



Ecological Mitigation Strategy

Land east of Wandley's Lane
Fontwell, West Sussex



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LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date. This report provides a snap shot of the species that were present at the time of the surveys only.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

- 1.1 The Ecology Partnership was commissioned by ECE Architecture/Welbeck Land to carry out ecology surveys on land to the east of Wandleys Lane, Fontwell, West Sussex, BN18 0QR. The initial preliminary ecological appraisal (PEA) was carried out in April 2017, which identified the potential for a number of protected species to be present on site and further surveys were recommended.
- 1.2 Throughout the course of 2017, The Ecology Partnership carried out surveys and made assessments for the following species: bats, dormice, great crested newts and reptiles. The results of these surveys and recommended mitigation measures are summarised within this report.

Site Context and Status

- 1.3 The site lies to the east of Wandleys Lane in Fontwell, West Sussex (SU 95648 06681). The site covers approximately 6.98ha and consists of grassland fields with tree lines, hedgerows and a woodland edge. The surrounding area consists of medium-density housing, agricultural land and woodland. Wandley's Copse, an ancient woodland, lies along the southern boundary of the site. The aerial photograph below (Figure 1) shows the site and its immediate surroundings. The red line depicts the approximate site boundary and survey area.
- 1.4 The current plans for the site are to build up to 157 residential dwellings with landscaping, open space and access provision (Figure 2).



Figure 1: Approximate location of the red line boundary



Figure 2: Latest plans for the development

2.0 Bats

Survey Results

- 2.1 There were two buildings along the northern boundary of the site which were internally and externally inspected for their roosting bat potential during the PEA in April 2017. They were both considered to have negligible roosting bat potential due to their construction materials, their open and exposed nature and/or a lack of access or suitable crevices for roosting.
- 2.2 At the same time, the trees along the boundaries of the site were also inspected. Three mature oaks dotted around the site were considered to have low roosting bat potential, due to the presence of holes, cracks in the limbs or dense ivy cover. It was recommended that these trees be retained and sufficiently buffered from the development.
- 2.3 Bat activity transect surveys were recommended due to the site's location, its linear features, the presence of ancient woodland along the southern boundary and the possibility of rare species in the local area, particularly barbastelles. One transect per season was considered appropriate along with automated surveys. The surveys were carried out in May, July, August and September 2017 with one transect route and two Anabat express locations along the northern and southern boundaries.
- 2.4 The surveys highlighted the use of the site by several different bat species. Across all surveys, the highest frequency of calls recorded were made by common pipistrelles. Soprano pipistrelles, Nathusius' pipistrelles, serotines, noctules, Leisler's, brown long-eared bats, Myotis and barbastelles were also recorded at much lower rates. It was considered that the pipistrelle and brown long-eared bats were using the site for foraging purposes whilst the other bat species were only making brief passes and commuting through.
- 2.5 Barbastelles are an Annex II (Habitats Directive) species and there are three Special Areas of Conservation (SAC) within 10km of the site which are known to be important

for barbastelles. It was considered possible that the barbastelles visiting the site were travelling from these SACs or roosting in nearby woodlands, although given the low number of calls recorded, it was not deemed likely that they were roosting in Wandley's Copse adjacent to site. Despite the low number of passes, it is known that barbastelles are spread thinly over the landscape and it was recommended that this species still be considered within the design of the scheme.

Mitigation and Enhancements

- 2.6 Since the buildings on site were considered to have negligible roosting bat potential, they can be demolished without further consideration for bats. However, three mature oaks were considered to have roosting bat potential and should be retained within the scheme. They should also be buffered from lighting and this is discussed further below. Any mature trees allocated for removal should be checked for their roosting bat potential by a suitably qualified ecologist prior to removal.
- 2.7 The tree lines and hedgerows along the boundaries of the site have been shown to be used by a range of foraging bats and therefore should be retained and enhanced where possible. Oak trees are of particular importance since they support a wide range of invertebrate prey for bats and should be sensitively managed to ensure their longevity. Any trees which are to be removed, for example to create access routes along the northern boundary, should be replaced elsewhere on site with native species such as oak, hazel, beech, cherry, hornbeam or rowan.
- 2.8 Surveys demonstrated that the ancient woodland edge is an important foraging area for bats on site and a buffer zone of between 15-19m is to be maintained between this habitat and the development. There are plans to plant this area as an extension to the woodland and this should be done in such a way as to provide structural and species diversity using native species only. A graded profile with mixed habitats should be created to provide different niches and should include succession from grasslands to herbs to shrubs and trees, all of which cater for different invertebrate species and thus increase potential prey for a range of bat species.

- 2.9 Additional planting has also been recommended along the boundaries of the site, particularly where there are gaps (see Appendix 1). A combination of native trees, shrubs and herbaceous plants with value to wildlife should be used to create a diversity of structure, age and species and thus different opportunities for a wide range of invertebrates. Hedgerows can be supplemented with species such as hazel, field maple, elder, privet, dog rose and dogwood. Shade-tolerant wildflower seeds can be sown along the base of the hedges whilst leaf litter can be left to accumulate and common nettles and brambles left to grow.
- 2.10 Dead wood is present along the boundaries of the site and should be retained and incorporated into log piles. This is a valuable habitat for a range of invertebrates, including saprophytic insects such as beetles that noctules and serotines forage for. Flowering climbers, such as clematis or honeysuckle, can also be planted around log piles to provide additional nectar sources.
- 2.11 The latest plans for the site include the creation of three new ponds. These can be planted to enhance opportunities for invertebrates but care must be taken to ensure that aggressive alien species are not accidentally introduced. Different plants occur at different depths in a pond and so banks with a stepped gradient are best to increase biodiversity.
- 2.12 To enhance the local bat population and provide roosting opportunities within the new development, it is recommended that integrated bat boxes/tubes be incorporated into the structure of the new buildings (Figure 3). The bat tubes should be inserted as high up as possible in the brickwork. Habibat, in association with the Bat Conservation Trust, provide a range of boxes which are unfaced for render or designed to match the brickwork of the building (Figure 3).

