REDROW HOMES

ECOLOGYSOLUTIONS

Part of the ES Group

GREAT WILSEY PARK, HAVERHILL: INFRASTRUCTURE RESERVED MATTERS APPLICATION

Landscape and Ecological Management Plan

Pursuant to Condition 7 of DC/15/2151/OUT

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ecology solutions for planners and developers

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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 (reference: DC/15/2151/OUT). The site location and existing conditions is shown on Plan ECO1.

1.2 Condition 7 requires that a Landscape and Ecological Management Plan (LEMP) be submitted and approved prior to commencement of development. The condition states:

No development shall commence within any phase or reserved matters application until a Landscape and Ecological Management Plan (LEMP) for that phase or reserved matters application has been submitted to and approved in writing by the local planning authority. The content of the LEMP shall include the following.

a) Description and evaluation of features to be managed including all new and existing woodland and coppiced areas, tree and shrub belts, field margin compensatory habitat, new and existing hedgerows and gapping up of existing areas of grassland, meadow and hedgerow margins with intended management regimes, those parts of the site that contain notable plant species recorded on the site, watercourse margins, attenuation ponds and associated features.
b) Ecological constraints on site and how these influence management.
c) Aims and objectives of management.
d) Appropriate management options for achieving aims and objectives.
e) Prescriptions for management actions.
f) Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).
g) Details of the body or organisation responsible for implementation of the plan.
h) Ongoing monitoring and remedial measures.
i) Strategy for the provision of information about sensitive habitats through a variety of outlets such as interpretation boards, new resident information packs.

The management plan for the existing Great Field Plantation woodland must include monitoring of public use of the woodland such that the design of pathways, fencing, hedging and other management operations are iterative, with the aim that the woodland design reflects the needs of the new community. Control of litter and dog waste (within normal refuse collection) can be part of this iterative process. The management plan should identify areas for coppicing to encourage understorey development.

The LEMP shall also include details of the legal and funding mechanism(s) by which the long-term implementation of the plan will be secured and the management body(ies) responsible for its delivery. The plan shall also set out (where the results from monitoring show that conservation aims and objectives of the LEMP are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved details.

The development shall be undertaken in accordance with the approved LEMP. All elements of the mitigation strategy shall be implemented in accordance with the approved details.

Reason: To ensure the satisfactory development of the site and that wildlife habitats and protected species are considered as part of the design process and are not affected adversely by the development.

1.3 This report sets out the management of features of ecological interest due to be retained and created and describes the wildlife enhancements and mitigation strategies to be implemented as part of the Redrow's phase of the development.

1.4 This LEMP has been written with reference to published guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM)[1] and in accordance with Natural England and other relevant guidelines for protected species. It should be read in conjunction with materials produced by Exterior Architecture, in particular the GA and Planting Plans, the Planting Schedule, and the Phase 1 Landscape Strategy.

[1]CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* Version 1.1 – Updated September 2019. Chartered Institute of Ecology and Environmental Management, Winchester.

2. CONTEXT AND CONSULTATION

2.1 The development at Great Wilsey Park is informed by several sources of information, including:

- National Planning Policy Framework (2018);
- St Edmundsbury Core Strategy (2010);
- Haverhill Vision 2031 (2014);
- Joint Development Management Policies Document (2015);
- St Edmundsbury Green Infrastructure Strategy – Final Report (2009);
- Ecology ES Chapter and associated technical reports (2015); and
- ES Addendum (2016).

2.2 In addition to these planning policy and technical sources, reference has been made to information on the natural environment provided by organisations such as Natural England, Suffolk Biodiversity Information Service (SBIS) and Suffolk Biodiversity Partnership (SBP). Regard has been had to designated sites in the locality, to existing habitats and features, and to local nature conservation priorities.

2.3 All these factors have helped to shape the vision and objectives for the Landscape and Ecological Management Plan.

2.4 National Planning Policy Framework

2.4.1 Guidance on national policy for biodiversity and geological conservation is provided by the NPPF, published in March 2012, revised on 24 July 2018 and updated on 19 February 2019. It is noted that the NPPF continues to refer to further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system provided by Circular 06/05 (DEFRA / ODPM, 2005) accompanying the now-defunct Planning Policy Statement 9 (PPS9).

2.4.2 The key element of the NPPF is that there should be "*a presumption in favour of sustainable development"* (paragraphs 10 to 11). It is important to note that this presumption *"does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site"* (paragraph 177). 'Habitats site' has the same meaning as the term 'European site' as used in the Habitats Regulations 2017.

2.4.3 Hence the direction of Government policy is clear; that is, the presumption in favour of sustainable development is to apply in circumstances where there is potential for an effect on a European site, if it has been shown that there will be no adverse effect on that designated site as a result of the development in prospect.

2.4.4 A number of policies in the NPPF are comparable to those in PPS9, including reference to minimisation of impacts to biodiversity and provision of net gains to biodiversity where possible (paragraph 170).

2.4.5 The NPPF also considers the strategic approach that Local Authorities should adopt with regard to the protection, maintenance and enhancement of green

infrastructure, priority habitats and ecological networks, and the recovery of priority species.

2.4.6 Paragraphs 174 to 176 of the NPPF comprise a number of principles that Local Authorities should apply, including encouraging opportunities to incorporate biodiversity in and around developments; provision for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for; applying the protection given to European sites to potential SPAs, possible SACs, listed or proposed Ramsar sites and sites identified (or required) as compensatory measures for adverse effects on European sites; and the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats **–** unless there are 'wholly exceptional reasons' (for instance, infrastructure projects where the public benefit would clearly outweigh the loss or deterioration of habitat) and a suitable compensation strategy exists.

2.4.7 National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

2.5 St Edmundsbury Core Strategy

2.5.1 The St Edmundsbury Core Strategy was adopted on 14 December 2010. The Core Strategy sets out the vision, objectives, spatial strategy and overarching policies for the provision of new development in the Borough up to 2031. A single policy within the Core Strategy relates to ecology.

2.5.2 *Policy CS2 Sustainable Development* relates to sustainable environmental design measures, appropriate to the location and scale of development. Measures relating to ecology include:

- Protection, conservation and the minimisation of impact to local wildlife and biodiversity;
- The implementation of a Biodiversity Action Plan (BAP) to identify, create or sustain networks of protected habitat; and
- Ensuring conformity to appropriate national standards, codes of practice and regulations.

2.6 Haverhill Vision 2031

2.6.1 The Haverhill Vision 2031 document is a comprehensive plan, guiding the overall direction of future service provision and the management of growth in Haverhill for at least the next 20 years.

2.6.2 *Policy HV4: Strategic Site – North-east Haverhill* relates specifically to the Great Wilsey Park development. There are no elements of the policy that relate directly to ecology or nature conservation but does state that a buffer is identified which could provide a variety of supporting uses including Sustainable Drainage Systems (SuDS).

2.6.3 *Policy HV18: Green Infrastructure in Haverhill* refers to the maintenance, protection, enhancement and establishment of the green infrastructure network in and around Haverhill through the implementation of the St

Edmundsbury Green Infrastructure Strategy. The policy states that opportunities exist to extend the coverage and connectivity of the strategic green infrastructure network and where appropriate, should be undertaken in association with new development.

2.7 Joint Development Management Policies Document

2.7.1 The Joint Development Management Policies Document was adopted on 27 February 2015 by Forest Heath District Council and on 24 February 2015 by St Edmundsbury Borough Council. The document replaces a number of policies within each councils existing Local Plan, replacing them with locally specific management policies for a wide range of topics, including preservation of the environment.

2.7.2 *Policy DM2: Creating Places - Development Principles and Local Distinctiveness* promotes good design within new developments to ensure a better quality of life for people within the area. Measures proposed include taking mitigation measures into account to not adversely affect sites, habitats, species and features of ecological interest.

2.7.3 *Policy DM3: Masterplans* covers analysis of site conditions and key ecological identification for land allocated in Local Plans and Site Allocations DPD, following concept plan preparation, when a Local Planning Authority masterplan is required. This includes:

- Extensive landscaping, green infrastructure and open space to ensure sufficient recreational space and support for local wildlife.
- A full biodiversity plan of species and habitat protection and mitigation, compensation, and habitat creation.

