



Colchester Borough Council

**East Colchester  
Growth Area Option  
Environmental Audit**

November 2015

## Colchester Borough Council

### East Colchester Growth Area Option

### Environmental Audit

Approved

A handwritten signature in black ink, appearing to read 'D. Watkins', written over a light grey rectangular background.

Dominic Watkins

Position

Director

Date

17 November 2015

Revision

Final

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## 1.0 INTRODUCTION

### 1.1 Background

- 1.1.1 The Borough of Colchester covers an area of 324 square kilometres in North East Essex. It is located approximately 60 miles North East of London and also lies in close proximity to the seaport of Harwich (20 miles) and Stansted Airport (30 miles). It borders Babergh District in Suffolk to the north and the districts of Tendring, Braintree and Maldon to the east, west and south west respectively. Colchester's population is currently estimated at 180,420 (ONS Mid-Year Population estimates, 2014) however it is increasing more quickly than any other Borough in Essex, with the exception of Uttlesford.
- 1.1.2 Colchester's population is projected to grow significantly over the next 20 years. To plan for this population growth, Colchester Borough Council is producing a new Local Plan to guide development in the Borough to 2032 and beyond. The new Local Plan will plan for the delivery of approximately 1,000 new houses per year over the plan period, running from 2017-2032. The new Local Plan will set out a strategy for the growth of the Borough including the amount of development needed, the types of development needed, the most sustainable locations for new development and the timescale for delivering planned growth. Choices about the location of new development will need to be made in the context of an overall vision of how the Borough can accommodate growth and change in the most sustainable way. The new Local Plan will set out the Council's long term aims and aspirations for the Borough and will include policies and land allocations to help deliver these.
- 1.1.3 In January 2015 Colchester Borough Council published an Issues and Options Paper for consultation which set out a number of potential options for growth. The Issues and Options Paper identified potential options for major growth in the form of Garden Settlements, identifying a number of potential locations including land to the East and land to the West of Colchester. In addition to these, an additional growth option has come forward which lies to the North East of Colchester near Langham. To support the production of the new Local Plan, the Council is developing a new evidence base; Environmental Audits of the potential locations for growth in West Colchester, East Colchester and North East of Colchester form part of this evidence base. The Environmental Audits will help guide future masterplanning and development in and around any future garden settlements taken forward in Borough.
- 1.1.4 Chris Blandford Associates (CBA) was commissioned by Colchester Borough Council to undertake an Environmental Audit of the land to the east of Colchester (the 'Site'), which includes land within Tendring District. The location of the Site is shown on **Figure 1.1**, and the Site boundary is illustrated in more detail on **Figure 1.2**.



**KEY**

Site Boundary

District/Borough Boundary

0 1 2 Kilometres



1:75,000 @A3



1.1.5 In accordance with the Council's requirements, the purpose of the Environmental Audit is to provide a preliminary appraisal of the constraints and opportunities for development of the Site in respect of the following environmental considerations:

- Ecology and Nature Conservation.
- Landscape/Townscape Character and Visual Amenity.
- Water Quality and Flood Risk.

1.1.6 Other environmental considerations that may present constraints to development on the Site, such as cultural heritage or agricultural land use for instance, are beyond the scope of this Environmental Audit.

1.1.7 In line with the purpose of the Environmental Audit, the appraisals are largely based on review of currently available desk-top information, supplemented by targeted field surveys as appropriate. While access to private land within the Site was not possible within the timescales of this Environmental Audit, it is considered that this was not a significant limitation on the robustness of the preliminary appraisals due to the extensive network of public rights of way through the Site.

1.1.8 Where further more detailed investigations are required to inform Site masterplanning, environmental assessment and mitigation, these are recommended in the respective sections.

## **1.2 Structure of the Environmental Audit**

1.2.1 The Environmental Audit is structured as follows:

- Ecology and Nature Conservation
- Landscape/Townscape Character and Visual Amenity
- Water Quality and Flood Risk

1.2.2 Each of the above sections provides:

- a general introduction to the section
- a brief summary of the audit methodology (including any limitations)
- a description of the existing conditions
- an appraisal of the constraints and opportunities for development (including recommendations for further work as appropriate)
- a summary of the key findings



1.2.3 Drawing on the findings of the individual appraisals, mitigation measures for avoiding or reducing potential adverse environmental effects through the Site masterplanning and assessment process are recommended. These also include identification of opportunities for incorporating Green Infrastructure features into the development of the Site. It should be noted that the mitigation measures are not exhaustive; they are intended to provide broad guidance on the type of measures that are likely to be necessary in order to achieve a sustainable development on the Site.

1.2.4 A summary of the Environmental Audit's key findings and conclusions is also provided.

### **1.3 Study Areas**

1.3.1 For each of the environmental disciplines, an appropriate Study Area has been defined to allow the relevant issues that may influence the suitability of the Site for development to be adequately considered. Where appropriate, reference is also made to the wider context of the Study Area.

