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Land off Oakhurst Rise, Charlton Kings, GL52 6NR.

Ecological Appraisal

September 2016
Revision 1: February 2017
Revision 2: July 2017
Revision 3: November 2017
Revision 4: April 2018
Revision 5: June 2018

Notice to readers:

The results of the survey and assessment work undertaken by All Ecology are representative at the time of surveying.

Every endeavour has been made to identify the presence of protected species on site, where this falls within the agreed scope of works.

The flora and fauna detailed within this report are those noted during the field survey and from anecdotal evidence. It should not be viewed as a complete list of flora and fauna species that may frequent or exist on site at other times of the year.

Up to date standard methodologies have been used, which are accepted by Natural England and other statutory conservation bodies. No responsibility will be accepted where these methodologies fail to identify all species on-site.

All Ecology cannot take responsibility where Government, national bodies or industry subsequently modify standards.

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Reference to sections or particular paragraphs of this document taken out of context may lead to misrepresentation.

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1.0 Introduction

Background

1.1 All Ecology was commissioned to undertake an Ecological Appraisal of a site known as Land off Oakhurst Rise, Charlton Kings, GL52 6NR. The site is approximately 4 ha in size and is composed of two fields of grassland, a larger field at 3 ha in size, and a smaller field 1ha in size. These are separated by a mature hedge and trees; a line of trees also extends into the larger field from the north boundary. A small number of mature and semi-mature standard trees are also present on site. The site is bound by a mix of hedges and trees, garden hedges, and fences. It is surrounded by residential housing on all aspects except to the south where St Edwards School is situated.

1.2 The site is the subject of a planning application for a new housing development of 91 new dwellings with associated gardens, driveways and a new access road.

1.3 The aim of the survey was to identify features of ecological interest, undertake a basic search of habitats present for evidence of use, or potential use, by protected species, and to identify any other possible ecological constraints to the development.

1.4 Revision 2 of the report includes a small number of revisions to reflect additional findings on site following comments from the public and subsequent visits to the site to carry out other activities. An updated mitigation plan is also included.

1.5 **The revision of the report includes a revised mitigation plan, which uses the latest proposed site plan, and details of site visit to confirm that the grassland habitats on site were the same as previously reported and to address the concern that the initial survey was carried out just outside the optimal period. Revisions are presented in bold in paragraphs 2.5, 3.7, 3.8 and 4.8.**

Site Location

2.0 Methodology

Desk Study

2.1 In order to compile background information on the site and immediate surroundings, Gloucestershire Centre for Environmental Records (GCER) was contacted.

2.2 Information requested was as follows:

- Statutory site designations on or within 1 km of the site
- Non-statutory site designations on or within 1 km of the site.
- Records of protected species within the 1 km of the site.
- Records of rare or notable species within the 1 km of the site.

2.3 Additionally, MAGIC (Multi-Agency Geographic Information for the Countryside, 2016) was used to establish the distance and direction of designated sites and species records within the search area.

Personnel

2.4 The survey was carried out by James Godbeer BSc Hons MCIEEM, an ecologist with over 9 years experience working as a consultant. James has extensive experience of managing environmental contracts, and particular experience in surveying, assessment and mitigation for rare and protected species. He has considerable knowledge of the development and planning process including Ecological Impact Assessments, sustainable ecological design and he has completed ecology chapters of Environmental Statements. James holds a number of protected species licences including bats (all species, all counties, Licence No. CLS01752), and Great Crested Newts (Class Licence Registration No. 2015-8038-CLS-CLS). He has successfully obtained European Protected Species mitigation licences for a number of bat species including Lesser Horseshoe, Serotine, Brown Long-eared, Common Pipistrelle and Natterer's bats, for a number of roost types including maternity and hibernation sites.

Habitat Survey

2.5 The site was visited on the 1st September 2016 and surveyed in accordance with the Joint Nature Conservation Committee (JNCC) Phase I Habitat Survey methodology (JNCC, 2010). This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential that might warrant further study. **The grassland was surveyed for a second time on the 20th June 2018 using the same methodology.**

2.1 The observable higher plant species in each habitat type within the site, and their abundance, were recorded, using the DAFOR scale where appropriate:

D Dominant

A Abundant

F Frequent

O Occasional

R Rare

Fauna

2.2 The habitats on the site were also searched for signs of faunal activity. The trees were assessed for their potential to support bat roosts by visually inspecting them from the ground using binoculars and high-powered torches where appropriate. Potential features such as holes, cavities or splits were recorded and then inspected where possible for signs of bats, which including grease/urine stains, scratch marks, droppings or the bats themselves.

