Appendix 9.10

DORMOUSE SURVEY

FORT HALSTEAD, KENT

DORMOUSE SURVEY

A Report to: CBRE Ltd

Report No: RT-MME-127947-10 Rev A

Date Final Issued: October 2018
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REPORT VERIFICATION

This study has been undertaken in accordance with British Standard 42020:2013 “Biodiversity, Code of practice for planning and development”.

Report Version	Date	Completed by:	Checked by:	Approved by:
Rev A	12/09/2019	Hannah Train GradCIEEM (Senior Ecological Consultant)	Tom Docker MSc CEcol MCIEEM (Associate Director, EIA)	Dr Philip Fermor CEnv MCIEEM (Managing Director)
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DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client’s brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

VALIDITY OF DATA

The findings of this study are valid for a period of 24 months from the date of survey. If works have not commenced by this date, an updated site visit should carried out by a suitably qualified ecologist to assess any changes in the habitats present on site, and to inform a review of the conclusions and recommendations made.

NON-TECHNICAL SUMMARY

Middlemarch Environmental Ltd was commissioned by CBRE Ltd to undertake a Dormouse Survey at Fort Halstead in Kent. This assessment is required to inform a hybrid planning application associated with the proposed redevelopment of the site, which will involve the demolition of the majority of existing industrial buildings and the construction of a new employment-led mixed-use village. It is understood that the new village will comprise business areas (Use Classes B1a/b/c with energetic testing operations), development of up to 750 residential dwellings, a village centre (Use Classes A1/A3/A4/A5/B1a/D1/D2), a one form entry primary school, use of the Fort Area and bunkers as an Historic Interpretation Centre (Use Class D1), together with amenity space, landscape and ecological enhancements both on the site and on the adjacent land within the Applicants ownership.

Many of the habitats found at the site are considered to be of high value to dormouse due to the presence of suitable vegetation (such as broadleaved semi-natural woodland and scrub) providing opportunities for nesting, sheltering and hibernating dormice, together with the abundant food source and good connectivity providing suitable dispersal routes for this species.

As a result, a nest tube survey was required to be carried out to establish the presence or likely absence of this species. A total of 400 nest tubes were set out in May 2018 in areas of suitable habitat on site. These tubes were monitored monthly from June until October 2018. During the monitoring survey visits undertaken on site one dormouse was recorded during October in Tube 109 in an area of bramble scrub adjoining broadleaved semi-natural woodland to the north in the south of the site opposite the southern security fence. Drawing Number C127947-10-02 shows the location of the dormouse recorded on site.

The following recommendations have been made to maximise the sites future value to dormice and ensure compliance with associated wildlife legislation:

R1 As dormouse have been recorded, no works should be undertaken which would breach the legislation outlined in Section 1.4.

R2 Prior to works commencing on site, the scale of the works will be reviewed and subject to a detailed review of the impacts a Natural England European Protected Species Licence should be applied for. The Method Statement within the licence will detail the mitigation strategy to ensure no dormice are harmed during the proposed development. This strategy will also ensure that the conservation status of this species in the local area is not adversely impacted by the proposals.

R3 A nest box monitoring scheme should be implemented on site, covering all areas of suitable habitat. Monitoring should continue annually pre, during and post development, in order to monitor the dormouse population on site and the influence of any construction and operational phase impacts. This will inform ongoing and future management practices on site and allow appropriate steps to be taken in order to ensure the favourable conservation status of dormice is maintained or improved on site.

R4 A suitable management programme should be designed for areas of woodland and scrub on site in order to create or maintain a varied age structure, including areas of rotational coppice, to ensure the areas provide suitable habitat for dormice and as broad a range of other species as possible.

Native species rich hedgerows should be planted on site wherever possible including hazel *Corylus avellana*, hawthorn *Crateagus monogyna*, blackthorn *Prunus spinosa*, holly *Ilex aquifolium*, yew *Taxus baccata*, guelder rose *Viburnum opulus*, field maple *Acer campestre*, spindle *Euonymus europeaus,* wild privet *Ligustrum vulgare* and buckthorn *Rhamnus cathartica*. Native species rich hedgerows will be used by dormice and a wide range of other species in order to nest, feed, shelter and hibernate.

Native plant species should be incorporated into landscaping designs, including gardens, amenity and recreational space, street trees and shrub borders, which adjoin areas of existing habitat that has the potential to support dormice. Native tree species could include English oak *Quercus robur*, beech *Fagus sylvatica*, crab apple *Malus sylvestris*, wild cherry *Prunus avium*, wild service *Sorbus torminalis*, rowan *Sorbus acuparia* and whitebeam *Sorbus aria*. Native border/shrub species could include dogwood *Cornus sanguinea*, hazel *Corylus avellana*, wayfaring tree *Viburnum lantana*, dog rose *Rosa canina*, gorse *Ulex europaeus*, spindle *Euonymus europaeus*, wild privet *Ligustrum vulgare* and guelder rose *Viburnum opulus*. Native plant species will be used by dormice and a wide range of other species in order to nest, feed, shelter and hibernate.

Site designs should ensure existing areas of habitat suitable for dormice on site remain connected in order not to fragment existing dormouse populations and habitats. This may include the implementation of habitat bridges over barriers such as roads, car parks or buildings.

