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## **Land South of Arundel Road Fontwell**

### ***Dormouse Mitigation Strategy***

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## 1.0 INTRODUCTION

### 1.1 Summary

This document outlines the proposed strategy for the mitigation of the likely impacts to Dormice (*Muscardinus avellanarius*) as a result of the development of a parcel of land adjacent to Woodcroft, south of Arundel Road (here after referred to as 'the site'). The presence of Dormice within the habitats on the site has been established after a nest tube surveys carried out by The Ecology Co-op during the 2018 active season identified both nests and Dormice within nest tubes on site. With areas of scrub trees requiring removal to facilitate the development process, a Natural England European Protected Species (EPS) development licence will be required for works to legally take place for which this document will form the basis.

#### 1.1.1 Site Description

The site (approximately 1.3 ha) comprises of a parcel of grassland, standard trees and managed woodland located to the south of Arundel Road, Fontwell, West Sussex, BN18 0QP (OS grid reference SU 960 067) (**Fig 1**). The north of the site is bounded by Arundel Road / A27 the south by West Walberton Lane and the west and east by mature gardens. The immediate surrounding environ is considered to be semi-rural with arable fields and woodland dominating.

**Figure 1.** Redline location plan of the site.



## 1.2 Relevant Nature Conservation Legislation and Policy

### 1.2.1 Legislation

Dormice are fully protected under the Wildlife and Countryside Act (1981 as amended) and the Conservation of Habitats Regulations (2010). Under these two pieces of legislation acting in parallel it is an offence to:

- Deliberately or intentionally kill, capture, injure or take a Dormouse;
- Deliberately disturb a Dormouse;
- Damage or destroy a breeding site or resting place of a Dormouse;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a Dormouse &
- Keep, transport, sell or exchange, or offer for sale or exchange a live or dead Dormouse or any part of a Dormouse.

### 1.2.2 Planning Policy

The development would seek to comply with relevant Planning Policy, at a local, regional and national level. Specific policies pertaining to the protection of biodiversity and nature conservation within the Arun District are summarised below, for full details refer to the original documents.

National government guidance is provided by National Planning Policy Framework (NPPF), which places an onus on development to conserve and enhance biodiversity with a requirement for positive biodiversity outcomes wherever possible from the overall development process. The NPPF provides guidance to Local Authorities in how to conserve and enhance biodiversity through local Planning Policies and when assessing planning applications.

#### 1.2.2.1 Local – Arun Local Plan 2011 - 2031

The following policy is considered relevant to this document as provided within the Arun Local Plan 2011 – 2031 (Adopted July 2018);

#### **Policy ENV DM5 Development and Biodiversity**

*Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement.*

*Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site*

*or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person.*

*All developments shall have regard to Natural England's standing advice for protected species.*

### **1.3 Aims of the Mitigation Strategy**

This Dormouse mitigation strategy details the measures, which will be implemented in order to ensure that the proposed development would fully comply with legislation and planning policy relevant to the protection of Dormice and form the basis of the European Protected Species (EPS) licence application. The two primary aims of the Dormouse mitigation strategy are:

- 1) To prevent the killing or injury of Dormice as a result of works
- 2) To ensure any adverse impacts from the development are adequately mitigated and compensated for to protect the Favourable Conservation Status (FCS) of the species.

### **1.4 Sources of Guidance and Best Practice**

The Dormouse Conservation Handbook 2nd Edition (Bright et al., 2006) outlines the best practice guidelines for surveying and mitigating for any potential adverse impacts to Dormice resulting from development.

### **1.5 Brief Description of the Proposals**

The proposals entail development of 8 new detached dwellings and associated landscaping with access via Arundel Road.

### **1.6 Survey Methods**

#### *1.6.1 Nest Tubes*

The following text on the survey methodology has been reproduced verbatim from that provided within Land South of Arundel Road, Fontwell – Phase 2 Ecology Surveys report (The Ecology Co-Op 2019):

