated for. The planned mitigation is expected to result in a net positive benefit to the biodiversity of the site through the retention, enhancement and creation of ecologically valuable habitats. In turn these habitats will provide benefits to several protected species that may be present within the wider landscape. As such, the proposed site can be developed in accordance with Policy *SAWB3 Land to the south of West Road* of East Hertfordshire Council's emerging Draft District Plan (2014), chapter 11: *Conserving and Enhancing the Natural Environment* of the National Planning Policy Framework (2012) and relevant wildlife legislation.

Contents

1.0	Introduction and Aims	1
2.0	Methods	1
3.0	Constraints	2
4.0	Results	2
5.0	Findings and Recommendations	4
6.0	Conclusions	10
7.0	References	11

Appendices

Appendix 1: Habitat Map

Appendix 2: Species List and Relative Abundance

Plates

- 1. Tall Ruderals**
- 2. Field Margins**
- 3. Rank Grassland**
- 4. Farm Buildings**

1.0 **Introduction and Aims**

1.1 Southern Ecological Solutions Ltd. (SES) was commissioned to undertake an extended phase 1 habitat survey of the land at Chalks Farm, Sawbridgeworth, Hertfordshire (appendix 1).

1.2 The objectives of this extended phase 1 survey were to:

- map the main ecological features within the site and compile a plant species list for each habitat type;
- make an initial assessment of the presence or likely absence of species of conservation concern;
- identify any legal and planning policy constraints relevant to nature conservation which may affect the development;
- determine any potential further ecological issues;
- determine the need for further surveys and mitigation; and
- Make recommendations for minimising impacts on biodiversity and providing net gains in biodiversity where possible in accordance with chapter 11: *Conserving and Enhancing the Natural Environment*, of the National Planning Policy Framework (NPPF) (2012).

1.3 The site survey was undertaken by suitably qualified ecologist Sean Crossland BSc BCA in September 2012 with all areas being accessible at the time of survey. This initial survey was updated in April 2014 via walkover and is considered to remain an accurate depiction of the site.

2.0 **Methodology**

Desk Study

2.1 SES commissioned an extensive data search for records of protected and notable fauna species via Hertfordshire Biological Records Centre. The data search encompassed the study area, and up to 2km from its boundary. The search radius was extended to 5km for mobile species such as bats.

Extended Phase 1 Habitat Survey

2.2 The field survey comprised of an extended Phase 1 survey (JNCC, 2010) of the development site. This is a standard technique for obtaining baseline ecological information for areas of land, including proposed development sites.

2.3 The dominant and readily identifiable higher plant species identified in each of the various habitat parcels were recorded and their abundance was assessed on the DAFOR scale (appendix 2):

- D Dominant
- A Abundant
- F Frequent
- O Occasional
- R Rare

2.4 These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (1997).

- 2.5 Incidental records of fauna were also made during the survey and the habitats identified were evaluated for their potential to support legally protected species and other species of conservation concern, including Biodiversity Action Plan (BAP) Priority species.

3.0 **Constraints**

- 3.1 Desk top data searches are a valuable tool in evaluating a sites potential to hold rare and protected species, it is not however a absolute in confirming presence or absence of noted species due to the nature of how the records are collected.

4.0 **Results**

Desktop Data Search

- 4.1 European protected species identified through the data search include: multiple bat species including common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, serotine *Eptesicus serotinus*, brown long-eared *Plecotus auritus*, noctule *Nyctalus noctula*, Daubenton's *Myotis daubentonii*, Natterer's *Myotis nattereri* and whiskered bat *Myotis mystacinus* all recorded within 5km of site (1985-2005). One record of a great crested newt *Triturus cristatus* (GCN) was also present (1978) 1.5km northeast of site separated from site by significant residential development. Records of otter *Lutra lutra* were also present within Sawbridgeworth Marsh Site of Special Scientific Interest (SSSI) 1.8km northeast of site, as well as Stort Meads Local Wildlife Site (LWS) and the River Stort Pishiobury Meander LWS; both 1.5km southeast of site.
- 4.2 Multiple common lizard records *Lacerta zootica* were present 800m northeast along the River Stort (1970-2005). There were also multiple records of water vole *Arvicola amphibius* present within Tednambury Meadows LWS, Sawbridgeworth Meadows LWS, 1.8km northeast of site as well as within Stort Meads LWS 1.5km southeast of site.
- 4.3 The data search also highlighted the (SSSI) of Sawbridgeworth Marsh approximately 1.8km northeast of site designated for its marsh/tall fen habitats. Multiple LWS were also identified including; Tednambury Meadows 1.8km northeast of site (7ha of unimproved grassland and marsh/tall fen habitat), Sawbridge Meadows 1.5km northeast of site (17ha neutral grassland/swamp), Pishiobury Park 1.2km southeast of site (31ha of Parkland with pasture, Stort Meads 1.5km southeast of site (7.8ha of marshy grassland), River Stort Pishiobury Meander (section of meandering River Sort) and Rivers Nursery 300m south of site (former nursery with semi-improved grassland and scrub).

