

11. [REDACTED]

11.1 Baseline Conditions

11.1.1 The work undertaken to inform the 2015 ES found that what had been classed as a main sett on the eastern side of Great Field Plantation was no longer so.

11.1.2 More recent monitoring checks were completed in November and December 2018. [REDACTED]

[REDACTED]

[REDACTED]

11.2 Conservation Objectives

[REDACTED]

11.3 Designs and Working Methods

Construction Phase

11.3.1 All retained woodland and hedgerow habitats will be fenced using Heras fencing or similar (see GA and Planting Plans). This will avoid the possibility of direct encroachment on principal [REDACTED]. The known [REDACTED] from the construction area and there is no likelihood of direct encroachment.

11.3.2 [REDACTED]

11.3.3 In addition, the potential exists for [REDACTED] to roam into areas where construction is underway and become trapped in trenches, excavate new [REDACTED] in piles of subsoil or disturb chemicals that may be being used for development.

11.3.4 Checks will be undertaken by an ecologist prior to the commencement of any works within the site to ensure no new setts have been established. This work will be updated on a monthly basis by an Ecological Clerk of Works (ECoW).

The site manager will be in regular contact with the ECoW during the construction period, to discuss any new excavations that may require earlier inspection.

- 11.3.5 In the event that a [REDACTED] is recorded the project ecologist would take a view as to whether a Natural England licence will be required to close it. This licence would be obtained from Natural England and appropriate mitigation measures implemented according to the particular requirements of the situation. There is no evidence to suggest that such a licence will be required at the time of writing.
- 11.3.6 All site personnel will be made aware of the potential presence of this species; this will form part of the site induction.
- 11.3.7 The following measures will be followed throughout the construction phase of development.
- All site personnel will be made aware of the presence of this species and the appropriate steps required to [REDACTED]
[REDACTED]
 - [REDACTED]
[REDACTED] therefore, during the construction process, all dug ground and loose soil will be levelled and compacted wherever possible. [REDACTED]
[REDACTED]
[REDACTED]
 - Any mounds of material will be regularly checked [REDACTED] especially before disturbance or movement;
 - Planks will be left in any uncovered trenches to [REDACTED]
[REDACTED]
 - Any open trenches will be checked at the beginning of each day, [REDACTED]
[REDACTED]
[REDACTED]
 - Tools and loose materials will be stored in an appropriate container in order to reduce the [REDACTED] coming onto site and injuring themselves;
 - No fires or chemicals should be left unsupervised anywhere on the site;
 - Any open pipework greater than 150mm outside diameter will be blanked off at the end of each working day to prevent [REDACTED] entering the pipework;
 - Driven piling work will be undertaken only following consultation with the project ecologist.

- 11.3.8 In the event that any suspected [REDACTED] [REDACTED] is observed during construction, work in the area will cease and the ECoW will be contacted for advice.

Operational Phase Mitigation and Enhancement

- 11.3.9 [REDACTED] are a common species throughout much of southern England. It is common for people using woodland and [REDACTED] to coexist with no significant disturbance. It is very likely that these will occur in the current case.
- 11.3.10 Nevertheless, as part of the enhancements for Great Field Plantation, conifers are to progressively felled and new understorey planting undertaken. Thorny species will be planted in the [REDACTED] to provide cover.
- 11.3.11 New foraging opportunities will be provided within the site, in particular within the Green Spine and Linear Park, where new areas of open green space will be created. Once established, this will offer enhanced foraging resources over the existing arable landscape, with a greater area of habitats to encourage invertebrates such as earthworms plus fruit-bearing trees and scrub.

12. BATS

12.1 Baseline Conditions

- 12.1.1 Bat activity surveys completed in October 2018 and April to June 2019 across the Redrow site have recorded a generally low level of activity. Areas shown to be of greater interest for bats are Great Field Plantation and Hedgerow H4, crossing the south of the site. Species recorded during the activity surveys include Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Noctule Bat *Nyctalus noctula*, Brown Long-eared Bat *Plecotus auritus* and Barbastelle *Barbastella barbastellus*. The results of the activity surveys completed by to inform the ES in 2014 and 2015 across the wider site recorded a similar assemblage.
- 12.1.2 Several trees with potential roost features were identified by in 2014, three of which were found to contain roosts. A single Pipistrelle species hibernation roost was identified within tree T28. Trees T44 and T49 were identified as having bat roosts but the species were not identified from eDNA testing. Nocturnal surveys concluded that T49 was used as a roost by Soprano Pipistrelle.
- 12.1.3 Activity surveys involving transects and static detector deployments are to continue for the remainder of the 2019 survey season. Previously identified bat roosts are to be resurveyed to update the baseline information.
- 12.1.4 The 2018/19 dataset, combined with the information from the outline ES, provides a robust baseline from which to assess the effectiveness of mitigation and enhancement measures. As far as possible, future monitoring surveys will replicate the approach taken for the 2018/19 work.

