

Applegarth Farm

Dormouse Survey Report

Author: Alison Johnson BSc Msc MIEEM CEnv

Contact Details: Alison.johnson@newleafecology.com. Tel 07977 393016

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1. Introduction

New Leaf Ecology was commissioned by Davidson-Watts Ecology to undertake a survey for dormice (*Muscardinus avellanarius*) at the land encompassing Applegarth Farm and Applegarth Vale, near Grayshott, Hampshire, where commercial expansion and development of the site for housing is proposed. The commercial development will include a Rural Enterprise Centre (REC), a Soft Play Facility and a Cooking School. The housing development comprises proposals for up to 80 new houses together with an extensive area of natural green-space to be made available for informal recreational use.

Dormice are a European Protected Species. Often associated with hazel coppice, the typical habitat of dormice is ancient semi-natural species-rich broadleaved woodland. Dormice are also found in species-rich hedgerows, scrub and even in coniferous forest (Bright *et al*, 2006, Garland and Woods, 2005). Understanding of dormouse distribution has been improving in recent years and dormice are found in a wider range of habitats than previously thought.

The site at Applegarth Farm and Vale includes hedgerows and small blocks and strips of broadleaved woodland. There is a large area of native broadleaved woodland immediately adjacent to the site to the north, which forms part of Whitmoor Hangar Site of Importance for Nature Conservation (SINC) and the site is well connected to large expanses of native broadleaved woodland in the wider landscape. The woodland and hedgerows present form connections between the habitats on site and to the adjacent and wider woodlands, providing a network of habitat suitable for dormice.

Dormice have been reported to be present within 2km of the site. Given the suitable habitat present and historic records reported it was considered possible that this species would be present in the woodlands and hedgerows within and adjacent to the site. Dormouse presence/likely absence surveys were therefore undertaken during 2014.

This report will accompany a planning application and presents the results of the surveys. Section 2 of the report describes the methodologies used for the survey, Section 3 provides the results of the survey, Section 4 provides discussion and information on legislation and policy, with potential impacts and recommendations in Section 5 and conclusions provided in Section 6.

2. Methodology

Desk Study

Records of dormice were sought from Hampshire Biodiversity Information Centre (HBIC) for a search area of 2km around the centre point of the site.

The NBN Gateway website was also searched for records of dormice within a 2km search area.

Field Survey

The methodology for the dormouse survey follows the guidance provided in The methodology set out in the Dormouse Conservation Handbook 2nd edition (2006) and The English Nature report "Surveying dormice using nest tubes. Results and experience from the South West dormouse project" Chanin P. and Woods, M. (2003).

A nest tube survey for dormice was undertaken in areas of woodland and hedgerow within or immediately adjacent to the site. The aim of this survey was to establish the presence or likely absence of dormice and to provide sufficient data to enable an appropriate mitigation strategy to be developed and to provide data for a Natural England licence application, if required.

Using 50 tubes as a standard for surveying, a score can be calculated as an indicator of thoroughness of a survey. If 50 tubes are installed then a score can be calculated adding the “index of probability” for each month in which they are present on site using the indices shown in Table 2.1. In the research report by Chanin and Woods (2003) it is indicated that a minimum total score of 20 demonstrates a thorough survey.

Table 2.1 – Index of probability of finding dormice present in nest tubes in any one month (Source: Dormouse Conservation Handbook, 2006)

Month	Index of probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Tubes were erected on 21 March 2014. Each tube was checked on a monthly basis between April and September 2014. The survey visits were undertaken on dates in accordance with the National Dormouse Monitoring Programme survey guidelines with all surveys undertaken by Alison Johnson who is registered under who is registered to use Natural England Class Licence WML CL10a for Dormouse Survey (licence registration number CLS0240).

A total of 67 nest tubes were used. Areas surveyed are shown in Appendix A, along with numbers of tubes in each survey area.

