

APPENDIX F

AGEAS BOWL REDEVELOPMENT, EASTLEIGH DORMOUSE SURVEY TECHNICAL NOTE

1 INTRODUCTION

This Technical Note presents the results of dormouse (*Muscardinus avellanarius*) surveys undertaken within areas of suitable habitat across the Ageas Bowl and Boundary Lakes Golf Club site (hereafter referred to as 'the Site'), in Botley, Hampshire. It also presents a summary of the historic surveys for dormouse carried out by Entec in 2007/2008 and by Johns Associates Ltd since that period and in 2016/2017 and 2019 within areas of suitable habitat in the southern part of the Site.

Dormouse are known to be present within a small central southern area Boundary Lakes Golf Club following surveys undertaken in 2007/2008 and 2016/2017. These historic surveys informed the planning applications for the initial development of the Ageas Bowl golf course and the land adjacent to Thorneydown Farm. Particular areas of habitat have since been managed to minimise impacts to and enhance conditions for dormouse and to provide optimum habitat for this species.

The aim of the current survey was to update the historic baseline and re-confirm presence or likely absence of dormouse within the Masterplan Site. The results of the survey will inform an Ecological Impact Assessment (EclA) of redevelopment proposals and any necessary mitigation and/or further enhancement measures that may be required for this species.

2 METHODOLOGY

2.1 HABITAT SUITABILITY

The habitats within and adjacent to the Site were assessed for their suitability to support dormouse, according to guidance contained in the Dormouse Conservation Handbook and with reference to other relevant sources including Chanin and Gubert, 2012 and the Forestry Commission for Wales Dormouse Habitats Regulations Guidance, 2010. A number of criteria were used, as shown in Table 1.

Table 1: Categorisation of habitats for dormouse – promoting and limiting factors

Effect	Key habitat features affecting the suitability of habitat for dormouse
Promoting	Woodland at least 2ha up to 20ha as a minimum size to support a viable population. Adjacent to ancient woodland or Plantation on Ancient Woodland Sites (PAWS) (including conifer), scrub or early successional stage woodland, including conifer. Species rich shrub layer such as in native deciduous/mixed woodland, species-rich hedgerow, scrub and heathland where considerable gorse and scattered/dense scrub. A variety of fruiting and flowering species of known value to dormice providing a good foraging resource. Natural features such as crevices within trees offering opportunity for summer nest sites and features such as coppice stools, logs, banks and tree root cavities, brushwood, leaf litter and moss offering potential hibernation sites. Good lateral structure and cover to enable commuting and foraging. Canopy connections across tracks or other connections such as hedgerows to other, nearby suitable habitat. Good connectivity to adjacent tracts of suitable habitat. Wide age ranges of trees (applies to woodland sites).
Limiting	Small (<2ha) isolated wood or adjacent only to an old conifer plantation Densely shaded with little or no understorey Poor range of food sources Few potential nesting sites/hibernation sites Poor cover and a lack of habitat structure Poor connectivity to adjacent habitat Seasonally waterlogged ground Little or no shrub understorey
Negligible	Very small and/or isolated patches of unsuitable habitat. Isolated from adjacent suitable habitat/presence of significant barriers to movement such as buildings/extensive hard standing and short grassland (or equivalent) Lack of suitable food sources and lack of cover Seasonally waterlogged ground in unsuitable habitat

2.2 NEST TUBE SURVEYS

Nest tube surveys were undertaken to help detect the presence of, or demonstrate the likely absence of dormouse. Nest tube surveys were undertaken in accordance with standard methodology based on guidance in Bright *et al*, 2006 and according to the Natural England Interim Advice Note for dormouse surveys and the Natural England Standing Advice Sheet (DOR-4).

Standard guidance assigns a value to each month in terms of the probability of recording dormouse or evidence of them in nest tubes (where at least 50 tubes are installed at 20m intervals in areas of suitable habitat). In order to confirm that sufficient survey effort has been employed and to be confident that no significant dormouse population is present, the score must be equal to or above 20 in order for confidence to be placed in the conclusions drawn. If 100 tubes were used then the probability score can be doubled. The score is calculated by summing the value of each month that the nest tube or box is in place. Table 2 indicates the value assigned to each month that a nest tube is deployed.

Table 2: Index of probability of recording dormouse in nest tubes

Month	Index of probability of recording dormouse
April	1
May	4
June	2

Month	Index of probability of recording dormouse
July	2
August	5
September	7
October	2
November	2

Over 100 dormouse nest tubes were installed within suitable habitat across the Site as shown in

Figure 1.