12.2 Conservation Objectives

<p>To avoid disturbance to bat foraging during construction.</p> <p>To avoid possible adverse effects on known bat roosts.</p> <p>To avoid effects on bat foraging during operation..</p>

12.3 Designs and Working Methods

Construction Phase Mitigation

- 12.3.1 During the construction period no lighting will be present at night on identified bat foraging routes, as shown in the *Lighting Strategy for Bats* produced for Condition 44. This will be the responsibility of the site manager. The Ecological Clerk of Works will be able to advise on the location of these features.
- 12.3.2 Retained trees with roost potential will be safeguarded using Heras fencing or similar (see GA and Planting Plans for location of fencing) and site personnel briefed on the presence of bats as part of the site induction.

New Habitat Planting

- 12.3.3 To compensate for the partial loss of hedgerows, additional native species planting will be provided throughout the green infrastructure and open space area greater than that which is to be lost, as shown on the GA and Planting Plans. The retained hedgerows will be included within the green linkages and will be 'gapped up' with native species; this will increase species diversity, strengthen the hedgerows and improve the corridor for foraging bats.
- 12.3.4 Management of the hedgerows will be undertaken in an ecologically sensitive manner to enhance the nature conservation value. Such management will include allowing the hedgerow to reach at least a height of 3m. Once reached the hedgerow can be 'topped out' to maintain the height or to suit circumstances, with a width of at least 1-2m; a proportion of trees within the hedgerow such as Oak and Field Maple will be allowed to mature into standard trees to provide nesting and foraging opportunities for local wildlife and a varied habitat structure; and grassland along the hedgerow base will be allowed to grow to provide a graduated sward height and habitat.
- 12.3.5 To compensate for woodland losses additional native species woodland planting (that of which will be greater than to be lost) are to be incorporated into the scheme (see GA and Planting Plans).
- 12.3.6 The attenuation features to be established will offer new foraging resources for bats once established. Seeding with dry and damp grassland mixes, and establishing marginal vegetation will encourage use by invertebrates and increase the foraging opportunities for the local bat population.

Dark Corridors

- 12.3.7 Across the site, dark corridors have been designed to ensure and incorporate habitats of value to bats for foraging, potential roosting and commuting into the wider area – see the *Lighting Strategy for Bats*.
- 12.3.8 Other lighting considerations will also be implemented during construction and incorporated into the development in order to ensure minimal light spill from the site. Lighting will be directed to where it is needed, to avoid light spillage, particularly along the hedgerow and woodland edges; buffer zones will not be illuminated; lighting that is incorporated into the development design will be of a type that has a low attraction to insects; any upward lighting will be avoided; and security lighting on properties backing on to sensitive hedgerows and woodland will be low wattage LED which will be provided on the properties at construction to forestall a future homeowner installing unsuitable lighting which could impact on bats.

Bat Hop-overs

- 12.3.9 In order to maintain the linkages and an area of darkness across the gaps created by the road access through the hedgerows, young plantation woodland and tributary corridor a 'hop-over' will be created. Details of the locations of the hop-overs and their specification in terms of planting are provided on the GA and Planting Plans. Hop-overs will be established early in the process.

Bat Boxes

- 12.3.10 The inclusion of a variety of bat boxes around the site on suitable trees, and particularly along the woodland edges will provide new potential roosting sites for bats within the local area. Boxes will be located in sheltered spots and placed at a height of at least three metres from the ground. Boxes will also be arranged around the site so that a number of different aspects are covered.
- 12.3.11 Illustrative locations of bat boxes are provided on Plans ECO4a to d; in practice the locations of the boxes will be determined on the ground by the Ecological Clerk of Works, who will ensure that the orientation and position of the boxes is appropriate, and that suitable trees are chosen.

12.4 Type and Source of Materials

- 12.4.1 Twenty Schwegler 2F Universal Bat Boxes, 20 Schwegler 1FF Flat Bat Box, and 5 Schwegler 1FW Hibernation Boxes (see Appendix 2) will be installed on suitable existing trees throughout the site.

12.5 Initial Aftercare and Long-term Management and Maintenance

- 12.5.1 Bat boxes will be checked periodically (once per year in March) for the first five years following installation, by a suitably experienced and licensed ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

13. OTTERS AND WATER VOLES

13.1 Baseline Conditions

- 13.1.1 No evidence of use by Otters or Water Voles has been recorded in the existing waterbodies across the Redrow site and the wider site, but these species are known to be present in the River Stour, and the Stour Brook south of the site.

13.2 Conservation Objectives

To avoid impacts on potential Otter and Water Vole habitat during construction.

To establish and enhance suitable habitat for Otters and Water Voles within the site, to encourage natural colonisation in future.

13.3 Designs and Working Methods

- 13.3.1 Prior to any works in the vicinity of suitable habitats within the site, a check survey for Otters and Water Voles will be undertaken by an ecologist. In the event that evidence of these species is recorded, consideration will be given for the need for a Natural England licence, dependent on the nature of the works proposed.