2.7.4 *Policy DM10: Impact of Development on Sites of Biodiversity and Geodiversity Importance* mandates the recognition of advice provided by Natural England, the Suffolk Wildlife Trust and other specialist sources, specifically relating to:

a. the ecological or geological value and objectives for which the site was classified or designated;
b. the integrity of the site in terms of its wildlife value, its diversity and relationship with other ecological resources;
c. the cumulative impact of the proposal and other developments on the wildlife or geological value of the site;
d. the presence of protected species, habitat areas and wildlife corridors, or geological features, and proposed measures to safeguard and enhance them;
e. the opportunity to create new habitat areas and to improve the conservation status of locally vulnerable species;
f. guidance set down within Biodiversity Action Plans (BAP), habitat management plans and other relevant sources; and
g. the extent to which the imposition of conditions or planning obligation:
i. would mitigate the effects of the development and/or protect the geological or nature conservation value of the locality;
ii. ensure replacement habitat or features; and/or
iii. ensure that resources are made available for the future enhancement and management of the replacement habitat or feature to enable it to attain the quality and attributes that have been lost. Proposals for development which would adversely affect the integrity of areas of international nature conservation or geological importance, as indicated on the Polices Map, will be determined in accordance with the Conservation of Habitats and Species

Regulations 2010 (as amended). Proposed development likely to result in adverse effects to a SSSI will not be permitted unless the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs.

2.7.5 *Policy DM11: Protected Species* limits development exclusively to that which does not risk or, where unavoidable, satisfactorily mitigates against adverse impact on species protected under the Conservation of Habitats and Species Regulations (2010) (as amended), the Wildlife and Countryside Act (1981), the Protection of Badgers Act (1992) and the Suffolk Biodiversity Action Plan and subsequent legislation. The policy states that suitable measures should be taken to reduce disturbance to a minimum, maintain the population identified on site, or provide adequate alternative habitats to sustain at least the current levels of population.

2.7.6 *Policy DM12: Mitigation, Enhancement, Management and Monitoring of Biodiversity* states that measures for the protection of biodiversity and the mitigation of any adverse impacts should be included in the design of all developments, and enhancements for biodiversity should be included in all proposals, equal to the scale of the development.

2.8 St Edmundsbury Green Infrastructure Strategy – Final Report

2.8.1 The Green Infrastructure Strategy was developed by Land Use Consultants on behalf of St Edmundsbury Borough Council and sets out the green infrastructure requirements for the Borough and a framework of delivery.

2.8.2 Projects relevant to the site include:

- The creation of green corridors to the north of Haverhill, improving links between the Stour Brook and the Stour Valley Path, as well as several other sites of interest. These links are primarily for pedestrian use but will also act as wildlife corridors; and
- Landscape planting to be delivered in advance of, or alongside development to provide landscape and visual mitigation and habitat connectivity.

2.9 ES Chapter (2015) and Addendum (2016)

2.9.1 A series of surveys were undertaken to establish the baseline interest and inform the outline planning application process for the site. These were reported in the ES Chapter and accompanying technical appendices.

2.9.2 It was concluded that the adverse effects of the development on designated sites and habitats and species of interest can be avoided or adequately mitigated and / or compensated by the creation of new habitats and wildlife corridors included in the design. The loss of arable farmland and replacement with new semi-natural habitats was seen as being of benefit to biodiversity. The overall effects on ecology were not considered likely to be significant.

2.9.3 The 2016 Addendum reviewed the predicted effects on ecological receptors in light of amendments to the scheme and comments made by consultees. Further information was provided on Badgers *Meles meles* and bats for which surveys continued after the submission of the planning application. Greater

definition to the mitigation measures relating to Dormice *Muscardinus avellanarius* was included to satisfy the comments made by Suffolk Wildlife Trust. Other changes were not considered to be significant in the context of the overall evaluation of the effects of the development on ecology as described in the ES Chapter, and mitigation measures and residual impacts were considered to remain the same.

2.10 **Designated Sites**

2.10.1 The site is not subject to any statutory or non-statutory designation, nor is it immediately adjacent to such a designation. The following designated sites are present in the locality, and illustrated on Plan ECO1:

- *Trundley and Wadgell's Wood, Great Thurlow Site of Special Scientific Interest (SSSI)* is situated some 2.7km to the north of the site at its closest point. The site has been designated for its substantial areas of ancient, semi-natural woodland. Both woodlands also possess a network of wide grassy rides.

- *Over and Lawn Woods SSSI* lies on chalky boulder clay and has been designated for its ancient woodland supporting well developed plant and animal communities. It is some 3.9km north-west of the site at its closest point.

- *Haverhill Railway Walks Local Nature Reserve (LNR)* is some 340m to the south of the site. It is designated for its tree and scrub cover, providing a valuable wildlife corridor.

2.10.2 The Landscape and Ecological Management Plan will aim to complement these existing nature conservation designations wherever possible, particularly Haverhill Railway Walks LNR, a short distance to the south.

2.11 **Suffolk Biodiversity Partnership**

2.11.1 Suffolk Biodiversity Partnership has prepared a list of the UK Priority Species which occur in the region. The list includes:

- Mammals including Barbastelle Bat *Barbastella barbastellus*, Brown Long-eared Bat *Plecotus auritus*, Lesser Horseshoe Bat *Rhinolophus hipposideros*, Noctule Bat *Nyctalus noctula*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Dormouse, Otter *Lutra lutra*, Water Vole *Arvicola amphibius*, Harvest Mouse *Micromys Minutus*, Hedgehog *Erinaceus europaeus*, Polecat *Mustela putorius* and Brown Hare *Lepus europaeus*;

- Birds such as Skylark *Alauda arvensis*, Yellowhammer *Emberiza citrinella*, Linnet *Carduelis cannabina* and Bullfinch *Pyrrhula pyrrhula*;

- Adder *Vipera berus*, Grass Snake *Natrix helvetica*, Common Lizard *Zootoca vivipara* and Slow Worm *Anguis fragilis*;

- Common Toad *Bufo bufo*, Great Crested Newt *Triturus cristatus*, and Natterjack Toad *Bufo calamita*; and

- A wide range of invertebrates and vascular and non-vascular plants.

2.11.2 Biodiversity Action Plans (BAP) or factsheets have been prepared for certain species including bats, Dormice, Otters, Water Voles, Skylarks and Linnets.

2.11.3 A suite of factsheets is currently being developed, and many of the existing BAPs have now been archived. However, they remain available as they still contain useful information.

2.11.4 Ecological survey work undertaken to inform the outline planning application and the recent updates completed by Ecology Solutions has established that the site supports, or has potential to support, several of these local conservation priority species. A key objective of the Landscape and Ecological Management Plan will be to maximise opportunities for these species wherever possible.

2.11.5 Suffolk Biodiversity Partnership has Habitat Action Plans (HAP) for the following habitats of relevance to the site and the development. A number of the HAP documents have now been replaced by factsheets. The following HAPs have been considered as part of this strategy:

- Hedgerows;
- Mixed Deciduous Woodland;
- Arable Field Margins;
- Rivers and Streams; and
- Ponds.

2.11.6 Suffolk Biodiversity Partnership has also prepared a Planning Biodiversity Action Plan to assist local authority and other planning departments meet their legal obligations towards biodiversity.

2.12 **Consultation**

2.12.1 Suffolk Wildlife Trust has previously been consulted regarding the scope of the development and their aspirations for the site.

2.12.2 The development of this document has benefited from extensive involvement and constructive criticism from West Suffolk's Ecology and Landscape Officer.

2.12.3 It is expected that further opportunities for consultation and feedback will be taken as the development progresses.

3. DESCRIPTION AND EVALUATION OF FEATURES TO BE MANAGED

3.1 This section sets out the inventory of existing habitats to be retained and managed, identifying features of particular interest or importance that will be priorities for management. This information is derived from work undertaken to inform the outline ES, as well as walkover surveys undertaken by Ecology Solutions in 2018/19.

3.2 Existing Woodland

Great Field Plantation

3.2.1 Great Field Plantation consists of two distinct areas, designated as W5 and W7 in the ES. The western compartment (W5) has a number of mature specimens including Austrian Pine *Pinus nigra*, Common Larch *Larix decidua*, Grand Fir *Abies grandis*, Beech *Fagus sylvatica*, English Elm *Ulmus procera*, Elder *Sambucus nigra*, Scots Pine *Pinus sylvatica*, Oak *Quercus robur*, Norway Spruce *Picea abies* and Sycamore *Acer pseudoplatanus*.