## 2.0 ECOLOGY AND NATURE CONSERVATION

### 2.1 General

- 2.1.1 This section identifies potential ecological and nature conservation constraints and opportunities for development on the Site. In line with the purpose of the Environmental Audit, the appraisal involves a desk-top review of currently available ecological information, supplemented by a habitat survey of the Site to identify features of potential ecological and nature conservation interest.
- 2.1.2 The principal nature conservation legislation in the UK includes: the EC Habitats Directive 1992 (transposed into UK legislation by the Conservation of Habitats and Species Regulations 2010)<sup>1</sup> (referred to as ‘the Habitats Regulations’); the Wildlife and Countryside Act 1981 (as amended)<sup>2</sup>; and the Countryside and Rights of Way Act 2000<sup>3</sup>.
- 2.1.3 The National Planning Policy Framework (NPPF)<sup>4</sup> sets out the Government’s current planning policy in relation to the natural environment. Paragraph 118 of the NPPF states: *‘If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused’*. Paragraph 118 of the NPPF also states: *‘opportunities to incorporate biodiversity in and around developments should be encouraged’*. Paragraph 017 of the Planning Policy Guidance on the Natural Environment provides guidance on opportunities for biodiversity enhancements in and around developments, such as *‘habitat restoration, re-creation and expansion; improved links between existing sites; buffering of existing important sites; new biodiversity features within developments; and securing management for long-term enhancement.’*

### 2.2 Audit Methodology

- 2.2.1 A desk-based appraisal has been undertaken for a 2km Study Area. Information regarding land designated for its nature conservation value and of Habitats of Principal Importance/Biodiversity Action Plan (BAP) Priority Habitats has been derived from the Magic website ([www.magic.gov.uk](http://www.magic.gov.uk)). Desk study data comprising records of notable species (species protected by law and species of conservation concern, but excluding birds (as this data is not currently available) were obtained from the Essex Field Club.

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<sup>1</sup> [http://www.legislation.gov.uk/uksi/2010/490/pdfs/uksi\\_20100490\\_en.pdf](http://www.legislation.gov.uk/uksi/2010/490/pdfs/uksi_20100490_en.pdf)

<sup>2</sup> <http://www.legislation.gov.uk/ukpga/1981/69>

<sup>3</sup> [http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga\\_20000037\\_en.pdf](http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf)

<sup>4</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/6077/2116950.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf)

- 2.2.2 An extended Phase 1 Habitat Survey of the Site was undertaken using guidelines set out in the 'Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit'. The survey was undertaken on 21<sup>st</sup>, 23<sup>rd</sup> and 24<sup>th</sup> July 2015 and provides a broad overview of the habitats within the Site and their potential to support species protected by law or of conservation concern.
- 2.2.3 The field survey was undertaken from Public Rights of Way due to lack of access to private land. Habitats and features at a distance from these were viewed through binoculars, and this was used to judge the most appropriate Phase 1 Habitat category to assign them. However, this does introduce a degree of uncertainty in discerning different habitats and features, for example the differences between species-rich and species-poor hedgerows, broadleaved semi-natural woodland and broadleaved plantation, scrub and developing broadleaved plantation and between different grassland types. Where some areas could not be viewed from Rights of Way, these gaps are highlighted in the Phase 1 Habitat plan (**Figure 2.1**). Overall, these Site survey constraints are not considered to be a significant limitation on the robustness of this preliminary appraisal of ecological constraints and opportunities for development.

