

Dunsbury Hill Farm, Hampshire

Application for a Natural England Licence - Bats

ATKINS

Method Statement: Document 1

Background and Supporting Information

Portsmouth City Council

Notice

This report was produced by Atkins Limited for Portsmouth City Council for the specific purpose of obtaining a Natural England mitigation licence in respect of bats for felling of trees at Dunsbury Hill Farm, Hampshire.

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Atkins Limited

Document history

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A. Executive Summary

This report has been produced as part of an application for a licence to undertake works that will affect bats. The works include removal of trees at Dunsbury Hill Farm which are within the footprint of the proposed Dunsbury Hill Link Road and will therefore be affected by the development proposals.

The Dunsbury Hill Farm Development is a proposed 20.2 hectare (50 acre) greenfield development site in the ownership of Portsmouth City Council. A hybrid planning application was submitted, comprising a detailed planning application for an access road (referred as the link road hereafter), and an outline planning application for the whole site development (business park and hotel). An Environmental Statement was produced in March 2012 by Atkins and the hybrid planning application for the site was submitted on 30th March 2012.

The proposed development to which this licence application relates involves the works with full planning permission comprising the link road, road bridge, Hulbert Road roundabout and the replacement lay-bys, but not the two phases of the business park development.

Numerous bat surveys have been carried out on site between 2010 and 2013. Two tree roosts were discovered during update bat surveys in 2013. Based on the survey findings, it can be concluded that trees 781 and 795 support low status, non-breeding roosts of common pipistrelles, a common and widespread species.

The habitat to be cleared for the link road within the Dunsbury Hill development site consists of scrub habitat and approximately 70 trees of various species and ages. The habitat to be lost is a small proportion of the wider network of scrub, hedgerows and woodland habitats found within the immediate vicinity of the site.

In the absence of mitigation, the proposals would result in the destruction of two summer (non-breeding) tree roosts used by a small number of common pipistrelles, and roosting opportunities in the neighbouring trees. If felling were not undertaken in a sensitive manner there would be a risk of disturbance, and potentially, killing or injury of a small number of individual bats. In the absence of mitigation, the impact of the scheme would be low following the Bat Mitigation Guidelines (English Nature, 2004).

In practice, as explained in the Method Statement Document 2, the appropriate method and timing of tree felling and provision of artificial bat roosts will ensure that disturbance impacts will be kept to a minimum and roosting and foraging opportunities for bats will continue to be provided in the long term, ensuring the favourable conservation status of the local common pipistrelle population is maintained. The common pipistrelle is one of the most common and widespread species of bats in the UK. In addition, bats at the site have free access to numerous trees and buildings of much higher suitability in the surrounding area. The overall impact would therefore be negligible, taking mitigation into account.

B. Introduction

B1. Background to activity/development

Dunsbury Hill Farm (referred to as “the Site” hereafter) is a proposed 20.2 hectare (50 acre) greenfield development site in the ownership of Portsmouth City Council, located on the western edge of Havant in Hampshire. A “hybrid” planning application was submitted on 30th March 2012 for a full planning permission for an access road (referred to as the link road hereafter) and road bridge, and outline planning permission for the actual site development (business park and a high quality hotel with conference facilities), in accordance with Havant Borough Core Strategy Policy CS18¹. Planning permission was granted on the 19th February 2014.

The proposed development will be constructed in several phases. In order to allow access into Dunsbury Hill Farm Site, a link road and associated roundabout with replacement lay-bys will be constructed first. This work is planned to commence in 2014. The business park itself will then be constructed in two phases:

- Phase 1 – commencing in 2014, with 2016 being the assumed opening year for operation;
- Phase 2 – expected to take place from 2020 – 2022, with 2022 being the assumed opening year for operation.

Numerous bat surveys have been carried out on site between 2010 and 2013. Bat surveys undertaken in 2013 have confirmed that two trees were used as a summer (non-maternity) bat roost by a small number of common pipistrelle bats *Pipistrellus pipistrellus*.