CONTENTS

1. INTRODUCTION

1.1 PROJECT BACKGROUND

Middlemarch Environmental Ltd was commissioned by CBRE Ltd to undertake a Dormouse Survey at Fort Halstead in Kent. This assessment is required to inform a hybrid planning application associated with the proposed redevelopment of the site, which will involve the demolition of the majority of existing industrial buildings and the construction of a new employment-led mixed-use village. It is understood that the new village will comprise business areas (Use Classes B1a/b/c with energetic testing operations), development of up to 750 residential dwellings, a village centre (Use Classes A1/A3/A4/A5/B1a/D1/D2), a one form entry primary school, use of the Fort Area and bunkers as an Historic Interpretation Centre (Use Class D1), together with amenity space, landscape and ecological enhancements both on the site and on the adjacent land within the Applicants ownership.

A suite of baseline surveys have been completed by Waterman Group between 2006 and 2013, the results of which are provided in an Ecological Appraisal (Report EED12715-102.R.2.3.7.LM) and Protected Species and Habitat Survey (Report EED12715-102.R.3.3.6.LM), and summarised in the ecology chapter of an EIA associated with a previous application, for which outline planning consent was granted.

Due to the amount of time that has elapsed since the previous surveys were completed, updated ecological surveys were required for the current planning application.

In addition, Middlemarch Environmental Ltd has been commissioned to undertake the following assessments:

- Preliminary Ecological Appraisal (Report RT-MME-127947-01);
- Preliminary Bat Roost Assessment (Report RT-MME-127947-02);
- Nocturnal Emergence and Dawn Re-entry Bat Surveys (Report RT-MME-127947-03);
- Bat Activity Surveys (Report RT-MME-127947-04);
- Badger Survey (Report RT-MME-127947-05);
- Breeding Bird Survey (Report Rt-MME-127947-06);
- Botanical Survey (Report RT-MME-127947-07);
- Terrestrial Invertebrate Survey (Report RT-MME-127947-08);
- Reptile Survey (Report RT-MME-127947-09);
- Winter Bird Survey (Report RT-MME-127947-11);
- Pre-development Arboricultural Survey (Report RT-MME-128206-01); and,
- Arboricultural Impact Assessment (Report RT-MME-128206-02).

Dormice and the areas they use for shelter are subject to European-wide protection under the Conservation of Habitats and Species Regulations 2010 (Habitats Regulations, 2010). The species receives further legal protection in the UK under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that dormice, and the places they use for shelter or protection, are capable of being a material consideration in the planning process. A summary of the legislation protecting the dormouse is included within Appendix 1. This section also provides some brief information on the ecology of dormouse from the Kent Local Biodiversity Action Plan (BAP).

1.2 SITE DESCRIPTION

The site is located off Star Hill Road in Halstead, Kent, centred at National Grid Reference TQ 4970 5922. It is an irregularly shaped parcel of land that measures 131.89 ha in size.

At the time of the survey, the site comprised a defence research facility which contained a number of buildings with associated areas of hardstanding, surrounded by parcels of semi-natural and plantation woodland. Areas of neutral grassland, calcareous grassland and amenity grassland were also present, as well as patches of scrub and tall ruderal vegetation.

The site was bordered by the A224 Polhill to the north-east and Star Hill Road to the south-west. A mixture of arable and pastoral fields, pockets of woodland and farm buildings surround the site. The wider landscape

was dominated by a rural setting, consisting of agricultural land interspersed with pockets of woodland and small settlements.

1.3 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by the client regarding the scope of the project. Documentation made available by the client is listed in Table 1.1.

Document Name / Drawing Number	Author
Fort Halstead – Design and Access Statement: 00556I	John Thompson and Partners
Site Location Plan: 00556I_S01 Rev D5	John Thompson and Partners
Land Use and Green Infrastructure Plan: 00556I_PP01 Rev D10	John Thompson and Partners
Building Heights Plan: 00556I_PP02 Rev D10	John Thompson and Partners
Access and Movement: 00556I_PP03 Rev D9	John Thompson and Partners
Demolition Plan: 00556I_PP04 Rev D8	John Thompson and Partners
Ecological Appraisal: EED12715-102.R.2.3.7.LM	Waterman Group
Protected Species and Habitats Survey: EED12715-102.R.3.3.6.LM	Waterman Group
Environmental Statement - Ecology and Nature Conservation	Waterman Group
Decision Notice (planning application number SE/15/00628/OUT)	Sevenoaks District Council

Table 1.1: Documentation Provided by Client

2. METHODOLOGIES

2.1 DESK STUDY

As part of the Preliminary Ecological Appraisal (Report RT-MME-127947-01) an ecological desk study was undertaken to determine the presence of dormice within 2 km of the site. The consultees for the desk study were:

- Natural England - *MAGIC* website for statutory conservation sites; and,
- Kent and Medway Biological Records Centre.

Middlemarch Environmental Ltd then assimilated and reviewed the desk study data provided by these organisations. Relevant dormouse data are discussed in Chapter 3. In compliance with the terms and conditions relating to its commercial use, the full desk study data are not provided within this report.

