Yorkshire Fog *Holcus lanatus*	2.5%
Tall Fescue *Festuca arundinacea*	12.5%
Meadow Fescue *Festuca pratensis*	10%
	100%

Table 5.11. Emorsgate Seeds EG10 Tussock Grass Mixture species list.

5.9.8. Once established, tussocky grassland requires very little management.

5.9.9. In the first year, mow regularly to 40-60mm throughout the growing season to prevent annual weeds smothering the slower growing grasses. Cuttings will be removed if dense. After the first year, unwanted perennial weeds can be occasionally spot treated.

5.9.10. Tussocky areas may need to be cut every 2-3 years between October and February to control scrub and bramble development. This should be done on a rotational basis, so that no more than half of the area is cut in any one year to allow an area of safe refuge for wildlife.

5.9.11. The periphery of the wildflower meadows will be planted with native tree species (see Table 5.12 below), bolstering the existing woodland edge and mature Oak trees present along the southern boundary of The Meadows West.

Woodland Meadow Edge Tree Species
Field Maple *Acer campestre*
Alder *Alnus glutinosa*
Silver Birch *Betula pendula*
Hazel *Corylus avellana*
Bird Cherry *Prunus padus*
White Willow *Salix alba*
Crack Willow *Salix fragilis*
Yew *Taxus baccata*

Table 5.12. Woodland Meadow Edge tree species list.

5.10. New Attenuation Features

5.10.1. For the most part these new features will not be permanently wet, but some areas will be designed to retain water. This will diversify the habitats present. Locally native aquatic and emergent species will be planted to encourage early naturalisation. Swales to be planted with appropriate mix of native species (see Table 5.13 and 5.14 below).

Marginal Planting Species
Marsh-marigold *Caltha palustris*
Lesser Pond-sedge *Carex acutiformis*
Common Spike-rush *Eleocharis palustris*
Water Avens *Geum rivale*
Yellow Iris *Iris pseudacorus*
Jointed Rush *Juncus articulatus*
Purple-loosestrife *Lythrum salicaria*
Water Mint *Mentha aquatica*
Water Forget-me-not *Myosotis scorpioides*
Reed Canary Grass *Phalaris arundinacea*

Table 5.13. Marginal planting species list.

5.10.2. Newly established basins will be seeded with locally native species mixes and managed appropriately. Areas of dry and wet grassland will be established. The blue infrastructure network of swales will provide new foraging and dispersal opportunities for a variety of wildlife.

EP1F Wild Flowers for Pond Edges Species	% per Mix
Sneezewort *Achillea ptarmica*	2.5%
Wild Angelica *Angelica sylvestris*	10%
Marsh-marigold *Caltha palustris*	1%
Common Knapweed *Centaurea nigra*	7.5%
Hemp-agrimony *Eupatorium cannabinum*	5%
Meadowsweet *Filipendula ulmaria*	15%
Water Avens *Geum rivale*	2.5%
Square-stalked St John's-wort *Hypericum tetrapterum*	2.5%
Yellow Iris *Iris pseudacorus*	20%
Greater Bird's-foot-trefoil *Lotus pedunculatus*	5%
Gypsywort *Lycopus europaeus*	4%
Purple-loosestrife *Lythrum salicaria*	3%
Water Mint *Mentha aquatica*	0.5%
Common Fleabane *Pulicaria dysenterica*	0.5%
Meadow Buttercup *Ranunculus acris*	10%
Great Burnet *Sanguisorba officinalis*	3%
Ragged Robin *Lychnis flos-cuculi*	4%
Devil's-bit Scabious *Succisa pratensis*	2.5%
Tufted Vetch *Vicia cracca*	1.5%
	100%

Table 5.14. Emorsgate Seeds EP1F Wild Flowers for Pond Edges species list.

5.10.3. In the first year, annual weed growth should be cut back to encourage the development of a good perennial ground cover.

5.10.4. Once established, vegetation should be managed on a rotational basis, removing short sections every 2-3 years to provide a variation in structure. Dense stands of single species may also benefit from selective thinning. Vegetation removal should be undertaken between September and November to cause the least disruption to wildlife.

5.11. Wider Residential Measures

5.11.1. The Green Spine and Linear Country Park will be the principal ecological enhancements of the new residential areas, but these will be complemented by further on-plot measures.

5.11.2. New residential gardens will offer new potential habitat for birdlife and 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. This will enhance the permeability of the new development.

5.11.3. Opportunities will be taken in each phase of residential development to incorporate enhancements for wildlife. This will include a mix of nesting boxes for birds, roosting boxes for bats, and nesting aids for invertebrates, as detailed in the following section.

5.11.4. Native planting, in particular fruit trees, will be established in rear gardens to offer new habitat for wildlife.

5.11.5. All new residents will be provided with information on wildlife gardening as part of their welcome pack.

5.12. Lighting Strategy

5.12.1. Pedestrian spaces and routes will be lit with low level path lighting (below 1 lux) to minimise any light pollution. Lighting of the vehicular routes will also have carefully considered lighting to reduce any adverse effects.

