Tiverton East Urban Extension: Area 1

DRAFT Protected Species and Hedgerow Survey Report

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GLOSSARY

BAP	Biodiversity Action Plan
CBD	Convention on Biological Diversity
CRoW	Countryside and Rights of Way Act 2000
CWS	County Wildlife Site
EU	European Union
Ha	Hectare
JNCC	Joint Nature Conservation Committee
LBAP	Local Biodiversity Action Plan
LPA	Local Planning Authority
MAGIC	Multi-Agency Geographic Information for the Countryside
NE	Natural England
NERC	Natural Environment and Rural Communities Act
NPPF	National Planning Policy Framework
OS	Ordnance Survey
OSWI	Other Sites of Wildlife Interest
SAC	Special Area of Conservation
SINC	Site of Importance for Nature Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TN	Target Note
UK	United Kingdom
UWS	Unconfirmed Wildlife Sites
WCA	Wildlife and Countryside Act 1981

1 EXECUTIVE SUMMARY

1.1 Engain was instructed by Waddeton Park to undertake a suite of protected species and habitat surveys for bats, dormice, badgers, trees and hedgerows within Area 1 of the proposed development site at Tiverton East Urban Extension, Devon.

1.2 This report presents the findings of these surveys and evaluates the potential implications of the proposed development upon species and habitats at the site as well as making recommendations for avoidance, mitigation, compensation and enhancement for biodiversity as necessary to fulfil legal and policy obligations.

1.3 Data search results for protected and notable species within 2km of the site (4 km for bats) and designated sites within 2 – 5km, are presented within the accompanying Ecological Appraisal report (Engain ref. eg12464, November 2012). Reference is also made to the desk study findings in this report.

1.4 Five bat transect surveys (one per month) were carried out at the site from May to September by one or two surveyors at a time. Static dataloggers were also placed on site throughout the survey season at one point on site for three to five nights consecutively. A total of 11 species were identified using the site for foraging or commuting. One recording was made of a possible Western barbastelle on site. Data from these surveys was further informed by simultaneous surveys, which were carried out by Engain to the same methodology on the adjacent proposal site.

1.5 75 nest tubes were placed within hedges and woodland on site considered to have potential to be used as places of shelter by dormice (listed on Annex II of the Habitats Directive). Two inspections were made in July and August. Evidence of dormice was found on site during both inspections and these signs were spread across the suitable habitat on site.

1.6 Trees on site were evaluated for potential for roosting bats. A badger survey has been carried out and one disused outlier sett identified.

1.7 Dormice (*Muscardinus avellanarius*) (protected under the 'Habitat Regulations' and Wildlife and Countryside Act Schedule 5) are present on site. Good numbers of noctule (*Nyctalus noctula*) and pipistrelle (*Pipistrellus sp*) bats were recorded foraging and commuting on site along with much lower numbers of nine other species including a Leisler's (*Nyctalus leisleri*) bat on one occasion. Due to the presence of Wildlife and Countryside Act Schedule 5 species, dormouse on site all hedgerows are classified as ecologically important under the Hedgerow Regulations 1997. A number of hedgerows are also ecologically important due to floristic diversity and associated features.

1.8 Following full implementation of the mitigation and enhancement strategy, it is not considered that ecology poses a significant constraint to the proposed development.

Mitigation

1.9 The majority of the hedgerows and all standard mature trees on site will be retained and enhanced with some minor fragmentation due to access roads and footpaths. Strategic planting will be used to alleviate the impact of newly created gaps. The River Lowman corridor and associated woodland and grassland to the west of the site will be enhanced for dormice and other protected species along with habitats on site and connecting habitat providing mitigation and enhancements.

1.10 A detailed mitigation strategy and European Protected Species licence will be required prior to carrying out any works that will affect dormouse habitat including for all hedgerows on site and any wooded areas.

1.11 Should any works to the retained trees be required, further survey may be required and a method statement for encountering bats should be implemented. Should bats be found work will stop immediately and a licensed bat worker will be contacted.

1.12 A Construction Stage Environmental Management Plan (CEMP), individual mitigation strategy for dormice as well as a lighting plan for bats will be produced to inform the proposals and development works. Lighting within the

site will be kept to a minimum and designed to have a minimal impact on bats using flight paths within the site.