Extended Phase 1 Survey

- 4.4 The phase 1 habitat map of the site is shown within appendix 1 and the plant species recorded per habitat type are tabled in appendix 2.
- 4.5 The proposed development site lies west of the western edge of Sawbridgeworth, with agricultural land dominating the wider landscape to the north, south and west. The site itself is dominated by arable land considered to be of low ecological value. Hedgerows bound the site on all sides with Sawbridgeworth Brook running along the eastern boundary of site.

4.6 There are 6 habitat types found within the site these are:

- Arable land
- Scattered scrub
- Tall ruderal
- Defunct species-rich hedgerow with trees
- Species-rich hedgerow
- Running water

4.7 Each habitat type is described below and their distribution shown within appendix 1.

Arable land

4.8 An arable field dominates the site. At the time of survey it was recently ploughed, being devoid of any vegetation.

Scattered scrub

4.9 Scattered scrub can be found intermittently along the northern boundary adjacent to residential dwellings that front onto West Road. As such species present include largely ornamental species such as lilac *Syringa vulgaris*, tree of heaven *Ailanthus altissima* and garden privet *Ligustrum ovalifolium*. A line of Leyland cypress *Cupressus x leylandii* is also present forming a boundary to the eastern most residential property.

Tall ruderal

4.10 A large patch of tall ruderals is present in the northeast corner of site. To the north it is dominated by common nettle. To the south adjacent to the arable field its composition changes to relatively sparse vegetation cover consisting of species such as spear thistle *Cirsium vulgare*, bristly ox-tongue *Picris echioides* and hedge mustard *Sisymbrium officinale* (plate 1).

Defunct species-rich hedgerow with trees

4.11 Defunct hedgerows with mature trees are present onsite. These hedgerows are considered likely to be species rich. Standing deadwood is present throughout these hedgerows increasing their value for biodiversity. Common hawthorn *Crataegus monogyna* is the most abundant species with blackthorn *Prunus spinosa*, field maple *Acer campestre* and elm *Ulmus sp.* frequent. The field margins associated with these hedgerows are generally thin and of very poor quality in terms of species composition and structure (plate 2). In places the defunct nature of the hedgerows provides the opportunity for the semi-improved grass field margins to increase in size and structural diversity (plate 3).

Species-rich hedgerow

4.12 One hedgerow is present on site that is entire and encloses a smaller arable field in the southeast corner of site. This hedgerow is also considered likely to be species-rich and as above its associated field margins are small and very poor quality in terms of species composition and structure.

Running water

- 4.13** Sawbridgeworth Brook can be found following the eastern boundary of site. This stream held approximately 1-2 inches of water on average at the time of survey with sporadic deeper pools observed along its length. The stream consisted of a stony bottom with steep bare earth banks and a distinct lack of marginal/aquatic vegetation (plate 3).

5.0 Findings and Recommendations

Statutory/Non-statutory Sites

- 5.1** Sawbridgeworth Marsh SSSI is designated for its marsh/tall fen habitats. Taking this character into account as well as the nature of the proposed development and the distance between Sawbridgeworth Marsh SSSI and the development site (1.8km); it is considered very unlikely that there will be any significant adverse ecological impacts on the aforementioned Sawbridgeworth Marsh SSSI. This is also considered to be the case for all LWS's identified within section 4.3.