Fencing of Retained Habitats

- 13.3.2 All retained watercourses will be fenced using Heras fencing or similar (as shown on the GA and Planting Plans) to avoid possible encroachment. All site personnel will be briefed as to the importance of these areas for wildlife as part of the site induction.

Enhancements

- 13.3.3 Though there is no evidence of their presence within the site at the time of writing, Otters and Water Voles are known to be present within the locality and the development represents an opportunity to provide greater opportunities for the species.
- 13.3.4 The network of attenuation features to be established as part of the Linear Park and drainage strategy, as well as the retained and enhanced ditches across the site, will be a valuable new area of potential habitat for Otters and Water Voles, should they colonise the site.
- 13.3.5 The provision of wet grassland associated with the drainage strategy will provide suitable overland habitat for dispersal.

14. DORMICE

14.1 Baseline Conditions

- 14.1.1 No evidence of Dormice has been recorded by Ecology Solutions across the Redrow site in surveys completed in 2018 and 2019. A partial Dormouse nest was recorded in a survey tube in the south-east of the wider site in 2015 during surveys to inform the outline ES; no evidence was recorded in the Redrow site.

14.2 Conservation Objectives

To avoid potential killing or injury of any Dormice that may be present.
To establish and enhance suitable habitat for Dormice within the site.

14.3 Designs and Working Methods

Construction Phase Mitigation

- 14.3.1 Notwithstanding that no evidence of Dormice has been recorded in the Redrow site, the highly precautionary approach advocated by the ES Addendum has nevertheless been adopted in full. At the time of writing there is no requirement for a Natural England licence.
- 14.3.2 During the construction period all contractors will be briefed about the importance of the habitats within the site for the range of species that have been identified, and that care should be taken when conducting any works near existing natural features. All vegetation removal will have been predetermined at the full planning stages, and no additional losses would occur until the project ecologists have confirmed so.
- 14.3.3 Where site offices, material and vehicle storage are proposed, and where the phased development commences all natural habitats will be fenced off with an appropriate buffer using Heras fencing or similar (the location of which is shown on the GA and Planting Plans). This will ensure that habitats are not degraded through soil compaction and interference by contractors and machinery.

Timed Vegetation Removal – Hedgerows

- 14.3.4 Where sections of hedgerow are to be removed these will generally be limited to a length of 12m. The methods below cover the methods for habitat removal during the winter and summer.

Winter

- 14.3.5 Vegetation checks and removal will be undertaken during the winter between November and March inclusive under the supervision of the Ecological Clerk of Works. This period will avoid the bird breeding season and the active period for Dormice, as they are more likely to be in hibernation underground. Searches of the vegetation will be undertaken prior to any vegetation removal whereby nests and any cavities within trees etc will be inspected for Dormice.

The clearance of vegetation will be undertaken by hand with no heavy machinery to be used in close proximity to the areas of removed, so avoiding any possible disturbance through noise and vibrations. All tree felling will also be undertaken during this period, provided there are no bat roosting constraints.

- 14.3.6 The vegetation will be cut down to approximately 10-15cm, to avoid disturbance to the ground and retain the roots and stumps, in order not to adversely affect any Dormice that may be hibernating at or below the surface. The hedgerow canopy will be removed from the stem, a small proportion of the hedge will be kept as a 'dead hedge', which will provide a feature within which Dormice could continue to move when they wake from hibernation, this also means that individuals will be able to move along such breaks into surrounding retained habitats.
- 14.3.7 The removal of the root systems of the cut vegetation will be undertaken when Dormice are active between April to October, although care will be taken to avoid periods of cold wet weather, when Dormice can go into torpor. All root removals will need to be supervised by a licensed ecologist. During this period the 'dead hedge' will also be removed from the site; care will be taken to ensure that there are no nesting birds present; if they are present then work will stop until young have fledged and a buffer created to ensure that the nest is not disturbed. These areas will also be searched for Dormouse nests prior to removal.

Summer

- 14.3.8 Vegetation will be cleared by hand during the summer when Dormice are active; this will be between May to late September, but clearance should ideally be undertaken in May to avoid separating young that would be dependent on their mothers. All vegetation that is scheduled for removal will be checked for bird and Dormouse nests before any removal is undertaken. All removal will take place under a watching brief by a licensed ecologist, whereby removal of small lengths (approximately 10m) will be undertaken over consecutive days, thus allowing time for any possible Dormice to move from the area. The removal of the canopy of vegetation will be undertaken by hand; this will ensure that sightings of Dormice are more likely. The root system of the vegetation should also be removed during this period so to avoid potential refuge and hibernation opportunities in the future.

Timed Vegetation Removal – Woodland

- 14.3.9 Small sections of woodland are to be removed to facilitate access roads in the south of the Redrow site, these are also well removed from the Dormouse nest recorded. Approaches for winter and summer vegetation removal were included in the outline application.