Enhancement

1.13 The site has the potential for ecological enhancement. The development will accommodate the following recommended measures:

- Appropriate local native plant species and features in landscape planting plans to increase species and habitat diversity;
- Planting of additional lengths of native hedgerow and planting standard trees to create new wildlife corridors enhancing connectivity both within and leading off site;
- Installation of bat and bird boxes in existing and new trees as well as on buildings close to natural habitat on the site (once new trees established); and
- An Ecological Management Plan outlining the above will be agreed with statutory consultees prior to commencing works.

2 INTRODUCTION

2.1 Engain was instructed by Strategic Land Partnership to undertake a suite of protected species and habitat surveys for bats, dormice, badgers, otters and water voles and hedgerows within Area 1 of the proposed development site at Tiverton East Urban Extension (Tiverton EUE), Devon.

2.2 The site forms part of the larger Tiverton EUE. The suite of surveys described in this report has been simultaneously conducted on an adjacent part of the Tiverton EUE which lies immediately to the west. The results of these surveys will be used to further inform mitigation recommendations for both sites. As such the proposed mitigation will be designed with consideration for the integrity and functionality of the larger Tiverton EUE strategic site.

2.3 This report presents the findings of these surveys and evaluates the potential implications of the proposed development upon species and habitats at the site as well as making recommendations for avoidance, mitigation, compensation and enhancement for biodiversity as necessary to fulfil legal and policy obligations.

3 LEGISLATION AND POLICY

Relevant Legislation

3.1 The two principal European Union (EU) Directives relating to nature conservation are the EU Habitats Directive (1992)[2] and the EU Birds Directive (1979)[3]. Both of these Directives are transposed into National legislation through the Conservation of Habitats and Species (Amendment) Regulations 2011[4] or the 'Habitat Regulations'

3.2 The EU Habitats Directive[2] makes provision for the designation of wildlife conservation areas as Special Areas of Conservation (SAC). The EU Birds Directive[3] makes provision for the designation of conservation areas for rare and vulnerable birds as Special Protection Areas (SPAs).

3.3 Dormice (*Muscardinus avellanarius*), all British bats (*Chiroptera*), otters (*Lutra lutra*) and great crested newts (*Triturus cristatus*) are European Protected Species (EPS) under the Habitat Regulations. It is an offence to:

- Deliberately capture or kill a EPS;
- Deliberately disturb a EPS in such a way as to be likely to significantly affect
  - i) the ability of any significant group of animals of that species to survive, breed or rear or nurture their young, or
  - ii) the local distribution of that species; and
- Damage or destroy a breeding site or resting place of a EPS.

3.4 A EPS licence is required to carry out an otherwise unlawful action affecting these species. A licence will only be granted if the following tests can be met:

- The consented operation must be for "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment";
- There must be "no satisfactory alternative"; and
- The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their range.

3.5 The Birds Directive is also implemented through the Wildlife and Countryside Act (WCA) 1981[5] (as amended). In addition, the WCA 1981[5] provides protection to other habitats and species at a national level. The Countryside and Rights of Way Act 2000 (CRoW)[6] adds additional enforcement, making offences arrestable, increasing time limits for some prosecutions and increasing penalties.

3.6 The WCA 1981[5] (as amended) with further protection from the CRoW Act 2000[6] makes provision for the designation of Sites of Special Scientific Interest (SSSI).

3.7 Badgers (*Meles meles*) and their sett are protected under the Protection of Badgers Act 1992[7] as amended by The Hunting Act 2004[8].

3.8 The Hedgerow Regulations 1997 protect hedgerows that are important ecologically, historically and in landscape terms. It is illegal to remove or destroy an important hedgerow without permission from the LPA.

3.9 The Natural Environment and Rural Communities Act (NERC) 2006[9] extends the biodiversity duty set out in the CRoW Act 2000[6] to public bodies and statutory undertakers to take due regard to the conservation of biodiversity. Local Planning Authorities (LPAs) should ensure that there is no net loss of biodiversity on a site, no net loss in habitat connectivity and should always aim to enhance biodiversity.

Relevant Policy

3.10 The National Planning Policy Framework (NPPF)[10] sets out the Government's policies for the protection and enhancement of biodiversity through the

planning system. The NPPF encourages the planning system to contribute to and enhance natural and local environments, through minimising the impacts on biodiversity and providing net gains in biodiversity where possible.

