



Proposed Residential Development off East Street, Hindon, Wiltshire

Preliminary Ecological Appraisal

18 November 2014

Revision 00

Prepared for CG Fry & Son Limited



NON TECHNICAL SUMMARY

Andrew McCarthy Ecology was commissioned by CG Fry and Son to undertake a Preliminary Ecological Appraisal at a site adjacent to East Street, Hindon in Wiltshire. The work was undertaken in support of a planning application for residential development. The site comprises a single arable plot on clay with flints soils. The broadly triangular-shaped 4ha field is fringed by fences, bramble scrub and short sections of often species-poor, gappy hedges. Hindon village lies to the south-west; to the north lies a small triangular horse and sheep-grazed paddock and beyond this to the east lies open countryside dominated by arable fields.

The site lies 2.5km north-west of Fonthill Grottoes SSSI; a component roost of the Chilmark Quarries Bats SAC. Chilmark comprises a group of abandoned mines and underground follies regularly used by greater and lesser horseshoe, Bechstein's and barbastelle bats, in large part for winter hibernation. As well as the SAC roosts, bats also use a network of other roosts throughout the year and, given the dependency of bats upon wider landscape features, 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'. Whilst the site was assessed as having low potential for bats in this study in view of its intensive land-use and arable setting, it lies within the consultation zone for the Chilmark SAC and bat survey is recommended to inform a detailed master plan and mitigation strategy. In view of the low potential of the site for bats a modest level of survey is considered appropriate and proportionate, in line with published best practice. Survey requirements should be agreed beforehand with the local authority ecologist, in line with local policy.

Hedges were assessed as sub-optimal for dormouse. Although this European protected species occurs locally, hedges are isolated ecologically and would in any case not be detrimentally affected by the proposals as access would be *via* the un-hedged East Street and new native hedge planting is proposed. No survey is therefore recommended.

No evidence of badger was found.

There is limited potential for reptiles in grassy field margins. However, as with hedges, the scale of the proposed development is such that grass headlands could be largely retained and enhanced. No reptile survey is recommended.

There are no waterbodies within 500m and the site has no potential for great crested newt.

The final section of the report outlines potential constraints, mitigation and enhancement options and survey recommendations; these comprise (i) summer check survey for arable weeds and (ii) a bat activity survey.

CONTENTS

1.0	INTRODUCTION.....	1
1.1	Terms of Reference	1
1.2	Site Context.....	1
2.0	RELEVANT LEGISLATION AND POLICY	3
2.1	Habitat Regulations – European protected species	3
2.2	Habitats regulations – European sites	3
2.3	Wildlife and Countryside Act	5
2.4	Hedgerow Regulations 1997	6
2.5	Natural Environment & Rural Communities Act and S41 list species.....	6
2.6	National Planning Policy Framework	6
2.7	Biodiversity Action Plans.....	6
3.0	SURVEY METHODOLOGY	8
3.1	Data Search.....	8
3.2	Field Survey	8
3.3	Limitations	9
4.0	SURVEY RESULTS.....	10
4.1	Desk Study Returns.....	10
4.2	Results of Phase 1 habitat survey	12
4.3	Evidence of protected fauna	15
5.0	DISCUSSION AND RECOMMENDATIONS	17
5.1	Impact assessment bats.....	17
5.2	Survey requirements	17
5.3	Mitigation and enhancement opportunities	17
6.0	REFERENCES & BIBLIOGRAPHY	19

1.0 INTRODUCTION

1.1 Terms of Reference

Andrew McCarthy Ecology (AME) Limited was commissioned by CG Fry and Son to undertake an 'extended' Phase 1 habitat survey and Preliminary Ecological Appraisal (PEA) for a proposed development site adjacent to East Street, Hindon in Wiltshire. The appraisal focuses upon identification of (i) potential ecological constraints to development and (ii) whether specialist ecological surveys are required to inform a detailed mitigation strategy.

1.2 Site Context

Plate 1 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 which lies a residential area. On its eastern side the site is bordered by a narrow lane which runs between Hindon and Chicklade villages. The extreme southern edge is bounded by the B3089.

The site comprises a single, broadly triangular-shaped arable field, a small rectangular section of which at the western end was uncultivated at the time of survey and contained crops from the previous season. The bulk of the site was ploughed however and had been recently sown with a rye-grass mix, presumably so the main field can be grazed in 2015. There are no buildings or trees within the site boundary, although a few mature beech trees were noted in gardens to the west.