Protected Habitats

Hedgerows

- 5.2** The hedgerows on site are considered to meet the definition for classification as a UK BAP habitat. This is due to the hedgerows composition being more than 80% UK native woody species.
- 5.3** It should be noted however that the hedgerows on site are considered to have the potential to meet the definition of an 'important hedgerow' under the Hedgerow Regulations (1997), due to the nature, type and/or number of species present. Important hedgerows require permission from the local planning authority before they can be removed. As such, if any hedgerows are to be removed or the several access points planned require the removal of small sections of a hedgerow, it is recommended that a hedgerow survey is undertaken to ascertain whether or not the hedgerows on site are important under the Hedgerow regulations (1997).
- 5.4** The hedgerows on site have the potential to be of value to notable and legally protected species such as bats and/or reptiles. This habitat also provides foraging and nesting habitat for many species of birds and may also provide habitat for the European hedgehog and noted invertebrates such as the stag beetle *Lucanus cervus*. Due to this potential ecological value, the hedgerows onsite should ideally be retained and enhanced and any loss compensated for through additional plantings, in line with chapter 11 of the NPPF.
- 5.5** The majority of hedgerows will be retained and significantly enhanced. Considerable plantings of native species around the boundaries of site will increase the quantity and value of this habitat on site which will benefit biodiversity in general. If the retained hedgerows are adequately protected during construction following common industry standards it is considered that there will be a positive impact associated with development, through an improvement in quantity, structure and species composition of the hedgerows. This is considered to be in accordance with East Hertfordshire Council's Draft District Plan (2014): Policy *SAWB3 Land to the south of West Road (d): quality local green infrastructure through the site including opportunities for preserving and enhancing on-site assets (such as Sawbridgeworth Brook),*

maximising opportunities to link into existing assets and enhance biodiversity. Mitigation and enhancement recommendations with respect to other fauna that may use this boundary habitat are dealt with in the relevant sections below.

Rivers

- 5.6** Although the shallow brook (Sawbridgeworth Brook) that runs along the eastern boundary of site can be considered of relatively poor quality, it however has an inherent biodiversity value. This water course also has the potential to be of value to European protected species such as local bat populations or otters. As such it is recommended that this water course is protected during construction.
- 5.7** Avoidance of any adverse direct impacts to the water course and its banks will be prioritised through consideration of site ecology during the design stage. Mitigation of any indirect impacts during construction will also be appropriated following the Environment Agency pollution prevention guidelines. Semi-natural green infrastructure will be strategically placed alongside this brook linking to the retained and enhanced hedgerows and new plantings. This will improve the ecological connectivity of Sawbridgeworth Brook to the wider landscape as well as the site wide green infrastructure in accordance with East Hertfordshire Council's Draft District Plan (2014): Policy *SAWB3 Land to the south of West Road (d)*.

Species of Conservation Concern

Plants

- 5.8** All plant species recorded onsite are common and widespread.

Bats

- 5.9** All bat species are legally protected under section 9 of the Wildlife and Countryside Act (1981) and regulation 41 of The Conservation of Habitats and Species Regulations (2010) thus making bats a material consideration of the planning process.
- 5.10** The desk top data search uncovered records of several species of bat within 5km of the proposed development site indicating that bats maybe utilising adjacent habitats.
- 5.11** The vast majority of site is likely to be of little value to bat species being arable land. However, the hedgerows with trees along the sites boundaries provide potentially suitable habitat for foraging and commuting bats. Along the eastern boundary, tall ruderals and Sawbridgeworth Brook provide additional potential foraging value.
- 5.12** All trees on site were considered to display negligible bat roosting potential (category 3) through the absence of features such as raised bark, cracks, fissures and rot holes as per The Bat Conservation Trust guidelines 2012 (BCT, 2012). This assessment was made from ground level.
- 5.13** However, several old farm buildings were observed adjacent to the eastern boundary of site (appendix 1, T1) (plate 4). These buildings are considered to display moderate bat roosting potential with features such as hanging tiles. Additionally, green corridors in the form of hedgerows and tree lines through the wider agricultural landscape provide the site with good ecological connectivity to several small woodlands (within 1km) and other potentially suitable habitat.