2.2 DORMOUSE SURVEY

A habitat suitability assessment was conducted in order to establish target areas that indicated a potential for supporting dormice in May 2018. Following the identification of the habitats that were to be surveyed, a nest tube survey for dormice commenced.

The methodology used to conduct the nest tube survey follows the guidelines set out in the Natural England Dormouse Conservation Handbook (2nd edition) (Bright *et al*., 2006). The survey involved erecting dormouse tubes within suitable habitats such as woodland, scrub and hedgerows. The tubes were distributed as evenly as possible, approximately every 20 m. A total of 400 numbered nest tubes were placed along the habitats within the site identified as suitable for dormice, as illustrated in Drawing C127947-10-01 in Section 7.

Nest tube surveys can only be carried out between April and November and should be checked by an appropriately licensed ecologist once per month.

In order to assess the likely presence or absence of dormice, an index of probability of finding dormice present in nest tubes in any one month was developed by Bright *et al*., (2006) and is recommended for use by Natural England (2011). This index can be used as an indicator of the thoroughness of a survey. Table 2.1 details the index of probability, which is based on the deployment of 50 nest tubes. All of the monthly scores for the period over which the tubes are in place are added together - a minimum score of 20 must be reached in order to determine presence/likely absence.

Month	General Index of Probability of Dormouse Detection Based on 50 Nest Tubes
January	-
February	-
March	-
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Table 2.1: Index of Probability (from Bright et al, 2006)

Based on the Natural England Interim Advice Note (WML-G37) entitled 'Dormouse surveys for mitigation licensing: best practice and common misconceptions', once dormice are detected it is not always essential to continue the surveys.

The locations in which evidence of dormouse presence was indicated are plotted on Middlemarch Environmental Drawing C127947-10-02, located in Chapter 7.

3. DESK STUDY RESULTS

3.1 BIOLOGICAL RECORDS

Table 3.1 and the following text provide a summary of dormouse records within a 2 km radius of the study area.

Species	No. of Records	Most Recent Record	Proximity of Nearest Record to Study Area	Species of Principal Importance?	Local BAP	Legislation / Conservation Status
Dormouse *Muscardinus avellanarius*	2	2015	510 m south	✓	✓	ECH 4, WCA 5, WCA 6

Key:
ECH 4: Annex IV of the European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora. Animal and plant species of community interest in need of strict protection.
WCA 5: Schedule 5 of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds).
WCA 6: Schedule 6 of Wildlife and Countryside Act 1981 (as amended). Animals which may not be killed or taken by certain methods.

Species of Principal Importance: Species of Principal Importance for Nature Conservation in England.
Local BAP: Kent Biodiversity Action Plan

Table 3.1: Dormouse Records Within 2 km of Survey Area

3.2 PREVIOUS SURVEYS

In 2012, Waterman Group carried out a dormouse survey at Fort Halstead. During the survey, a dormouse nest was recorded in a nest tube located within an area of semi-natural ancient woodland in the eastern extent of the site. Mammal nests were also found within two other nest tubes in the northern extent of the site, although it was not possible to discern which species constructed the nests between dormouse or yellow-necked mouse *Apodemus flavicollis*.

4. RESULTS

4.1 INTRODUCTION

A total of 400 nest tubes were installed on site in May 2018, with monitoring visits conducted between June and October 2018 by Jamie Fletcher (Ecological Consultant and Licensed Dormouse Worker, NE Class Licence No. 2017-26775-CLS-CLS). The weather conditions experienced during the survey visits are detailed in Table 4.1.

Date	Temperature (°C)	Cloud Cover (%)	Precipitation	Wind Speed (Beaufort)
12/06/2018	22	25	None	F1
02/07/2018	23	25	None	F1
20/08/2018	20	50	None	F1
20/09/2018	18	50	None	F1
09/10/2018	16	75	None	F1

Table 4.1: Weather Conditions During the Survey Visits

4.2 SURVEY CONSTRAINTS

Tubes were regularly damaged, displaced or destroyed within the western and south-western part of the site throughout the survey period due to landscaping activities and interference from patrol dogs. Dislodged tubes were reinstalled when encountered and damaged tubes were repaired wherever possible including replacing broken cable ties and wooden inserts.

4.3 SURVEY RESULTS

4.3.1 Assessment of Habitats

Drawing Number C127947-10-01 in Section 7 details the location of the habitats that were deemed to have potential for providing suitable habitat for dormice. The habitat types are discussed below.

Broadleaved semi-natural woodland
Broadleaved semi-natural woodland was an abundant habitat type on site, with it occurring around the entire site boundary and in smaller adjoining pockets located throughout the site.

