

Dormouse Survey 2017

Land to the north of Water Lane
Angmering

Contents

1.0	INTRODUCTION	3
	BACKGROUND.....	3
	SITE CONTEXT AND STATUS	3
2.0	DORMICE SURVEY METHODOLOGY	5
3.0	RESULTS	9
4.0	DISCUSSION.....	17
	DORMICE LEGISLATION	18
	HABITAT SUITABILITY AND POPULATION ESTIMATE.....	19
	MITIGATION AND ENHANCEMENTS	20
5.0	CONCLUSIONS	23
	APPENDIX 1: PROPOSED ENHANCEMENT AREAS	25

LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living creatures are capable of migration and whilst protected species may not have been located during the survey duration, their presence may be found on a site at a later date.

The views and opinions contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

- 1.1 The Ecology Partnership Ltd was commissioned by Rydon Homes and Gleeson Strategic Land Limited to undertake a dormouse survey after an initial ecological appraisal in August 2015 of land at Water Lane, Angmering. The report stated that:

“There is a significant amount of potential habitat present off site, suitable for dormice, in the form of Groom’s Copse to the east of the site. The site provides a variety of suitable tree species associated with the species such as oak, hazel, ash and large amount of bramble, providing a variety of food sources and excellent connectivity across the site to further woodland. The layered habitat of woodland and scrub creates the density and diversity of understorey necessary to support the species.”

- 1.2 The ecological appraisal survey identified habitats that could be potentially used by a range of specially protected species, including reptiles, badgers and dormice.
- 1.3 Section 2 of this report sets out the methodology of The Ecology Partnership’s survey and the results in Section 3 and the implications discussed in Section 4. Conclusions are provided for in chapter 5 of this report.

Site Context and Status

- 1.4 The site is located on land to the north of Water Lane on the eastern edge of Angmering in West Sussex. The site adjacent to the border of the South Downs National Park and adjacent to the border of ancient woodland. Low-density residential dwellings, major A-roads and agricultural fields are present within the surroundings. There are no other designated sites with 5km of the site. The approximate red line boundary of the site is shown below in Figure 1.



Figure 1: Approximate red line boundary of the site in 2015

- 1.5 Since the initial assessment, the boundaries of the red line have been altered. As such, further areas of land have been included within the survey area. It was considered that due to the change in the red line boundary and the evolving master plan that additional dormouse surveys should be undertaken to provide further information on their use of the habitats across the site.
- 1.6 The new redline boundary of the site is shown in figure 2 below. This includes an area adjacent to Water Lane on the western aspect of the site. This habitat was surveyed in 2016. The survey identified that the hedgerows which lie adjacent to Water Lane have the potential to support dormice. However, the majority of the habitats on this portion of the site were considered to be suboptimal for dormice.



Figure 2: Extent of new red line boundary in 2017

Description of Proposed Development

- 1.7 The site has received planning proposals for the construction of up to 525 residential dwellings with up to 3 hectares of employment land. Open space provision and SUDS will also be included within the illustrative master plan.

2.0 Dormice Survey Methodology

- 2.1 Dormouse nest tubes were established within areas of suitable habitat on site on 7th August 2015. A total of 60 dormouse tubes were established along the woodland edge to

- the east and within Groom's Copse, and a further 27 tubes were established along the central hedgerow and down the access driveway (Figure 3).
- 2.2 Surveys were undertaken by Alexia Tamblyn (dormouse survey licence CLS 138) under the Natural England Class Survey Licence WML CL 10A and her accredited agents. Each dormouse tube was established as per Natural England guidelines, attached to the underside of a suitable branch with a cable tie (Figure 4). All tubes were located within the hedgerows and treelines at approximately 20m intervals.



Figure 3: Locations of the dormice tubes

- 2.3 Each month supports a varying 'index of probability' and as such, surveying throughout the year will provide a variable chance of finding evidence of dormice. August and September show the highest index score. Since 87 tubes were established in August and

the survey ran until November 2015, a survey effort of 27 had been reached (Dormouse Conservation Handbook).

- 2.4 Alongside the surveying of dormouse tubes, hazel nuts were also searched for since the tooth marks on hazel nuts opened by dormice are distinctive. A nut search provides further information on presence/likely absence of dormouse within the site boundaries.



Figure 4: Dormouse tube in situ at Water Lane

- 2.5 Additional tubes were established on 25th April 2017 by Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS and Tom Rothero BSc (Hons) MSc MCIEEM. These tubes were located along the additional land parcels. Further tubes were added across the western aspect of the site in order to assess if dormice are present within this edge. A total of 53 additional tubes were added to the existing 87 tubes. The location of these is shown below in figure 5. Checks were carried out once a month from May until October 2017, therefore with a total of 140 tubes, an effort score of 61.8 was achieved.