Winter

- 14.3.10 During the winter months (November to March) ground level vegetation will be removed from the woodland areas; this will persuade any Dormice that could potentially be present to move when they come out of hibernation. As with the above a 'dead hedge' will be provided to allow safe passage to surrounding retained habitats / woodland. The remaining tree stumps and any

ground removal will take place in the summer months when any Dormice present would be expected to have left the area (May to September).

Summer

- 14.3.11 Summer removal will take place between May and September. Small sections of the woodland compartments will be removed over a number of consecutive days. This will allow time and opportunities for any Dormice that might be present to move into adjacent retained habitats. Care will be taken to ensure that no habitats contain nesting birds.

Habitat Enhancements and Management

- 14.3.12 All existing and retained habitats will be enhanced with additional planting to ensure that poor structure and gaps are filled with native species that will benefit foraging, commuting and nest building. These will have a positive effect on Dormice but also other species.
- 14.3.13 Woodland compartments will be thinned to allow understorey shrub development, which are of more value to Dormice than the current tree canopy. Understorey species will be planted, including Oak, Honeysuckle *Lonicera periclymenum*, Hawthorn, Wayfaring-tree *Viburnum lantana*, Bramble *Rubus fruticosus*, Crab Apple *Malus sylvestris*, Cherry and Hazel.
- 14.3.14 Management will include coppicing, rotational cutting of sections of hedgerows at three to five year intervals and / or hedgerow laying; such measures will ensure increased fruiting bodies and understorey renewal of growth which will benefit invertebrates.
- 14.3.15 There will be a number of new habitats created within the site that will increase opportunities for Dormice to spread from their current isolation into the wider site and off site.
- 14.3.16 Generally, gaps established in existing hedgerows will be limited to 12m (see GA and Planting Plans), to facilitate movement of Dormice at ground level should they move into the area. To limit the requirement for individuals to go to ground taller shrubs / trees will be planted either side of any gaps, whereby management will ensure that the canopy is lifted to create a natural bridge over time. These measures are effectively the same as the bat hop-overs, and are in the same location. Similar measures will be adopted across the stream that runs through the site, whereby tree canopies will be encouraged to bridge the gap and potentially provide links to habitats where Dormice are currently absent.

Nest Boxes

- 14.3.17 Prior to any habitat losses a number of Dormice nesting boxes will be installed within woodland habitats.
- 14.3.18 Wooden nest boxes will be installed within habitat adjacent to any vegetation losses, these will increase the nesting opportunities within the site and thus increase the carrying capacity in the long term. These will be monitored to ensure they remain viable as nesting features, and will also be used for future assessment of the population.

14.4 Type and Source of Materials

- 14.4.1 All Dormouse boxes erected to inform surveys will be re-positioned and an additional 20 boxes will be installed within suitable and retained habitat. Locations for Dormouse boxes will be determined by the Ecological Clerk of Works.

14.5 Initial Aftercare and Long-term Management and Maintenance

- 14.5.1 Nesting boxes will be checked periodically (at least once a year in March) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

15. HEDGEHOGS

15.1 Baseline Conditions

- 15.1.1 The site contains suitable habitats for Hedgehog foraging and dispersal, including woodland and hedgerows.

15.2 Conservation Objectives

<p>To avoid killing or injury of Hedgehogs during construction.</p> <p>To provide greater opportunities for Hedgehogs within the site.</p>
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15.3 Designs and Working Methods

Construction Phase Mitigation and Vegetation Clearance

- 15.3.1 Ground cover will be cleared outside of the winter hibernation period wherever possible. Where this is not possible, a check for hibernation nests will be completed by the Ecological Clerk of Works prior to clearance.
- 15.3.2 Scrub and tree removal will be carried out in a sensitive manner, using hand tools to clear the base of trees to be removed prior to any large machinery pulling out roots.
- 15.3.3 Any clearance of log piles or other Hedgehog shelter features will be subject to inspection by the Ecological Clerk of Works to ensure that Hedgehogs are absent. In the event that an individual is encountered, it will be carefully placed in an appropriate lidded box and immediately removed to an area of suitable habitat at the margins of the site away from working areas.
- 15.3.4 Any trenches or deep pits associated with construction that are to be left open overnight will be provided with a means of escape in case a Hedgehog enters. This is particularly important if the trench fills with water, and will take the form of a roughened plank of wood placed in the trench as a ramp to the surface.

New Habitat Planting

- 15.3.5 The retention of hedgerows along with additional buffer planting and grassland will provide continued opportunities for commuting and foraging Hedgehogs. New planting including native species and species of known wildlife value will offer new foraging resources for Hedgehogs.
- 15.3.6 Specific enhancements for invertebrates (see below) will provide additional foraging opportunities for Hedgehogs.