- 5.14** Although the majority of site is likely to be of little value to local bat populations. The boundary habitats are considered to provide suitable foraging and/or commuting habitat for bats. This habitat is considered to be of medium habitat quality. Additionally the site displays a high degree of connectivity to potential roosting habitat. As such, following best practice (BCT, 2012) potential impacts from development must be considered.
- 5.15** To fully assess the potential impacts of development upon local bat populations it is recommended that a bat activity survey is undertaken to provide the necessary information. For the size of the site and development concerned, best practice guidance recommends 1 visit per transect every month from April to September in addition to automated surveys. However due to the sites characteristics, specifically the low value arable field dominating the site, it is considered that 3 visits between March and September plus automated surveys (table 7.2 BCT, 2012) would be appropriate to provide the required information.
- 5.16** With the retention and enhancement of the boundary habitats planned through development, it is considered that any potential impacts upon the local bat population as a result of development will be able to be fully mitigated for. It is also likely that these planned enhancements will provide a net positive effect upon the conservation status of any local bat populations satisfying relevant wildlife legislation, chapter 11 of the NPPF and East Hertfordshire Council's Draft District Plan (2014): Policy SAWB3 *Land to the south of West Road (d)*.

Birds

- 5.17** The site contains a matrix of habitats that is ubiquitous within the wider agricultural landscape. Sawbridgeworth Marsh SSSI is present within 2km of site and supports various breeding birds of conservation concern such as snipe *Gallinago gallinago*. However this SSSI contains habitats different from the proposed development site which are unlikely to be of significant value to the bird populations it supports.
- 5.18** The versatility of most bird species means they can utilise almost any habitats encountered and the sites boundary habitats provide good foraging and nesting opportunities for many bird species. As these boundary habitats are to be retained and enhanced post development it is considered unlikely that the development will significantly affect local bird populations. However it is recommended that a breeding bird survey is undertaken to allow enhancements to be targeted to the specific population assemblage in accordance with East Hertfordshire Council's Draft District Plan (2014): Policy SAWB3 *Land to the south of West Road (d)*.
- 5.19** All breeding birds are protected under the Wildlife and Countryside Act 1981 (as amended). Therefore, if any nesting bird habitat is to be lost (scrub, trees and buildings) it should be cleared outside of the nesting season (which is generally March to August) or after an ecologist has confirmed active nests are not present.

Badgers

- 5.20** Badgers are legally protected under The Protection of Badgers Act (1992) and as such, are of consideration when applying the principles of the NPPF.

5.21

5.22

5.23

Dormice

- 5.24** Dormice *Muscardinus avellanarius* are protected under United Kingdom law, primarily by The Wildlife and Countryside Act (1981) and regulation 41 of The Conservation of Habitats and Species Regulations (2010).
- 5.25** Dormice are arboreal and ideally require a habitat of a diverse range of trees and shrubs, which provide food resources throughout the year. They are generally found to have low population densities across their range due to territory and food requirements (English Nature, 2006).
- 5.26** The potential dormouse habitat onsite is restricted to the boundary hedgerows. However, with the preferred food species Hazel *Corylus avellana* notably absent and only 5 of 16 plant species identified as valuable to dormice present within this habitat (English Nature, 2006); blackthorn, hawthorn, sycamore *Acer pseudoplatanus*, bramble *Rubus sp.* and oak *Quercus sp.* Taking into account the lack of substantial wooded areas displaying connectivity to the site as well as the sub-optimal character of the boundary hedgerows, it is considered that the habitats present on site constitute sub-optimal conditions to support a viable dormouse population. In addition, the boundary hedgerows are to be retained and enhanced limiting any potential adverse impacts and will provide enhanced habitat for this species. Furthermore, no records of dormice were uncovered in the wider area through the data search undertaken. Therefore it is considered unlikely that dormice are utilising the site and no further works are required for this species.

Invertebrates

- 5.27** The majority of site is unlikely to currently support rare or noted invertebrates due to the lack of structural diversity displayed. However the boundary hedgerows have the potential to provide habitat for noted invertebrates such as the stag beetle *Lucanus cervus* (which is relatively widespread in the south of England). As the boundary habitats are being retained and the development is to be located within the arable field, it is considered that there will be no significant impacts of the development upon any potential noted invertebrates.