*‘For this survey, a total of 100 Dormouse nest tubes were deployed on 21<sup>st</sup> May 2018 along hedgerows, treelines and scrub along the boundaries of the site. Dormice survey checks were undertaken in the mornings and the first survey took place on 20<sup>th</sup> June 2018, approximately 1 month after the nest-tubes were first positioned. Following the incidental sighting of a dormouse in a bird box along the southern boundary of the site during the first Dormouse survey check on 20<sup>th</sup> June 2018 further surveys were suspended since presence of Dormouse on the site was confirmed by this sighting and once dormice have been found it can be assumed that they are present in all suitable habitat on the site. The Dormouse tubes were left in situ until the final reptile survey visit and were checked and, if empty, removed on 29<sup>th</sup> September 2018. Any nest tubes supporting dormice or other small mammals were left in-situ. Surveys were undertaken by accredited agents of licensed Dormouse surveyor Kristina Lewis (2016-21929-CLS-CLS).’*

## 2.0 BASELINE DATA AND LIKELY IMPACTS OF THE PROPOSALS

### 2.1 On Site Habitat Description

The Preliminary Ecological Appraisal (The Ecology Co-Op, 2018) of the site identified the following key habitats considered to be suitable for Dormice:

- Mixed semi natural woodland - This habitat was located in the south western corner of the site and was dominated by mature multi stemmed Hazel (*Corylus avellana*). The following species were also recorded; Holly (*Illex aquifolium*), Honeysuckle (*Lonicera periclymenum*), Spindle (*Euonymus europaeus*) with *Cottoneaster* spp also present (**Fig 2**).
- Species rich native hedge with trees – This feature was located around the boundaries of the majority of the site and supported the following species: Hazel, Holly, Honeysuckle, Cherry Laurel (*Prunus lauracerasus*), Bramble (*Rubus fruticosus* agg), Ivy (*Hedera helix*), Privet (*Ligustrum ovalifolium*), Spindle, *Quercus* spp and Hawthorn (*Crataegus mongyna*) (**Fig 3**).
- Scattered scrub – Bramble dominated scrub (with occasional Bracken) was noted as being scattered across the site with some encroachment from the western and southern boundaries.

Additionally, the site is well connected into woodland habitats in the wider landscape and therefore meets a number of the criteria of suitability as described within the Dormouse Conservation Handbook (Bright et al., 2006).

**Figure 2.** Woodland area in south western corner of the site and developing Bramble scrub.



**Figure 3.** Boundary species rich native hedgerow and scattered mature *Quercus* spp.



## 2.2 Local Status of Dormice

A data request was submitted to the Sussex Biological Records Centre (SxBRC) (using a 1 km search radius) as part of the work undertaken for the PEA (The Ecology Co-Op, 2018). This returned a total of 219 Dormouse records with the majority from Potwell Copse 0.3 km to the east of the site. The number of records indicates there is a well-established population present locally.

## 2.3 The Status of Dormice on the Site

### 2.3.1 Survey Results

During the nest tube checks undertaken by The Ecology Co-Op during the latter part of the 2018 survey season, four Dormice and nine nests were found in a total of ten Dormouse nest tubes (numbers 9a, 10a, 12, 13a, 19a, 21, 24, 70, 85 and 90 as per **Fig 4**) and one Dormouse was recorded incidentally in one bird box. In addition, two records of other small mammals, including Woodmouse, were also recorded in two nest tubes (49 and 52).

**Figure 4.** Results of the Dormouse nest tube surveys carried out by The Ecology Co-Op during 2018. The blue dots and numbers indicate nest tubes / boxes within which Dormice / Dormice nests were recorded.



#### 2.2.1 Interpretation / Evaluation of Results

A total of 4 individual Dormice were recorded within nest tubes along with a number of nests which indicates there is a well-established population in the local area which is using the site. There is no confirmed evidence that Dormice breed at this site but breeding will be assumed at this stage due to the suitability of the habitat and numbers / amount of evidence recorded. Dormice are however relatively common and widespread within West Sussex and have been recorded in suitable habitat

across the county. Consequently, the site is considered to be of **Local – County** value for the species (CIEEM, 2018)

### 3.0 IMPACT ASSESSMENT IN ABSENCE OF MITIGATION

If the proposed development was to proceed without suitable mitigation and compensation, it would likely result in an offence being committed under the W&CA (1981 as amended) and the Conservation of Species and Habitats Regulations (2017) through potentially killing, injuring and disturbing Dormice and damaging a place of rest.

#### 3.1 Short-term Impacts

##### 3.1.1 Loss of Habitats

Subject to a successful EPS licence application the works will involve the removal of approximately 2830 m<sup>2</sup> of scrub and shrubs located through the site (Based on calculations of habitat loss using geo referenced aerial images of the site [www.findmaps.co.uk](http://www.findmaps.co.uk) and recent site visits) (Fig 5).