5.12.2. The provision of low pollution security lighting where properties back onto a sensitive hedgerows or woodland will discourage homeowners from installing inappropriate floodlighting.

5.12.3. Bat hop-overs will be incorporated into the scheme where hedgerows are intersected by a lit road, footpath or cycle path. The bat hop-overs will encourage bats to fly at a height greater than that of the street lighting, enabling them to cross in darkness. Greater detail on bat hop-overs is provided in the bat section below.

5.12.4. Such an approach to lighting will reduce adverse effects on nocturnal wildlife and encourage use of habitats by bats and invertebrates.

5.13. Targeting Local Conservation Priorities

5.13.1. Suffolk Biodiversity Partnership has a number of HAPs relevant to the site, and this strategy is in accordance with the aims of these plans. Information is taken from current factsheets where these are available. Where current factsheets are not available, information has been taken from archived HAPs.

5.13.2. The SBP has produced a factsheet relating to hedgerows across Suffolk. The factsheet details the vision for Suffolk. Namely, improving the knowledge of the extent and quality of hedgerows across the county; maintaining the existing extent of hedgerows to ensure no net loss; encouraging the restoration and improvement of degraded hedgerows; and re-establishing hedgerows as opportunities arise. The factsheet also gives advice on hedgerow management including rotational cutting and the retention of dead wood at the base for Stag Beetles *Lucanus cervus* and other saproxylic insects.

5.13.3. Similarly, a factsheet for mixed deciduous woodland has been produced with the same vision as hedgerows. Management advice includes maintaining woodland edge habitat and structural diversity to provide a wide range of habitats.

5.13.4. Furthermore, the SBP has produced a factsheet for arable field margins with the same vision as set out above in hedgerows. Management advice is also prescribed and includes maintaining a mosaic of different habitats such as hedgerows, woodland, grass banks and bare ground; and creating beetle banks within cropped areas from sown strips of native grasses.

5.13.5. A factsheet relating to rivers and streams is yet to be published and there is no archived HAP available on the SBIS website. The UK Biodiversity Action Plan Priority Habitat Description document for rivers makes reference to the aims for this habitat and states that:

Where a stretch of river is near-natural, the aim will be to maintain this quality and, where possible, to increase the naturalness of other parts of the river system.

5.13.6. The document goes on to say:

Where a river qualifies on grounds other than naturalness, improvements in habitat quality may also form part of the objectives for maintaining the interest of its BAP features.

5.13.7. An archived HAP is available through the SBIS website and relates solely to eutrophic ponds. The specific targets were yet to be classified at the time of writing but include ensuring the protection and continuation of favourable condition and eutrophic standing waters by 2005.

5.14. Meeting the Objectives of the Strategy

5.14.1. The measures contained in this section safeguard habitats of interest within the site, to the extent that these are present, and ensure that this existing interest will be maintained and enhanced in line with local priorities.

5.14.2. Overall there will be a demonstrable net gain for biodiversity through the development, establishing new high quality habitats of ecological interest that permeate the scheme, in place of an intensive arable landscape of low wildlife interest.

5.15. Timescale for Delivery and Responsibilities for Implementation

5.15.1. New habitats will be delivered as part of the ongoing development, with new areas established early in the process as part of the landscape and drainage strategies.

5.15.2. The establishment of new habitats will the responsibility of Redrow Homes, the project landscape architect and the appointed landscape contractor.

5.15.3. Redrow and the landowner will establish a joint management company to manage and maintain the public landscape areas across Phase 1 of Great Wilsey Park. The management company will be responsible for the ongoing maintenance of areas of hard and soft landscaping within public open spaces, attenuation basins, children's play areas, Great Field Plantation, paths, cyclepaths and allotments.

6. BATS

6.1. Biodiversity Objective

To provide new opportunities for bats in terms of potential roost sites and enhanced foraging resources, with particular focus on local conservation priorities.

6.2. Construction Phase Mitigation

6.2.1. During the construction period no lighting will be present at night.

6.2.2. Retained trees containing roost potential will be safeguarded and site personnel briefed on the presence of bats.

6.3. Enhancements

6.3.1. 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. 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.

6.3.2. Preference will be given to planting species of local provenance within the hedgerows and woodland that will be nectar and fruit producing species to provide foraging for insects, birds and mammals. Species will include Alder *Alnus glutinosa*, Beech *Fagus sylvatica*, Silver Birch *Betula pendula*, Wych Elm *Ulmus glabra*, Cherry *Prunus avium*, Hornbeam *Carpinus betulus*, Oak *Quercus robur*, Rowan S*orbus aucuparia*, Goat Willow *Salix caprea*, Hawthorn *Crataegus monogyna*, Hazel *Corylus avellana*, Field Maple *Acer campestre*, Blackthorn *Prunus spinosa*, Dogwood *Cornus sanguinea*, Elder *Sambucus nigra*, Guelder Rose *Viburnum opulus*, Field Rose *Rosa arvensis* and Dog Rose *Rosa canina*.