The site lies some 2.5km north-west of Chilmark Quarries SAC and is within the SAC's consultation zone ('Core Zone'). The Chilmark SAC is one of several internationally important bat sites in the region and according to the Wiltshire Bats SAC Planning Guidance for Wiltshire¹ it:

"is another of Wiltshire's internationally important bat sites 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 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."

1

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

Plate 1. Aerial photograph showing the proposed development site in a local landscape context. The rather intensive nature of the land use around Hindon can clearly be seen.



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.

2.2.1 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."

2.3 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 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.

2.7 Biodiversity Action Plans

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. Regional and local BAPs include Habitat and Species Action Plans; these form the focus for local and regional conservation action on conservation of species and habitats of nature conservation importance.

The Wiltshire BAP² 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 within the BAP are targeted largely at bringing areas of arable land into sensitive management *via* agri-environment schemes, such as Environmental Stewardship. There is likely to be potential within this proposed development scheme for targeted habitat enhancement to support the agri-environmental element of the Wiltshire BAP.

² <http://www.wiltshire.gov.uk/biodiversity-wiltshire-action-plan.pdf>

3.0 SURVEY METHODOLOGY

3.1 Data Search

A desk search request was made to Wiltshire and Swindon Biological Records Centre (WSBRC) at the outset of the project, for records of statutory / non-statutory sites and legally protected and notable species up to 2km distance. The search was expanded up to 10km for European protected sites.

3.2 Field Survey

3.2.1 Extended Phase 1 survey

The 'extended' Phase 1 habitat survey was carried out by Andrew McCarthy CEnv MCIEEM, on the 27 October 2014. The field 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 conservation value, or where finer scale description of such features were deemed to be required, were described by 'Target Notes'; their locations are shown on Drawing 1.

The approach to site assessment for a range of fauna that could occur at a site such as this is shown in Table 3.1.

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, in line with guidance in Hundt <i>et al.</i> (2012). This appraisal was undertaken by Andrew McCarthy, holder of a bat Class II licence (CLS0201). The site was assessed 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, both on site and locally. The approach to site assessment is explored in more detail in Section 4.3.1. Habitats were assessed for their potential to support foraging / breeding farmland birds, in particular those species deemed to be a priority locally such as corn bunting.

Species or group	Notes on searches undertaken during Phase 1 survey
Badger <i>Meles meles</i>	All habitats within and adjacent to the site were inspected visually for typical field signs of this species. A particular search was made for badger paths running through adjacent hedges.
Common species of reptile	Grass habitats were assessed for their potential to support reptile species such as slow worm <i>Anguis fragilis</i> .
Amphibians in particular 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 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 'extended' Phase 1 habitat survey was carried out rather late in the season at a time when many flowering plants had finished flowering and their above ground parts had largely or completely died back; as a result, the surveyor may have missed some early flowering species. The survey was in all other respects undertaken without significant limitation.

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. Plans showing results from the 2km and 10km search areas are included in Appendix 3. The results of the desk study are summarised below:

4.1.1 Bats

Wiltshire supports important populations of British bats but surprisingly few records (only ten) were returned for the 2km data search area. Records received were for the following species; bats (species unspecified; three roost records); pipistrelle *Pipistrellus sp.* (two roost records); noctule (one unspecified record); brown long-eared (four records; all of which were for roosts).

The Fonthill Grottoes SSSI component of the Chilmark Bats SAC lies 2.5km south-east of Hindon. 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. daubentoni*, whiskered *M. mystacinus*, Brandt’s *M. brandti* and brown long-eared *Plecotus auritus*. The very rare Bechstein’s *Myotis bechsteini* 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 vespertilinoid 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 of dormouse were returned during the desk study; both were from woodland around Fonthill, around 2km to the south-east.

4.1.3 Badger

A total of 11 records for badger were returned during the data search, from a wide area around Hindon.

4.1.4 Hedgehog

A single record of hedgehog *Erinaceus europaeus* was returned during the desk study.

4.1.4 Harvest mouse

A single old (1970's) record of harvest mouse *Micromus minutus* was returned for farmland around Hindon.

