



Proposed Residential Development at East Street, Hindon, Wiltshire

Preliminary Ecological Appraisal

17 April 2018

Revision 01

Prepared for CG Fry & Son Limited



NON TECHNICAL SUMMARY

Andrew McCarthy Ecology was commissioned by CG Fry and Son in March 2018 to undertake an update to the 2014 Preliminary Ecological Appraisal report that had been compiled for a Site adjoining East Street, Hindon, in Wiltshire. The 2014 / 2018 surveys have been undertaken in support of a future planning application for residential development.

Surveys found the Site to comprise an arable field on clay with flints soils. The broadly triangular-shaped 4ha area is fringed by fences, bramble scrub and short sections of rather species-poor and gappy hedges. Hindon village lies to the south-west; to the north lies a small triangular horse and sheep-grazed paddock and beyond this lies open countryside dominated by arable fields.

The Site lies north-west of Fonthill Grottoes SSSI, which was at the time of writing (in April 2018) a component roost of the Chilmark Quarries Bats SAC. The SAC protects a group of abandoned mines and underground follies which are regularly used by greater and lesser horseshoe, Bechstein's and barbastelle bats, in large part for winter hibernation. As well as designated SAC roosts, bats also use a network of other roosts in the area throughout the year and, given the dependency of these mammals on landscape-scale features such as hedges, woods and watercourses, planning guidance for Wiltshire states: 'it is important to understand that even activities which occur some distance from the designated sites may damage important elements of the network and disrupt population dynamics'.

The Site was at the outset of the project in 2014 found to lie within the Fonthill Grottoes SSSI section of the consultation zone for the Chilmark SAC¹ and a bat survey was undertaken in 2015 to inform the emerging master plan. The survey was overseen by Ian Davidson-Watts, a specialist on the Chilmark roost area, on behalf of Andrew McCarthy Ecology Limited and the level of survey effort was agreed beforehand with the local authority ecologist, in line with local policy. Survey techniques used included transect, static logger work and mist-netting.

The results of the bat survey are described in a separate bat report (AME, 2016). The Site is currently subject to update bat survey, following consultation in March 2018 with the Wiltshire Senior Ecologist, Louisa Kilgallen.

The Site was found to be sub-optimal for the European protected species dormouse. Although this animal does occur locally (two records of it were included in the 2018 update desk study return) the hedges were found to be isolated ecologically, and would in any case not be detrimentally affected by the proposals (since access is likely to be *via* the un-hedged East Street). No survey was recommended in the original 2014 PEA report and this update concurs with the original conclusion; the Site is unchanged since the original work was carried out.

No evidence of badger was found during either the 2014 or the 2018 work.

¹ It is understood from the County Ecologist Louisa Kilgallen that this SSSI will be removed from the SAC in the near future, as part of a review into the current guidance for the European site.

Following the PEA in 2014, the Site was subject to breeding bird survey (in spring / early summer 2015) by an experienced bird surveyor. No breeding populations for any national or local priority bird species were recorded.

The Site was assessed as having limited potential for reptiles in the narrow grassy field margins. However, as with the hedges, the scale of the proposed development is such that grass headlands would be largely retained / enhanced through planting and other measures. No reptile survey is therefore deemed to be needed to inform the emerging masterplan and mitigation strategy.

There are no waterbodies within 500m and the Site was assessed as having no potential to support great crested newt.

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1.0 INTRODUCTION

1.1 Terms of Reference

Andrew McCarthy Ecology (AME) Limited was commissioned by CG Fry and Son in 2014 to undertake an 'extended' Phase 1 habitat survey / Preliminary Ecological Appraisal (PEA) for a proposed development site adjacent to East Street, at Hindon in Wiltshire. The 2014 draft PEA report followed a Phase 1 habitat survey in October of that year; it focused upon identification of potential ecological constraints to development and made recommendations regarding the specialist ecological surveys that would be required to inform an emerging master plan layout.

In spring 2018 AME was instructed to (i) carry out an update visit to the site (ii) undertake an update desk study through Wiltshire and Swindon Biological Records Centre (WSBRC) (iii) update the PEA report and (iv) consult with the biodiversity team at Wiltshire Council to determine requirements for any update surveys needed prior to preparation of a future planning application.

1.2 Site Context

Figure 1 below shows that the Site, which is around 4ha in extent and located at OS Grid reference ST910329, fringes the north-eastern edge of Hindon village. It is bounded by a street lamp-lit road (East Street) to the south-west; beyond this lies a residential area. On its eastern side the Site is bordered by a narrow lane between Hindon and Chicklade villages. The extreme southern edge is bounded by the B3089. In 2014 and 2018 the Site was found to comprise a broadly triangular-shaped arable field that had been recently sown and planted with an arable crop (a small rectangular section of the field at its western end was uncultivated at the time of each of the 2014 and 2018 surveys and contained residual crops from the previous season). There are no buildings or trees within the boundary, although a few mature specimens are present in gardens to the west, and some of the older hedges contain semi-mature trees.

In 2014 it was determined that the Site was within the Consultation Zone for the Chilmark Quarries SAC, an internationally important landscape-scale complex of bat roost sites which protects populations of several rare species. The site is described thus by Wiltshire Council:

'It is another of Wiltshire's internationally important bat sites² which includes Fonthill Grottoes SSSI. Together these sites make up a complex of abandoned mines and subterranean follies which is regularly used by an important assemblage of bat species as a hibernation site. The extensive system of undisturbed mines, with their constant temperature and humidity, and the varied construction of the grottoes, provide suitable conditions for large numbers of wintering bats. However as with the Bath and Bradford-on-Avon SAC the bats also rely on a wider network of roost sites throughout the year. The

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<http://www.wiltshire.gov.uk/corestrategydocument?directory=Studies%2C%20Surveys%20and%20Assessments&fileref=129>

site is considered to be one of the best in the UK for Bechstein's bat, barbastelle, and greater horseshoe bats, and supports a significant population of lesser horseshoe bats. The surrounding woodland, grassland and open water habitats also provide vital roosting, commuting and feeding areas for these significant populations."