**Figure 5.** Approximate extent of suitable Dormouse habitat (estimated at 2830 m<sup>2</sup>) that will require removal under EPS (red shaded areas).



Should adequate mitigation not be implemented this could result in direct harm to individual Dormice should they be present within the vegetation being removed, which would constitute a major negative impact at a site level (and an offence under wildlife legislation). However due to the presence of Dormice in the wider habitat, and the retention of areas of suitable habitat on site, this would likely constitute a low to moderate negative impact upon the local population and a minimal impact at a national level.

***NB at this point it should be noted that in their Phase 2 Ecology Report (2019), The Ecology Co-op refer at paragraph 4.5.1 on page 37 to the “loss of approximately 1.3 ha of suitable habitat (for Dormice), including Hazel coppice and scrub present within the site, although it is anticipated that most of the existing hedgerows and tree belts around the boundaries of the site will remain intact”. It should however be noted, as stated above, that this appears to be an error as 1.3 ha is the size of the entire site and hence the figure above for habitat loss is considerably less.***

### 3.1.2 Disturbance

Short-term disturbance impacts on the local Dormouse population are likely to occur during the construction works related to the development. There is anticipated to be an increased level of disturbance (noise, vibration and visual) to any Dormice present within the retained habitats / woodland from the movement of any heavy machinery and the presence of construction workers (although there is a level of baseline noise due to the close proximity of the A27). Furthermore, it is likely there will be an increase in dust deposition on vegetation and an increase in localised light pollution from the construction area. Such impacts could dissuade Dormice from occupying retained habitats on site and habitats in the immediate environs and/or limit breeding success. Should adequate protection not be implemented around all retained habitat, accidental encroachment by machinery and the inappropriate storage of construction materials could also result in damage to retained habitats, decreasing their suitability and putting any individual Dormice present at risk of harm. Unmitigated works are considered likely to result in a moderate negative impact at the District level, however due to the presence of relatively large areas of connected Dormouse habitat in the vicinity of the site this is not considered likely to result in significant impacts upon the integrity of Dormouse populations at a higher level.

## 3.2 Long-term Impacts

### 3.2.1 Fragmentation & Isolation

There are not considered to be any issues with fragmentation or isolation of habitats being retained on site as all boundary hedgerows tree lines will be preserved and enhanced (with access to the site via an existing gateway).

### 3.2.2 Disturbance

In the long term there may be operational impacts from noise associated with the new housing development however, as Dormice are nocturnal it is anticipated that this will be most likely to occur for a short period in early evening when residents return home or during good weather in the summer months (when residents are more likely to use their gardens) or until dark within the

woodland. There may also be additional impacts from an increase in external, lighting associated with the development and an increase in risks of cat predation.

#### 4.0 RECOMMENDED ACTIONS TO MITIGATE & COMPENSATE

The development of the site is likely to result in adverse impacts to Dormice. Therefore, as a fully protected species, in order to fully comply with relevant legislation, it is necessary to implement a full mitigation strategy (the main principles of which are outlined below).

##### 4.1 Works to be Carried Out Under the Supervision of a Suitably Licenced Ecologist (SLE)

Prior to clearance commencing, 5 Dormouse nest boxes (**Fig 6**) will be installed through the retained hedgerow / tree lines along the western boundaries (in the POS areas), to increase the carrying capacity of the retained habitats for Dormice. These will also act as receptors for any Dormice found during the sensitive clearance works and will be located within 100 m of all cleared vegetation by the licenced ecologist.

All habitat clearance will adopt the following methodology:

- Clearance of the vegetation within the site will be carried out sympathetically and under the supervision of a Licenced Ecologist (LE) who will search for nests by hand and capture Dormice (if necessary) before and during clearance works. If any active animals are discovered during the works then these animals will be captured and placed, with their original nest where present, within previously erected nest boxes (outlined above). If any hibernation nests/potential hibernation nests are identified during the first stage of the clearance over winter, these will be left undisturbed, with vegetation retained in a buffer around the nest, due to the vulnerable nature of hibernating or torpid Dormice. All arisings / cuttings will also be removed from site each day following a hand search by the licenced ecologist to prevent re-occupation.
- The licenced ecologist will deliver a toolbox talk to the vegetation clearance contractors, detailing the sensitive measures required. The ecologist will then supervise all vegetation clearance. No clearance will be undertaken without the supervision of the ecologist.
- To avoid any impacts to Dormice the removal of all vegetation will adopt a two staged approach with the upper sections removed over winter (when Dormice may be hibernating in the lower parts) and the trunk and roots removed during spring. The Dormouse Conservation Handbook (Bright et al., 2006) suggests the following method for the first stage of the removal process:

##### Winter clearance

*'This should remove sufficient vegetation to persuade dormice emerging from hibernation in April or May to move to more appropriate habitat nearby. Once emergence is complete, by the end of May, full clearance of the area can continue. Winter clearance should thus be planned as a two-stage process.'*

*Trees and shrubs within the area in question should be cut down between November and March inclusive, to avoid both the bird nesting season and the majority of the period when dormice might be found in nests above ground. Clearance should be done by hand and in a sensitive manner, to minimise the likelihood of disturbing or killing hibernating dormice. Similarly, the process of removing the cut material should, as far as possible, be designed to protect dormice hibernating on the ground. This can involve such techniques as:*

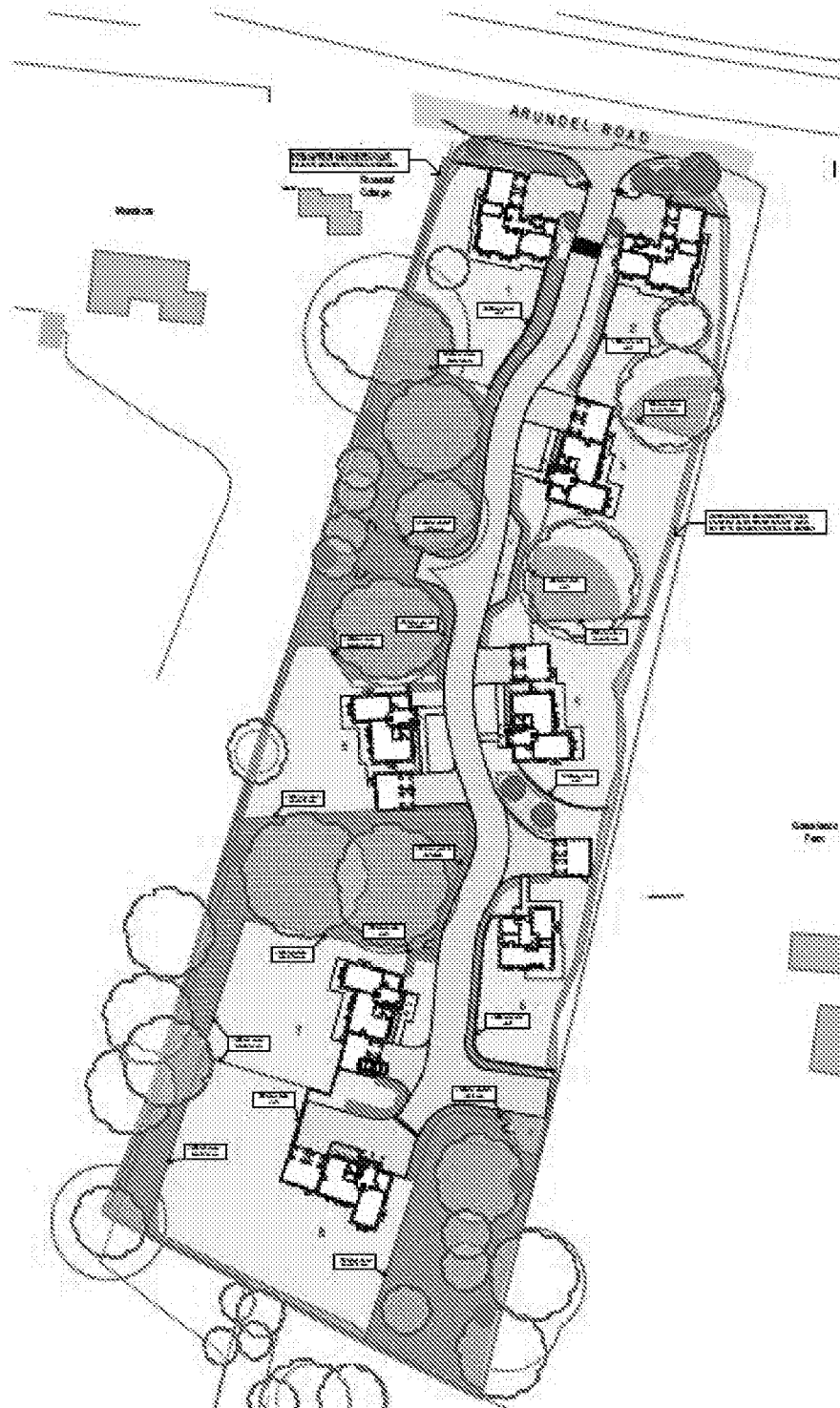
- *Sacrificing a single 'haul- route', which has first been cleared by hand if necessary;*
- *Using a long-reach mechanical grab and/or limiting the number of 'drag-lines' along which stems are removed; and/or*
- *Directional felling to minimise the ground impact. '*