3.2.2 The eastern compartment (W7) has a higher proportion of coniferous trees such as Common Larch, Grand Fir and Norway Spruce, which are more regularly spaced. The ES reports that these were intended to produce Christmas trees, but they were ultimately not harvested and allowed to grow.

3.2.3 Ground flora in both compartments consists of Ivy *Hedera helix*, Common Nettle *Urtica dioica*, Herb Robert *Geranium robertianum*, False Brome *Brachypodium sylvaticum*, Hemlock *Conium maculatum*, Wood Dock *Rumex crispus* and Dog's Mercury *Mercurialis perennis*. The understorey is limited but includes species such as Holly *Ilex aquifolium* and Hazel *Corylus avellana*. The woodland was well trodden with footpaths and showed signs of regular human disturbance from the presence of fires, dens and litter

3.2.4 The Stour Brook Tributary runs along the southern edge of Great Field Plantation and on to the southeast. The watercourse is sheltered by a woodland corridor, with species including Crack Willow *Salix fragilis* and Alder *Alnus glutinosa*, and an understorey of Blackthorn *Prunus spinosa*, Elder *Sambucus nigra*, Hawthorn *Crataegus monogyna* and Dogwood *Cornus sanguinea*.

3.2.5 Ground flora around the watercourse consists species including Ground Ivy, Soft Brome, Common Nettle, Bramble, Dog's Mercury, and Cuckoopint *Arum maculatum*. The degree of overshading limits the aquatic and emergent vegetation, which is limited to occasional Brooklime *Veronica beccabunga* and Pendulous Sedge *Carex pendula*.

Southern Plantation

3.2.6 The southern plantation has been relatively recently established, and consists of young and semi-mature trees including Ash *Fraxinus excelsior*, Field Maple *Acer campestre*, Goat Willow *Salix caprea*, Oak *Quercus robur*, Cherry *Prunus avium*, Apple *Malus domestica* and Silver Birch *Betula pendula*. There is no active management of the woodland

3.2.7 The woodlands within the site, being plantations, were not classed by the ES as habitats of principal importance under the Natural Environment and Rural

Communities Act 2006. The ES recognised their value for wildlife, however, and categorised them as being of local value. The ES classed the watercourse as being of no more than local nature conservation value.

3.3 Field Margins

3.3.1 The field margins consist of semi-improved neutral grassland, with a range of common species, as summarised below.

Yorkshire Fog *Holcus lanatus*
Cock's-foot *Dactylis glomerata*
Creeping Bent *Agrostis capillaris*
False Oat-grass *Arrhenatherum elatius*
Timothy *Phelum pratense*
Meadow Foxtail *Alopecurus pratensis*
Red Fescue *Festuca rubra* agg
Meadow Fescue *Festuca pratensis*
Soft Brome *Bromus hordeaceus*
Sweet Vernal Grass *Anthoxanthum oderatum*
Wild Oat *Avena fatua*
Meadow Oat-grass *Avenula pratensis*
Black Grass *Alopecurus myosuroides*
Barren Brome *Bromus sterilis*
Glaucous Sedge *Carex flacca*
Spring Sedge *Carex caryophyllea*
Red Clover *Trifolium pratense*
White Clover *Trifolium repens*
Knapweed *Centurea nigra*
Ribwort Plantain *Plantago lanceolata*
Ragwort *Senecio jacobea*
Creeping Buttercup *Ranunculus repens*
Tufted vetch *Vicia cracea*
Hop Trefoil *Trifolium campestre*
Dove's-foot Crane's-bill *Geranium molle*
Smooth Tare *Vicia tetrasperma*
Rough Hawk's-beard *Crepis biennis*
Field Bindweed *Convolvulus arvensis*
Smooth Sow-thistle *Sonchus oleraceus*
Welted Thistle *Cardus crispus*
Red Bartsia *Odontites vernus*
Smooth Hawk's-beard *Crepis capillaris*
Betony *Stachys officinalis*
Dandelion *Taraxicum officinale* agg.

3.3.2 Arable field margins are listed as habitats of principal importance under section 41 of the Natural Environment and Rural Communities Act 2006, as well as being Suffolk Biodiversity Action Plan Habitats. With the exception of the field margins in the north of the Redrow site, which the ES classed as being of value at the site level, the margins were considered to be of negligible nature conservation interest owing in part to their easily replicable nature.

3.4 Existing Hedgerows

3.4.1 Thirteen hedgerows are present within the Redrow site, with a reasonable degree of species diversity present. Table 3.1 below, using data extracted from the ES chapter, summarises their features and interest. Assessment under Hedgerow Evaluation Grading System (HEGS) found H11 and H12 being classified as moderate to moderately high value, with the remaining hedgerows being moderate to low value, or of low value. None of the hedgerows within the Redrow site are considered to be 'important' under the Hedgerow Regulations 1997. All hedgerows on site contain at least 80% native species and therefore are habitats of principal importance in England under section 41 of the Natural Environmental and Rural Communities Act 2006; they are also Suffolk Biodiversity Action Plan habitats. The ES classed the existing hedgerows as being of local level importance to nature conservation.

Hedge Ref.	Woody Species	Height	Width	% Gaps	Ditch (wet or dry)	Grass Verge	Standard Trees	Connections	HEGS Grade	Impt. under Hedgerow Regulations
H4	Ps, Cm, Sn, Um	2m	2m	0%	Dry	Yes	0	4	3+	No
H5	Cm, Sn, Qr, Fe	4m+	2m	10%	Dry	Yes	<3	2	3+	No
H6	Cm	2m	2m	0%	n/a	Yes	0	2	4+	No
H7	Cm, Cs, Ps	2m	2m	0%	n/a	No	0	1	4+	No
H9	Ac, Ps, Sn	2m	2m	10%	n/a	Yes	0	2	3-	No
H10	Garden boundary hedgerow. Ps, Ms	4m+	2m	10%	Dry	Yes	0	2	3	No
H11	Cm, Ac, Ps, Ca, Fe, Cs, Vo	4m	2m	0%	n/a	Yes	<5	2	2	No
H12	Ps, Fe, Qr, Cm, Cs	3m	2m	10%	Dry	Yes	<5	2	2-	No
H13	Cm, Ps	2m	1m	10%	n/a	No	0	3	4	No
H14	Defunct hedgerow. Cs, Cm, Qr	2m	2m	30%+	Dry	Yes	<3	1	4	No
H15	Defunct hedgerow. Cm, Ps, Cs	2m	2m	30%+	Dry	Yes	<5	2	3-	No
H16	Ps, Cm, Um	1m	1m	0%	Wet	Yes	0	1	3-	No
H17	Cm, Qr, Um	4m	2m	0%	Wet	Yes	1	2	3-	No

Table 3.1. Existing Hedgerow Inventory (reproduced from ES chapter).
(Ac / Field Maple; Ca / Hazel; Cm / Hawthorn; Cs / Dogwood; Um / Elm; Fe / Ash; Ms / Crab Apple; Ps / Blackthorn; Qr / English Oak; Sn / Elder; Vo / Guelder rose.)

3.5 Existing Ditches

3.5.1 The majority of the field boundaries include dry ditches. Those within hedgerows are densely overshaded and those in the open are densely vegetated with the surrounding semi-improved grassland, with patches of Great Willowherb *Epilobium hirsutum*, Rosebay Willowherb *Chamerion angustifolium* and Common Nettle. The ES classed the ditches as being of no more than local nature conservation value.

4. ECOLOGICAL 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 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.

4.3 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.

4.4 None of these habitats pose an overriding ecological constraint in themselves, with the majority of the habitats of greater value being retained and enhanced as part of the green infrastructure for the site.

4.5 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 Badgers, though this appears to have declined over time; an assemblage of breeding birds; 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.

4.6 The presence of these species does not represent a constraint to development as such, since the results of the earlier work have informed the layout assessed in the outline ES and the parameter plans with which the Redrow scheme must comply. Nevertheless, the management prescriptions set out in the following pages have regard to the potential presence of these species within existing and proposed habitats, and the need for sympathetic treatment.

