

Dunsbury Hill Business Park

Dormouse Licence - Method

Statement Document 1: Background and Supporting Information

Portsmouth City Council

February 2014

ATKINS

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Table of contents

Chapter	Pages
A. Executive summary	4
B. Introduction	5
B.1 Background to activity/development	5
B.2 Full details of proposed works on site that are covered by the licence	8
C. Survey and Site Assessment	10
C.1 Pre-existing information on dormice at the survey site	10
C.2 Status of dormice	10
C.3 Objectives of the survey	10
C.4 Scaled plan/map of the survey area	11
C.5 Site/habitat description	12
C.6 Field surveys	14
C.7 Survey results	15
C.8 Interpretation/evaluation of survey results	15
D. Impact Assessment in Absence of Mitigation	17
D.1 Short-term impacts: disturbance, dormice injured/killed	17
D.2 Long-term impacts: Habitat loss or modification	17
D.3 Long-term impacts: Fragmentation and isolation	17
D.4 Post-development interference impacts	18
D.5 Predicted scale of impact	18
E. References	18
F. Annexes	20
F.1 Pre-existing survey reports	20
F.2 Raw survey data	21

A. Executive summary

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 28th March 2013.

Dormice have been confirmed as present within the site during the 2010/2011 presence / likely absence surveys. Their presence was taken into account and potential impacts on them were considered in the Environmental Statement.

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

The habitat to be cleared for the link road within the Dunsbury Hill development site consists of scrub habitat and 77 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. The dormice using the scrub habitat and trees within the development site are therefore likely to be part of a larger population within the connecting habitats. These habitats are to be retained and enhanced during the development.

Due to the amount of vegetation loss in context of the greater area of available dormouse habitat present and the retention of habitat connectivity at the site during this phase, only small scale and localised impacts are anticipated, even in the absence of mitigation. The loss of habitat would not be predicted to affect the dormouse population at a wider level.

B. Introduction

B.1 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. A “hybrid” planning application has been submitted and planning permission will include 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 hotel), comprising a mix of B1, B2 and B8 land uses (business park and a high quality hotel with conference facilities), in accordance with Havant Borough Core Strategy Policy CS18 Strategic Site Delivery and Site 3 on pages 95-98¹. A strong landscaped buffer will be created and as far as practical, existing features of nature conservation interest and landscape importance, including trees and hedgerows will be retained.

Dunsbury Hill Farm is identified by Havant Area Action Plan (AAP) as an area suitable to be developed as an employment site. The business and technology park will create up to 1,315 direct and 578 indirect jobs thereby contributing to the sub regional regeneration need identified by the Solent Local Enterprise Partnership (LEP). An additional 1,495 temporary construction jobs will be created.

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 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 of the development would take place from 2015 – 2016, with 2016 being the assumed opening year for operation of Phase 1. Phase 2 is expected to take place from 2020 – 2022, with 2022 being the assumed opening year for operation of Phase 2.

An Environmental Impact Assessment (EIA) was produced in March 2012 by Atkins and the “hybrid” planning application for The Site has been submitted and agreed in principle by the Local Planning Authority (Havant Borough Council) on 28th March 2013. Hampshire County Council Senior Ecologist, Tristan Norton, had requested further clarification on dormouse mitigation following submission of the EIA. A Dormouse Mitigation Strategy was produced by Atkins² following discussions between Danial Winchester (Atkins Senior Ecologist) and Tristan Norton (Hampshire County Council Senior Ecologist) which satisfied the request for further information³. Full planning permission was subsequently granted on the 19th February 2014.

The proposed development to which this licence application relates involves the works with full planning permission comprising the link road, road bridge and Hulbert Road roundabout, but not the two phases of the business park development. As stated in the Dunsbury Hill Dormouse Master Plan (Atkins, February 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 a separate dormouse mitigation licence application(s).

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

² Atkins (August 2013) Dunsbury Hill Farm Dormouse Mitigation Strategy Technical Note

³ D. Winchester (Atkins Senior Ecologist), Pers Comm with T.Norton (Hampshire County Council Senior Ecologist) 24th September 2013

The proposed works for the link road, road bridge, Hermitage Stream realignment, Hulbert Road roundabout and replacement lay-bys are detailed below.

The design specification for the link road is set out in the Highway Design Report⁴ which accompanied the Dunsbury Hill Farm Environmental Statement (Atkins, March 2012) with further design amendments set out in the Dunsbury Hill Farm Traffic Assessment Addendum⁵. The general arrangement drawings for the proposed Hulbert Road roundabout and link road (5099848/TP/GA/101 – 104) can be found in Appendix D of the Dunsbury Hill Farm Transport Assessment Addendum⁶. To summarise the proposal comprises;

- A four arm standard roundabout on Hulbert Road;
- A lay-by accessed off the fourth arm of the roundabout on Hulbert Road;
- Joining into the existing roundabout on Woolston Road;
- Two way single lane carriageway between the proposed new roundabout on Hulbert Road and Woolston Road;
- A bridge over the Hermitage Stream;
- A 3 m wide shared footway/cycleway to the north and a 2 m footway to the south of the link road between the hotel roundabout and Woolston Road roundabout, along with a 3.5 m wide swale;
- A bus stop in each direction (located within lay bys between the hotel roundabout and the Woolston Road roundabout);
- A bus gate at the Woolston Road roundabout to prevent access to the Proposed Development by general traffic.

A 6.5 m wide two way single lane carriageway is proposed for the section of the link road between the hotel roundabout and the Woolston Road roundabout. The carriageway has been designed with a 2.5% central camber to drain surface water across a 3 m wide tree verge either side of the carriageway into 3.5 m wide swales. There is then a 2 m wide verge before the footway/cycleway. It is only proposed to install kerbs (with up-stands) at the bus stops along this section of the link road. The remainder of the link road would have flush kerbs⁷.

The link road carriageway between Hulbert Road and the bridge over the Hermitage Stream would be 7.3 m wide with 2 m wide verges on either side primarily on a raised embankment. In places, such as the entrance from Hulbert Road, due to the nature of the gradient, there is a need for a working width of 18 m to accommodate the earthworks⁸.