As more than 50 tubes were used and the tubes were left out between April and September 2014 a total score of 21 has been achieved, which indicates an adequate survey has been undertaken.

Survey Limitations

All suitable areas of the site were safe to access with landowner permission allowed and all surveys have been carried out under suitable weather conditions. There have been no limitations to the survey carried out.

3. Results

Desk Study

The NBN Gateway (<https://data.nbn.org.uk>) shows records of dormice present in two of the 1km grid squares within 2km of the site.

Information received from HBIC did not report any records of dormice within the 2km search area.

Field Survey

Survey areas are illustrated in Appendix A. Habitat descriptions and photographs are provided in Appendix B. Appendix C provides the results of the dormouse survey. This provides information on where evidence of dormouse or other small mammal activity was found. Evidence of use of some of the tubes by wood mice has been found, such as nut stashes, but these are not typical of dormice and chewed nuts found do not show the characteristics of those chewed by dormice.

Evidence of dormice

One dormouse nest was found during the September survey in tube 2, which is within hedgerow H2 (see Appendix A). An additional check of the nest tubes in hedgerow H2 and the connecting woodlands W2 and W3 was carried out in October, but no further evidence of dormouse was found.

4. Discussion

Legislation and Policy

Dormice and their habitats are protected under the legislative mechanisms summarised in Table 4.1 below.

As the dormouse is a European Protected Species, a licence from Natural England with respect to dormice is required for any work that would otherwise be in contravention of the Conservation Regulations. A licence can only be issued to permit otherwise prohibited acts if Natural England are satisfied that:

- The work needs to be carried out to preserve public health or public safety or for imperative reasons of over-riding public interest, including those of a social or economic nature and beneficial consequences of primary importance to the environment;
- there “is no satisfactory alternative”; and
- the action proposed “will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range”.

Table 4.1 – Simplified summary of relevant legislation

Legislation	Offences
Conservation of Habitats and Species Regulations 2010 Reg 41	Deliberately ¹ capture, injure or kill a dormouse; deliberate disturbance ² of a dormouse; or damage or destroy a breeding site or resting place used by a dormouse.
Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a dormouse in such a place.

¹Deliberate capture or killing is taken to include “accepting the possibility” of such capture or killing

²Deliberate disturbance of animals includes in particular any disturbance which is likely to impair their ability- to survive, to breed or reproduce, or to rear or nurture their young; or in the case of animals of hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong. Lower levels of disturbance, not covered by the Conservation Regulations, remain an offence under the Wildlife and Countryside Act, however a defence is available where such actions are the incidental result of an otherwise lawful activity.

The Natural Environment and Rural Communities Act 2006 requires public authorities to have regard to the purpose of conserving biodiversity in relation to habitats and species listed as being of principal importance for the conservation of biodiversity. The dormouse is included on this list of species of principal importance for the conservation of biodiversity and is a priority species in the UK.

The National Planning Policy Framework (NPPF), published by the Government on 27th March 2012, includes a section that states that, “the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity, where possible contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures”

The site brings the opportunity for the proposed development to provide net gains in biodiversity in line with the NPPF.

5. Potential Impacts and Recommendations

One dormouse nest was found during the September survey in tube 2, which is within hedgerow H2 (see Appendix A). Hedgerow H2 is outside of the red line boundary of the application site but connects to the broadleaved woodland within Whitmoor Hangar SINC and the alder hedgerow (which is adjacent to the north-western boundary of the application

site). Due to the presence of connecting habitat, it is therefore possible that dormice are also present in the Whitmoor Hangar SINC, but were undetected during the survey.

The following paragraphs outline potential impacts to dormice and propose mitigation measures.

Habitat Loss/Gain

None of the habitat considered suitable for dormice within the red line boundary is due to be removed as part of the proposed Applegarth Farm development; therefore no loss of habitat for dormice is predicted.