This licence application pertains to the works with full planning permission comprising the construction of the link road and Hulbert Road roundabout, but not the two phases of the business park development. As stated in the Dunsbury Hill Bat Master Plan (Atkins, January 2014) which accompanies this licence application, vegetation clearance works relating to Phase 1 and Phase 2 of the Business Park, which will be carried out at a later stage, will be covered by separate bat mitigation licence application(s) should these be required.

Portsmouth City Council is the developer and landowner. The main contractor for the vegetation clearance works has been appointed (Gristwood & Toms). Consultants from Atkins Limited are acting as the project Ecologists.

B2. Full details of proposed works on site that are to be covered by the licence

Vegetation clearance, including tree felling, will be required to facilitate the construction of the link road and Hulbert Road roundabout. The vegetation clearance will involve the removal of nine trees which have been assessed as having low and moderate bat roost potential, and another one that has been confirmed as a bat roost (trees 781). In addition, tree 795, another confirmed bat roost, will be disturbed during tree surgery works which are designed to retain the roost features whilst minimising the risk of physical failure of the retained tree. The design of the link road and roundabout can be found on Figure C4.2 below.

Tree 781 is within the actual footprint of the link road. Tree 795 is located between the embankment of Hulbert Road which requires reprofiling, and the edge of the haul road which will be used by contractors to access the site on a daily basis. The tree was originally marked as being felled in the Arboricultural Impact Assessment for the Scheme due to its poor structure and form (standing dead tree with extensive decayed

¹ Havant Borough Council (March 2011) Havant Borough Core Strategy

base and main stem) and proximity to the working areas. However, following discussions with the highways engineer and the arboriculturalist, due to its status as a bat roost, it was agreed that the tree (and its roost features) can be retained by reducing its height and monolithing it to standing dead wood. By doing so, the potential consequence of failure will be reduced in line with the reduction in height and weight of the tree, thereby increasing the chance of survival of the roost features. If tree surgery was not carried out, there is a higher risk for the tree to fail and the roost features being lost in addition to implications for safety of construction staff.

A planning application (ref. APP/12/00338) including ecological information was submitted for this scheme in March 2013 to the Havant Borough Council Planning Department, and planning permission was subsequently granted on the 19th February 2014. The proposed development will go towards addressing the sub-regional regeneration need identified by the Solent Local Enterprise Partnership (LEP).

Actions requiring licensing

The licence is primarily required for the destruction of one tree roost, and the disturbance/modification of a tree containing another tree roost, but will also need to cover disturbance and capture of any bats that are present at the time of felling. It would not be possible to fell these trees without also destroying the roost. Measures detailed in the accompanying Method Statement - Document 2 will minimise the risk of disturbance to bats during the works as far as possible.

C. Survey and site assessment

C1. Pre-existing information on bat species at the survey site

The site lies within Hampshire and the Hampshire Biodiversity Information Centre (HBIC) was contacted to provide data on bats and bat roost records within 5km of the site as part of the Environmental Impact Assessment for the Dunsbury Hill Farm development.

The desk study identified numerous records of bats within 5 km of the proposed development. Species include common pipistrelle, a pipistrelle not identified down to species level, noctule, serotine, Bechstein's, Brandt's, whiskered, Daubenton's, Natterer's, brown long-eared and a long-eared bat not identified down to species level.

C2. Status of species

Common pipistrelle

The common pipistrelle is native, widespread and one of the UK's most common bat species, with an estimated UK population of 2,430,000 individuals (Battersby ed., 2005). A review by the Bat Conservation Trust (BCT) in 2012 concluded that the UK population of common pipistrelle was showing a slight increase.

Their historic decline means that they were listed as priority species in the UK Biodiversity Action Plan (BAP); however it has since been removed from the UK BAP priority list as a result of its population remaining stable.

C3. Objectives of the survey

Bat surveys have been undertaken at the site between 2010 and 2013. Table C3.1 below lists the surveys undertaken to date and their objectives.