## 2.3 Existing Conditions

### Desk Study

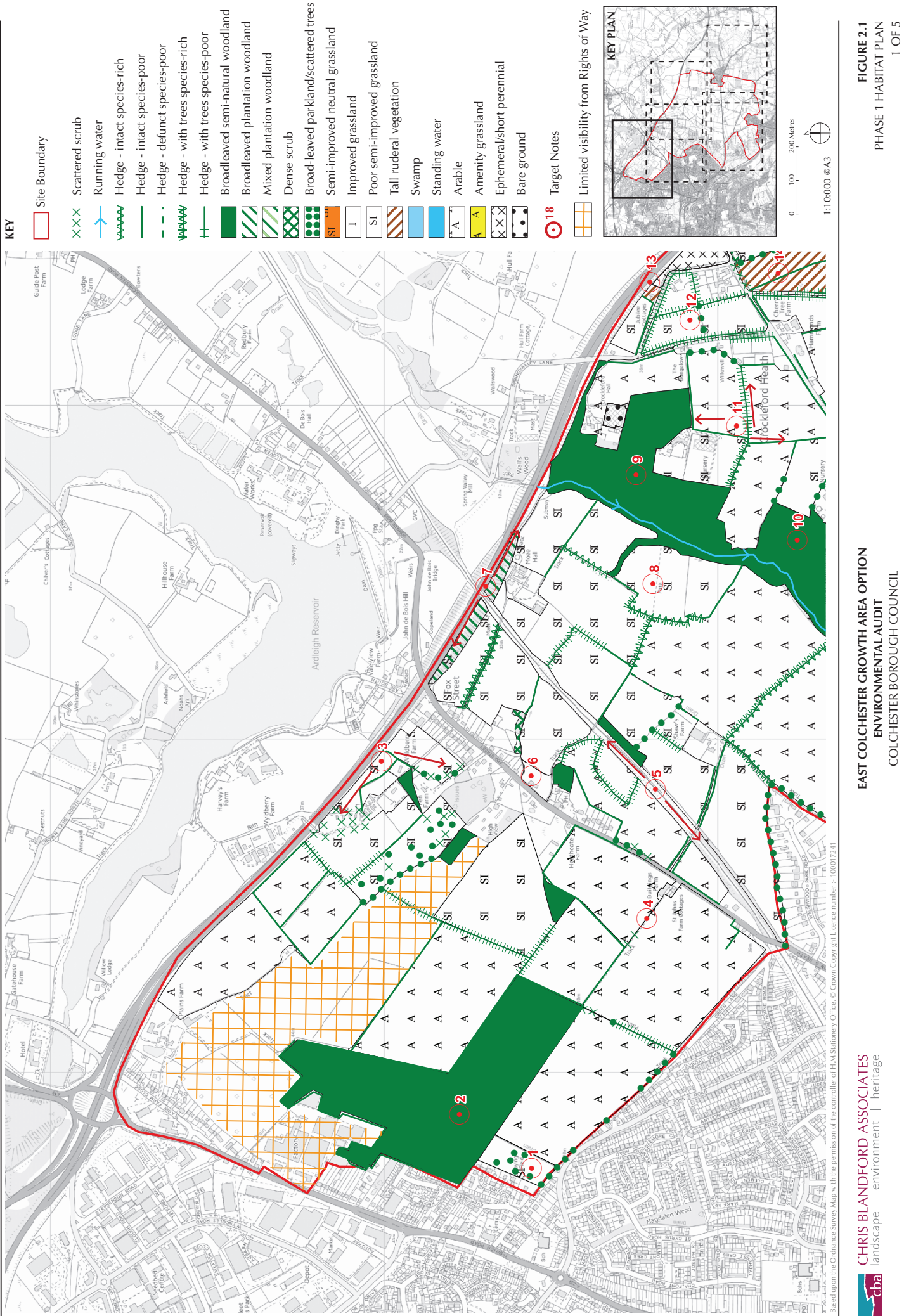
#### Designated Sites

- 2.3.1 The locations of designated sites within the 2km Study Area are illustrated on **Figure 2.2**.

#### Statutory Sites

#### International Sites

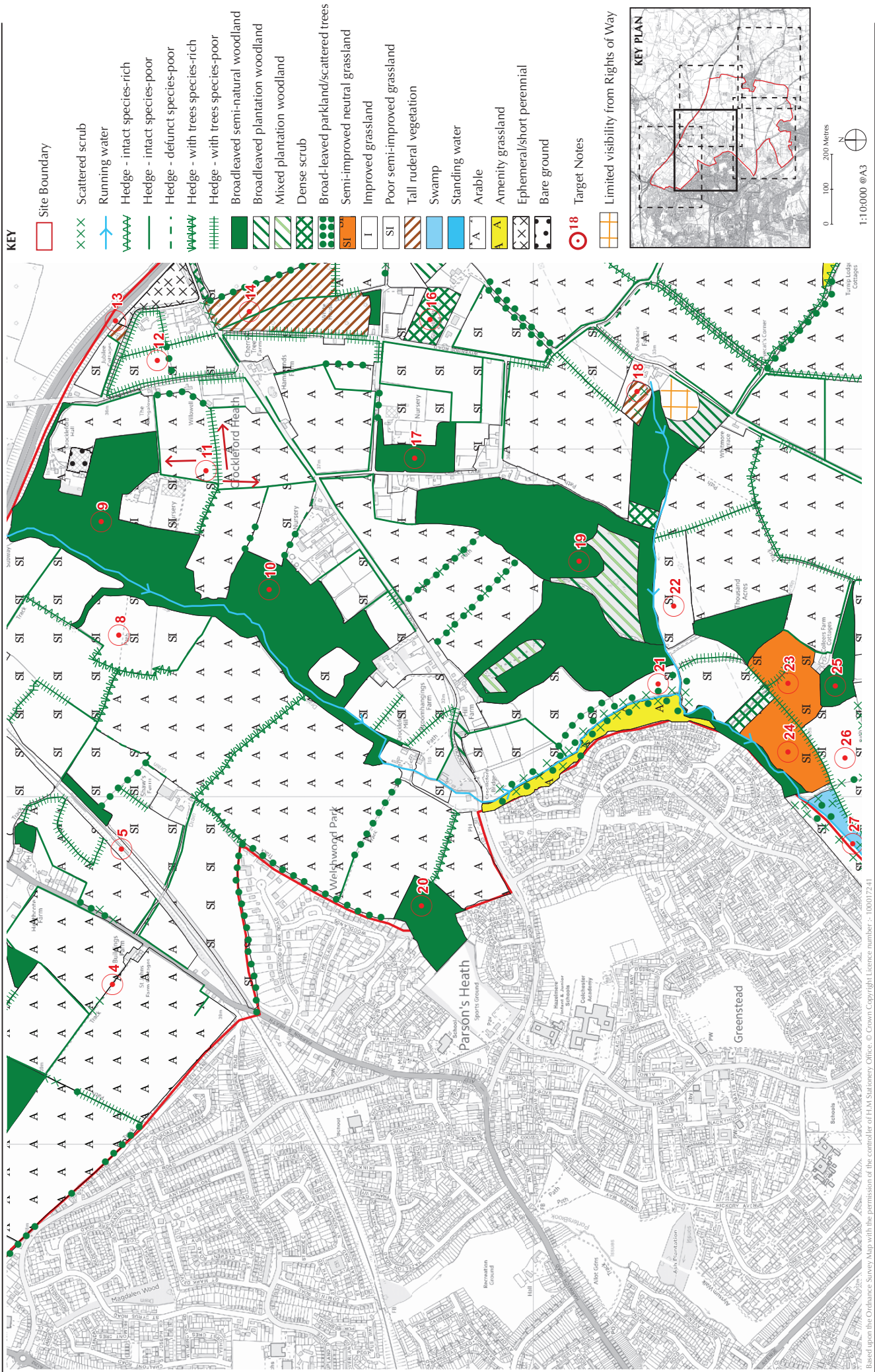
- 2.3.2 The Essex Estuaries Special Area of Conservation (SAC), designated under the EC Habitats Directive (92/43/EEC), Colne Estuary (Mid-Essex Coast Phase 2) Ramsar site and Special Protection Area (SPA), designated under the Wild Birds Directive (79/409/EEC), and Colne Estuary Site of Special Scientific Interest (SSSI) lies approximately 2km to the south east of the Study Area. This is designated for its estuarine habitats, including sand and mudflats and saltmarsh and the breeding and overwintering bird species it supports, including breeding little tern and overwintering waterfowl and waders (especially avocet, golden plover, redshank and dark-bellied brent goose) and hen harrier.