Figure 5: Location of dormouse tubes across the site in 2017 with numbers shown to indicate the number of tubes associated with each dotted line

3.0 Results

- 3.1 No evidence of dormice was found in August or September 2015. The October check revealed **five** nests found inside tubes, which were tightly woven as per a characteristic dormouse nest (Figure 7). Two dormice were also located within two of these tubes (Figure 6). The locations of the nests indicate that the central hedgerow and treeline are key to the movement of dormice across the site and that dormice are well established within Groom's Copse.
- 3.2 During the October 2015 check, three tubes along the driveway access route contained nests belonging to wood mice and several were seen inside the tubes themselves. No gnawed hazelnuts which are likely to have been opened by dormice were found in October during the nut search.



Figure 6: One of two dormice found in tubes in October 2015



Figure 7: Location of the dormouse nests found in October 2015. Red indicates nests with dormice in the tube; yellow indicates empty dormouse nests; purple indicates wood/yellow-neck mouse nests

- 3.3 The November 2015 dormouse survey revealed the same dormouse nest locations as the October check, with the addition of one further nest along the driveway access route (Figure 8). This shows the use of the internal features and spread of the dormice around the site. No new nests from other species were found. No gnawed hazelnuts which are likely to have been gnawed by dormice were located in November during the nut search. This was due to the lack of fruiting hazel found on site.



Figure 8: Location of the dormouse nests found in October and November 2015 (Red - nests with dormice in the tube; yellow - empty dormouse nests; purple - wood/yellow-neck mice nests). The additional November nest found is circled for ease of identification

- 3.4 The dormouse tubes were rechecked in April 2017 once the additional tubes were established across the site. A single adult dormouse in torpor was found (Figures 9 and 10).



Figure 9: Location of the dormouse in torpor in April 2017

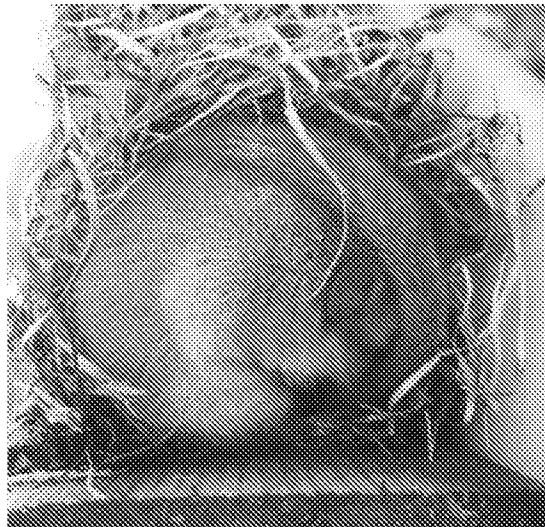


Figure 10: Dormouse in torpor found in April 2017

3.5 Checks were then subsequently undertaken across the whole of the site (including the new tubes) in May, June, July, August, September and October 2017.

- 3.6 The survey undertaken on 31st May 2017 did not identify the presence of dormice within any of the tubes on site. No new nests were identified (old nests had been removed). No live dormice were found.
- 3.7 The survey conducted on 28th June 2017 identified a new single dormouse nest with an adult dormouse present at the time of the survey. The location of the new nest and dormouse is shown in figure 11 below. A photo of the nest is shown in Figure 12.



Figure 11: Location of the dormouse and nest on the northwest side of the site



Figure 12: New dormouse nest identified in June 2017 along the northwest edge of the site

- 3.8 The survey carried out on 10th July 2017 did not identify any new nests on site and no dormice were located within the tubes.
- 3.9 The dormouse check on 8th August 2017 dormouse survey did not identify any new nests on site and no dormice were located within the tubes. Several birds were found using the tubes across the site.
- 3.10 On 12th September, a total of four dormice nests were found at various locations around the site (see Figure 13). In addition, one adult dormouse was found within Groom's Copse (Figure 14). It should be noted that the hedgerows of the southeast field had been flailed which meant that many of the tubes along the southern and western boundaries of this field could no longer be found.



