



ECOLOGYSOLUTIONS

Part of the ES Group

GREAT WILSEY PARK,
HAVERHILL:
INFRASTRUCTURE
RESERVED MATTERS
APPLICATION

**Ecological Implementation
Strategy**

Pursuant to Condition 42 of
DC/15/2151/OUT

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1. INTRODUCTION

- 1.1. Ecology Solutions was commissioned by Redrow Homes in October 2018 to prepare materials to address the requirements of planning conditions for the development at Great Wilsey Park as shown on Plans ECO1 and ECO2 (reference: DC/15/2151/OUT).
- 1.2. Condition 42 requires that an Ecological Implementation Strategy be submitted and approved prior to commencement of development. The condition states:

No development shall take place on any phase or reserved matters application (including demolition, archaeological investigation, ground works and vegetation clearance) until an ecological implementation strategy for that particular phase or reserved matters application addressing the mitigation measures set out in Volume 2 Section 9 of the Environmental Statement dated September 2015, relevant appendices and subsequent Addendum document May 2016 has been submitted to and approved in writing by the local planning authority. The implementation strategy shall include the following:

- a. ES mitigation measures to be addressed
- b. Purpose and conservation objectives for the proposed works.
- c. Review of site potential and constraints informed by up to date survey.
- d. Detailed design(s) and / or working method(s) to achieve stated objectives.
- e. Extent and location / area of proposed works on appropriate scale maps and plans.
- f. Type and source of materials to be used where appropriate, e.g. native species of local provenance.
- g. Timetable for implementation demonstrating that works are aligned with the proposed phasing of development.
- h. Persons responsible for implementing the works.
- i. Details of initial aftercare and long-term maintenance.
- j. Requirement for monitoring and remedial measures.
- k. Details for disposal of any wastes arising from works.

The implementation strategy shall be implemented in accordance with the approved details and all features shall be retained in that manner thereafter.

Reason: To ensure the satisfactory development of the site at the appropriate time to protect vulnerable ecological habitats and ensure the satisfactory development of the site.

- 1.3. This report has been prepared to address the requirements of condition 42, providing details of the ecological implementation strategy to be adopted within the infrastructure phase of the Redrow development, with particular attention paid to the mitigation measures set out in Volume 2 Section 9 of the Environmental Statement, relevant appendices and subsequent Addendum. Due regard is had to the baseline information and long term objectives for the site where these are relevant. As necessary, mitigation strategies are proposed such that the development would be in line with all relevant legislative and planning policy requirements.
- 1.4. The focus of this document is on the mitigation strategies and protective measures that will be implemented during construction, i.e. the development of the site and establishment of the various habitats and features proposed. The long term of management and ecological enhancement of the site is focused on in the Landscape and Ecological Management Plan.

- 1.5. Both documents refer to the General Arrangement (GA) drawings and Planting Plans produced by Exterior Architecture in consultation with Ecology Solutions.

2. ES MITIGATION MEASURES TO BE ADDRESSED

2.1 ES Chapter

2.1.1 The mitigation measures described in the Ecology ES Chapter are summarised in Table 9.5 of that document. The effects concerned and the mitigation proposed are reproduced in the table below. A column has been added to the table to indicate where in this document and / or on the accompanying GA and Planting Plans the measures are detailed.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
Construction						
Statutory & Non-Statutory Sites						
Dust Particles Exposure on LNR & CWS	Temporary	Negligible	Work area sprayed with water during dry conditions	Local	Negligible	See section 6 of this document.
Habitats						
Arable Field Loss	Permanent	Negligible	Diverse range of habitats will be created within previously arable dominated areas	Negligible	Minor/ Moderate Beneficial Long Term	Arable fields are largely occupied by housing parcels. Green spine proposals illustrated on GA and Planting Plans.
Improved Grassland – Loss of fields	Permanent	Negligible	Some fields to be retained along the water course, these will be enhanced with additional planting. More species rich meadow grassland habitats are to be created within the GI	Negligible	Negligible	See GA and Planting Plans and section 7 of this document.
Field Margins – Partial loss	Permanent/ Temporary	Negligible	Majority retained within hedgerows. New areas of grassland habitats created providing more coverage and diversity	Site	Minor Beneficial Long Term	For general protection of field margins, see GA and Planting Plans and section 7 of this document. H19, H21, H23, H24 are not within the Redrow site.
Field Margins – Partial loss of North/East 'Wildlife Conservation Areas' margins. (H19, H21 & H23/H24)	Permanent/ Temporary	Minor Adverse Short Term		Site		
Woodland - Loss of 1ha of Woodland Compartment W1	Permanent	Minor/ Moderate Adverse Long Term	Additional woodland planting through the Application Site	Local	Moderate Beneficial Long Term at Local Level.	W1 is not within the Redrow site.
Woodland - Loss of 0.3ha Recently Planted Plantation (TN5)	Permanent	Minor/ Moderate Adverse Long Term	Additional woodland planting to compensate for losses	Local		See GA and Planting Plans and section 8 of this document.
Woodland – Damage from encroachment by equipment or materials	Temporary/ Permanent	Minor/ Moderate Adverse Short Term	Retained habitats fenced off and 'toolbox' talks given to contractors. No dig methods where roads and footpath required.	Site	Negligible	See GA and Planting Plans and section 8 of this document.
Woodland – Foliage coverage with dust particles	Temporary	Minor Adverse Short Term	During dry periods water will be sprayed over the ground, suppressing dust.	Site		See GA and Planting Plans and section 8 of this document.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
Hedgerows - Partial losses of hedgerows H4, H9, H13 & H14	Permanent	Minor Adverse Long Term	Existing hedgerows strengthened with additional native species. Compensatory hedgerows planted.	Local		See GA and Planting Plans and section 9 of this document.
Local				For H11, H12 see GA and Planting Plans and section 9 of this document. H21, H23 not within Redrow site.		
Local				H19 not within Redrow site.		
Hedgerows - Partial loss of hedgerows H19 'important' under REGS	Temporary/ Permanent	Minor Adverse Medium Term	Retained habitats fenced off and 'toolbox' talks given to contractors	Site		See GA and Planting Plans and section 9 of this document.
Hedgerows - Damage to existing and newly planted hedgerows from machinery, equipment and materials						See GA and Planting Plans and section 9 of this document.
Watercourses - Becoming clogged with rubbish/building material	Temporary	Minor Adverse Short Term	'Toolbox' talks given to contractors about sensitivity of habitats	Site		See GA and Planting Plans and section 10 of this document.
Fauna						
[REDACTED]	Temporary	Minor Adverse Short Term	Retain buffer during initial site works.	Site	Negligible	See GA and Planting Plans and section 11 of this document.
[REDACTED]	Temporary	Minor/ Moderate Adverse Short Term	All excavations are to be covered overnight, or means of escape given	Site		See section 11 of this document.
[REDACTED]	Permanent	Minor Adverse Long Term	No arable habitats will be created. Additional nests and foraging provided in GI.	Negligible	Negligible	See section 16 of this document.
[REDACTED]	Permanent	Moderate Adverse in Short Term	Habitat removal to occur outside of breeding season or under supervision of an experienced ecologist. New hedgerows will be planted with fruiting bodies for foraging and dense structure for nesting.	Site	Negligible	See GA and Planting Plans and section 16 of this document. W1 not in Redrow site.
[REDACTED]	Permanent	Minor Beneficial Long Term	GI will create additional hedgerow, trees, areas of open greenspace and residential gardens.	Local	Minor Beneficial Long Term	See GA and Planting Plans and section 16 of this document.
Wintering Birds – Loss of arable habitats on skylarks	Permanent	Minor Adverse Long Term	Displaced to surrounding arable field	Local	Negligible	See section 16 of this document.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
Dormice – Loss of habitats used by dormice – Isolation and injury/death	Permanent	Minor/ Moderate Adverse Long Term	Removal of habitats under Natural England licence at appropriate times of the year.	Local	Negligible	No evidence of Dormice in Redrow site. No licence required (see ES Addendum comments below).
Dormice Loss of hedgerow H23/H24	Permanent	Negligible / Minor Adverse Long Term		Site	Negligible	H23, H24 not in Redrow site.
Dormice - Possible encroachment of construction machinery/materials into retained habitats used dormice	Temporary	Minor	Retained habitats fenced off and 'toolbox' talks given to contractors	Site	Negligible	No evidence of Dormice in Redrow site. See GA and Planting Plans and section 9 of this document for hedgerow protection measures.
Dormice – Deer grazing on new GI planting	Temporary	Moderate Adverse Long Term	Fencing off or planting more mature species.	Site	Negligible	No evidence of Dormice in Redrow site. See section 14 of this document for protective measures.
Reptiles - Loss of habitats used by reptile populations	Permanent	Moderate Adverse Medium Term	Passive displacement will be undertaken in areas when habitat losses occur.	Local	Minor Beneficial Long Term	See GA and Planting Plans and section 17 of this document.
Reptiles - Isolation of reptile populations from access roads/habitat loss	Temporary/ Permanent	Minor/ Moderate Long Term	Ensuring populations are not isolated by displacement measures and additional habitats created	Site		See section 17 of this document.
Reptiles - Possible encroachment of construction machinery/materials into retained habitats used by reptiles	Temporary	Minor Adverse Short Term	Retained habitats fenced off and 'toolbox' talks given to contractors	Site	Negligible	See GA and Planting Plans and section 17 of this document.
Bats -Losses of woodland W1 will alter navigational and foraging behaviours	Temporary	Minor Adverse Short Term	Linkages will be retained within other areas of woodland W1. Increased GI will provide alternative routes.	Site	Negligible	W1 not in Redrow site.
Bats - Fragmentation of navigational corridors due to linear losses	Temporary	Minor Adverse Short Term	Habitat 'Hop-overs' to be created near gaps and additional planting to ensure additional navigational routes	Local		See GA and Planting Plans and section 12 of this document.
Bats - Disruption of navigational and foraging routes by artificial lighting from construction works – common species of bat	Temporary	Minor Adverse Short Term	Limit dusk working hours, where required direction lighting will be situated away from natural habitats.	Site	Negligible	See GA and Planting Plans and Lighting Strategy for Bats (Condition 44).
Bats - Disruption of navigational and foraging routes by artificial lighting from construction	Temporary	Moderate Adverse Short Term		Local		See GA and Planting Plans and Lighting Strategy for Bats (Condition 44).