The broadleaved semi-natural woodland on site comprised of a varied and complex structure, with established canopy trees including beech *Fagus sylvatica*, English oak *Quercus robur*, ash *Fraxinus excelsior*, whitebeam *Sorbus aria*, silver birch *Betula pendula*, sycamore *Acer pseudoplatanus,* wild cherry *Prunus avium* and sweet chestnut *Castanea sativa*. The understorey consisted of hazel *Corylus avellana*, yew *Taxus baccata*, field maple *Acer campestre*, sweet chestnut *Castanea sativa*, rowan *Sorbus acuparia*, elder *Sambucus nigr*a, hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, dogwood *Cornus sanguinea*, dog rose *Rosa canina*, crab apple *Malus malus*, holly *Ilex aquifolium*, bramble *Rubus fruticosus*, and wayfaring tree *Viburnum lantana*. The ground flora contained several species indicative of ancient woodlands, including bluebell *Hyacinthoides non-scripta*, dog's mercury *Mercurialis perennis*, primrose *Primula vulgaris*, wood anemone *Anemone nemorosa*, wood spurge *Euphorbia amygdaloides* and yellow archangel *Lamiastrum galeobdolon*. Other species present included bracken *Pteridium aquilinum*, bramble *Rubus fruticosus*, bugle *Ajuga reptans*, clematis *Clematis sp*., common nettle *Urtica doica*, dog violet *Viola riviniana*, ground ivy *Glechoma hederacea*, herb-Robert *Geranium robertianum*, honeysuckle *Lonicera periclymenum*, ivy *Hedera helix*, stitchwort *Stellaria* sp, lesser celandine *Ranunculus ficaria*, lords-and-ladies *Arum maculatum*, St John's-wort *Hypericum* sp., wild strawberry *Fragaria vesca* and willowherb *Epilobium* sp.

Broadleaved plantation woodland
A linear area of broad-leaved plantation woodland was located along the western site boundary. This habitat also extended around much of the semi-improved grassland in the western part of the site. The canopy consisted of ash, beech, cherry *Prunus* sp., crab apple, English oak, field maple, rowan, silver birch, sweet chestnut, whitebeam and yew, with an understorey of cherry laurel, dogwood, hawthorn and hazel. The ground flora comprised bramble, buttercup *Ranunculus* sp., cleavers *Galium aparine*, clematis, common

nettle, cow parsley *Anthriscus sylvestris*, dandelion *Taraxacum officinale* agg., germander speedwell *Veronica chamaedrys*, plantain *Plantago* sp., thistle *Cirsium* sp. and vetch *Vicia* sp.

Mixed plantation woodland
Three parcels of mixed plantation woodland were present on site; one area was located along Crow Drive in the north-eastern part of the site, one area was located to the north of Armstrong Close and west of Fort Road, and another area was located in the south-western corner of the site. The canopy was dominated by spruce *Picea* sp., although ash, English oak, rowan, silver birch and sweet chestnut were also present, with an understorey of buddleia *Buddleia davidii*, cherry laurel, cotoneaster *Cotoneaster* sp., elder, hawthorn, holly and pussy willow *Salix* sp. The ground flora contained a few species indicative of ancient woodlands, including bluebell, wood anemone and wood sorrel *Oxalis acetosella*. Other species present included bracken, buttercup, cleavers, clematis, common nettle, creeping jenny *Lysimachia nummularia*, ground-elder *Aegopodium podagraria*, lesser celandine and stitchwort.

Scattered scrub
Patches of scattered scrub were present throughout the area of semi-improved neutral grassland in the south-western corner of the site, and throughout the areas of unimproved calcareous grassland in the southern part of the site. Species included blackthorn, bramble, dog rose, dogwood, elder, hawthorn and wayfaring tree.

Species-rich hedgerow with trees
Remnants of a species-rich hedgerow with trees were located within the north-western area of poor semi-improved grassland. These appeared to have once been boundary markers between fields, but the fields have since been merged into one large area of poor semi-improved grassland. The hedgerow sections comprised blackthorn, bramble, dog-rose, elder, field maple, hawthorn, hazel and holly.

4.3.2 Summary of Habitats – Value to Dormice

Broadleaved semi-natural woodland
The broadleaved semi-natural woodland on site provided excellent foraging, nesting and hibernating habitat for dormice due to the diversity of tree and floral species found which will provide a wide range of food sources throughout much of the year; the abundance of mature trees, deadwood and other woodland detritus which provide high quality nesting and hibernating opportunities; the large size of the woodland and the excellent connectivity to adjoining habitats.

Broadleaved plantation woodland
The broadleaved plantation woodland on site provided good foraging habitat for dormice due to the diversity of tree species present. Despite this the area provided limited nesting or hibernation potential for the species due to the absence of mature trees and sparse understorey. The mixed plantation woodland was well connected to adjoining areas of broadleaved semi-natural woodland and species-rich hedgerows with trees, allowing dormice to move between habitats freely.

Mixed plantation woodland
The mixed plantation woodland on site provided reasonably good foraging habitat for dormice due to the diversity of tree and other floral species present. Despite this the abundance of spruce in certain areas, notably to the west of Armstrong Close, resulted in the absence of any substantial understorey and made the area beneath the woodland canopy dark and cold. The mixed plantation woodland on site was well connected to adjoining areas of broadleaved semi-natural woodland, allowing dormice to move between habitats freely.

Scattered scrub
The scattered scrub on site provided excellent foraging and nesting opportunities for dormice, whilst much of the scattered scrub on site was also adjoining areas of broadleaved semi-natural woodland, allowing dormice to move freely between habitats.