With regards to the new bridge over the Hermitage Stream, the scheme will undertake a stream realignment to naturalise the banks of the existing culverted section of the stream, and divert the stream to change the angle at which it passes under the proposed link road bridge, thereby reducing the length of the new bridge required. The new bridge structure will therefore span over the naturalised stream and adjacent banks, and the bridge abutments will be extended by wing walls either side of the bridge to retain the road embankment. The deck will be 12.25 m wide and the bridge abutments are to be supported by reinforced concrete spread footings. The structure is to consist of a single span measuring 15 m between abutments (See Drawing DHFSI_ATK- TP25_BR – DR – S - 0001 Rev A in Annex I of the Dunsbury Hill Farm Dormouse Master Plan (Atkins, February 2014)).

Following confirmation of design requirements for the bus only section on the link road within the development some minor revisions to the layout have been made. These include;

⁴ Atkins (March 2012) Dunsbury Hill Farm Environmental Statement Highway Design Report Version 4

⁵ Atkins (January 2013) Dunsbury Hill Farm Transport Assessment Addendum

⁶ Atkins (January 2013) Dunsbury Hill Farm Transport Assessment Addendum

⁷ Atkins (March 2012) Dunsbury Hill Farm Environmental Statement Highway Design Report Version 4

⁸ D. Winchester (Atkins Senior Ecologist), Pers Comm with S.Dimmock (Atkins Engineer) 28th May 2013

- Relocation of the proposed rising bollard further west to provide a distance of 20 m between the Woolston Road roundabout and the bollard. The central traffic island has been extended to the west to match the new position of the rising bollard;
- Provision of a turning head on the link road west of the bus gate. This is to allow vehicles erroneously entering the bus only section from the west, the opportunity to turn prior to the bus gate. The proposed turning head has been designed to allow a 4.6 T transit van to turn as requested by Hampshire County Council;
- Narrowing of the link road carriageway to 3.5 m at the western end of the bus only section to more clearly define the bus only section. Associated with this measure is the implementation of give way markings on the westbound approach, to the narrowing to give priority to eastbound buses. It is also proposed to provide an informal pedestrian crossing point at the narrowing; and
- Annotation of Drawing 5099849/TP/GA/103 Rev D to highlight that the proposed bus stops are to be constructed to Bus Rapid Transit (BRT) specification, including the implementation of;
 - Bus kerbs;
 - Bus shelter; and
 - Real time passenger information

Hermitage Stream realignment

The Hermitage Stream realignment works will comprise of the following⁹:

- Restoration of the Hermitage Stream to provide a more naturalised form and function contributing towards the requirements of the Water Framework Directive;
- Removal of the concrete bed and banks where applicable;
- Sinuous channel planform typical of a lowland stream and based on historical mapping records;
- Two-stage cross-sectional profile;
- Stream bed comprising medium to coarse gravels over an as-dug substrate;
- Establishment of a riffle-pool sequence;
- Varying flow conditions in-channel indicate of lowland river system; and
- Vegetated banks with native species characteristic and appropriate to the existing local environment and habitats present.

Proposed road bridge

The following information on the proposed road bridge is taken from the Dunsbury Hill Farm Stage 2 Highway Bridge Planning approval in Principle Report¹⁰.

The link road crosses the Hermitage Stream. At the point of the bridge crossing the stream, is currently a rectangular cross section with built up vertical banks crossing the proposed link road at an acute angle. The scheme will naturalise the banks of the culverted section of the stream and divert its path to cross the link road at a greater angle to reduce the length of bridge required.

The structure will span over the naturalised stream and adjacent banks and the bridge abutments will be extended by wing walls either side of the bridge to retain the road embankment. The 12.25 m wide deck shall be made up of precast pre-stressed concrete beams with a reinforced concrete slab.

⁹ Atkins (February 2014) Dunsbury Hill Farm Vol 3 Works Information – Stream realignment

¹⁰ Atkins (August 2011) Dunsbury Hill Farm Stage 2 Highway Bridge Planning Approval in Principle

The structure consists of a single span constructed from precast pre-stressed concrete beams made composite with a reinforced concrete deck. The beams shall be made fully integral with reinforced concrete abutments.

The bridge abutments are to be supported by reinforced concrete spread footings. The structure is to consist of a single span measuring 15 m between abutments with a skew angle of 7°.

B.2 Full details of proposed works on site that are covered by the licence

Dormouse habitat that will be lost for the proposed link road and bridge is shown on Figure 1 (included with the licence application pack as a separate figure for clarity), and consists of approximately 77 trees of varying species and ages, widening an existing 2 m gap in a hedgerow (H3) to 30 m, removing some scrub along the route of the proposed link road and Hulbert Road roundabout and replacement lay-bys, some scrub removal (predominantly bramble) at the proposed location of the road bridge crossing the Hermitage Stream, and 382 m² of light scrub removal (bramble and occasional young blackthorn and young pedunculate oak) along the current culverted section of the Hermitage Stream, in order to facilitate the temporary channel for the Hermitage Stream realignment works.

An additional 350 m² of woodland within Cherry Tree Row SINC will need to be cleared to accommodate the Hermitage Stream realignment works to the south of the road bridge. The dormouse habitat that is present within this area to be cleared comprises a mix of both young and mature trees of various species and shrub understory of hazel and holly. The tree species to be cleared are; a group of fourteen young self-seeded goat willows and silver birches, two mature pedunculate oaks, one early mature common alder, and three young self-seeded silver birches.

All of these trees were subject to an Arboricultural Impact Assessment by an experienced Atkins arboriculturist¹¹, as well as a tree assessment and tree climbing survey where possible by two experienced and certified bat ecologists to determine bat roosting potential¹².

A drawing (Figure 15.2 Rev D in Method Statement 2 – Delivery Information of this licence application) setting out ecological mitigation and enhancement measures for the site and a drawing showing woodland Sites of Importance for Nature Conservation (SINCs) and the location of the hedgerows (H1, H2, H3 and Adder Hedge), and dormouse habitat to be lost specifically related to the link road can be found in Figure 1 (See Method Statement 2 – Delivery Information of this licence application). In addition to the loss of trees and scrub, an existing gap at the southern end of Hedgerow H3 will be widened to incorporate the link road. Approximately 200 m of nettle and bramble scrub will also be removed from the section of the link road connecting to Woolston Road roundabout on the east of the site.

