

to the underside of a suitable branch. Some of the tubes were installed at intervals of less than 20m apart due to the size of the site and some areas being unsuitable to hang tubes.



Figure 2: Location of dormouse tubes on land east of Wandley's Lane

- 2.2 To date, checks have been undertaken once a month in June, July, August and September 2017. Additional checks are to be carried out in October and November 2017. This is so that the recommended effort score of 20 is achieved according to the Index of Probability in the Dormouse Conservation Handbook. This is the minimum score considered necessary in order to detect presence/likely absence of dormice.
- 2.3 Surveys have been undertaken by Alexia Tamblyn (dormouse survey licence CLS 138) under the Natural England Class Survey Licence WML CL10A and accredited agents.
- 2.4 In addition to the nest tube checks, hazelnut searches will also be carried out in October 2017. This survey requires searching an area of 10 x 10 metres around heavily fruiting hazel for 20 minutes, with all nuts picked up so that no double counting occurs. All opened nuts will be inspected to see if they have been opened by dormice. Using this method, it has been estimated that after checking three such squares, there is an 80%

chance of finding a nut opened by a dormouse, if dormice are indeed present. If no nuts opened by dormice have been found in five squares, it is considered that there is a 90% change that dormice are not present on site. False negatives are possible due to squirrel competition etc., so this method should never be used in isolation to determine likely absence.

3.0 Results

- 3.1 Surveys undertaken in June, July and August 2017 did not find evidence of dormice using any of the nest tubes within the site. However, evidence of dormice in the form of adult dormice and nests were found in September 2017. Additional checks are to be carried out in October and November 2017.
- 3.2 In September, three tubes were found to contain adult dormice and an additional two tubes contained empty nests which appeared to have been made recently (Figures 3 and 4). All tubes containing evidence were located in the southeast corner of the site in both the woodland and adjacent tree line (Figure 5).