2.3 The site and surroundings, for a minimum distance of 30 m, were searched for signs of Badgers. These include setts, latrines, dung pits, snuffle marks or hairs caught in hedges or on fencing.

2.4 A casual search for evidence of Dormice such as nests and/or gnawed nuts was also carried out.

2.5 Incidental observations of invertebrates and birds were recorded and a search made for any signs of current or previous nesting.

2.6 Any refugia on site such as logs or other debris were lifted and inspected for reptiles and amphibians.

2.7 A second visit to the site was made on the 6th February to carry out a Hedgerow Assessment and investigate the presence of a pond following a comment from a member of the public. This pond was subject to the Great Crested Newt Habitat Suitability Index (HSI) Assessment.

Habitat Suitability Index Assessment

2.8 Ponds in the surrounding area were subject to the Great Crested Newt Habitat Suitability Index (HSI) Assessment. The assessment was undertaken during the Ecological Appraisal by a Licensed Ecologist (Licence Number CLS001752), trained in the assessment of water bodies for their potential to support populations of Great Crested Newts.

2.9 The HSI is a measure of habitat quality using a numerical index between 0 and 1 derived from an assessment of variables known to influence the presence of Great Crested Newts (Oldham et al. 2000). It is used to assess whether a water body warrants detailed surveys to establish presence or absence of newts and aids in the assessment of impacts and the design of mitigation measures. Since January 2008 it has been a requirement to include the results of HSI assessments in European Protected Species (EPS) licence applications.

2.10 To calculate the HSI of the water bodies ecologists first record the following variables before applying the HSI calculation to these: pond size; surface area; water depth; water quality; % shade, % macrophyte cover; presence of fish and waterfowl; number of water bodies within 1 km of survey water body; quality of terrestrial habitat surrounding ponds; and type of marginal/aquatic vegetation (Oldham et al. 2000).

2.11 Once the HSI score is obtained it can be used to define water body suitability for Great Crested Newts in the following way (National Amphibian Recording Scheme, 2008):

Table 1: HSI Scores

<0.5	Poor
0.5 – 0.59	Below Average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

2.12 Water bodies scoring less than 0.5 are deemed as unlikely to support Great Crested Newts and further surveys are not usually required.

Valuation of Ecological Features

2.13 The value of areas of habitat and plant communities has been measured against published criteria where available. Biodiversity Action Plans (BAPs) have been searched to identify whether action has been taken to protect all areas of a particular habitat and to identify current factors causing loss and decline of particular habitats. The presence of injurious and legally controlled weeds has also been taken into account.

2.14 When assigning a level of value to a species, its distribution and status (including a consideration of trends based on available historic records) has been taken into account. Other factors influencing the value of a species are: legal protection, rarity and Species Action Plans (SAPs). Guidance, where it is available, for the identification of populations of sufficient size for them to be considered of national or international importance has also been taken into account.

Nomenclature

2.15 The English name only of flora and fauna species is given in the main text of this report; however, scientific names are used for invertebrates where no English name is available. Vascular plants and charophytes follow the nomenclature of The Botanical Society for the British Isles (BSBI) 2007 database (BSBI, 2007) with all other flora and fauna following the Nameserver facility of the National Biodiversity Network Species Dictionary (http://www.nhm.ac.uk/nbn/), which is managed by the Natural History Museum.

3.0 Results

Desk Study

3.1 There are no statutory designated sites within 1 km of the site.

3.2 There is one non-statutory designated site within 1 km of the site. This is a Key Wildlife Site (KWS):

- Glenfall Wood KWS (976 m E)

3.3 Glenfall Wood KWS is designated for its Ash-Wych Elm wood with a diverse ground flora including Wood-sorrel and Sanicle. Taking into account the nature of this sites, its isolation from the application site and nature of the proposals, no direct or indirect impacts to this designated site are predicted and no further consideration is given.