The combined total area of scrub habitat and trees to be lost is approximately 2.3 ha, and is therefore a small proportion of the wider network of scrub, hedgerows and woodland habitats found within the immediate vicinity. The losses will be in small blocks, the largest of which is only 427 m² in area, and this is a series of mature pedunculate oak trees with no scrub understory. The area below these trees is grazed by horses, and is within the north-east corner of Neville's Park East Wood SINC. There will be localised reduction in available habitat and habitat connectivity, potentially affecting dormouse movement through the site; however, it will not reduce the site's carrying capacity for dormice.

¹¹ Atkins (January 2014) Dunsbury Hill Farm – Hermitage Stream realignment Arboricultural Impact Assessment

¹² Atkins (February 2014) Dunsbury Hill Farm – Hermitage Stream realignment tree inspection in relation to bats Technical Note

Tree felling and scrub clearance is currently timetabled for March 2014, when dormice would be torpid at / below ground level. A check will be made for occupied bird nests before any vegetation clearance work takes place, and work will be delayed if required to protect an occupied nest. Prior to any vegetation clearance works starting, all contractors will be given a tool-box talk by an experienced ecologist with a current Natural England dormouse survey licence, on the protected species and habitats on site, particularly dormice and what to do if any of these are found during the vegetation clearance works. The ecologist will be present throughout all tree felling and scrub clearance to act as an Ecological Clerk of Works.

Dormouse habitat that will be created includes;

- Buffer planting of woodland edge mix to act as a buffer zone for woodland edges to Neville's Park East and West Wood SINC's;
- Buffer planting of native woodland tree and shrub species of local provenance among existing trees on the Highways Agency verge approaching the Hulbert Road roundabout;
- A new hedgerow of mixed native species of local provenance on the west and east verges of the proposed link road, from the Hulbert Road entrance;
- Planting of semi-mature pedunculate oaks along the east verge of the proposed link road to replace those which will be lost;
- New hedgerows of mixed native species of local provenance with preference for fruiting shrubs that are of particular importance for dormice, such as hazel; hawthorn; blackthorn; spindle; and bramble to be planted either side of the bridge on both west and east stream banks in order to connect the dormouse underpass with existing retained dormouse habitat;
- Native climbing species of local provenance, such as honeysuckle, ivy and wild clematis will be planted in suitable areas at the entrances of the bridge leading to the meshing for the dormouse underpass;
- Buffer hedgerow planting for the Adder Hedge to protect the adder/reptile hibernacula on the south-east corner of this hedgerow, and to link up with Cherry Tree Row SINC and;
- Following construction of the link road native semi-mature trees will be planted either side of the gap leading to the retained Hedgerow H3 and the retained trees/scrub of Cherry Tree Row SINC. These native semi-mature trees will also be planted to act as bat "hop-over's" as described in the bat mitigation section of the Dunsbury Hill Environmental Statement (ES)¹³.

¹³ Atkins (March 2012) Dunsbury Hill Farm Environmental Statement Volume 1 Chapter 15 Ecology Paragraph 15.136

C. Survey and Site Assessment

C.1 Pre-existing information on dormice at the survey site

Habitat suitable for dormice was identified within woodland in Cherry Tree Row SINC, Beech Wood East SINC and Neville's Park East Wood SINC, plus hedgerows across the site and adjoining Park Lane, but there were no records of dormice in these locations prior to the 2010 dormouse survey by Atkins. The closest record of dormice that was found was from Staunton Country Park, which is 2.1 km north-east of Dunsbury Hill Farm¹⁴. This record was provided by the ranger of Staunton Country Park at the time of dormouse surveys undertaken by Regarding Badgers Consultancy in 2002. The typical habitat for dormice is hazel coppice or ancient semi-natural species-rich broad-leaved woodland. However, dormice are also found in other areas, including coniferous forest and species-rich hedgerows¹⁵.

C.2 Status of dormice

Dormice are found in lowland England and Wales. In England, dormice occur mainly in the southern counties, where they are still widespread but patchily distributed. Common dormice have declined in both distribution and abundance in the 20th Century as a result of woodland loss and fragmentation. The National Dormouse Monitoring programme has confirmed a significant downward trend from 1993-2002, although populations in southern England appeared to be stable.

The dormouse is a local and national Biodiversity Action Plan (BAP) priority species. The Hampshire BAP states that Hampshire is a national stronghold for dormice, holding at least 10% of the national population. However, the species is categorised as declining, scarce and highly threatened within Hampshire.

C.3 Objectives of the survey

Dormouse surveys were undertaken to inform the Environmental Impact Assessment (EIA) for the Dunsbury Hill Farm hybrid planning application and following confirmation of dormouse presence to provide data on dormouse usage of the site for this licence application.

¹⁴ Neeves, M (2002) Dormouse Survey: Land at Dunsbury Hill Farm, Leigh Park, Havant. Regarding Badgers Consultancy.

¹⁵ Bright, P.; Morris, P.; and Mitchell-Jones, T. (2006). The Dormouse Conservation Handbook Second Edition. English Nature.

