



Date: October 2011

Land at Durrants Lane
and Shooters Way,
Berkhamsted

Protected Species Report

Prepared by
CSa Environmental Planning

On behalf of
Taylor Wimpey UK Ltd
Egerton Rothesay School
Hertfordshire County Council

Report No: CSA/1074/004

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1.0 Introduction

- 1.1 The following report sets out the findings of detailed ecological survey work undertaken at the Land at Durrants Lane and Shooters Way site, Berkhamsted, by CSa Environmental Planning on behalf of Taylor Wimpey UK Ltd, Egerton Rothesay School and Hertfordshire County Council. The surveys have been undertaken to assess the potential impacts of the development proposals on protected and notable species. This work follows recommendations set out in an Ecological Appraisal undertaken by CSa in March 2008 (Report Reference: CSA/1074/001). A summary of findings from a great crested newt *Triturus cristatus* survey undertaken between April and May 2008 is also included within this report.
- 1.2 The proposed development site encompasses approximately 14.2 hectares and consists of a school and associated grounds with arable fields and a woodland belt ("The Plantation") to the south, as well as further woodland ("Cox Dell") and a small rough grassland area to the north. It is understood that under the proposed scheme the school buildings be will expanded and refurbished, with new playing fields being provided alongside a new residential development.
- 1.3 The range of habitats present provides the potential for the site to be used by protected/notable species including badgers, bats, birds, reptiles and great crested newts. Specific survey work has therefore been undertaken to assess whether these species occur at the site, and the findings are detailed herein.

2.0 Bats

Legislation

- 2.1 All species of British bats are legally protected under part 3 (section 41) of the Conservation of Habitats and Species Regulations 2010. These Regulations make it an offence to:
- Deliberately capture, injure or kill a bat;
 - Deliberately disturb bats, impairing their ability to survive, breed, reproduce or rear/nurture their young;
 - Damage or destroy a breeding site or resting place used by bats; or
 - Be in possession of, transport, sell, and exchange or offer to sell/exchange a bat (dead or alive) or any part of a bat.
- 2.2 All bats and their roosts in England, Scotland and Wales were originally protected under the Wildlife & Countryside Act 1981. Subsequent amendments to the legislation for England and Wales has removed bats from most of the provisions of the Act, however it remains an offence to:
- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection; or
 - Intentionally or recklessly obstruct access to any structure or place that a bat uses for shelter or protection.
- 2.3 Disturbance of bats is covered by both the 2010 Regulations and the 1981 Act, with the magnitude of disturbance critical. Disturbance that impairs survival or successful reproduction would be covered by the Regulations with no legal defence existing. Less significant acts of disturbance may only be covered by the Wildlife & Countryside Act 1981, which includes some legal defences that may be applied in certain circumstances.
- 2.4 It is important to note that bat roosts are protected throughout the year, regardless of whether or not bats are present at the time. Under the Conservation of Habitats and Species Regulations 2010 the offence of damaging or destroying a breeding site or resting place of bats is not subject to any legal defence, i.e. an offence will have been committed even if the damage or destruction occurs accidentally.
- 2.5 The penalties for conviction of any of the above offences are a fine of up to £5000 per incident or per bat and/or up to six months imprisonment. Forfeiture of any items used to commit the offence may also occur, such as vehicles, plant, etc.

Survey Methodology

Assessment of potential for trees to support roosting bats

2.6 Mature trees identified within the site were inspected externally for features with potential to support roosting bats and any signs of bats using close focusing binoculars and high powered torches. This assessment was undertaken on 11 March 2011 by Jamie Woollam AIEEM. The following factors were taken into consideration when assessing the potential for roosting bats to be present:

- Frequency and distribution of features – presence on main trunk, branches attached to main trunk, outer branches etc. The greater the range of microclimates offered (e.g. by different orientation of holes or locations at different levels), the greater the likelihood of suitability for bats during at least some part of the year. Some features (e.g. a split in a large tree fork) may be aligned in such a way that they collect water in which case they are less likely to be suitable.
- How well-developed the potential roost features are – e.g. large sheets of loose bark, deep cavities.
- Evidence of past or present bat use - oily stains around entrance holes, droppings on bark below entrance holes, sound of bats emanating from holes etc.
- The extent to which features may be obscured – e.g. by growth of ivy etc or by other limitations on observation from the ground.

2.7 Trees were scored as having negligible, low, medium or high potential for use by roosting bats:

- The extent to which features may be obscured – e.g. by growth of ivy etc or by other limitations on observation from the ground.
- Negligible potential. Trees i) that are not sufficiently mature to have developed potential bat roost features, or ii) trees that are sufficiently mature but are known to lack them.
- Low potential. Trees where no potential roost features have been seen but which could not be examined completely and are of sufficient maturity to support such features in locations not visible from the ground.
- Medium potential. Trees exhibiting i) only poorly-developed potential roost features or ii) only one type of well-developed potential roost feature in a very limited range of locations or orientations.
- High potential. Trees i) exhibiting at least one roost feature that shows probable evidence of past use by bats, ii) showing one type of well-developed potential roost feature in a wide range of locations or orientations, iii) showing several types of well-developed potential roost features or iv) some combination of i) – iii).