There will be a gain in habitats suitable for dormice as the following are to be incorporated within the masterplan by the planting of locally indigenous native broadleaved tree species to the north of the site to shield views from the Applegarth Vale housing to the north. New woodland will consist of a mix of beech (*Fagus sylvatica*), oak (*Quercus robur*) and (*Q. patrea*), rowan (*Sorbus aucuparia*), whitebeam (*Sorbus aria*) and silver birch (*Betula pendula*) mixed with hazel (*Corylus avellana*), holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*) and grey willow (*Salix cinerea*);

Habitat Enhancement

The incorporation of enhancements for dormice would encourage nearby populations to colonise the site, thereby increasing biodiversity in line with the NPPF.

Habitats present on site include areas of mature broadleaved woodland and the alder hedgerow to the north-west of the site, which currently lack much understorey vegetation in the form of shrubs and smaller trees and are therefore lacking the structural diversity required for optimal dormouse habitat. The objective will be to increase the density and diversity of under-storey shrubs through planting and coppicing, particularly along the woodland belt along the edge of Headley Road. This will be achieved through limited thinning of former coppice stools such as sycamore and planting of hazel, holly, grey willow and hawthorn. Where present in the existing woodlands, laurel and rhododendron will be removed.

As well as improving habitat for dormice, this will help to improve the value of the woodlands for a range of other wildlife including nesting birds, insects and small mammals.

Fragmentation/Connectivity

None of the habitat considered suitable for dormice is due to be removed as part of the proposed development, therefore no loss fragmentation of habitat for dormice is predicted.

In addition, connectivity of habitats will be improved with the introduction of additional tree, scrub and woodland planting. Wherever possible individual areas of planting will be connected via the shrub layer or canopy.

Disturbance

Car parking and market garden plots are proposed adjacent to the broadleaved woodland and hedgerows which do not currently support breeding dormice. Following the development, these areas will be enhanced for dormice and there is a long term risk that without careful consideration, ill-placed light sources could impact on the use of these features by this nocturnal species.

Sensitive lighting design will ensure that lighting is low level and directed away from woodland, hedgerows, scrub and trees to minimise light spill into these habitats.

6. Conclusions

One dormouse nest was found during the September survey in tube 2, which is within hedgerow H2 (see Appendix A). Hedgerow H2 is outside of the red line boundary of the application site but connects to the broadleaved woodland within Whitmoor Hangar SINC, which is adjacent to the northern boundary of the application site. Due to the presence of connecting habitat, it is therefore possible that dormice are also present in Whitmoor Hangar SINC, but were undetected during the survey.

The current proposals do not result in the loss of any habitat suitable for dormice and the proposals incorporate habitat creation and enhancement of benefit to dormice.