During spring 2018, consultation with Louisa Kilgallen from Wiltshire Council revealed that that Fonthill Grottoes SSSI appears to have been excluded from the SAC. Previously the Site was located within the SAC consultation zone around 6km from a core barbastelle *Barbastella barbastellus* roost and 4km from a core greater horseshoe *Rhinolophus ferrumequinum* roost. If Fonthill Grottoes SSSI is removed and the consultation zone is revised, this would place East Street just outside the zone for barbastelle. Notwithstanding, the results of bat surveys by AME in 2015 showed there is significant use of the Site by barbastelle and there are some habitat features present that we conclude are functionally linked to the SAC. Therefore in terms of future survey and impact assessment, it is recommended that the Site is treated as if it were in the consultation zone.

Figure 1. Proposed development site in landscape context.



2.0 **RELEVANT LEGISLATION AND POLICY**

The information provided below is a summary only. It is recommended that readers consult the original legal / policy documents for the definitive text. Web addresses are provided in the references section at the end of this document; these give access to the full legislative text.

2.1 **Habitat Regulations – European protected species**

The Conservation of Habitats and Species Regulations 2010 transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (Habitats Directive), making it an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2. Disturbance, as defined by the 2010 Regulations, includes any action that impairs the ability of animals to survive, breed, rear their young, hibernate or migrate (where relevant) or which affects the local distribution or abundance of the species. It is an offence to damage or destroy a breeding site or resting place of such an animal, even if the animal is not present.

2.2 **Habitats Regulations – European sites**

The Regulations also set out the process for assessing the implications of proposed plans or projects on the integrity of European sites; e.g. on a Special Area of Conservation (SAC) such as Chilmark. With respect to such sites, Regulation 61 is relevant:

- (1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—
 - (a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and
 - (b) is not directly connected with or necessary to the management of that site, must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.
- (2) A person applying for any such consent, permission or other authorisation must provide such information as the competent authority may reasonably require for the purposes of the assessment to enable them to determine whether an appropriate assessment is required.
- (3) The competent authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority specify.
- (4) They must also, if they consider it appropriate, take the opinion of the general public, and if they do so, they must take such steps for that purpose as they consider appropriate.
- (5) In the light of the conclusions of the assessment, and subject to Regulation 62 (considerations of overriding public interest), the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).

(6) In considering whether a plan or project will adversely affect the integrity of the site, the authority must have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given.

(7) This regulation does not apply in relation to a site which is—

- (a) a European site by reason of regulation 8(1)(c), or
- (b) a European offshore marine site by reason of regulation 15(c) of the 2007 Regulations (a site protected in accordance with Article 5(4) of the Habitats Directive).

(8) Where a plan or project requires an appropriate assessment both under this regulation and under the 2007 Regulations, the assessment required by this regulation need not identify those effects of the plan or project that are specifically attributable to that part of it that is to be carried out in Great Britain, provided that an assessment made for the purpose of this regulation and the 2007 Regulations assesses the effects of the plan or project as a whole.

2.3 Wildlife and Countryside Act

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act (CRoW) 2000 and the Natural Environment and Rural Communities Act 2006 consolidates and amends existing legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive). Under this legislation it would be an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 (e.g. barn owl) or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5, intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed in Schedule 5, intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter / protection;
- Plant or otherwise cause to grow in the wild a plant included on Part 2 of Schedule 9 (non-native invasive species). Japanese knotweed is listed in Schedule 9 of the Wildlife and Countryside Act 1981 which means it is an offence to plant or allow this species to grow in the wild.

2.4 Hedgerow Regulations 1997

The Hedgerow Regulations 1997 protect hedgerows in the countryside. A hedgerow is assessed as 'important' if it has (i) been present for more than 30 years and (ii) complies with the appropriate criteria listed in Part II of Schedule 1 of the Regulations. Whilst it is unlawful to remove or destroy an 'important' hedgerow without obtaining permission from the local authority, removal may be possible under particular circumstances, including certain types of development with planning permission.

2.5 Natural Environment & Rural Communities Act and S41 list species

Section 40 of the Natural Environment and Rural Communities Act 2006 places a duty on authorities to have 'due regard' for biodiversity during the course of their operations.

The England Biodiversity List (more correctly termed the Section 41 list of Species of Principal Importance in England) provides guidance to local authorities when implementing their duty under section 40 of the Act. The list replaces that published under the CRow Act (which was drawn from UK Biodiversity Action Plan, or BAP list at that time).

2.6 Policy

2.6.1 National Planning Policy Framework

The NPPF states that the planning system should:

- contribute to and enhance the natural and local environment;
- Recognise the wider benefits of ecosystem services;
- Minimise impacts on biodiversity and provide net gains in biodiversity where possible;
- Contribute to the Government's commitment to halt the overall decline in biodiversity including by establishing coherent ecological networks which are more resilient to current and future pressures.

Other key NPPF principles:

- Conservation of International and National statutory designated sites;
- Protection of ancient woodland / veteran trees;
- Creation, protection, enhancement and management of biodiversity networks and green infrastructure;
- Preservation, restoration and recreation of priority habitats / ecological networks;
- Recovery of priority species populations.