Table C3.1 – Survey objectives (all surveys were carried out by Atkins, except where otherwise stated)

Timing	Survey Type	Objectives
September 2011	Day-time bat roost assessments (whole site)	Inspection of buildings and trees for the presence of features with potential to support roosting bats.
September 2010 and June 2011 (see Annex F.1.1. for full survey report)	Dusk/Dawn bat activity transect surveys (whole site) Automated (static detection) bat surveys (whole site)	Identify potential roosts and key bat commuting and foraging habitats, evaluate their importance and sensitivity, identify potential mitigation measures and identify further survey requirements.
September 2012 (see Annex F.1.2. for full survey report)	Update dusk/dawn bat activity transect survey (link road phase only) Update tree assessment from the ground, and subsequent tree climbing inspections (link road phase only)	Gather up to date information on the usage of the site by bats. Determine whether any trees scheduled for removal within the site contain any bat roosts; the legal implications of any development; and the information required to obtain a European Protected Species licence for any works carried out that might affect a bat roost.
July 2013 (see section C.6 for survey results)	Update tree assessment from the ground (link road phase only) Dusk/dawn emergence/re-entry surveys (link road phase only)	Provide a detailed assessment of the presence or possible absence of roosting bats within on-site trees with bat roosting potential and, if present, to assess the number, species and location of bat roosts and to determine key areas of foraging and commuting activity. <i>Surveys carried out by Ecosa on behalf of Atkins.</i>

Full details of the bat surveys are provided in Annex F1. The information above has been used to identify suitable working practices, and to assess the potential impacts of the proposed works on bats and inform a mitigation and compensation strategy that is proportional and appropriate to these impacts.

C4. Scaled plan/map of survey area

Please see Figure C4.1 for a site location plan (aerial), and Figure C4.2 for the location of the link road and its associated planning application boundary.



Figure C4.1: Site Location Plan Aerial (view of Site and wider surrounding landscape)

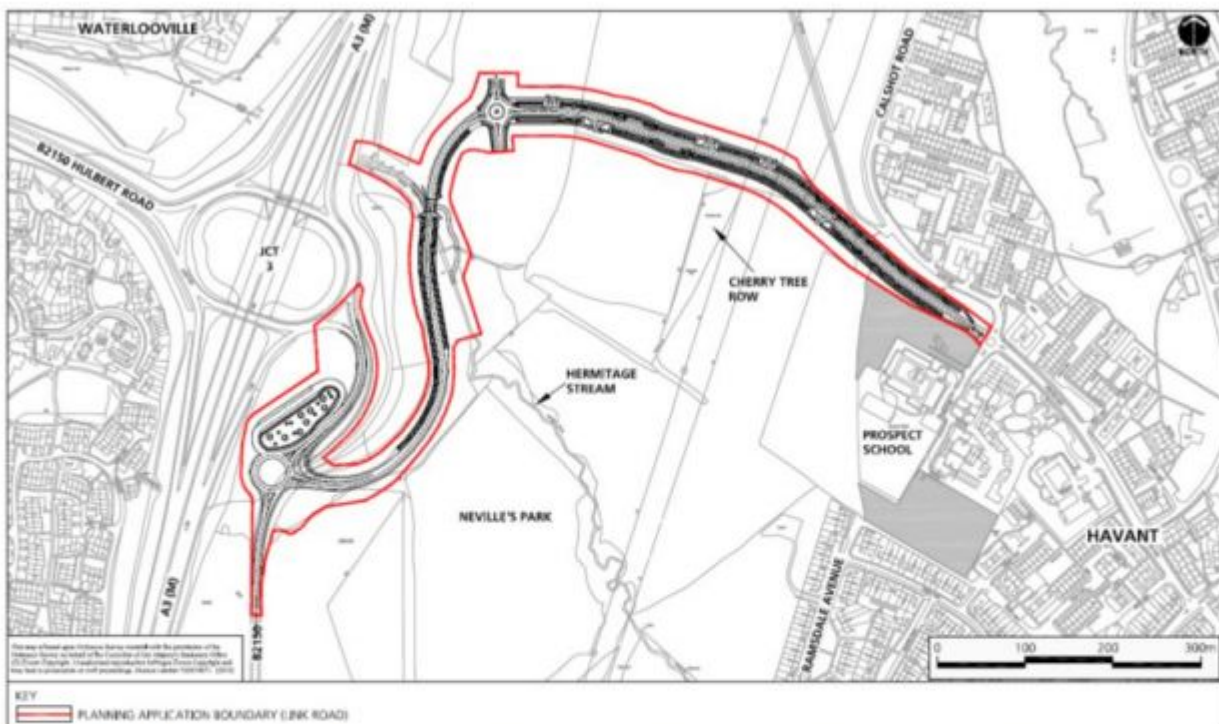


Figure C4.2: Site Location Plan showing the proposed link road and the planning application boundary