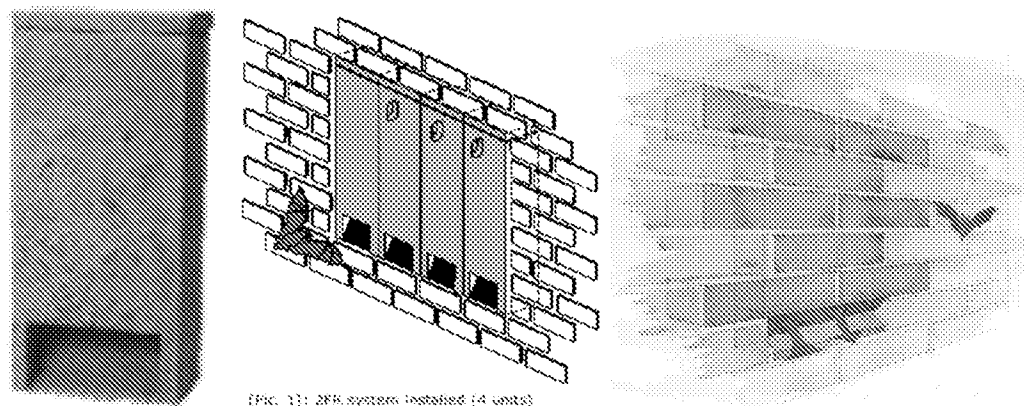


Figure 3: Bat tubes incorporated into the wall of a building to provide roosting space

2.13 Additional roosting opportunities can be provided by hanging bat boxes on mature trees or buildings around the site. The number of boxes which should be hung around the site is dependent on the number of tubes integrated into buildings. A minimum of six boxes is recommended using a combination of:

- Schwegler 2F Bat Box – These boxes are attractive to small bats such as pipistrelles and long-eared bats and can be hung on trees (Figure 4).
- Schwegler 2FN Bat Box – This is slightly larger than the 2F and provides opportunities for the larger bats such as noctules. These should be hung on mature trees.
- Schwegler 1FD Bat Box - This box has been designed specifically for smaller bats and provides opportunities as a maternity roost (Figure 4).
- Schwegler Improved Cavity Bat Box – this is designed for cavity-dwelling species such as brown long-eared bats.

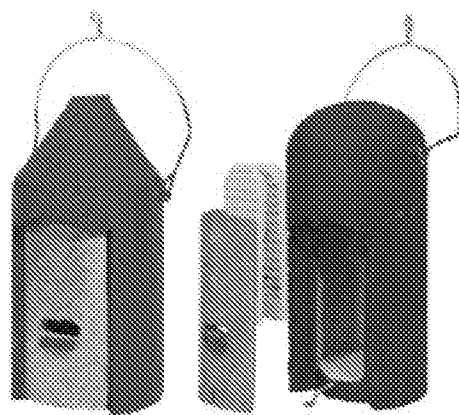


Figure 4: Schwegler 2F (left) and 1FD (right) bat boxes

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- 2.14 As a number of bat species have been shown to use the site, a sensitive lighting scheme is essential. Any new lighting on site should only be installed if there is a significant need and must be directed away from the tree lines and hedgerows along the edges of the site in order to maintain 'dark corridors'. Lighting should also be aimed away from any potential roosting sites such as bat boxes/tubes. Planting or man-made structures required within the build can be used to form barriers against light. Lighting should be hooded or baffled to ensure minimal light spillage. Lamps of greater than 2000 lumens (150W) must not be installed. Low-pressure sodium lamps or high-pressure sodium should be used instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics.

3.0 Dormice

Survey Results

- 3.1 During the PEA, the site was found to support suitable dormouse habitat in the form of the ancient woodland edge, hedgerows and tree lines. These features were considered to be relatively species-rich and connected to other areas of suitable habitat off-site, including an area to the east with numerous records of dormice. Therefore, further surveys were recommended.
- 3.2 A total of 50 dormouse tubes were established along the boundaries of the site in May 2017 and checked once a month from June to November 2017. Evidence of dormice was found in September, October and November 2017. At least four adult dormice and their nests were found within tubes in the southeast corner of the site. In addition, another three empty dormouse nests were also identified in the southeast corner as well as one partially constructed nest along the northern tree line (Figure 5).



Figure 5: Summary of adult dormice (red circles) and empty dormouse nest (yellow) locations found on site in 2017

Mitigation and Enhancements

- 3.3 Since dormouse presence was confirmed on site, works which would involve the loss of habitat cannot proceed without a dormouse mitigation licence from Natural England. This will include the creation of two new access routes along the northern boundary of the site since a partial dormouse nest was found there and it is well connected to the tree lines along Wandley's Lane. A licence can only be applied for once planning permission has been granted and all licensable works should be carried out under the supervision of a suitably qualified licensed ecologist.
- 3.4 Once the licence has been awarded, vegetation clearance should be carried out in September and October since this is the time of year when dormice are least sensitive to disturbance, prior to hibernation and after young have dispersed. All site operatives involved in habitat clearance works will receive a tool box talk by a suitably qualified ecologist. If a dormouse is encountered at any time, works will be halted pending consultation with the suitably qualified ecologist.

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- 3.5 To compensate for any habitat loss and to provide new habitat on site for dormice, it is recommended that new hedgerows and tree lines be planted along all boundaries, particularly where there are gaps (see Appendix 1). This will help to improve habitat connectivity across the site for a range of species including dormice. Planting should use species which provide food sources for dormice throughout the year, including hazel, oak, honeysuckle, sycamore and wayfaring tree. Bramble should also be left to grow where possible as it is an important food source for dormice.
- 3.6 It is considered that whilst some habitat loss and fragmentation will occur, the most significant impacts from the development would be those associated with domestic cats and increased recreational pressure on the ancient woodland habitat. Therefore, mitigation is focused on reducing these impacts.
- 3.7 Plans for the site already incorporate a 15-19m buffer between the development and Wandley's Copse. A buffer zone should also be implemented along the boundary areas where dormice and their nests have been found, which includes the eastern and northern tree lines. It is recommended that several lines of additional planting within these buffer zones be implemented to provide a natural fence line. Species which should be planted include holly, hawthorn, blackthorn and dog rose. Bramble should also be left to grow. The use of thick thorns in the planting scheme will provide dormice protection from pets such as cats and dogs. Overall, two parallel hedges of thorny species should be planted along these edges with a hedgerow of beneficial species (see hedgerow species above) between them and the woodland. This planting should be approximately 6m wide to provide an effective barrier and this needs to be taken into account with regards to the siting of SUDS ponds and the pumping station proposed in the southeast corner. The recommended thorny planting can be incorporated into the successional planting recommended for bats.
- 3.8 Prior to works commencing, it is recommended that dormice boxes be erected within Wandley's Copse, if possible. Permission from the landowner will be required but these would aid dormice in finding new safe nesting areas and allow them to adjust to the modified habitats on site. Boxes can also be put up in areas of suitable habitat on site and

they will help to increase the carrying capacity of the habitats on and off site. They should be established at a variety of heights, but above standard human reach to prevent interference and should be installed by suitably qualified personnel. It is recommended that at least 15 boxes are erected on and off site.

- 3.9 Post-development, both habitat management and dormouse population monitoring will be required as part of the Natural England licence. Habitat management and enhancement will include maintaining the hedgerows and tree lines, planting along the boundaries of the site as well as additional planting where required for the foreseeable future. Bramble should be left to grow where possible. Monitoring of the dormouse population will be carried out by a licenced ecologist twice a year (May and September) for three years following the completion of development works. Funding for both activities can be secured through a Section 106 agreement and a detailed method statement and management plan can be conditioned as part of the planning permission.