Appendix A - Dormouse Survey Plan

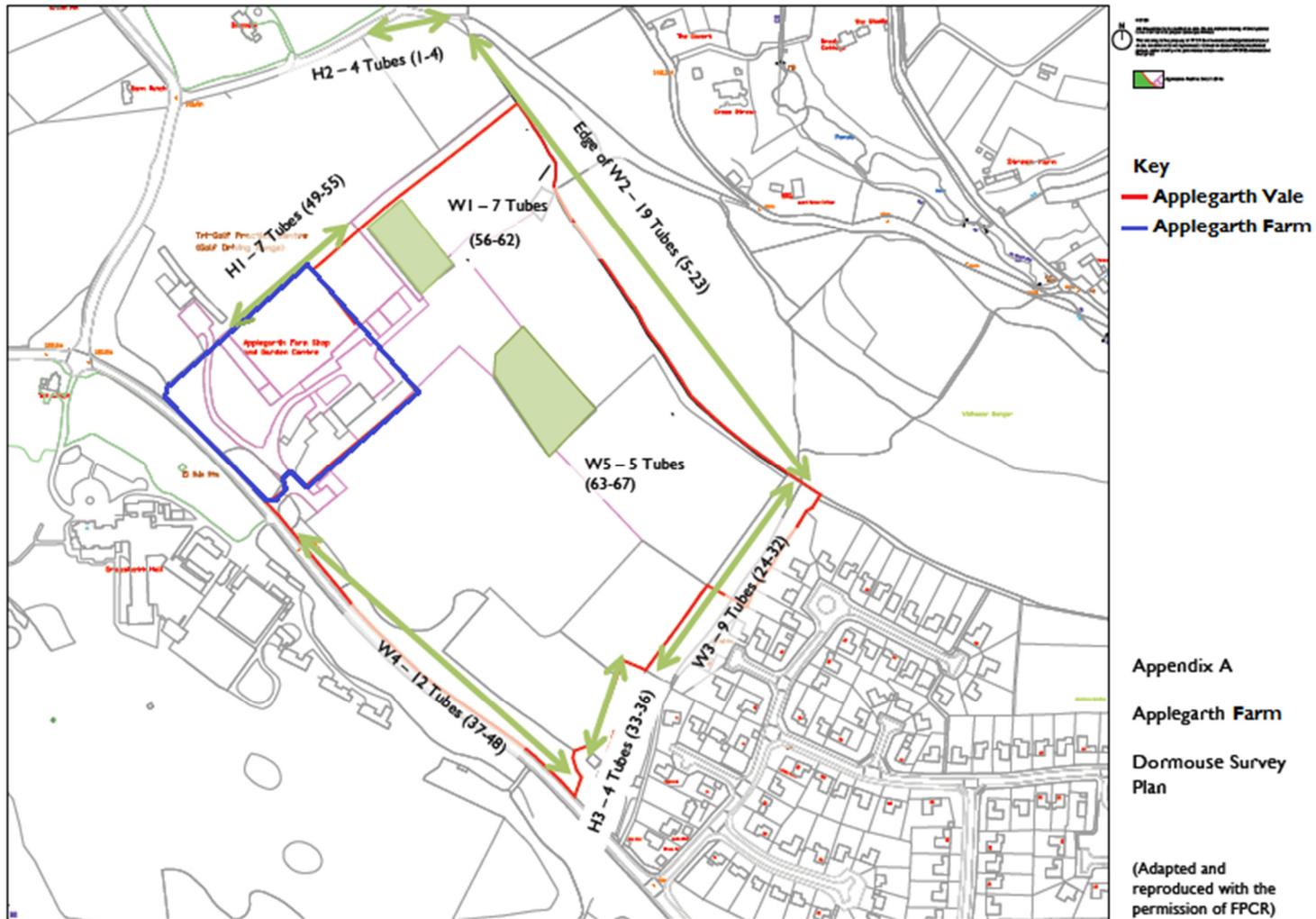


Table A.1 – Dormouse Tube Numbers placed in survey areas

Survey Area	Number of Tubes Used	Tube Numbers	Notes
W1	7	56-62	Small copse to northwest of site, outside red line boundary
W2	19	5-23	Whitmoor Hangar. Outside of the red line boundary. Tubes placed along southwest woodland edge along boundary of site
W3	9	24-32	Woodland strip along southeast edge of site, outside red line boundary
W4	12	37-48	Woodland strip along southwest edge of the site connects to broadleaved woodland on site
W5	5	63-67	Small copse in centre of site. Outside red line boundary.
H1	7	49-55	Hedgerow forming boundary with Tri-Golf Practice Centre. On north-west boundary of site.
H2	4	1-4	Section of hedgerow which joins Whitmoor Hangar. Outside of the red line boundary, but with connectivity to the site.
H3	4	33-36	Small section of hedgerow, outside the red line boundary.
Total	67		