2.6.2 Wiltshire Bats SAC Planning Guidance 2013

In respect of policy regarding such internationally protected sites, the Wiltshire Bats SAC Planning Guidance is relevant. Chilmark SAC is surrounded by a consultation zone or 'Core Area' within which Hindon sits and to which the following policy applies:

"Where a development proposal falls within one of the Core Areas (as shown on Plans 1 – 3) and could potentially affect one or more Sensitive Features (as set out Section 3.1), potential impacts should be considered at an early stage in order to inform site selection, scheme design, project timescales and budgets and to ensure the timely delivery of development objectives. Broad impacts to be considered at an early stage include:

- *Physical changes – alteration / demolition / removal of a potential roost feature, loss, damage or change of management of potential foraging habitat, removal / fragmentation of a potential commuting corridor;*
- *Lighting – artificial lighting close to potential roosting, foraging and commuting features;*
- *Noise and vibration – construction / demolition activities close to potential roost features; and*
- *Pollution – dust and fumes close to potential roost features.*

If any of the above potential impacts are likely, a licensed bat ecologist should be commissioned to carry out a preliminary visit to assess the risk and the need for further survey work. All survey work should be carried out in general accordance with published best practice, although exact survey requirements will need to reflect the sensitivity of the site, and the nature and scale of the proposals. The bat ecologist should advise on the detailed requirements following a preliminary site assessment and desk study. If the survey protocol will not meet best practice requirements, this should be agreed in writing with one Wiltshire Council's ecologists prior to submission of the application. Also, if evidence of one of the SAC species is recorded at the site during the surveys, it is strongly recommended that any need for further survey and mitigation measures be agreed with a Wiltshire Council ecologist at an early stage, prior submission of the application. Please note that surveys for European protected species cannot normally be conditioned.

Early support from a consultant ecologist and engagement with Wiltshire Council (where necessary) will ensure that adequate survey data has been gathered and appropriate mitigation measures are incorporated into the project. Failure to provide the necessary information to support an application is likely to result in delays in determination, amendments to the scheme and potentially the need to temporarily withdraw the application to resolve these issues. If insufficient information is submitted to fully assess the application in accordance with the Habitats Regulations¹⁰, the local authority will have no legal option but to refuse the application. The Planning Inspectorate will be required to apply the same legal tests to any appeal applications. It is worth noting that bat surveys are seasonally constrained. A substantial suite of surveys may take up to 12 months to complete and should therefore be programmed into the project delivery plan at an early stage to avoid delays."

2.6.3 Local Biodiversity Action Plan priorities

Biodiversity Action Plans (BAPs) help fulfil the UK's commitment to the Rio Convention on Biological Diversity in 1992, to which the UK was a signatory. Whilst these have been superseded, Regional and local BAPs include Habitat and Species Action Plans, which can form

the focus for local and regional conservation action on conservation of species and habitats of nature conservation importance.

In the case of Wiltshire, the Wiltshire BAP³ includes action plans for priority habitats across the county. Wiltshire is recognised as important for its arable farmland diversity and the mixed farm environment, which supports priority birds such as tree sparrow *Passer montanus* and corn bunting *Emberiza calandra*. Actions are targeted largely at bringing areas of arable land into sensitive management *via* agri-environment schemes, such as Environmental Stewardship.

³ <http://www.wiltshire.gov.uk/biodiversity-wiltshire-action-plan.pdf>

3.0 SURVEY METHODOLOGY

3.1 Data Search

In 2014 a desk search request was made to Wiltshire and Swindon Biological Records Centre (WSBRC) for records of statutory / non-statutory sites and legally protected and notable species up to 2km distance (this was expanded up to 10km for European protected sites). The desk study was updated in March 2018 when a request was made to WSBRC for a complete new set of records for a 2km search area around the Site.

3.2 Field Survey

3.2.1 Extended Phase 1 survey

An 'extended' Phase 1 habitat survey was carried out by Andrew McCarthy CEnv MCIEEM, on the 27 October 2014; this was updated on the 29th March 2018. Habitat survey was undertaken in line with JNCC (2007) methodology and, in addition to general habitat classification and mapping, a provisional botanical species list was compiled (see Appendix 1). The abundance of each species on this list was estimated in the field using standard 'DAFOR' codes; **D**ominant, **A**bundant, **F**requent, **O**ccasional and **R**are, with **locally** being used as a prefix where appropriate. Floristic nomenclature is in accordance with Stace (2010). Features assessed as having potential nature conservation value, or where finer scale description of such features were deemed to be required were described with 'Target Notes'; their locations are shown on Drawing 1.

The approach to site assessment for a range of fauna at the Site is shown in Table 3.1 (together with notes following additional surveys undertaken between October 2014 and March 2018).

Table 3.1 Site assessment for protected / conservation priority species

Species or group	Notes on searches undertaken during Phase 1 survey
Bats and foraging / nesting birds	Air photographs and OS maps were scrutinised at the outset of the project to enable the Site to be assessed in respect of its potential for bats; initially in 2014 this was in line with guidance in Hundt <i>et al.</i> (2012). The initial appraisal was undertaken by Andrew McCarthy, holder of a bat Class II licence (2015-12464-CLS-CLS) and Dr Ian Davidson-Watts, a specialist on bats in the Chilmark area. The Site was assessed initially as having 'low' potential to support foraging and commuting bats and no potential to support roosting bats - in large part as a consequence of the intensive land-use and in the immediate area. The assessment was revised following specialist survey in 2015, the scope of which was agreed beforehand with WC. The surveys were overseen by Dr Davidson-Watts and the work subsequently found that the north-western / north-eastern boundaries were used extensively by barbastelle and occasionally by greater horseshoe bats. Habitats were also assessed for their potential to support foraging / breeding farmland birds; in particular for species deemed to be a priority locally, such as corn bunting. Specialist breeding bird survey was subsequently undertaken in 2015, but no rare species were recorded.

Species or group	Notes on searches undertaken during Phase 1 survey
Badger <i>Meles meles</i>	Habitats within and adjacent to the Site were inspected visually for typical field signs of badger. A search was made for badger paths running through adjacent hedges in 2014 and again in 2018.
Common species of reptile	Grassy edge-habitats were assessed for their potential to support 'widespread' reptiles such as slow worm <i>Anguis fragilis</i> , in 2014 and again in 2018.
Great crested newt <i>Triturus cristatus</i>	A search of air photographs and OS maps was made for ponds within 500m of the Site boundary capable of supporting protected amphibians.
Dormouse <i>Muscardinus avellanarius</i>	Habitats within and adjacent to the Site were assessed for their potential to support the European protected species dormouse; factors such as species-richness and ecological connectivity of hedges were taken into account.
Invertebrates	An assessment was made of overall habitat quality in respect to invertebrates; in particular in regard to plant species and habitat structural diversity.