4.0 Reptiles

Survey Results

- 4.1 The majority of the site consists of grassland habitat but this was considered to be largely sub-optimal for reptiles due to the fact that it is either grazed or cut for hay. This keeps the grass from becoming long and tussocky, which is preferred by reptiles in terms of cover from predators and prey availability. However, the very edges of the site where grazing and cutting were restricted supported longer grassland and there was also scrub and ruderal vegetation around the buildings in the north as well as log, brash and rubble piles which could act as hibernacula. Therefore, further surveys were recommended.
- 4.2 Reptile mats were placed along the very edges of the site on 8th May 2017 and seven survey visits were carried out between 15th May and 7th June 2017. Over the survey period, a peak count of six adult slow worms and one adult grass snake was recorded, along with two juvenile grass snakes. This means there is a 'good' population of slow

worms and a 'low' population of grass snakes on site and that a mitigation strategy is required to ensure that no reptiles are harmed by the development (see further below).

- 4.3 The reptiles were found at various points around the site, but were concentrated along the northern and eastern boundaries (Figure 6).



Figure 6: Location of slow worms (yellow circles) and grass snakes (red) found on site in 2017

Mitigation and Enhancements

- 4.4 In order to move reptiles outside the construction zone and ensure that individuals are not harmed, a reptile translocation needs to be carried out. Prior to this, a receptor area needs to be created and enhanced so that reptiles can be moved here. A suitable receptor area could be made within the grassland area to be retained along the western boundary of the site (see Appendix 1). The grassland should be left to grow and refugia and hibernacula should be created in the form of log and rubble piles. This area should be sufficient for the reptile population estimated from the surveys on site, however if larger

numbers of reptiles are found during the translocation process, another off-site receptor area may be required.

- 4.5 It is considered that only the reptile receptor area needs to be fenced off since enhancement planting needs to be carried out along the boundaries of the site. Therefore the reptiles can be moved and contained within the receptor area whilst the rest of the site can be made unsuitable once the translocation is complete. The reptile fence will be constructed following the standard below (Figure 7).

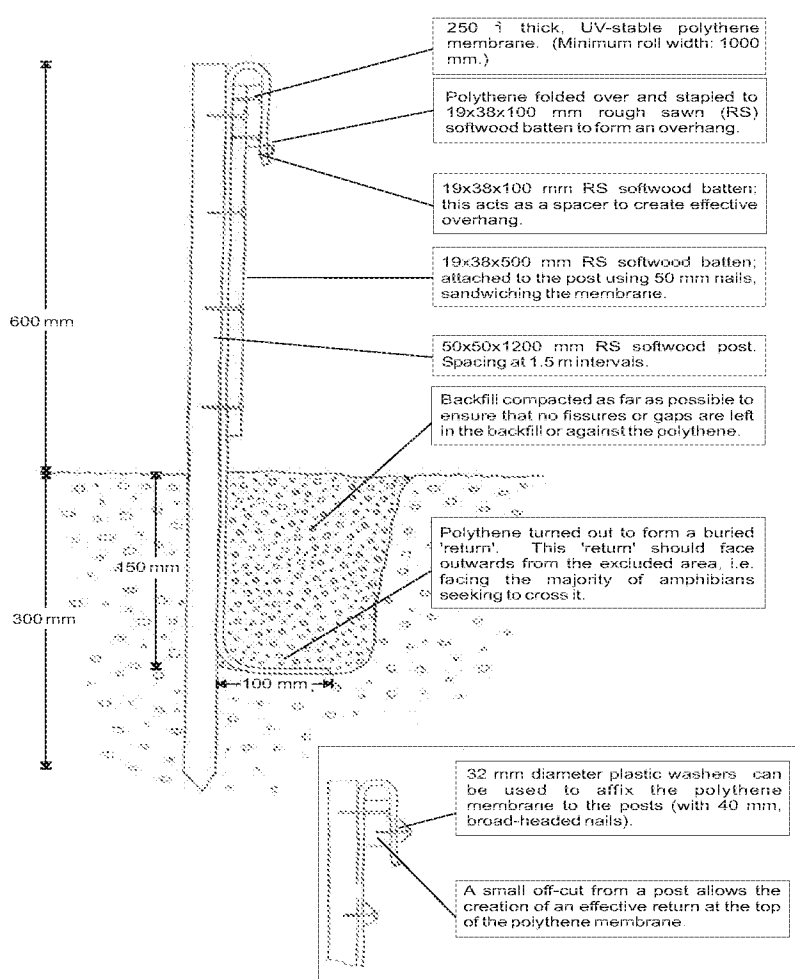


Figure 7: Fence line standards

- 4.6 With the exclusion fence set-up and the receptor site ready, the rest of the site can be trapped intensively for reptiles. Artificial refugia for the reptiles would be set out in a density of at least 50 refugia per hectare of suitable habitat (HGBI guidelines 1998) and

allowed to bed in. Trapping will take place in optimal weather conditions, between March and October (inclusive) and for a period of at least 90 days or until there are 5 consecutive no reptile-catch days.

- 4.7 Once the trapping has been completed, or that there are 5 no catch days, the grassland will then be strimmed to 150mm, checked, and then finally strimmed down to ground level. This will be undertaken under ecological supervision. The arisings can be placed in several compost heaps within the retained habitat and added to hibernacula in the receptor area, providing good habitat for breeding slow worms and grass snakes.
- 4.8 Following strimming, the soil will need to be sensitively removed under ecological watching brief. A finger tip search will be carried out and then the soil can be slowly raked through with a toothed bucket. Any reptiles found will be caught and moved before the soil can then be completely removed.
- 4.9 For the final stage of the translocation process, any natural reptile refugia will need to be dismantled by hand or using sensitive machine work under close supervision of an ecologist.
- 4.10 Once the translocation is complete, the reptile fence around the receptor area should be retained until construction has finished to prevent the translocated reptiles venturing on to site. This will also aid in preventing machinery and works from entering the receptor area. Therefore, the fencing should be maintained to a high standard and will be periodically checked by an ecologist until it is ready to be removed.
- 4.11 To enhance the site for reptiles post-development, understorey planting is recommended with species such as hawthorn, blackthorn, honeysuckle and hazel, along with shrubs such as dog rose, holly and dogwood. The receptor area should be maintained as a tussocky wildflower meadow which is cut only once a year so as to provide suitable habitat on site for reptiles and other wildlife, such as invertebrates and birds. This can be planted with species of value to wildlife and appropriate seed mixes can be purchased from native species stockists.

- 4.12 It is also recommended that log piles are created for use as refugia by reptiles, amphibians, small mammals and invertebrates (Figure 8). They should be placed in sunny locations (where they can dry out) and within existing vegetation such as hedgerows, woodland edges and areas of scrub so that there is cover immediately adjacent. They should also be located away from areas of high public access to prevent disturbance, collection or arson. If there is a risk of this, they can be partially buried in the ground or anchored with wire. Such piles should contain a mixture of log sizes and shapes with some small-diameter material to create a diverse structure. Leaf litter can be added and planting around the log piles with species such as honeysuckle or clematis can also add value.