C.5 Site/habitat description

The Site is located on land between Waterlooville and Leigh Park, on the north western side of Havant Borough. The site lies immediately to the east of the A3(M) motorway Junction 3, and the A3(M) runs along the western edge of the site. Open countryside consisting of blocks of woodland and agricultural fields lie to the north of the site. There is a further area of woodland and agricultural fields to the south of the site. The slip road leading off the A3(M) is the B2150 Hulbert Road, which runs on the western side of the site, and is proposed to provide access for the scheme (see below). The site slopes gently from north to south, down to the Hermitage Stream which runs on the south western side of the Site from Waterlooville to Leigh Park. A 50m section of the Stream is canalised where it runs eastwards from the A3(M).

C.5.1 Landscape

The land within the Dunsbury Hill Farm development site consists predominantly of large arable fields and their associated margins, hedgerows (including some which qualify as ecologically important hedgerows under the Hedgerow Regulations, 1997), areas of scrub, and is partly surrounded by locally designated sites (Sites of Importance for Nature Conservation, SINC). The majority of these SINC are woodlands, which were designated for being either ancient woodlands or woodlands where there is an element of surviving ancient semi-natural woodland. See photographs 1-3 below for a view of the habitats concerned by the link road development. These landscape features provide suitable habitat for a range of protected and notable species including bats.



Photograph 1 – View of area of scrub to be cleared for the link road (road alignment will be in the centre of the photograph at this location)



Photograph 2 – View of trees to be cleared for the link road



Photograph 3 – View of arable field and Beech Wood East SINC in the distance (taken from edge of Cherry Tree Row SINC)

C6. Field Surveys

The Bat Conservation Trust (BCT) provides guidance for bat survey work in *Bat Surveys: Good Practice Guidelines Second Edition* (Hundt, 2012). This provides a methodology for undertaking initial building inspections and roost site surveys. The field surveys carried out as part of this assessment were all undertaken according to the guidelines relevant at the time of the surveys².

As mentioned above, numerous bat surveys have been carried out at Dunsbury Hill Farm between 2010 and 2013. The information below concentrates on the most recent surveys carried out by Ecosa on behalf of Atkins in 2013 (full previous survey reports can be found in Annexes F.1.1. and F.1.2), which focus on the area of the site covered by this licence (i.e. the link road). This section also includes, where appropriate, relevant reference to previous surveys in order to contextualise the use of the wider site by bats.

2013 Field Surveys

The requirement to carry out further survey works in 2013 was identified during discussions between Atkins Ltd and Hampshire County Council, following a number of initial surveys on all trees to be affected by the works, carried out by Atkins Ltd, and submission of a preliminary report. As a result of the preliminary report, it was recommended that ground level tree inspection surveys should be carried out on a number of pedunculate oaks (tree tag numbers 815, 825, 807, 781 and 790). In addition it was recommended that a sampling survey, comprising a dusk emergence and dawn re-entry survey, be carried out on trees in Group 2 (tree tag numbers 781, 782, 783, 784, 776, 771, 772, 773, 774 and 775), trees in Group 5 (tree tag numbers 746, 749, 750, 751, 752) and on two standing dead trees (tree tag numbers 794 and 795). The location of these trees can be found in Annex F2.

Ground survey of trees

Trees were visually assessed from the ground with the aid of close focussing binoculars for features that may provide roost sites for bats such as natural holes, woodpecker holes, cracks/splits in major limbs, loose bark, hollows/cavities and dense epicormic growth. A high-power torch was used to inspect cavities and shaded areas of the branch structure. Any audible bat social calls emitted from roosts were noted.