2.8 It should be noted that where mature trees showed no obvious features to support roosting bats, these trees were not assessed in detail. Furthermore, not all trees to the interior of the two woodland areas “Cox Dell” to the north and “the Plantation” were included within the assessment, as it is understood these trees are to be retained as part of the proposed development.

Bat activity/emergence survey

- 2.9 Three bat activity surveys were carried out by licensed bat workers Kris Long MIEEM, Clare Caudwell MIEEM and Anna Price AIEEM, along with experienced surveyors Jamie Woollam AIEEM, Katie Critchley MIEEM and Jason Stone. Surveys were undertaken on 20 June and 4 August, comprising walked transects across key areas of the site to assess general level of bat activity and identify of any bat flight lines across the site. Transect points and identified flight lines are shown on Bat Survey Plan (CSA/1074/134) provided in Appendix A.
- 2.10 A dusk emergence survey was also undertaken on 22 July which focused on the school buildings.
- 2.11 Surveys were undertaken for approximately 1.5 - 2 hours following BST sunset or before BST sunrise, following Bat Conservation Trust good practice guidelines. All surveys were carried out in suitable weather conditions (summarised in Table 2).
- 2.12 During the bat surveys, surveyors watched for any bats entering or exiting trees or buildings, or using key flight lines, aided by broadband Batbox Duet detectors and Anabat SD1 detectors. All bat passes were noted along with the time, the species and any information regarding behaviour. Bat calls were subsequently downloaded from the Anabat detectors and analysed using the computer software Analook v.3.8m. The use of Analook software functions, such slope were used where possible to split closely related species (e.g. *Myotis* spp.)

ResultsAssessment of potential for trees to support roosting bats

- 2.13 Four trees were identified within the site to have potential to support roosting bats. These trees were assessed following methodology above, and results are summarised in Table 1 below. The locations of assessed trees are shown on the Bat Survey Plan (CSa/1074/134) provided in Appendix A.

Table 1: Tree Inspection Survey Results

Tree No.	Species	d.b.h (m)	Age Class	Features	Bat roost potential
1	Conifer sp.	0.75	Semi-mature	Tree leaning against adjacent sycamore tree with a single 4cm wide split in trunk from ground level to 5m (south-east aspect).	Medium
2	Pedunculate oak	0.75	Mature	Upwards facing hole at 7m height with several small holes above.	Low
3	Lime sp.	1.25	Mature	Several smalls holes at end of branches.	Low
4	Beech	1.0	Mature	Several smalls holes at end of branches.	Low

- 2.14 A single conifer tree exhibited one well-developed feature which may provide roosting opportunities for bats. However, there was no evidence of roosting bats found within this or any other tree assessed. Three other assessed trees were

found to show low potential for roosting bats to occur due to the small number and/or suitability of cavities (e.g. open at top/ no extension upwards).

Activity Surveys

- 2.15 Bat activity surveys were undertaken on 20 June, 22 July and 04 August 2011 during suitable weather conditions, as summarised in Table 2 below.

Table 2: Bat survey weather conditions

Survey Date	Sunrise/sunset (BST)	Time (hours)		Temp (°C)	Precipitation	Cloud cover (oktas)	Wind (Beaufort Scale)
20/06/11	21:22	Start	21:02	15	Intermittent light rain	8/8	2
		End	23:22	14		8/8	3
22/07/11	05:10	Start	03:25	9	Dry	3/8	1
		End	05:10	7.5	Dry	1/8	1
04/08/11	20:46	Start	20:31	15	Dry	1/8	2
		End	22:46	12	Dry	0/8	2

- 2.16 The results from the three activity surveys are summarised in Tables 8, 9 and 10 in Appendix B.
- 2.17 No bats were seen to emerge from, or return to, any trees or buildings on the site during the three activity surveys. The earliest bats recorded were common pipistrelle *Pipistrellus pipistrellus* immediately after sunset on the first survey. Pipistrelle bats are known to typically emerge within the first 30 minutes after sunset (with some pipistrelle bats emerging prior to this), and it is considered likely that these bats emerged from a roost in fairly close proximity to the site. However, there was no evidence to suggest that the bats emerged from a tree or building roost within the site.
- 2.18 Bat activity varied between surveys, with the first and third activity surveys revealing a low to moderate level of bat activity recorded for a single species: common pipistrelle. In contrast, no bats were recorded during the second survey which was focused around the school buildings. A single pass was also recorded for brown long-eared *Plecotus auritus* during the first survey.