3.4 GCER provided the following records for protected and notable species within 1 km of the site boundary:

Mammals – Hedgehog, Otter, badger, Daubenton's Bat, unidentified bats, Pipistrelle bat sp.

Birds – Lesser Redpoll, Kingfisher, Lesser Spotted Woodpecker, Reed Bunting, Brambling, Herring Gull, Mediterranean Gull, Red Kite, Spotted Flycatcher, House Sparrow, Marsh Tit, Hedge Accentor, Common Bullfinch, Starling, Redwing, Song Thrush, Fieldfare, Dunnock, Brambling, Little Egret, Quail, Wyrneck, Red Kite, Tree Sparrow, Golden Plover, Marsh Tit, Black Redstart, Cuckoo, Linnet, Herring Gull.

Reptiles – Slow-worm, Grass Snake.

Amphibians –Smooth Newt, Common Frog, Common Toad, unidentified newt.

Fish – Bullhead, European Eel.

Invertebrates – Moths: Centre-barred Sallow, Small Square-spot, Autumnal Rustic, Hedge Rustic, Mouse Moth, Minor Shoulder-knot, Small Square-spot, White Ermine, Blood-vein, Brown-spot Pinion, Large Nutmeg, Dusky Brocade, Mottled Rustic, September Thorn, Dusky Thorn, Small Emerald, Rustic, Brindles Beauty, Dot Moth, Shoulder-striped Wainscot, Powdered Quaker, Shaded Broad-bar, White Ermine, Buff Ermine, Cinnabar.

Habitats

3.5 The following habitats or vegetation types were identified on the site during the course of the habitat survey:

- Poor semi-improved grassland
- Dense scrub
- Tall ruderal
- Species-rich hedge and trees
- Species-poor hedge and trees

- Species-poor hedge
- Standard trees
- Fence
- Wall
- Standing water

Poor semi-improved grassland

3.6 The majority of the site was poor semi-improved grassland. It was evident that the grassland is not intensively managed but is subject to regular mowing. Perennial Rye-grass, Red Fescue, Cock's-foot and Yorkshire-fog were all locally dominant and abundant or frequent throughout the sward. There was also occasional Annual Meadow-grass, False Oat-grass, Creeping Buttercup, Ribwort Plantain, Daisy, and Broad-leaved Dock but herb species were mostly absent.

3.7 **The survey of the grassland in June 2018 as well as numerous visits over the summer of 2017 to conduct bat surveys confirmed that the grassland is not intensively managed but is subject to mowing, with the arisings left in-situ. The east field was a tall sward at the time of the June 2018 survey and this recorded a homogenous sward dominated by False-Oat-grass with abundant Yorkshire-fog, frequent Meadow Foxtail and Cock's-foot, and occasional Timothy, Rough Meadow-grass, Sweet Vernal Grass and Perennial Rye-grass. Herbaceous species were few and limited to frequent Meadow Vetchling, occasional Hogweed, Ladies Bedstraw and Broad-leaved Dock, and rare occurrences of Common Nettle, Creeping Thistle, Clustered Dock, Creeping Buttercup, Meadow Buttercup, Red Clover, Cleavers, Bird's-foot Trefoil and Common Sorrel. False Brome was recorded at the edges of the field and there was a stand of Creeping Thistle close to the centre of the field on the site of a former bonfire.**

3.8 **The west field had recently been mown but remnants of tall grass were present in narrow strips and around standard trees. The composition of the grass species in the grassland in this field was similar to that recorded in the east field. Herbaceous species were limited to frequent Hogweed, occasional Sorrel, Common Nettle, Creeping Thistle and Broad-leaved Dock, and rare occurrences of Common Vetch, Creeping Cinquefoil, Cut-leaved Crane's-bill and Ribwort Plantain.**

Photograph 1: General view of the smaller, west field looking south.

Photograph 1a: General view of the smaller, west field looking south in June 2018.

Photograph 2: General view of the larger, east field looking southwest.

Photograph 2a: General view of the larger, east field looking southwest.