In addition to the above, all vegetation being removed, and the ground beneath, will first be hand searched as far as possible to identify the presence of any hibernation nests. Similarly, any proposed drag/haul routes will first be searched by hand before such usage commences. If any hibernation nests are identified, these will be retained and protected and, if present within a haul/drag routes these will be re-routed to avoid the retained nest.

#### Spring clearance

Once the above works have been completed, the roots will be removed using hand tools where possible or with a digger using a toothed bucket under the supervision of the licenced ecologist from mid-April onwards (provided the temperatures have been warm enough for Dormice to emerge from hibernation at the discretion of the ecologist).

**Figure 6.** Site layout / landscape plan with indicative locations of Dormouse nest boxes indicated by red dots.



## 4.2 Disturbance

### 4.2.1 Protecting Retained Features

Prior to construction works commencing the retained hedgerows / tree lines will be protected via the installation of heras fencing (or similarly robust construction fencing) covered with dust sheets and with regular information signage installed. Access will not be permitted behind this fencing by

construction personnel. This will protect Dormouse habitat from direct damage/disturbance and dust.

#### 4.2.2 Mitigating Operational Impacts

##### 4.2.2.1 Lighting

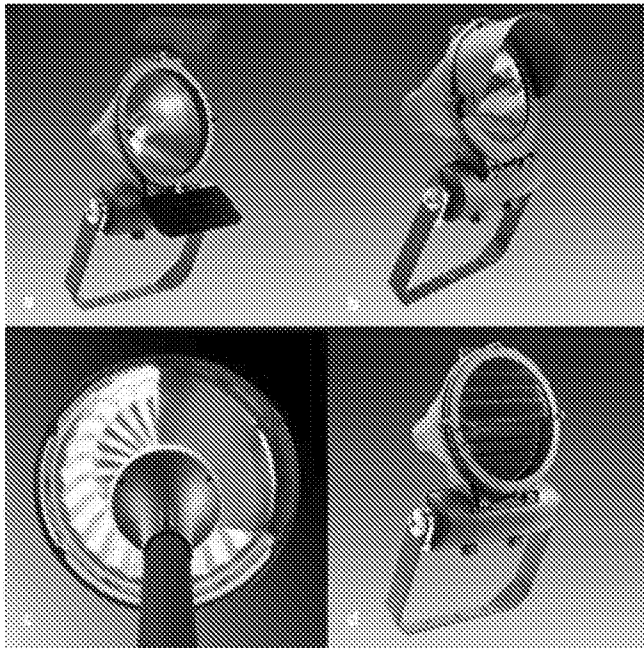
A new document (*Guidance Note 08/18 Bats and Artificial Lighting in the UK*) has recently been produced via a collaboration between the Institute of Lighting Professionals (ILP) and the Bat Conservation Trust (BCT), which outlines the latest recommendations to minimise the impacts of increased artificial lighting on bats (which by extension, will also act to mitigate against impacts to Dormice). The key recommendations within this document have been outlined below and will be implemented provided there are no conflicts with any legal limits of illumination (in which case a suitable compromise should be reached).