Discussion

- 2.19 None of the assessed trees on site had any evidence of roosting bats, with a single tree exhibiting medium potential to support roosting bats. Whilst the bat activity surveys were undertaken to assess general activity levels and identify any flight lines, attention was also paid to trees within the site where bats could potentially emerge from or return to. However, no bats were noted to emerge from any trees during the surveys.
- 2.20 Where those trees that have been identified herein with low or medium potential to support roosting bats are to be removed, it is recommended that precautionary measures be put in place to further reduce likelihood of bats being impacted by works. These measures should include precautionary return to roost or

emergence survey immediately prior felling works, 'soft-felling' and retaining felled sections for a period to allow any bats present to safely escape.

- 2.21 No bats were seen to emerge from the school buildings, and these flat-roofed structures are considered to provide limited potential to support roosting bats.
- 2.22 Bat activity surveys revealed low to moderate levels of bat activity on site, with only a single bat species being recorded for the majority of the time. Bats were principally observed to commute or forage along trees lines, hedgerows or woodland edges, as illustrated shown in Appendix A: Bat Survey Plan (CSA/1074/134). Recommendations to retain as much of these habitats as possible have been reflected within the current Masterplan for the site.
- 2.23 The lighting design for the site should minimise potential impacts to bats and other wildlife that may use these habitats by avoiding unnecessary spill onto these linear features through the use of directional light sources and shielding where necessary.
- 2.24 Additionally, it is recommended that opportunities should be taken to provide new roosting opportunities on the new buildings and existing trees. At least 20 bat tubes (such as the Schwegler 1FR Bat Tube)¹ or 10 bat boxes (e.g., Eco-Surv Bat Boxes)¹ should be installed on new residential buildings adjacent "The Plantation" to the west, Grim's ditch area to the north and Coppin's Close edge to the east, near identified bat flight lines.

¹Bat and bird boxes are available from supplier such as Alana Ecology <http://www.alanaecology.com> and Wildcare <http://www.wildcareshop.com/>

3.0 Badgers

Legislation

- 3.1 The Protection of Badgers Act 1992 makes it an offence to kill or injure a badger or disturb an animal whilst it is occupying a sett. In addition the setts themselves are protected from damage, destruction and obstruction of access. Where works may potentially cause any of these offences it may be necessary to obtain a licence from Natural England to authorise the action.

Survey Methodology

- 3.2 An initial badger survey of the site was carried out on 11 March 2011 by Jamie Woollam AIEEM. This involved methodically searching the survey area for field signs of badgers and mapping any present including:
- Feeding evidence such as snuffle holes made during foraging;
 - Badger guard hairs caught on coarse vegetation, fences, etc.;
 - Latrines, often positioned along territorial boundaries;
 - Foraging tracks and push-throughs under fences and other obstacles; and Badger setts
- 3.3 Where setts are located the number and usage level of holes and the type of sett they comprise are recorded and categorised according to the criteria listed in Table 3², as used in various national badger surveys^{3,4}).

Table 3. Badger sett and hole definitions

Sett Type
Main Setts - These usually have a large number of holes with large spoil heaps, and the sett generally looks well used. There will be well-used paths to and from the sett and between sett entrances. Although normally the breeding sett is in continuous use, it is possible to find a main sett that has become disused due to excessive digging or some other reason; it should be recorded as a disused main sett. In the first survey, the average size of an active main sett was twelve holes (including all categories of use).
Annexe setts - They are often close to a main sett, usually less than 150 metres away, and are usually connected to the main sett by one or more obvious well-worn paths. They usually have several holes, but may not be in use all the time even if the main sett is very active.
Subsidiary setts - These often only have a few holes. They are usually at least 50 metres from a main sett, and do not have an obvious path connecting with another sett. They are not continuously active.
Outlying setts - These usually have only one or two holes, often have little spoil outside the hole, have no obvious path connecting with another sett, and are only used sporadically. When not in use by badgers, they are often taken over by foxes or even rabbits. However, they can still be recognised as badger setts by the shape of the tunnel (not the actual entrance hole), which is usually at least 250mm in diameter, and is rounded or a flattened oval shape. Fox and rabbit tunnels are smaller and often taller than broad.

² Categories originally defined in: Harris, S., Cresswell, P. & Jefferies, D. (1989) Surveying Badgers. An occasional publication by the Mammal Society. No. 9. London.

³ Wilson, G., Harris, S. & McLaren, G. (1997) Changes in the British badger population, 1988 to 1997. People's Trust for Endangered Species, London.

⁴ Cresswell, P., Harris, S. & Jefferies, D.J. (1990) The history, distribution, status and habitat requirements of the badger in Britain. Nature Conservancy Council, Peterborough.