Dense scrub

3.9 Narrow fringes of Bramble scrub were present along sections of the north boundary of the site. A fringe of Blackthorn and Wild Plum scrub was present along parts of the west boundary of the site, extending from the unmanaged hedge.

Photograph 3: Fringe of Bramble scrub along the north boundary.

Photograph 4: Fringe of scrub along the west boundary.

Tall ruderal

3.10 A small area of Creeping Thistle and Common Nettle with frequent False Oat-grass was present in the northwest corner of the east field.

Photograph 5: Small area of tall ruderal vegetation in the northwest corner of the larger field.

Species-rich hedge and trees

3.11 A double species-rich hedge bisected the site, dividing the two fields. This has become tall and overgrown and the hedges have largely merged. This was formed by Blackthorn and Hawthorn for the most part, with frequent Holly and mature trees of Ash and Pedunculate oak. Ivy and Bramble were abundant within the hedge and the ground flora included Common Nettle, Broad-leaved Dock, Barren Brome and Red Hemp-nettle.

Photograph 6: Double species-rich hedge separating the two fields and bisecting the site from north to south.

Species-poor hedge and trees

3.12 A species-poor hedge and trees was present along the majority of the west boundary of the site although much of this was overgrown and extended into fringes of scrub. The hedge was formed by Blackthorn and Hawthorn with Bramble and Ivy growing through the hedge. There was also a section of Wild Plum, and occasional Holly. Larger trees of Ash, Sycamore, and Pedunculate Oak were also present.

Photograph 7: Species poor hedge and trees on the west boundary.

Species-poor hedge

3.13 Species-poor hedges were present along portions of the north and east boundaries. These were variously formed by Cherry Laurel, Leyland Cypress and Holly. These were well maintained garden hedges; the section of Holly hedge also had Bramble and Hedge Bindweed growing through the hedge.

Photograph 8: Species poor hedge along part of the north boundary.

Standard trees

3.14 A number of standard trees were present in additional to those in the hedgerows on site. The majority of these were close to the boundaries and were Pedunculate Oak. A Sycamore tree was present within the east field as well as trees of Ash, Sycamore and Oak forming group of trees extending from the north boundary into this field. Other trees included Scot's Pine, Leyland Cypress as well as Ash and Pedunculate Oak on the boundaries where hedges were absent.

Photograph 9: Standard oak tree in the northwest corner of the site

Photograph 10: Standard Sycamore in the east field.

Wall

3.15 A low garden wall was present along part of the east boundary separating the site from an adjacent garden.

Photograph 11: Low garden wall and species-poor hedge along part of the east boundary.

Standing water

3.16 A pond was present on the north boundary of the site. This area was completely dry during the September 2016 survey but contained a substantial amount of water when the February 2017 visit took place. There was no aquatic vegetation as such although adjacent terrestrial grasses were present at the edges where the water was sufficiently high to cover the surrounding banks. It seems likely that this is an ephemeral pond that holds water during wetter periods but regularly dries.

Photograph 12: Ephemeral pond on the north boundary of the site.

Fauna

Bats

3.17 GCER provided a small number of bat records within 1 km of the site. A Daubenton's bat was recorded in 2014 approximately 620 m southwest of the site. A pipistrelle species roost record from 1993 approximately 420 m north of the site was also provided as well as another unidentified bat roost recorded in 1992.

3.18 There are no buildings on site to provide any roosting features for bats and none situated on the site boundary. However, there were a large of number of mature number trees both present as standard trees or within hedges and a good number of these had features for roosting bats. These features ranges from significant rot holes and hollow trunks, to minor splits and fissures. No evidence of use by bats was noted but a full detailed inspection was beyond the scope of the present survey. Nine trees were noted as having potential roosting features for bats (Target Notes 1 to 9) and it is possible that other features were also present but obscured from view by foliage.

Photograph 13: Tree with hollow trunk; Target Note 1.

Photograph 14: Tree with hollow trunk; Target Note 2.

3.19 With the exception of the central portions of the larger field, the site is generally sheltered with mature trees and overgrown hedges, which provide optimal foraging habitat for bats. These also provide continuous linear features that could also be important for commuting bats.

Badgers

3.20 GCER provided Badger records within 1 km of the site. There is one record of an active sett from 2008 approximately 620 m northwest of the site. The most recent records are from 2012 and are of a sett approximately 595 m northwest of the site.