Figure 8: Log piles can be created within the edges of the site or in the retained habitats on site

5.0 Great Crested Newts

Survey Results

- 5.1 There are no ponds present on site but four were identified within 250m of the red line boundary (Figure 9). Of the ponds that could be seen from the site boundary during the PEA, pond 1 was assessed as having average habitat suitability for GCNs whilst pond 4 was calculated as poor. Ponds 2 and 3 were not accessible at the time of the survey as they are located on private property.
- 5.2 Previous GCN surveys were carried out by FCPR for a neighbouring development in 2014. These surveys included ponds 2, 3 and 4 but it appears pond 1 may not have yet

been created since it was not surveyed and satellite imagery shows it appearing some time between 2013 and 2015. Access was not granted to survey pond 2 and pond 3 was not present, meaning it may have been dry. Pond 4 was surveyed using bottle trapping, torching and egg searching but no GCNs were found over four visits.



Figure 9: Location of ponds within 250m of the red line boundary

- 5.3 The site was considered to contain largely sub-optimal terrestrial habitat for GCNs and there are no records of GCNs within 2km of the site over the last 10 years. However, given the close proximity of the ponds to site, if any of the ponds were used by breeding GCNs then the development would likely result in an offence according to the Natural England licence risk assessment. Therefore, eDNA surveys were recommended as a precautionary approach but, unfortunately, they could not be carried out before the June 30th deadline.
- 5.4 The suitability of the ponds themselves for GCNs is questionable. Pond 1 was only created in the last 2-4 years and may contain fish, reducing the likelihood of GCNs finding and using this pond. According to satellite imagery, pond 2 was created

sometime between 2005 and 2012 suggesting that this is also a recently created pond. Pond 3 was not present in 2014 suggesting that it regularly dries up, reducing its suitability for breeding GCNs. Pond 4 appeared to be used as a duck pond during the PEA with little emergent vegetation.

- 5.5 Pond 4 was surveyed in 2014 (by FCPR) but no GCNs were found, which was to be expected given that there are no GCN records within 2km of the site from the last 10 years. With a lack of historical evidence of GCNs in this area, it would be necessary to look at other ponds in the surrounding area and connective habitat to gauge the likelihood of GCN presence. The only other ponds close to the site lie to the east on the other side of West Walberton Lane, which would act as a barrier to dispersal.
- 5.6 The suitability of the surrounding terrestrial must also be considered. The proposed development is largely restricted to the grassland area on site, which is regularly cut for hay and grazed by sheep. This makes it largely unsuitable for GCNs due to the lack of refuge and cover from predators. Research has identified that GCNs have a higher affinity to wooded areas as opposed to grassland. Woodland habitats present varied structural habitat and provide both shelter and humid microclimates to a much greater extent than grassland, especially managed grassland. Newts use old woodland stumps and piles of old leaves as damp refuge but also take advantage of the heat produced from decomposing plant materials. These habitats are not found on managed grassland habitat. As such, it is reasonable to assume that any GCNs that may be present would be largely using the tree lines and hedgerows which extend around the site. These are being maintained within the development.
- 5.7 Research has also found that newts can travel varying distances. Movement and activity of newts from ponds depends on the surrounding habitat. If local refuges and food are abundant in habitats close to the pond, then newts are likely to remain in this area exploiting such resources. When considered the four off-site ponds, it is considered likely that any GCNs that might be present would use the hedgerows and nearby woodland as opposed to the grassland on site and that surrounding ponds 1, 2 and 3. It should be noted that the grassland around pond 1 is regularly mown as it is part of a

residential garden and the grassland around pond 3 is regularly grazed by horses and therefore kept very short.

5.8 The proposed development does not affect any ponds, does not result in the isolation of one pond from another and does not result in the isolation of a breeding pond from suitable terrestrial habitat. The edges around the site provide opportunities to move around the site and into the wider landscape and these corridors will be further improved post-development. The development is confined to the sub-optimal grassland habitat on site.

5.9 The above should therefore be considered when assessing developments in terms of their potential to cause an offence under legislation. Indeed, Natural England state in their licence method statement that: *“NE is concerned about the trend for increasingly risk averse mitigation for several reasons. Primarily, there is no legal need, and little benefit to GCN conservation, in undertaking mitigation where there are no offences through development. Even where there technically is an offense, such as the destruction of a small, distant area of resting place habitat, or even killing low numbers of newts, it is arguable that impact beyond the core areas often have little or no tangible impacts on the viability of populations. Mitigation in such circumstances is of questionable value in conservation terms. There are, however, substantial costs: developers delay projects and spend large sums on mitigation. Sometimes the mitigation project itself has environmental costs, especially when it entails substantial lengths of newt fencing. In some cases long newt fences are employed with no justification. Natural England wishes to see newt fencing used more appropriately i.e. only where there is a reasonable risk of capturing, containing and/or excluding newts”.*

And furthermore, *“Natural England wishes to see mitigation planning shift away from such a highly risk adverse starting point. The domestic legislation protecting GCNs arises largely from the Habitats Directive which has a central aim to restore scheduled species to a favourable conservation status. A more appropriate approach to mitigation, addressing tangible impacts on populations whilst giving lower priority to negligible effects, is consistent with the aims of the Directive.”*

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- 5.10 Considering this, no breeding ponds have been found on site and the ponds in the wider area will not be directly affected by any development works and are not to be lost. The development results in some terrestrial habitat loss, however this is largely suboptimal and the tree lines and hedgerows are being maintained. These habitats are not isolated or fragmented within the landscape and therefore the natural range of any potential GCNs in the area will not be reduced by the proposals. The development would therefore not impact the ability of any GCNs in the local area to survive, breed, reproduce, rear young or migrate nor would it significantly affect the local distribution or abundance of the species.
- 5.11 With regards to further surveys, there is no guarantee that access will be granted, especially since access was denied to pond 2 previously in 2014. If this is the case, there is no other method for surveying whether GCNs are present in these ponds or not. The use of terrestrial surveys is considered to be difficult. Indeed, the GCN mitigation guidelines (2001) state: *"Determining population size class by sampling in terrestrial habitat distant from the pond is fraught with practical and interpretative difficulties, and is therefore not recommended."* Furthermore, *"It would be futile to attempt to comprehensively assess terrestrial habitat use through survey unless several years of intensive studies were undertaken."*
- 5.12 Finally, it is important to draw attention to the duty of the Local Planning Authority (LPA) with regards to protected species. Several legal cases are noteworthy in this respect and must be considered in relation to the site, the knowledge and survey effort undertaken as well as the master plan.
- 5.13 Morge (2011) Supreme Court did not make comment about survey requirements and that the responsibility of the planning committee is *"only to have regard"* for protected species. LPAs should only refuse planning permission if (i) there would be a breach of article 12 (of the Habitats Directive) and (ii) that a licence would be unlikely to be granted. In the more recent case of *Prideaux vs Bucks CC* (2013), the High Court states that the *"LPA does not have to carry out the assessment that NE does when deciding whether there would be a breach of Article 12 or whether a licence should be granted"* and *"if a proposed*

development is found acceptable when judged on its planning merits, planning permission should be given unless article 12 (1) is likely to be offended and it is unlikely to be licensed."