*‘Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following should be considered when choosing luminaires:*

- *All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used. LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.*
- *A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component.*
- *Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).*
- *Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.*
- *The use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered. However, this often comes at a cost of unacceptable glare, poor illumination efficiency, a high upward light component and poor facial recognition, and their use should only be as directed by the lighting professional.*
- *Column heights should be carefully considered to minimise light spill.*
- *Only luminaires with an upward light ratio of 0% and with good optical control should be used – See ILP Guidance for the Reduction of Obtrusive Light.*
- *Luminaires should always be mounted on the horizontal, i.e. no upward tilt.*
- *Any external security lighting should be set on motion-sensors and short (1min) timers.*

*As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed (Fig 7). This may be appropriate to use on roads adjacent to the central tree line.*

**Figure 7.** (a) Shield ‘barn doors’ (b) cowl hood; (c) shield and; (d) external louvre Images from ILP (2018).



#### 4.2.2.2 Cat Predation

To minimise the risks of cat predation once the houses have been completed and the new occupants moved in, thorny species (such as *Prunus spinosa*) will be planted up periodically along the boundaries of the site at a minimum density of 1 per linear metre. As these species mature, they will provide a natural deterrent to cats moving into the boundary hedgerows / treelines.

### 4.3 Habitat Compensation

#### 4.3.1 Habitat Replacement

The permanent loss of approximately 2830 m<sup>2</sup> of habitat will be compensated for through the reinforcement of the existing hedgerows / tree lines on site and the planting up of areas beneath retained trees (as they have TPOs) with shade tolerant native shrubs (see **Fig 8**). Species that will be included within more light exposed areas include (reflective of those found on site):

- Hazel (*Corylus avellana*)
- Hawthorn (*Crataegus monogyna*)
- Blackthorn (*Prunus spinosa*)
- Holly (*Illex aquifolium*)
- Wild Privet (*Ligustrum vulgare*), and climbers such as
- Dog Rose (*Rosa canina*) and Honeysuckle (*Lonicera periclymenum*).

The areas beneath the retained TPO trees will need to make use of species more tolerant of shady conditions and should therefore include the following:

- Alder Buckthorn (*Frangula alnus*)
- Common Broom (*Cytisus scoparius*)
- Gorse (*Ulex* spp)
- Field Maple (*Acer campastre*)
- Guelder Rose (*Viburnum opulus*)
- Wayfaring Tree (*Viburnum lantana*)

Planting density will seek to achieve a minimum of 4 plants / m<sup>2</sup>.

Based on the calculations, it is anticipated that the compensatory planting will total 2460 m<sup>2</sup>. Although this represents a minor deficit of 370 m<sup>2</sup>, it is not considered that this would have an adverse impact upon the local Dormouse population viability (due to the extensive amount of habitat located within the wider landscape).

***NB All shrubs/trees used for the planting will be of at least a size of 90 – 120 cm bare root plants with 1 in 50 plants used a standard tree (250 cm minimum height). Native climbers will be planted as required and favourable to the planting arrangements of the other shrubs/trees. The use of spiral guards and canes will be included to protect new plantings. Planting will aim take place during the first late autumn-winter period available after the EPS licence has been granted to allow adequate time for establishment. It has also been confirmed by the arboricultural consultant that planting under existing trees will not impact upon roots provided it is done using hand tools.***

**Figure 8.** Proposed site / landscape plan. The areas shaded in green will be targeted with shade tolerant native shrubs and the red areas species more suited to higher levels of sun exposure.



## 4.4 Post Development Management and Site Safeguard

### 4.4.1 Responsibility

The newly created habitats (as per **Fig 8**) will be managed for a minimum period of 12 months by the developer post completion of development, covering the first part of the establishment period. Ownership / management responsibilities for the POS will then be transferred to a management company (yet to be appointed).

### 4.4.2 Management on Newly Planted Areas

#### General Notes

- Control of grass and weed species that may compete with planted trees (either spraying or mulching)
- Replacement of dead stock
- Largely non-intervention of trimming or reduction in the first 5 years of new planting to encourage establishment and fruiting. Any spiral guards and canes will be removed in years 3-5 dependent on establishment levels.
- Any plants that are removed, die or become seriously damaged or defective within five years of planting shall be replaced like for like in the next planting season.

### 4.4.3 Protection of Habitats

The newly planted habitats associated with the TPO trees (as per **Fig 8**) will be protected via their inclusion within the sites POS and the edges of these area marked with a wooden knee rail and signage to keep new residents out. It will also be necessary aim to ensure the retained boundary habitats are not included within the available garden areas of the new dwellings (where they may be cut down / back) and so the rear extents of the gardens will not include any of the existing shrubs (and will be fenced off so as to not allow access). The new owners will also be provided with information leaflets outlining the presence of Dormice within the boundary habitats, the legal protection they and their habitat is afforded as well as providing some general information on the species ecology (text to be informed by an ecologist).

## 5.0 REFERENCES

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