6.3.3. 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.

6.3.4. To compensate for woodland losses additional native species woodland planting (that of which will be greater than to be lost) will be incorporated into the scheme.

6.3.5. 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.

6.3.6. Development will be buffered from features of value to bats, such as hedgerows and woodland edges, that will be incorporated within the dark corridor, the buffer zones have been designed to be of sufficient size (a minimum of 10 or 15m) that will ensure that the features utilised by bats will maintain a light level of below 1 lux.

6.3.7. In order to maintain the linkages and an area of darkness (below 1 lux) across the gaps created by the road access through the hedgerows, young plantation woodland and tributary corridor a 'hop over' will be created. This comprises trees that are already semi-mature (6m in height) planted at either side of the road so that the canopies of these trees will be allowed to interlink over this section of road. To minimise the potential effects to bats (particularly Barbastelle) during the development these standard trees will be planted immediately following the removal of hedgerows / trees to facilitate road access.

6.3.8. Habitat corridors to be created extending out of the site to the north have been designed with native species planting (2m in height) which will ensure that a dark corridor (below 1 lux) is maintained on the outer edge of the new habitats to increase linkages to the wider environment and provide additional foraging habitat for bats following completion of the development.

6.3.9. The green infrastructure area will be established in the early phases of the development. This will include planting of the buffer zones along woodland edges and additional planting along the boundaries / green infrastructure areas.

6.3.10. 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 provided on the properties at construction to forestall a future homeowner installing unsuitable lighting which could impact on bats.

6.3.11. The introduction of a series of ponds across the site within the area of green infrastructure will increase the foraging opportunities for the local bat population. Adjacent to the ponds an area will be seeded with a mix with a high proportion of flower species to compensate for the loss of the field margin habitats. The inclusion of night scented species such as Evening Primrose *Oenothera biennis* and Fleabane *Pulicaria* sp. will attract night flying insects and in turn bats. The new ponds will be established within dark corridors. Establishment of these habitats will increase the diversity of insects which will use the area and therefore increase the value of these features for bats.

6.3.12. The inclusion of twenty Schwegler 2F Universal Bat Boxes, 20 Schwegler 1FF Flat Bat Box, and 5 Schwegler 1FW Hibernation Boxes (see Appendix 2) around the development site on suitable trees and particularly along the woodland edges will provide new potential roosting sites for bats within the local area. Bat boxes will be built into the fabric of new buildings and include boxes such as Schwegler 1FQ, 1WQ, 1FR / 2FR bat tube or the Ibstock bat

brick. 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.

6.4. Targeting Local Conservation Priorities

6.4.1. Local Priority Species include Barbastelle Bat, Brown Long-eared, Soprano Pipistrelle and Noctule. The measures set out in this section would provide enhanced habitats for these species, in line with these local priorities.