- 5.14 Cheshire East vs Rowland Homes (2014) confirmed that following Morge was sufficient, i.e. planning permission was granted without any protected species surveys as the site had "*plenty of space*". Whilst this ruling is considered to be incongruent with Circular 06/2005, it is European Protected Species (EPS) case law which is considered to be the most relevant in terms of interpretation of the planning system. Finally, in the case of Barr vs North Somerset Council (2015), the court states that LPAs can rely on expert evidence that there would be no impacts predicted on protected species, even with survey data deficiencies.
- 5.15 These cases have been identified to demonstrate that the recent survey effort from 2014 by FCPR, the desk based assessment (no data of GCNs within ten years) and the details of the mitigation measures proposed (see below) are sufficient in order to make a robust and informed consideration of the protected species involved on the site.
- 5.16 It should also be highlighted that the proposals for the site would not result in a breach of Article 12 Habitats Directive in terms that a licence would not be granted (under Article 16) if indeed GCNs were indeed found. The strict protection measures adopted under Article 12 should aim to fulfil the main objective of the Directive by contributing to the maintenance or restoration, at favourable conservation status, of Annex IV(a) species while taking into account economic, social and cultural requirements and regional and local characteristics.

Mitigation and Enhancements

- 5.17 Whilst it is considered unlikely that GCNs are present on or surrounding the site, since surveys could not be carried out, a precautionary approach should be followed in order to prevent any harm to GCNs that may be present.

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- 5.18 Prior to the commencement of works on site, a reptile translocation is required since a 'good' population of slow worms and a 'low' population of grass snakes was found. This will require the erection of reptile fencing around the reptile receptor area, which will be done under the supervision of an ecologist who can check for GCNs in addition to reptiles during installation. The trapping and translocation of reptiles on site will then run for at least 90 days or until there are 5 consecutive no reptile-catch days between March and October (inclusive) in optimal weather conditions. At the same time, carpet tiles can also be distributed within the translocation area which GCNs have been shown to use as refuges. These can be checked alongside the reptile mats. In the unlikely event that GCNs are found at any point during the translocation process, consultation with a licenced ecologist will be required.
- 5.19 Once the trapping period is complete, the clearance of the site can follow the same protocol as that for reptiles. The grassland should be strimmed and the soil sensitively removed under ecological supervision. Any potential hibernacula will be searched and moved by hand or using sensitive machine work.
- 5.20 During construction work, construction and demolition materials, including skips and pallets, should be stored on hardstanding or an area of unsuitable habitat where possible and elevated off the ground. This is so that no features are created that any GCNs could potentially use as a refuge.
- 5.21 When trenches and holes are dug, these should not be left open overnight where possible since a whole range of animals may get trapped in vertical-sided trenches. Where there is a risk of this occurring, the holes should be refilled or planks of wood should be placed so that any trapped animals may use these to escape.
- 5.22 Post-development, a number of enhancements can be made for the benefit of GCNs and other amphibians. Plans include the maintenance of buffer zones along the edges of the site, some of which are to be planted with successional habitats for dormice whilst other parts are to be maintained as a wildflower meadow for reptiles. Both habitat types will be beneficial for GCNs and amphibians since the grassland would provide foraging and

commuting opportunities whilst the extension to the woodland would provide refugia and a damp microclimate. This strip of protected and enhanced habitats along the boundaries of the site should then be managed appropriate post-development to maintain its suitability as a wildlife corridor for amphibians and other animals. A detailed management plan can be conditioned as part of the planning permission. This corridor would help to provide connectivity between the off-site ponds to the southwest with ponds to the east since at the moment, there is limited connectivity due to the poor terrestrial habitat on site.

- 5.23 Recommendations also include hedgerow planting along the edges where there currently are none and enhancement planting along the existing hedgerows and tree lines to provide better corridors around the site. Planting at the base and edges of hedgerows would also improve these corridors and should use herbaceous plants and bulbs which attract bees, butterflies and other insects as well as providing ground cover for smaller animals. Post-development, the hedgerow edges should be managed to encourage rough tussocky vegetation which would provide cover, food resources and damp microhabitats; all of which are ideal for amphibians commuting around the site.
- 5.24 Log piles will be created as part of the reptile receptor area as well as within the woodland buffer strip. These would be beneficial for amphibians too as they provide moist, shaded refuges in which they can rest and hibernate. Fallen deadwood in the woodland buffer zone should be retained in situ post-development and would provide additional shelter.
- 5.25 In addition to the log piles, it is recommended that a rubble pile be created within the reptile receptor area as a refuge and potential hibernacula for both reptiles and amphibians. This should be made of stone, rock and clean brick rubble (with no cement residues). Whether it is placed above ground or dug into the ground is dependent on the drainage qualities of the soil since waterlogged hibernacula are best avoided. Examples of designs are outlined in Figure 10 below (Langton *et al.* 2001).

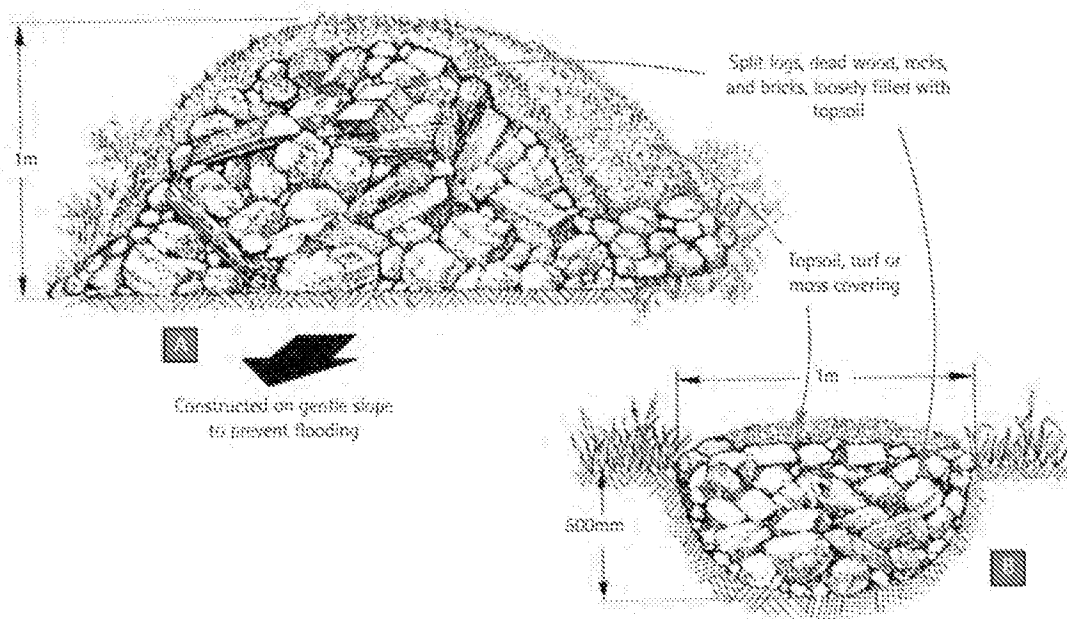


Figure 10: Examples of amphibian rubble pile refuges on impermeable (A) and free-draining (B) soils

6.0 Other Species

Badgers

- 6.1 No evidence of badgers, such as setts, latrines or snuffle holes, was found anywhere on site during any of the surveys. However, mammal paths were identified along the northern and western boundaries and it is considered likely that badgers use the site for foraging and commuting purposes. Whilst such habitat is not legally protected, safety measures can be taken to ensure no badgers are harmed during the development process.
- 6.2 It is recommended that any excavations and trenches associated with construction are either covered at night or supplemented with a means of escape for any badgers that may fall into the excavation whilst foraging. Any open pipes or conduits laid should be blocked off each night to prevent badgers from entering them. If possible, construction work should only take place between dawn and dusk with no late evening work to reduce possible disturbance.