**FIGURE 2.1**  
PHASE 1 HABITAT PLAN  
1 OF 5

**EAST COLCHESTER GROWTH AREA OPTION**  
**ENVIRONMENTAL AUDIT**  
COLCHESTER BOROUGH COUNCIL

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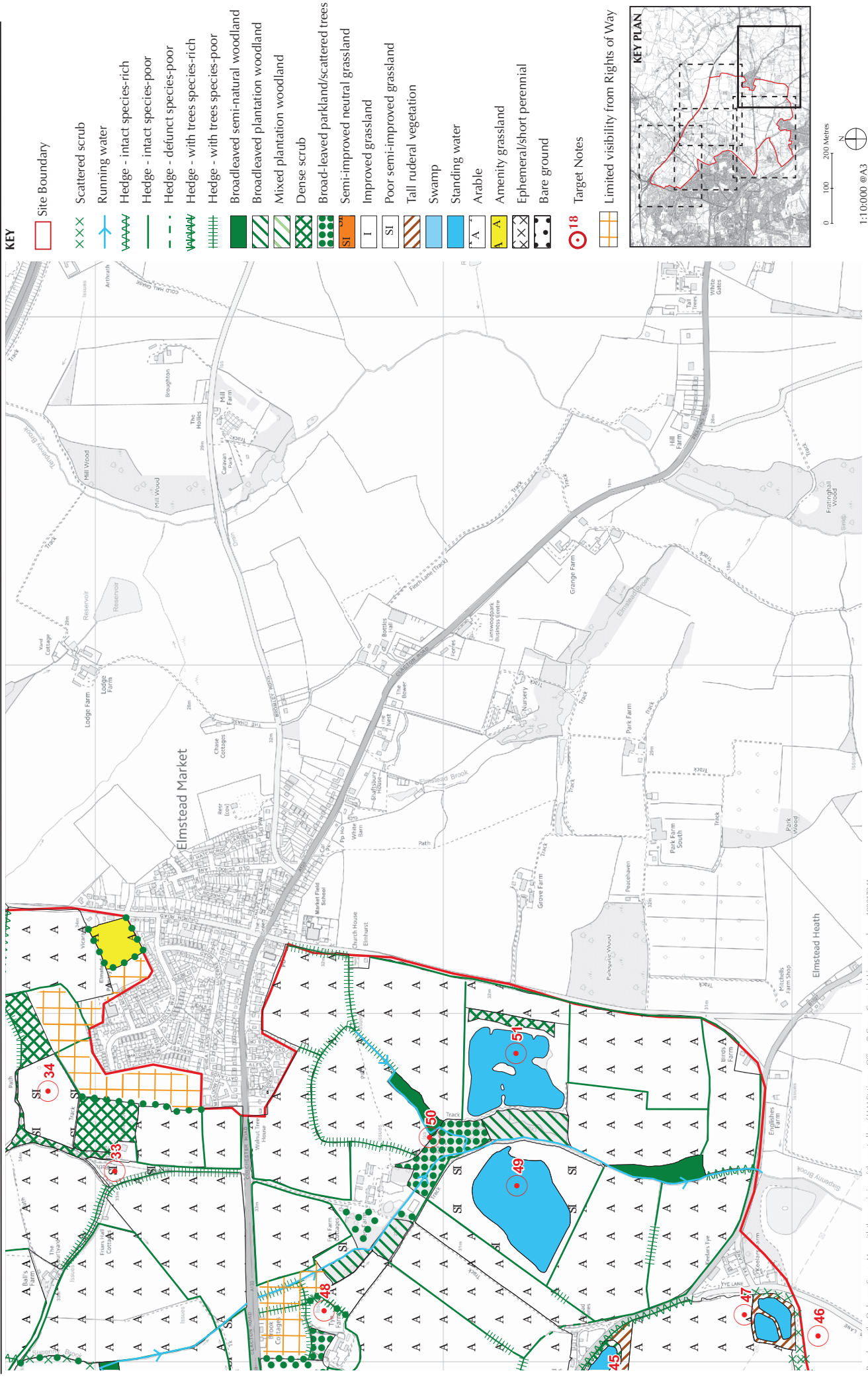
**FIGURE 2.1**  
PHASE 1 HABITAT PLAN  
2 OF 5