50 tubes were installed along the northern and western tree line boundaries in May 2020: tubes were installed to connect the northern and western areas to the southern and eastern boundaries and an additional 50 nest tubes were installed in June 2020 along the eastern tree line boundary and along the tree line where historic survey results have confirmed presence.

Survey visits were undertaken in June and July 2020. Tubes were checked by a suitably experienced ecologist who holds a NE Class 1 dormouse survey licence.

Additional nest tube surveys were carried out in 2021, in areas of suitable habitat to the north of the Mixed Use Development site (see Figure 2). This area has not been previously surveyed for this species. Fifty nest tubes were deployed on 23rd June 2021 and checked in July, September and checked and collected in on 2nd November 2021.

Figure 1: Dormouse records and tube locations

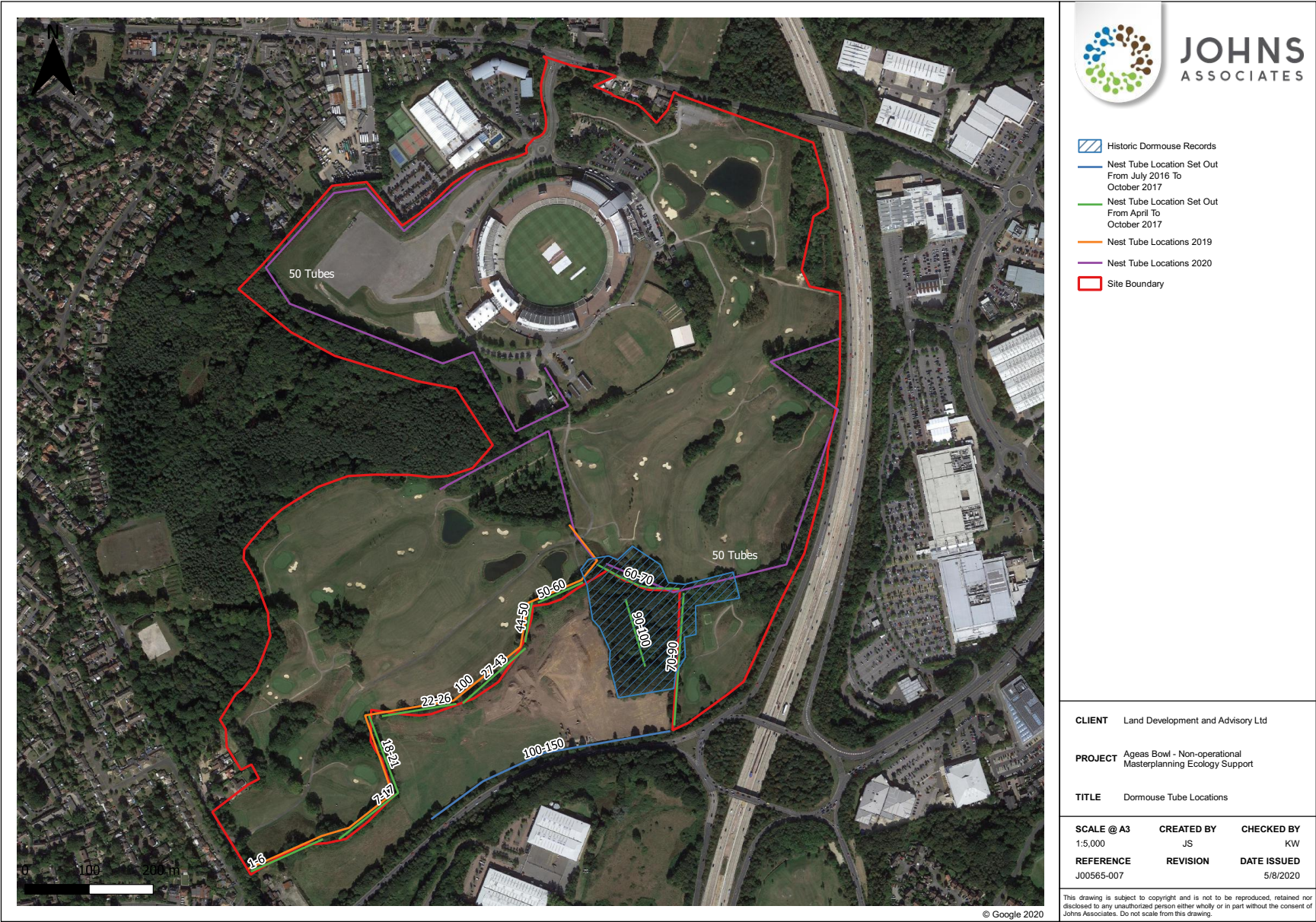


Figure 2: Dormouse tube locations 2021



2.3 OTHER SIGNS

An additional method that has been used to find evidence of dormouse is searching for characteristically opened hazel nuts. This method involves collecting 100 hazel nuts that have been opened by small rodents and identifying any nuts which have the characteristic tooth marks created by dormouse. These were collected and inspected in 2020 from across the site.