C.4 Scaled plan/map of the survey area

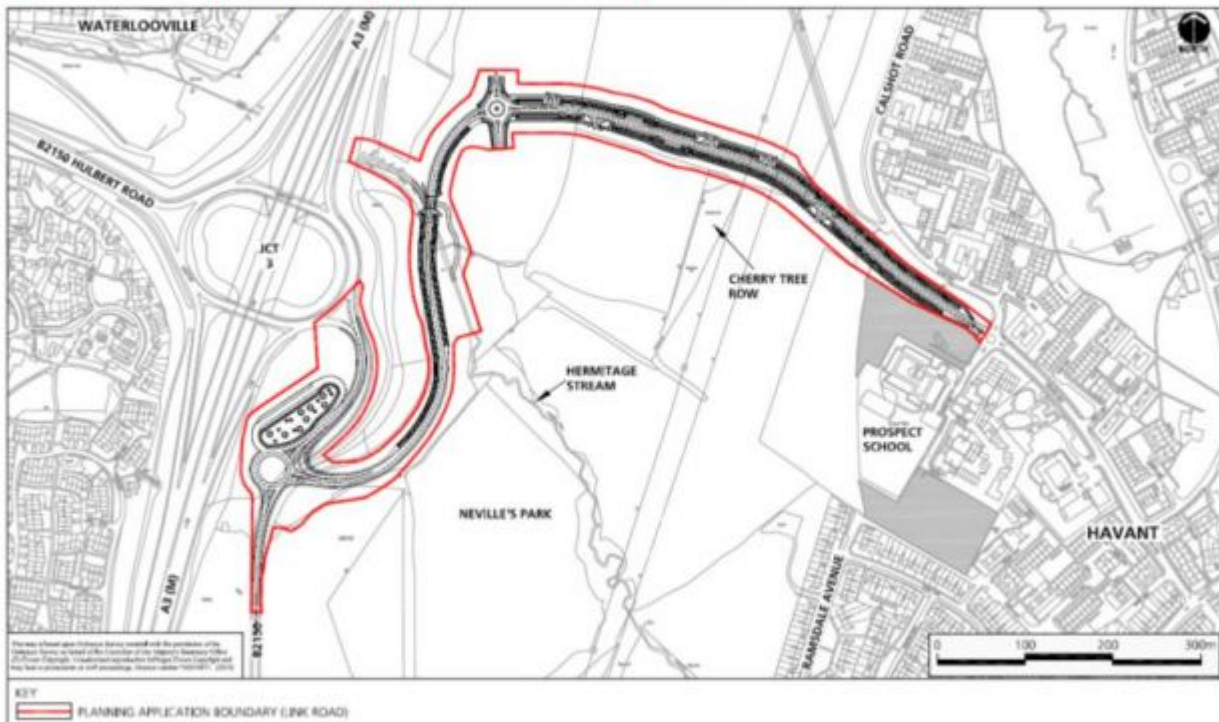


Figure C4.1: Site Location Plan showing the proposed link road and the planning application boundary



Figure C4.2: Site Location Plan Aerial (view of Site and wider surrounding landscape)

Please also see Figure 15E.1 included with the licence application pack as separate figure for clarity. Figure 15E.1 entitled Dormouse Survey Location shows the survey area covered within the wider Dunsbury Hill

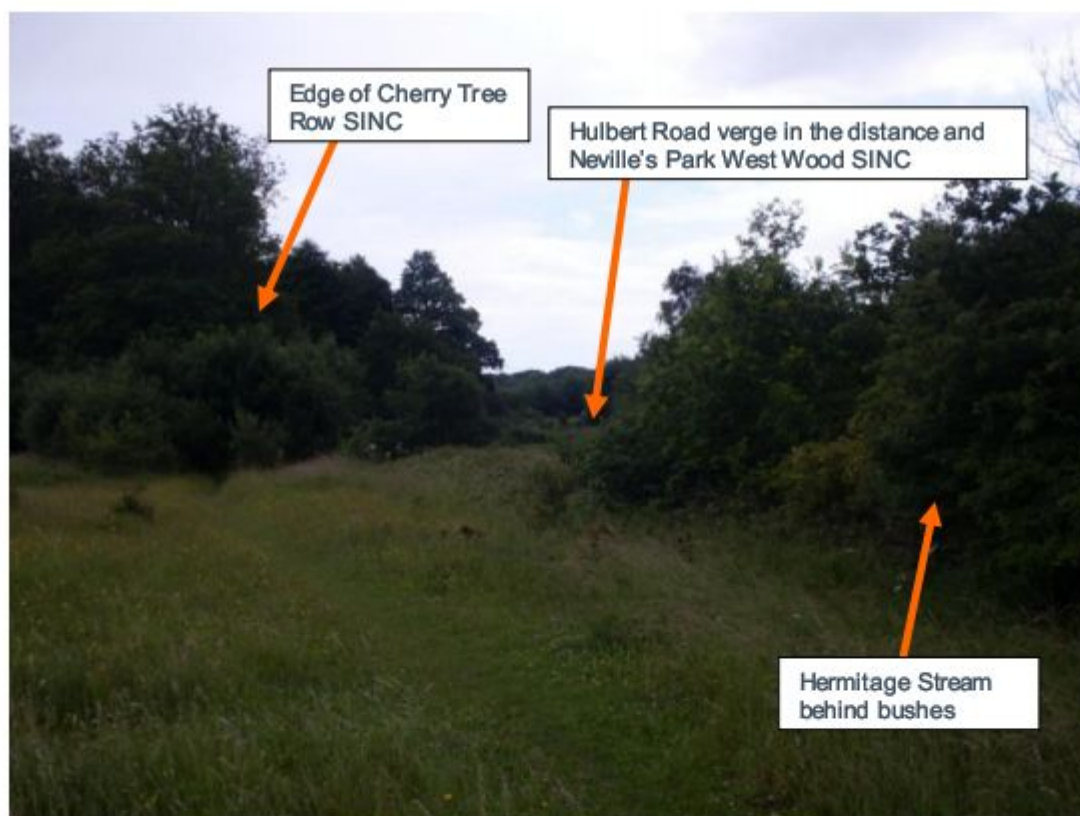
development site, including locations of dormouse tubes and locations of positive evidence of dormice found during the surveys in 2010-2011. A full table of results from these surveys is provided in Annex F2.

C.5 Site/habitat description

Dunsbury Hill Farm (referred to as "The Site" from hereafter) 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.

The land within the Dunsbury Hill Farm development site consists predominantly of arable fields and their associated margins, hedgerows, areas of scrub, and is surrounded by locally designated sites (Sites of Importance for Nature Conservation, SINC). These woodlands are designated as SINC and are also either ancient woodlands or woodlands where there is an element of surviving ancient semi-natural woodland. These woodlands provide suitable habitat for a range of protected and notable species including dormice.

Good dormouse habitat within the Site comprises of woodland (the edges of Beech Wood East SINC, Cherry Tree Row SINC, Nevilles Park East Wood SINC, and Dunsbury Hill Wood SINC), hedgerows (including some which qualify as ecologically important hedgerows under the Hedgerow Regulations, 1997) and areas of scrub, such as hawthorn, blackthorn and bramble. The arable fields that dominate the site do not provide potential dormouse habitat. See photographs 1-3 below for a view of the habitats concerned by the link road development.