**EAST COLCHESTER GROWTH AREA OPTION**  
ENVIRONMENTAL AUDIT  
COLCHESTER BOROUGH COUNCIL

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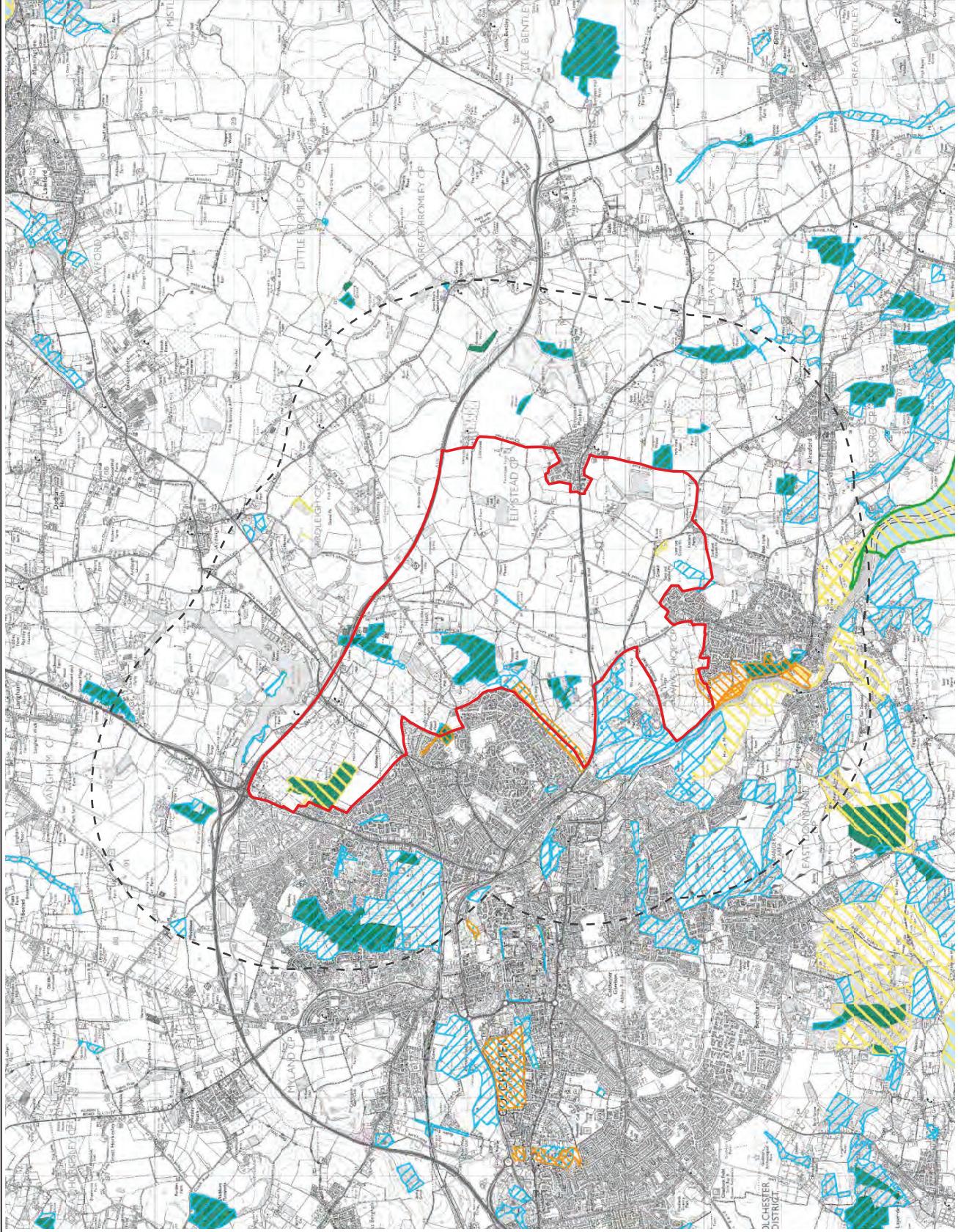