Hibernation Boxes

- 15.3.7 Hedgehog hibernation boxes and log piles will be installed in discreet locations throughout the development under the direction of the Ecological Clerk of Works.

Hedgehog Gateways and Highways

- 15.3.8 Though not strictly part of the Infrastructure RMA, access to new housing areas will be a benefit for Hedgehogs using the new green infrastructure, and through being connected new residential gardens will offer new potential habitat for Hedgehogs and other small mammals. Garden fences will be provided with a 'Hedgehog Gateway', a 13cm x13cm section of fence cut out at the base, to facilitate dispersal for Hedgehogs and other small animals (see Appendix 3). This will enhance the permeability of the new development for wildlife. In this way, where the residential areas intersect with the green infrastructure, Hedgehog Highways will become established.

15.4 Type and Source of Materials

- 15.4.1 Ten Schwegler Hedgehog Domes or Ecoplate Hedgehog houses (see Appendix 4) will be positioned in discreet locations within the site.

15.5 Initial Aftercare and Long-term Management and Maintenance

- 15.5.1 Hibernation boxes will be checked periodically (at least once a year) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

16. BIRDS

16.1 Baseline Conditions

- 16.1.1 Four wintering bird surveys were completed by Ecology Solutions in November and December 2018, and in January and February 2019. A total of 47 species were recorded, including 17 species that are listed as NERC species of principal importance, Suffolk LBAP and / or on the UK Birds of Conservation Concern Red and Amber list, as set out below:

Song Thrush <i>Turdus philomelos</i>	Dunnock <i>Prunella modularis</i>
Skylark <i>Alauda arvensis</i>	Mistle Thrush <i>Turdus viscivorus</i>
Yellowhammer <i>Emberiza citrinella</i>	Starling <i>Sturnus vulgaris</i>
Kestrel <i>Falco tinnunculus</i>	House Sparrow <i>Passer domesticus</i>
Linnet <i>Carduelis cannabina</i>	Reed Bunting <i>Emberiza schoeniclus</i>
Redwing <i>Turdus iliacus</i>	Fieldfare <i>Turdus pilaris</i>
Stock Dove <i>Columba oenas</i>	Mallard <i>Anas platyrhynchos</i>
Black-headed Gull	Lesser Black-backed Gull
<i>Chroicocephalus ridibundus</i>	<i>Larus fuscus</i>
Bullfinch <i>Pyrrhula pyrrhula</i>	

- 16.1.2 Four wintering bird surveys were undertaken between November 2014 and February 2015 to inform the outline ES, recording a similar complement of species.

- 16.1.3 [REDACTED] were undertaken by Ecology Solutions in April, May and June 2019.

- 16.1.4 Fifty species were recorded within or immediately adjacent to the site, including 18 species that are listed as NERC species of principal importance and / or on the UK Birds of Conservation Concern Red and Amber list, as follows:

Song Thrush <i>Turdus philomelos</i>	Dunnock <i>Prunella modularis</i>
Skylark <i>Alauda arvensis</i>	Mistle Thrush <i>Turdus viscivorus</i>
Yellowhammer <i>Emberiza citrinella</i>	Starling <i>Sturnus vulgaris</i>
Kestrel <i>Falco tinnunculus</i>	House Sparrow <i>Passer domesticus</i>
Linnet <i>Carduelis cannabina</i>	Reed Bunting <i>Emberiza schoeniclus</i>
Herring Gull <i>Larus argentatus</i>	Fieldfare <i>Turdus pilaris</i>
Stock Dove <i>Columba oenas</i>	Willow Warbler <i>Phylloscopus trochilus</i>
Black-headed Gull	Lesser Black-backed Gull
<i>Chroicocephalus ridibundus</i>	<i>Larus fuscus</i>
Bullfinch <i>Pyrrhula pyrrhula</i>	Tawny Owl <i>Strix aluco</i>

16.2 Conservation Objectives

To safeguard bird nesting and foraging habitats during construction.
To avoid damage or destruction of birds' nests during construction.
To provide greater opportunities for birds within the site.

16.3 Designs and Working Methods

Nesting Bird Checks

- 16.3.1 [REDACTED], and to avoid a potential offence under the Wildlife & Countryside Act 1981, all necessary clearance of vegetation would be undertaken outside of the bird breeding season (March to July inclusive) wherever possible. Where this is not possible, a check survey of vegetation by an experienced ecologist would be undertaken immediately prior to clearance. In the event that a nest was found to be present, the vegetation would be left uncleared with a 5m exclusion zone around it until the young had fledged.
- 16.3.2 The Ecological Clerk of Works would liaise closely with the site manager on all clearance of suitable nesting habitat.

Fencing of Retained Habitats

- 16.3.3 All retained woodland, trees, hedgerows and field margins will be fenced using Heras fencing or similar (as shown on the GA and Planting Plans) to avoid possible encroachment. All site personnel will be briefed as to the importance of these areas for nesting birds as part of the site induction.