Photograph 1 – View of scrub to be cleared for the link road (centre of photo and in the distance)



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)

C.6 Field surveys

As part of the Environmental Impact Assessment for the proposed business park development, dormouse surveys were undertaken by a suitably experienced and licensed ecologist (Danial Winchester dormouse survey licence reference no's at the time were 20094029 (valid from 26/11/2009 to 25/11/2010); and 20104438 (valid from 01/12/2010 to 30/11/2011) between 24/09/2010 and 28/08/2011 following standard methodology¹⁶ using 100 nesting tubes, which were installed in August 2010 within suitable habitat in the following areas of the site:

- Highways Agency fence-line between the western edge of the proposed access road and scrub on land owned by the Highways Agency leading to Hulbert Road;
- Woodland of Beech Wood East SINC;
- Woodland of Neville's Park East SINC;
- Woodland of Cherry Tree Row SINC and;
- Hedgerows across the site and bordering the public access track known as Park Lane.

An area of mixed woodland in Neville's Park West Wood SINC, broadleaved woodland and scrub to the west of Hulbert Road were identified as being potential habitat for dormice in September 2011. This area was not included within the nest tube survey but no signs of dormice were found during a search for evidence, such as nest and feeding remains, in September 2011. However given the proximity of this site to areas where dormice are known to be present it is considered likely that dormice would utilise this habitat. Neville's Park West Wood SINC is to the west of Hulbert Road and is connected by canopy linkage from trees to the east of Hulbert Road within Neville's Park East Wood SINC; therefore providing potential dormouse habitat linkage from Dunsbury Hill to suitable areas outside the site boundary. No vegetation clearance will be undertaken in Neville's Park West Wood SINC.

The location of the dormouse tubes and location of positive evidence of dormice can be found in Figure 15E.1

C.6.1 Constraints

The number of tubes checked on each survey varied slightly (between 93 and 100 boxes were checked). This is due to the loss of tubes in some places, as well as the wooden inserts falling out the tubes or the tubes not being re-located within the dense vegetation.

There are factors such as potential tampering with the nest tubes by members of the public that may have affected the results of the dormouse surveys. The nest tubes were positioned and hidden as best as possible away from public footpaths. The surveys were all carried out in suitable weather. It is thought that the site was surveyed thoroughly.

During a dormouse survey in June 2011 a number of additional dormouse nest tubes were found amongst vegetation to the side of the Hermitage Stream. Upon further investigation it was discovered that the Highways Agency had contracted the consultancy Mouchel to undertake dormouse surveys along the Hermitage Stream and within Highways Agency land. Some of these nest tubes were within the site boundary, and may have affected our survey results as dormice may have been using these additional nest tubes instead of those from the Atkins survey. No dormice were found within these additional tubes by Atkins ecologists but Mouchel confirmed that during the first check of their dormouse tubes in July 2011, three tubes had signs of dormouse occupancy (two tubes had a dormouse nest, and the third one had a dormouse nest and a dormouse).

¹⁶ Bright, P.; Morris, P.; and Mitchell-Jones, T. (2006). The Dormouse Conservation Handbook Second Edition. English Nature.

C.7 Survey results

Table 1 below provides a summary of the results. The full survey results can be seen in Annex F.2 Raw survey data. Dormice were recorded across all the survey areas and adults and juveniles were recorded.

Table 1 – Summary of dormouse tubes checks 2010/2011

	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
No of tubes surveyed	100	95	93	97	93	95
No of dormice found	8	6	6	3	0	2
Tubes with signs of dormouse occupancy (occupied and unoccupied nests)	13	14	7	8	8	9
Percentage of tubes showing signs of dormouse occupancy (occupied and unoccupied nests)	13	15	8	8	9	9

C.8 Interpretation/evaluation of survey results

Dormice were recorded across all the survey areas, suggesting they are using all suitable habitats within the site. The presence of juveniles indicates that there is a successful breeding dormouse population in the area.

Densities of dormice are naturally thought to be quite low in England, compared with other small mammals. In early summer there are typically only 3 to 5 (but sometimes up to 10) adults per hectare in deciduous and coniferous habitats¹⁷. It is difficult to estimate the density of dormice with confidence based on field survey data, but some areas within the site appeared to support higher densities than others. For example, more dormice were recorded in the woodland areas of Beech Wood East SINC and Cherry Tree Row SINC. However, this appearance of higher density may simply indicate that these areas have suitable foraging habitat but less suitable sheltered nesting sites, making the nest tubes more attractive to dormice.

Using the guidance on small mammal population densities in The Dormouse Conservation Handbook¹⁸ a rough estimate of pre-breeding numbers of adult dormice per hectare in each habitat area surveyed is given below.

¹⁷ Bright, P.; Morris, P.; and Mitchell-Jones, T. (2006). The Dormouse Conservation Handbook Second Edition. English Nature.

¹⁸ Bright, P.; Morris, P.; and Mitchell-Jones, T. (2006). The Dormouse Conservation Handbook Second Edition. English Nature.

- Neville's Park East Wood SINC which is 9.07 ha and is oak dominated woodland with hazel would have 2 adult dormice per ha; so therefore could have 18 adult dormice. The habitat that is being lost from this SINC is 427 m² of standard mature oak trees with no shrub/scrub understory. These trees are within short grassland that is heavily grazed by horses, and not optimal dormouse habitat. The habitat lost would only form part of the territory of an adult dormouse.
- Neville's Park West Wood SINC which is 4.72 ha and is predominantly conifer woodland with some deciduous tree species and hazel would have 2 adult dormice per ha; so therefore could have 9 adult dormice; however no habitat is being lost from this woodland and so no dormice will be affected.
- Cherry Tree Row SINC which is 1.89 ha and is oak dominated woodland with hazel would have 2 adult dormice per ha; so therefore could have 4 adult dormice. The habitat that is being lost from this SINC is 350 m² which includes 2 mature pedunculate oak trees, 1 early mature common alder, 3 self-seeded and young silver birches and a mixed group of 14 self-seeded young goat willow and silver birches. The habitat lost would only form part of the territory of an adult dormouse.
- Beech Wood East SINC which is 2.5 ha and is oak dominated woodland with hazel would have 2 adult dormice per ha; so therefore could have 5 adult dormice; however no habitat is being lost from this woodland and so no dormice will be affected.
- Each of the hedgerows (H1, H2, H3 and the Adder Hedge) surveyed would be habitat estimated to support 1 adult dormice per ha; so therefore;
 - H1 which is 1,668.97 m² could theoretically form 20% of the territory for an adult dormouse.
 - H2 which is 865.2 m² could theoretically form 10% of the territory for an adult dormouse.
 - H3 which is 2443.5 m² could theoretically form 30% of the territory for an adult dormouse.
 - Adder Hedge which is 1019.2 m² theoretically form 13% of the territory for an adult dormouse.