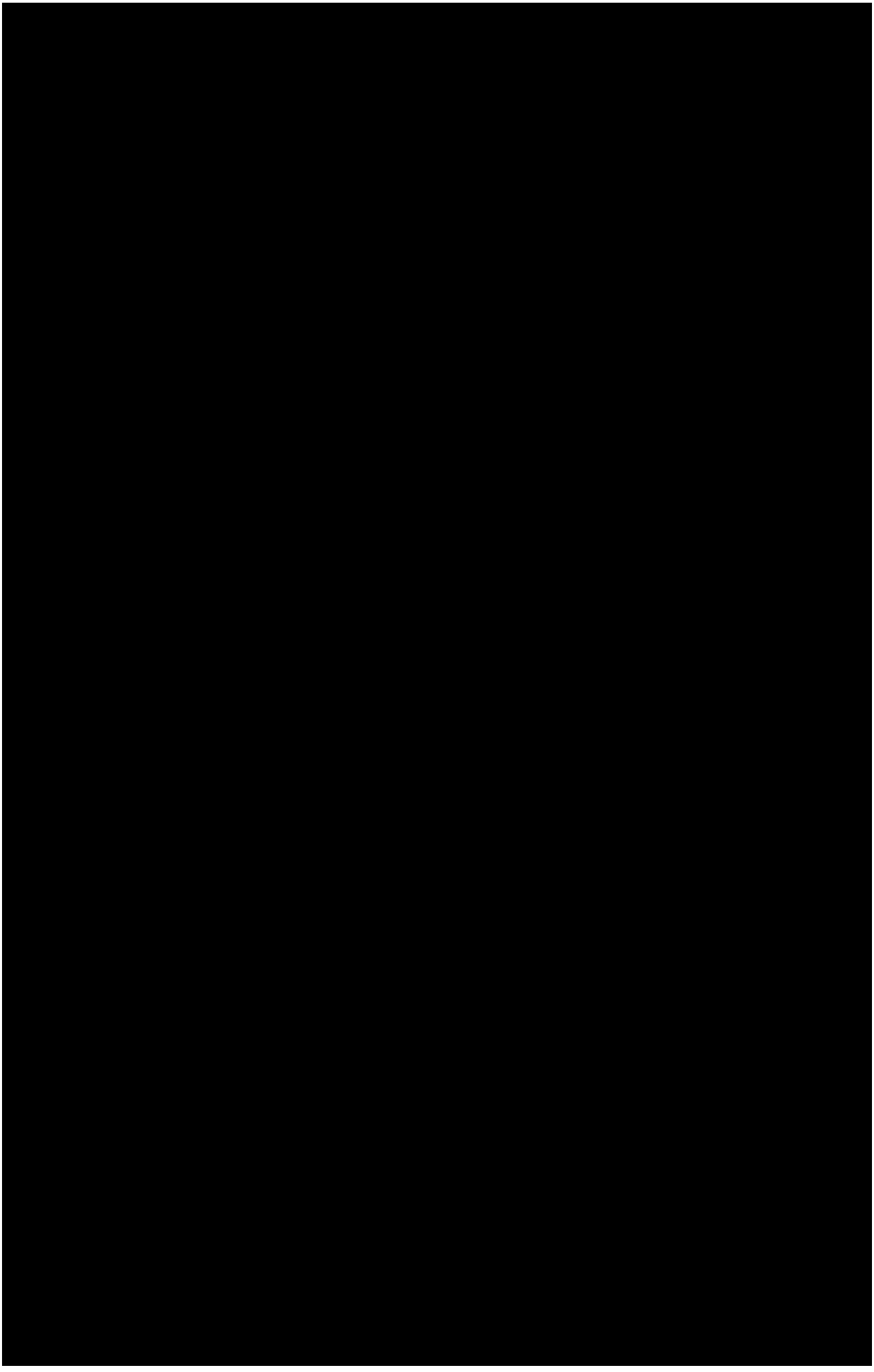
6.4.2. A grouped local BAP has been developed by the Bat Conservation Trust and Suffolk Bat Group covering 13 species of bat. The targets of the plan include raising awareness of the needs of bats amongst the general public, farmers, landowners and managers. Other targets are specific to roost sites and include working with land owners to protect all known hibernation sites and ensure that roost sites are identified to the Suffolk Biological Records Centre. The National Bat Monitoring Programme runs a programme of summer activity surveys and this should be continued and promoted to the general public.

6.5. Timescale for Delivery and Responsibilities for Implementation

6.5.1. The installation of bat boxes and access tiles will the responsibility of Redrow Homes, in conjunction with the project ecologist. These will be delivered as part of the construction of each unit.

6.6. Outcomes

6.6.1. Overall, the proposals for the site will deliver a net gain for bat species in the locality, both in terms of the number of available roosting opportunities, and the extent and variety of new foraging resources.



8. OTTERS

8.1. Biodiversity Objective

To avoid potential impacts during construction, and establish and enhance suitable habitat for Otters within the site, to encourage natural colonisation in future.

8.2. Construction Phase Mitigation

8.2.1. Prior to any works on the existing habitats within the site, a check survey for Otters will be undertaken by an ecologist. In the event that evidence of the species is recorded, consideration will be given for the need for a Natural England licence, dependent on the nature of the works proposed.

8.2.2. Other measures as proposed for Badgers above would avoid potential conflicts with Otters during construction.

8.3. Operational Phase Mitigation

8.3.1. No operational phase effects on Otters are anticipated.

8.4. Enhancements

8.4.1. Though there is no evidence of their presence within the site at the time of writing, Otters are known to be present within the locality and the development represents an opportunity to provide greater opportunities for the species.

8.4.2. Measures to enhance existing waterbodies and to establish new areas as part of the drainage strategy will encourage greater use of the site by this species.

8.4.3. The provision of wet grassland associated with the drainage strategy will provide suitable overland habitat for Otter dispersal. The creation of this new habitat, based around native species, will also enhance the site for Otters.

8.5. Targeting Local Conservation Priorities

8.5.1. Otter is a Local Priority Species. Though not currently present within the site, the measures proposed may encourage movement into the site and environs in the future.

8.5.2. An archived local BAP for Otters (dated December 2003) states that riversides often lack the appropriate cover for Otters to lie up in during the day. Such areas can be made more attractive to Otters by managing riverside land sympathetically, leaving uncultivated buffer zones and areas of undisturbed scrub. New trees could also be planted on the banksides. The creation of artificial holts can provide further refuge areas for Otters in the short term, in conjunction with longer term habitat enhancements.

8.5.3. Other important habitats for Otters include wet grassland, fen, reedbeds and their associated dyke networks.

8.5.4. Road mortality is considered to be a major limiting factor for Otter populations within some catchments. It is suggested that by building culverts and ledges under road bridges safer routes can be created for Otters.