The trees were categorised for their potential to support roosting bats in accordance with the criteria described in the table below³.

Table C6.1 - Assessment of Potential to Support Roosting Bats - Grading System for Trees

Category	Description
Bats present (referred to elsewhere in this document as 'confirmed roost')	In some instances, bat presence can be confirmed from trees e.g. where droppings or staining is visible, where roosting bats have been observed entering/emerging from a tree or where roosting bats can be heard.
High Potential	High potential trees have features such as loose bark, splits and deep/extensive holes suitable for roosting bats. High potential trees are generally large and/or mature specimens.
Medium Potential	Medium potential trees have some interest for roosting bats such as broken snags, some flaking bark, a covering of ivy or shallow holes.
Low Potential	Low potential trees have some, although generally limited potential to support roosting bats.

² Note: Bat surveys undertaken prior to 2012 followed guidance provided in *Bat Surveys: Good Practice Guidelines* (BCT, 2007)

³ The criteria are an attempt to qualify the potential for a given building or tree to support roosting bats and are to a degree subjective. Bats may make use of a single feature on an otherwise unsuitable building or tree and therefore an assessment of bat potential cannot solely be based on the quantity of potential roost features present.

Category	Description
Negligible Potential	Negligible potential trees are those that provide few or no features with bat roosting potential. Generally these trees are immature specimens.

Dusk/Dawn Emergence/re-entry survey

The sampling surveys comprised one dusk emergence and one dawn re-entry survey, covering trees in group 2 (tree numbers 781, 782, 783, 784, 776, 772, 773, 774, 775), group 5 (tree numbers 746, 749, 750, 751 and 752), and individual trees number 794 and 795. Each group of trees was surveyed by four ecologists.

The methodology for the dusk and dawn surveys followed guidance by the Bat Mitigation Guidelines (Mitchell-Jones, 2004) and Bat Surveys Good Practice Guidelines, 2nd edition (Hundt, 2012). Dusk emergence surveys started approximately 15 minutes before sunset and continued for one hour after sunset. Dawn re-entry surveys started approximately 2 hours before sunrise and stopped approximately 15 minutes after sunrise. The surveyors were positioned around the trees at previously identified vantage points.

During the surveys, each surveyor recorded the time, species, location and direction of flight for each bat encountered, with particular attention paid to establishing bat access/egress locations on the specified trees. Bat activity was also noted in relation to other trees within view of each surveyor. Each surveyor was equipped with a Pettersson D240x time expansion bat detector. The Pettersson detectors were connected to Edirol R-90 recorders for the full duration of the surveys. Recordings made with the Pettersson detectors were later analysed using Sonobat® (v2.9.7) to confirm the identity of any species encountered.

C.6.1 Dusk and dawn survey timings and conditions

Both parts of the surveys were carried out in acceptable weather conditions, i.e. no strong wind or heavy rain (see Table C.6.1 below for more detail on weather conditions)

Table C.6.1 Survey condition details

Survey Date	Survey Type	Duration	Weather Conditions	Sunset/Sunrise Time
3rd July 2013	Dusk Emergence Survey	21:05 -22:25	0% cloud, dry, F1 (light air), 15°C	21:22
23 rd July 2013	Dawn Re-entry Survey	03:15 – 05:30	25% cloud, dry, F2 (light breeze), 15°C	05:17

C.6.2 Personnel

Tree assessment: Frances Lowe of ECOSA (Natural England bat licence no. 20130175).

Dusk / Dawn Surveys: Surveys led by Frances Lowe as above, with assistance from other Ecosa ecologists.

C.6.3 Constraints

Some bat species, e.g. long-eared bats, generally emerge from their roosts in total darkness and do not produce strong echolocations. These bats can therefore be difficult to observe and record during Phase 2 bat surveys, leading to potential under-recording.

Foliage on the trees was dense at the time the survey work was undertaken; this can make surveying difficult as views can be obscured during bat emergence/re-entry surveys. Although views of the trees included within the dusk/dawn surveys were obscured by foliage, it is considered that the data collated is suitable for the purpose of establishing whether a roost is present or not within the pre-determined survey area.