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
works – Barbastelle bats						
Bats - Disruption of tree roosts and access to them, by artificial lighting from construction works	Temporary	Minor Adverse Short Term		Site	Negligible	See GA and Planting Plans and Lighting Strategy for Bats (Condition 44).
Operational Effects						
Statutory & Non-Statutory Sites						
Increase in recreational disturbance on CWS & LNR.	Temporary/ Permanent	Minor Adverse Long Term	Specific GI created for recreational activities i.e. off lead dog walking. Circular walks with semi natural features.	Local	Negligible	See GA and Planting Plans and section 6 of this document.
Effects on Habitats						
Woodland - Recreation disturbance on Great Field Plantation	Temporary/ Permanent	Minor Adverse Long Term	Perimeter planting and fencing to focus public access to designated paths. Interpretation boards installed.	Local	Minor Beneficial Long Term	See GA and Planting Plans and section 8 of this document.
Woodland - Increased disturbance of woodland W1, due to possible access to new amenities	Temporary/ Permanent	Minor Adverse Long Term		Local		W1 not in Redrow site.
Woodland - Increased disturbance and possible damage of woodland W4 from extended play and public interference	Temporary/ Permanent	Minor Adverse Long Term		Local		W4 not in Redrow site.
Woodland - Increase in litter levels within woodland affecting ground flora and fauna	Temporary	Minor Adverse Medium Term	Litter bins to be located at entry points to woodland and near public amenities	Local		See GA and Planting Plans and section 8 of this document.
Woodland - Disturbance through public short cuts through exiting and created hedgerow / margins	Temporary	Minor Adverse Medium Term	Post and wire fencing to allow time for hedgerows to establish.	Site		See GA and Planting Plans and section 8 of this document.
Watercourse - Increase in recreational pressure of watercourse, particularly the central feature	Temporary/ Permanent	Minor Adverse Long Term	Fencing and public interpretation boards to raise awareness of biological features.	Local	Negligible	See GA and Planting Plans and section 10 of this document.
Residential Gardens	Permanent	Minor beneficial Long Term	N/A	Site	Minor beneficial Medium Term	N/A
New Woodland – Damage by the public	Temporary	Minor Adverse in Medium Term	New woodland planting will be fenced off and managed	Local	Negligible	See GA and Planting Plans and section 8 of this document.

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
New Habitats – Grassland, waterbodies, woodland, and individual tree planting	Permanent	Moderate/ Major Beneficial Long Term	New habitats created	Local	Moderate/ Major Beneficial Long Term	See GA and Planting Plans and sections 7 to 10 of this document.
New Habitats – Inappropriate Management	Temporary/ Permanent	Moderate Adverse Short/ Medium/ Long Term	A Green infrastructure & Biodiversity Management Plan will be written	Local	Moderate Beneficial Long Term	See GA and Planting Plans and Landscape and Ecological Management Plan (Condition 7).
Effects on Fauna						
██████████	Permanent	Moderate Adverse Medium Term	Fencing and dense shrub planting around setts	Site	Negligible	See GA and Planting Plans and section 11 of this document.
██████████	Permanent	Minor/ Moderate Long Term	Fencing and dense shrub planting around setts. Areas near setts will require dogs to be kept on the lead.	Site		See GA and Planting Plans and section 11 of this document.
██████████	Temporary	Minor Adverse Long Term	Ensure that all refuse areas are fenced off and that bins are used.	Site		See section 11 of this document.
Birds – Domestic Cats and Slow Development of Habitats	Temporary	Minor Adverse Medium Term	Existing habitats retained to allow possible refuge. Where possible more mature hedgerow species planted. Nesting boxes will provide opportunities while habitats mature.	Site	Negligible	See GA and Planting Plans and section 16 of this document.
Birds – New GI	Permanent	Minor Beneficial Long Term	Retention of hedgerows and the GI created will provide more refuge and foraging opportunities	Local	Minor Beneficial Long Term	See GA and Planting Plans and section 16 of this document.
Dormice – Inappropriate Management of Habitats	Temporary/ Permanent	Minor / Moderate Adverse Long Term	A Green infrastructure & Biodiversity Management Plan will be written	Site	Minor Beneficial Long Term	No evidence of Dormice in Redrow site.
Dormice – Degradation of existing/created habitats by public	Temporary/ Permanent	Minor / Moderate Adverse Long Term	Habitats will be fenced off while they develop and interpretation boards specifying the importance of such areas	Site		No evidence of Dormice in Redrow site.
Dormice – Predation by Cats	Permanent	Minor Adverse Long Term	Dense hedgerow planting and nesting boxes installed for refuge opportunities while habitats develop.	Site		No evidence of Dormice in Redrow site. See GA and Planting Plans and section 14 of this document.
Reptiles – Predation by Cats	Permanent	Minor Adverse Long Term	New grassland habitats will be created through the site with specific reptile features such as hibernacula, log piles and hedgerows. These will act as refuge and hibernation structures.	Site	Minor Beneficial Long Term	See GA and Planting Plans and section 17 of this document.
Reptiles – Habitat Creation	Permanent	Minor Beneficial Long Term		Site		See GA and Planting Plans and section 17 of this document.
Reptiles – Degradation of existing/created habitats by public	Temporary/ Permanent	Minor/ Moderate		Habitats will be fenced off while they develop and interpretation boards specifying the importance of such areas		Site