Hole Type
Well used holes - These are clear of any debris or vegetation, are obviously in regular use, and may or may not have been excavated recently.
Partially used holes - These are not in regular use and have debris such as leaves and twigs in the entrance, or have moss and / or other plants growing in or around the entrance. Partially used holes could be in regular use after a minimal amount of clearance.
Disused holes - These have not been in use for some time, are partially or completely blocked, and could not be used without a considerable amount of clearance. If the hole has been disused for some time, all that may be visible is a depression in the ground where the hole used to be, and the remains of the spoil heap, which may be covered in moss or plants.

- 3.4 Where setts were identified and it appeared that holes were not in current use, sticks were placed across sett entrance holes to confirm this (these would be easily moved by a badger entering or leaving the sett). Several further checks were undertaken of holes identified by Jamie Woollam AIEEM or Clare Caudwell MIEEM on 19 May, 03 June, 16 June, 20 June and 21 June.
- 3.5 The location of setts and other badger field signs observed at the site is shown on the Badger Survey Plan (CSA/1074/135) in Appendix C.

Results

- 3.6 The survey confirmed that badgers are active within the site, with activity focused within the woodland to north and some evidence of activity to the south. Mammal paths were found within playing fields and woodland areas on site which may have been formed by badgers. Furthermore, two regularly used latrines were found within two woodland areas to the north and south of the site. Snuffle holes were found within playing fields to the east of the site.
- 3.7 The initial survey found a cluster of six entrance holes on a bank within the woodland to the north ('Cox Dell'). These holes likely form entrances to two setts: a main or subsidiary sett (with four entrance holes) and a potential annexe sett (with two entrance holes). Although the area around these two setts was entirely covered in dense nettle *Urtica dioica*, well-used paths and excavated substrate were clearly visible. The four main sett entrance holes were found to be active during all return visits with badger prints, guard hairs and excavated material found. The two annexe sett entrance holes were not found to be actively used by badgers on any of the return visits.
- 3.8 A further hole, likely dug by badgers, was found within 'The Plantation' woodland to the south of the site within a deep depression. This hole potentially forms an entrance to an outlier badger sett but was not found to be actively used by badgers during the survey or on any of the subsequent visits.

Discussion

- 3.9 Badgers were found to be actively using a single main or subsidiary sett within 'Cox Dell' woodland to the north of the site between 01 April and 30 June 2011. It

is likely that the badgers present in this sett use the playing fields and woodland on site to forage but may also disperse into the wider landscape across Durrants Lane or Shooters Way, and/or into gardens of residential properties adjacent to the site.

- 3.10 Under current development proposals the woodland areas on site are to be retained and managed with the intention of increasing structural diversity of these habitats. It is unlikely that clearance or construction, which is to be focused away from woodland areas, will impact badger setts present on site.
- 3.11 The extent of a badger group's range can vary between 15 ha and 300 ha (averaging 30 ha in high density, 75 ha in moderate and 180 ha in low density areas), not all of which will provide useful foraging⁵. It is generally accepted that the loss of 25% or more from a group's range could have a major impact. Of the habitats present on site, those most favoured for foraging badgers are open playing fields (for earthworms and other invertebrate prey), followed by woodland and hedgerows (fruits, nuts and invertebrate prey), and finally arable land (for crop plants). Whilst playing fields potentially used by foraging badgers will be lost to the east of the site, a larger area of open space (playing fields and public open space) is to be created on agricultural land to the southwest of the site. Therefore no major impacts are anticipated to badgers as a result of the proposed development, and some benefit to the local badger population may be achieved.
- 3.12 New native fruiting trees have been recommended along the "the Plantation" woodland frontage to the east of the proposed residential development. These new trees will provide additional foraging opportunities for local wildlife, including badgers during autumn and winter months.

⁵ Neal E. & Cheeseman C. (1996) *Badgers*. Poyser, London.

4.0 Birds

Legislation

- 4.1 All wild birds, their nests and eggs are protected under subsection 1(1) of the Wildlife and Countryside Act 1981. It is an offence to kill or injure any wild bird, to take or destroy their eggs, or to take, damage or destroy their nests while in use or being built.
- 4.2 In addition, certain species of wild bird, listed within Schedule 1 of the Wildlife and Countryside Act, receive additional protection under subsection 1(5) of the Act. This makes it an offence to disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young. It is also an offence to disturb the dependent young of such a bird.
- 4.3 Consideration is also taken of Birds of Conservation Concern (BoCC). These are species which are declining or appear to be in need of concentrated conservation actions (Eaton et al, 2009⁶). Certain criteria are used to place birds on a Red-list, Amber-list or Green-list and these are outlined in Table 4 below.

Table 4. Birds of Conservation Concern criteria

Red listed	<ul style="list-style-type: none"> those that are globally threatened according to The World Conservation Union (IUCN) criteria; historical decline in breeding population and not shown substantial recent recovery those that have shown a severe breeding decline over 25 years/longer term; those that have shown a severe breeding range decline over 25 years/longer term; species whose non-breeding population has declined over 25 years/longer term.
Amber listed	<ul style="list-style-type: none"> species of European Conservation Concern; those whose population has declined historically but made a substantial recent recovery; those whose breeding population has declined moderately over 25 years /longer term; those that have shown a moderate breeding range decline over 25 years/longer term; those whose non-breeding population has declined moderately over 25 years /longer term; rare breeders; or non-breeding rarity species with internationally important or localised populations.
Green listed	<ul style="list-style-type: none"> species that fulfil none of the criteria above.