C.7 Survey Results

C.7.3 Results from 2012 tree inspections (for context)

The tree assessment and follow up climbing inspections carried out in 2012 (which was based on the recommendations made in the Environmental Statement) found no direct evidence of bats within the features inspected. Five of the trees inspected were assessed as having low bat roosting potential, these are trees with tag number 773, 751, 873, 882 and 679. Full details of the surveys can be found in Annex F1.2.

Note: the 2012 tree inspection surveys did not include any of the trees assessed in 2013, as these additional trees were discovered following an update in the link road design, which meant that additional trees would have to be felled as a result.

C.7.1 Ground level survey (2013)

Five trees were identified as having features that may have bat roosting potential during the Tree Assessment. These are listed in Table C.7.1 below.

Table C.7.1 – Results of ground level tree assessment for bat roosting potential.

Tree Tag Number and Species	Diameter (mm)	Height (m)	Comments	Potential for Roosting Bats
815 Pedunculate Oak	400	17	Deadwood, snag with splits and cracks on west side (possibly superficial but could not be determined from ground level inspection). Main trunk appears to lack features but upper parts of tree significantly obscured by dense foliage.	Low Potential
825 Pedunculate Oak	350	16	Very similar to 815. Limb scar on west side. Heavily obscured by dense foliage. No other features visible from ground level inspection.	Low Potential
807 Pedunculate Oak	500	15	Very large tree, well spread canopy with covering of dense ivy and warped bark. Numerous small fissures on all sides of tree, though none of excellent quality. Upper parts obscured by dense foliage.	Moderate Potential
781 Pedunculate Oak	500	13	Superficial limb scar on east side of trunk. Visibility reasonably good with no suitable features recorded.	Negligible Potential apparent from ground inspection, but subsequently confirmed as roost
790 Pedunculate Oak	450	13	Dead limb on eastern side with loose bark. No other features visible but view heavily obscured by dense foliage.	Moderate Potential

C.7.2 Dusk/Dawn survey results (2013)

Two trees were identified as roosts during the dusk/dawn emergence/re-entry surveys (please see photographs 4 and 5 below). The survey results can be found in Table C.7.2 below.

Table C.7.2 – Emergence/re-entry survey results

Tree Tag number and Species	Phase 2 Dusk/Dawn survey Results		General bat Activity at the Site
	Dusk emergence Survey 3 rd July 2013	Dawn Re-entry Survey 23 rd July 2013	
Group 2: Pedunculate Oak and Common Ash 771,772,773, 774,775,776, 781,782,783, 784	No bats recorded emerging from trees	Two common pipistrelles were recorded re-entering tree 781 at 04:04 and 04:35	DUSK - 3rd July 2013 Common pipistrelle were recorded foraging in this area throughout the survey. In addition a single pass of a soprano pipistrelle was recorded at 22:02. DAWN - 23rd July 2013 Common pipistrelle and soprano pipistrelle were recorded foraging throughout the survey area.
Group 5: Pedunculate Oak 746,749,750, 751,752	No bats recorded emerging from trees	No bats recorded entering the trees	DUSK - 3rd July 2013 Common pipistrelle were recorded foraging in this area throughout the survey DAWN - 23rd July 2013 Common pipistrelle and soprano pipistrelle were recorded foraging throughout the survey area. In addition a single pass of a long-eared bat was recorded at 04:18
Standing Dead Trees: Silver birch (795), and unknown species (794)	A possible emergence of a common pipistrelle from a standing dead tree 795 at 22:01, 39 minutes after sunset. While absolute confirmation of its emergence was not made, the tree is considered a confirmed roost and is treated as such for this licence.	No bats recorded entering the trees	DUSK - 3rd July 2013 Common pipistrelles were recorded foraging in this area throughout the survey. In addition a single pass of an unidentified pipistrelle bat was recorded at 21:32 and a single pass of a Myotis species was recorded at 21:01. DAWN - 23rd July 2013 Common pipistrelle was recorded foraging in this area throughout the survey. In addition a single pass of a noctule was recorded at 03:04, and two passes of a long-eared bat were recorded at 04:13 and 04:16.