POTENTIAL EFFECT	NATURE OF EFFECT	SIGIFICANCE	MITIGATION / ENHANCEMENT MEASURES	GEOGRAPHICAL FEATURES	RESIDUAL EFFECTS	DOCUMENT / PLAN REFERENCE OR COMMENT
Bats – Street and Building Lighting	Permanent	Moderate Adverse Short Term	Buffers will be created along habitats to limit the degree of light spill. Where lighting required, they will be directionally focused or shrouded. Lighting on buildings will only be placed where necessary. Additional GI will provide alternative foraging and commuting opportunities	Local	Negligible	See GA and Planting Plans and Lighting Strategy for Bats (Condition 44).
Bats – Additional GI	Permanent	Minor/ Moderate Beneficial Long Term	Additional GI created that will provide new commuting and foraging opportunities. GI will increase prey items as waterbodies and grassland habitats created.	Local	Minor/ Moderate Beneficial Long Term	See GA and Planting Plans and section 12 of this document.
Cumulative Effects – North West Haverhill Development						
Construction						
Dust Particles Effects on Statutory Sites	Temporary	Minor Adverse Short Term	Supress with spraying ground with water during dry periods	Borough	Negligible	See section 6 of this document.
Loss of hedgerows	Permanent	Minor Adverse Long Term	New hedgerow planting with GI	Site		See GA and Planting Plans and section 9 of this document.
Operational						
Recreational pressures on Ann Sucklings Way & Norney Plantation CWS	Permanent	Minor Adverse Long Term		Borough	Negligible	See section 6 of this document.

2.2 ES Addendum

2.2.1 The ES Addendum summarises the revised approach to be taken for Dormice, at paragraphs 9.2.8 and 9.2.9. Note that the reference to a nest is for an area outwith the Redrow phase of development.

Since the submission of the planning application, the proposed mitigation measures have been amended; a Natural England licence will not be required. The survey results used techniques recommended within the most current available guidance, which demonstrated a single dormouse nest is situated within habitats to be retained by the proposals. No further nesting sites or evidence of dormouse nests were identified in nesting tubes within locations affected by the proposed development. From this evidence it has been concluded that the proposed development will not affect a breeding site or resting place, which are afforded strict protection under the Conservation of Habitats and Species Regulation 2010 (as amended), therefore a licence is not required to legitimise the works.

In situations where no evidence of dormouse activity has been identified in habitats effected by proposals, but dormice are known locally the Dormice Conservation Handbook confirms a licence can be avoided “if the proposed activity can be timed, organised and carried out to avoid committing offences”. The guidance also confirms that where impacts can be completely avoided, the Regulations are not offended and a licence is not required. To ensure such circumstances a precautionary Outline Risk Assessment and Method Statement has been written on the basis of the current parameters plan (Appendix 9.6), this specifies habitat removal at appropriate time of the year so

avoiding potential offences under the Regulations. If dormice activity is confirmed then works will stop and a licence applied for.

- 2.2.2 The strategies in the Dormouse Risk Assessment and Method Statement included as an Appendix to the Addendum have been adopted in full, as set out in section 14 of this document. The results of surveys undertaken by Ecology Solutions have shown that this remains a suitable approach.
- 2.2.3 Other information in the ES Addendum does not change the approach summarised in the table above.

3. PURPOSE AND CONSERVATION OBJECTIVES

3.1 Purpose of the Strategy

3.1.1 The purpose of this strategy is to address the mitigation measures set out in Volume 2 Section 9 of the Environmental Statement (ES) dated September 2015, relevant appendices and the subsequent Addendum document dated May 2016.

3.1.2 The scope of the ES relates to the wider site and the ecological receptors identified during work to inform the outline application. The current strategy relates solely to infrastructure reserved matters application for the land in the ownership of Redrow Homes.

3.2 Conservation Objectives

3.2.1 Specific objectives for the conservation of particular species or groups and particular habitats of nature conservation interest are set out in the relevant sections below. The nature of these objectives has been guided by the principles set out in UK and European wildlife legislation, notably the Wildlife & Countryside Act 1981 (as amended), the Conservation of Habitat and Species Regulations 2017 and the Natural Environment & Rural Communities Act 2006. Furthermore, the formulation of these objectives has also been influenced by national and local biodiversity and conservation targets, as set out in the UK Post-2010 Biodiversity Framework and the Sussex Biodiversity Action Plan (BAP).

3.2.2 The overarching objectives for nature conservation are as follows:

- To safeguard habitats and species that are important in the national and local context, and to maintain or enhance their conservation status as appropriate;
- To ensure that the site continues to support a similar complement of species to that already existing (with the exception of invasive non-native species); and
- To enhance the biodiversity of the site, where this is compatible with the above objectives.

3.2.3 Information on the existing situation at the site and its environs regarding habitats of ecological interest and the presence of protected species has been collated as part of the preparation of this document. This includes information gathered to inform the outline ES and the more recent 2018/19 surveys completed by Ecology Solutions. Together, this provides the baseline on which the mitigation strategies set out in this document are founded.

3.3 Detailed Designs and Working Methods to achieve Objectives

3.3.1 Information on the approaches to achieve the stated objectives is set out in the sections to follow. These are specifically designed to achieve the aims of the mitigation strategy set out in the ES and associated documents. They define the type and source of materials to be used where appropriate.

4. REVIEW OF SITE POTENTIAL AND CONSTRAINTS

4.1 This document has been informed by the background information accrued for the outline ES and by updated surveys undertaken by Ecology Solutions of the Redrow Homes site in 2018/19.

4.2 Constraints

4.2.1 The following main habitat / vegetation types were identified within the areas proposed for infrastructure within the site:

- Arable;
- Improved Grassland;
- Hedgerow;
- Watercourse;
- Pond;
- Ditch;
- Trees;
- Plantation; and
- Field Margins.

4.2.2 The location of these habitats is shown on Plan ECO2.

4.2.3 Habitats of value in the context of the site include mixed and broadleaf plantation, hedgerows, trees (especially where these also offer suitable nesting opportunities for bird species or potential roosting opportunities for bats), field margins, watercourse, ditches and ponds. The arable land and improved grassland are of limited intrinsic nature conservation value.

4.2.4 None of the above habitats pose an overriding ecological constraint in themselves that would prevent the development proceeding, with the majority of the habitats of greater value being retained and enhanced as part of the green infrastructure for the site.

4.2.5 Other ecological constraints within the areas of infrastructure are attributed to the known or potential presence of [REDACTED] bats, Otters, Water Voles, Dormice, Hedgehogs, birds, common reptiles, amphibians and invertebrates. These constraints are addressed by mitigation measures detailed in later sections of this document.

4.2.6 The ecological constraints are illustrated on Plan ECO3.

4.2.7 In addition, Haverhill Railway Walks Local Nature Reserve (LNR) and Haverhill Disused Railway Line County Wildlife Site (CWS) are present some 492m south of the site according to the ES. This is beyond the existing built-up area of Haverhill, and though the ES highlights the potential for dust deposition as an adverse effect, in Ecology Solutions' view this is highly unlikely given the distance and prevailing wind direction, even if there were not a requirement for standard good construction practice to minimise dust on surrounding residential areas. Ann Sucklings Way CWS and Norney Plantation CWS are further removed, at 729m and 990m according to the ES. These are cited in the cumulative effects assessment in terms of recreational effects.