4.7 Overall, 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.

5. AIMS AND OBJECTIVES OF MANAGEMENT

5.1 This section sets out the vision and conservation objectives for the site strategy.

> *The vision for the strategy is to provide a framework for enhancement and management across the site such that demonstrable net gains for biodiversity are achieved.*

5.2 Defining the Conservation Objectives

5.2.1 Defining a set of objectives is central to the effectiveness of this strategy, given that it is intended to provide a framework that will safeguard existing nature conservation interest and provide guidance on enhancement and future management.

5.2.2 Specific objectives for the conservation of particular species or groups and particular habitats of nature conservation interest are set out in the relevant sections to follow. 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) and the Conservation of Habitat and Species Regulations 2017. 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 Suffolk Biodiversity Action Plan (BAP).

5.2.3 The overarching objectives for nature conservation are as follows:

Objective 1

To safeguard species important in the national and local context, and to maintain or enhance their conservation status as appropriate.

Objective 2

To ensure that the site continues to support a similar complement of species to that already existing.

Objective 3

To enhance the biodiversity of the site, where this is compatible with the above objectives.

5.3 Achieving the Objectives

5.3.1 Information on the existing situation at the site and its environs with regard to any habitats of ecological interest and the presence of protected species has been collated as part of the preparation of this document and it is upon this foundation that the specific enhancements and management prescriptions to follow are based.

5.3.2 Where appropriate, specific objectives are defined in the sections to follow.

5.3.3 The Landscape and Ecological Management Plan, and the various measures described in the following sections, are illustrated on Plans ECO2a to ECO2d.

5.3.4 This document should be read in conjunction with the materials produced by Exterior Architecture on the landscape strategy for the site, namely the GA and Planting Plans, the Planting Schedule and the Phase 1 Landscape Strategy.

6. GREEN SPINE / LINEAR COUNTRY PARK

6.1 This section is concerned with the establishment of the Green Spine and Linear Park, as shown on the GA and Planting Plans.

6.2 Conservation Objectives

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

To manage these habitats appropriate to maximise botanical and wildlife interest.

6.3 Prescriptions for Management Actions

6.3.1 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.

6.3.2 Avenue trees (see GA and Planting Plans, Planting Schedule and Table 6.1 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 *Acer campestre*
Field Maple 'Elsrijk' *Acer campestre* 'Elsrijk'
Hornbeam *Carpinus betulus*
Hornbeam 'Fastigiata' *Carpinus betulus* 'Fastigiata'
Hornbeam 'Frans Fontaine' *Carpinus betulus* 'Frans Fontaine'
Hazel *Corylus avellana*
Beech *Fagus sylvatica*
Cherry 'Accolade *Prunus* 'Accolade'
Bird Cherry *Prunus padus*
Chanticleer Pear *Pyrus calleryana* 'Chanticleer'
Whitebeam *Sorbus aria*
Small-leaved Lime *Tilia cordata*
Large-leaved Lime *Tilia platyphyllos*

Table 6.1. Avenue Tree species list.

6.3.3 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).

6.3.4 The Northern Gateway Park will incorporate a large number of parkland trees (see GA and Planting Plans, Planting Schedule and Table 6.2 below), increasing the diversity and age range of tree species within site.

Parkland Tree Species
Field Maple *Acer campestre*
Field Maple 'Elsrijk' *Acer campestre* 'Elsrijk'
Silver Birch *Betula pendula*
Downy Birch *Betula pubescens*
Himalayan Birch 'Jaquemontii' *Betulus utilis* 'Jaquemontii'
Hornbeam *Carpinus betulus*
Hornbeam 'Fastigiata' *Carpinus betulus* 'Fastigiata'
Hazel *Corylus avellana*
Hawthorn *Crataegus monogyna*
Beech *Fagus sylvatica*
Apple *Malus domestica*
Black Poplar *Populus nigra*
Cherry 'Accolade' *Prunus* 'Accolade'
Plum 'Avalon' *Prunus domestica 'Avalon'*
Gage 'Cambridge Gage' *Prunus domestica 'Cambridge Gage'*
Bird Cherry *Prunus padus*
Chanticleer Pear *Pyrus calleryana* 'Chanticleer'
Oak *Quercus robur*
White Willow *Salix alba*
Whitebeam *Sorbus aria*
Rowan S*orbus aucuparia*
Swamp Cypress *Taxodium distichum*
Small-leaved Lime *Tilia cordata*
Common Lime *Tilia x europaea*

Table 6.2. Parkland tree species list.

6.3.5 New areas of extensive tree planting will be under-sown with Emorsgate Seeds woodland mix (see GA and Planting Plans, Planting Schedule and Table 6.3 below).

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

Slender Creeping Red Fescue *Festuca rubra ssp. litoralis*	20%
Wood Meadow-grass *Poa nemoralis*	12%
	80%

Table 6.3. Emorsgate Seeds EW1 Woodland Mixture species list.

6.3.6 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 6.4 below).

Edible Planting Species
Wild Garlic *Allium ursinum*
Hazel *Corylus avellana*
Wild Strawberry *Fragaria vesca*
Crab Apple *Malus sylvestris*
Water Mint *Mentha aquatica*
Wild Marjoram *Origanum vulgare*
Dog Rose *Rosa canina*
Rowan S*orbus aucuparia*

Table 6.4. Edible Planting species list.

6.3.7 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 6.5 below).

Wild Orchard Tree Species
Apple 'Annie Elizabeth' *Malus domestica* 'Annie Elizabeth'
Apple 'Red Falstaff' *Malus domestica* 'Red Falstaff'
Wild Cherry *'*Amber Heart' *Prunus avium* 'Amber Heart'
Wild Cherry 'Knight Early Black' *Prunus avium* 'Knight Early Black'
Wild Cherry 'Penny' *Prunus avium* 'Penny'
Plum 'Avalon' *Prunus domestica* 'Avalon'
Plum 'Cambridge Gage' *Prunus domestica '*Cambridge Gage'
Bird Cherry *Prunus padus*

Table 6.5. Wild Orchard tree species list.

6.3.8 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.

6.3.9 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 6.6 below).

EL1 Flowering Lawn Mixture Species	**% per Mix**
Wild Flowers	
Lady's Bedstraw *Galium verum*	4%
Rough Hawkbit *Leontodon hispidus*	0.5%
Oxeye Daisy *Leucanthemum vulgare*	1%
Birdsfoot Trefoil *Lotus corniculatus*	3.7%
Cowslip *Primula veris*	3.0%

Selfheal *Prunella vulgaris*	4.0%
Meadow Buttercup *Ranunculus acris*	3.5%
Red Clover *Trifolium pratense*	0.1%
	20%
Grasses	
Common Bent *Agrostis capillaris*	8.0%
Crested Dog's-tail *Cynosurus cristatus*	40.0%
Slender Creeping Red Fescue *Festuca rubra ssp. litoralis*	28.0%
Smaller Cat's-tail *Phleum bertolonii*	4.0%
	80%

Table 6.6. Emorsgate Seeds EL1 Flowering Lawn Mixture species list.

6.3.10 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.

6.3.11 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 6.7 and 6.8 below).

6.3.12 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 *Achillea millefolium*	0.5%
Kidney Vetch *Anthyllis vulneraria*	0.5%
Common Knapweed *Centaurea nigra*	1.5%
Greater Knapweed *Centaurea scabiosa*	2%
Wild Basil *Clinopodium vulgare*	0.4%
Wild Carrot *Daucus carota*	1%
Lady's Bedstraw *Galium verum*	2%
Field Scabious *Knautia arvensis*	1.5%
Rough Hawkbit *Leontodon hispidus*	0.4%
Oxeye Daisy *Leucanthemum vulgare*	0.5%
Bird's-foot Trefoil *Lotus corniculatus*	0.6%
Sainfoin *Onobrychis viciifolia*	1.5%
Wild Marjoram *Origanum vulgare*	0.2%
Hoary Plantain *Plantago media*	0.7%
Salad Burnet *Sanguisorba minor*	2%
Cowslip *Primula veris*	1%
Selfheal *Prunella vulgaris*	1%
Meadow Buttercup *Ranunculus acris*	1%
Bulbous Buttercup *Ranunculus bulbosus*	1.5%
Small Scabious *Scabiosa columbaria*	0.2%
	20%
Grasses	
Quaking-grass *Briza media*	4%
Glaucous Sedge *Carex flacca*	0.2%
Crested Dog's-tail *Cynosurus cristatus*	32%
Sheep's-fescue *Festuca ovina*	24%

Slender Creeping Red Fescue *Festuca rubra ssp. litoralis*	12.6%
Crested Hair-grass *Koeleria macrantha*	2%
Smaller Cat's-tail *Phleum bertolonii*	4%
Yellow Oat-grass *Trisetum flavescens*	1.2%
	80%

Table 6.7. Emorsgate Seeds EM6 Meadow Mixture for Chalk and Limestone Soils species list.