3.21 Significant activity by Badgers was recorded on site. A large sett was recorded under the trees that extend from the north boundary into the larger field (Target Note 10). This had a number of well-used and partially used holes. A small number of partially used and disused holes were recorded in the overgrown double hedge line and trees separating the two fields (Target Note 11). Badger snuffle marks and trails were also noted around the site although no dung pits or latrines were recorded. Badgers, including their setts, are therefore present on the site.

Photograph 15: Well used hole in the larger sett.

Photograph 16: Badger trail.

Otters and Water Voles

3.22 GCER provided one Otter record within 1 km of the site which was recorded in 2012 approximately 640 m southwest of the site.

3.23 There are no watercourses on site or in the general vicinity of the site. These species are therefore deemed to be absent

Dormice

3.24 GCER did not provide any records of Dormice within 1 km of the site. The hedges provide limited habitat that is poorly connected to the wider area. The potential for this species to be present is negligible and it is concluded that they are absent.

Other mammals

3.25 GCER provided a number of Hedgehog records within 1 km of the site.

3.26 The site was mostly open short grassland and therefore poor for mammals. The hedgerows, trees and small areas of scrub and tall ruderal vegetation provide cover and foraging habitats for common small mammals as well as Hedgehogs, but the potential for other protected species is low.

Birds

3.27 GCER provided a number of bird records within 1 km of the site including House Sparrow, Song Thrush and Kingfisher. Species recorded during the survey were Blackbird, Carrion Crow, Wren, House Sparrow, House Martin, Collared Dove, Woodpigeon, Magpie, Raven and Chiffchaff.

3.28 No evidence of current or previous nesting by birds was recorded in the vegetation although nests could have been missed in the denser areas of vegetation and tree cavities. The

grassland that occupies the majority of the site is of only limited value to foraging birds and in this context is not suitable for ground nesting birds. The main areas of interest are the hedges, trees and scrub which provide nesting and foraging opportunities for a range of urban/garden bird species such as those recorded on site and some of the records above.

Reptiles

3.29 GCER provided one record of Slow-worm and three records of Grass Snake within 1 km of the site. The Slow-worm was recorded in 2008 but only a four-digit grid reference was supplied. Grass Snakes were recorded in 2005 approximately 540 m north of the site. Another Grass Snake was recorded in 2006 approximately 540 m northwest of the site. The most recent record of Grass Snake is from 2012 approximately 225 m north of the site.

3.30 The grassland that covers the majority of the site is short and regularly managed making it poor habitats for reptiles. The hedges, scrub and tall ruderal habitats provide cover for reptiles but their association with the poor grassland habitat limits their potential for use. While it is nearly always possible that small numbers of reptiles are present in such habitats, the site's isolation from any areas of obvious off site reptile habitat and the limited nature of the habitats on site, means they are probably absent. Provided the site is continued to be maintained in its current state, reptiles are expected to continue to be absent.

Amphibians

3.31 GCER provided a number of amphibian records within 1 km of the site, the majority of which were Common Toad and Frog. There were also two records of Smooth Newt and one record of an unidentified newt species. One of the Smooth Newt records was from 1999 and the most recent record was from 2004 but only a four digit grid reference provided. The unidentified newt was recorded in 2006 approximately 540 m northwest of the site.

3.32 The grassland on site is poor habitat for amphibians and although the hedges, scrub and tall ruderal do provide optimal terrestrial habitats, there is a single ephemeral pond on site.

3.33 With regard to Great Crested Newts, the pond on site was subject to the Great Crested Newt HSI Assessment (see Table 1 for the calculations). The pond was roughly circular in shape with diameter of 6 m. It appears to dry frequently but the water quality appeared to be good although a diversity of invertebrates is unlikely. The pond was mostly shaded by an adjacent mature oak. Fish and waterfowl are absent. There are a number of ponds within 1 km but only two within 500 m shown on maps of the area (see below). The pond is surrounded by bramble scrub beyond which is short grassland on site, and residential gardens to the north. There was no macrophyte cover and only a small amount of submerged grass along the south edge.