4.1.5 Brown hare

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

4.1.6 Birds

Bird records included returns for several conservation priority farmland species, including nine for corn bunting *Emberiza calandra* and one for barn owl *Tyto alba* (near Chicklade in the north of the search area). Other farmland bird records included four for lapwing *Vanellus vanellus*, 15 for yellowhammer *E. citrinella* and seven for skylark *Alauda arvensis*. Most such records appear to be for anecdotal sightings and it is not known whether any are for breeding birds.

4.1.7 Reptiles and amphibians

No records of protected reptiles or amphibians were returned during the desk study.

4.1.8 Invertebrates

Only a few records of invertebrates were returned during the desk study and most of these were for moths and butterflies; this probably reflects the popularity of recording of these species, rather than the abundance of invertebrates in this intensively farmed area *per se*. The site is unlikely to support few species of conservation interest, in view of the lack of habitat structural and floristic species diversity locally within this intensively managed area.

4.1.9 Designated sites

The site does not lie within the consultation zones of any statutorily designated sites, other than the aforementioned Chilmark SAC and it is only this site which could be considered potentially sensitive to a proposed residential development. A plan showing the locations of 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 Phase 1 habitat survey

The result of the 2014 extended Phase 1 habitat survey are illustrated in Drawing 01. Plant species recorded across the site during the survey are listed in Appendix 1 and 'Target Notes' describing specific habitat elements within the site are listed in Appendix 2.

4.2.1 Overview

The site is approximately 4ha in extent and comprises a single field, the small rectangular western corner of which was uncultivated at the time of survey and contained elements of previous season's crop. The field is bounded around the margins by a grassy belt of varying width; up to 2m wide at its widest point along the northern margin. Such strips are probably periodically cultivated.

Intact hedges are confined to the western corner; along part of the north-western boundary, 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 overall there is a reasonable diversity of woody species). The eastern margin comprises a dense belt of bramble *Rubus fruticosus* agg scrub, developed over a former fence line. The south-western margin, along the boundary with East Street, comprises only a simple fence along a grassy bank.

Principal habitats are described below:

4.2.2 Arable habitats and their margins

The main area of the field was recently ploughed and had been seeded with perennial ryegrass, presumably in preparation for a grazing element of the rotation. A low species-diversity was noted. 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.

Arable weeds occur on the arable-grass headland interface as well as occasionally in open ground in the developing crop. Typical species of open ground are dandelion *Taraxacum*

officinale agg, scarlet pimpernel *Anagalis arvensis*, white campion *Silene latifolia*, a cudweed *Filago* sp. and field forget-me-not *Myosotis arvensis*.

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*.