3.3 Limitations

The 2014 'extended' Phase 1 habitat survey was carried out rather late in the season at a time when many flowering plants were considered to have finished flowering, and when their above ground parts may have died back. Floristic checks were repeated in May during the breeding bird survey in 2015 and a further spring update check was undertaken at the end of March 2018. No notable or scarce plant species have been found during any of these surveys and consequently the habitat work is considered compliant with best practice.

4.0 SURVEY RESULTS

4.1 Desk Study Returns

Desk study returns from WSBRC were provided in spreadsheet form and can be supplied on request if required, for both the 2014 and 2018 studies. Plans showing the results from the 2km and 10km search areas are included in Appendix 3. The results of the 2014 / 2018 studies are summarised below.

4.1.1 Bats

Wiltshire supports important populations of bats and there are numerous records from within the 2km data search area (a number are from the surveys undertaken in 2015 at the Site by AME Limited) from a range of species, and there are roosts locally for the nationally rare species barbastelle, greater horseshoe, lesser horseshoe *Rhinolophus hipposideros* and Bechstein's *Myotis bechsteinii* bats. Other bat records include Brandt's *Myotis brandtii*, Daubenton's *M. daubentonii*, whiskered *M. mystacinus*, Natterers *M. nattereri*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus*, noctule *Nyctalus noctula* and brown long-eared *Plecotus auritus*.

Fonthill Grottoes SSSI was until recently a component of the Chilmark Bats SAC; this lies some 2.5km south-east of Hindon and the SSSI citation for this site states:

*"Fonthill Grottoes is a set of three subterranean follies dating from the eighteenth century, sited in mixed broad-leaved and ornamental woodland around an ornamental lake. These are regularly used as hibernacula by seven species of bat: greater horseshoe *Rhinolophus ferrumequinum*, lesser horseshoe *R. hipposideros*, Natterer's *Myotis nattereri*, Daubenton's *M. daubentonii*, whiskered *M. mystacinus*, Brandt's *M. brandtii* and brown long-eared *Plecotus auritus*. The very rare Bechstein's *Myotis bechsteinii* and barbastelle *Barbastella barbastellus* bats have also been recorded from the site in several recent years.*

The three follies are of different construction. The Dark Walks is a set of tunnels constructed of large stone blocks with earth heaped over them. Gaps between the irregular blocks provide hibernation sites for vespertilionid bats. Ventilation shafts ensure a range of temperature within the site. The Hermitage is the smallest folly, consisting of a single cave with rock walls. The Quarry comprises tunnels cut back into the rock from a disused quarry. This is the largest of the follies and supports the majority of the horseshoe bats using the grottoes.

Despite the small size of this site it is of considerable importance. The maximum number of bats recorded here is 207 which is the sixth largest hibernaculum count in Britain. The presence here of Bechstein's and barbastelle bats is especially noteworthy as very few hibernacula are known for either species."

4.1.2 Dormouse

Only two records for dormouse were returned during the 2014 and 2018 desk studies; both from the area around Fonthill, around 2km to the south-east.

4.1.3 Badger

A total of 12 records for badger were returned during the update data search in 2018, from a wide area around Hindon.

4.1.4 Hedgehog

A total of five hedgehog *Erinaceus europaeus* records were returned during the desk study, including one from the Hindon area.

4.1.4 Harvest mouse

A single old (1974) record of harvest mouse *Micromys minutus* was returned for farmland around Hindon.

4.1.5 Brown hare

A total of eight records for brown hare *Lepus europaeus* were returned during the 2018 update desk study; most were from the area around Hindon and Chicklade.

4.1.6 Birds

Bird records included returns in 2018 for several conservation priority farmland species, including 14 for corn bunting *Emberiza calandra* and one for barn owl *Tyto alba* (in 2005, near Chicklade in the north of the search area). Other farmland bird records included four for lapwing *Vanellus vanellus*, 34 for yellowhammer *E. citrinella* and 22 for skylark *Alauda arvensis*. Most such records appear to be for anecdotal sightings and it is not known whether any are of breeding birds.

4.1.7 Reptiles and amphibians

No records of protected reptiles or amphibians were returned during the desk studies; either in 2014 or in 2018.

4.1.8 Invertebrates

Only a few records of invertebrates were returned during the 2014 and 2018 desk studies; most of which were for moths and butterflies. This probably reflects the popularity of recording of these species, rather than an abundance of invertebrates in this intensively farmed area *per se*. The Site is likely to support few species of conservation interest because of the lack of habitat and floristic species diversity locally.

4.1.9 Designated sites

The Site does not lie within the consultation zones for any statutorily designated sites, other than the aforementioned Chilmark SAC (notwithstanding the earlier text which notes that Fonthill Grottoes SSSI appears to have been removed from it). A plan showing the locations of all designated sites within 10km is provided in Appendix 3.

Only four non-statutory sites of nature conservation importance lie within the 2km search area and these are listed in the table below:

Table 4.1. Designated sites within 2km of site

Code	Designated site	Description	Dist. from site
ST93.040	Hawking Down	Unimproved neutral and calcareous grassland with scattered scrub.	0.9km west
ST93.039	Chilfinch Down	A small site with calcareous grassland on a north-west facing chalk slope	0.8km north-east
ST93.043	Fonthill Terrace Woods	Broadleaved woodland	0.95km south-east
ST93.035	Chilfinch Down	Very species-rich calcareous grassland on a steep bank south of Great Ridge Wood.	1.95km north-east

4.2 Results of 2014 Phase 1 habitat survey and 2018 update

The result of the two habitat surveys (in 2014 and 2018) are shown in an 'extended' Phase 1 habitat survey plan on Drawing 1. Plant species recorded across the site during the survey are listed in Appendix 1 and 'Target Notes' describing specific habitat elements are included in Appendix 2.

4.2.1 Overview

The Site is approximately 4ha in extent and comprises a single field, the small rectangular south-western corner of which was uncultivated at the time of the 2014 and March 2018 surveys (on both occasions it contained elements of the previous season's crop).