Table 1: HSI Assessment Results

HSI Calculator		Pond 1
SI1 - Location	1	1
SI2 - Pond area	2	0.05
SI3 - Pond drying	3	0.01

SI4 - Water quality	4	1
SI5 - Shade	5	0.6
SI6 - Fowl	6	1
SI7 - Fish	7	1
SI8 - Ponds	8	1
SI9 - Terr'l habitat	9	0.67
SI10 - Macrophytes	10	0.3
HSI Score	Score	0.38

3.34 The pond scored 0.38 and is rated as 'poor' in terms of its suitability for Great Crested Newts. It is unlikely that Great Crested Newts are present here and the pond scored below the threshold at which further surveys may be required.

3.35 The only ponds indicated on maps of the area within 500 m of the site that are not totally isolated from it, are a pond 260 m to the south and another 360 m to the southeast. These are poorly connected to the site but if newts were present in these ponds there is limited potential for them to be present. The ponds were therefore investigated and it was found that Pond 1 was completely vegetated with no areas of open water. Pond 2 was completely dry. Great Crested Newts are therefore expected to be absent from the site.

Photograph 17: Pond 1.

Photograph 18: Pond 2.

Invertebrates

3.36 GCER provided a number of moth records within 1 km of the site but the habitats on site are mostly common habitat types and do not provide much potential for rare invertebrate species; it is mostly common species that are expected to be present, with the majority of interest limited to the trees and hedges.

4.0 Development Constraints and Recommendations

4.1 The site is the subject of a planning application for a new housing development of 91 new dwellings with associated gardens, driveways and a new access road. This will result in the loss of the majority of the habitats on site including the hedge on site that separates the two fields, and the trees that extend down from the north boundary where the Badger setts are located. A section of the west boundary hedge also requires removal for the new access road.

4.2 Possible ecological constraints and recommendations with regard to the potential development are discussed below.

Habitats

4.3 The UK BAP Priority Habitats include all hedgerows with at least 80% cover of at least one woody UK native species (JNCC, 2016). The hedgerow on the site and along the west boundary had at least 80% cover of native species and as such qualify as UK BAP Priority Habitats. The majority of the hedgerow on site would require removal along with a section of the west boundary hedge.

4.4 These do not form part of any residential curtilages and they could qualify as important under the Hedgerows Regulations 1997. A hedgerow assessment is therefore required in order to establish whether either hedge qualifies as 'important'. This assessment was carried out on the 6th February 2017 the findings of which are included in a separate report.

4.5 Any loss of hedges should be compensated for by the planting of new hedges, enhancement of existing hedges and/or an appropriate landscape strategy. Where new hedgerows are to be planted or if existing hedges are to be enhanced as part of the landscape proposals for the site, the following species rich mix is recommended as a minimum to encourage wildlife: 50% Hawthorn, 20% Field Maple, 15% Blackthorn and 15% mix of Hazel, Spindle, Dog-Rose and Holly (Gilbert and Anderson, 1998). Management practices for both new and existing hedgerows include laying the hedgerows to encourage bushy growth low down, trimming only every three years or less if possible, and maintaining them at their current height of at least three metres for new hedges.

4.6 The mature standard trees as well as those within hedges, are valuable habitat features on site that are not easy to replace. Every effort should be made to retain as many of these as possible within the landscape scheme both for their intrinsic value but also their value to other wildlife including potentially bats and birds; this is discussed further below. Where trees are to be removed, compensatory trees should be planted in appropriate locations elsewhere on site.

4.7 The remaining vegetative habitats on site are common habitats, which are of low ecological value in terms of their vegetation. The scrub and tall ruderal do not qualify as UK BAP Priority Habitats and the grassland does not fit the criteria to qualify (JNCC, 2016). In order to qualify as a UK BAP Priority Habitat, grassland typically has to be unimproved (good semi-improved grassland can also qualify) and would have to be examples of grassland such as lowland calcareous grassland or lowland dry acid grassland, habitats not found on site. Although the survey was carried out outside the optimal period for surveying grasslands, this was only

shortly after and it was evident from the species present that the grassland was more improved than unimproved in nature and no further surveys are recommended.