Figure 13: Location of dormouse nests (yellow dot) and adult dormice with nests (red dot) found in tubes in September 2017

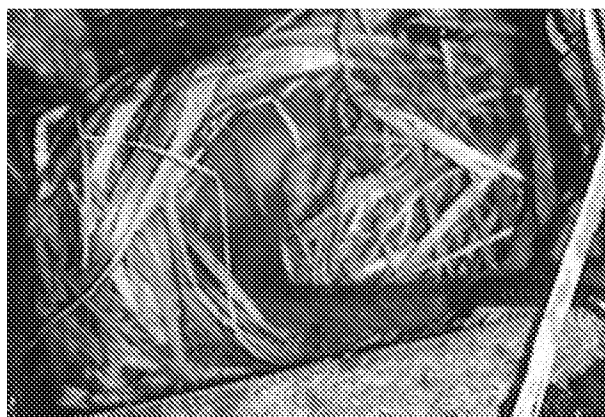


Figure 14: Dormouse (indicated by fluffy tail and ginger fur) and nest found in September 2017

- 3.11 A final check was carried out on 23rd October 2017. A total of two adult dormice were found, one in Groom's Copse and the other in the northwest corner of the site (Figure 15). The individual in the woodland was found to be an adult male (non-breeding) and weighed 17.5g (Figure 16). This may have been the same individual found in September. Unfortunately, the second adult escaped before it could be sexed and weighed. A number of empty dormouse nests were also found as shown in Figure 15.



Figure 15: Location of adult dormice (red dot) and empty dormouse nests (yellow) found in October 2017



Figure 16: Adult male (non-breeding) dormouse found in the woodland to the east of the site in October 2017

4.0 Discussion

4.1 During both the 2015 and 2017 surveys, dormice were found to be using Groom's Copse to the east of the site as well as the hedgerows and tree lines along the main driveway. With the addition of new dormouse tubes in 2017, dormice were also found in the northwest corner of the site (Figure 17).

4.2 As dormice have been found using the site, any development works affecting the site will need to consider their presence and any works which would involve the loss of habitat will need to be carried out under a licence from Natural England.

4.3 Groom's Copse is outside of the development and it is understood that a buffer of at least 15m will be maintained between the development and the ancient woodland as part of the scheme. The majority of the existing tree lines and hedgerows will also be retained, including the tree line in the northwest corner and those either side of the access track. However, there will be some small areas of hedgerow to be lost in order to provide access routes. The mitigation and enhancement strategy for dormice will therefore focus on extra planting along the existing linear features of the site and creating new habitat throughout the site, particularly along the northern boundary in order to improve connectivity between Groom's Copse and woodland to the north and west of the site.



Figure 17: Location summary of adult dormice (red) and dormouse nests (yellow) found in 2015 and 2017

- 4.4 It is considered that there will be limited direct impacts in terms of habitat loss. However, it is the indirect impacts which are likely to pose a risk to dormice in the long term. Indirect impacts which need to be considered include increased recreational pressure on the woodland habitats as well as a potential increase in predators due to the likely increase in domestic cats as a result of residential development. Both direct and indirect impacts are discussed further below.

Dormice Legislation

- 4.5 The dormouse is a European Protected Species (EPS) and as such it is protected from deliberate killing, injury or disturbance. In addition, its breeding sites and resting places

-
- are absolutely protected with no requirement to show that their destruction was deliberate or reckless. The aim of this law is to protect the favourable conservation status (FCS) of the species. The dormouse is further protected by the Wildlife and Countryside Act 1981 (as amended). This law provides protection to individual animals as well as breeding and resting places, making the deliberate killing or injuring of individual dormice unlawful.
- 4.6 Due to the laws providing protection to dormice, any disturbance or destruction of their nests is unlawful unless done under a licence from Natural England. Killing or injuring cannot be done under licence.
- 4.7 The proposed development within the redline boundary will affect the dormice that reside on site by causing disturbance and potential destruction of their nests. Therefore, a licence from Natural England must be applied for. This can only be done after planning consent has been received.
- 4.8 Individual animals will also be affected and are vulnerable to killing and injuring unless appropriate mitigation is put in place. A detailed mitigation strategy for maintaining the FCS and for minimising the risk of causing death or injury to individuals is outlined in detail below.

Habitat suitability and population estimate

- 4.9 The majority of the habitat on site is open agricultural fields with treelines, hedgerows and woodland edge. The open fields are not suitable for dormice; however, the treelines, hedgerows, bramble-dominated scrub and woodland edge habitat are optimal and provide a wide variety of shelter and nest-building opportunities. According to the existing plans, the development site excludes Groom's Copse (the main habitat for the dormice) but does include all interior hedgerows and treelines. This type of habitat is approximately 1.4ha in size.