Species-rich hedgerow with trees
The species-rich hedgerows with trees provided excellent foraging, nesting and hibernating opportunities for dormice, whilst also providing good connectivity to areas of adjoining broadleaved plantation woodland, allowing dormice to move freely between habitats.

Due to the presence of suitable nesting, sheltering and hibernating habitat, and abundant food sources, the habitats within the site are considered to be of high value to dormice.

4.3.3 Connectivity to Adjacent Habitats

The site is very well connected to other adjoining areas of broadleaved semi-natural woodland, extensive mature hedgerows and patches of dense and scattered scrub within the immediate wider landscape. Star Hill Road to west and Polhill/A224 to the east are major barriers to extensive areas of highly suitable habitat, though some limited connectivity via overhanging or interconnected mature tree canopies above the aforementioned roads is possible.

4.3.4 Nest Tube Survey

Dormouse nest tubes were placed at approximately 20 m intervals along areas of suitable habitat identified on site and monitoring survey visits were undertaken monthly between June and October 2018.

One dormouse was recorded along the sites south-eastern boundary in an area of bramble scrub adjoining broadleaved semi-natural woodland during the October survey visit. The location of the dormouse recorded is shown on Drawing C127947-10-02.

4.4 SUMMARY OF RESULTS

Table 4.2 provides a summary of the survey results.

Date	Result
12/06/2018	Tube 4: Empty wood or yellow-necked mouse nest Tube 26: Empty wood or yellow-necked mouse nest
02/07/2018	Tube 25: Empty wood or yellow-necked mouse nest Tube 235: Empty wood or yellow-necked mouse nest Tube 236: Empty wood or yellow-necked mouse nest Tube 240: Empty wood or yellow-necked mouse nest
20/08/2018	Tube 1: Empty wood or yellow-necked mouse nest Tube 13: Empty wood or yellow-necked mouse nest Tube 25: Empty wood or yellow-necked mouse nest Tube 38: Empty wood or yellow-necked mouse nest Tube 155: Empty wood or yellow-necked mouse nest Tube 226: Empty wood or yellow-necked mouse nest Tube 236: Empty wood or yellow-necked mouse nest Tube 240: Empty wood or yellow-necked mouse nest
20/09/2018	Tube 155: Empty wood or yellow-necked mouse nest Tube 91: Empty wood or yellow-necked mouse nest Tube 87: Empty wood or yellow-necked mouse nest Tube 9: Empty wood or yellow-necked mouse nest Tube 10: Acorn cache Tube 13: Wood mouse nest with two wood mice within Tube 30: Empty wood or yellow-necked mouse nest Tube 44: Empty wood or yellow-necked mouse nest Tube 226: Empty wood or yellow-necked mouse nest Tube 220: Wood mouse nest within one wood mouse within
09/10/2018	Tube 146: Empty wood or yellow-necked mouse nest **Tube 109: Dormouse recorded jumping out of the tube as surveyor approached and climbing into the adjoining bramble scrub. No nest present within tube.** Tube 91: Empty wood or yellow-necked mouse nest Tube 1: Empty wood or yellow-necked mouse nest Tube 13: Empty wood or yellow-necked mouse nest Tube 15: Empty wood or yellow-necked mouse nest Tube 20: Wood mouse nest with two wood mice within Tube 42: Empty wood or yellow-necked mouse nest Tube 220: Acorn cache

Table 4.2: Summary of Dormouse Survey Results

5. DISCUSSION AND CONCLUSIONS

5.1 SUMMARY OF PROPOSALS

The proposals for the site are as follows:

Hybrid planning permission comprising:

In detail:

- *Demolition of existing buildings;*
- *Change of use and works to buildings Q13 and Q14 (including landscaping and public realm);*
- *Primary and secondary accesses.*

In outline:

- *Development of business space (use classes B1a/b/c) of up to 27,659 sq m GEA;*
- *Works within the 'X' enclave relating to energetic testing operations, including fencing, access, car parking;*
- *Development of up to 750 residential dwellings;*
- *Development of a mixed-use village centre (use classes A1/A3/A4/A5/B1a/D1/D2);*
- *Development of a one form entry primary school;*
- *Change of use of Fort Area and bunkers to Historic Interpretation Centre (use class D1) with workshop space;*
- *Roads, pedestrian and cycle routes, public transport infrastructure, car parking, utilities infrastructure, drainage;*
- *Landscaping, landforming and ecological mitigation works.*

5.2 FINDINGS OF DESK STUDY

There were two records of dormice within 2 km of the site, with the closest being located 510 m to the south. The most recent record is from 2015.

During a dormouse survey undertaken on site by Waterman Group in 2012 a single empty dormouse nest was recorded within an area of semi-natural ancient woodland to the immediate east of the main site boundary within the wider survey area.

5.3 HABITAT ASSESSMENT

The site contains a high level of habitat suitability - the conditions are ideal to support a viable dormouse population. The broadleaved semi-natural woodland, broadleaved plantation woodland, mixed plantation woodland, scattered scrub and species-rich hedgerows with trees on site provide suitable nesting and hibernation areas and the plant diversity and abundance within these habitats is also sufficient to provide year-round food sources. The wider survey area also provides an abundance of well-connected high-quality habitat.