EM8 Meadow Mixture for Wetlands Species	**% per Mix**
Wild Flowers	
Yarrow *Achillea millefolium*	0.2%
Sneezewort *Achillea ptarmica*	0.2%
Betony *Stachys officinalis*	1%
Common Knapweed *Centaurea nigra*	2.5%
Meadowsweet *Filipendula ulmaria*	2%
Lady's Bedstraw *Galium verum*	2%
Rough Hawkbit *Leontodon hispidus*	0.5%
Oxeye Daisy *Leucanthemum vulgare*	0.5%
Bird's-foot Trefoil *Lotus corniculatus*	0.7%
Greater Bird's-foot-trefoil *Lotus pedunculatus*	0.5%
Ribwort Plantain *Plantago lanceolata*	1%
Cowslip *Primula veris*	1%
Selfheal *Prunella vulgaris*	1.5%
Meadow Buttercup *Ranunculus acris*	2%
Yellow Rattle *Rhinanthus minor*	1.5%
Great Burnet *Sanguisorba officinalis*	1.5%
Pepper-saxifrage *Silaum silaus*	0.5%
Ragged Robin *Lychnis flos-cuculi*	0.4%
Devil's-bit Scabious *Succisa pratensis*	0.5%
	20%
Grasses	
Common Bent *Agrostis capillaris*	10%
Meadow Foxtail *Alopecurus pratensis*	1%
Sweet Vernal Grass *Anthoxanthum odoratum*	3%
Quaking-grass *Briza media*	2%
Crested Dog's-tail *Cynosurus cristatus*	32%
Tufted Hair-Grass *Deschampsia cespitosa*	1%
Slender Creeping Red Fescue *Festuca rubra ssp. litoralis*	24%
Meadow Barley *Hordeum brachyantherum*	1%
Meadow Fescue *Festuca pratensis*	6%
	80%

Table 6.8. Emorsgate Seeds EM8 Meadow Mixture for Wetlands species list.

6.3.13 Areas of tussocky grassland will be established using Emorsgate Seeds EG10 Tussock Grass Mixture (see GA and Planting Plans, Planting Schedule and Table 6.9 below) to create greater opportunities for reptiles and other wildlife.

EG10 Tussock Grass Mixture Species	**% per Mix**
Meadow Foxtail *Alopecurus pratensis*	2.5%
Crested Dog's-tail *Cynosurus cristatus*	25.0%
Cocksfoot *Dactylis glomerata*	20.0%
Tufted Hair-Grass *Deschampsia cespitosa*	2.5%
Strong-creeping Red Fescue	25.0%
Yorkshire Fog *Holcus lanatus*	2.5%

Tall Fescue *Festuca arundinacea*	12.5%
Meadow Fescue *Festuca pratensis*	10%
	100%

Table 6.9. Emorsgate Seeds EG10 Tussock Grass Mixture species list.

6.3.14 The periphery of the wildflower meadows will be planted with native tree species (see GA and Planting Plans, Planting Schedule and Table 6.10 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 *Acer campestre*
Alder *Alnus glutinosa*
Silver Birch *Betula pendula*
Downy Birch *Betula pubescens*
Hornbeam *Carpinus betulus*
Hornbeam 'Fastigiata' *Carpinus betulus* 'Fastigiata'
Hornbeam 'Frans Fontaine' *Carpinus betulus* 'Frans Fontaine'
Hazel *Corylus avellana*
Beech *Fagus sylvatica*
Cherry 'Accolade' *Prunus* 'Accolade'
Cherry 'Knight's Early Black' *Prunus avium* 'Knight's Early Black'
Bird Cherry *Prunus padus*
Oak *Quercus robur*
White Willow *Salix alba*
Goat Willow *Salix caprea*
Crack Willow *Salix fragilis*
Whitebeam *Sorbus aria*
Rowan S*orbus aucuparia*
Swamp Cypress *Taxodium distichum*
Small-leaved Lime *Tilia cordata*

Table 6.10. Woodland Meadow Edge tree species list.

6.4 Initial Aftercare and Long-term Management and Maintenance

Trees

6.4.1 Watering will be required during periods of drought for no less than the first three years after planting to ensure satisfactory establishment.

6.4.2 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.

6.4.3 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.

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

Grassland

6.4.5 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.

6.4.6 **EG10 Tussock Grass Mixture.** Once established, tussocky grassland requires very little management.

6.4.7 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.

6.4.8 After the first year, unwanted perennial weeds can be occasionally spot treated.

6.4.9 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.

6.4.10 **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.

6.4.11 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.

6.4.12 **EW1 Woodland Mixture.** In established woodland the woodland mix requires very little management.

6.4.13 In young or open woodland with higher light levels, the mix should be cut annually in mid-summer until the tree cover has established.

6.4.14 **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.

6.4.15 In subsequent years, on poor shallow soils the grass will be cut once or twice at the end of the summer.

6.4.16 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.

6.4.17 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.

6.4.18 Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

6.4.19 Dead or diseased plants will be removed and replaced with the same species immediately after identification.

7. WOODLAND AND SCRUB

7.1 This section is concerned with the establishment and management of existing and new woodland habitats, including Great Field Plantation.

7.2 Conservation Objectives

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

To promote greater habitat diversity in existing woodland.

7.3 Prescriptions for Management Actions

Great Field Plantation

7.3.1 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

7.3.2 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.

7.3.3 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.

7.3.4 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.

7.3.5 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.

7.3.6 While formal pathways as such will not be established, the locations of new understorey planting will aim to anticipate new desire lines.

Coppicing

7.3.7 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

7.3.8 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

7.3.9 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

7.3.10 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

7.3.11 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

7.3.12 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

7.3.13 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. Non-native conifers will be selectively felled to introduce habitat diversity, with timber retained as for Great Field Plantation.

7.3.14 An appropriate coppicing regime will be introduced on a 15-year rotation to encourage a vigorous understorey.

7.3.15 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
Hornbeam *Carpinus betulus*
Hornbeam 'Fastiagata' *Carpinus betulus* 'Fastiagata'
Hazel *Corylus avellana*
Beech *Fagus sylvatica*
Apple *Malus domestica*
Blackthorn *Prunus spinosa*
Oak *Quercus robur*

Table 7.1. Bat Hop-over tree species list.

Stour Brook Tributary

7.3.16 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

7.3.17 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 7.2 to 7.4 below set out the species to be used.

No	**Species**	**%**
129	Downy Birch *Betula pubescens*	8%
161	Hornbeam *Carpinus betulus*	10%
145	Dogwood *Cornus sanguinea*	9%
562	Hazel *Corylus avellana*	35%
65	Spindle *Euonymus europaeus*	4%
113	Holly *Ilex aquifolium*	7%
49	Wild Privet *Ligustrum vulgare*	3%
49	Crab Apple *Malus sylvestris*	3%
161	Blackthorn *Prunus spinosa*	10%
49	Buckthorn *Rhamnus cathartica*	3%
81	Yew *Taxus baccata*	5%
49	Wayfaring-tree *Viburnum lantana*	3%

Table 7.2. Woodland planting species list, Area 1.