3.11 Local planning authorities should follow key principles to ensure that the potential impacts of planning decisions on biodiversity conservation are considered. Circular 06/05: Biodiversity and Geological Conservation[11] provides administrative guidance on the application of the law relating to planning and nature conservation and complements the NPPF.

3.12 The UK Biodiversity Action Plan (UK BAP)[12] is the UK Government's response to the convention on Biological Diversity (CBD) signed in 1992 at Rio de Janeiro, which describes the UK's biological resources and commits a detailed plan for the protection of these resources including priority species and habitats.

3.13 The UK BAP is divided into Local BAPs (LBAPS). The Nature of Devon: A Biodiversity and Geodiversity Action Plan[13] is the LBAP relevant to this site.

"*Each LBAP works on the basis of partnership to identify county and local priorities and to determine the contributions they can make to the delivery of the national Species and Habitat Action Plan targets. Often, but not always, LBAPs conform to county boundaries.".*[12].

4 METHODS

Dormouse Survey

4.1 Dormouse nest tubes are an established method of identifying the presence or likely absence of dormice. Survey guidance[12] provides an index score for each month that nest tubes are left out. A minimum survey effort index score of 20 is required to assume absence.

4.2 Seventy-five nest tubes were installed on 31 May 2012, at approximately 20 m intervals within hedgerows and on the branches of small trees, within suitable habitat at least 1.5 m above ground level. The nest tubes were left on site throughout the year and checked by licenced dormouse ecologist, Georgie Starkie during July and August whereupon surveys were stopped as the presence of dormice on site had been confirmed.

4.3 After placement, the dormouse tubes were left for two weeks before the surveys commenced.

4.4 Data recorded during the nest tube inspections include the number of dormice observed using the nest tubes, nest tube number, whether nests are present and whether nest tubes are being used by other species. If dormice were present then biometric measurements including sex, activity (active/torpid), breeding condition and number of young would be recorded.

4.5 Nest tubes are left undisturbed if small, pink, furless young are present.

Bat Activity Surveys

4.6 Surveys were carried out according to standard guidance (Bat Surveys: Good Practice Guidelines 2007[14] and Bat Mitigation Guidelines, English Nature 2006[14]). The site is considered to be of large size and medium habitat quality with no designated sites for bats and no records of very rare or localised distribution within 5km of the boundary. As such five transect surveys were carried out between May and September 2012 on 28 May, 25 June, 30 July, 20 August with a dusk and dawn survey on 20/21 September.

4.7 Visual observations were supported by the use of ultra-sonic bat detectors. A combination of heterodyne and frequency division hand held detectors (BATBOX Duet) and frequency division detectors (Anabat) were used, which detect ultrasonic bat calls. The frequencies were recorded for analysis and verification.

4.8 The aims of the transect surveys were to identify which bat species are using which habitats or features on the site, or around it, for what purposes eg foraging, commuting or possible roost, which habitats or features are more frequently used or avoided and to give an indication of the relative value of the site to British bats.

4.9 The weather conditions were suitable with the exception of the last hour of the survey in July when heavy rain cut the survey short. Details of the weather conditions the results are presented in Appendix 1. The evening transect surveys commenced at or just before sunset and continued for two and a half hours after sunset. The dawn survey on 21 September 2012 began 2 hours before dawn and continued until dawn.

4.10 To supplement the transect surveys, a static data logger (either an Anabat or SM2) was left on site for between 3 and 5 consecutive nights each month from May to September to record bat activity between sunset and sunrise. The locations of the static dataloggers are shown on Figure 4-1 and the full results presented in Appendix 1.

4.11 BATBOX Duet recordings were analysed using the sound analysis software 'BatScan', whilst Anabat and SM2 data was analysed with the use of 'Analook'. Within these software packages recordings are displayed as sonograms and the interpulse interval, repetition rate and peak frequency output is visualised. These parameters aid in the identification of bat species.

Tree Inspection Survey for Bats

4.1 The tree inspections were undertaken on 19 June 2012 by an experienced ecologist; Jen Weaver (BSc (Hons) MIEEM).

4.2 The trees on site were inspected visually during daylight hours externally for evidence of usage and current suitability for bats. This involved an assessment of the tree for potential bat roost sites eg splits, cracks, holes and cavities in the trunk and branches, loose bark and ivy cover.