**EAST COLCHESTER GROWTH AREA OPTION**  
**ENVIRONMENTAL AUDIT**  
**COLCHESTER BOROUGH COUNCIL**

**FIGURE 2.1**  
**PHASE 1 HABITAT PLAN**  
**5 OF 5**

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**KEY**

- Site Boundary
- Study Area (2km distance from Site Boundary)

**Ecological Designation:**

- Site of Special Scientific Interest
- Ancient Woodland
- National Nature Reserve
- Local Nature Reserve
- Local Wildlife Site
- Special Area of Conservation
- Ramsar/Special Protection Area

0 1 2 Kilometres  
 1:50,000 @A3

**FIGURE 2.2**  
 ECOLOGICAL DESIGNATIONS

**EAST COLCHESTER GROWTH AREA OPTION**  
 ENVIRONMENTAL AUDIT  
 COLCHESTER BOROUGH COUNCIL

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### **Sites of Special Scientific Interest (SSSIs)**

- 2.3.3 Bullock Wood SSSI lies within the north western part of the Site, and is designated for its nationally rare lowland hazel-sessile oak as well as plateau alder and acid sessile oak-hazel-ash woodland.
- 2.3.4 Wivenhoe Gravel Pit SSSI is located in the south of the Site and is a geological site designated for its exposures of organic sediments of interglacial origin among early Thames gravels. These are important for dating various early Thames gravel deposits and for improving the Pleistocene record for this part of Britain.
- 2.3.5 Upper Colne Marshes SSSI lies immediately to the south of the Site. It is designated for its grazing marsh, saltmarsh and other intertidal habitat and for the plant, invertebrate and breeding and wintering bird species and assemblages it supports.
- 2.3.6 Ardleigh Gravel Pit SSSI lies approximately 1.2km to the north east of the Site. This geological site exposes early Thames gravels which are important for British Pleistocene stratigraphy and palaeogeographical reconstruction.
- 2.3.7 Upper Colne Marshes SSSI lies approximately 1.7km to the south west of the Site and comprises a mosaic of habitats, including Ancient Woodland, scrub, acid grassland and heathland and wet grassland and fen.

### **Local Nature Reserves (LNRs)**

- 2.3.8 Welsh Wood, Salary Brook and Colne Local Nature Reserves lie along the western and southern boundaries of the Site. Welsh Wood is an Ancient Woodland with a small stream and a range of characteristic species. In addition to the brook itself Salary Brook comprises large stands of swamp or emergent vegetation and grassland, some of which supports species characteristic of unimproved meadows, as well as a network of hedgerows. There are also three ponds. Colne Local Nature Reserve comprises the Ancient Woodland of Wivenhoe Wood, grassland developed on ex-arable land and grazing marsh beside the River Colne.

## Non-statutory Sites

### Local Wildlife Sites (LWSs)

2.3.9 The following ten Local Wildlife Sites<sup>5</sup> lie partly or wholly within the Site:

- Co143 Welsh Wood – Ancient Wood (Welsh Wood LNR)
- Co146 Salary Brook – grassland, wetland and scrub along stream (Salary Brook LNR)
- Co152 Thousand Acres – woodland including Ancient Woodland
- Co150 Home Wood – woodland including Ancient Woodland
- Co161 Wivenhoe Cross Pit – woodland, scrub, grassland and ruderal with notable invertebrates
- Te4 Churn Wood Meadow – River Floodplain grassland
- Te5 Churn Wood – ancient and secondary woodland
- Te6 Wall's Wood – Ancient streamside woodland, secondary woodland, wet woodland
- Te7 Chapel Lane Verge – roadside verge with notable plant population
- Te8 Pyecats Corner Verges – roadside verges with notable plant population

2.3.10 A further 35 Local Wildlife Sites lie within the wider 2km Study Area.

- Co115 Langham Road Grassland – grassland and pond
- Co116 High Woods – woodland including Ancient Woodland, scrub, grassland, stream and lake (High Woods Country Park)
- Co118 Cowdray Marsh – marsh and wet scrub and woodland with notable invertebrates
- Co121 Bourne Valley – woodland, marsh, tall grassland, stream and lake with notable invertebrates
- Co122 Middlewick Ranges – grassland, including acid grassland, scrub with notable invertebrates
- Co123 East Wood – relic woodland fragments
- Co125 The Moors – reedbed, woodland, grassland and ruderal with notable plants and invertebrates
- Co128 Birch Brook Wood – stream valley woodland and acid grassland
- Co132 Magdalen Wood – relic Ancient Woodland
- Co133 Kiln Wood – Ancient Woodland
- Co135 Donyland Wetlands – waterbodies and breeding amphibians
- Co137 Hythe Brownfield – disused sand pit (with exposures) and sewage treatment works and grazing marsh with notable invertebrates

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<sup>5</sup> LWS prefixed with "Co" refer to sites within Colchester Borough, defined by the 2008 Local Wildlife Sites Review; LWS prefixed with "Te" refer to sites within Tendring District, defined by the 2015 Local Wildlife Sites Review.