⁶ Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009) Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* 102, pp296-341

Survey Methodology

Common Birds Census

- 4.4 A Common Birds Census (CBC) was carried out encompassing three visits to the site on 9 April, 15 May and 26 June 2011 to obtain a picture of the range and distribution of resident and migratory species breeding at this site. Although 10 visits are recommended by the British Trust for Ornithology (BTO), it was considered that a three visit survey, with effort targeted at finding 'significant' species, would produce a good illustration of the site's breeding community. The survey was completed by Martin Sutherland, and the conduct of the fieldwork was in line with good ornithological practice, with due attention being given to parameters which may affect the activity of birds i.e. period in the year, time of day and weather conditions.
- 4.5 The survey methodology adopted follows the standard CBC method and comprises:
- Identification of breeding species within the habitats at the site
 - Identification of all birds seen and heard with locations recorded on a large-scale plan and;
 - Records of the total numbers of birds seen including juveniles.
- 4.6 On each survey the surveyor walked a route across the site which enabled coverage of all proposed phases of the development. Over the three visits, the methodology applied ensured that the vast majority of species present at the site were recorded, although certain species that may be using the site, for example, nocturnal species such as owls, may be missed. Each survey commenced at dawn, when birds are most active, and continued for approximately three to four hours during suitable weather conditions.
- 4.7 The surveys focused on breeding bird species listed within Schedule 1, the Red and Amber categories of Birds of Conservation Concern, and those species listed as Priority Species under the UK and Local BAPs, although all bird species identified were recorded.
- 4.8 To ascertain the breeding status of birds using the site, the following criteria were applied, following the methodology used in the 'Atlas' surveys of 1988-1991 . This accepts the following activities as denoting breeding:
- Bird apparently holding territory;
 - Displaying or singing;
 - Pairs of birds in suitable habitat;
 - Adult visiting probable nest site;
 - Nest-building (including excavating nest holes);
 - Distraction display or feigning injury;
 - Used nest found;
 - Recently fledged young;
 - Adult carrying faecal sac or food;

- Adult entering or leaving the nest site in circumstances indicating occupied nest;
- Nest with eggs found, or bird sitting and not disturbed, or eggshells found near nest or;
- Nest with young; or downy young of ducks, game-birds, waders and other nidifugous species.

4.9 The data from the three surveys was compiled into Table 6 to reveal the number of territories for individuals of each species encountered in different areas of the site.

Results

Breeding Bird Surveys

4.10 Breeding bird surveys were undertaken between 9 April and 26 June 2011 during suitable weather conditions, as summarised in Table 5 below.

Table 5: Bird survey weather conditions

Survey date	Temp (°C)	Precipitation	Cloud cover (oktas)	Wind (Beaufort Scale)
09/04/2011	10	Dry	0/8	1
16/05/2011	8	Dry	0/8	3
26/06/2011	15	Dry	(misty- sky obscured)	1-2

4.11 The survey recorded a total of 32 bird species and, of these, 26 species were proven or considered likely to attempt to breed in habitats within the site.

4.12 Table 6 below shows the numbers of breeding territories of each species recorded in the survey area. As well as giving the total number of breeding territories, the table shows the numbers of territories of each species which are considered to be centred upon certain parts of the survey area.

Table 6: Numbers of territories of each species considered to breed at Land at Durrants Lane and Shooter's way, Berkhamsted: April to July 2011.

Species Name	Habitat Areas						Total
	1	2	3	4	5	6	
Pheasant	-	-	-	1	-	-	1
Woodpigeon	3	5	-	-	3	1	12
Great Spotted Woodpecker	-	1	-	-	-	-	1
Green Woodpecker	-	1	-	-	-	-	1
Wren	6	1	-	-	2	1	10
Dunnock	1	1	-	-	1	2	5
Robin	3	3	-	-	2	1	9
Blackbird	3	4	-	-	1	1	9
Song Thrush	1	1	-	-	-	-	2
Blackcap	3	-	-	-	2	1	6
Chiffchaff	2	-	-	-	1	-	3
Goldcrest	3	-	-	-	1	-	4
Long-tailed Tit	1	-	-	-	1	-	2