Barn Owls

- 6.3 No evidence of barn owls, such as pellets, feathers or faecal splashing, was found in either of the buildings on site. Both buildings were considered unsuitable for roosting and nesting barn owls due to their open and exposed nature, the lack of suitable perches and the fact that they are too low in height, as almost all buildings in which barn owls roost or nest are 3m high or taller (Barn Owl Trust 2012). In addition, no trees were identified on site with holes big enough for barn owls to roost or nest in.
- 6.4 Barn owl foraging habitat is not legally protected but should be considered on developments with large grassland habitats. The grassland on site was considered to be sub-optimal for foraging barn owls due to the fact that it is grazed and mown for hay, which reduces prey availability. Since barn owls have large home ranges, it was not considered that the site would form a significant part of this range and therefore the development would not impact upon their favourable conservation status. Mitigation for this species was not considered necessary in this case, especially since the site is within 1km of a major road (A27). Instead, enhancements have been recommended which would increase the rough grassland edges on site.
- 6.5 It has been recommended that part of the southern and western boundary buffer zone be retained as a reptile receptor area (see Appendix 1). As such, the grassland will be maintained as a tussocky wildflower meadow. This will provide opportunities for small mammals as well as reptiles since minimal cutting to above ground level will allow a litter layer to develop. Hedgerow planting and enhancements have also been recommended along most of the boundaries on site with management including planting at the bases of the hedgerows and retaining rough edges. This will again increase opportunities for small mammals on site and in turn provide additional food sources for barn owls in the local area.

7.0 Overall Mitigation and Enhancement Strategy

Pre-Construction

Translocation and Destructive Search

- 7.1 Before any works can take place on site, a reptile translocation needs to be carried out. Prior to this, a reptile receptor area needs to be designated and prepared. It is recommended that the buffer zone in the southern and western portion of the site which is not being planted as an extension of the woodland be used as a receptor area (see Appendix 1). Reptile fencing should be constructed around the receptor area following the standard outlined previously. The rest of the site can remain unfenced since enhancement planting needs to be carried out along the boundaries. The whole site will be trapped and once five no-catch days have been reached, the rest of the site will be destructively searched and made unsuitable for reptiles. This will discourage any reptiles in the surrounding area from coming on to site during the construction phase.
- 7.2 Once the reptile fence has been installed under ecological watching brief, the receptor area needs to be enhanced before moving reptiles into the area. Since a hedgerow and enhanced boundary has been recommended along this edge, planting will need to be carried out at the same time the receptor area is being enhanced. Therefore, planting hedgerow saplings and understorey species can be carried out whilst also creating log and rubble piles within the fenced area. It is recommended that at least three log piles and one rubble pile are created in various locations to act as refugia and hibernacula (see Appendix 1). Species such as honeysuckle and clematis can then be planted around them to add value. The grass in this area should not be cut prior to enhancement works so that it can become long and tussocky prior to the start of the translocation. Wildflower seed mixes could also be sown to further increase the biodiversity of the area for reptiles and other species. These enhancements will also be beneficial for any GCNs in the area.
- 7.3 Once the receptor area is ready, the translocation can begin and will follow the methodology outlined below:

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- Reptile mats (1m² roofing felt tiles) will be placed within the trapping area at a density of at least 50 refugia per hectare of suitable habitat and left to bed in for at least seven days. At the same time, carpet tiles can be placed liberally around the site in case GCNs are present.
 - The mats on site will then be checked by an ecologist for reptiles for a period of at least 90 days. Any reptiles found will be caught and moved to the receptor area. This will continue until there are five consecutive days of no reptile captures. In the unlikely event that any GCNs are found, a suitably qualified ecologist should be consulted immediately.
 - Once cleared of reptiles, the development area can be destructively searched under ecological watching brief. A visual inspection and fingertip search of vegetation will be carried out by an ecologist before it is strimmed to 150mm above ground. The cut will be inspected again before the vegetation is then cut to ground level. Arisings can be added to log and rubble piles in the receptor area.
 - Sensitive soil removal can then take place under ecological watching brief. This involves running a toothed bucket through the topsoil and any reptiles found will be caught and moved by the ecologist. Once the ecologist is satisfied that the area is clear, the rest of the soil can then be removed.
 - Any potential refugia and hibernacula must be hand searched and sensitively removed under ecological watching brief.
 - Once vegetation and soil clearance is complete and the ecologist is satisfied, then development works can commence.
 - The fence line will be checked throughout the translocation process and whilst construction work is being carried out to ensure that it remains intact. Signs should be displayed detailing that the fenced area is a reptile receptor area and that machinery or equipment must not encroach on this area (see Appendix 2). Any damage to the fence line must be repaired immediately.

Building Demolition

- 7.4 As part of the clearance works on site following the reptile translocation, the buildings can also be demolished, especially due to the presence of scrub and ruderal vegetation

around them. It is considered that neither of these buildings are suitable for roosting bats or barn owls therefore they can be demolished without further consideration for these species. However, nesting birds such as swallows and swifts may be using them. Therefore, they should be checked by a suitably qualified ecologist before demolition. If nesting birds are found, then the demolition will have to wait until after the young have fledged.

Natural England Dormouse Mitigation Licence

- 7.5 A Natural England Dormouse Mitigation Licence can only be applied for once planning permission has been granted and conditions regarding ecology have been cleared. The licence application requires a lot of detail and therefore the exact plans for the access along the northern edge will need to be confirmed. These can then be incorporated into the application along with details about the mitigation to be implemented on site and the monitoring to take place post-development. Once the application has been sent, Natural England aim to issue a decision within 30 working days, depending on the volume of applications they have received.
- 7.6 Once the licence is granted, mitigation measures will need to be put in place as soon as possible prior to works starting. This will include the erection of dormouse boxes on and off site as well as the planting of the buffer zones along the boundaries where dormice have been found. The habitat clearance along the northern boundary can commence during the period outlined in the licence under the supervision of a licenced ecologist.

Enhancement Planting

- 7.7 Following the completion of the reptile translocation, it is recommended that the boundaries of the site be enhanced prior to the commencement of construction works. This allows the planted vegetation time to develop whilst building works take place and it also means that planting can take place when it has been confirmed that reptiles are no longer present.