No	**Species**	**%**
54	Field Maple *Acer campestre*	7%

39	Downy Birch *Betula pubescens*	5%
39	Hornbeam *Carpinus betulus*	5%
31	Dogwood *Cornus sanguinea*	4%
261	Hazel *Corylus avellana*	34%
8	Spindle *Euonymus europaeus*	1%
39	Beech *Fagus sylvatica*	5%
16	Holly *Ilex aquifolium*	2%
8	Wild Privet *Ligustrum vulgare*	1%
16	Crab Apple *Malus sylvestris*	2%
16	Cherry *Prunus avium*	2%
39	Blackthorn *Prunus spinosa*	5%
8	Buckthorn *Rhamnus cathartica*	1%
23	Rowan S*orbus aucuparia*	3%
16	Yew *Taxus baccata*	2%
154	Small-leaved Lime *Tilia cordata*	20%
8	Wayfaring-tree *Viburnum lantana*	1%

Table 7.3. Woodland planting species list, Area 2.

No	Species	%
41	Field Maple *Acer campestre*	3%
14	Hornbeam *Carpinus betulus*	1%
27	Dogwood *Cornus sanguinea*	2%
265	Hazel *Corylus avellana*	20%
199	Hawthorn *Crataegus monogyna*	15%
14	Spindle *Euonymus europaeus*	1%
27	Beech *Fagus sylvatica*	2%
27	Holly *Ilex aquifolium*	2%
14	Wild Privet *Ligustrum vulgare*	1%
14	Crab Apple *Malus sylvestris*	1%
14	Cherry *Prunus avium*	1%
27	Blackthorn *Prunus spinosa*	2%
67	Sessile Oak *Quercus petraea*	5%
199	Oak *Quercus robur*	15%
14	Buckthorn *Rhamnus cathartica*	1%
67	Goat Willow *Salix caprea*	5%
67	Grey Willow *Salix cinerea*	5%
14	Elder *Sambucus nigra*	1%
14	Rowan S*orbus aucuparia*	1%
14	Yew *Taxus baccata*	1%
186	Small-leaved Lime *Tilia cordata*	14%
14	Wayfaring-tree *Viburnum lantana*	1%

Table 7.4. Woodland planting species list, Area 3.

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.

Shrubs

7.4.5 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.

8. HEDGEROWS AND TREES

8.1 This section is concerned with the establishment and management of existing and new hedgerows and trees.

8.2 Conservation Objectives

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

To manage hedgerows to promote dense structure and enhanced habitat for wildlife

8.3 Prescriptions for Management Actions

8.3.1 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 8.1 below. Existing hedgerows will be 'gapped up' where necessary using species below.

Native Hedgerow and Shrub Species
Field Maple *Acer campestre*
Dogwood *Cornus sanguinea*
Hazel *Corylus avellana*
Hawthorn *Crataegus monogyna*
Spindle *Euonymus europaeus*
Holly *Ilex aquifolium*
Wild Privet *Ligustrum vulgare*
Crab Apple *Malus sylvestris*
Wild Cherry *Prunus avium*
Dog Rose *Rosa canina*
Guelder Rose *Viburnum opulus*

Table 8.1. Native Hedgerow and Shrub species list.

8.3.2 Hedgerows will continue to be managed. Management will aim to ensure continued good structure. Hedgerows will be cut on a three-year 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 by an experienced contractor to encourage greater structural diversity.

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 and Hedgerows

8.4.5 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.

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

9. ATTENUATION FEATURES

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

9.2 Conservation Objectives

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

To manage these features to ensure unimpeded drainage while having regard to wildlife

9.3 Prescriptions for Management Actions

9.3.1 For the most part these new features will not be permanently wet, but some areas will be designed to retain water. The design of the attenuation basins throughout the linear park include small ponds designed to hold water, and a variety of shallow scrapes and channels, as well as embayments and spits. This diversity of slopes and banks offering varying water depths and retention will create a variety of micro-habitats for wildlife and will diversify the habitats currently 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 9.1 and 9.2 below).

Marginal Planting Species
Fool's-water-cress *Apium nodiflorum*
Lesser Water Parsnip *Berula erecta*
Marsh-marigold *Caltha palustris*
Lesser Pond-sedge *Carex acutiformis*
Common Spike-rush *Eleocharis palustris*
Water Avens *Geum rivale*
Yellow 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 9.1. Marginal planting species list.

9.3.2 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 9.2. Emorsgate Seeds EP1F Wild Flowers for Pond Edges species list.

9.4 Initial Aftercare and Long-term Management and Maintenance

9.4.1 **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.

9.4.2 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.

9.4.3 Ditches will be checked on an annual basis. Where it is necessary to dig out, this will be done over winter to avoid the bird nesting season (March to July inclusive) which also covers the amphibian breeding season.

10. WORK SCHEDULE AND FIVE-YEAR PLAN

Habitat	Action	Timing
Trees	Establishment	From Year 1 growing season onwards
	Watering	Where required during first three years in periods of drought
	Inspection	Every six months for first two years to check for damage and disease. Replaced if failing
	Inspection	Annually from two years onwards if establishing well
	Pruning	Between January and March as required
Grassland	Sowing	Generally autumn sowing, possibly spring
EG10 Tussock	Mowing	First year: mow regularly to 40-60mm throughout growing season, remove cuttings if dense
	Spot treatment of weeds	Using approved herbicide or digging out
	Mowing	After first year, cut every 2-3 years October to February, no more than half total area to be cut in any one year
EL1 Flowering Lawn	Mowing	Every 7-10 days during growing season for first year to 40-60mm
	Spot treatment of weeds	Using approved herbicide or digging out
	Mowing	After first year, to height of 25-40mm. Relaxed management from late June for 4-8 weeks. Collect cuttings
EW1 Woodland	Mowing	In establishing woodland, cut annually in mid-summer until tree cover has established. Thereafter, very little management required
EM6 Chalk / Limestone Meadow and EM8 Wetlands Meadow	Mowing	Mow regularly during growing season of first year to height of 40.60mm. Remove arisings.
	Spot treatment of weeds	Using approved herbicide or digging out
	Mowing	From year 2 onwards, cut to 50mm after flowering in July / August. Leave cuttings to dry for 1-7 days to shed seed, then remove arisings. Maintain grass at height of 50mm to spring
Grassland	Arisings	Retain proportion of arisings as habitat piles in reptile mitigation areas
Great Field Plantation	Diversification of age structure	Establish glades in year 1. Selective felling of coniferous species outwith nesting birds season. Any trees with bat roosting potential or known bird nest sites retained
	Understorey planting	Year 1 growing season
	Understorey inspection	Every six months for first two years to check for damage and disease. Replaced if failing
	Understorey inspection	Annually from two years onwards if establishing well
	Log piles	Using felled timber from Year 1 onwards; replenished with further woodland management
	Coppicing	Hazel stools coppiced on 15-year rotation from Year 1 onwards.
	Layering	Establishing new Hazel stools with this technique during planting season from Year 1 onwards
	Boundary hedgerow planting	Year 1 growing season

	Boundary hedgerow watering	Where required during first three years in periods of drought
	Boundary hedgerow inspection	Every six months for first two years to check for damage and disease. Replaced if failing
	Boundary hedgerow inspection	Annually from two years onwards if establishing well
	Boundary hedgerow pruning	Between January and March as required
Southern Plantation	Phased removal of conifers	To diversify age structure from Year 1 onwards
	Coppicing	Hazel stools coppiced on 15-year rotation from Year 1 onwards.
	Bat hop-overs	Established in Year 1 growing season
	Log piles	Using felled timber from Year 1 onwards; replenished with further woodland management
New Woodland	Establishment	From Year 1 growing season onwards
	Watering	Where required during first three years in periods of drought
	Inspection	Every six months for first two years to check for damage and disease. Replaced if failing
	Inspection	Annually from two years onwards if establishing well
	Pruning	Between January and March as required
Hedgerows	Gapping up	From Year 1 growing season onwards
	Watering	Where required during first three years in periods of drought
	Inspection	Every six months for first two years to check for damage and disease. Replaced if failing
	Inspection	Annually from two years onwards if establishing well
	Cutting	Over winter on three-year rotation, so only one third cut in any one year, unless adjacent to public right of way, cycleway or pedestrian route
	Laying	Hedgerows laid in rotation by experienced contractor, over winter period
Attenuation Features	Invasive species	Annual check. Spot treatment with approved herbicide or digging out
EP1F Pond Edges	Weed growth	Cut back in first year
	Cutting	Manage on rotational basis every 2-3 years to provide varied structure. Cut back short sections, remove dense stands of single species. Remove vegetation between September and November.
Ditches	Digging out	Where necessary done over winter to minimise wildlife effects

11. IMPLEMENTATION AND FUNDING

11.1 Redrow Homes has ultimate responsibility for implementation of this strategy. The individual currently leading for Redrow Homes is Richard Franks, Senior Engineering Manager, and the responsibility for implementation will be his or that of his appointed successor.