Photograph 4 – View of tree 795 (standing dead silver birch) with Hulbert Road in the background



Photograph 5 – View of tree 781 (oak) with Neville's Park Wood East SINC in the background

C.8 Interpretation/evaluation of survey results

The ground level inspection and subsequent climbing inspections carried out by Atkins in 2012 on some of the trees that would potentially be lost to the link road identified these trees as having low potential for roosting bats. The ground level inspection survey carried out by ECOSA in 2013 assessed the Dunsbury Hill Link Road site as containing trees of low and moderate potential for supporting roosting bats. The results of the ground level inspection were based on the presence of features which could support roosting bats such as hollow trunks, splits, gaps in the bark and woodpecker holes. The subsequent sampling surveys identified the possible emergence of a single common pipistrelle from tree 795 (standing dead silver birch), and the re-entry of two common pipistrelles into tree 781 (oak). No bats were seen to emerge from any of the other trees surveyed.

The level of bat activity at the site was relatively low on both survey visits, considering the suitability of the habitat on site. Similar results were found during the previous bat activity transect surveys carried out at the site. It is possible that bats are attracted to the woodland adjacent to larger areas of rough grassland to the south-east of the site, which may provide better foraging opportunities. Common pipistrelle, soprano pipistrelle, long-eared sp. bat, *Myotis* bat species and noctule bat were recorded commuting and foraging on site. The species identification was confirmed through call analysis using Sonobat® (v2.9.7). For the single *Myotis* bat species the characteristics of the call did not clearly fit the echolocation parameters of a particular species. However, the characteristics of a Daubenton's bat call are considered to be the best profile "match" of the *Myotis* bat species which was recorded during the dusk survey on the 3rd July 2013. None of the calls which were analysed from the dusk and dawn surveys fit the profile of a Bechstein's bat.

Given the nature of the trees, and the size and exposed nature of the available roosting crevices, it is not considered likely that bats will use the trees within the site for hibernating.

Based on the survey findings, it can be concluded that trees 781 and 795 support low status, non-breeding roosts of common pipistrelles, a common and widespread species.

D. Impact assessment in absence of mitigation

D.1 Short-term impacts: disturbance

Tree-felling operations in the immediate vicinity of the recorded tree roosts in tree 795 and tree 781 will potentially disturb roosting bats, should they be present at the time of the works. There will be an increase in human presence at the site and there will be an increase in noise resulting from the machinery used to fell the trees.

If vegetation clearance, and particularly tree felling, were undertaken at an inappropriate season without mitigation then a small number (five or less) of individual bats could be disturbed, or even injured or killed.

Once the vegetation clearance has been completed there would be no further disturbance to roosting bats within the site.

D.2 Long-term impacts: roost modification

Not applicable to the confirmed tree roost that will be lost as a result of vegetation clearance for the Scheme (tree 781).

The other tree which also contains a roost (tree 795) will be subject to tree surgery that will not affect the roost feature directly. Tree surgery will prolong the likely life of the roost as the tree will be likely to stay vertical for longer before it falls, as a result of the surgery. Therefore the impact in the absence of mitigation on this roost feature would be positive.

D.3 Long-term impacts: roost loss

The vegetation clearance for the Scheme will result in the loss of one confirmed bat roost and the modification of a tree containing another tree roost, both used by a small number of common pipistrelle bats, and the loss of roosting opportunities in neighbouring trees of low to moderate bat roosting potential. Based on the low bat activity recorded during transect surveys carried out between 2010 and 2013 in the vicinity of these two trees, and due to the fact that bats at the site have free access to numerous trees and buildings of much higher suitability in the surrounding area, it is considered that the use of the roosts is temporary and transitory.

The nomadic behaviour exhibited by tree-dwelling bats means that they move roosts frequently and are less dependent on a single specific roost; particularly where this is not used as a hibernation or maternity roost; although there are more suitable mature trees with features of value to roosting bats within the immediate vicinity of the Scheme the felling of trees within the site will result in loss of trees with bat roosting potential.