Great Crested Newts

- 5.28** GCN are legally protected under section 9 of the Wildlife and Countryside Act (1981) regulation 41 of The Conservation of Habitats and Species Regulations (2010) thus making GCN a material consideration of the planning process.

- 5.29** One record of a GCN was also found (1978) 1.5km northeast of site separated from site by significant residential development and as such displaying no connectivity to site.
- 5.30** The site is dominated by an arable field which is considered to be of no value to GCN due to being subjected to an intense agricultural management regime. However the boundary habitats offer some potential suboptimal foraging (semi-improved grassland within gaps in defunct hedgerows) and hibernating (hedgerows) habitat. No suitable aquatic habitat was observed on site with all ditches dry and Sawbridgeworth Brook displaying unsuitable conditions such as flowing shallow water and no marginal/emergent vegetation.
- 5.31** From OS maps, a pond is shown to be present approximately 80m to the north of site. This pond displays limited connectivity, being separated from site by residential development and West Road. Furthermore, this ponds presence was not observed when viewing the area from public land and it is considered likely that it does not exist anymore. No other ponds are present within 500m from the site.
- 5.32** Due to the site being largely of no value to GCN (with the exception of the hedgerows on site) and the distinct lack of the required mosaic of suitable aquatic and terrestrial habitat within the surrounding landscape that may sustain a viable meta-population, it is considered that GCN are highly unlikely to be present within the boundary habitats on site. As such no further works are recommended.

Reptiles

- 5.33** Multiple common lizard records were present 800m northeast along the River Stort (1970-2005).
- 5.34** The site is dominated by an arable field which is considered to be of no value to reptiles. However the hedgerows onsite offer potential sub-optimal foraging (semi-improved grassland margins) and hibernating (hedgerow/scrub) habitat. It is considered that the network of hedgerows on site is potentially suitable to support viable populations of common lizards, slow worms *Anguis fragilis*, adders *Vipera berus* and grass snakes. These species of reptiles are primarily legally protected under the Wildlife and Countryside Act 1981 (as amended) making it an offence to:
- Intentionally, or recklessly, kill or injure any of the above species,
 - and/or; Sell, or attempt to sell, any part of the species, alive or dead.
- 5.35** It is recommended that a presence/ likely absence reptile survey is undertaken to guide any potential mitigation that may be required. A seven visit presence and likely absence survey should be undertaken during 'suitable' days for reptile activity; a 'suitable' survey day is determined by the weather with temperature being the pre eminent factor. Reptile refugia (0.5m x 0.5m) should be used to observe reptiles basking. Refugia should be laid at a density of 10 per hectare. If presence is detected a population assessment should be carried out with the largest count within these seven visits indicating the potential population size of the recorded reptile species. This survey methodology is recognised as best practice by Froglife and the Herptofauna Worker's Manual.
- 5.36** The development is to be located within the arable field (considered to be of low value to reptiles). The suitable reptile habitat on site (hedgerows and associated grass margins) is to be retained post development (with the exception of access points) and will be enhanced through additional plantings. This will provide an

increase in quantity and quality of the suitable reptile habitat present on site. As such, it is thought that any potential impacts of the development upon any potential reptile populations would be limited to killing/injuring during construction. This potential impact will be able to be wholly mitigated for should reptiles be found to be present through actions such as the erection of fencing to exclude reptiles from the construction zone and appropriate timings of works.

Otters

- 5.37** The otter *Lutra lutra* is legally protected under section 9 of the Wildlife and Countryside Act (1981) regulation 41 of The Conservation of Habitats and Species Regulations (2010) thus making otters a material consideration of the planning process.
- 5.38** Sawbridgeworth Brook runs along the eastern site boundary which may potentially be used by otters for commuting and records have been observed with 2km of site (section 4.1). However, this riparian corridor lacks features that may be used as resting places for otters such as exposed root systems and other crevices. Existing disturbance levels are considered to be moderate with residential development and local area of play opposite the site and adjacent to the Brook.
- 5.39** As such, the potential use of Sawbridgeworth Brook as a commuting route would be expected to continue post development if this brook is protected through common industry practice during construction.
- 5.40** Avoidance of any adverse direct impacts upon Sawbridgeworth Brook and mitigation of any indirect impacts during construction will be appropriated following the Environment Agency pollution prevention guidelines. With this in mind no further works are recommended.