8.5.5. The aims and objectives set out in the action plan are to maintain and expand existing Otter populations and to have Otters breeding in every catchment by 2010.

8.6. Timescale for Delivery and Responsibilities for Implementation

8.6.1. Pre-development checks are the responsibility of the site manager in conjunction with the project ecologist.

8.6.2. Delivery of the landscape scheme is the responsibility of Redrow Homes, in conjunction with the project landscape architect and appointed landscape contractor. This will be delivered on a sequential basis.

8.7. Outcomes

8.7.1. The approach taken in respect of this species is to provide new opportunities for future natural colonisation. It is not expected that there would be an immediate observable outcome in terms of rapid inward migration; nevertheless, the establishment of these new habitats will be a benefit for Otters in the locality in the longer term.

9. WATER VOLES

9.1. Biodiversity Objective

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

9.2. Construction Phase Mitigation

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

9.3. Operational Phase Mitigation

9.3.1. No operational phase effects on Water Voles are anticipated.

9.4. Enhancements

9.4.1. Though there is no evidence of their presence within the site at the time of writing, Water Voles are known to be present in the locality and the development represents an opportunity to provide greater opportunities for the species.

9.4.2. 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 Water Voles, should they colonise the site.

9.4.3. The provision of wet grassland associated with the drainage strategy will provide suitable overland habitat for Water Vole dispersal. New native species marginal planting and dry riparian grassland will also offer new foraging interest for Water Voles.

9.4.4. Waterbodies would be checked on an annual basis and managed periodically to ensure that no one species comes to dominate.

9.5. Targeting Local Conservation Priorities

9.5.1. Water Vole is a Local Priority Species. Though not currently present within the site, the measures proposed may encourage movement into the site and environs in the future.

9.5.2. The objectives and targets of an archived local BAP (dated December 2003) include managing watercourses and wetlands, as well as promoting appropriate Mink control methods to halt the decline and possible extinction of Water Voles in Suffolk; and to establish new populations by creating reedbeds and broad reed-dominated pool margins.

9.6. Timescale for Delivery and Responsibilities for Implementation

9.6.1. Pre-development checks are the responsibility of the site manager in conjunction with the project ecologist.

9.6.2. The enhancement of the watercourse and ditches across the site, as well as the establishment of swales will be the responsibility of Redrow Homes, in conjunction with the project landscape architect and appointed landscape contractor.

9.7. **Outcomes**

9.7.1. The approach taken in respect of this species is to provide new opportunities for future natural colonisation. It is not expected that there would be an immediate observable outcome in terms of rapid inward migration; nevertheless, the establishment of these new habitats will be a benefit for Water Voles in the locality in the longer term.

10. DORMICE

10.1. Biodiversity Objective

To establish and enhance suitable habitat for Dormice within the site.

10.2. Construction Phase Mitigation

10.2.1. 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 will 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.

10.2.2. 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 high visibility fencing or similar. This will ensure that habitats are not degraded through soil compaction and interference by contractors and machinery.

10.2.3. The approach identified as part of the outline planning application, based on the survey evidence, is that work is to be undertaken on a non-licensed method statement basis. This is on account of the very limited indications of presence and the apparently limited distribution within the site. Information obtained to date as part of Ecology Solutions' updated surveys has not changed this understanding; further work to be completed in spring 2019 will help to determine whether this remains the most suitable approach or whether a licence would be required.

Timed Vegetation Removal – Hedgerows

10.2.4. 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.

<u>Winter</u>

10.2.5. Vegetation checks and removal will be undertaken during the winter between November and March inclusive under the supervision of a licensed ecologist. 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 heavily 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.

10.2.6. 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.

10.2.7. 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

10.2.8. Vegetation will be cleared by hand during the summer when Dormice are active; this will be between May to late September, but clearance would 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 would also be removed during this period so to avoid potential refuge and hibernation opportunities in the future.

Timed Vegetation Removal – Woodland

10.2.9. 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

10.2.10. 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

10.2.11. 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.

10.3. **Enhancements**

10.3.1. 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.

10.3.2. 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.

10.3.3. 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.

10.3.4. 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.

10.3.5. Generally, gaps established in existing hedgerows will be limited to 12m, 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.

10.3.6. Prior to any habitat losses a number of Dormice nesting boxes will be installed within woodland habitats.

10.3.7. 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.

10.4. **Targeting Local Conservation Priorities**

10.4.1. Dormouse is a Local Priority Species and measures included as part of this strategy may encourage greater use of the site.

10.4.2. An archived local BAP for Dormice (dated December 2003) presents objectives and targets that include the continuing effort to identify sites where Dormice occur; to maintain and enhance Dormouse populations at these sites; and wherever possible, link Dormouse populations to reduce the chances of local extinctions.