New Habitat Planting

- 16.3.4 The scheme includes habitat enhancements through the planting of native and ornamental trees and shrubs. New areas of woody species planting throughout the site will in time mature into habitats suitable for use by foraging and nesting birds.
- 16.3.5 Areas of new tussocky wildflower grassland will provide further nesting and foraging opportunities for farmland birds such as Skylark.
- 16.3.6 The locations of these new habitats are shown on the GA and Planting Plans.

Bird Boxes

- 16.3.7 A series of bird boxes and Swift poles will be provided to enhance nesting opportunities for birds in the local area. A selection of hole- and open-fronted designs will be used in order to encourage a variety of species. The locations of the Swift poles are shown on the GA and Planting Plans.
- 16.3.8 Indicative locations of the bird boxes are shown on Plans ECO4a to d, but in practice these will be positioned on suitable mature trees under the direction of the Ecological Clerk of Works.

16.4 Type and Source of Materials

- 16.4.1 Twenty Schwegler 2H Open Front Bird Boxes, 20 Schwegler 1N General Purpose Deep Bird Boxes and 20 Schwegler 1B Bird Boxes will be installed on retained trees throughout the site. Swift poles will be erected within suitable areas within the site (see Appendix 5 and GA and Planting Plans).

16.5 Initial Aftercare and Long-term Management and Maintenance

- 16.5.1 Bird boxes will be checked periodically (at least once a year in March) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Boxes will be replaced if found to be damaged.

17. REPTILES

17.1 Baseline Conditions

- 17.1.1 A presence / absence survey for reptiles has been completed from April to June 2019. The results of the surveys show that low populations of Grass Snake and Common Lizard are present, with the main areas of interest being Hedgerow H4 and the southern edge of the new plantation in the south of the site. The field margins to the north of Great Field Plantation were also seen to support small numbers of Common Lizard. These results are similar to those of surveys undertaken to inform the outline ES in 2014. That work also identified Slow Worm in the wider survey area, though not within the Redrow site.

17.2 Conservation Objectives

<p>To safeguard reptile habitats during construction.</p> <p>To provide greater opportunities for reptiles within the site.</p>

17.3 Designs and Working Methods

Passive Displacement

- 17.3.1 Where habitats used by reptiles exist mitigation measures will be put into place to ensure that no offence is caused under the Wildlife & Countryside Act. This will include passive displacement and fencing of sensitive areas.
- 17.3.2 The locations of existing field margins to be removed are shown on the GA and Planting Plans.
- 17.3.3 Passive displacement will involve the intensive management of the existing habitats favourable to reptiles, through a cutting regime which will encourage reptiles to move away from such areas. Cuts will be undertaken using a hand strimmer with an initial cut of 200mm followed by a cut of 100mm 24 hours later and then cut as short as possible. Displacement will occur ahead of development, when reptiles are active (between mid-March and October) and during favourable weather conditions. All cuttings and other debris will be removed to avoid creating places of refuge. Following the passive displacement exercise, topsoil will be stripped to remove any suitability for reptiles. All works will be undertaken under the supervision of a suitably qualified ecologist.
- 17.3.4 At the time of writing it is expected that all reptile mitigation measures would be undertaken by means of passive displacement, as specified in the ES and supported by the most recent survey findings. However, it is possible that passive displacement may not prove to be the most appropriate method in all circumstances, for example if the direction of displacement would not encourage reptiles to move into areas of larger suitable habitat, or where fragmentation is an issue. At the discretion of the Ecological Clerk of Works, in consultation with the site manager, a more formal capture and translocation exercise will be undertaken, involving the deployment of 'tins' and daily visits to the site during suitable conditions. Captured reptiles would be placed in a

cloth bag and removed to receptor sites identified for the purpose; the locations of these sites are shown on the GA and Planting Plans.

Fencing of Retained Habitats

- 17.3.5 All retained field margins will be fenced using Heras fencing or similar (as shown on the GA and Planting Plans) to avoid possible encroachment. All site personnel will be briefed as to the importance of these areas for reptiles as part of the site induction.

New Habitat Planting and Hibernation Features

- 17.3.6 Areas where reptiles have been recorded are to be included within the green infrastructure network. These will undergo enhancements with hibernacula created to offer refuge, shelter and hibernation opportunities away from residential areas. The locations of the hibernacula are shown on the GA and Planting Plans.
- 17.3.7 The green corridors will link to larger areas, which will have multiple uses, including amenity, access and conservation. Habitats will be established with a tussocky grassland structure with wildflower mixes; this will provide the nectar sources for invertebrate / prey items, basking areas and safe passages through undergrowth. Where tree removal is required the trunks will be kept and cut up and arranged within retained habitats; these will create basking opportunities, refuge and as they rot provide a foraging resource. The locations of these new habitats are shown on the GA and Planting Plans.
- 17.3.8 Management of grassland will be important for the longevity of suitable habitats. Cutting regimes will be rotated whereby only small parcels of a compartment are cut in one year.