- Co138 St. Andrew's Churchyard, Greenstead – grassland including notable plant species
- Co140 University Marshes – grazing marsh and ditches with notable plants
- Co142 Hythe Lagoons – lagoons and grassland with notable waders and waterfowl and plants
- Co144 Rowhedge Pits – mosaic of lakes, ponds, swampy scrub and woodland, grassland and sandy cliffs with diverse breeding birds and notable invertebrates
- Co148 Wivenhoe Park – parkland including veteran trees, scrub, acid grassland, stream and lakes with notable plants, invertebrates and birds
- Co151 Birch Wood, Langham – Ancient Woodland
- Co154 Wivenhoe Wood – woodland including Ancient Woodland
- Co158 Barrage Marsh – grazing marsh with notable plants
- Co159 Brickhouse Farm Pits – worked out gravel pits with scrub, woodland, including wet woodland, reedbed, grassland and freshwater. Notable plants and reptiles and amphibians
- Te1 Ardleigh Reservoir Woodland – secondary woodland
- Te2 Birch Wood – Ancient woodland
- Te3 Ardleigh Reservoir Grassland – mosaic of grassland, scrub and wet woodland
- Te9 Manor House Meadow – species-rich grassland
- Te10 Springhead Corner Meadow – acid grassland
- Te12 Villa Farm Quarry – worked out gravel pits, Ancient Woodland, heath, acid grassland and ponds
- Te14 Alresford Lodge Pits – worked out gravel pits with secondary woodland, acid grassland and wet woodland
- Te15 Palegate Wood – Ancient woodland
- Te17 Park Wood – Ancient woodland
- Te20 Money Wood – Ancient Woodland
- Te24 Fratinghall Wood – Ancient woodland and population of Dormouse
- Te27 Mill Wood – Ancient woodland
- Te28 Hockley Farm Wood - Secondary woodland, hedgerows and population of Dormouse
- Te37 Great Bromley Churchyard – Acid grassland.

2.3.11 Many of these sites are separated from the Site by the urban area of Colchester. However, Co137 Hythe Brownfield, Co140 University Marshes, Co142 Hythe Lagoons and Co154 Wivenhoe Wood lie adjacent or close to the south western boundary of the Site.

## **Habitats**

### **Ancient Woodland**

- 2.3.12 There are a number of Ancient Woodlands within the Site, notably Bullock Wood in the north west, and a string of woodland running north-south within or adjacent to the valley of the Salary Brook, including Wall's Wood, Welsh Wood, Churn Wood and Home Wood.

### **Habitats of Principal Importance**

- 2.3.13 Lowland Mixed Deciduous Woodland is scattered throughout and adjacent to the Site but with concentrations at Bullock Wood in the northwest and along and adjacent to the valley of the Salary Brook (see above). Small areas are also located further east. Woodpasture and Parkland is present within the grounds of the Essex University campus immediately adjoining the Site as well as some smaller areas to the north of the A120. A small area of Traditional Orchard is identified as present to the immediately south of the Site between Keelers Tye and Elmstead heath.
- 2.3.14 Coastal and Floodplain Grazing Marsh is present along the valleys of the Salary Brook and the River Colne and saltmarsh and intertidal mudflat is also present along the River Colne.

## **Protected Species**

### **Great crested newts**

- 2.3.15 There are no records of great crested newts from within the Site but there are five records from within the 2km Study Area, the nearest of which is for High Woods, approximately 1.3km from the Site boundary.

### **Reptiles**

- 2.3.16 Within the Site common lizard has been recorded in the Salary Brook area. The other three widespread reptile species, slow worm, grass snake and adder have all been recorded in the 2km Study Area.

### **Dormice**

- 2.3.17 Dormice have not been recorded from within the Site, but they have been recorded within the 2km Study Area, especially from sites to the east.

### Water voles

- 2.3.18 Water voles have been recorded from the Salary and Sixpenny Brooks within the Site, as well as from a number of locations within the 2km Study Area, especially in the Colne valley to the south west.

### Bats

- 2.3.19 Serotine, noctule, common and soprano pipistrelle and brown long-eared bats have been recorded from within the Site. Daubenton's and natterer's bats have also been recorded from within the 2km Study Area.

### Otters

- 2.3.20 Otters have been recorded from the Salary Brook (2009) within the Site, and from Ardleigh Reservoir immediately to the north and the Colne Valley immediately to the south of the Site.

### Badgers

- 2.3.21 There are numerous records of badgers from within the Site and the 2km Study Area.