10.5. **Timescale for Delivery and Responsibilities for Implementation**

10.5.1. Pre-development checks are the responsibility of the site manager in conjunction with the project ecologist.

10.5.2. Delivery of the landscape scheme is the responsibility of Redrow Homes, in conjunction with the project landscape architect and appointed landscape contractor. This will be delivered on a sequential basis.

10.6. **Outcomes**

10.6.1. Overall, the proposals for the site will deliver a net gain for Dormice both in terms of the availability of foraging resources and greater dispersal opportunities.

11. HEDGEHOGS

11.1. Biodiversity Objective

To avoid potential impacts during construction, and establish and enhance suitable habitat for Hedgehogs within the site.

11.2. Construction Phase Mitigation

11.2.1. 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 a suitably qualified ecologist prior to clearance.

11.2.2. 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.

11.2.3. Any clearance of log piles or other Hedgehog shelter features will be subject to inspection 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.

11.2.4. 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.

11.3. Enhancements

11.3.1. 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.

11.3.2. 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.

11.3.3. Hedgehog hibernation boxes (see Appendix 4) will be installed in discrete locations throughout the development.

11.3.4. Specific enhancements for invertebrates (see below) will provide additional foraging opportunities for Hedgehogs.

11.4. Targeting Local Conservation Priorities

11.4.1. Hedgehog is a local priority species and measures included as part of new development may encourage greater use of the site.

11.4.2. There are no current or archived action plans for this species on the Suffolk Biodiversity Information Service website. However, it is noted as being an

associated priority species for the hedgerows and arable field margins habitat action plans.

11.5. Timescale for Delivery and Responsibilities for Implementation

11.5.1. Pre-development checks are the responsibility of the site manager in conjunction with the project ecologist.

11.5.2. Delivery of the landscape scheme is the responsibility of Redrow Homes, in conjunction with the project landscape architect and appointed landscape contractor. This will be delivered on a sequential basis.

11.5.3. The installation of Hedgehog gateways and hibernation boxes will the responsibility of Redrow Homes, in conjunction with the project ecologist. These will be delivered as part of the construction of each unit.

11.6. Outcomes

11.6.1. Overall, the proposals for the site will deliver a net gain for Hedgehogs in the locality, offering opportunities for foraging and shelter.

12. BIRDS

12.1. Biodiversity Objective

To avoid potential impacts during construction, and establish and enhance suitable habitat for birds within the site, in order to retain and enhance existing ornithological interest.

12.2. Construction Phase Mitigation

12.2.1. In order avoid impacts on nesting birds, 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.

12.3. Enhancements

12.3.1. The scheme will include habitat enhancements through the planting of native and ornamental trees and shrubs, with preference given to species of value to local bird populations, e.g. berry- and fruit-bearing species such as Crab Apple, Hawthorn, Rowan, Holly *Ilex aquifolium* and Guelder Rose. The scheme will provide habitat buffers adjacent to retained hedgerows to minimise potential impacts to local bird populations in the long-term. New areas of woody species planting throughout the site will in time mature into habitats suitable for use by foraging and nesting birds.

12.3.2. Areas of new tussocky wildflower grassland will provide further nesting and foraging opportunities for farmland birds such as Skylark.

12.3.3. 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. An additional two Swift poles will be erected within suitable areas within the site (see Appendix 5).

12.3.4. These measures would result in significant gains for nesting and foraging birds.

12.4. Targeting Local Conservation Priorities

12.4.1. Bullfinch, House Sparrow, Linnet, Reed Bunting, Skylark, Song Thrush and Yellowhammer are Local Priority Species, and measures included as part of new development will be a benefit.

12.4.2. Suffolk Biodiversity Information Service have a number of archived action plans in relation to birds, several of which have been recorded on site.

12.4.3. The action plan for to Bullfinch (dated February 2007) describes that retaining hedgerows and infield trees is practical action that helps to protect habitat for Bullfinches.

12.4.4. Entry Level Stewardship options that may be beneficial include enhanced hedgerow management options, buffering woodland edges and hedges and retaining and buffering infield trees.

12.4.5. The action plan for Linnets (dated February 2007) specifies the need to seek areas where Linnets can find lots of seed food including rotational set-aside and winter stubbles, as well as Oil-seed rape and the associated broadleaved weeds for chicks in Spring. Linnets nest in thick thorny hedgerows, scrub and brambles on grassland and waste ground.

12.4.6. Entry Level Stewardship options that may benefit Linnets include conservation headlands and uncropped cultivated margins.

12.4.7. The current actions detailed in the BAP for Reed Bunting centre around agricultural practises, stressing the importance of management choices for Oil Seed Rape. Favoured management practices include allowing the seed to ripen naturally to allow clutched sufficient time to fledge prior to harvest, and the sympathetic management of riparian and ditch side vegetation to provide additional feeding and breeding opportunities.

12.4.8. The BAP also states that there is a continued need to highlight the importance of farmland for what is generally perceived as a “wetland” species.