7.8 The recommended planting regime includes:

- New tree and hedgerow planting along the northern boundary of the site (see Appendix 1) to improve wildlife corridors around the site for species such as dormice, reptiles, amphibians, small mammals and birds. It will also provide a buffer between the neighbouring gardens and the development. Species should be native and of value to wildlife such as oak, hazel, sycamore, wayfaring tree, rowan, elder, privet, field maple, hawthorn, blackthorn, dog rose, honeysuckle. The bases of the hedgerows can be planted with shade-tolerant flowering plants and should be sourced from native species-stockists.
- Buffer zone planting along the ancient woodland edge and eastern boundary where dormice were found. A buffer of up to 19m is to be maintained between the ancient woodland and the development and a narrower buffer is to be maintained along the eastern boundary along the length that dormice were found to be using. Both areas are to be planted within two lines of thorny hedgerow which includes species such as blackthorn, hawthorn, holly dog rose and bramble. In between a hedgerow of beneficial species (see above) will also be planted. This should be at least 6m wide.
- Along the woodland edge, the 6m triple hedgerow will be incorporated into additional planting which will create a succession of habitats. This means that there will be species-rich grassland habitat closest to the development followed by shrubs then the hedgerows and then tree planting to provide an extension to the woodland. Dormice favour early successional habitat and this planting scheme within the buffer zone will help to provide this. Only native species should be used.

7.9 The habitat enhancements along the northwest boundary can only be carried out once the Natural England licence has been granted and the habitat has been cleared to create the new access routes. New planting should then be undertaken as soon as possible and include species such as oak, hazel, sycamore, elder and wayfaring tree. Bramble should be left to grow where possible to provide a good understorey and additional food sources for a range of species, including dormice.

-
- 7.10 Whilst planting is taking place along the boundaries of the site, any deadwood present should be used to create log piles. These can be supplemented with logs from any tree removal works which take place when creating the new access routes. Species such as honeysuckle or clematis should also be planted around the log piles to enhance them further.

Habitat Maintenance

- 7.11 Before construction work begins, the boundary features which will have been enhanced should be protected using heras fencing to prevent the encroachment of people, equipment and machinery into these areas. This includes the buffer zones along the southern and eastern boundaries and the areas of new planting along the northeast and eastern boundaries (see Appendix 1). Signs should be displayed along all lengths of the fencing providing warnings to keep out and information about why these areas are being protected (see Appendix 2 for examples).

During Construction

Ground Works

- 7.12 The habitats within the construction zone will have already been cleared and the heras fencing erected to protect retained and enhanced boundary habitats prior to the commencement of construction work. Therefore, it is unlikely that wildlife will venture onto site. However, in the event that any animals did come on to site, there are a number of best practice guidelines which should be followed:
- Any excavations or trenches should not be left open overnight or should be covered or supplemented with a means of escape for any animals that may fall in.
 - Any open pipes or conduits should be blocked off each night to prevent any animals from entering them.
- 7.13 Evidence of rabbits in the form of burrows was found along the boundaries of the site, particularly the southern boundary. It is considered unlikely that any rabbit burrows

will be affected by the construction works since they are focussed along the protected boundaries. However, in the event that a burrow needs to be removed, this should be done sensitively by hand under ecological watching brief so as not to harm any rabbits that might be present. This is because the Wild Mammals Protection Act 1996 states that it is an offence to crush or cause asphyxiation to mammals.

Habitat Creation

7.14 At the start of construction works, bat boxes should be erected around the site on mature trees following the recommendations outlined previously (see paragraph 2.13). At the same time, bird boxes can also be erected to increase breeding opportunities on site. Recommended boxes include:

- Schwegler 1N Deep Nest Box – This box is used by a wide variety of small birds including robins, wrens and pied wagtails. It gives added nest protection from predators such as cats, magpies and jays. At least three should be hung within hedgerows and tree lines along the boundaries of the site.
- Schwegler 1B Bird Box – This general purpose bird box is suitable for many species. There are three different hole size options which cater for different species. At least five of these with a combination of different hole sizes should be hung within the woodland edge and tree lines on site at an angle that faces away from the prevailing wind.

7.15 In addition to the new opportunities provided by the boxes, it has been recommended that bat tubes be integrated into the new buildings (see paragraph 2.12). These should be incorporated into as many buildings as possible but particularly the houses along the edges of the site, for example next to the ancient woodland boundary which will be buffered from lighting and has been shown to be an important foraging and commuting route for bats. A booklet can be created for future home owners informing them of what the tubes are for and the legal protection surrounding bat roosting sites.

7.16 New gardens will be created as part of the scheme and these should be planted with species of value to wildlife. Shrubs and herbs help to provide understorey vegetation and a layering of habitats. Species which are recommended include those which produce

flowers and berries such as box (e.g. dwarf sweet box *Sarcococca hookeriana*), bilberry (*Vaccinium myrtillus*), various hebes and cotoneaster species. Herbs should include species which provide nectar opportunities for invertebrates such as lavender, jasmine, chamomile, fennel, oregano, evening primrose, thyme, mint and heather.

- 7.17 Additional habitats may be provided for species including birds and insects in the form of green walls. Green walls can be created by planting climbing plants in the ground and training these on fences or trellis. Alternatively, it is possible to create an instant green wall using established climbing plants rooted into containers and grown onto frames. Insect boxes can then be incorporated into the green walls. Species could include honeysuckle, clematis, climbing hydrangea and dog rose.
- 7.18 Newly formed areas of open space not protected as wildlife zones, such as the reptile receptor area and ancient woodland buffer, could be supplemented by integrating a variety of native plant species. Patches of bare soil can be sown with wildflower seed mixes to increase biodiversity and aesthetic appeal. Fruit trees, such as apples, pears, gages and damsons, could also be planted in open areas and in gardens as fallen fruit provides good foraging for badgers, hedgehogs and birds.

Lighting

- 7.19 A sensitive lighting scheme should be designed for the development due to the level of bat activity found on site and also to decrease the amount of light pollution that may affect other species. Recommendations include:
- Installing lighting only if there is a significant need;
 - Using low-pressure sodium lamps or high-pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics;
 - Directing light to where it is needed and avoiding light spillage;
 - Using baffled lighting where light is directed towards the ground;
 - Avoid putting lighting near treelines or hedgerows and angling light away from these linear features which are used by commuting and foraging bats;

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- Planting a barrier or using man-made features required within the scheme to form a barrier.

Post-Construction

Management

- 7.20 Habitat management post-development will be a requirement of the Natural England Dormouse Mitigation Licence. A detailed management strategy will be outlined as part of the licence application. This can be incorporated into a general management strategy for the whole of the site which can be conditioned as part of the planning permission. Activities will include maintaining the boundary and buffer zone habitats on site, additional planting where required, periodic grass cutting and wildflower meadow maintenance in the reptile receptor area.

Monitoring

- 7.21 Since a number of protected species have been found using the site, a monitoring scheme should be implemented post-construction. Monitoring of the dormouse population is a requirement of the Natural England licence. This will involve checking the dormouse boxes erected on and off site twice a year (May and September) by a licenced ecologist for at least three years. A reptile survey can also be carried out a year or two after completion to monitor the reptile population on site and to inform future management.

8.0 References

Barn Owl Trust (2012) *Barn Owl Conservation Handbook*. Pelagic Publishing, Exeter.

Bat Conservation Trust (2008) *Bats and Lighting in the UK – Bats and the built environment (version 2)*. Bat Conservation Trust, London.