4.3 A search for evidence of bats including oil and urine staining, scratch marks and droppings around holes, was also conducted. Attributing droppings to bats (rather than mice or other small mammals) is straightforward, owing to the dry dusty/crumbly texture of the droppings. Assigning them to a particular species of bat is, however, more difficult and attributions should therefore be taken as probable rather than certain.

Badger Survey

4.4 The badger survey was conducted on 19 June 2012 and 29 September 2012 in good conditions by an experienced ecologist, Jen Weaver. The survey followed Mammal Society Guidelines[6].

4.5 The survey included a thorough search of the site to record all setts within the site boundary and any setts outside on the perimeter of the boundary (where access permitted). A search for signs of badgers eg tracks, latrines, hairs and snuffle holes was also conducted throughout the site.

Hedgerow Survey

4.6 A hedgerow survey was conducted on 19 June 2012 by an experienced ecologist, Jen Weaver. Under the Hedgerow Regulations 1997 a hedgerow is deemed to be ecologically important if:

- It contains, or records exist that it has contained, protected species of birds, animals or plants, listed on schedules 1, 5 or 8 of the Wildlife and Countryside Act 1981;
- It contains certain red data book species that are listed as endangered, extinct, rare or vulnerable including birds, plants, invertebrates or stoneworts;
- It runs along a public right of way and includes at least four woody species, in an average 30 m length and has at least two associated features; and
- The hedgerow includes at least five woody species in an average 30 m length, combined with three or more associated features, further woody species or contains one or more particularly uncommon woody species which are detailed within the hedgerow regulations.

4.7 The survey data was used to assess the ecological value and status of each hedgerow on site according to the Hedgerow Regulations 1997, the UK Biodiversity Action Plan (BAP) and the Devon BAP. Hedgerows with five or more species within an average 30 m length are classed as species-rich.

Survey Limitations

4.8 Due to access constraints it was not possible to include the grounds of Blundell's School within any of the surveys although where possible these areas were observed from accessible areas of the site.

4.9 In accordance with the updated survey guidance[14] bat transect surveys would ideally have been conducted from April to September, however the surveys commenced in May 2012. Due to the low to moderate potential for bats at the site and the level of survey detail subsequently obtained it is considered that the survey effort is sufficient for the purposes of informing the proposals

4.10 Due to heavy rain during the bat transect survey on 20 August 2012, the survey was cut short by one hour. Rain on the night of 21 September 2012 reduced bat activity in the vicinity of the static datalogger on site.

5 SITE LOCATION AND GENERAL DESCRIPTION

Site Location

5.1 The site is located to the north east of Tiverton and consists of farmland to the north of Blundells Road and to the south of the A361 dual carriageway. The River Lowman and associated woodland, as well as the adjacent business park form the western boundary and residential development lies to the east. The site currently consists of agricultural land, which is grazed by cattle and sheep.

5.2 The site is 16.7 hectares in size.

5.3 The Ordnance Survey (OS) grid reference for the centre of the site is SS 978 134.

General Description

5.4 In a broader context the wider landscape consists of agricultural land with associated hedgerows with Tiverton golf course to the east. The town of Tiverton separates the site from the wider landscape to the south west.

6 SURVEY FINDINGS

6.1 The following section describes the findings of the detailed habitats and species surveys conducted. Data was received from DBRC in April 2012 and the full data search results are detailed in the accompanying Ecological Appraisal report (Engain 2012).

Dormouse Survey

6.2 Dormouse nests were found within seven separate nest tubes placed on site during July and August. These nests were firmly woven balls of green or browned dead leaves occasionally mixed with honeysuckle (*Lonicera periclymenum*) bark. One nest tube contained what appeared to be the beginnings of a dormouse nest as there were several freshly collected green leaves present. No individual dormice were found during the surveys.

6.3 Dormouse nests were found to the north and south of Uplowman Road with the most nests found in species-rich Devon hedges. One nest was also found in the relatively new species poor hedgerow along the southern edge of the A361. Figure 6-1 shows the locations of dormouse signs found.

6.4 The full dormouse survey results are shown in Appendix 2.

6.5 There are no statutory sites within 5 km or non-statutory sites within 2 km designated for dormice. Records of dormice were returned immediately adjacent to the site.