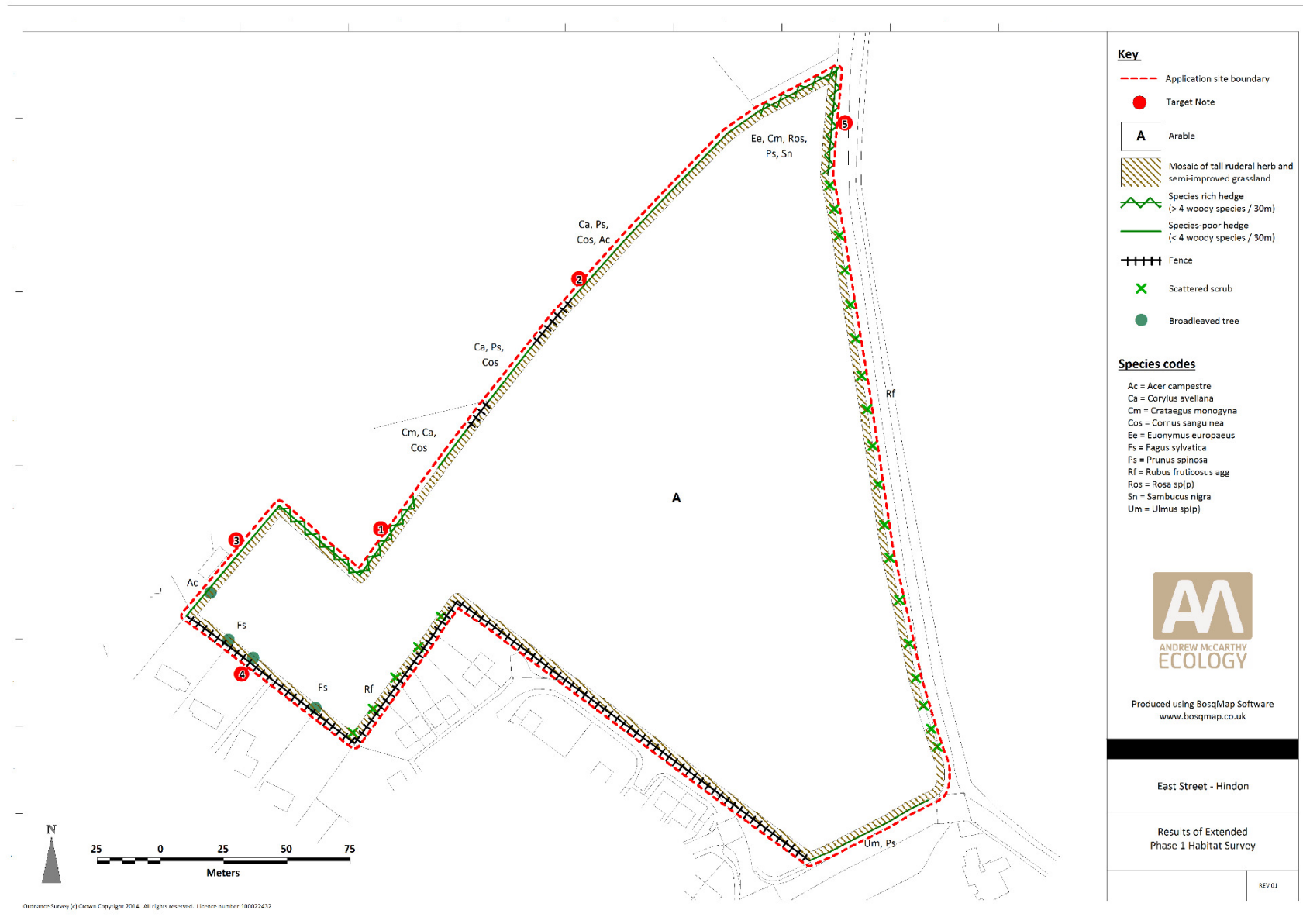
4.2.3 Hedges and scrub

As already stated, reasonable lengths of intact hedge are only present around part of the rectangular section of the field at the sites western end. Shorter sections are present along part of the northern boundary and the southern, 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 stretch and are hence have been mostly mapped as species-poor, there are a reasonable variety of woody plant species present 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 important under the Hedgerow Regulations.

4.2.5 Invasive non-native species

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



4.3 Evidence of protected fauna

4.3.1 Bats

Notwithstanding that only a relatively small number of bat records were returned for the 2km search area during the desk study, the wider area is of considerable importance for its bat assemblage which, as already discussed, includes important populations of a number of rare species. Detailed examination of aerial photographs for the local area however shows that the site sits within an intensively farmed landscape, in stark contrast to the landscape only a few kilometres to the south-east around Chilmark, where a series of chalk escarpments fall away to a well-wooded area around the core of the SAC. In addition, the proposed development site does not appear to lie between the SAC and any obvious landscape or other potential roost features and, when its low structural and species diversity and poor quality boundary features are taken into account, the potential for bats is concluded to be low (in line with guidance in Hundt *et al.*, 2012).

4.3.2 Badgers

There was no evidence of badger within or around the site margins during the Phase 1 survey.

4.3.3 Brown hare

Although no hares were seen during the Phase 1 survey, it is likely that the main 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, which is probably at greater threat from wider changes in agricultural practice.

4.3.4 Hazel dormouse

Only two records of dormouse were returned during the desk study and this, coupled with the fragmented and ecologically isolated nature of boundary habitats at the site, suggests that this European protected species is unlikely to occur here. More importantly, since the proposed development footprint would not affect fringing hedges and given the scope to create additional beneficial habitat around site margins for this species, no survey is recommended.

4.3.5 Birds

The site was assessed as being largely unsuitable for barn owl in view of the absence of grassland with a dense thatch to support its required small mammal prey.

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 such species breed periodically at the better developed western end of the site.

4.3.5 Amphibians

There are no 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 has no potential to support reptiles. There is limited potential for reptiles such as slow worm to occur around the grassy margins, but these habitats would be largely unaffected by the development proposals and in any case are likely to be periodically cultivated, thus limiting their potential to support reptiles. Further, there is expected to be scope within the scheme to include reptile habitat enhancement within the mitigation package.