It should be noted that there are no mean spring densities of adult dormice for scrub habitat; and therefore no population estimates can be given for the scrub habitat on the Hulbert Road verge.

Some of the hedgerows that cross the site, such as H1 (Park Lane long hedge) and H3 (Long hedge) (H1 and H3 on Figure 1 included with the licence application pack as separate figure for clarity) had regular records of dormice. H1 was connected to other areas of scrub and woodland, whilst H3 was separated from other hedgerows/scrub by a gap of approximately 2 m width at either end of the hedge. It seems likely that dormice are using these hedgerows as corridors between other habitat blocks, such as woodland.

The habitat to be cleared for the link road within the Dunsbury Hill development site consists of scrub habitat and trees of various species and ages. The habitat to be lost can be seen in Figure 1 and is 2.3 ha. The habitat to be lost is a small proportion of the wider network of scrub, hedgerows and woodland habitats found within the immediate vicinity. These habitats are to be retained during the development with 3 ha being enhanced, as described in Method Statement Document 2. The dormice using the scrub habitat and trees within the development site are therefore likely to be part of a larger population within the connecting habitats. Neville's Park West Wood SINC is to the west of Hulbert Road and is connected by canopy linkage from trees to the east of Hulbert Road within Neville's Park East Wood SINC; therefore providing potential dormouse habitat linkage from Dunsbury Hill to suitable areas outside the site boundary.

Without mitigation the loss of trees and scrub for the proposed link road would sever habitat connectivity between trees and mixed scrub on land owned by the Highways Agency to the east of Hulbert Road, Neville's Park East Wood SINC, and Cherry Tree Row SINC. Dormouse habitat exists within and along the boundaries of the site in the form of retained hedgerows, woodland

SINC (Beech Wood East, Neville's Park West Wood, Neville's Park East Wood and Cherry Tree Row), and the trees and mixed scrub on land owned by the Highways Agency to the east of Hulbert Road.

D. Impact Assessment in Absence of Mitigation

D.1 Short-term impacts: disturbance, dormice injured/killed

In the absence of mitigation there is a risk of killing or injury of dormice and destruction of nests. In addition, there is a risk of disturbing dormice during the tree and vegetation removal by contractors.

D.2 Long-term impacts: Habitat loss or modification

Dormouse habitat that will be lost for the proposed link road and bridge consists of approximately 77 trees of varying species and ages, and scrub along the route of the proposed link road, Hulbert Road roundabout and replacement lay-bys (20,000 m²), and some scrub removal (2,890 m²) at the proposed location of the road bridge crossing the Hermitage Stream. 382 m² of light scrub (bramble and occasional young blackthorn) along the current culverted northern section of the Hermitage Stream will also be removed, in order to facilitate the temporary channel for the Hermitage Stream realignment work.

An additional 350 m² of woodland within Cherry Tree Row SINC will need to be cleared to accommodate the Hermitage Stream realignment works to the south of the road bridge. The dormouse habitat that is present within this area to be cleared comprises a mix of both young and mature trees of various species and shrub understory of hazel and holly. The tree species to be cleared are; a group of fourteen young self-seeded goat willows and silver birches, two mature pedunculate oaks, one early mature common alder, and three young self-seeded silver birches.

Without mitigation the loss of trees and scrub for the proposed link road would sever habitat connectivity between trees and mixed scrub on land owned by the Highways Agency to the east of Hulbert Road, Neville's Park East Wood SINC, and Cherry Tree Row SINC. Dormouse habitat exists within and along the boundaries of the site in the form of retained hedgerows, woodland SINC (Beech Wood East, Neville's Park West Wood, Neville's Park East Wood and Cherry Tree Row), and the trees and mixed scrub on land owned by the Highways Agency to the east of Hulbert Road.

D.3 Long-term impacts: Fragmentation and isolation

Without mitigation the loss of trees and scrub for the proposed link road would sever habitat connectivity between trees and mixed scrub on land owned by the Highways Agency to the east of Hulbert Road, Neville's Park East Wood SINC, and Cherry Tree Row SINC. Dormouse habitat exists within and along the boundaries of the site in the form of retained hedgerows, woodland SINC (Beech Wood East, Neville's Park West Wood, Neville's Park East Wood and Cherry Tree Row), and the trees and mixed scrub on land owned by the Highways Agency to the east of Hulbert Road. Beech Wood East SINC is 2.85 ha; Neville's Park West Wood SINC is 4.72 ha; Neville's Park East Wood SINC is 9.07 ha; Cherry Tree Row SINC is 2.0 ha and Dunsbury Hill Wood SINC is 6.77 ha. The total area of suitable dormouse habitat within all these SINC is 20 ha.

D.4 Post-development interference impacts

The retained hedgerows and enhanced habitats, habitat creation area, dormouse underpass and (A dormouse bridge for Phase 1 and 2 developments plots is described in the Dunsbury Hill Farm Dormouse Master Plan) will need to be maintained as part of the Habitat Management Plan. Habitat management for these areas will be undertaken outside of the bird nesting season (March – August), and when there is least disturbance to dormice and other protected species. Impacts on dormice will be minimal in terms of habitat management. The site will be developed as a business park and hotel; therefore increased predation by cats which is usually associated with residential developments is not anticipated.

D.5 Predicted scale of impact

The area of scrub habitat and trees to be lost is approximately 2.3 ha, and is therefore a small proportion of the wider network of scrub, hedgerows and woodland habitats found within the immediate vicinity. There will be localised reduction in available habitat and habitat connectivity, potentially affecting dormouse movement through the site; however it will not reduce the site's carrying capacity for dormice.

Due to the amount of vegetation loss in context of the greater area of available dormouse habitat present and the retention of habitat connectivity at the site, only small scale and localised impacts are anticipated, even in the absence of mitigation.

The loss of habitat would not be predicted to affect the dormouse population at a wider level.

E. References

Atkins (March 2012) Dunsbury Hill Farm Environmental Statement Highway Design Report Version 4.

Atkins (March 2012) Dunsbury Hill Farm Environmental Statement Volume 1 Chapter 15 Ecology

Atkins (January 2013) Dunsbury Hill Farm Transport Assessment Addendum

Atkins (August 2013) Dunsbury Hill Farm Dormouse Mitigation Strategy Technical Note.