4.3 Potential

- 4.3.1 The majority of the site consists of intensively managed arable fields, with areas of improved grassland. These are intrinsically of low ecological interest, with the large arable fields in particular offering relatively little for wildlife. The plantations are generally even-aged; Great Field Plantation has minimal understorey and a depauperate ground flora. The hedgerows, while a significant ecological asset, are gappy or missing in places.
- 4.3.2 Hence the site possesses excellent potential for wildlife gains, retaining and enhancing the best of the existing habitats, while promoting new opportunities through the strategies for green and blue infrastructure networks. The establishment of new habitats and future management of the network as a whole will deliver significant benefits.
- 4.3.3 Surveys undertaken to inform the outline planning application and those completed in 2018/19 identified a complement of bat species using the site for foraging and dispersal; some use of the site by [REDACTED], though this appears to have declined over time; an assemblage of [REDACTED] the presence of two species of reptile, Common Lizard and Grass Snake; and the amphibians Common Toad and Smooth Newt. Some limited evidence of Dormice was recorded in the wider site subject to the outline application (though not the Redrow site). Otters and Water Voles are known to be present in the wider locality. The site is expected to support a range of common invertebrates, but interest will be limited by the intensive arable management.
- 4.3.4 Overall, there is significant potential to enhance the site for the species known to be present, and to provide opportunities for those present in the wider environment to colonise naturally over time.

4.4 Survey Information

- 4.4.1 This Ecological Implementation Strategy is informed by the range of survey work completed as part of the outline planning application, which has been reviewed in full, and surveys carried out by Ecology Solutions on behalf of Redrow Homes in 2018/19. The ecological constraints are well understood. The mitigation and enhancement strategy for this reserved matters application has adopted in full the approved measures in the Environmental Statement and ES Addendum accompanying the outline planning application. The strategy is therefore comprehensive and robust.
- 4.4.2 Full details of the updated survey work are provided in the Protected Species Survey Report which accompanies the Infrastructure RMA. The Protected Species Survey Report should be read in conjunction with this EIS for the full baseline information.

5. EXTENT AND LOCATION / AREA OF PROPOSED WORKS

- 5.1 The extent and location of all proposed works are shown on the GA and Planting Plans produced by Exterior Architecture in consultation with Ecology Solutions.
- 5.2 These detailed plans, which are at an appropriate scale, clearly show the locations of all new and retained habitats, the degree of habitat loss and creation, and the protective measures to be employed throughout the period of construction.
- 5.3 This strategy make reference to the GA and Planting Plans throughout, and should be read alongside those plans.
- 5.4 Summary plans (Plans ECO4a to d) are included within this EIS for an overview and ease of reference, but for the full detail refer to the GA and Planting Plans.

6. DESIGNATED SITES

6.1 This section is concerned with addressing the effects on Haverhill Railway Walks Local Nature Reserve (LNR) and Haverhill Disused Railway Line County Wildlife Site (CWS) as identified in the ES, as well as Ann Sucklings Way CWS and Norney Plantation CWS cited in the cumulative effects assessment.

6.2 Conservation Objectives

To avoid dust effects arising from development.

To avoid increased recreational disturbance.

6.3 Designs and Working Methods

Dust Suppression

6.3.1 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.

6.3.2 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

6.3.3 It should be noted that suppression of dust during construction is a routine measure adopted by Redrow Homes on all sites, particularly where existing residential properties and / or features of ecological importance are present. Hence this will be done in any event.

6.3.4 It is noted that the effects of dust on these designated sites were assessed as 'negligible' in the ES even before mitigation.

Recreational Opportunities

6.3.5 The Redrow scheme includes a significant expanse of new public open space, which will be delivered as part of the infrastructure phase of development, as set out in this document, the Landscape and Ecological Management Plan and the GA and Planting Plans. This new green infrastructure will be available for use by new residents, offering diverse opportunities for walking, dog-walking and general informal recreation. There will therefore be no adverse effects on the designated sites as a result.

7. GREEN SPINE / LINEAR COUNTRY PARK

7.1 This section is concerned with the establishment of the Green Spine and Linear Park, as shown on the GA and Planting Plans, and the mitigation of effects on grassland as identified in the ES.

7.2 Conservation Objectives

To avoid adverse effects on retained habitats through direct encroachment.

To avoid adverse effects on new establishing habitats through direct encroachment.

To establish high quality new habitats using appropriate native species mixes.

7.3 Designs and Working Methods

Construction Phase Mitigation

- 7.3.1 All habitats to be retained as part of development will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans.
- 7.3.2 Tree root protection areas, as defined on the GA and Planting Plans, will be safeguarded through fencing complying with the British Standard.
- 7.3.3 Site personnel will be briefed as to the presence of these important retained areas.
- 7.3.4 No storage of materials will be permitted within 10m of retained habitats, and vehicle movements within this area will be for essential works only.
- 7.3.5 These measures will be the responsibility of the site manager.

Dust Suppression

- 7.3.6 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.
- 7.3.7 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

New Habitats

- 7.3.8 All new habitats will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans, until such time as they are properly established.
- 7.3.9 New planting undertaken as part of the infrastructure of the site will include native species with an emphasis on trees and plants of known value to wildlife.

- 7.3.10 Avenue trees (see GA and Planting Plans, Planting Schedule and Table 7.1 below) will be planted along primary roads screening play areas and parkland. This will help to increase connectivity throughout the site and offer habitats for nesting birds and invertebrates.

Avenue Tree Species
Field Maple 'Elsrijk' <i>Acer campestre</i> 'Elsrijk'
Norway Maple 'Crimson King' <i>Acer platanoides</i> 'Crimson King'
Hornbeam 'Fastigiata' <i>Carpinus betulus</i> 'Fastigiata'
Cherry 'Accolade' <i>Prunus</i> 'Accolade'

Table 7.1. Avenue Tree species list.

- 7.3.11 The Linear Country Park will be a core component of the new development. Green corridors throughout the new development will serve as conduits for wildlife, encouraging natural processes to permeate into the establishing community. They will include new areas of wildflower grassland, native tree and shrub planting, and new swales and attenuation basins as part of the drainage strategy (see below).
- 7.3.12 The Northern Gateway Park will incorporate a large number of parkland trees (see GA and Planting Plans, Planting Schedule and Table 7.2 below), increasing the diversity and age range of tree species within site.

Parkland Tree Species
Field Maple <i>Acer campestre</i>
Norway Maple <i>Acer platanoides</i>
Indian Horse-chestnut <i>Aesculus indica</i>
Alder <i>Alnus glutinosa</i>
Silver Birch <i>Betula pendula</i>
Hornbeam <i>Carpinus betulus</i>
Hornbeam 'Fastigiata' <i>Carpinus betulus</i> 'Fastigiata'
Beech <i>Fagus sylvatica</i>
Copper Beech <i>Fagus sylvatica</i> 'Purpurea'
Holly <i>Ilex aquifolium</i>
Crab Apple 'Evereste' <i>Malus sylvestris</i> 'Evereste'
Crab Apple <i>Malus sylvestris</i>
Canadian Poplar <i>Populus x canadensis</i>
Bird Cherry <i>Prunus padus</i>
Blackthorn <i>Prunus spinosa</i>
Pin Oak <i>Quercus palustris</i>
Oak <i>Quercus robur</i>
Whitebeam 'Majestica' <i>Sorbus aria</i> 'Majestica'
Rowan <i>Sorbus aucuparia</i>
Wild Service-tree <i>Sorbus torminalis</i>
Bald Cypress <i>Taxodium distichum</i>
Small-leaved Lime <i>Tilia cordata</i>
Common Lime <i>Tilia x europaea</i>

Table 7.2. Parkland tree species list.

- 7.3.13 New areas of extensive tree planting will be under-sown with Emorsgate Seeds woodland mix (see GA and Planting Plans, Planting Schedule and Table 7.3 below).