4.3.7 Invertebrates

The main habitats are herb-poor, with the most structurally diverse areas being at the western end. Overall, the site was assessed as being simple in structure however, and unlikely to provide optimal habitat for a diverse range of invertebrates. Given the semi-urban setting and relative floristic impoverishment, such habitats are unlikely to support an invertebrate community with high conservation importance and this group of fauna is not considered further in this report.

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 Impact assessment bats

In view of the low diversity at this site and the intensive nature of site management, together with a locally intensive land use, it is considered highly unlikely that the site constitutes an important foraging resource for the bat species for which the SAC is designated. Such species depend to a great extent upon less intensively grazed pasture and woodland habitat, which are noted as scarce in this locality. Similarly, the paucity of hedges and their fragmentation, together with the sites' urban fringe position, means that boundary features are highly unlikely to act as critical conduits to and from the SAC. As a consequence, it is highly unlikely that the development as proposed would have a negative effect on the integrity of the European site. The bat survey proposed below in Section 5.2 is intended to inform the emerging detailed master plan and to guide development of biodiversity enhancement measures.

5.2 Survey requirements

The only surveys deemed necessary going forwards are (i) for bats and (ii) a summer check visit to complete a proper inventory of the arable weed flora; this could be tied in with the bat survey.

For the purposes of bat survey planning the site has been provisionally assessed against guidance in Hundt *et al* (2012) as having 'Low' potential (see Section 4.3.1 for rationale in arriving at this assessment and the impact assessment in Section 5.1 above). Best practice expectations indicate that sites of this size and character should be subject to night surveys during the active bat season in order to determine patterns of activity; the resultant data would in this instance guide an emerging detailed scheme design.

The following survey effort is recommended:

- One, three-hour transect per survey season (i.e. three sessions; one each in spring, summer and autumn) to commence in April / May 2015 and to finish in September / October 2015.
- Two static detectors in strategic positions (to be agreed with the County Ecologist beforehand) with data being collected on at least three consecutive nights for each seasonal deployment.

5.3 Mitigation and enhancement opportunities

There are a range of biodiversity enhancement opportunities offered by this proposed development that could benefit a range of species, including bats, birds, reptiles and invertebrates. The following options should therefore be explored at the detailed design stage:

Dark zones

Commuting and feeding bats will benefit from creation of dark zones around the site margin. Lighting engineers would be consulted if required in order to advise on how zones with a maximum of 0.1 lux can be created; such levels would encourage use by scarcer bats such as horseshoe and *Myotis sp.* (such bats are generally rather light averse). Use of appropriate lamp technology such as low-level bollard and back-shielded types will be key to ensuring that bats are able to use this site post-development.

Habitat enhancement

- An overall biodiversity gain could be delivered post-development *via* establishment of new habitats such as grass headlands and hedges. Grassland could provide a dual function of public open space and also bat (and bird) foraging habitat and a hedged margin to the site, with rotationally managed grassland strips at its base. This would provide foraging habitat for birds and bats, as well as potentially reptiles. Provision of such measures will also enhance ecological connection with the wider landscape, which at present is rather poor.
- Such measures would benefit farmland birds in addition to bats, in particular hedge dependent species such as buntings. Grassland establishment would result in a more varied seed and insect food source that is required by many such species throughout the year.
- Reptile habitat could be incorporated into peripheral plantings where design allows; especially where such features are south-facing (for example along the north-western boundary). Reptile grasslands would need to be cut on a long rotation so that these areas 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, if not already present).
- 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 would be). 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.

6.0 REFERENCES & BIBLIOGRAPHY

Anon (2002) *Badgers and Development*. English Nature, Peterborough.

Bright, P.W., Morris, P.A. & Mitchell-Jones, A.J. (2006). *The Dormouse Conservation Handbook*. English Nature, Peterborough.

Hundt L (2012) *Bat Surveys: Good Practice Guidelines*, 2nd ed. Bat Conservation Trust, London.

Joint Nature Conservation Committee (2007) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (Revised reprint). Joint Nature Conservancy Council, Peterborough.

Stace, C. (2010). 3rd Edition. *New Flora of the British Isles*. Cambridge University Press, Cambridge.