-
- 4.10 The Dormouse Conservation Handbook cites various studies that give an estimate of likely dormouse numbers per hectare in different types of habitat. Approximately 1.4ha of the site is considered to be hedgerow habitat, which was found to have a mean spring density (pre-breeding population) of 1.3 adults per hectare. Therefore, the on-site population is estimated at 1.82 adult dormice.
- 4.11 Unfortunately, the mean density of dormice within scrub habitat could not be calculated. Therefore, it cannot be estimated how many dormice may reside in the scrub habitat on site, which covers approximately 0.9ha on site. This scrub habitat surrounds the raceway and is connected to the woodland to the east. With the density of bramble in this area, it is considered possible that dormice would forage and nest within this habitat.
- 4.12 The woodland to the east of the site is continuous with the habitat on site and has been shown to support dormice. The woodland is considered to be oak dominated woodland, with hazel therefore the density estimate for the rest of the woodland is based on 2 adults^{-ha}. This area of off-site woodland is approximately 7.4ha, leading to a total estimate of 14.8 adult dormice.
- 4.13 This leads to a total population estimate of 17.6 dormice across the entirety of the continuous habitat, except for the scrub on site. It should be noted, however, that the suitability of the woodland for dormice is dependent on its management. Dormice thrive in early successional habitats, therefore if the woodland is not managed appropriately it may become shaded with a dense canopy making it less suitable for dormice due to a lower diversity of species and therefore food sources.

Mitigation and Enhancement Strategy

- 4.14 According to current plans, the majority of the dormouse habitat on site is to be retained and a buffer is in place between the development and Groom's Copse. However, access routes have been proposed along the length of the driveway hedgerow. There are also areas of bramble and scrub which it is presumed would need to be removed. Whilst some scrub areas not directly connected to the woodland, this habitat provides good

-
- foraging opportunities as well as dense protective cover for nesting and hibernation. Therefore, vegetation clearance on site can only take place under a Natural England licence and under the supervision of a licenced ecologist.
- 4.15 The vegetation clearance should be carried out in September and October. It is considered that this is the time of the year when dormice are least sensitive to disturbance, prior to hibernation, and young have dispersed. All site operatives involved in habitat clearance works will receive a tool box talk by a suitably qualified ecologist. Once the vegetation is cleared, the stacked tyres by the racetrack should be removed under watching brief as a variety of species could be using these for refuge, including dormice. If a dormouse is encountered at any time, works will be halted pending consultation with the suitably qualified ecologist.
- 4.16 It is considered that whilst some habitat loss and fragmentation will occur, the most significant impacts from the development would be those associated with domestic cats and increased recreational pressure on woodland habitats. Mitigation measures to reduce these impacts are outlined below. These measures would also enable the proposals to provide net gains in biodiversity on site by enhancing the retained habitats through supplementary planting and providing new habitats for dormice through the addition of dormice boxes. These would improve the site for both dormice alongside other wildlife.
- 4.17 The masterplan should incorporate large buffers between the ancient woodland and the development. Buffer zones should also be implemented along the boundaries and hedgerows where dormice have been found. It is recommended that several lines of additional planting within these buffer zones be implemented to provide a natural fence line. Species which should be planted include holly, hawthorn, blackthorn and dog rose. Bramble should also be left to grow. The use of thick thorns in the planting scheme will provide dormice protection from pets such as cats and dogs.
- 4.18 It is also recommended that the north field be planted with a woodland edge which will connect Groom's Copse to the east with Polings Furzedown, located on the northern edge of the site adjacent to the A27 (see Appendix 1). This should be created by planting
-

-
- at least three rows of hedging. The first two rows should include species such as hazel, sweet chestnut, oak, beech, wayfaring tree and honeysuckle. The third edge should be located furthest away from the A27 (i.e. located further within the red line boundary) and should include thorny species such as those outlined above. Planting an extensive hedgerow/woodland edge along the A27 would create an additional 450m of suitable hedgerow, which would provide additional opportunities for foraging and connectivity to other areas of suitable habitat off-site.
- 4.19 It is also recommended that the hedgerow directly south of the race track, which supports a main badger sett, be enhanced using similar methods as above (see Appendix 1).
- 4.20 Prior to works commencing, it is recommended that dormice boxes be erected within Groom's Copse, if this is possible, and within the other areas on site where dormice have been found. This will aid dormice in finding new safe nesting areas and allow them to adjust to the modified habitats on site. Boxes help to increase the carrying capacity of the habitats on and off site. They should be established at a variety of heights, but above standard human reach to prevent interference and should be installed by suitably qualified personnel. Where there are no suitably mature trees to hang boxes on, such as when new hedgerow and tree planting takes place along the northern boundary, then boxes can be mounted on posts. It is recommended that at least 20 boxes are erected on and off site.
- 4.21 Post-development, both habitat management and dormouse population monitoring will be required as part of the Natural England licence. Habitat management and enhancement will include maintaining the hedgerows and planting along the boundaries of the site as well as additional planting where required for the foreseeable future. Bramble should be left to grow where possible. Monitoring of the dormouse population will be carried out by a licenced ecologist twice a year (May and September) for three years following the completion of development works. Funding for both activities can be secured through a Section 106 agreement.
-