During each nest tube survey, a search in the immediate vicinity of each of the tubes was undertaken for further evidence indicating the potential presence of dormouse. This included the presence of breeding/hibernation nests, gnawed fruit stones, stripped honeysuckle bark, flowers with the stamens removed, blackberries with feeding signs and ash keys with wings removed.

2.4 SURVEY LIMITATIONS

No limitations to the dormouse surveys were encountered in either 2020 or 2021.

3 SUMMARY OF HISTORIC SURVEYS

Entec undertook dormouse surveys in areas of suitable habitat in 2007 and Johns Associates Ltd undertook nest tube surveys across the Site in 2011 and additional nest tube surveys in land in the far south associated with Thorneydown Farm in 2016/2017 and in 2019. All used standard nest tube methods, together with a search for gnawed hazel nuts and other characteristic signs as described above. Inspections of installed nest boxes occurred between 2011 and 2015.

Results of the surveys confirmed presence of dormouse in a single general location at the Site through the identification of dormouse nests in tubes and boxes located in hazel edge habitat of wet and dry woodland in the central south of the Site. A dormouse EPS licence was secured from Natural England which required the provision of 50 dormouse nest boxes. Post-installation monitoring of these reconfirmed the presence of dormouse in the same general location.

In 2016/2017 100 tubes were installed along the northern and eastern boundary hedgerow of land to the far south of the Site associated with Thorneydown Farm. Results of the 2016/2017 survey confirmed presence of dormouse at the Site (in the same general location as previously recorded) through the identification of two dormouse nests along the edge of the western woodland. No evidence of dormouse was recorded elsewhere. Further surveys of hedgerows/scrub/trees leading west was undertaken in 2019. No evidence of dormouse was recorded during these surveys.

Please see

Figure 1 for the general location of historic dormouse records.

4 RESULTS

4.1 HABITAT SUITABILITY

Table 3 shows the results of the assessment of habitat suitability for habitats present within the Site boundary, based on the criteria set out in Table 2. The suitability classification adopted is based on that used by the Forestry Commission for Wales (i.e. High, Medium or Low).

Table 3: Dormouse habitat suitability classification

Habitat description	Habitat Suitability
Semi-natural broadleaved woodland Woodland at least 2ha up to 20ha as a minimum size to support a viable population. Canopy connections across tracks or other connections such as hedgerows to other areas of suitable habitat nearby. Good connectivity to adjacent tracts of suitable habitat. Densely shaded with little or no understorey. Poor range of food sources. Poor cover and a lack of habitat structure. Seasonally waterlogged ground in small areas. Little or no shrub understorey. Presence of some features that increase suitability for dormouse, although very limited in area and poor connection to suitable habitat in the wider landscape	High Medium

Habitat description	Habitat Suitability
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Defunct species-poor hedgerow Natural features such as crevices within trees offering opportunity for summer nest sites and features such as coppice stools, logs, banks and tree root cavities, brushwood, leaf litter and moss offering potential hibernation sites. Lack of suitable food sources and lack of cover Presence of some features that increase suitability for dormouse, although limited in area, defunct, and poor connection to suitable habitat in the wider landscape	Medium Low
Dense scrub Areas of bramble scrub, with small stands of elder and oak. Good connectivity to adjacent tracts of suitable habitat. Poor range of food sources throughout the year. Few potential nesting sites/hibernation sites. Absence of the majority of features that increase suitability for dormouse due to fragmented nature and lack of species diversity on a small spatial scale	Medium

4.2 NEST TUBE SURVEYS

No signs of dormouse were identified during the survey visits in 2020 or 2021.

4.3 OTHER SIGNS

No evidence of dormouse was recorded from other signs including nibbled hazel nuts, other feeding signs, natural nests, sightings of dormouse or identification of stripped bark.

5 SUMMARY

Given the limited number of tubes used in the woodland where previously located, but taking into account widespread survey coverage across the wider site, it is reasonable to conclude that the historically recorded small population of dormouse still occupies a relatively restricted part of the Boundary Lakes Golf Club site, but located outside of the proposed Mixed Use Development boundary. Please see

Figure 1 the general location of historic dormouse records.

Further surveys carried out in 2020 and 2021 did not identify dormouse in any part of the proposed Mixed Use Development site – and dormouse has not been recorded in these areas historically. It is therefore considered reasonable to conclude that this species is absent from the proposed Mixed Use Development Site.

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