EW1 Woodland Mixture Species	% per Mix
Wild Flowers	
Garlic Mustard <i>Alliaria petiolata</i>	3%
Ramsons <i>Allium ursinum</i>	0.8%
Betony <i>Stachys officinalis</i>	1.6%
Rough Chervil <i>Chaerophyllum temulum</i>	1%
Foxglove <i>Digitalis purpurea</i>	0.2%
Meadowsweet <i>Filipendula ulmaria</i>	2%
Hedge Bedstraw <i>Galium album</i>	1%
Water Avens <i>Geum rivale</i>	1%
Wood Avens <i>Geum urbanum</i>	0.2%
Bluebell <i>Hyacinthoides non-scripta</i>	2.8%
Hairy St John's-wort <i>Hypericum hirsutum</i>	0.8%
Primrose <i>Primula vulgaris</i>	0.2%
Selfheal <i>Prunella vulgaris</i>	1.5%
Red Campion <i>Silene dioica</i>	2.7%
Ragged Robin <i>Lychnis flos-cuculi</i>	0.2%
Wood Sage <i>Teucrium scorodonia</i>	1%
	20%
Grasses	
Common Bent <i>Agrostis capillaris</i>	10%
Sweet Vernal Grass <i>Anthoxanthum odoratum</i>	2%
False Brome <i>Brachypodium sylvaticum</i>	7%
Crested Dog's-tail <i>Cynosurus cristatus</i>	28%
Tufted Hair-Grass <i>Deschampsia cespitosa</i>	1%
Slender Creeping Red Fescue <i>Festuca rubra ssp. litoralis</i>	20%
Wood Meadow-grass <i>Poa nemoralis</i>	12%
	80%

Table 7.3. Emorsgate Seeds EW1 Woodland Mixture species list.

- 7.3.14 An 'edible spine' will be established within the linear country park focusing on edible and foraging plants (see GA and Planting Plans, Planting Schedule and Table 7.4 below).

Edible Planting Species
Wild Garlic <i>Allium ursinum</i>
Hazel <i>Corylus avellana</i>
Purple Coneflower <i>Echinacea purpurea</i>
Wild Strawberry <i>Fragaria vesca</i>
Crab Apple <i>Malus sylvestris</i>
Water Mint <i>Mentha aquatica</i>
Wild Marjoram <i>Origanum vulgare</i>
Blackthorn <i>Prunus spinosa</i>
Dog Rose <i>Rosa canina</i>
Elder <i>Sambucus nigra</i>
Rowan <i>Sorbus aucuparia</i>

Table 7.4. Edible Planting species list.

- 7.3.15 Significant new tree planting will be undertaken in this area with an emphasis on orchard tree species (see GA and Planting Plans, Planting Schedule and Table 7.5 below).

Wild Orchard Tree Species
Apple 'Annie Elizabeth' <i>Malus domestica</i> 'Annie Elizabeth'
Apple 'Red Falstaff' <i>Malus domestica</i> 'Red Falstaff'
Wild Cherry 'Amber Heart' <i>Prunus avium</i> 'Amber Heart'
Wild Cherry 'Knight Early Black' <i>Prunus avium</i> 'Knight Early Black'
Wild Cherry 'Penny' <i>Prunus avium</i> 'Penny'
Plum 'Avalon' <i>Prunus domestica</i> 'Avalon'
Plum 'Cambridge Gage' <i>Prunus domestica</i> 'Cambridge Gage'
Plum 'Denniston's Superb' <i>Prunus domestica</i> 'Denniston's Superb'
Bird Cherry <i>Prunus padus</i>

Table 7.5. Wild Orchard tree species list.

- 7.3.16 The planting schedule includes the provision of wet and dry grassland habitat, designed to encourage greater wildflower diversity, and the provision of swales and ponds as habitats containing taller vegetation. This habitat diversification will favour invertebrates and will in turn provide net gains for local wildlife.
- 7.3.17 Areas of amenity grassland within the infrastructure for the site will be seeded with a flowering lawn mix (see GA and Planting Plans, Planting Schedule and Table 7.6 below).

EL1 Flowering Lawn Mixture Species	% per Mix
Wild Flowers	
Lady's Bedstraw <i>Galium verum</i>	4%
Rough Hawkbit <i>Leontodon hispidus</i>	0.5%
Oxeye Daisy <i>Leucanthemum vulgare</i>	1%
Birdsfoot Trefoil <i>Lotus corniculatus</i>	3.7%
Cowslip <i>Primula veris</i>	3.0%
Selfheal <i>Prunella vulgaris</i>	4.0%
Meadow Buttercup <i>Ranunculus acris</i>	3.5%
Red Clover <i>Trifolium pratense</i>	0.1%
	20%
Grasses	
Common Bent <i>Agrostis capillaris</i>	8.0%
Crested Dog's-tail <i>Cynosurus cristatus</i>	40.0%
Slender Creeping Red Fescue <i>Festuca rubra ssp. litoralis</i>	28.0%
Smaller Cat's-tail <i>Phleum bertolonii</i>	4.0%
	80%

Table 7.6. Emorsgate Seeds EL1 Flowering Lawn Mixture species list.

- 7.3.18 The existing field margins are recognised to be of relatively higher botanical interest. These will be retained and subject to ongoing management to maximise their botanical interest. There will be no storage of materials or tracking over of these areas, and no new tree planting.
- 7.3.19 New areas of wildflower grassland are to be established throughout the Green Spine and Linear Park. These areas are currently principally intensive arable and improved grassland respectively. In conjunction with the drainage strategy, areas of dry and wet grassland will be established (see GA and Planting Plans, Planting Schedule and Tables 7.7 and 7.8 below).

7.3.20 Newly established meadows will be cut on an annual basis as required, with the arisings removed. These would be retained as 'habitat piles' in suitable locations to encourage reptiles.

EM6 Meadow Mixture for Chalk & Limestone Soils Species	% per Mix
Wild Flowers	
Yarrow <i>Achillea millefolium</i>	0.5%
Kidney Vetch <i>Anthyllis vulneraria</i>	0.5%
Common Knapweed <i>Centaurea nigra</i>	1.5%
Greater Knapweed <i>Centaurea scabiosa</i>	2%
Wild Basil <i>Clinopodium vulgare</i>	0.4%
Wild Carrot <i>Daucus carota</i>	1%
Lady's Bedstraw <i>Galium verum</i>	2%
Field Scabious <i>Knautia arvensis</i>	1.5%
Rough Hawkbit <i>Leontodon hispidus</i>	0.4%
Oxeye Daisy <i>Leucanthemum vulgare</i>	0.5%
Bird's-foot Trefoil <i>Lotus corniculatus</i>	0.6%
Sainfoin <i>Onobrychis viciifolia</i>	1.5%
Wild Marjoram <i>Origanum vulgare</i>	0.2%
Hoary Plantain <i>Plantago media</i>	0.7%
Salad Burnet <i>Sanguisorba minor</i>	2%
Cowslip <i>Primula veris</i>	1%
Selfheal <i>Prunella vulgaris</i>	1%
Meadow Buttercup <i>Ranunculus acris</i>	1%
Bulbous Buttercup <i>Ranunculus bulbosus</i>	1.5%
Small Scabious <i>Scabiosa columbaria</i>	0.2%
	20%
Grasses	
Quaking-grass <i>Briza media</i>	4%
Glaucous Sedge <i>Carex flacca</i>	0.2%
Crested Dog's-tail <i>Cynosurus cristatus</i>	32%
Sheep's-fescue <i>Festuca ovina</i>	24%
Slender Creeping Red Fescue <i>Festuca rubra ssp. litoralis</i>	12.6%
Crested Hair-grass <i>Koeleria macrantha</i>	2%
Smaller Cat's-tail <i>Phleum bertolonii</i>	4%
Yellow Oat-grass <i>Trisetum flavescens</i>	1.2%
	80%

Table 7.7. Emorsgate Seeds EM6 Meadow Mixture for Chalk and Limestone Soils species list.