White Clawed Crayfish

- 5.41** White clawed crayfish *Austropotamobius pallipes* are protected under the Wildlife and Countryside Act (1981) and regulation 41 of The Conservation of Habitats and Species Regulations 2010 thus making white clawed crayfish a material consideration of the planning process.
- 5.42** The site borders a riparian corridor along its eastern boundary (Sawbridgeworth Brook) that displays sub-optimal habitat for white clawed with a lack of submerged root structures, emergent vegetation and general crevices used for shelter (Peay, 2000).
- 5.43** As such it is considered unlikely that white clawed crayfish are present within the immediate section of Sawbridgeworth Brook adjacent to the site. However it is recommended that, avoidance of any impacts upon Sawbridgeworth Brook should be prioritised.
- 5.44** Avoidance of any adverse direct impacts upon Sawbridgeworth Brook and mitigation of any indirect impacts during construction will be appropriated following the Environment Agency pollution prevention guidelines. With this in mind no further works are recommended and as such any potential impacts will be avoided.

Water Vole

- 5.45** Water vole *Arvicola amphibius* are protected under the Wildlife and Countryside Act (1981) and as such, are of consideration when applying the principles of the NPPF.
- 5.46** The aquatic habitat present along the eastern boundary of site (Sawbridgeworth Brook) is considered unsuitable for water vole due to the lack of marginal and bank side vegetation. As such no further works are recommended.

6.0 Conclusions

- 6.1** The proposed development site is dominated by arable land considered to be of low ecological value. Hedgerows run through, as well as bound the site which may potentially be of value to several protected species as well as being of general biodiversity value themselves. As such further works have been recommended and were subsequently undertaken (except for breeding birds) for the following:
- Hedgerows
 - Bats
 - Reptiles
 - Breeding Birds
- 6.2** It is considered that any potential adverse impacts from the proposed development upon specific protected species/habitats will be able to be wholly mitigated for. In addition the planned landscape plantings will provide enhancements to the ecologically valuable habitats on site which in turn will benefit multiple species and biodiversity in general. This is considered to be in accordance with East Hertfordshire Council's Draft District Plan (2014): Policy *SAWB3 Land to the south of West Road (d)* and chapter 11 of the NPPF.

7.0 References

- ARG UK (2010). *Advice Note 5, Great Crested Newt Habitat Suitability Index*. Amphibian and Reptile Group UK.
- Bat Conservation Trust (2012). *Bat Surveys-Good Practice Guidelines 2nd Edition*. Bat Conservation Trust, London.
- Department for Communities and Local Government (2012). *National Planning Policy Framework*. London: HMSO, pp. 25-29.
- East Hertfordshire Council (2014). *Draft District Plan: Preferred Options Consultation 2014*. http://easthertsconsult.limehouse.co.uk/portal/district_plan_preferred_options?poinId=2445576#document-2445576. Accessed May 2014.
- English Nature (2001). *Great crested newt mitigation guidelines*. English Nature, Peterborough.
- English Nature (2006). *The Dormouse Conservation Handbook 2nd ed.* English Nature, Peterborough.
- Environment Agency (2001-2011). *Polution Prevention Guidelines Series*. Environment Agency. Bristol.
- HMSO (1997). *The Hedgerow Regulations 1997 – Statutory Instrument 1997 No. 1160*
- JNCC (2010). *Handbook for Phase 1 habitat survey: a technique for environmental audit*. JNCC, ISBN 0 86139 636 7.
- Oldham, R.S., Keeble, J., Swan, M.J.S and Jeffcote, M. (2000). *Herpetological Journal Vol. 10*, pp. 143-155.
- Peay, S. (2000). *English Nature: Guidance on works affecting white clawed crayfish*. English Nature. Peterborough.
- Stace, C. A. (1997). *New Flora of the British Isles, 2nd Edition*. Cambridge University Press. Cambridge.