17.4 Type and Source of Materials

- 17.4.1 Hibernacula will be created from materials sourced on site from tree management activities (see Appendix 6).

17.5 Initial Aftercare and Long-term Management and Maintenance

- 17.5.1 Hibernacula will be checked annually for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Hibernacula will be replaced if found to be damaged.

18. AMPHIBIANS

18.1 Baseline Conditions

- 18.1.1 [REDACTED] *Triturus cristatus* were recorded during earlier survey work in 2015. Additionally, there are no records for [REDACTED] Common Toads *Bufo bufo* and Smooth Newts *Lissotriton vulgaris* were recorded during Great Crested Newt surveys completed in 2014 and 2015. Ponds within the site and those within 500m were subject to eDNA testing in 2019 where permission was granted. The results of the eDNA testing were returned as negative.

18.2 Conservation Objectives

To safeguard amphibian habitats during construction.
To provide greater opportunities for amphibians within the site.

18.3 Designs and Working Methods

Precautionary Working Methods

- 18.3.1 Construction works and pollution of surface water run-off could result in pollution of the ponds, field ditches and water course. To ensure there are no potential negative effects to the quality of the water all operations will be undertaken in accordance with standard guidance provided in the Environmental Agency Guidelines PPG5 Pollution Prevention Guidelines. In addition, the drainage strategy will be designed to ensure that surface water run-off is suitably treated prior to discharge.
- 18.3.2 Works to enhance ponds and ditches will be undertaken outside of the amphibian breeding period from March to June inclusive. The Ecological Clerk of Works will be consulted before this work is undertaken, and if necessary a check survey will be carried out.
- 18.3.3 [REDACTED] have been recorded within the site and a Natural England licence is not necessary to undertake the work.

Retained and New Habitats

- 18.3.4 Work to enhance and manage on site ditches, and to establish new wildlife-friendly attenuation features, will provide new aquatic habitats for amphibian species. New grassland habitats to be established within the site will offer new opportunities during the terrestrial phase.
- 18.3.5 The proposed development will include strong green linkages across the site (see GA and Planting Plans). Within the green infrastructure additional attenuation features. Permanently wet areas will include marginal native species planting, as shown on the GA and Planting Plans and Planting Schedule. These areas will offer new breeding habitats, while the grassland and woodland to be established (see GA and Planting Plans) will provide terrestrial opportunities.

- 18.3.6 Additional habitats suitable for use by invertebrate and amphibian species will be provided by creating log piles within the green linkages at the base of hedgerows, and in areas of woodland and grassland. The piles would be established using wood generated through maintenance of trees / woodlands within the site. These structures would benefit amphibians by providing places of shelter and or rest and potential hibernation opportunities along with increasing habitat for invertebrates.

Road Crossings

- 18.3.7 Where gaps in existing hedgerows are created as part of the development, dropped kerbs will be installed on either side of the road in that location to aid the movement of wildlife through the site.

18.4 Type and Source of Materials

- 18.4.1 Log piles will be created from materials sourced on site from tree management activities.

18.5 Initial Aftercare and Long-term Management and Maintenance

- 18.5.1 Log piles will be checked periodically for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ. Log piles will be replaced if found to be missing.

19. INVERTEBRATES

19.1 Baseline Conditions

- 19.1.1 Given the habitats present, it is likely an assemblage of common invertebrate species utilises the site, though the intensive arable management of the majority of the land will limit variety. There is no evidence to suggest that any rare or notable species would currently be present.

19.2 Conservation Objectives

To provide greater opportunities for invertebrates within the site.

19.3 Designs and Working Methods

New Habitat Planting

- 19.3.1 The provision of new habitats of ecological interest including trees, wildflower grassland and wetland habitats, will offer new and enhanced resources for invertebrates.

Nesting Aids, Log Piles and Bee Banks

- 19.3.2 As a further enhancement, invertebrate nesting aids and log piles, along with bee banks and a bug hotel feature will be established within the green infrastructure of the site. These features, the locations of which are shown on the GA and Planting Plans, will provide new opportunities for invertebrates.

19.4 Type and Source of Materials

- 19.4.1 Log piles and 'loggeries' will be created from materials sourced on site from tree management activities (see Appendix 7). A series of bee banks, 10 Schwegler clay and reed insect nesting aids and a bug hotel feature will be installed throughout the site (see Appendix 8).

19.5 Initial Aftercare and Long-term Management and Maintenance

- 19.5.1 Nesting aids will be checked annually for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged. Nesting aids will be replaced if found to be damaged. Bee banks will be checked annually as part of landscaping works, and re-established if they are deteriorating.
- 19.5.2 The initial aftercare and long-term management and maintenance of new and enhanced habitats is described in the habitats section above.