Wildlife and Countryside Act 1981:

www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1981/cukpga_19810069_en_1

Countryside and Rights of Way Act 2000:

www.legislation.hmso.gov.uk/acts/acts2000/20000037

Natural Environment and Rural Communities Act 2006:

www.opsi.gov.uk/acts/acts2006/ukpga_20060016_en_1

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 sanguinaeus</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

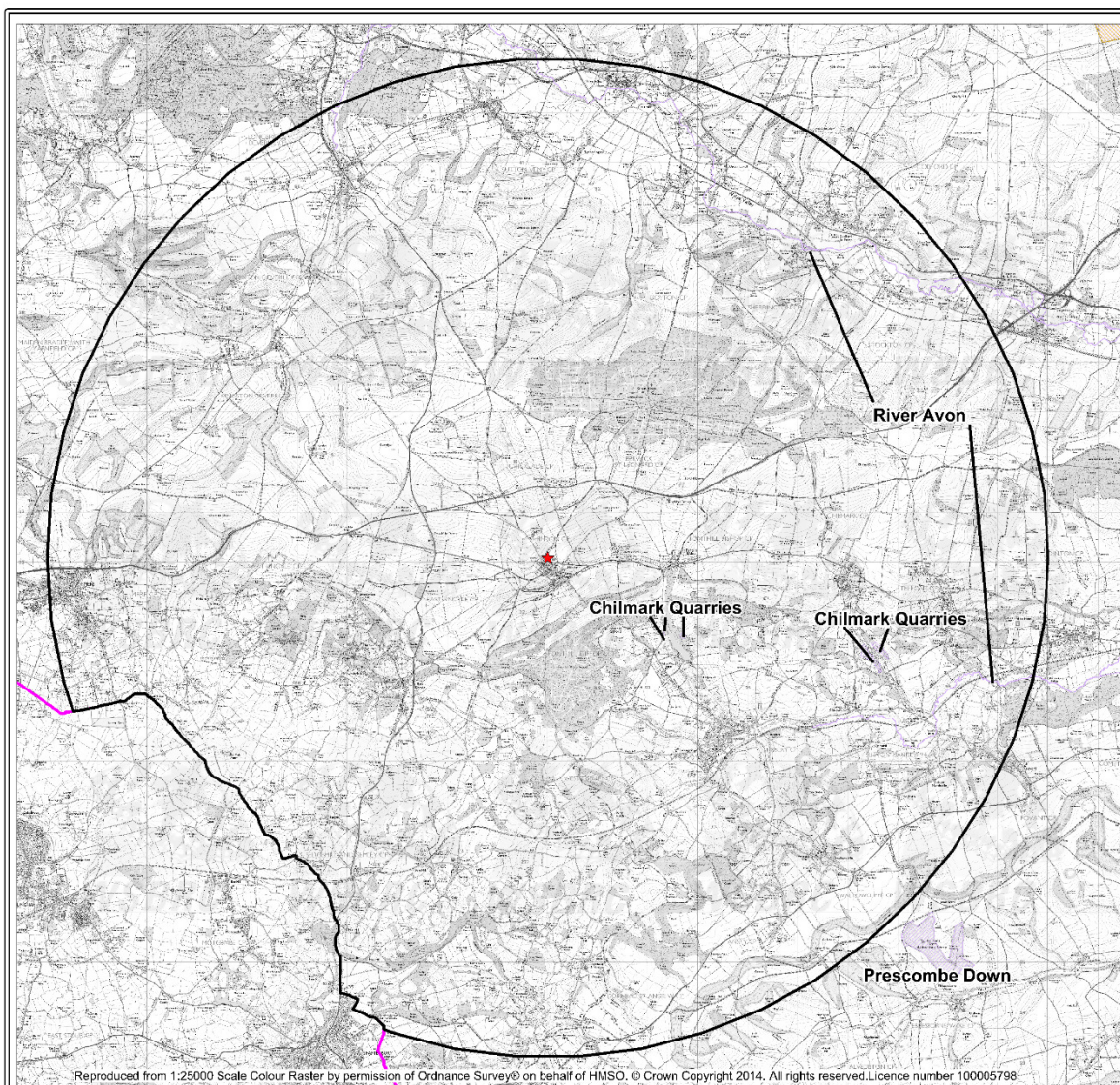
<i>Agrostis capillaris</i>	common bent	LD
<i>Alopecurus pratensis</i>	meadow foxtail	LA
<i>Arrhenatherum elatius</i>	false oat-grass	LD
<i>Dactylis glomerata</i>	cock's-foot	LA
<i>Elymus repens</i>	common couch	LD
<i>Holcus lanatus</i>	Yorkshire fog	LD
<i>Lolium perenne</i>	perennial rye-grass	LD