4.8 **The June 2018 confirmed that grassland was relatively species-poor with very few herbaceous plants of a limited number of species some of which individually could indicate calcareous and neutral swards. However, the lack of diversity of herbaceous species indicates more improved conditions and a grassland that resembles a species-poor neutral grassland i.e. poor semi-improved grassland. The characteristics are highly consistent with an MG1 grassland community with none of the characteristic species of the potentially more interesting subcommunities. MG1 grassland is virtually ubiquitous throughout the lowlands of Britain and is common on neglected sites, roadside verges etc. In the absence of any management this grassland community succeeds to scrub, which the mowing of the site is currently preventing. The arisings, which are left on site, return nutrients to the soil and allow the more vigorous species to continue to dominate limiting opportunities for other species and restricting the species diversity of the sward. No rare or notable species were recorded and the MG1 community does not correspond with any of the typical lowland meadow communities, such as MG5 and MG4 grassland, meaning it does not qualify as NERC (UK BAP) Priority Habitat. Any value in terms of its vegetation is limited to the site and local level. No further assessment is warranted or necessary.**

4.9 The development would result in a decrease of vegetative cover, the impact of which would be low in the local and wider context. Any impact should be reduced by the implementation of an appropriate landscape strategy. Where new areas of habitat are to be created, these should be seeded with appropriate seed mixes using seeds of local provenance. Where additional new trees or shrubs are to be planted, native tree and shrub species should be used as these are most beneficial to invertebrates, and many also produce seeds, nuts and berries that are food for native mammals and birds. Planting of non-native plant species should be limited to those that are not invasive, and should prioritise those that provide a good source of nectar for invertebrates *e.g.* Butterfly-bush, Jasmine.

Protected and Notable Species

Bats

4.10 There are no buildings on site but at least nine trees had potential bat roosting features for bats, some with multiple features. It is clear from the proposed landscape plan that at least some of these would be removed and there is significant potential for impacts to those that remain through isolation and disturbance. It will therefore be necessary to carry out a detailed aerial inspection of all potential bat roosting features in order to determine whether any are in use and carry out emergence and re-entry surveys as necessary. The best time to carry out detailed inspections are over the winter months when features are more visible and easier to detect. Any emergence surveys, if required, can begin in May. A ground inspection of the trees to catalogue potential roosting features for bats was carried out in February 2016. Detailed aerial inspections and subsequent emergence surveys as necessary are scheduled to begin in May 2017.

4.11 The hedgerows and boundary vegetation are well connected to the local area and likely to be used by a number of commuting and foraging bat species. The creation of the new entrance

through the west boundary hedge and the removal of the double hedge separating the two fields has significant potential to affects bats' ability to move through the surrounding landscape and as such a bat activity survey will be required in order to establish their importance for bats to enable a suitable mitigation strategy to be devised. In accordance with the Bat Conservation Trust Good Practice Guidelines (Collins, 2016), for 'moderate suitability habitat for bats', one visit per month (April to October) in appropriate weather conditions should be carried out. At least one of these surveys should comprise a dusk and pre-dawn (or dusk to dawn) within one 24-hour period. Further surveys may be required if these survey visits reveal higher levels of bat activity than originally predicted by habitat alone. This survey has been commissioned and is scheduled to begin in April 2017 with a report covering April to August (this includes the optimal months) to be submitted in August 2017.

4.12 Any specific mitigation for bats is dependent on the outcome of the required further surveys but mitigation should be considered at the earliest opportunity and regardless of the outcome of the surveys, the LPA will usually expect to see enhancements included in the development. This being the case, an indicative enhancement scheme for roosting bats is included on Plan 2. This scheme would address the loss of any roosts in trees, should they be discovered, as well enhance the development as a whole for bats by providing additional roosting opportunities, and the planting of new boundary hedges and reinforcing existing boundary hedges. Large open roof voids for species such as long-eared or horseshoe bats would usually be a significant enhancement of the site if the design and location were appropriate. However, the inclusion of such roof spaces in small residential buildings is often not desirable or possible, and would be of questionable value in this location unless the bat activity surveys show otherwise. Nevertheless, the buildings can still easily be enhanced for crevice-dwelling bat species, which almost certainly be present on site, without inconveniencing prospective occupants. Bat panels such as Schwegler Bat Access Panel 1FE, or bat tubes such as the Schwegler 2FR Bat Tube can be incorporated into the building exteriors with little visual impact, or roosts such as the Schwegler Bat Roost 1FQ can be erected after building completion.