20. TIMETABLE OF WORKS

20.1 The timetable of works as set out in the previous sections is summarised below. The phasing of the development and particular actions that must occur before each phase is brought forward is summarised on Plan ECO5.

Receptor	Action	Timing
Habitats	Habitat creation and enhancement	In concert with construction
	Pre-construction checks of suitable habitat	Prior to commencement of works
	Understorey screening of sett area	As part of habitat enhancement works, from autumn 2019 onwards
Bats	Bat box installation	On retained trees as part of habitat enhancement works, autumn 2019
	Establishment of hop-overs	To be established in first phase of landscaping works associated with Infrastructure RMA
Otters	Pre-construction checks of suitable habitat	Prior to commencement of works
Water Voles	Pre-construction checks of suitable habitat	Prior to commencement of works
Dormice	Seasonal vegetation clearance	Winter clearance to be completed November to March inclusive. Stumps to be removed April to October under full supervision of an ECoW. Summer clearance May to late September under full supervision of an ECoW.
	Dormouse nest box installation	On retained trees autumn 2019
Hedgehogs	Clearance of log piles and other hibernation features	Under full supervision by ECoW between October and April; certified by ECoW between May and September
	Hedgehog hibernation box installation	In suitable habitat, from autumn 2019 onwards
Birds	Nesting bird checks of vegetation to be removed	March to July inclusive, as required
	Bird box installation	On retained trees from autumn 2019 onwards
	Swift pole installation	On completion of initial landscaping works in each area
Reptiles	Clearance of log piles and other hibernation features	Under full supervision by ECoW between November and March; certified by ECoW between April and October
	Passive displacement	Under full supervision by ECoW when reptiles are active (between mid-March and October) and during favourable weather conditions
	Hibernacula installation	From autumn 2019 onwards, in line with landscaping works
Amphibians	Road crossings	In concert with construction
	Hibernacula installation	From autumn 2019 onwards, in line with landscaping works
Invertebrates	Nesting aid installation	In suitable habitat from autumn 2019 onwards
	Bee bank construction	As part of landscaping works, from autumn 2019 onwards

Table 20.1. Timetable for ecological mitigation and enhancement measures.

21. PERSONS RESPONSIBLE FOR IMPLEMENTING THE WORKS

- 21.1 Redrow Homes has ultimate responsibility for implementation of this strategy. The individual currently leading for Redrow Homes is Richard Franks, Senior Engineering Manager, and the responsibility for implementation will be his or that of his appointed successor.
- 21.2 It is the responsibility of the appointed individual at Redrow Homes to instruct appropriate experienced contractors to establish the various features and protective measures proposed, and also the responsibility of the appointed individual at Redrow Homes to instruct appropriate experienced ecologists and / or landscape contractors to check the work.
- 21.3 A suitably experienced Ecological Clerk of Works (ECoW) will be appointed by Redrow Homes to liaise with the site manager during construction. The ECoW will attend site at least once per month for a meeting with the site manager, and at any other times where an immediate presence is required.
- 21.4 It will be the responsibility of the site manager or his appointed representatives to deliver a site induction that includes reference to all wildlife issues identified in this document. The ECoW will liaise with the site manager on the content of the induction.
- 21.5 Clear channels between these parties and their associates on the ground will be in operation at all times, by email and telephone as appropriate.
- 21.6 Redrow and the landowner will establish a joint management company to manage and maintain the public landscape areas of Great Wilsey Park. The management company will be responsible for the ongoing maintenance of areas of soft landscaping within public open spaces, attenuation basins and Great Field Plantation.

22. MONITORING AND REMEDIAL MEASURES

- 22.1 Site visits by the Ecological Clerk of Works will be undertaken on a monthly basis throughout the programme of works to establish the infrastructure of the site. The ecologist will meet with the site manager and discuss progress of establishment, along with any problems that may have arisen. The Ecological Clerk of Works will also be available to attend site at short notice to discuss particular issues or observe specific works.
- 22.2 Effects on ecological receptors will be monitored, and conclusions drawn as to the significance of any effects, and any measures that may need to be implemented to mitigate for any effects identified. Following completion of the work, the effects will be analysed and any significant changes will be reported.
- 22.3 A separate comprehensive Biodiversity Monitoring Strategy for the infrastructure application has been prepared to address the requirements of Condition 45. That document should be referred to for full details of monitoring of newly established habitats and features.

23. DISPOSAL OF WASTES

- 23.1 Waste arising from the proposed works will be disposed of as per standard construction practice. A clear system so waste storage and disposal will be put in place as part of good site management. All waste arising will be stored in approved and secure locations and separated for disposal as appropriate.
- 23.2 During the operational phase of the development, the appointed management contractor will allow for the off-site disposal of all litter and landscape maintenance waste. The contractor will be responsible for all waste disposal costs and approvals.
- 23.3 There are no known non-native invasive species within the Redrow site and therefore disposal of material of at an approved facility is not required.