Coal Tit	1	-	-	-	1	1	3
Blue Tit	2	3	-	-	2	1	8
Great Tit	-	2	-	-	1	-	3
Nuthatch	1	-	-	-	-	-	1
Treecreeper	1	-	-	-	1	-	2
Starling	-	1	-	-	-	-	1
Jay	-	-	-	-	1	-	1
Magpie	-	1	-	-	1	-	2
Carrion Crow	-	1	-	-	-	-	1
House Sparrow	1	-	-	-	-	-	1
Chaffinch	3	3	-	-	2	2	11
Greenfinch	-	2	-	-	-	-	2
Goldfinch	-	1	-	-	-	-	1
<i>Number of territories</i>	35	31	0	1	23	11	101
<i>Number of species</i>	16	16	0	1	16	9	26

Habitat areas: 1: 'Cox Dell' woodland north of school buildings; 2: Playing fields and amenity grassland. This includes the trees and shrubs within and fringing these areas; 3: School buildings; 4: Arable fields in the southern half of the area; 5: 'The Plantation' woodland belt between the southern arable fields &; 6: Tree belt along north side of Shooters Way.

Discussion

- 4.13 No species included in Annex 1 of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were recorded during the three breeding bird survey visits. A total of three Birds of Conservation Concern (BOCC) Red list species⁷ were recorded during the surveys: song thrush *Turdus philomelos*, starling House *Sturnus vulgaris* and sparrow *Passer domesticus*. All of these species qualify for this list due to their UK breeding population or breeding range having contracted by 50% or more in the preceding 25 years. All of these species are also including in the UK BAP with the addition of dunnock *Prunella modularis*, which was also recorded.
- 4.14 All species recorded breeding in the survey area were common and widespread and typical of habitats present. No population was considered to be of anything other than local significance.
- 4.15 Under current development proposals "The Plantation" and "Cox Dell" woodland areas are to be retained and managed with the intention of increasing structural diversity of the habitat. The retention and enhancement of this key habitat, along with any new native planting on site, is likely to benefit birds and other wildlife present on site.
- 4.16 Additionally it is recommended that opportunities should be taken to provide new nesting opportunities for birds on the new buildings. At least 15 bird bricks (such as the Schwegler Bird Brick Type 24)⁸ A combination of at least 10 bird boxes (including Schwegler No 11 House Martin Nests, Schwegler Bird Houses. Schwegler 1MR Avianex Nest Box and Sparrow Terrace)⁸ should be installed on

⁷ Recently revised list: Eaton M.A et al (2009) 'Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel islands and Isle of Man' British Birds 102: 296-341

⁸ Bat and bird boxes are available from supplier such as Alana Ecology <http://www.alanaecology.com> and Wildcare <http://www.wildcareshop.com/>

new residential buildings adjacent to Grim's ditch area to the north, Coppin's Close edge to the east and Shooters Lane edge to the south.

- 4.17 All wild birds are protected from killing and injury, and their nests and eggs are protected from damage and destruction, under the Wildlife and Countryside Act 1981 (as amended). Therefore, dense vegetation clearance and significant tree surgery works should avoid the period between March and August (inclusive) when nesting birds are most likely to be present. If this is not possible then the vegetation will need to be checked for nesting birds by a suitably qualified ecologist.

5.0 Reptiles

Legislation

- 5.1 All native British reptiles are afforded protection against intentional killing and injury under Schedule 5 Section 9 (1) of the Wildlife and Countryside Act 1981. Certain rarer native species with restricted distributions are also protected under European legislation, but they are not relevant to the location of this site. In addition all British reptile species are classified as UK Biodiversity Action Plan (BAP) priority species.

Survey Methodology

- 5.2 Artificial reptile refugia comprising squares of roofing felt (a minimum size of 0.5 x 0.5m), were distributed across potentially suitable areas of habitat at the site on 11 March 2011. The refugia warm up quickly in the sun and provide sheltered places where reptiles may obtain warmth.
- 5.3 Six daytime survey visits were carried out between 19 March and 05 July 2011 to check for the presence of reptile species, such as common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis* and grass snake *Natrix natrix*. On each occasion the refugia were checked and careful visual searching of potential basking spots was also undertaken. An additional visual inspection for basking reptiles was undertaken alongside the reptile survey set-up on 11 March 2011. Checks were carried out when weather conditions are suitable for more conspicuous reptile behaviour, generally on days of mild weather when temperatures are between 10°C and 20°C. In April and May surveying is usually most effective during the middle part of the day, i.e. 11:00 – 15:00, when temperatures are at their peak. As the season progresses temperatures around midday are often less suitable for detecting reptiles and surveying is generally most effective between about 08:30 and 11:00, and between 16:00 and 18:30. However, the suitability of these time periods is dependent on the weather conditions, which are therefore included within the survey results.
- 5.4 It should be noted that surveys were carried out prior to the release on 09 September 2011 of new survey guidelines for reptiles produced by Natural England⁹. However, the survey effort applied at the site meets the 'minimum standard effort' requirements when surveying for slow worms, common lizards and grass snakes, as set out in this new guidance.

⁹ Natural England (2011) Natural England Technical Information Note TIN102: Reptile Mitigation Guidelines

Results

- 5.5 No reptiles were found on any of the six surveys or observed during the reptile set-up visit. Full survey details including weather conditions are provided in Table 7 below.