11.2 It is the responsibility of the appointed individual at Redrow Homes to instruct appropriate experienced contractors to establish the various features and habitats proposed, and also the responsibility of the appointed individual at Redrow Homes to instruct appropriate experienced ecologists and / or landscape contractors to check the work.

11.3 Clear channels between these parties and their associates on the ground will be in operation at all times, by email and telephone as appropriate.

11.4 Redrow and the landowner will establish a joint management company to manage and maintain the public landscape areas of Great Wilsey Park. The management company will be responsible for the ongoing maintenance of areas of soft landscaping within public open spaces, attenuation basins and Great Field Plantation.

12. MONITORING AND REMEDIAL MEASURES

12.1 A separate comprehensive Biodiversity Monitoring Strategy for the infrastructure application has been prepared to address the requirements of Condition 45. That document should be referred to for full details of monitoring of newly established habitats and features.

12.2 The results of this monitoring work will be fed back into the evolution of this strategy, to adjust the approach to management where necessary, to ensure that the development still delivers the defined aims and objectives.

13. INFORMATION STRATEGY

13.1 New residents will be provided with an information pack setting out the value of the various retained and proposed habitats and features within the site. This will be provided at occupation.

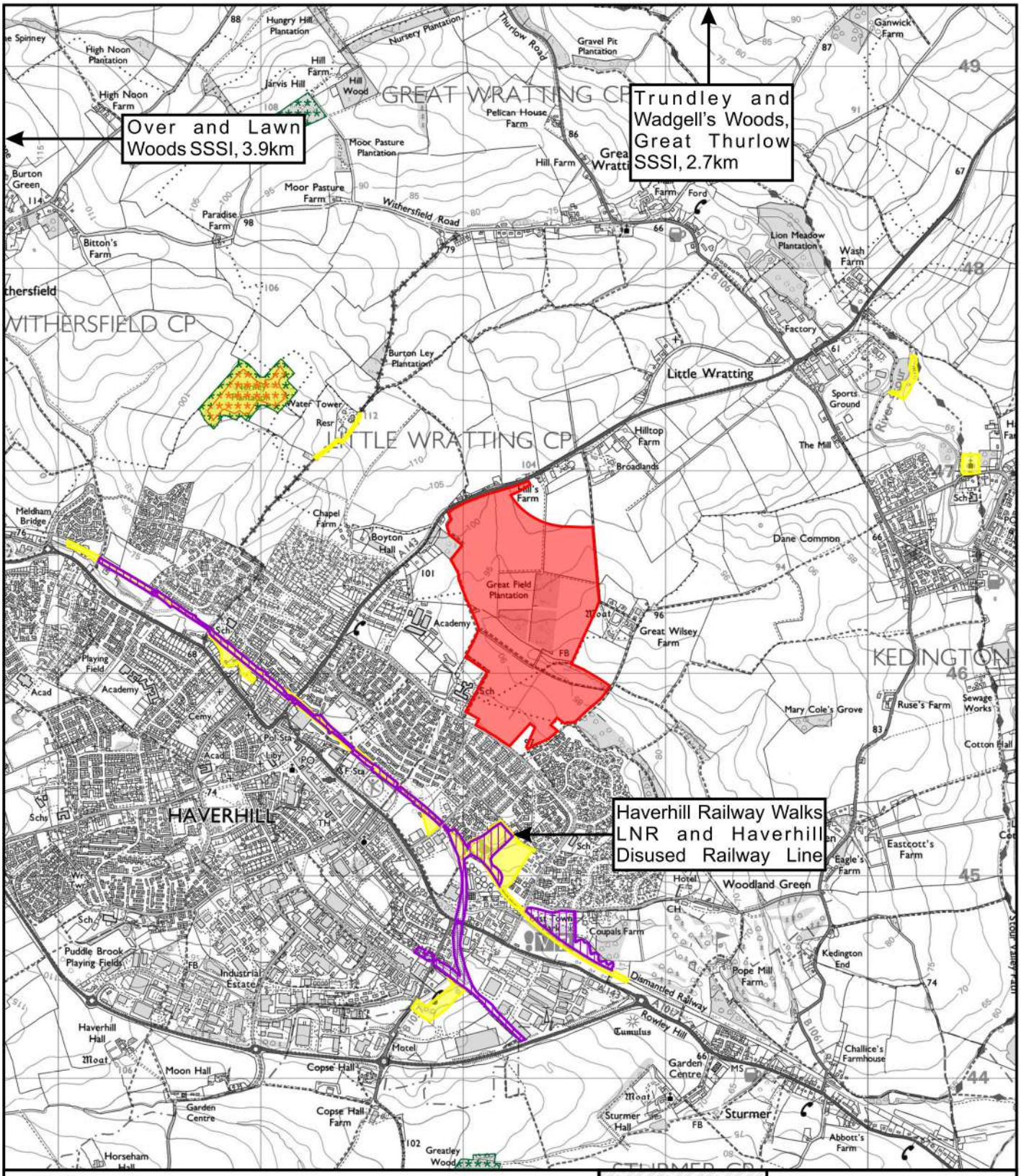
13.2 Three to four information and interpretation boards will be provided in key locations within the green infrastructure, setting out the wildlife interest of the site and how residents and visitors can find out more.

13.3 The precise text and locations will be agreed with West Suffolk Council, with the boards installed prior to first occupation of the new development.

PLANS

PLAN ECO1

Site Location and Ecological Designations



KEY:

- SITE LOCATION
- LOCAL NATURE RESERVE (LNR)
- COUNTY WILDLIFE SITE (CWS)
- ANCIENT WOODLAND
- ANCIENT REPLANTED WOODLAND

N

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PLAN ECO1: SITE LOCATION AND ECOLOGICAL DESIGNATIONS

Rev: A

Jul 2019

PLAN ECO2a

Landscape and Ecological Management Plan 1

Establishment of native hedgerows

Species rich field margins to be retained and enhanced

New tree and understorey planting

New wild flower meadows, native planting and swales to provide wildlife corridors through development

Establishment of wetland habitats, such as ponds, swales, basins and ditches, to be planted with native marginal planting and wildflowers for pond edges

N

Based on Exterior Architecture Drawing No. 200325_ExA_1868_Illustrative Masterplan

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PLAN ECO2a:
LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 1

Rev: D

Mar 2020

PLAN ECO2b

Landscape and Ecological Management Plan 2

Establishment of wetland habitats, such as swales and ditches, to be planted with native marginal planting and wildflowers for pond edges

New wild flower meadows, native planting and swales to provide wildlife corridors through development

New understorey planting will be undertaken using native species

Three glades will be established by felling conifer species

Existing broadleaved species will be encouraged to grow to maturity

N

Based on Exterior Architecture Drawing No. 200325_ExA_1868_Illustrative Masterplan