Bat Activity Surveys

6.6 The surveys found moderate levels of bat activity throughout the active season with bats using the site for foraging and commuting. Areas of particular foraging activity were around mature trees at hedgerow junctions and along the sunken lanes that bisect the site, particularly the north/south lane adjacent to the golf course.

6.7 The species diversity recorded overall was high although the vast majority of activity recorded was that of common pipistrelle bats (*Pipistrellus pipistrellus*), often considered to be repetitively passing surveyors or static dataloggers

while foraging along hedgerows and around trees. A total of 11 species were recorded on site as follows: common pipistrelle, soprano pipistrelle (*Pipistrellus pygmaeus*), noctule bat, Natterer's bat (*Myotis nattereri*), a long-eared bat species considered likely to be brown long-eared (*Plecotus auritus*), Daubenton's (*Myotis daubentonii*), whiskered bat (*Myotis mystacinus*), serotine (*Eptesicus serotinus*) and likely Brandts (*Myotis brandtii*), Leislers bat (*Nyctalus leisleri*) and a possible Western barbastelle (*Barbastella barbastellus*).

6.8 Figure 6-2 shows the locations of transects walked and Figure 6-3 shows the areas of highest foraging and commuting activity. The full survey results are shown in Appendix 1.

6.9 Noctule bats were the second most frequently recorded species and were regularly seen hawking over the arable fields south of Uplowman Road roughly half an hour after sunset.

Tree Inspection Survey for Bats

6.10 There were four mature oaks and a mature ash tree within hedgerows on the site that could potentially be used by roosting bats. The oak trees have a small amount of rot within lower branches that may provide roosting opportunities for low numbers of crevice dwelling bats and under ivy cover on all five trees however no evidence of bats was noted. The trees have **low** to **moderate** potential for bats.

6.11 Figure 6-4 shows the location of trees inspected and the level of potential for bats identified.

Badger Survey

6.12 Several records of badgers within 2 km of the site were received from DBRC. One of which was for a recent road kill on the A361 to the west of the site.

6.13 The badger survey recorded very little evidence of badger activity across the site. One blocked and clearly currently disused outlier sett with a moderate

spoil heap and consisting of one old entrance was found within a curtilage hedgerow on site. More recent rabbit diggings surrounded the sett.

6.14 A main sett was recorded within a hedge bank during a survey on an adjacent site. This off-site sett lies approximately 500 m from the site boundary but badgers are likely to use the site for foraging and dispersal.

Hedgerow Survey

6.15 The site supports a structurally and floristically diverse hedgerow network that is well connected with the surrounding countryside. The majority of hedgerows on site are species rich, Devon hedges, supported by tall hedge banks. Due to the presence of dormice on site (a Schedule 5 species) all hedgerows on site should be considered ecologically important, however a number of hedgerows can also be considered important due to species diversity or other associated structural features.

6.16 Woody species recorded within hedgerows include hazel (*Coryllus avellana*), hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*), European gorse (*Ulex europaeus*), pedunculate oak (*Quercus robur*), *Rosa* species and blackthorn (*Prunus spinosa*). Honeysuckle was frequent within the species rich, Devon hedgerows. Ground flora was moderately diverse within the Devon hedgerows, particularly within those along Uplowman Rd and included barren strawberry (*Potentilla sterilis*), dogs mercury (*Mercuralis perennis*), hart's tongue fern (), bluebell (*Hyacynthoides non-scripta*) and foxglove (*Digitalis purpurea*). Ground flora in other hedgerows was poor and dominated by nettle (*Urtica dioica*).

6.17 The full hedgerow survey results are shown in Appendix 3. Figure 6-5 maps the hedgerows on site.

7 EVALUATION, MITIGATION & ENHANCEMENT

Dormice

7.1 Nest tube surveys demonstrate presence and absence and cannot give an accurate representation of the population density of dormice across the site. However, due to the moderate number of nests found and the wide spread of nests across the site it is assumed that dormice are present within all suitable and connecting habitat, but likely at higher densities within larger, species rich, Devon hedges and at low density within species poor hedgerows.

7.2 Although studies have shown that dormice can sometimes avoid crossing gaps of as little as three metres, it is considered likely that dormice will occasionally cross the narrow, quiet lanes bisecting the site such as Uplowman Road. The A361 is likely to be a major barrier to dormouse movement, although the corridor of scrub and trees alongside the road has suitability as a dispersal route.