Atkins (January 2014) Dunsbury Hill Farm Hermitage Stream realignment Arboricultural Impact Assessment

Atkins (February 2014) Dunsbury Hill Farm Hermitage Stream realignment tree inspection in relation to bats Technical Note

Battersby (Edited and compiled, 2005). UK Mammals: Species status and population trends (2005).

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

Hampshire Biodiversity Action Plan, available at
<http://www.hampshirebiodiversity.org.uk/action.html>

Havant Borough Council (March 2011) Havant Borough Core Strategy, available at
<http://www.havant.gov.uk/planning-policy-design/havant-borough-local-plan-core-strategy>

Natural England Species Information Note SIN005. Dormouse: European Protected Species

Neeves, M (2002) Dormouse Survey: Land at Dunsbury Hill Farm, Leigh Park, Havant. Regarding Badgers Consultancy.

People's Trust for Endangered Species (Winter 2009) The Dormouse Monitor

F. Annexes

F.1 Pre-existing survey reports

Dormouse survey of land at Dunsbury Hill Farm (Regarding Badgers Consultancy, 2002) (See separate attachment)

F.2 Raw survey data

Survey results 2010/2011¹⁹

♀ = Female T = Torpid TS = Males with Testes Scotal
♂ = Male A = Active P = female clearly pregnant
J = Juvenile L = lactating female
PL = Post Lactating

NB = non-breeding (none of the above)

Babies: Pink = no fur

Grey = with grey fur and eyes still closed

Eyes open = grey/brown fur eyes open

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Park Lane long hedge (H1)						
T1	Empty	Bird droppings	Empty	Empty	Green leaves only	Small mammal nest but not dormouse nest
T2	Empty	Potential dormouse nest but could not be confirmed at time of survey	Beginning of dormouse nest	Green leaves only	Empty	Empty
T3	1 wood mouse and nest	Small mammal nest but not dormouse nest	Empty	Empty	Empty	Empty
T4	1 A unsexed adult dormouse escaped and nest in tube	Small mammal nest but not dormouse nest	Empty	Empty	Empty	1 ♀ wood mouse and nest
T5	Empty	Tube missing and replaced with new tube	Empty	Empty	Empty	Dormouse nest and food cache
T6	Empty	Tray fallen on ground and re-installed	Not found due to dense vegetation	Not found due to dense vegetation	Not found due to dense vegetation	Not found due to dense vegetation
T7	Empty	Old food cache of acorns and some dry leaves	Old food cache of acorns and some dry leaves	Old food cache of acorns and some dry leaves	Empty	Empty
T8	Empty	Small mammal	Empty	Tray fallen on	Empty	Dormouse

¹⁹ The raw data can also be found in the Dunsbury Hill Farm Environmental Statement Volume 3 – Appendix 15.5 Dormouse Survey Report (Atkins, March 2012)

		nest but not dormouse nest		ground and re-installed		nest and food cache
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Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Park Lane short hedge (H2)						
T1	Empty	Tube missing and replaced with new tube	Empty	Empty	Empty	1 ♀ wood mouse and nest
T2	Empty	Small mammal nest but not dormouse nest	Empty	Empty	Empty	Single leaf
T3	Empty	Small mammal nest but not dormouse nest and bird droppings	Tube missing and replaced with new tube	Empty	Empty	Small mammal nest but not dormouse nest
T4	Empty	Empty	Empty	1 T♂ 17g and nest	1 yellow-necked mouse and nest	Dormouse nest

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Long hedge (H3)						
T1	Empty	Bird's nest	Bird's nest	Bird's nest	Empty	Empty
T2	Start of small mammal nest with fresh hawthorn leaves	2 wood mice and nest	Small mammal nest but not dormouse nest	Wet small mammal nest	Empty	Empty
T3	Empty	Empty	Empty	Empty	Empty	Empty
T4	Empty	Empty	Empty	Empty	Empty	Empty
T5	Empty		Empty			
T6	Empty	1 A ♂ escaped and nest	1 T ♀ 18g and 1 T ♀ 17g and nest	Dormouse nest	Dormouse nest	Dormouse nest
T7	Empty	Empty	Empty	Empty	Empty	Empty
T8	1 A J ♀ 13g and 1 A ♂ 17g and nest	Small mammal nest but not dormouse nest	Empty	Empty	Empty	1 A unsexed escaped and nest
T9	Empty	1 yellow-necked mouse and nest	1 yellow-necked mouse and nest	Empty	Empty	Empty
T10	Empty	1 single cherry stone chewed by dormouse	Empty	Empty	Empty	Empty
T11	Empty	Dormouse nest	Empty	Empty	1 ♂ wood mouse and nest	1 wood mouse and nest
T12	Empty	Empty	Tube missing and replaced with new tube	Empty	Empty	Empty
T13	Empty	Old food cache	Old food cache	Empty	Fresh green leaves	Small mammal nest but not dormouse nest
T14	Empty	Bird droppings	Empty	Empty	Fresh green leaves	Small mammal nest but not dormouse nest
T15	1 A J escaped	Old leaves only	Empty	Empty	Empty	Empty

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Cherry Tree Row SINC 1						
T1	Empty	Empty	Empty	Empty	Empty	Empty
T2	Empty	Bird droppings	Empty	Empty	Empty	Empty
T3	Empty	Empty	Empty	Tray missing and tube removed	Not replaced	Not replaced
T4	Empty	Empty	Empty	Empty	Empty	Empty
T5	Empty	Tray missing and replaced	Empty	Empty	Empty	Empty
T6	Empty	Empty	Empty	Empty	Empty	Empty
T7	Empty	Bird droppings	Empty	Empty	Empty	Empty
T8	Dormouse nest	Dormouse nest	Empty	Empty	Empty	Empty
T9	Empty	Empty	Empty	Tube relocated due to potential interference in vicinity	Empty	Empty
T10	Empty	Empty	Birds' nest	Birds' nest	Empty	Empty
T11	1 A J escaped	Dormouse nest	Empty	Empty	Empty	Empty
T12	Empty	Small mammal nest but not dormouse nest	Empty	Empty	Empty	1 yellow-necked mouse and leaves
T13	Empty	Bird droppings	Empty	Empty	Empty	Empty
T14	Empty	Bird's nest	Small mammal nest but not dormouse nest	Dormouse nest	Dormouse nest	Small mammal nest but not dormouse nest
T15	Empty	Empty	Empty	Empty	Empty	Empty