EM8 Meadow Mixture for Wetlands Species	% per Mix
Wild Flowers	
Yarrow <i>Achillea millefolium</i>	0.2%
Sneezewort <i>Achillea ptarmica</i>	0.2%
Betony <i>Stachys officinalis</i>	1%
Common Knapweed <i>Centaurea nigra</i>	2.5%
Meadowsweet <i>Filipendula ulmaria</i>	2%
Lady's Bedstraw <i>Galium verum</i>	2%
Rough Hawkbit <i>Leontodon hispidus</i>	0.5%
Oxeye Daisy <i>Leucanthemum vulgare</i>	0.5%
Bird's-foot Trefoil <i>Lotus corniculatus</i>	0.7%
Greater Bird's-foot-trefoil <i>Lotus pedunculatus</i>	0.5%
Ribwort Plantain <i>Plantago lanceolata</i>	1%
Cowslip <i>Primula veris</i>	1%
Selfheal <i>Prunella vulgaris</i>	1.5%

Meadow Buttercup <i>Ranunculus acris</i>	2%
Yellow Rattle <i>Rhinanthus minor</i>	1.5%
Great Burnet <i>Sanguisorba officinalis</i>	1.5%
Pepper-saxifrage <i>Silaum silaus</i>	0.5%
Ragged Robin <i>Lychnis flos-cuculi</i>	0.4%
Devil's-bit Scabious <i>Succisa pratensis</i>	0.5%
	20%
Grasses	
Common Bent <i>Agrostis capillaris</i>	10%
Meadow Foxtail <i>Alopecurus pratensis</i>	1%
Sweet Vernal Grass <i>Anthoxanthum odoratum</i>	3%
Quaking-grass <i>Briza media</i>	2%
Crested Dog's-tail <i>Cynosurus cristatus</i>	32%
Tufted Hair-Grass <i>Deschampsia cespitosa</i>	1%
Slender Creeping Red Fescue <i>Festuca rubra ssp. litoralis</i>	24%
Meadow Barley <i>Hordeum brachyantherum</i>	1%
Meadow Fescue <i>Festuca pratensis</i>	6%
	80%

Table 7.8. Emorsgate Seeds EM8 Meadow Mixture for Wetlands species list.

- 7.3.21 Areas of tussocky grassland will be established using Emorsgate Seeds EG10 Tussock Grass Mixture (see GA and Planting Plans, Planting Schedule and Table 7.9 below) to create greater opportunities for reptiles and other wildlife.

EG10 Tussock Grass Mixture Species	% per Mix
Meadow Foxtail <i>Alopecurus pratensis</i>	2.5%
Crested Dog's-tail <i>Cynosurus cristatus</i>	25.0%
Cocksfoot <i>Dactylis glomerata</i>	20.0%
Tufted Hair-Grass <i>Deschampsia cespitosa</i>	2.5%
Strong-creeping Red Fescue	25.0%
Yorkshire Fog <i>Holcus lanatus</i>	2.5%
Tall Fescue <i>Festuca arundinacea</i>	12.5%
Meadow Fescue <i>Festuca pratensis</i>	10%
	100%

Table 7.9. Emorsgate Seeds EG10 Tussock Grass Mixture species list.

- 7.3.22 The periphery of the wildflower meadows will be planted with native tree species (see GA and Planting Plans, Planting Schedule and Table 7.10 below), bolstering the existing woodland edge and mature Oak trees present along the boundaries of the linear park.

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

Table 7.10. Woodland Meadow Edge tree species list.

7.4 Initial Aftercare and Long-term Management and Maintenance

Trees

- 7.4.1 Watering will be required during periods of drought for no less than the first three years after planting to ensure satisfactory establishment.
- 7.4.2 Trees will be inspected every six months for the first two years to ensure that they are healthy, not diseased or damaged, or dead. After the first two years, trees can be inspected annually if found to be establishing well.
- 7.4.3 Any failed trees within the first five years will be replaced and maintained for a subsequent five years. Tree replacement will occur in early spring or late autumn.
- 7.4.4 Annual pruning will be completed between January and March. Emergency pruning will be undertaken immediately after a critical fault is identified.

Grassland

- 7.4.5 Seed is best sown in the autumn or spring but can be sown at other times of the year if there is sufficient warmth and moisture.
- 7.4.6 **EG10 Tussock Grass Mixture.** Once established, tussocky grassland requires very little management.
- 7.4.7 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.
- 7.4.8 After the first year, unwanted perennial weeds can be occasionally spot treated.
- 7.4.9 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.
- 7.4.10 **EL1 Flowering Lawn Mixture.** Newly sown flowering lawns should be mown every 7-10 days during the growing season of the first year to a height of 40-60mm. Residual perennial weeds will be carefully dug out or spot treated.
- 7.4.11 After the first year the grass will be mown regularly to a height of 25-40mm. Management can be relaxed from late June for 4-8 weeks to allow for flowering (mowing may be suspended earlier to allow for Cowslip to flower). Heavy quantities of cuttings should be collected and removed from site.
- 7.4.12 **EW1 Woodland Mixture.** In established woodland the woodland mix requires very little management.
- 7.4.13 In young or open woodland with higher light levels, the mix should be cut annually in mid-summer until the tree cover has established.
- 7.4.14 **EM6 Meadow Mixture for Chalk and Limestone Soils and EM8 Meadow Mixture for Wetlands.** Newly sown meadows will be mown regularly

throughout the first year of establishment to a height of 40-60mm. This will control annual weeds and help maintain balance between faster growing grasses and slower developing wild flowers. Cuttings will be removed if dense. Residual perennial weeds will be carefully dug out or spot treated.

- 7.4.15 In subsequent years, on poor shallow soils the grass will be cut once or twice at the end of the summer.
- 7.4.16 On deeper soils best results are usually obtained by traditional meadow management. This will include a cut to 50mm after flowering in July or August. The cuttings will be left to dry and shed seed for 1-7 days before being removed from the site. The grass can then be maintained at a height of 50mm through to spring.
- 7.4.17 Areas of new and retained and enhanced planting, as well as ponds and swales, will be monitored annually for the first five years to ensure that the species diversity and composition is developing in such a way as to enhance the site for wildlife.
- 7.4.18 Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.
- 7.4.19 Dead or diseased plants will be removed and replaced with the same species immediately after identification.

8. WOODLAND AND SCRUB

8.1 This section is concerned with the establishment and management of existing and new woodland habitats, including Great Field Plantation, and the mitigation of effects on woodland as identified in the ES.

8.2 Conservation Objectives

To avoid adverse effects on retained habitats through direct encroachment.

To avoid adverse effects on new establishing habitats through direct encroachment.

To establish high quality new habitats using appropriate native species mixes.

To promote greater habitat diversity in existing woodland.

8.3 Designs and Working Methods

Construction Phase Mitigation

- 8.3.1 All habitats to be retained as part of development will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans.
- 8.3.2 Tree root protection areas, as defined on the GA and Planting Plans, will be safeguarded through fencing complying with the British Standard.
- 8.3.3 Site personnel will be briefed as to the presence of these important retained areas.
- 8.3.4 No storage of materials will be permitted within 10m of retained habitats, and vehicle movements within this area will be for essential works only.
- 8.3.5 These measures will be the responsibility of the site manager.

Dust Suppression

- 8.3.6 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.
- 8.3.7 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

New Habitats

- 8.3.8 All new habitats will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans, until such time as they are properly established.

Great Field Plantation

- 8.3.9 Overall, while Great Field Plantation does offer opportunities to wildlife, it is of limited intrinsic nature conservation interest. The understorey is virtually absent and the field layer is very impoverished, with little light penetrating to the woodland floor. The aims of management are therefore to facilitate a gradual conversion to a more naturalistic woodland with greater structural diversity, focusing on native species as opposed to introduced conifers.