Appendix 1: Habitat Map



KEY

- Site boundary
- Species-rich hedgerow
- Running water
- Arable land
- Former species-rich hedgerow with trees
- Scattered scrub
- Tall ruderals
- Target note



Site: Land at Chalk Farm,
Sawbridgeworth, Hertfordshire

Drawn by N Pankhurst	Date 10/10/2012	Scale NA	Rev NA
Ecologist Southern Ecological Solutions Unit 1, Saffron Station Saffron Road Downham, Essex CM11 1LB Tel: 01206 711021 Email: info@ses.eco.co.uk		Client Baral Homes	



Appendix 2: Species List and Relative Abundance

Common name	Latin name	Scattered scrub	Defunct species-rich hedgerow with trees	Species rich hedgerow	Tall ruderal	Running water	Arable
Blackthorn	<i>Prunus spinosa</i>	○	○				
Bramble	<i>Rubus</i>	○	○				
Lilac	<i>Syringa vulgaris</i>	○					
Rose	<i>Rosa sp.</i>	○	○				
Elm	<i>Ulmus sp.</i>	○		F			
Holly	<i>Ilex aquifolium</i>	○					
Garden Privet	<i>Ligustrum ovalifolium</i>	○					
Cherry	<i>Prunus sp.</i>	○					
Hazel	<i>Corylus avellano</i>	○	○	○			
Leyland Cypress	<i>Cupressus x leylandii</i>	○					
English Oak	<i>Quercus robur</i>	○					
Hawthorn	<i>Crataegus monogyna</i>		F	○			
Field Maple	<i>Acer campestre</i>		○	○			
Dogwood	<i>Cornus sanguinea</i>		○				
Sycamore	<i>Acer pseudoplatanus</i>		○				
Elder	<i>Sambucus nigra</i>		○	○			
Wheat	<i>Triticum aestivum</i>		○				
White Bryony	<i>Bryonia dioica</i>		○				
Goat Willow	<i>Salix caprea</i>		○	○			
Herb Robert	<i>Geranium robertianum</i>		○				
Nipplewort	<i>Lapsana communis</i>		○				
False Oat Grass	<i>Arrhenatherum elatius</i>		○				
Soft Brome	<i>Bromus mollis</i>		○	○			
Perennial Rye Grass	<i>Lolium perenne</i>		○	○			
Clematis	<i>Clematis sp.</i>		○				
Ground Ivy	<i>Glechoma hederacea</i>		○				
Field Bindweed	<i>Convolvulus arvensis</i>		○				
Smooth Sow Thistle	<i>Sonchus oleraceus</i>		○				
Wild Oat	<i>Avena sp.</i>		○	○			
Poppy	<i>Papaver sp.</i>		○				
Scentsless Mayweed	<i>Tripleurospermum inodorum</i>		○				
Dandelion	<i>Taraxacum agg.</i>		○				

Greater Plantain	<i>Plantago major</i>		O				
Cocksfoot	<i>Dactylis glomerata</i>		F		O		
Ash	<i>Fraxinus excelsior</i>			O			
Black Bryony	<i>Tamus communis</i>			O			
Red Fescue	<i>Festuca rubra</i>			O	O		
Spear Thistle	<i>Cirsium vulgare</i>				O		
Creeping Thistle	<i>Cirsium arvense</i>				F		
Common Nettle	<i>Urtica dioica</i>				F		
Cleavers	<i>Gallium aparine</i>				O		
Bristly Ox Tongue	<i>Picris echioides</i>				O		
Dock sp.	<i>Rumex sp.</i>				O		
American Willow Herb	<i>Epilobium montanum</i>				O		
Common Mallow	<i>Malva sylvestris</i>				O		
Hedge Mustard	<i>Sisymbrium officinale</i>				O		
Perennial Sow-Thistle	<i>Sonchus arvensis</i>				O		
Dove's-foot crane's-bill	<i>Geranium molle</i>				O		

DAFOR Scale; D=Dominant, A=Abundant, F=Frequent, O=Occasional R=Rare.

Plates

1. Tall Ruderals



3. Rank Grassland



2. Field Margins



4. Farm Buildings