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**

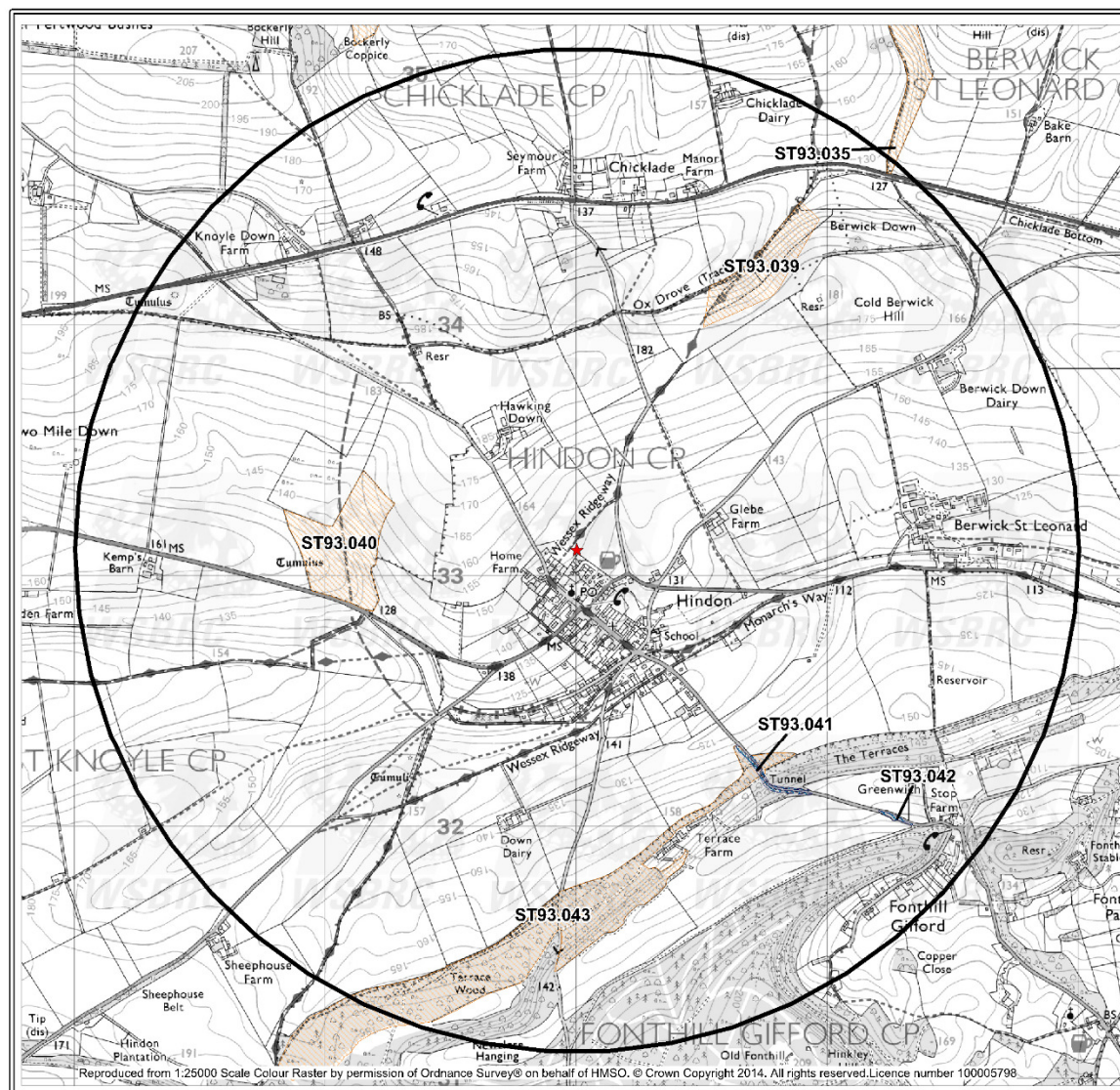
12th November 2014

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