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Cherry Tree Row SINC 2						
T1	Empty	Bird droppings	Empty	Empty	Empty	Empty
T2	Empty	Tube missing and replaced	Empty	Empty	Empty	Empty
T3	Empty	Empty	Empty	Empty	Empty	Empty
T4	Empty	Empty	Empty	Empty	Empty	Empty
T5	Empty	Empty	Empty	Empty	Empty	Empty
T6	Empty	Empty	Empty	Empty	Empty	Empty
T7	Empty	Bird's nest	Bird's nest and eggs	Bird's nest	Bird's nest	Empty
T8	Empty	Empty	Empty	Empty	Empty	Empty
T9	Empty	Dormouse nest	Empty	Empty	Not checked due to vagrant and health and safety reasons	Empty
T10	Empty	Empty	Empty	Empty	Not checked due to vagrant and health and safety reasons	Empty
T11	Empty	Bird's nest	Bird's nest	Bird's nest	Bird's nest	Empty
T12	Empty	Bird droppings	Empty	Empty	Empty	Empty
T13	Empty	Bird's nest	Bird's nest and chicks	Bird's nest	Empty	Empty
T14	Empty	Empty	Empty	Empty	Empty	Empty
T15	Empty	Bird's nest	Bird's nest and eggs	Bird's nest	Empty	Empty
T16	Empty	Could not check due to health and safety reasons as suspicious people in vicinity	Empty	Empty	Empty	Empty
T17	Empty	Empty	Empty	Empty	Empty	Empty
T18	Empty	Empty	Empty	Empty	Empty	Empty
T19	Empty	Bird droppings	Empty	Empty	Empty	Empty
T20	Empty	Empty	Empty	Empty	Empty	Empty

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Cherry Tree Row SINC 3						
T1	Empty	Empty	Empty	Empty	Empty	Empty
T2	Empty	Empty	Dormouse nest	Dormouse nest and bumblebee	Dormouse nest	Small mammal nest but not dormouse nest
T3	Empty	Dormouse nest	Bird's nest	Bird's nest	Empty	Single blackberry
T4	Empty	Empty	1 A L ♀ escaped and nest with 3 Pink babies	Dormouse nest	Dormouse nest	Shredded grass and food cache
T5	1 A unsexed adult escaped and nest in tube	Empty	Dormouse nest	1 A unsexed escaped	Wet dormouse nest	Empty
T6	Empty	Empty	Empty	Empty	Empty	Empty
T7	Empty	Bumblebees and nest	Empty	Empty	Empty	Empty
T8	Empty	Empty	Empty	Empty	Empty	Empty
T9	Empty	Empty	Empty	Empty	Empty	1 A unsexed escaped and nest
T10	Empty	Empty	Empty	Empty	Empty	Empty
T11	Empty	Bird's nest	Empty	Empty	Empty	Empty
T12	Empty	Bird droppings	Empty	Empty	Bird droppings	Empty
T13	Empty	Empty	Tube not found	Empty	Empty	Empty
T14	Empty	Empty	Empty	Empty	Empty	Empty
T15	Empty	Empty	Empty	Empty	Empty	Empty

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Adder Hedge (H4)						
T1	Empty	Empty	Empty	Empty	Empty	Empty
T2	Empty	Tube not found	Tube not found	Tube not found	Tube not found	Tube not found
T3	Empty	Tray missing and replaced	Empty	Empty	Dormouse nest	Empty

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Highways Agency Boundary Fence						
TA	Dormouse nest	Dormouse nest	Empty	Empty	Empty	Empty
TB	1 A J ♂ 19 g and nest	Dormouse nest	Empty	Empty	Empty	Empty
TC	Empty	Dormouse nest	Empty	Empty	Empty	Empty

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Neville's Park Woodland East SINC						
T1	Empty	Bird's nest	Empty	Empty	Empty	Empty
T2	Empty	Empty	Empty	Empty	Empty	Not found
T3	Empty	Empty	Not found	Empty	Empty	Empty
T4	Empty	Bird's nest	Bird's nest	Bird's nest	Bird's nest	Empty
T5	Empty	Empty	Empty	Empty	Empty	Empty

Tube No.	Sept 2010	April 2011	May 2011	June 2011	July 2011	August 2011
Beech Wood East SINC						
T1	Empty	Bird droppings	Bird droppings	Empty	Empty	Empty
T2	Empty	Tube not found and replaced	Tube not found due to dense vegetation	Tube not found due to dense vegetation	Tube not found due to dense vegetation	Tube not found due to dense vegetation
T3	Empty	Tube not found and replaced	Tube not found due to dense vegetation	Tube not found due to dense vegetation	Tube not found due to dense vegetation	Tube not found due to dense vegetation
T4	1 A ♂ escaped	1 A unsexed escaped and 1 A ♀ 13 g with white tail-tip	Empty	Empty	Empty	Dormouse chewed hazel nuts
T5	Empty	Bird droppings	Empty	1 A unsexed escaped and nest	Dormouse nest	Dormouse nest
T6	Dormouse nest	Tube not found and replaced	Tube not found due to dense vegetation	Tube not found due to dense vegetation	Tube not found due to dense vegetation	Tube not found due to dense vegetation
T7	Dormouse nest	Empty	Tube not found due to dense vegetation	Empty	Tube not found due to dense vegetation	Food cache but could not confirm chewed by dormouse
T8	Empty	2 A ♂ and 1 A J ♂ - not weighed due to risk of stress & high temperatures	Dormouse nest	Dormouse nest	Dormouse nest	Dormouse nest
T9	Empty	Bird droppings	Empty	Empty	Empty	Empty
T10	Empty	Bird droppings	Empty	Empty	Empty	Empty
T11	Empty	Bird droppings	Empty	Empty	Empty	Empty
T12	Empty	Bird droppings	Empty	Empty	Empty	Empty
T13	Empty	Empty	Empty	Empty	Empty	Empty
T14	Dormouse nest	Dormouse nest	Small mammal nest but not dormouse nest	Fresh green leaves	Small mammal nest but not dormouse nest	Empty
T15	Empty	Tube not	Empty	Empty	Empty	Empty

		found and replaced				
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