Appendix B – Site Photographs and Habitat Descriptions

Ref	Habitat Description	Photograph
W1	<p>Small copse to northwest of Vale site, outside red line boundary. Mature beech (<i>fagus sylvatica</i>) trees with scattered holly (<i>Ilex aquifolium</i>), hawthorn (<i>Crataegus monogyna</i>) and sycamore (<i>Acer pseudoplatanus</i>) towards the edges. No under-storey present apart from a small patch of bramble (<i>Rubus fruticosus</i>) scrub with regenerating silver birch (<i>Betula pendula</i>) and sycamore in northern corner.</p> <p>Sub-optimal dormouse habitat due to small size, low diversity and lack of under-storey, but connected to HI and in close proximity to W2.</p>	
W2	<p>Whitmoor Hangar SNIC and Ancient Woodland. Outside of the red line boundary. Large area of broadleaved woodland. Mature beech stands are dominant, with frequent oak (<i>Quercus robur.</i>) Under-storey of holly and beech with occasional silver birch.</p> <p>Along the woodland edge where the dormouse tubes are placed rowan <i>Sorbus aucuparia</i>, goat willow (<i>salix caprea</i>) and bracken (<i>Pteridium aquilinum</i>) are also present.</p> <p>This section of woodland adjacent to the site forms part of a large expanse of broadleaved woodland extending to the north, connecting to an area where dormice have been recorded historically.</p>	
W3	<p>Woodland strip along southeast edge of Applegarth Vale site. Oak dominant with occasional beech with under-storey of hazel (<i>Corylus avellana</i>), sycamore, hawthorn, elder (<i>sambucus nigra</i>), silver birch and large leaved lime (<i>Tilia platyphyllos</i>) and yew (<i>taxus baccata</i>).</p> <p>Strip through the centre has been cleared for overhead cables allowing growth of dense bramble scrub.</p> <p>Although relatively small, this woodland strip is well connected to W2 to the northeast and W4 to the southwest and contains a relatively high diversity of shrub species providing suitable</p>	

Ref	Habitat Description	Photograph
	<p>food sources for dormice.</p>	
<p>W4</p>	<p>Woodland strip along southwest edge of the site. Mature large leaved limes are dominant with abundant holly and laurel (<i>prunus laurocerasus</i>). Also present are mature beech trees, hawthorn, ash (<i>fraxinus excelsior</i>), sycamore, Scott's pine (<i>pinus sylvestris</i>), hazel, yew and Rhododenron. There are occasional areas of scattered bramble scrub, but otherwise the under-storey is sparse.</p> <p>This woodland strip connect to H3, which in turn connects to W3 and W2.</p>	
<p>W5</p>	<p>Small copse outside boundary to the north of the site. Mature beech and large leaved lime are both dominant with sycamore, hawthorn, oak, holly and silver birch also present. A small area of honeysuckle (<i>Lonicera periclymenum</i>) and small patches of bramble scrub are present on the eastern edge of the site, but otherwise the under-storey is sparse.</p> <p>Sub-optimal dormouse habitat due to small size, low diversity, lack of under-storey and poor connectivity, but in close proximity to W1 and W2.</p>	
<p>H1</p>	<p>Hedgerow forming boundary with Tri-Golf Practice Centre along north-west boundary. Italian alders (<i>Alnus cordata</i>) with occasional sycamore, hawthorn and bramble.</p> <p>Sub-optimal habitat for dormouse.</p>	

Ref	Habitat Description	Photograph
H2	<p>Section of hedgerow which joins Whitmoor Hangar. Hazel is dominant with occasional oak, rowan, goat willow, silver birch and holly. Honeysuckle, ivy and bramble area also present. Where it joins with Whitmoor Hangar woodland Scott's pine is dominant with holly, oak and beech.</p> <p>High diversity of species providing suitable food sources for dormice and good connectivity to W2.</p>	
H3	<p>Small section of hedgerow.</p> <p>Scattered lime, sycamore and silver birch with overhanging confers from adjacent garden.</p> <p>Occasional bramble and hawthorn.</p> <p>Sub-optimal habitat for dormice, but connects W3 to W4.</p>	