4.13 The enhancement of the site for bats could be increased further with the provision of further roosting opportunities by erecting bat boxes on retained mature trees. The Schwegler 2FF bat box is a good general design that will attract many species and does not require any regular maintenance. Bats are very particular about the internal conditions of bat boxes, so providing several bat boxes with different aspects creates differences in temperature, humidity etc. thereby increasing the chance of colonisation.

4.14 Additionally, any external lighting strategy should be designed with consideration to bats. As a general rule external lighting should be kept to a minimum in order to minimise disturbance to foraging and commuting bats. The lighting of boundary vegetation and retained trees should be avoided and where lighting is necessary for reasons of security and/or health and safety, the use of column lighting, with full cut-off directional shielding and low UV bulbs is recommended. New roosting features should not be illuminated.

Badgers

4.15 Significant activity by Badgers was recorded on site. A large sett was recorded under the trees that extend from the north boundary into the larger field, which had a number of well-used and partially used holes. A small number of partially used and disused holes were recorded in the overgrown double hedge line and trees separating the two fields. Badger snuffle marks and

trails were also noted around the site although no dung pits or latrines were recorded. The proposed landscape scheme would require the removal of these setts and the loss of possibly significant areas of foraging habitats. A full Badger survey was therefore required to establish the status of the setts and determine the level of use of the site and surrounding area so that an appropriate mitigation/compensation strategy can be devised. This survey was carried out in October 2016, the findings of which and recommendations are included in a separate report.

4.16 Based on the current proposal, it will be necessary to construct at least one new sett on site and close the existing sett by excluding Badgers prior to its destruction under a licence obtained from Natural England. It should be noted that Natural England will only licence activities likely to cause disturbance and/or sett closure between 1st July and 30th November.

Other mammals

4.17 The potential for other species of protected or notable mammal species to use the site is deemed to be low. No constraints are predicted as a result of the likely presence of common small mammals and the possible presence of Hedgehogs. As a precaution it is recommended that during the construction phase of the project any trenches and other excavations should be back-filled before nightfall or a ramp left to allow animals to easily exit, and any open pipes larger than 150 mm should be capped off overnight.

Birds

4.18 The survey was carried out in September, which is outside the nesting season generally regarded as being from March – August. No evidence of nesting birds was recorded but nests could have been missed in the denser areas of vegetation and tree cavities, and birds will likely nest in the future.

4.19 All nesting birds are protected under The Wildlife and Countryside Act 1981 (and amendments). It is recommended that the vegetation clearance be carried out outside of the bird-nesting season of March to August. Where this is not possible, the vegetation should be surveyed for nesting birds by a suitably qualified ecologist prior to works commencing. If they are found, then the nest and surrounding habitat must remain intact until the young have fledged.

4.20 The proposed development will result in a significant loss of nesting opportunities for birds, mainly those associated with the dividing hedge. However, new residential gardens can provide new nesting and foraging habitat and the development could be further enhanced by incorporating new nesting opportunities for birds on the new buildings. Nest boxes for Swifts and House Martins could be installed under the eaves or on north-facing gables at a height of at least 6 m. Colony type boxes could also be installed at a height of least 2 m to provide nesting sites for birds such as House Sparrows, which were recorded on site.

4.21 Bird boxes for small birds could also be erected on retained trees; these should be fixed a minimum of 2 m from the ground, with the entrance hole between north and east. This avoids the worst of the weather and prevents the box and its inhabitants becoming overheated in sunny weather. An indicative enhancement scheme for nesting birds is included on Plan 1.

4.22 Any new planting on site should concentrate on species that are native to the area and ideally produce a range of seeds and berries at varying times of the year. Nectar rich plants could also be used encourage invertebrates on to the site, which in turn provide food for birds as well as other species such as bats. Provided these measures are implemented, the loss of this habitat is expected to be negligible in the wider context.

5.0 References

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6.0 Plans

Indicative Bat and Bird Mitigation

Roost/nest features and boundary planting