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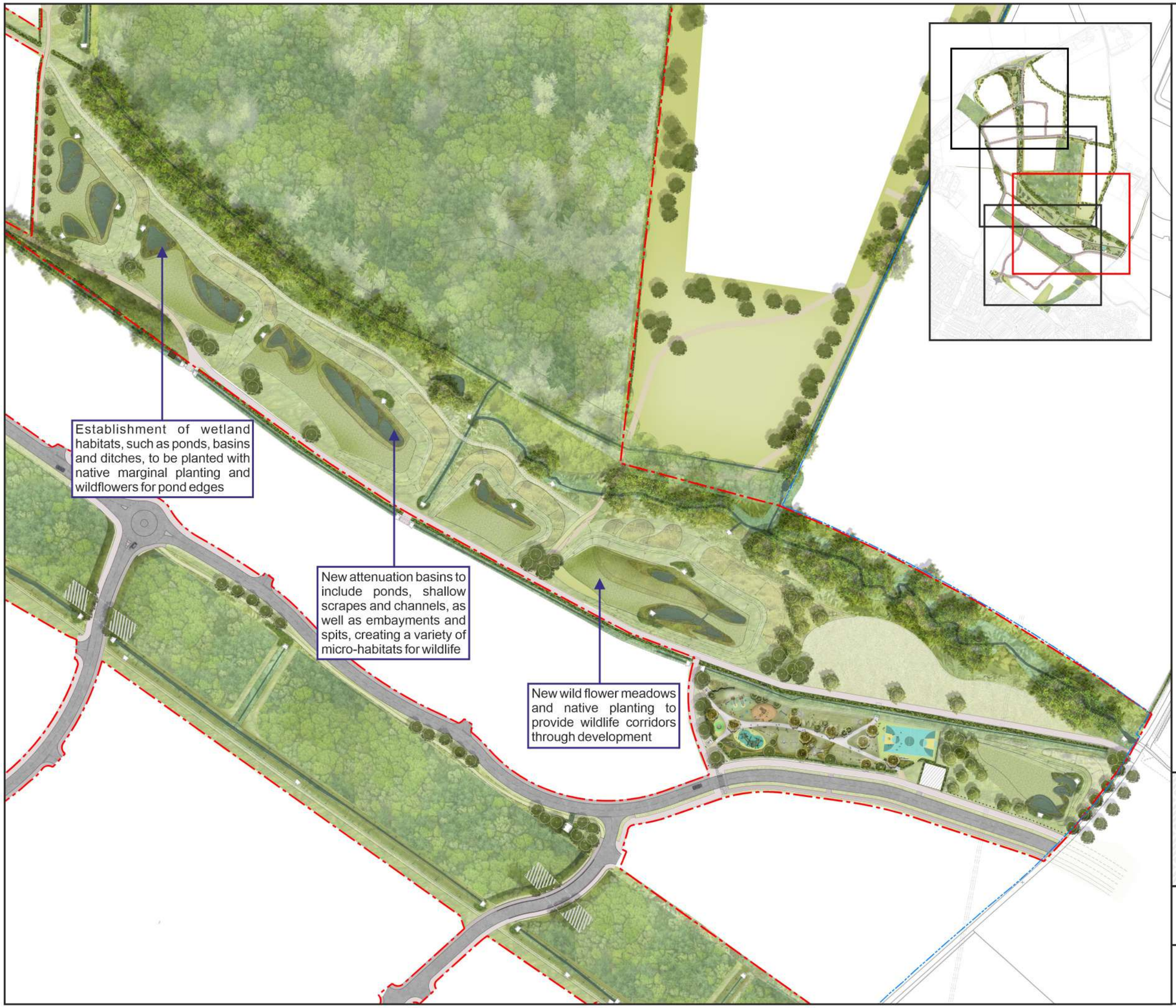
PLAN ECO2b:
LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 2

Rev: D

Mar 2020

PLAN ECO2c

Landscape and Ecological Management Plan 3



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Based on Exterior Architecture Drawing No. 200325_ExA_1868_Illustrative Masterplan

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PLAN ECO2c:
LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 3

Rev: D

Mar 2020

PLAN ECO2d

Landscape and Ecological Management Plan 4

Non-native conifers will be felled to introduce habitat diversity

An appropriate coppicing regime will be introduced to encourage a vigorous understorey

Establishment of wetland habitats, such as swales and ditches, to be planted with native marginal planting and wildflowers for pond edges

N

Based on Exterior Architecture Drawing No. 200325_ExA_1868_Illustrative Masterplan

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PLAN ECO2d:
LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN 4

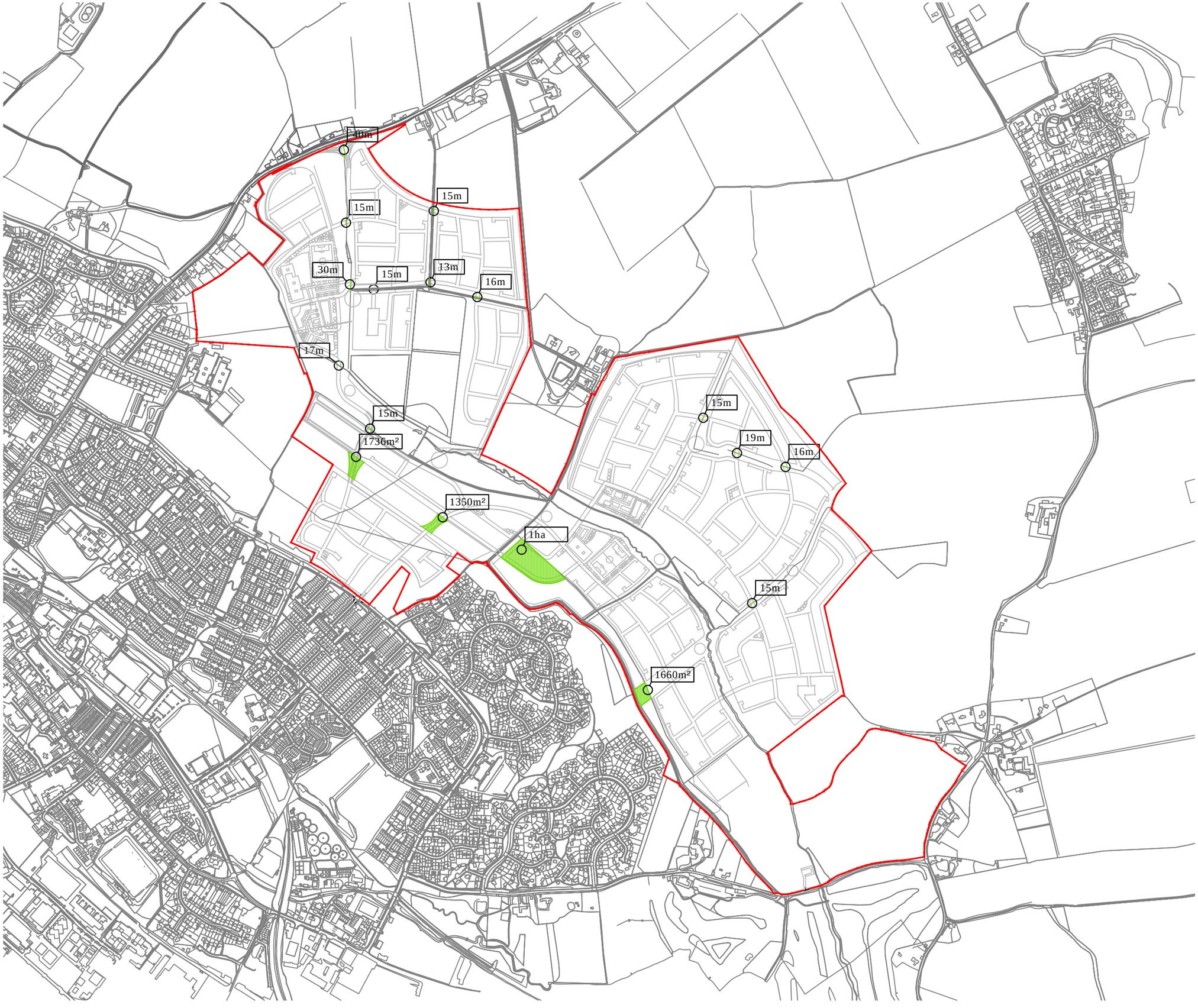
Rev: D

Mar 2020

APPENDICES

APPENDIX 1

Hedgerow Removal Plan 5055-L-112 rev C



NOTES

All dimensions to be verified on site. Do not scale this drawing. All discrepancies to be clarified with project Landscape Architect.

N

Scale 1:10,000 @ A3

0 100 200 300 400 500m

Application boundary		168.34ha
Hedgerow to be removed to facilitate road access (Total length) (Assumed 2.5 roadside clearance for visibility)		241m
Woodland to be removed (Total area)		1.47ha

rev	date	description	by
C	10.08.15	Coupals Road access / car park included	NJE
B	06.08.15	Change to site access	NJE
A	21.07.15	Change to road layout	SJ

fpcr

masterplanning
environmental assessment
landscape design
urban design
ecology
architecture
arboriculture

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client
HALLAM LAND MANAGEMENT LTD

project
Great Wilsey Park
Haverhill

drawing title
Hedgerow Removal Plan

scale	drawn	date
1:10,000@A3	NJE	July 2015

drawing number
5055-L-112

rev
C

CAD file: 5055/LANDS/CAD/Masterplan 01.04.15

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