12.4.9. The target for Bullfinch, Linnet and Reed Bunting is to as a minimum, maintain the existing 2007 populations and existing ranges in Suffolk.

12.4.10. The objectives and targets of the Skylark BAP (dated December 2003) are to maintain the Breeding Bird Survey population index at or above the 1995 level; maintain the current range of Skylark as measured in the 1993 Provisional Atlas of Breeding Birds in Suffolk; and create and manage suitable Skylark habitat on farmland through uptake of agri-environment schemes.

12.4.11. The objectives and targets of the Song Thrush BAP are to maintain the geographical range of Song Thrush, particularly on farmland habitats, as measured in the 1993 Provisional Atlas of Breeding Birds in Suffolk; continue to monitor Song Thrush numbers through Common Bird Census and Breeding Bird Survey; and restore suitable habitat on farmland by encouraging uptake of agri-environment schemes.

12.5. **Timescale for Delivery and Responsibilities for Implementation**

12.5.1. Pre-development checks are the responsibility of the site manager in conjunction with the project ecologist.

12.5.2. Delivery of the landscape scheme is the responsibility of Redrow Homes, in conjunction with the project landscape architect and appointed landscape contractor. This will be delivered on a sequential basis.

12.5.3. The installation of bird boxes will the responsibility of Redrow Homes, in conjunction with the project ecologist. These will be delivered as part of the construction of each unit.

12.6. **Outcomes**

12.6.1. Overall, the proposals for the site will deliver a net gain for bird species in the locality, both in terms of the availability of nesting opportunities, and the extent and variety of new foraging resources.

13. REPTILES

13.1. Biodiversity Objective

To provide greater opportunities for reptiles within the site.

13.2. Construction Phase Mitigation

13.2.1. 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 off sensitive areas.

13.2.2. Passive displacement will involve the intensive management of the existing habitats favourable to reptiles, through a number of cutting regimes 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.

13.3. Enhancements

13.3.1. Areas where reptiles have been recorded are to be included within the green infrastructure network. These will undergo enhancements with hibernacula (see Appendix 6) created to offer refuge, shelter and hibernation opportunities away from residential areas. The green corridors will link to larger areas, which will have multiple uses amenity, access and conservation.

13.3.2. Habitats will be established with a tussocky grassland structure with wildflower mixes near footpaths; this will provide the nectar sources for invertebrate / prey items, basking areas and safe passages through undergrowth. Tussocky grassland will be established throughout the attenuation areas to provide new reptile foraging opportunities.

13.3.3. 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.

13.3.4. 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. Grassland mixes will include Crested Dogstail *Cynosurus cristatus,* Cocksfoot *Dactylis glomerata*, Red Fescue *Festuca rubra* with wildflower mixes to include Common Knapweed *Centaurea nigra*, Greater Knapweed *Centaurea scabiosa*, Oxeye Daisy *Leucanthemum vulgare*, Wild Carrot *Dipsacus fullonum* and Tufted Vetch *Vicia cracca*.

13.4. **Targeting Local Conservation Priorities**

13.4.1. Grass Snake, Common Lizard and Slow Worm are Local Priority Species and measures included as part of this strategy may encourage greater use of the site.

13.5. **Timescale for Delivery and Responsibilities for Implementation**

13.5.1. Pre-development checks are the responsibility of the site manager in conjunction with the project ecologist.

13.5.2. Delivery of the landscape scheme is the responsibility of Redrow Homes, in conjunction with the project landscape architect and appointed landscape contractor. This will be delivered on a sequential basis.

13.6. **Outcomes**

13.6.1. Overall, the proposals for the site will deliver a net gain for reptile species, both in terms of the availability of foraging resources, and new opportunities for breeding, shelter and hibernation.

14. AMPHIBIANS

14.1. Biodiversity Objective

To provide greater opportunities for amphibians within the site.

14.2. Construction Phase Mitigation

14.2.1. 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.

14.2.2. Works to enhance ponds and ditches will be undertaken outside of the amphibian breeding period from March to June inclusive.

14.2.3. No Great Crested Newts have been recorded within the site and a Natural England licence is not necessary to undertake the work.

14.3. Enhancements

14.3.1. 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.

14.3.2. The proposed development will include strong green linkages across the site. Within the green infrastructure additional ponds, species rich grassland and woodlands will be created, this will increase the habitats available and increase the potential range by increasing connectivity for amphibians and other species across the site.

14.3.3. To increase the biodiversity potential of the ponds they will be designed where possible to incorporate a shallow sloping gradient, marginal shelves, aquatic planting, and seeding of the banks with species rich grassland. The implementation of these habitat enhancements will increase potential diversity of insects using the site and in turn will provide a significant foraging resource for amphibians and many other species such as reptile and mammal species.

14.3.4. 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.

14.3.5. 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.

14.4. Targeting Local Conservation Priorities

14.4.1. Great Crested Newt and Common Toad are Local Priority Species, and measures included as part of this strategy may encourage greater use of the site.