The field is bounded around its margins by a narrow grassy belt up to 2m in width at its widest point. Such strips appear periodically cultivated.

Intact hedges are confined to the north-western edge, along part of the north-eastern edge, and along a short section at the southern extremity of the Site. Most are gappy and species-poor, and in the main they contain four or less woody species per 30m length (although there is a reasonable diversity of woody species within the hedges when taken as a whole). The eastern margin comprises a dense belt of bramble *Rubus fruticosus* agg. scrub along a fence line. The south-western margin (along the boundary with East Street) comprises only a simple post and wire fence along a grassy bank.

The principal habitats are described in more detail below:

4.2.2 Arable habitats and their margins

The main area of the field had been seeded with an arable crop at the time of the March 2018 survey and low floristic species-diversity was recorded. The western rectangular shaped section of the Site had been left unploughed and contained residual crops from the previous year. This area is part-enclosed by two sections of taller hedge as well as by mature trees in domestic gardens to the west (see Plate 2, below).

Arable weeds in the arable-grass headland interface (as well as occasionally in open ground in the developing crop) included dandelion *Taraxacum officinale* agg, scarlet pimpernel *Anagalis arvensis*, white campion *Silene latifolia*, a cudweed *Filago* sp. and field forget-me-not *Myosotis arvensis*; all occur at low level.

Grassland around the Site margins is species-poor and overwhelmingly dominated by coarse grasses such as cock's-foot *Dactylis glomerata*, Yorkshire fog *Holcus lanatus* and creeping bent *Agrostis stolonifera*. Herbs in these grassy 'headland' habitats tend to be restricted to bulky perennials such as common nettle *Urtica dioica*, hedge woundwort *Stachys sylvatica*, cow parsley *Anthriscus sylvestris*, broad-leaved dock *Rumex obtusifolius*, hedge bedstraw *Gallium mollugo*, ground ivy *Glechoma hederaceae* and hedgerow cranesbill *Geranium pyrenaicum*.

4.2.3 Hedges and scrub

As already stated, reasonable lengths of intact hedge (mostly closely flailed) are present around the small rectangular section of the field at its south-western corner. Shorter sections are present along part of the north-western and south-eastern boundaries (see Plate 1, below) and also in the south where the Site abuts the B3089. Elsewhere boundary features comprise either fence lines (e.g. along the south-western edge adjacent to East Street), very gappy hedges (i.e. along the majority of the north-western boundary) or lines of bramble scrub (along the eastern boundary). Whilst these hedges rarely exceed four woody species per 30m (and are hence have been mostly mapped as species-poor) there are a reasonable variety of woody plant species present across the Site, including hazel *Corylus avellana*, spindle *Euonymus europaeus*, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, elm *Ulmus* sp., elder *Sambucus nigra*, field maple *Acer campestre*, holly *Ilex aquifolium*, field and dog rose *Rosa arvensis* and *R. canina*, respectively, and dogwood *Cornus sanguinea*. The field layer under the hedges is species-poor, being dominated by coarse grasses with a few competitive herbs such as nettle and ground ivy.

None of the hedges are assessed as important under the Hedgerow Regulations.

4.2.5 Invasive non-native species

No invasive non-native plant species were recorded during the survey.

Plate 1. Northern corner of the Site; view to the east



Plate 2. South-western corner - view to the north-east





Key

- A Arable
- Mosaic of tall ruderal herb and semi-improved grassland
- Species-rich hedge
- Species-poor hedge
- Fence
- Broadleaved tree
- × Scattered scrub
- Target note
- Site boundary

SPECIES CODES

- Ac Acer campestre
- Ca Corylus avellana
- Cm Crataegus monogyna
- Cos Cornus sanguinea
- Ee Euonymus europaeus
- Fs Fagus sylvatica
- Ps Prunus spinosa
- Rf Rubus fruticosus
- Ros Rosa sp(p)
- Sn Sambucus nigra
- Um Ulmus Sp(p)

4.3 Evidence of protected fauna

4.3.1 Bats

The region is of importance for its bat assemblage which, as already discussed, includes important populations of a number of several nationally rare and nationally scarce species. Detailed examination of aerial photographs for the local area in October 2014, together with subsequent habitat survey work, showed that the Site lies within an intensively farmed landscape, in contrast to the landscape a few kilometres south-east around Chilmark, where chalk escarpments fall away to a well-wooded area around the core of the SAC. Notwithstanding, a detailed bat survey between May and October 2015 recorded high numbers of the rare barbastelle along the north-western boundary and in the northern section, as well as greater and lesser horseshoe bats at low levels of abundance. As these species are 'qualifying features' of the SAC, maintaining the ecological functionality of the north-west and eastern boundaries has been identified as central to ensuring that there will be no Likely Significant Effect (LSE) upon the integrity of the SAC, post-development.

The bat field survey was supervised by a local specialist on the Chilmark SAC, Dr Ian Davidson-Watts, and techniques employed included transect / static logger work and mist netting (see AME, 2016). Figure 2 shows an example heat map from the 24/8/15; this shows activity from barbastelle, as well as one of the static logger locations (red circle).

Figure 2. Results of bat transect on the 24/8/15



4.3.2 Badgers

There was no evidence of badger within or around the Site margins during the Phase 1 survey during either the 2014 or the 2018 surveys.

4.3.3 Brown hare

No hares were seen during the Phase 1 survey. However, it is possible that the field is opportunistically used by this species once crops have grown sufficiently high to provide cover. The Site appears though to be managed similarly to other arable areas nearby, and there is no reason to think that a development would detrimentally affect the local hare population.

4.3.4 Hazel dormouse

Two records of dormouse were returned during the desk study in 2018 and this, coupled with the fragmented and ecologically isolated nature of boundary habitats at the Site, suggests that this European protected species is very unlikely to occur here. More importantly, since the proposed development footprint would not affect fringing hedges and given there is scope to create additional habitat around the margins for this species, no survey was deemed to be needed in advance of an impact assessment.

4.3.5 Birds

The Site was assessed as largely unsuitable for barn owl in view of the absence of significant areas of grassland with a dense thatch (required to support the small mammal prey for this species).