5.4 FINDINGS OF DORMOUSE SURVEY

The following signs of dormouse activity were recorded during the surveys conducted between June and October 2018:

- One dormouse was recorded jumping out of nest tube 109 as the surveyor approached and then climbing off into the adjoining bramble scrub opposite the south-eastern security fence during the October monitoring survey visit.

As nest tube surveys are intended to detect the presence of dormice and do not permit an estimation of population density, the following estimations of population density have been calculated using guidance from The Dormouse Conservation Handbook (Bright *et al.*, 2006).

It is hypothesised that there are an average of up to 10 adults per hectare in optimum habitat as per The Dormouse Conservation Handbook (Bright *et al*., 2006). As a worse-case scenario, if the development works

were to require the removal of all optimal available dormouse habitat on site the works would have the potential to affect up to 840 individuals. However, the proposals will impact on significantly less habitat than this. Prior to works commencing on site, the scale of vegetation removal will be analysed and a more detailed review of the impacts will be undertaken.

5.5 CONCLUSIONS AND SUMMARY OF POTENTIAL IMPACTS

It is understood that the vast majority of suitable dormouse habitat on site is to be retained and/or enhanced as part of the development proposals. It is possible that some limited works to areas of suitable habitat will occur and some areas of sub-optimal habitat that are connected to areas of high-quality habitat are also likely to be impacted.

Dormice in habitats affected by the works could potentially be disturbed, injured or killed during vegetation clearance if sensitive working methods are not in place.

It is not considered likely that the existing development proposals will have a significant impact upon the dormouse population on site due to the retention and of the vast majority of high-quality habitat on site, including some ecological enhancement. The most likely detrimental consequence to the dormouse population on site in relation to the proposed development is the increase in human disturbance and the increased threat of predation or injury from domestic animals, particularly cats.

6. RECOMMENDATIONS

All recommendations provided in this section are based on Middlemarch Environmental Ltd's current understanding of the site proposals, correct at the time the report was compiled. Should the proposals alter, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate.

R1 As dormouse have been recorded, no works should be undertaken which would breach the legislation outlined in Section 1.4.

R2 Prior to works commencing on site, the scale of the works will be reviewed and subject to a detailed review of the impacts a Natural England European Protected Species Licence should be applied for. The Method Statement within the licence will detail the mitigation strategy to ensure no dormice are harmed during the proposed development. This strategy will also ensure that the conservation status of this species in the local area is not adversely impacted by the proposals.

R3 A nest box monitoring scheme should be implemented on site, covering all areas of suitable habitat. Monitoring should continue annually pre, during and post development, in order to monitor the dormouse population on site and the influence of any construction and operational phase impacts. This will inform ongoing and future management practices on site and allow appropriate steps to be taken in order to ensure the favourable conservation status of dormice is maintained or improved on site.

R4 A suitable management programme should be designed for areas of woodland and scrub on site in order to create or maintain a varied age structure, including areas of rotational coppice, to ensure the areas provide suitable habitat for dormice and as broad a range of other species as possible.

Native species rich hedgerows should be planted on site wherever possible including hazel *Corylus avellana*, hawthorn *Crateagus monogyna*, blackthorn *Prunus spinosa*, holly *Ilex aquifolium*, yew *Taxus baccata*, guelder rose *Viburnum opulus*, field maple *Acer campestre*, spindle *Euonymus europeaus,* wild privet *Ligustrum vulgare* and buckthorn *Rhamnus cathartica*. Native species rich hedgerows will be used by dormice and a wide range of other species in order to nest, feed, shelter and hibernate.

Native plant species should be incorporated into landscaping designs, including gardens, amenity and recreational space, street trees and shrub borders, which adjoin areas of existing habitat that has the potential to support dormice. Native tree species could include English oak *Quercus robur*, beech *Fagus sylvatica*, crab apple *Malus sylvestris*, wild cherry *Prunus avium*, wild service *Sorbus torminalis*, rowan *Sorbus acuparia* and whitebeam *Sorbus aria*. Native border/shrub species could include dogwood *Cornus sanguinea*, hazel *Corylus avellana*, wayfaring tree *Viburnum lantana*, dog rose *Rosa canina*, gorse *Ulex europaeus*, spindle *Euonymus europaeus*, wild privet *Ligustrum vulgare* and guelder rose *Viburnum opulus*. Native plant species will be used by dormice and a wide range of other species in order to nest, feed, shelter and hibernate.

Site designs should ensure existing areas of habitat suitable for dormice on site remain connected in order not to fragment existing dormouse populations and habitats. This may include the implementation of habitat bridges over barriers such as roads, car parks or buildings.