5.0 Conclusions

- 5.1 The site was considered to have the potential to support dormice due to its connectivity to ancient woodland and interior hedgerow habitats with numerous food sources available.
- 5.2 Dormouse surveys running from August to November 2015 found dormice to be present within Groom's Copse to the east of the site, along the central hedgerow to the south of the race track, and along the central road leading into the site. A total of six nests were found on site and within Groom's Copse.
- 5.3 Additional tubes were installed in April 2017 and checks were carried out between May and October 2017. At least three adult dormice were found within tubes on site. Two were found in areas previously surveyed in 2015 but one individual was also found in the northwest corner of the site. A total of six different nests were also found throughout the site.
- 5.4 Since the current proposals will affect some areas of suitable dormouse habitat on site, particularly the hedgerows, a Natural England licence will be required for clearance works. This includes the dense scrub around the racecourse as well as the hedgerows. This must be carried out in a sensitive manner and under ecological watching brief.
- 5.5 The most significant impacts of development are considered to be indirect impacts resulting from an increased level of predators, such as domestic cats. As such it is recommended that large buffers are established adjacent to the woodland habitat, and that planting uses species which are thorny to prevent cats entering this protected area.
- 5.6 It is also recommended that dormice are encouraged to move across the landscape, as Groom's Copse is relatively isolated. As such a woodland/dense hedgerow edge adjacent to the A27 should be established. Planting should include species which can be utilised by dormice for food as well as thorny species to reduce the potential for cats to use this feature.

-
- 5.7 Dormouse boxes should be established within the woodland, if possible, and within the hedgerows on site to provide new nesting opportunities for dormice.
- 5.8 Habitat management and monitoring will be required post-development as part of the Natural England licence. Monitoring should be carried out by a suitably qualified licenced ecologist and checks will be carried out twice a year for 3 years. Funding for both activities can be secured through a section 106 agreement.
- 5.9 It is considered that if the outlined mitigation and enhancement strategy is followed, then the favourable conservation status of dormice in the local area will be maintained. Additionally, it is also considered that the proposals can provide net gains to biodiversity on site if the suggested enhancements, such as the addition of dormice boxes and the improvement of retained habitats, are incorporated into the scheme.

6.0 References

Bright, P., Morris, P. & Mitchell-Jones, T. (2006) *The Dormouse Conservation Handbook (Second edition)*. English Nature, Peterborough.

Bright, P. & MacPherson, D. (2002) *Hedgerow management, dormice and biodiversity (Report number 454)*. English Nature, Peterborough.

Appendix 1: Proposed enhancement areas



Key

-  Woodland
-  Enhancement areas of double planting, woodland edge and thicket creation
-  Retain and enhance where possible
-  Adult dormouse in nest
-  Empty dormouse nest
-  Survey boundary

Site: Land north of Water Lane, Angmering
Client: Rydon Homes
Drawing Date: October 2017
Drawing Title: Dormouse nest locations and proposed enhancement areas

the
ecology
partnership

The Ecology Partnership Ltd
Thorncroft Manor, Thorncroft Drive, Leatherhead,
Surrey, KT22 8JB
t: 01372 364 133 e: www.ecologypartnership.com

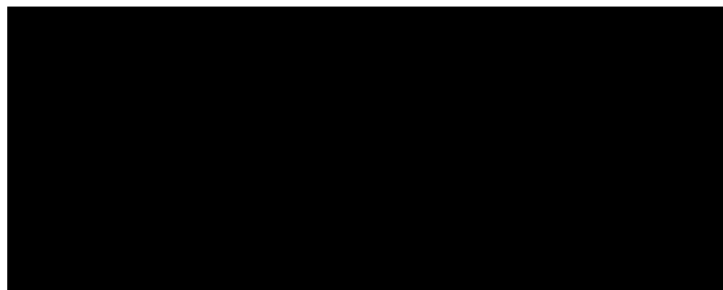
The Ecology Partnership

Thorncroft Manor

Thorncroft Drive

Leatherhead

KT228JB



Approved by: Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS,
Managing Director

Date: 10/11/2017

Re-issue date: 31/01/2018