Conversion of Even-aged Plantation to Uneven-aged System

- 8.3.10 The principal advantage of the phased removal of conifers and the introduction of native broadleaves is that disruption to wildlife is minimised. A phased approach is therefore favoured over a clear-fell approach, which would have an adverse effect on protected and notable species, and is in any case unacceptable from a landscape and visual standpoint.
- 8.3.11 Three glades will be established in the woodland by felling conifer species. New understorey planting will be undertaken using native species. Existing broadleaved species will be encouraged to grow to maturity.
- 8.3.12 Felled timber will be cut into logs and set into 'loggeries' and more informal log piles to encourage saproxylic invertebrates. Felled trees will not be shredded or mulched.
- 8.3.13 New planting will exclusively be locally native species e.g. Oak *Quercus robur*; Hazel *Corylus avellana*, Hornbeam *Carpinus betulus*; Field Maple *Acer campestre*, Holly *Ilex aquifolium*, Guelder Rose *Viburnum opulus*; Hawthorn *Crataegus monogyna*; Spindle *Euonymus europaeus*, Honeysuckle *Lonicera periclymenum*, Dog Rose *Rosa canina*, Silver Birch *Betula pendula*, Cherry *Prunus avium*, Bird Cherry *Prunus padus*, Crab Apple *Malus sylvestris* and Rowan *Sorbus aucuparia*. The aim will be to encourage strong growth of these species to canopy and understorey layer as appropriate.

Coppicing

- 8.3.14 Existing Hazel stools will be coppiced on a 15-year rotation to encourage greater structural diversity, and layered to produce new coppice stools and expand the understorey. Cut wood will be used to diversify the habitat through establishment of wood piles.

Ground Flora

- 8.3.15 The effects of habitat management on the ground flora will be monitored. Though the intention will be to encourage natural regeneration, if this proves difficult consideration will be given to the introduction of plug-planted locally native species.

Wildlife Opportunities

- 8.3.16 It is expected that the habitat enhancements will generate greater wildlife interest. Additional opportunities will be established by providing a series of bat, bird and invertebrate boxes (see following sections).

Public Use and Recreation

- 8.3.17 Public use of the woodland will be monitored and management operations adapted where necessary. Generally it is envisaged that fencing will be avoided. Where it is necessary to dissuade the public from accessing certain areas (for example around the Badger setts and where new planting has been undertaken) this will be by means of dead hedging or planting thorny species. If fencing must be used it will be suitable for the area, e.g. natural woven Willow or Hazel hurdles.

Boundary Hedgerow

- 8.3.1 A new native hedgerow will be established on the boundaries of Great Field Plantation to diversify the habitat and regulate public access. Subject to the detail of the Housing RMA layouts, which at the time of writing have yet to be finalised, specific access points will be facilitated.

Detailed Management Plan

- 8.3.2 Great Field Plantation represents a special case in terms of habitat establishment and management. The information in this and other documents set out the general prescriptions for management, protection and monitoring, but the detailed measures in terms of which trees to fell to establish glades, and which areas to coppice on which rotation will be subject to a further submission, for which Redrow Homes is content to accept a planning condition on the Infrastructure Reserved Matters permission. This allows time for further consultation on the detail of this key aspect of the green infrastructure, without unduly delaying the commencement of construction.

Southern Plantation

- 8.3.3 The woodland in the south of the site is currently a mixed plantation, with a good proportion of native species, though largely even-aged. Long term management will encourage growth of native species and diversification of the habitat.
- 8.3.4 Non-native conifers will be selectively felled to introduce habitat diversity, with timber retained as for Great Field Plantation.
- 8.3.5 An appropriate coppicing regime will be introduced on a 15-year rotation to encourage a vigorous understorey.
- 8.3.6 Bat and Dormouse 'hop-overs' will be established using native trees approximately 6m in height at edges of new accesses (see GA and Planting Plans for locations and detailed specifications of bat hop-overs). The species to be used are listed in Table 8.1 below.

Bat Hop-over Tree Species
Field Maple <i>Acer campestre</i>
Alder <i>Alnus glutinosa</i>
Hornbeam <i>Carpinus betulus</i>
Beech <i>Fagus sylvatica</i>
Bird Cherry <i>Prunus padus</i>
Blackthorn <i>Prunus spinosa</i>
Oak <i>Quercus robur</i>

Wild Service-tree <i>Sorbus torminalis</i>
Small-leaved Lime <i>Tilia cordata</i>

Table 8.1. Bat Hop-over tree species list.

Stour Brook Tributary

8.3.7 Generally the woodland along the watercourse is more semi-natural than that of the plantations, with mature broadleaved trees and a good understorey and field layer. At this stage it is considered that minimal intervention is necessary. Enhancements will focus on the provision of dead wood piles for habitat diversification. The existing footbridge will be replaced to facilitate safe public access and recreation.

New Woodland

8.3.8 A significant area of new woodland is to be established in the northern area of the linear park adjacent to plot A1. This will be based around W8 / W10 NVC woodland as recommended in the ES.

New Woodland

8.3.9 A significant area of new woodland is to be established in the northern area of the linear park adjacent to plot A1. This will be based around W8 / W10 NVC woodland as recommended in the ES. Tables 8.2 to 8.4 below set out the species to be used.

No	Species	%
23	Field Maple <i>Acer campestre</i>	3%
8	Hornbeam <i>Carpinus betulus</i>	1%
16	Dogwood <i>Cornus sanguinea</i>	2%
256	Hazel <i>Corylus avellana</i>	34%
113	Hawthorn <i>Crataegus monogyna</i>	15%
8	Spindle <i>Euonymus europaeus</i>	1%
8	Beech <i>Fagus sylvatica</i>	1%
16	Holly <i>Ilex aquifolium</i>	2%
8	Wild Privet <i>Ligustrum vulgare</i>	1%
8	Crab Apple <i>Malus sylvestris</i>	1%
8	Aspen <i>Populus tremula</i>	1%
8	Cherry <i>Prunus avium</i>	1%
16	Blackthorn <i>Prunus spinosa</i>	2%
113	Sessile Oak <i>Quercus petraea</i>	15%
38	Oak <i>Quercus robur</i>	5%
8	Buckthorn <i>Rhamnus cathartica</i>	1%
38	Goat Willow <i>Salix caprea</i>	5%
38	Grey Willow <i>Salix cinerea subsp. cinerea</i>	5%
8	Elder <i>Sambucus nigra</i>	1%
8	Rowan <i>Sorbus aucuparia</i>	1%
8	Yew <i>Taxus baccata</i>	1%
8	Wayfaring-tree <i>Viburnum lantana</i>	1%

Table 8.2. Woodland planting species list, Area 1 (752.52m²).

No	Species	%
54	Field Maple <i>Acer campestre</i>	3%
18	Hornbeam <i>Carpinus betulus</i>	1%

36	Dogwood <i>Cornus sanguinea</i>	2%
609	Hazel <i>Corylus avellana</i>	34%
269	Hawthorn <i>Crataegus monogyna</i>	15%
18	Spindle <i>Euonymus europaeus</i>	1%
18	Beech <i>Fagus sylvatica</i>	1%
36	Holly <i>Ilex aquifolium</i>	2%
18	Wild Privet <i>Ligustrum vulgare</i>	1%
18	Crab Apple <i>Malus sylvestris</i>	1%
18	Aspen <i>Populus tremula</i>	1%
18	Cherry <i>Prunus avium</i>	1%
36	Blackthorn <i>Prunus spinosa</i>	2%
269	Sessile Oak <i>Quercus petraea</i>	15%
90	Oak <i>Quercus robur</i>	5%
18	Buckthorn <i>Rhamnus cathartica</i>	1%
90	Goat Willow <i>Salix caprea</i>	5%
90	Grey Willow <i>Salix cinerea</i> subsp. <i>cinerea</i>	5%
18	Elder <i>Sambucus nigra</i>	1%
18	Rowan <i>Sorbus aucuparia</i>	1%
18	Yew <i>Taxus baccata</i>	1%
18	Wayfaring-tree <i>Viburnum lantana</i>	1%

Table 8.3. Woodland planting species list, Area 2 (1,790 85m²).