The presence of hedges and probably occasional seed sources from spilt grain suggests that scarce farmland bird species such as corn bunting and yellowhammer may occur here occasionally. It is possible that these species breed periodically at the better developed western end of the Site; however there was no evidence of this during the 2015 breeding bird survey in 2015 (AME, 2015).

4.3.5 Amphibians

There was no evidence of any waterbodies within 500m that could support the European protected species great crested newt and this species is not considered further in this report.

4.3.6 Reptiles

The main arable field is routinely ploughed and it has no potential to support 'widespread' species of reptile. Edges have limited potential in this respect, but these would be largely unaffected by the development proposals and they are in any case are likely to be periodically cultivated (thus limiting their potential to support reptiles). There is expected to be scope within the scheme to include reptile habitat enhancement for reptiles within the mitigation package.

4.3.7 Invertebrates

The Site was assessed as simple in structure, floristically rather poor and consequently it is unlikely to provide the complex of habitats required to support a diverse range of

invertebrates. The group of fauna is not considered further as a separate ecological feature / receptor in this report.

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 Bats

In view of the levels of barbastelle activity recorded at the Site during 2015, the emerging master plan has taken this species into account, as it is (along with greater horseshoe) a 'qualifying feature' of the SAC.

Impacts that have potential to affect the SAC include (i) loss, damage or change to management of potential foraging habitat for key bat species (ii) removal, fragmentation and modification of bat habitat along potential commuting corridors and (iii) disruptive effects of artificial lighting along key linear foraging habitat and commuting corridors. The outline scheme design and associated draft mitigation measures already demonstrate that it should be possible to maintain the ecological functionality of the SAC post-development, and the proposals should not have a Likely Significant Effect upon the SAC integrity. By way of illustration, a sketch layout is shown in Figure 3, below (n.b. this is not definitive and it is likely to be subject to further consultation and revision prior to any application). The sketch shows broad vegetated corridors retained along the north-western edge and in the northern section, within which it will be possible to maintain the dark conditions required by barbastelle and greater horseshoe, as well as other light-averse bat species. Lighting engineers would be consulted as needed in order to advise on how zones with a maximum of 0.1 lux can be created and use of appropriate lamp technology such as low-level bollard and back-shielded types will ensure that bats are able to use the Site post-development.

5.2 Bat update survey requirements 2018

It is anticipated that what are at present outline design proposals will be refined as the scheme progresses during 2018; eventually to the point where the design is fixed and mitigation is agreed with WC in an ecological impact assessment (EclA) report. This would form the basis of a planning application - probably in 2019.

In order to ensure that ecological survey information is up-to-date at the point of application, consultation with the WC ecologist team commenced in March 2018 in order to agree a reasonable comprehensive level of bat survey, but bearing in mind the extensive work that has already been undertaken. The following level of survey has been agreed *via* email with Louisa Kilgallen (28th March 2018):

- April / May – Two 2.5 hour transects, one starting an hour after sunset for barbastelle / horseshoe;
- July / August – Two 2.5 hr transects starting at dusk;
- Sept / Oct – Two 2.5 hr transects. One session to start >1 hour after sunset (as above).

In addition, two static Anabat Express logger units will be deployed along the north-western and north-eastern boundaries, during the following periods:

- April / May period - 7 nights
- July / August - 7 nights
- September / Oct - 7 nights

It is understood that repeat mist-netting / harp trapping is not required.

Figure 3. Sketch of possible master-plan layout as of April 17th 2018 showing broad green corridors in bat-critical areas (north-west and north).



5.3 Other surveys

It was agreed during the consultation that no further surveys (other than bat work) are required at the present time.

5.4 Mitigation and enhancement opportunities

There are a range of biodiversity enhancement opportunities that could be delivered at this proposed development site would benefit a range of species. The following options are presently under discussion:

Habitat enhancement

- Biodiversity gain could be delivered post-development *via* establishment of new habitats such as grass headlands and hedges. Grassland can provide a dual function of public open space (POS) as well as bat and bird foraging habitat; a hedged margin to the Site with rotationally managed grassland strips at its base would provide foraging habitat for birds and bats, as well as potentially habitat for reptiles. Strengthening measures such as this would enhance ecological connectivity with the wider landscape.
- Measures to benefit farmland birds would be simple to deliver; in particular for hedge dependent species such as buntings. Species-rich grassland establishment and light tough hedge management could result in a varied seed and insect food source that is required by many bird species throughout the year.
- Reptile habitat (e.g. hibernacula and foraging habitat) could be incorporated into peripheral habitats where design allows; especially where such features are broadly south-facing. Reptile grasslands would need to be cut on a long rotation so they might develop the 'thatch' preferred by species such as slow worm (which could be present at low level in nearby gardens and which may colonise the Site in future).
- New bat roost sites and bird nesting opportunities could be designed into the new buildings; in the case of bats in the form of garage roof loft spaces and roosting tubes/boxes. New nest sites for birds such as starling *Sturnus vulgaris* and house sparrow *Passer domesticus* could be designed into the new buildings in the form of specialist boxes.

Site clearance

Consideration will need to be given to whether vegetation clearance can be undertaken during the period mid-March to end of August inclusive in regard to nesting birds. At present, there are no plans to detrimentally affect most of the fringing hedges or the grassy margins (with the exception of a short section along East Street where the Site entrance could be located). The main field appears to have mostly been under an autumn planting regime, which is likely to inhibit the presence of ground nesting birds and it is likely that this main field could be cleared without seasonal constraint.