Appendix C - Dormouse Survey Results Table

Survey Area	Tube Number	Results					
		23 rd April	19 th May	25 th June	15 th July	22 nd August	22 nd September
W1	54	-	-	-	-	-	-
	55	-	-	Nut stash	Wood mouse nut stash and chewed nuts	Wood mouse nut stash and chewed nuts	-
	56	-	-	-	-	-	-
	57	-	-	-	-	-	-
	58	-	Small mammal droppings	-	-	-	-
	59	-	-	-	-	-	-
	60	-	-	Nut stash	Wood mouse nut stash and chewed nuts	-	Wood mouse nut stash and chewed nuts
	61	-	Nut stash	-	-	-	Wood mouse nut stash and chewed nuts
	62	Shredded bark, two dead leaves, small mammal droppings	-	-	-	-	-
W2	5	-	-	-	-	Wood mouse nut stash and chewed nuts	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-

Survey Area	Tube Number	Results					
		23 rd April	19 th May	25 th June	15 th July	22 nd August	22 nd September
W2	11	-	-	-	-	Wood mouse nut stash and chewed nuts	-
	12	-	-	-	-	Wood mouse nut stash and chewed nuts	Nut stash
W2	13	-	-	-	-	-	-
	14	-	-	-	-	-	-
	15	-	Nut stash	Nut stash	Wood mouse nut stash and chewed nuts	-	-
	16	-	Nut stash	-	Nut stash and shredded nut shells	-	Nut stash
	17	-	-	-	-	-	-
	18	-	-	-	-	Wood mouse nut stash and chewed nuts	Nut stash
	19	-	-	-	-	-	-
	20	-	-	-	-	-	-
	21	-	Acorn shell and small mammal droppings	-	-	-	-
	22	-	-	-	-	-	-
	23	Nut stash	-	Nut stash	-	-	Nut stash
W3	24	-	-	-	-	Wood mouse nut stash	Nut stash

Survey Area	Tube Number	Results					
		23 rd April	19 th May	25 th June	15 th July	22 nd August	22 nd September
						and chewed nuts	
	25	-	-	-	-	-	-
	26	-	Small mammal droppings	-	-	-	-
	27	-	-	-	-	-	-
	28	-	-	-	-	Wood mouse nut stash and chewed nuts	-
	29	-	-	-	-	-	-
	30	-	-	-	-	-	-
	31	-	-	-	-	-	-
W4	32	-	-	-	-	-	-
	37	-	-	-	-	-	-
	38	-	-	-	-	-	-
	39	-	-	-	-	-	-
	40	-	-	-	-	-	-
	41	-	-	-	-	-	-
	42	-	-	-	-	-	-
	43	-	-	-	-	-	-
	44	-	-	-	-	-	-
	45	-	-	-	-	-	-
	46	-	Small mammal droppings	-	-	-	-
47	-	-	-	-	-	-	
W5	48	-	-	-	-	-	-
	63	-	-	-	-	-	-
	64	-	-	-	-	-	-
	65	-	-	-	-	-	Nut stash

Survey Area	Tube Number	Results					
		23 rd April	19 th May	25 th June	15 th July	22 nd August	22 nd September
	66	-	-	-	-	-	-
	67	-	-	-	-	-	-
H1	49	-	-	-	-	-	-
	50	-	-	-	-	-	-
	51	-	-	-	-	-	Wood mouse x 2 and wood mouse nest
	52	-	-	-	-	-	Wood mouse and wood mouse nest
	53	-	-	-	-	-	-
	54	-	-	-	-	-	Wood mouse chewed nuts
	55	-	-	-	-	-	Wood mouse nut stash and chewed nuts
H2	1	-	-	-	-	-	-
	2	-	-	-	-	-	Dormouse nest
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
H3	33	-	-	-	-	-	-
	34	-	-	-	-	-	-
	35	-	-	-	-	-	-
	36	-	-	-	-	-	-