Table 7: Reptile survey weather conditions

Survey date	Start Time (hrs)	Temp (°C)		Precipitation	Cloud cover (oktas)	Wind (Beaufort Scale)
11/03/11 (setup)	12:30	Start	12	Dry	5/8	1
		End	12	Dry	5/8	1
19/05/11	11:30	Start	15	Dry	4/8	1
		End	15	Dry	4/8	1
03/06/11	10:00	Start	18	Dry	3/8	2
		End	18	Dry	3/8	2
16/06/11	14:00	Start	19	Dry	2/8	1
		End	19	Dry	2/8	1
20/06/11	16:00	Start	18	Dry	8/8	3
		End	18	Dry	8/8	3
21/06/11	09:30	Start	16	Dry	6/8	1
		End	16	Rain: damp ground	6/8	1
05/07/11	09:45	Start	15	Dry	2/8	2
		End	15	Dry	2/8	2

Discussion

- 5.6 No reptiles were found at the site during any of the survey visits. It is considered that the survey effort applied was appropriate to identify presence/absence of reptiles regularly using the site and the negative result is considered to be reliable. Reptiles are therefore not currently considered to be a constraint to development at this site.

6.0 Great Crested Newts

- 6.1 A great crested newt survey was undertaken in 2008 with full details found in the the great crested newt survey report (CSA/1074/002). As part of this survey six potentially suitable ponds within 500m of the site were surveyed, using the techniques described in English Nature's Great Crested Newt Mitigation Guidelines¹⁰. Initial assessments identified these six ponds to have potential to support great crested newts.
- 6.2 During the pond surveys however no evidence of this species was found and it is considered that great crested newts are not using these features. The results suggest that no population of great crested newt is present within the area surrounding the site.
- 6.3 It is therefore concluded that great crested newts pose no current constraint to the proposed development at the site.

¹⁰ English Nature (2001) Great Crested Newt Mitigation Guidelines. English Nature, Peterborough

7.0 Summary and Conclusions

- 7.1 Surveys for great crested newts and reptiles have been undertaken and no current constraints have been identified for the development of the site regarding these species.
- 7.2 No bat roosts have been identified on site. However, precautionary measures to further reduce the likelihood of bats being impacted by removal of, or surgery works to mature trees have been outlined. Additionally, recommendations have been made to maintain bat flight lines and for the lighting design of the site to minimise impacts to bats.
- 7.3 An active badger sett has been identified within the 'Cox Dell' woodland to the north of the site. This sett is not likely to be impacted by the development proposals. Whilst, some foraging habitat will be lost as part of the development, new open space will be created on arable land and native fruit tree/shrub planting has been recommended to provide autumn and winter foraging opportunities for badgers and other wildlife.
- 7.4 It is understood that much of the woodland, trees and hedgerows are to be retained as part of the development. The retention of these key habitats/features would provide good refuge, foraging and dispersal opportunities for a range of local wildlife including bats, badgers and birds. Where vegetation removal or significant tree surgery works are required it is recommended that works be undertaken between September and February inclusive to avoid impacts to nesting birds.
- 7.5 Native planting to benefit local wildlife has been recommended for inclusion within new landscaping for the site. Additionally, features to increase bird nesting and bat roosting opportunities have been recommended. where appropriate as part of new buildings on site.
- 7.6 The current Masterplan shows the retention of key habitats described above. Therefore the subject to the implementation of those recommendations made above it is anticipated that this site can be redeveloped without significant residual impacts to local biodiversity.

APPENDIX A

Bat Survey Plan (CSA/1074/134)



-  Assessed tree
-  Bat survey transect point
-  Bat survey transect route
-  Bat flight line
(line weight proportional to number of bat passes recorded between points)

Assessed Trees

1. Conifer sp: Moderate potential to support roosting bats
2. Pedunculate oak: Low potential to support roosting bats
3. Lime sp: Low potential to support roosting bats
4. Beech: Low potential to support roosting bats

 5F Deer Park Business Centre, Woolas Hall, Eckington, Pershore, Worcestershire, WR10 3DN t 01386 751100 f 01386 751144 e pershore@csaenvironmental.co.uk	Project	Land at Durrants Lane & Shootersway, Berkhamsted	Date	October 2011	Drawing Number	CSa/1074/134
	Title	Bat Survey Plan	Scale	See Scale Bar	Revision	-
	Client	Taylor Wimpey UK Ltd, Egerton Rothesay School & Hertfordshire County Council	Drawn	JW	Checked	AM