7. DRAWINGS

Drawing C127947-10-01 – Dormouse Survey

Drawing C127947-10-02 – Location of Dormouse Evidence

C127947-10-01

Legend

- Site boundary
- Dormouse transect
- Not surveyed

Phase 1 habitats:

- Scattered scrub
- Scattered trees
- Fence
- Native species-rich hedge and trees
- Species-poor defunct hedgerow
- Species-poor intact hedgerow
- Amenity grassland
- Semi-improved neutral grassland
- Semi-improved calcareous grassland
- Unimproved calcareous grassland
- Bracken
- Tall ruderal
- Broad-leaved semi-natural woodland
- Broad-leaved plantation woodland
- Coniferous plantation woodland
- Mixed plantation woodland
- Poor semi-improved grassland
- Other habitat: Built-up area with scattered trees present in abundance throughout site

N

Project	Fort Halstead
Drawing	Dormouse Survey Transects
Client	CBRE Ltd
Drawing Number: C127947-10-01	Revision: 00
Scale @ A3: 1:8,000	Date: June 2018
Approved By: JF	Drawn By: NE

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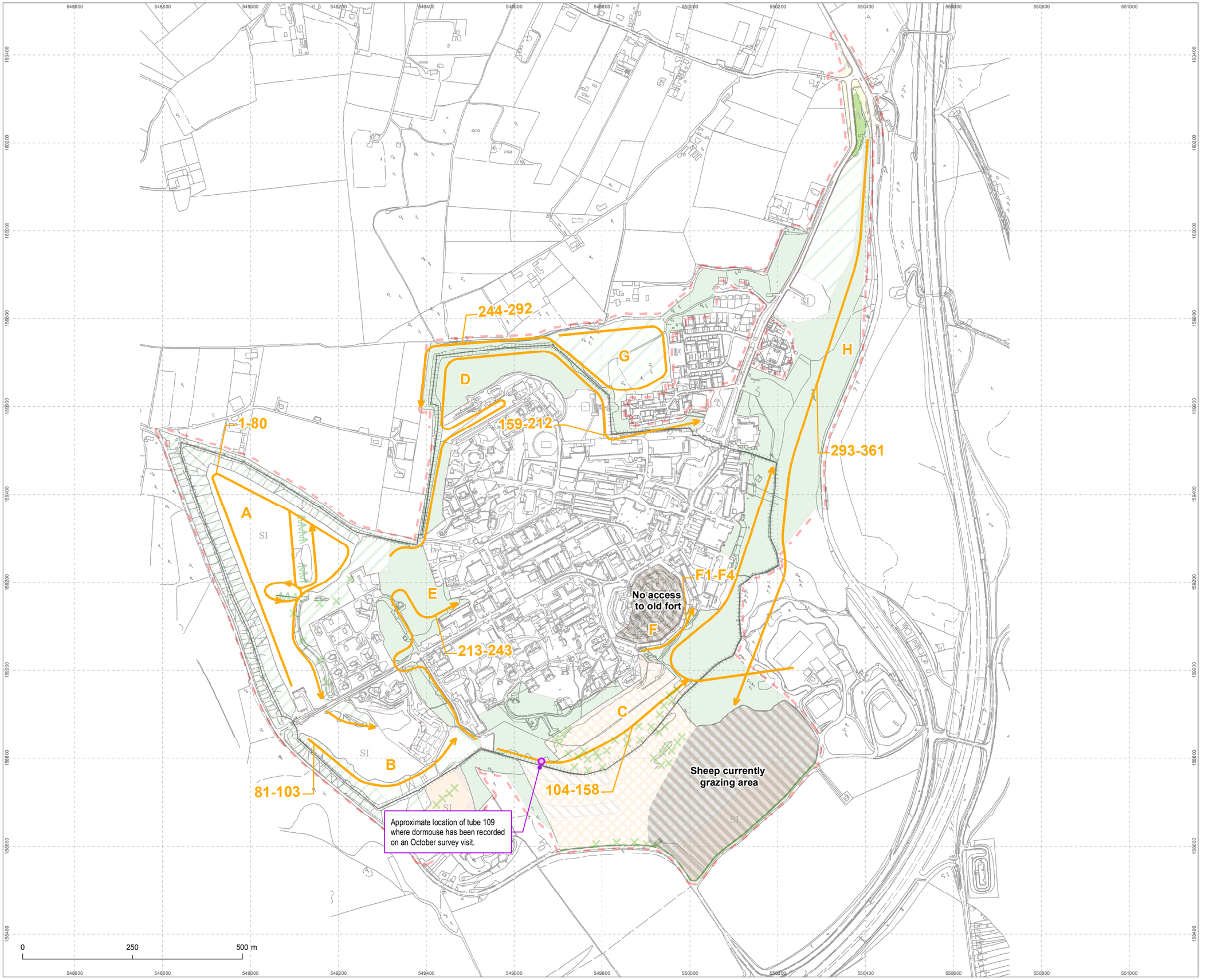

C127947-10-02

Legend

- Dormouse recorded
- Dormouse transect
- Site boundary
- Not surveyed

Phase 1 habitats:

- Scattered scrub
- Scattered trees
- Fence
- Native species-rich hedge and trees
- Species-poor defunct hedgerow
- Species-poor intact hedgerow
- Amenity grassland
- Semi-improved neutral grassland
- Semi-improved calcareous grassland
- Unimproved calcareous grassland
- Bracken
- Tall ruderal
- Broad-leaved semi-natural woodland
- Broad-leaved plantation woodland
- Coniferous plantation woodland
- Mixed plantation woodland
- Poor semi-improved grassland
- Other habitat: Built-up area with scattered trees present in abundance throughout site

N

Project	Fort Halstead
Drawing	Location of Dormouse Evidence
Client	CBRE Ltd
Drawing Number: C127947-10-02	Revision: 00
Scale @ A3: 1:8000	Date: November 2018
Approved By: JF	Drawn By: CD

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Wildlife & Countryside Act. (1981) as amended.