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- Natural England Standing Advice Species Sheet: Bats
www.naturalengland.org.uk/Plates/Bat%20feb11_tcm6-21717.pdf

Appendix 1. Floristic species-list

Trees and shrubs

<i>Acer campestre</i>	field maple	LD
<i>Cornus sanguinea</i>	dogwood	LD
<i>Corylus avellana</i>	hazel	LD
<i>Crataegus monogyna</i>	hawthorn	LA
<i>Ilex aquifolium</i>	holly	LD
<i>Prunus spinosa</i>	blackthorn	LD
<i>Rosa arvensis</i>	field-rose	LF
<i>Rosa canina</i>	dog-rose	LF
<i>Rubus fruticosus agg</i>	bramble	LD
<i>Sambucus nigra</i>	elder	LA
<i>Ulmus sp.</i>	elm species	O
<i>Euonymus europaeus</i>	spindle	LD

Herbs

<i>Anagalis arvensis</i>	scarlet pimpernel	LA
<i>Anthriscus sylvestris</i>	cow parsley	O
<i>Calistegia sepium</i>	hedge bindweed	LA
<i>Cirsium arvense</i>	creeping thistle	LA
<i>Cirsium vulgare</i>	spear thistle	LF
<i>Epilobium sp.</i>	a willowherb	O
<i>Filago sp.</i>	a cudweed	O
<i>Gallium mollugo</i>	hedge bedstraw	LA
<i>Geranium pyrenaicum</i>	hedgerow cranesbill	LD
<i>Glechoma hederaceae</i>	ground ivy	LA
<i>Hedera helix</i>	ivy	LD
<i>Heracleum sphondylium</i>	hogweed	LF
<i>Lamium album</i>	white dead-nettle	O
<i>Myosotis arvensis</i>	field forget-me-not	O
<i>Papaver rhoeas</i>	common poppy	O
<i>Plantago lanceolata</i>	ribwort plantain	LA
<i>Potentilla reptans</i>	creeping cinquefoil	R
<i>Ranunculus repens</i>	creeping buttercup	LA
<i>Rumex obtusifolius</i>	broad-leaved dock	LA
<i>Silene alba</i>	white campion	LF
<i>Stachys sylvatica</i>	hedge woundwort	LA
<i>Taraxacum officinale agg</i>	dandelion	LA
<i>Urtica dioica</i>	common nettle	LD
<i>Veronica persica</i>	common field speedwell	O

Grasses

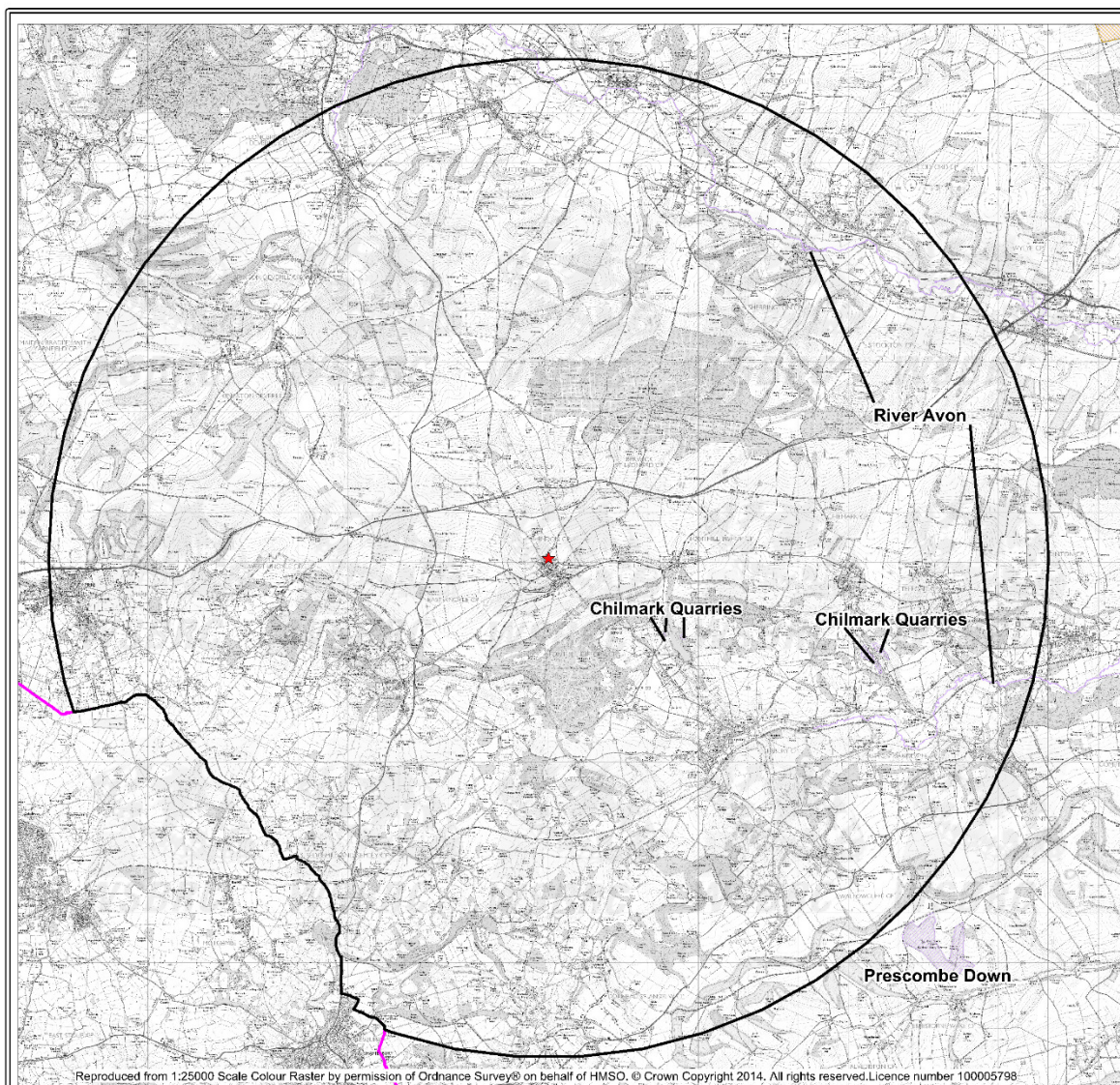
<i>Agrostis capillaris</i>	common bent	LD
<i>Alopecurus pratensis</i>	meadow foxtail	LA
<i>Arrhenatherum elatius</i>	false oat-grass	LD
<i>Dactylis glomerata</i>	cock's-foot	LA
<i>Elymus repens</i>	common couch	LD
<i>Holcus lanatus</i>	Yorkshire fog	LD
<i>Lolium perenne</i>	perennial rye-grass	LD