APPENDIX B

Bat Survey Results Tables

Table 8. Dusk bat activity survey results 20 June 2011

Time Period	Species	Activity (with transect point highlighted in bold)
21.02		START OF SURVEY (Sunset 21.22)
21.02-21.19		No activity
21.20-21.29	Common pip; Common pip; BLE;	Heard but not seen, very faint call C-D Seen moving North along road D Very quiet call HNS K
21.30-21.39	Common pip;	Foraging activity heard in woods, 2 passes O Seen feeding up and down main road A-B Heard not seen J-K 2 bats following tree line along the road, very faint A-D Commuting from west briefly foraging along hedge H-I Heard not seen, very faint, 7 passes A Commuting along hedge in a westerly direction, in and out of hedge foraging, 3 passes E-F Very brief pass, heard but not seen O
21.40-21.49	Common pip;	Bat heard foraging but not seen O Flying north along hedge L-K Very brief, foraging flying west to east along hedge I-J Bat foraging along hedge line H Bat heard but not seen E Very brief but close call, Heard but not seen L Foraging along wood edge, 4 passes E-F Bat seen commuting west to east along hedge F-G
21.50-21.59	Common pip;	HNS K Heard but not seen L Heard not seen, 6 passes C Bats heard and seen foraging west E Bats feeding at tree canopy level up and down road 16 passes Seen flying south towards woodland D Heard but not seen, under trees J
22.00-22.09	Common pip;	Fast pass from west to east N Heard but not seen, 2 brief passes G Brief heard but not seen L HNS A-C HNS D HNS A HNS along tree line to south D Brief heard but not seen L-K HNS, passing overhead E HNS, 4 passes M HNS E
22.10-22.19	Common pip;	HNS, very brief/quiet, 2 passes J Foraging over field A, along hedge 4 passes I-H Bat seen commuting in field A, along hedge/road G-F Heard foraging in wood, but not seen N Very brief bat calls, HNS K-L HNS C HNS, foraging around pond E 2218 – 2220 Regular foraging activity, 7 passes E-I
22.20-22.29	Common pip;	Very brief, 2 passes, HNS E HNS, 3 passes D-C HNS, 7 passes D Seen flying from central line of trees over open field, north towards houses L HNS 14 passes D
22.30-22.39	Common pip;	Foraging activity, 8 passes F-E Activity along road, no activity in field, 3 passes A-D Very brief, HNS L Seen feeding around road junction North to South, 15 passes A

		Between trees, 2 passes, HNS L-E HNS E
22.40-22.49	Common pip;	HNS J-I; HNS E; HNS K; HNS C
22.50-22.59	Common pip;	HNS, 3 passes E-F 2 bats feeding in corner of field, 15 passes D Very quiet, HNS L HNS, 2 passes H
23.00-23.09	Common pip;	Heard in woods, possible foraging over pond O 3 bats seen feeding along hedge on the field side, 7 passes A-D HNS 3 passes F-E HNS 4 passes A-B HNS L HNS N
23.10-23.19	Common pip;	HNS E
23.20-23.22	No activity	
23.22	END OF SURVEY	

Abbreviations: Pip = Pipistrelle; BLE= Brown long eared; HNS = heard not seen; SNH = seen not heard

Table 9. Dusk bat activity survey results 22 July 2011

Time Period	Species	Activity
03.25	START OF SURVEY	
03.25-05:10	No activity	
05:10	END OF SURVEY (Sunrise: 05:10)	

Table 10. Dusk bat activity survey results 04 August 2011

Time Period	Species	Activity
20.31	START OF SURVEY (Sunset 20.46)	
20.31-21.09	No activity	
21.10-21.19	Common pip;	Two bats flying between E-I-J ; One bat flying between B-M
21.20-21.29	Common pip;	Bat HNS at M Bat HNS at B One bat flying over rough grass from K One bat flying from K-L along tree line One bat flying from L-E along tree line
21.30-21.39	Common pip;	One bat feeding between M-B Two bats flying from L-E One bat flying from E-L One bat flying from I-J
21.40-21.49	Common pip;	One bat flying from J-K along hedge
21.50-21.59	No activity	
22.00-22.09	Common pip;	One bat flying from L-K along tree line
22.10-22.19	Common pip;	Bat HNS at J
22.20-22.29	Common pip;	One bat flying from H-I along tree line
22.30-22.39	Common pip;	Bat HNS at L
22.40-22.47	Common pip;	Bat HNS at M
22.47	END OF SURVEY	

Abbreviations: Pip = Pipistrelle; HNS = heard not seen; SNH = seen not heard

APPENDIX C

Badger Survey Plan (CSA/1074/135)



- - - Mammal path
- ♂ Badger hole (active)
- ♂ Badger hole (disused)
- D Digging ('snuffle hole')
- L Latrine

0 20 40 60 80 100 metres

Project	Land at Durrants Lane & Shootersway, Berkhamsted	Date	October 2011	Drawing Number	CSa/1074/135
Title	Badger Survey Plan	Scale	See Scale Bar	Revision	-
Client	Taylor Wimpey UK Ltd, Egerton Rothesay School & Hertfordshire County Council	Drawn	JW	Checked	AM