APPENDIX 1

LEGISLATION

Dormice and the places they use for shelter or protection receive European protection under The Conservation of Habitats and Species Regulations 2010 (Habitats Regulations 2010). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that dormice, and the places they use for shelter or protection, are capable of being a material consideration in the planning process.

Regulation 41 of the Habitats Regulations 2010, states that a person commits an offence if they:

- deliberately capture, injure or kill a dormouse;
- deliberately disturb dormice; or
- damage or destroy a breeding site or resting place.

Disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong.

It is an offence under the Habitats Regulations 2010 for any person to have in his possession or control, to transport, to sell or exchange or to offer for sale, any live or dead dormouse, part of a dormouse or anything derived from a dormouse, which has been unlawfully taken from the wild.

Whilst broadly similar to the above legislation, the WCA 1981 (as amended) differs in the following ways:

- Section 9(1) of the WCA makes it an offence to intentionally (rather than deliberately) kill, injure or take any protected species.
- Section 9(4)(a) of the WCA makes it an offence to intentionally or recklessly* damage or destroy, *or obstruct access to*, any structure or place which a protected species uses for shelter or protection.
- Section 9(4)(b) of the WCA makes it an offence to intentionally or recklessly* disturb any protected species *while it is occupying a structure or place which it uses for shelter or protection*.

*Reckless offences were added by the Countryside and Rights of Way (CRoW) Act 2000.

The Natural Environment and Rural Communities (NERC) Act 2006 places a duty on public bodies to have regard for the conservation of biodiversity and maintains lists of species and habitats which are of principal importance for the purposes of conserving biodiversity in England and Wales. These lists supersede Section 74 of the CRoW Act 2000.

The United Kingdom Biodiversity Action Plan (UK BAP) first published in 1994 and updated in 2007, is a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UK BAP contains a list of priority habitats and species of conservation concern in the UK, and outlines biodiversity initiatives designed to enhance their conservation status. The priority habitats and species in England correlate with those listed on Section 41 of the NERC Act.

Dormice are listed on the UK BAP and Section 41 (England) and Section 42 (Wales) of the NERC Act 2006. Dormice are also priority species on the Kent Local BAP.

The reader should refer to the original legislation for the definitive interpretation.

INFORMATION FROM KENT LOCAL BAP

Dormice eat a variety of foods throughout the year, adapting their diet as the seasons progress. Early in the year they may feed on hazel catkins and pollen, moving on to honeysuckle nectar and aphids in mid-summer and berries, seeds and nuts in the autumn.

The presence of dormice may be revealed by a nest situated in bramble or low-growing shrubs. The nest is about the size of a grapefruit, with an outer layer of leaves that are often green as they are picked from the tree rather than collected from the ground, and the inside is made of woven grass or strips of bark. Dormice gnaw hazel nuts in a characteristic way; look for hazel nuts with a circular opening with a smooth edge where the dormouse has enlarged the hole using a scooping action with its teeth.

Woodland with hazel coppice is often considered typical dormouse habitat, but broadleaved woodland with a well-developed, diverse understorey or tall mature hedgerows can also provide good dormouse habitat, and they have been found in conifer plantations as well.

Over the past 120 years, the dormouse has disappeared from at least half of its British range, and is now found mainly in south England and south Wales. Even in the south, dormice are no longer present at 70% of sites where they were known to be 120 years ago.

The dormouse receives full legal protection under the Wildlife & Countryside Act 1981 and the European Habitats Directive, meaning that dormice including their nests and resting places are protected from disturbance and destruction. The dormouse is widespread throughout Kent, and whilst it is likely to have suffered a decline in the county that reflects the national trend, Kent is considered to be a stronghold for the species. The decline of the dormouse is linked to the loss of woodland, and the loss of hedgerows in the country. In order to expand their territories, dormice need to access new woods via hedgerows as they do not like to travel along the ground or across open spaces. Therefore, the loss of hedgerows has resulted in many remaining patches of woodland being isolated. Also, the practice of coppicing, which makes dormouse habitat more suitable for it, has declined.

Dormice have been recorded breeding in the conifer plantations at Bedgebury Pinetum in Kent. Bedgebury's dormice nest in birch scrub and are thought to feed on aphids and pine seeds. Elsewhere in Kent, dormice are probably present in most of the larger woodland blocks in the county. Surveys by Kent Mammal Group have found that they are normally present in semi-natural woodlands of 20ha or more in extent.

Nest boxes have been put up at more than twenty four sites in Kent, which allows more dormice to nest and produce young in each patch of woodland. The nest boxes also make it easier to monitor their populations and the data collected contributes to the National Dormouse Monitoring Programme. The Kent Biodiversity Action Plan aims to extend the nest box scheme. Preventing further loss and fragmentation of woodland, securing appropriate woodland management including coppicing and linking up isolated populations through woodland and hedgerow planting will be crucial to maintaining and increasing the number of dormice living in Kent.