14.5. Timescale for Delivery and Responsibilities for Implementation

14.5.1. Pre-development checks are the responsibility of the site manager in conjunction with the project ecologist.

14.5.2. Delivery of the landscape scheme is the responsibility of Redrow Homes, in conjunction with the project landscape architect and appointed landscape contractor. This will be delivered on a sequential basis.

14.6. Outcomes

14.6.1. Overall, the proposals for the site will deliver a net gain for amphibian species, both in terms of the availability of foraging resources, and new opportunities for breeding, shelter and hibernation.

15. INVERTEBRATES

15.1. Biodiversity Objective

To provide greater opportunities for invertebrates within the site.

15.2. Construction Phase Mitigation

15.2.1. No mitigation measures in respect of invertebrates are required during the construction phase.

15.3. Enhancements

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

15.3.2. As a further enhancement, 10 Schwegler clay and reed insect nesting aids and log piles, along with bee banks and a bug hotel feature will be established within the green infrastructure of the site (see Appendices 7 and 8). These will provide new opportunities for invertebrates.

15.4. Targeting Local Conservation Priorities

15.4.1. Suffolk Biodiversity Partnership highlights a wide range of butterflies, moths, beetles and other invertebrates as Local Priority Species. Measures to establish and enhance habitats set out in this strategy will encourage greater invertebrate diversity, which may benefit these local priorities.

15.4.2. The list comprises 74 species, some of which are supported by habitats present within the boundaries of the site.

15.4.3. Hedgerow habitats support Stag Beetle, White-letter Hairstreak *Satyrium w-album*, Sloe Carpet *Aleucis distinctata*, Horehound Long-horn Moth *Nemophora fasciella* and Barberry Carpet *Pareulype berberata*. Of these species, Stag Beetle, White-letter Hairstreak and Sloe Carpet are the most notable to this site due to the hedgerow species present. The retention and re-gapping of hedgerows using native species as well as the creation of log piles will help these species.

15.4.4. Arable field margins support bees such as the Brown-banded Carder Bee *Bombus humilis*, Large Garden Bumblebee *Bombus ruderatus*, and Red-shanked Carder Bee *Bombus ruderarius*. Beetles such as the Brush-thighed Seed-eater Beetle *Harpalus froelichii* and Stag Beetle, and moths such as the Pale Shining Brown Moth *Polia bombycine*. These species favour flower rich grassland and the proposals for the retention and enhancement of the grassland, as well as the newly developed wildflower meadows, will benefit these species.

15.4.5. Other species listed have more specific needs but can be targeted through the planting schemes. Necklace Ground Beetle *Carabus monilis* is a predatory beetle and will benefit from the increase in prey species associated with the enhancement of the grassland. Grey Carpet Moth *Lithostege griseata* larvae feed on Flixweed *Descurainia sophia* and

Treacle-mustard *Erysimum cheiranthoides*, and the Four-spotted Moth *Tyta luctuosa* larvae feed on Field Bindweed *Convolvulus arvensis*.

15.4.6. Several of the invertebrate species associated with mixed deciduous woodland include species dependent on some of the tree species present on site. These include the Olive Crescent Moth *Trisateles emortualis* which feeds on Oak and Beech; the False Mocha Moth *Cyclophora porata* which feeds on Oak; and the White Spotted Pinion Moth *Cosmia diffinis* which feeds on Elm.

15.4.7. Other species listed are dependent on tree species not currently found on site but could be incorporated into the planting scheme. Poplar Leaf-rolling Weevil *Byctiscus populi*, which are known to interact with Aspen *Populus tremula* and White Poplar *Populus alba*; Alder Flea Weevil *Orchestes testaceus*, is known to interact with Alder, with the larvae eating the leaves; White Admiral *Limenitis Camilla* lay their eggs on Honeysuckle in dense woodland; Serrated Tongue Spider *Centromerus serratus* is associated with leaf litter and moss under pine, beech and oak but is most abundant in deep beech litter; and Stag Beetle which is associated with a number of tree species including Oak, Lime and Beech and will benefit from woodland being managed in such a way as to leave dead wood to decay on the woodland floor rather than being removed.

15.4.8. Rivers and streams, as well as ponds, support the Scarce Four-dot Pin-palp Beetle *Bembidion quadripustulatum* which is a predatory beetle associated with the bare clay or mud at the margins of standing and running water. Rivers and Streams also support White-Clawed Crayfish *Austropotamobius pallipes*, Norfolk Hawker *Aeshna isoceles*, Depressed River Mussel *Pseudanodonta complanata*, Desmoulin's Whorl Snail *Vertigo moulinsana*, and Swollen Spire Snail *Mercuria similis*.

15.5. **Outcomes**

15.5.1. Overall, the proposals for the site will deliver a net gain for invertebrates, providing a much-enhanced variety of habitats and niches for a range of species.