Appendix 2. Target Notes

1. A short section of species-rich hedge containing five woody species per 30m section: hazel, blackthorn, holly, field maple, hawthorn. The field layer is species poor and dominated by ivy, with occasional competitive herbs such as common nettle.
2. This narrow belt of species-poor grassland extends around the field and contains typical species of coarse grass such as creeping bent, cock's-foot grass, and Yorkshire fog, along with a few tall herbs.
3. A taller and better-developed section of hedge wraps around the north-western and north-eastern edges of this small rectangular area. The hedge species-count is just species-rich, with up to five woody plants being recorded per 30m section. Overall woody species comprise blackthorn, hawthorn, roses, holly, field maple and dogwood. Bramble is abundant in the north-eastern section of hedge. The field layer is species poor and dominated by grasses and ivy, with tall herbs dominating along the open margins.
4. This section of the Site backs onto domestic gardens, a number of which contain mature trees within their bounds. These help screen and enclose this section of the Site and are likely to provide sheltered feeding conditions for bats and birds.
5. A very short section of species-rich hedge, containing up to five woody species per 30m: blackthorn, hazel, hawthorn, roses and elder. The target-noted section extends around the corner of the field onto the northern boundary for a short distance, where spindle is dominant. The field layer is typically species poor and dominated by ivy, ground ivy, nettles and grasses.



Appendix 3. Selected Desk Study data extracts



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**European sites within 10 km of
Land off East Street
Hindon
Wiltshire
ST910331**

12th November 2014

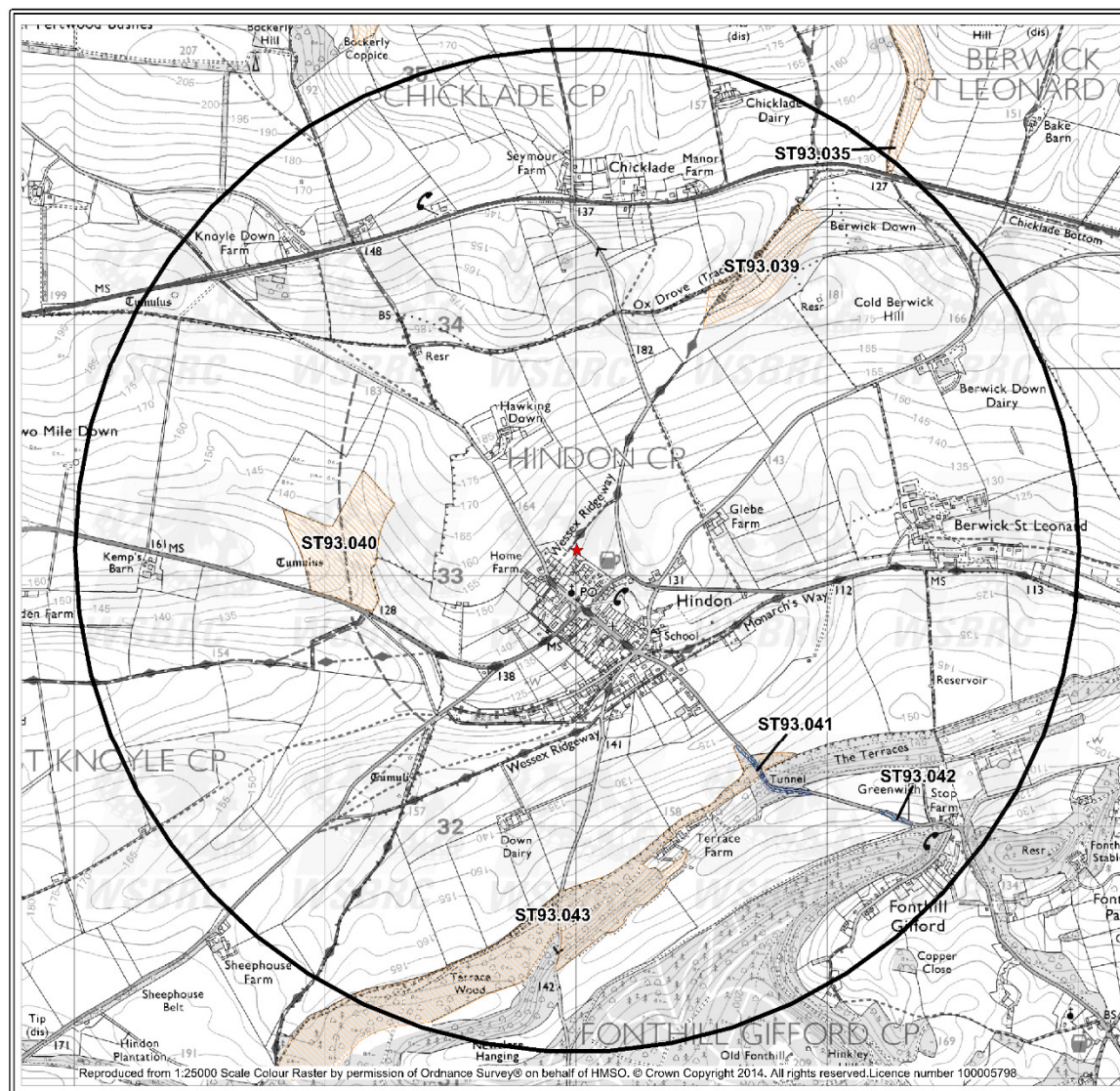
Special Area of Conservation



Special Protection Area



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Biological Records Centre



**Wildlife sites within 2 km of
Land off East Street
Hindon
Wiltshire
ST910331**

12th November 2014

National Nature Reserve



Site of Special Scientific Interest



Local Wildlife Site



Local Geological Site



Protected Road Verge



Wiltshire Wildlife Trust Reserve