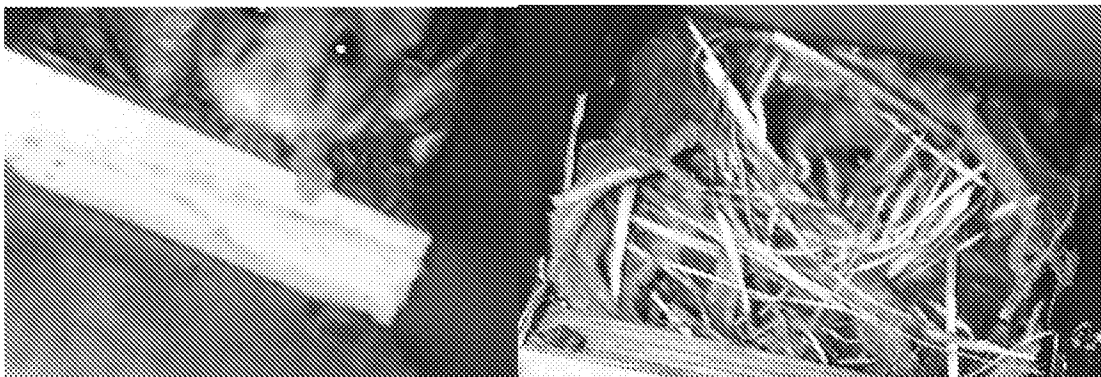


Figure 3: Two adult dormice found in separate tubes along the eastern tree line

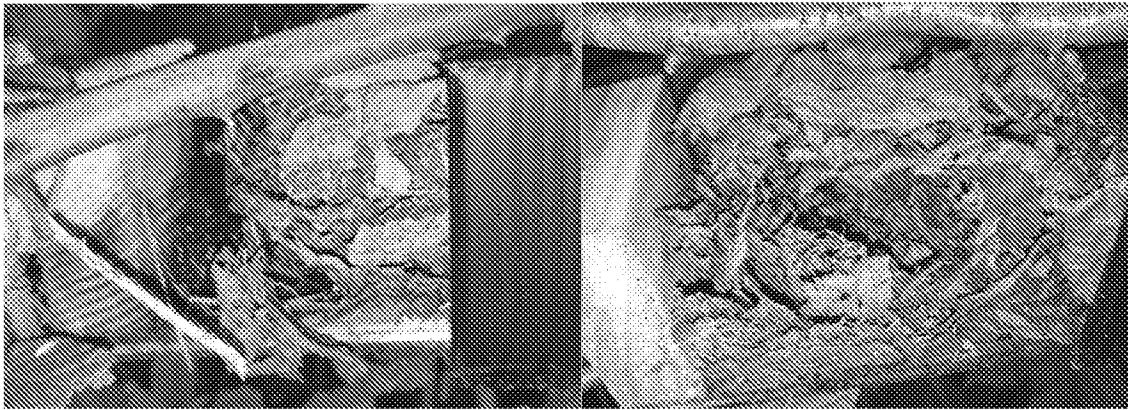


Figure 4: Two empty dormouse nests, recently made, along the eastern tree line



Figure 5: Location of tubes with adult dormice (red) and empty dormouse nests (yellow) found in September 2017

- 3.3 A preliminary nut search was carried out on 17th August 2017 as this is when hazelnuts start to accumulate on the ground. However, no nuts opened by dormice were found. An additional check will be carried out in October 2017 as dormice are likely to utilise this resource when trying to fatten up prior to hibernation.

4.0 Discussion

- 4.1 So far, surveys have found three adult dormice on site and two additional empty dormouse nests. This means dormouse presence has been confirmed on site. However, additional surveys in October and November still need to be carried out in order to obtain a survey effort score of 20.
- 4.2 As dormice have been found using the site, any development works will have to consider their presence and any works which would involve the loss of habitat will need to be undertaken under a licence from Natural England.
- 4.3 Wandley's Copse is outside of the development and it is understood that a 15m-19m buffer between the development and the ancient woodland has been incorporated into the scheme. The tree line along the eastern boundary is also to be retained although this will need further protection and enhancements. As such, the mitigation and enhancement strategy for dormice will focus on extra planting along the edges where dormice are present and creating new habitat along the southern and western boundaries.
- 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 ancient woodland habitat as well as a potential increase in predators due to the likely increase in domestic cats as a result of a residential development. These 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
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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 Current plans involve cutting through the northern tree line to provide two new access routes onto site. Whilst evidence of dormice has not been found on this part of the site, the habitat is connected to other suitable areas which means their presence here cannot be ruled out. Therefore, the development will be affecting dormouse habitat which may lead to disturbance and potential destruction of nests and a licence from Natural England must be applied for. This can only be done after planning permission has been received.
- 4.8 Individual animals will also be affected and are vulnerable to killing or injuring unless an appropriate mitigation strategy is put in place. A detailed mitigation strategy for maintaining the FCS and for minimising the risk of causing death or injury will be developed once the surveys have been completed in November. However, a preliminary strategy has been outlined further below.

Habitat suitability and population estimate

- 4.9 The majority of the habitat on site is a large open grassland field with tree lines and a woodland edge along the boundaries. The open field is not suitable for dormice; however, the tree lines and woodland edge were considered to be optimal habitat and provide a wide variety of shelter and nest-building opportunities. Wandley's Copse is outside the red line boundary; however, the tree lines and woodland edge are included.

- 4.10 The Dormouse Conservation Handbook cites various studies that give an estimate of likely dormouse numbers per hectare in different types of habitat. A more accurate population estimate can be calculated once surveys are complete in November. However, at this stage, given that approximately 0.5ha of the site is considered to be oak and hazel and 2 animals per hectare are estimated, this gives an on-site population estimate of 1 dormice. This is greatly exceeded by the latest survey which identified three.
- 4.11 The woodland to the south of the site is a continuous habitat with the habitat on site and highly likely to support dormice. This woodland has not been surveyed for dormice due to problems with access. However, it is considered to be dominated by oak and hazel, therefore the density estimate for the rest of the woodland is based on 2 adults per hectare. The woodland not included in the site is approximately 2.5ha, leading to a total estimate of 5 dormice. This leads to a total population estimate of 6 dormice across the whole continuous habitat. It should be noted this figure may change based on further survey data.