7.3 Connecting habitat exists between suitable on and off-site habitat in the form of an established network of Devon hedges. Woodland fragments are small and scarce in the immediate surroundings of the site and the hedgerow network on site in conjunction with that of the surrounding land is considered to support a population as well as providing dispersal routes between populations. The adjacent golf course has potential for the species as well as the limited areas of woodland around the River Lowman to the west and the former railway corridor to the south of the site.

Mitigation

7.4 Dormice are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species (Amendment) Regulations 2011 making dormice a European Protected Species (EPS).

7.5 A EPS licence will be required before any works can be carried out which may disturb or injure a dormouse or damage a place of shelter for dormice,

including all hedgerows, scrub and woodland on site. A detailed mitigation strategy will be required to inform this licence and guide works on site.

7.6 In order to satisfy the Habitat Regulations tests, there must be no loss and wherever possible, an enhancement to the conservation status of the dormouse population on site. The hedgerow network on site will be retained, buffered with additional planting and managed for dormice wherever possible. It is essential that connectivity between hedges on and off-site is maintained overall to allow dormice to continue to move through and off the site.

7.7 Some lengths of hedgerow will be removed as part of the development to create access roads and footpaths into the site. These lengths should be kept to an absolute minimum and be cleared under licence, with careful removal of vegetation down to approximately 30 cm between September and late February, outside of the nesting bird season. Works will avoid disturbance of hedgerow bases where hibernating dormice may be. The removal of this top growth will encourage dormice to move into adjacent vegetation in the spring allowing full removal of the hedge base to continue.

7.8 Where longer sections of species rich hedges ae to be removed, translocation of dormice may be required.

7.9 By allowing trees to grow into an arch across gaps or providing gantries or alternative hedgerow connections to compensate for wider gaps, connectivity could be maintained. Temporary measures such as gantries may be required while landscaping becomes established.

7.10 Due to the residential nature of parts of the proposed development there may be an increased conflict between domestic cats moving into the area and dormice. It is known that cats prey on dormice although there is a lack of detailed study regarding the long term impacts cats have on dormouse populations. At present dormice occur within curtilage hedgerows on site immediately adjacent to areas of residential development and as such it is likely some level of predation occurs here already.

7.11 It is important that additional connected habitat is created for dormice to provide opportunities for the population to expand or at the very least to move away from this additional pressure. This habitat should be reasonably isolated from the residential development and it is considered that the area of existing woodland to the west of the site around the River Lowman could be expanded and managed for dormice as new hazel coppice woodland as well as buffering areas around retained hedgerows.

7.12 Hedgerows that will be adjacent to residential areas should be fenced to reduce the likelihood of predation from cats.

7.13 A CEMP and EMP should be agreed with the LPA to manage risk to the species and to agree landscaping and management methodologies as well as a monitoring regime pre, post and during construction.

7.14 It is considered that if these mitigation measures are implemented that the status of dormice at the site could be maintained or enhanced.

7.15 The dormouse population on site is considered to be ecologically important at a **county** level and is considered to be sustainable only with maintained connectivity with off-site hedgerow and woodland habitat.

Bats

7.16 The hedgerows on site are of particular value to bats and show good levels of connectivity to the surrounding landscape. This connectivity should be maintained or enhanced where possible to retain the ecological value of the site for bats. Creation of new species rich habitats including grassland and woodland will continue to provide foraging opportunities.

7.17 Bats are traditionally loyal to flight paths, therefore should these hedgerows be removed it is important to ensure that any new lighting in this area is managed so as not to displace bats from the area.

7.18 A high species diversity is present and Leisler's bat and Barbastelle bat, both recorded on one occasion are restricted in distribution. The Barbastelle bat is listed on Annex II of the Habitats Directive and is a designating species for

European sites. No such sites are within 10 km of the proposal site or are likely to be impacted by the proposals. The majority of activity is that of common pipistrelle and noctule bats, both widespread species, reasonably tolerant of small increases in light levels, with other species being recorded occasionally.

7.19 It is considered that the assemblage of bats on site is of ecological value at a **local** level.

7.20 By retaining existing species-rich hedgerows and creating new species rich habitats including grassland, a diversity of invertebrate prey will remain available for foraging bats.