No	Species	%
132	Field Maple <i>Acer campestre</i>	10%
40	Hornbeam <i>Carpinus betulus</i>	3%
93	Dogwood <i>Cornus sanguinea</i>	7%
461	Hazel <i>Corylus avellana</i>	35%
40	Spindle <i>Euonymus europaeus</i>	3%
53	Beech <i>Fagus sylvatica</i>	4%
93	Holly <i>Ilex aquifolium</i>	7%
40	Wild Privet <i>Ligustrum vulgare</i>	3%
40	Crab Apple <i>Malus sylvestris</i>	3%
40	Cherry <i>Prunus avium</i>	3%
93	Blackthorn <i>Prunus spinosa</i>	7%
40	Buckthorn <i>Rhamnus cathartica</i>	3%
40	Elder <i>Sambucus nigra</i>	3%
40	Rowan <i>Sorbus aucuparia</i>	3%
40	Yew <i>Taxus baccata</i>	3%
40	Wayfaring-tree <i>Viburnum lantana</i>	3%

Table 8.4. Woodland planting species list, Area 3 (1,316.86m²).

8.4 Initial Aftercare and Long-term Management and Maintenance

Trees

- 8.4.1 Watering will be required during periods of drought for no less than the first three years after planting to ensure satisfactory establishment.
- 8.4.2 Trees will be inspected every six months for the first two years to ensure that they are healthy, not diseased or damaged, or dead. After the first two years, trees can be inspected annually if found to be establishing well.
- 8.4.3 Any failed trees within the first five years will be replaced and maintained for a subsequent five years. Tree replacement will occur in early spring or late autumn.

- 8.4.4 Annual pruning will be completed between January and March. Emergency pruning will be undertaken immediately after a critical fault is identified.

Shrubs

- 8.4.5 Shrub planting will be inspected every three months to ensure that they are healthy, not diseased or damaged, or dead. Any failed species will be removed and replaced with the same species and size.

9. HEDGEROWS AND TREES

9.1 This section is concerned with the establishment and management of new hedgerows and trees, and the mitigation of effects on woodland as identified in the ES.

9.2 Conservation Objectives

To avoid adverse effects on retained habitats through direct encroachment.

To avoid adverse effects on new establishing habitats through direct encroachment.

To establish high quality new habitats using appropriate native species mixes.

9.3 Designs and Working Methods

Construction Phase Mitigation

- 9.3.1 All habitats to be retained as part of development will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans.
- 9.3.2 Tree root protection areas, as defined on the GA and Planting Plans, will be safeguarded through fencing complying with the British Standard.
- 9.3.3 Site personnel will be briefed as to the presence of these important retained areas.
- 9.3.4 No storage of materials will be permitted within 10m of retained habitats, and vehicle movements within this area will be for essential works only.
- 9.3.5 These measures will be the responsibility of the site manager.

Dust Suppression

- 9.3.6 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.
- 9.3.7 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

New Habitats

- 9.3.8 All new habitats will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans, until such time as they are properly established.

New Hedgerows

- 9.3.9 The existing hedgerow network is a key green infrastructure asset and is to be retained and enhanced wherever possible. Unless otherwise stated on the Hedgerow Removal Plan 5055-L-112 rev C accompanying the outline application (see Appendix 1), new gaps established will generally be maximum of 12m to allow for Dormouse dispersal. Gaps in existing hedgerows will be reinforced with native species. New hedgerow and shrub planting will comprise native species as shown on the GA and Planting Plans and Planting Schedule and listed in Table 9.1 below.

Native Hedgerow and Shrub Species
Field Maple <i>Acer campestre</i>
Dogwood <i>Cornus sanguinea</i>
Hazel <i>Corylus avellana</i>
Hawthorn <i>Crataegus monogyna</i>
Spindle <i>Euonymus europaeus</i>
Crab Apple <i>Malus sylvestris</i>
Wild Cherry <i>Prunus avium</i>
Blackthorn <i>Prunus spinosa</i>
Dog Rose <i>Rosa canina</i>
Elder <i>Sambucus nigra</i>
Gelder Rose <i>Viburnum opulus</i>

Table 9.1. Native Hedgerow and Shrub species list.

- 9.3.10 Hedgerows will continue to be managed. Management will aim to ensure continued good structure. Hedgerows will be cut on rotation, so that not all are cut in any one year. This will encourage greater availability of winter forage for birds. Hedgerows will be laid on rotation to encourage greater structural diversity.

9.4 Initial Aftercare and Long-term Management and Maintenance

Trees

- 9.4.1 Watering will be required during periods of drought for no less than the first three years after planting to ensure satisfactory establishment.
- 9.4.2 Trees will be inspected every six months for the first two years to ensure that they are healthy, not diseased or damaged, or dead. After the first two years, trees can be inspected annually if found to be establishing well.
- 9.4.3 Any failed trees within the first five years will be replaced and maintained for a subsequent five years. Tree replacement will occur in early spring or late autumn.
- 9.4.4 Annual pruning will be completed between January and March. Emergency pruning will be undertaken immediately after a critical fault is identified.

Shrubs and Hedgerows

- 9.4.5 Shrub and hedgerow planting will be inspected every three months to ensure that they are healthy, not diseased or damaged, or dead. Any failed species will be removed and replaced with the same species and size.

- 9.4.6 Pruning and dead-heading will be completed at the end of the plant flowering seasons (spring to autumn) as required.

10. ATTENUATION FEATURES

10.1 This section is concerned with the establishment and management of new attenuation features.

10.2 Conservation Objectives

To avoid adverse effects on retained habitats through direct encroachment.

To avoid adverse effects on new establishing habitats through direct encroachment.

To establish high quality new habitats using appropriate native species mixes.

10.3 Designs and Working Methods

Construction Phase Mitigation

- 10.3.1 All habitats to be retained as part of development will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans.
- 10.3.2 Tree root protection areas, as defined on the GA and Planting Plans, will be safeguarded through fencing complying with the British Standard.
- 10.3.3 Site personnel will be briefed as to the presence of these important retained areas.
- 10.3.4 No storage of materials will be permitted within 10m of retained habitats, and vehicle movements within this area will be for essential works only.
- 10.3.5 Particular regard will be had to the management of on-site waste disposal, with regular checks of watercourses being undertaken for signs of litter.
- 10.3.6 These measures will be the responsibility of the site manager.

Dust Suppression

- 10.3.7 The preparation of the arable land for development is not considered likely to produce high levels of dust, but during periods of dry weather the work area will be sprayed with water.
- 10.3.8 A suitable vehicle and bowser will be kept on site, and the assessment of dust effects will be allocated to a suitable individual by the site manager, who will have ultimate responsibility for implementing the measure.

New Habitats

- 10.3.9 All new habitats will be appropriately protected using robust fencing, i.e. Heras fencing or similar, as shown on the GA and Planting Plans, until such time as they are properly established.

New Attenuation Features

- 10.3.10 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 will be planted with appropriate mix of native species (see GA and Planting Plans, Planting Schedule and Tables 10.1 and 10.2 below).

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

Table 10.1. Marginal planting species list.

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

Table 10.2. Emorsgate Seeds EP1F Wild Flowers for Pond Edges species list.

10.4 Initial Aftercare and Long-term Management and Maintenance

- 10.4.1 **EP1F Wild Flowers for Pond Edges.** In the first year, annual weed growth should be cut back to encourage the development of a good perennial ground cover.
- 10.4.2 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.