Bright, P., Morris, P. & Mitchell-Jones, T. (2006) *The dormouse conservation handbook (Second edition)*. English Nature, Peterborough.

Bright, P. & MacPherson, D. (2002) *Hedgerow management, dormice and biodiversity (Report number 454)*. English Nature, Peterborough.

English Nature (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

Gent, T. & Gibson, S. eds. (1998) *Herpetofauna Workers Manual*. Joint Nature Conservation Committee, Peterborough.

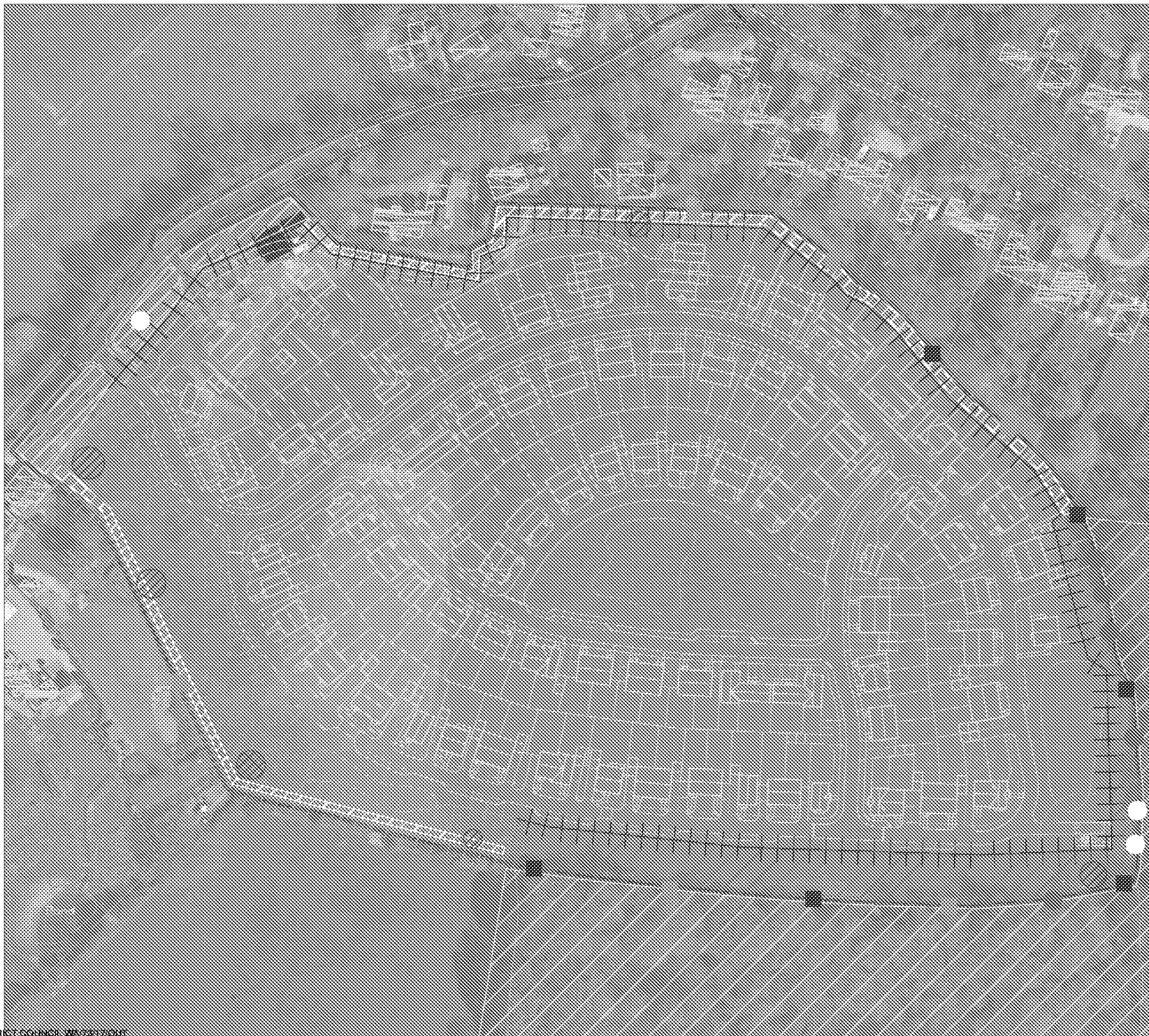
HGBI (1998) *Evaluating local mitigation/translocation programmes: Maintaining Best Practices and Lawful Standards*. HGBI advisory notes for Amphibian and Reptile Groups (ARGs). Herpetofauna Groups of Britain and Ireland, c/o Froglife, Halesworth.

Langton, T.E.S., Beckett, C.L. and Foster, J.P. (2001) *Great Crested Newt Conservation Handbook*. Froglife, Halesworth.

Mitchell-Jones, A.J. (2004) *Bat Mitigation Guidelines*. English Nature, Peterborough.

Natural England (2011) *Badgers and Development: A guide to best practice and licensing*. Natural England, Bristol.

Appendix 1: Mitigation and Enhancement Areas Map



KEY

-  Woodland
-  Buffer zone for ancient woodland and dormice with recommended thorny planting and maintenance of successional habitat
-  Buffer zone with recommended planting for dormice
-  Habitat to be cleared for new access routes under Natural England licence
-  Recommended new hedgerow and tree planting with rough grassland and herbaceous plant edges
-  Recommended reptile receptor area to be maintained as a tussocky wildflower meadow post-development
-  Reptile fence line
-  Log pile
-  Rubble pile
-  Protective heras fencing
-  Buildings to be demolished following nesting bird check
-  Adult dormice with nests found in tubes
-  Empty dormouse nests found in tubes
-  Recommended locations for bat boxes
-  Recommended locations for bird boxes
-  Red line boundary

Site: Land east of Wandley's Lane

Client: Welbeck Land

Title Drawing: Ecological Mitigation Strategy Map

Note: Drawing not to scale

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Appendix 2: Signage Examples

WILDLIFE PROTECTION ZONE

REPTILE RECEPTOR AREA

NO UNAUTHORISED ENTRY

NO STORAGE OF EQUIPMENT

NO MACHINERY

**ANY HOLES OR DAMAGE TO
FENCE MUST BE REPAIRED
IMMEDIATELY**

QUERIES SHOULD BE DIRECTED TO THE SITE ECOLOGIST

WILDLIFE PROTECTION ZONE

**PROTECTIVE FENCING MUST
NOT BE MOVED**

NO UNAUTHORISED ENTRY

NO MACHINERY

NO STORAGE OF EQUIPMENT

QUERIES SHOULD BE DIRECTED TO THE SITE ECOLOGIST

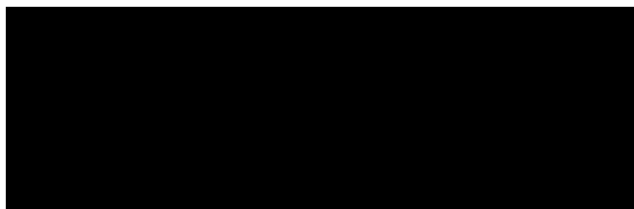
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