D.4 Long-term impacts: fragmentation and isolation

The construction of the link road will result in the loss of foraging and commuting habitat within the site. However, the area of foraging and commuting habitat to be lost is small in comparison to the foraging and commuting habitat available in the vicinity of the Scheme. Alternative commuting routes are available along existing landscape features (hedgerows and tree lines) and the Scheme will not result in significant severance that would affect bats' ability to commute between roosts and feeding areas.

Furthermore, it is considered that, in the long-term, this impact will not be significant, as ecological compensation for the Scheme involves planting of semi-mature trees either side of the new link road which will act as a bat hop-over in order to maintain connectivity between Cherry Tree Row and the long hedgerow which had been identified as an important commuting route. Bat bricks (Schwegler 1GS) will also be

installed on the new bridge supporting the link road to provide additional roosting opportunities, and the planting associated with the proposed dormouse underpass⁴ will also provide new foraging habitat.

D.5 Post-development interference impacts

Not applicable to the tree roost in tree 781 and associated nearby group of trees will be lost as a result of vegetation clearance for the Scheme.

With regards to the other tree which also contains a roost (tree 795), the proposals will result in an increase in artificial lighting along the new link road. However, the lighting design confirms that there will be no lighting in the vicinity of tree 795, and therefore post-interference impacts with regards to lighting are negligible.

D.6 Predicted scale of impact

In the absence of mitigation, the proposals would result in the destruction of one summer (non-breeding) tree roost and the disturbance/modification of a tree containing another roost, both used by a small number of common pipistrelles, and in the loss of roosting opportunities in the neighbouring trees. If felling and tree surgery were not undertaken in a sensitive manner there would be a risk of disturbance, and potentially, killing or injury of a small number of individual bats. In the absence of mitigation, the impact of the scheme would be low following the Bat Mitigation Guidelines (English Nature, 2004).

In practice, as explained in the Method Statement Document 2, the appropriate method and timing of tree felling /tree surgery and provision of artificial bat roosts will ensure that disturbance impacts will be kept to a minimum and roosting and foraging opportunities for bats will continue to be provided in the long term, ensuring the favourable conservation status of the local common pipistrelle population is maintained. The common pipistrelle is the most common and widespread species of bat in the UK. In addition, bats at the site have free access to numerous trees and buildings of much higher suitability in the surrounding area. The overall impact would therefore be negligible, taking mitigation into account.

⁴ These measures form part of a dormouse mitigation licence application which is currently being assessed by Natural England.

E. References

- Bat Conservation Trust (2012). Species Population Trends (online). Available from http://www.bats.org.uk/pages/species_population_trends.html [accessed September 2013].
- Battersby, J. (Ed) (2005) *UK Mammals Species Status and Population Trends. First Report by the Tracking Mammals Partnership*. JNCC/Tracking Mammals Partnership, Peterborough. Google Maps (2013) [online] available at: www.maps.google.co.uk/maps?hl=en&tab=wl [accessed September 2013]
- Hundt, L (2012) *Bat Surveys – Good Practice Guidelines, 2nd Ed.* Bat Conservation Trust: London
- JNCC (Joint Nature Conservation Committee) (2012) UK Biodiversity Action Plan (UKBAP) (online). Available at <http://www.ukbap.org.uk/newprioritylist.aspx> [accessed September 2013].
- MAGIC (Multi Agency Geographic Information for the Countryside) (2013) Interactive map (online). Available at MAGIC.defra.gov.uk [accessed September 2013].
- Mitchell-Jones A. J. (2004) *Bat Mitigation Guidelines*. English Nature
- Mitchell-Jones A. J. & McLeish A. P. (2004) *Bat Workers' Manual* (3rd Edition) Joint Nature Conservation Committee.
- Richardson, P. (2000) *Bat Atlas 2000*. Bat Conservation Trust: London

F. Annexes

F.1 Pre-existing survey reports

Annex F.1.1: Volume 3 Appendix 15.4 - Bat Survey Report. Dunsbury Hill Farm Environmental Statement, Atkins (September 2011).

Annex F.1.2: Updated Bat Survey Report, Atkins (November 2012)

F.2 Raw data

Figure F.2_Location of trees surveyed as part of the tree assessment and sampling survey (July 2013)

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