7.21 The impact of lighting on bats can be minimised by the use of low pressure sodium lamps[16]. Ensuring that the height of lighting columns in general is as short as possible can also reduce the ecological impact of the development.

7.22 Where it is not possible to use shorter lighting columns light should be directed downwards at an acute angle to thereby reduce horizontal spill. Pedestrian lighting should be below 3 lux at ground level[16].

7.23 Where possible timers should be fitted to lights and adjusted to the minimum required use to reduce the ecological impact of lighting on site.

Tree Inspection

7.24 The mature trees on site will be retained within hedgerows and lighting managed to avoid disturbing bats that may be using these features.

7.25 Should works to these trees be required then a climbing survey or an emergence and dawn activity survey should be carried out to inform as to the use of the tree by bats, prior to works commencing.

Badgers

7.26 Badgers and their setts are protected under the Protection of Badgers Act 1992[1] as amended by The Hunting Act 2004[2] which makes it an offence to kill, injure or take a badger or to interfere with a badger sett.

7.27 The disused badger sett will be retained in its current location and hedgerow and wildlife corridor enhancement carried out.

7.28 An update survey of the site for badgers will be carried out prior to commencing works on site to evaluate the current status of the sett and any changes in activity across the site. If an active minor badger sett does require closure a NE licence will be required. An application for a development licence to close a setts can only be submitted to NE once planning permission is granted and licenses are only issued for work to be carried out between 1st July and 30th November.

7.29 During construction, trenches and holes will be covered at night to prevent foraging badgers becoming trapped.

7.30 It is considered that badger movements across the site to the surrounding countryside will not be significantly restricted by the development as the total area of hedgerow planting will be enhanced overall and connectivity off site retained. Foraging opportunities for badger will likely decrease overall due to the loss of arable and pasture land however green space and grassland planting will provide opportunities and the site is considered to support low numbers of badgers in conjunction with the surrounding countryside. A badger tunnel beneath the new access road is not considered to be required as the activity of badgers across the site appears low. Lighting within the development will be uni-directional and low spill and will avoid wildlife corridors wherever possible.

1.1 The site will be planted with native hedgerows, tree species and grassland areas with wildlife plant mixes. The hedgerows/planting will create corridors and some foraging habitat across the site.

7.31 It is considered that the population of badgers on site are of ecological value at a **site** level.

Hedgerows

7.32 The hedgerows on site are part of a well-connected and valuable ecological resource creating commuting, dispersal, foraging and breeding habitat for a

wide variety of species including dormice, birds, bats, invertebrates, badgers and other mammals. It is important that the connectivity and integrity of this habitat should be maintained or enhanced where possible. All the hedgerows on site are native and as such are a UK BAP habitat.

7.33 The total area of hedgerow, woodland or other connective habitat should be approximately doubled within the new proposals by wildlife corridors being widened and buffered from the new development. Buffer habitat could comprise a mixture of wildflower meadow planting, scrub, woodland and wetland habitat and could be incorporated with a sustainable drainage scheme.

7.34 The hedgerow network on site is considered to be ecologically important at a **local** level.

8 CONCLUSIONS

8.1 The proposed development site is considered to be of ecological value at a **local** level overall with some features of higher value such as the hedgerow network, dormouse population and assemblage of bats using the site.

8.2 A Construction Stage Management Plan, a long term Ecological Management Plan, an individual species mitigation strategy for dormice and a lighting plan will be produced to inform the development.

8.3 The site has potential for enhancement through good design practice and principles. Such enhancement should take account of connectivity with the surrounding landscape and biodiversity.

Enhancement

8.4 The site has the potential for ecological enhancement. The development will accommodate the following recommended measures:

- Appropriate local native plant species and features in landscape planting plans to increase species and habitat diversity;
- Planting of additional lengths of native hedgerow and planting standard trees to create new wildlife corridors enhancing connectivity both within and leading off site;
- Installation of bat and bird boxes in existing and new trees as well as on buildings close to natural habitat on the site (once new trees established); and
- An Ecological Management Plan outlining the above will be agreed with statutory consultees prior to commencing works.

8.5 Following full implementation of the mitigation and enhancement, it is not considered that ecology poses a significant constraint to the proposed development.

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APPENDICES

Appendix I Bat Survey Results

Appendix 2 Dormouse Survey Results

Appendix 3 Hedgerow Survey Results