Mitigation and Enhancements

- 4.12 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 Wandley's Copse. However, two new access routes are proposed along the northern boundary which would result in a small amount of habitat loss. This work can only take place under a Natural England and under the supervision of a licenced ecologist.
- 4.13 The vegetation clearance should be conducted 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 should have dispersed. All site operatives involved in habitat clearance works will receive a tool box talk by a suitably qualified ecologist. If a dormouse is encountered at any time, works will be halted pending consultation with the suitably qualified ecologist.

- 4.14 To compensate for any habitat loss and to provide new habitat on site for dormice, it is recommended that new hedgerows and tree lines be planted along the western and southern boundaries of the site. This will help to improve habitat connectivity across the site for a range of species in addition to dormice. Species should include those which provide food sources for dormice throughout the year, including hazel, oak, honeysuckle, sycamore and wayfaring tree. Bramble should also be left to grow along this hedgerow as it is an important food source for dormice.
- 4.15 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 the ancient woodland habitat. Mitigation measures to reduce these impacts are outlined below.
- 4.16 The plans already incorporate a 15-19m buffer between the development and Wandley's Copse. Since dormice were also found along the eastern boundary tree line, a buffer zone should also be implemented along the area where dormice were 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. Overall, two parallel hedges of thorny species should be planted along these edges with a hedgerow of beneficial species (see hedgerow species above) between them and the woodland. This planting should be approximately 6m wide to provide an effective barrier.
- 4.17 Currently, the plans show that SUDS pond are to be created in the southeast corner of the site, adjacent to where dormice have been identified. The pond next to the eastern boundary should be moved further away from the boundary so that the 6m thorny buffer planting can be incorporated. The proposed pumping station should also be moved further away from the boundary to take into account the thorny buffer.
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- 4.18 Prior to works commencing, it is recommended that dormice boxes be erected within Wandley's Copse, if possible. Permission from the landowner will be required but these would aid dormice in finding new safe nesting areas and allow them to adjust to the modified habitats on site. Boxes can also be put up in areas of suitable habitat on site and they will 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. It is recommended that at least 10 boxes are erected on and off site.

5.0 Conclusions

- 5.1 The habitats on site, including the tree lines, hedgerows and woodland edge, were considered to provide suitable habitat for dormice during the preliminary ecological appraisal carried out in April 2017. Records also revealed that dormice were present approximately 700m east of the site in 2011 with connective habitat between Potwell Copse and the site.
- 5.2 A total of 50 dormice nest tubes were hung up in suitable habitat around the site in May 2017 and checks undertaken in June, July and August 2017 found no evidence of dormice. However, three adult dormice were found in September 2017 along with two empty dormouse nests.
- 5.3 This dormouse survey is ongoing until November 2017 in order to achieve the minimum survey effort score of 20. Therefore, the final report will be submitted once surveys have been completed and a detailed mitigation and enhancement strategy can be finalised.
- 5.4 However, since dormice presence has been confirmed on site and potential habitat loss is taking place, a Natural England licence will be required before clearance works can commence.

- 5.5 Recommendations regarding mitigation and enhancements have been outlined. These include additional hedgerow planting along the eastern and southern boundaries, a 6m thorny hedge buffer to be planted within the buffer zones and the erection of dormouse boxes. These will be finalised once the survey is completed in November.
- 5.6 It is considered that as long as the mitigation and enhancement strategy is followed, the favourable conservation status of dormice within the local area will be maintained post-development.

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