### **Other Species**

#### Plants

- 2.3.22 A range of Essex Red Data List plant species of woodland, grassland and arable have been recorded from within the Site including:

- Common polypody *Polypodium vulgare*
- Sneezewort *Achillea ptarmica*
- Harebell *Campanula rotundifolia*
- Smooth-stalked sedge *Carex laevigata*
- Common sedge *Carex nigra*
- Thin-spiked wood sedge *Carex strigosa*
- Jersey cudweed *Gnaphalium luteoalbum*
- Dittander *Lepidium latifolium*
- Butcher's broom *Ruscus aculeatus*
- Marsh ragwort *Senecio aquaticus*
- Devil's-bit scabious *Succisa pratensis*
- Mistletoe *Viscum album*

- 2.3.23 Many more species have been recorded from the 2km Study Area.

### Invertebrates

2.3.24 A large number of Essex Red Data List, Rare and Scarce and BAP invertebrate species have been recorded within the Site and the 2km Study Area.

### Amphibians

2.3.25 There are no records of amphibian species from within the Site. However, there are records of common frog, marsh frog, common toad, smooth newt and palmate newt from within the 2km Study Area.

### Mammals

2.3.26 Brown hare (UK and Essex BAP) and West European hedgehog (UK BAP) have been recorded from within the Site and harvest mouse (UK BAP) and yellow-necked mouse (Essex Red Data List) have been recorded from within the 2km Study Area.

### **Field Survey**

2.3.27 The findings of the extended Phase 1 Habitat Survey of the Site are mapped in **Figure 2.1**, which also includes the location of the Target Notes described in **Table 2.1**.

**Table 2.1 – Phase 1 Habitat Survey Target Notes**

<b>Target Note</b>	<b>Habitats and Features</b>	<b>Potential for Protected Species</b>	<b>Comments</b>
1	<ul style="list-style-type: none"><li>• Poor semi-improved grassland</li><li>• Trees</li></ul>	<ul style="list-style-type: none"><li>• Reptiles</li></ul>	Viewed from the east at a distance. Grassland may have structure making it suitable for reptiles, also given proximity to adjoining gardens etc.
2	<ul style="list-style-type: none"><li>• Broadleaved semi-natural woodland</li></ul>	<ul style="list-style-type: none"><li>• Birds</li><li>• Dormice</li><li>• Bats</li></ul>	Bullock Wood Ancient Woodland and SSSI
3	<ul style="list-style-type: none"><li>• Poor semi-improved grassland</li><li>• Tall ruderal</li><li>• Hedgerows</li><li>• Scrub</li></ul>	<ul style="list-style-type: none"><li>• Reptiles</li></ul>	Mosaic of small grassland fields with variable structure, ruderal with spoil heaps, hedgerows, scrub and houses. Potential for reptiles throughout, except in larger area of short (e.g. heavily grazed) grassland.
4	<ul style="list-style-type: none"><li>• Poor semi-improved grassland</li><li>• Scrub</li></ul>	<ul style="list-style-type: none"><li>• Reptiles</li></ul>	Uncultivated strip between arable fields. Has appropriate vegetation structure for reptiles but relatively isolated.
5	<ul style="list-style-type: none"><li>• Broadleaved semi-natural woodland</li><li>• Scrub</li><li>• Tall ruderal</li></ul>	<ul style="list-style-type: none"><li>• Reptiles</li><li>• Birds</li><li>• Dormice</li><li>• Bats</li></ul>	Mosaic habitat on railway embankments. More open areas may be suitable for reptiles.
6	<ul style="list-style-type: none"><li>• Poor semi-improved grassland</li><li>• Hedgerows</li><li>• Scrub</li></ul>	<ul style="list-style-type: none"><li>• Reptiles</li></ul>	Small grassland field with variable structure and adjoining hedgerow and scrub

Target Note	Habitats and Features	Potential for Protected Species	Comments
7	<ul style="list-style-type: none"> <li>Broadleaved plantation</li> <li>Scrub</li> <li>Tall Ruderal</li> <li>Poor semi-improved grassland</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	Embankments and verges of A120
8	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland with relatively tall sward at time of survey, making it potentially suitable for reptiles, but this will be sensitive to management. Adjoining hedgerows, woodland and Salary Brook. Generally species-poor but small amounts of common knapweed.
9	<ul style="list-style-type: none"> <li>Broadleaved semi-natural woodland</li> <li>Running water</li> </ul>	<ul style="list-style-type: none"> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	Wall's Wood – much of which is Ancient Woodland. Variable - Eastern plateau area on acidic sand with canopy of oak over hawthorn, holly and hazel. Field layer dominated by bracken, bramble and some bluebell. Lower part of slope to west has ash, field maple, elm, sycamore and occasional alder. Field layer richer – dog's mercury, yellow archangel, wood avens, herb Robert, red campion, enchanter's nightshade and nettle. Alder and willow frequent beside brook with pendulous and remote sedge.
10	<ul style="list-style-type: none"> <li>Broadleaved semi-natural woodland</li> <li>Running water</li> </ul>	<ul style="list-style-type: none"> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	The Broomhanging's – viewed from a distance but canopy has oak, sweet chestnut and birch. Ash on west side and willow and alder beside brook.
11	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Several wide grassy field margins with variable structure and adjoining hedges.
12	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Several grassy fields with variable structure and adjoining hedges and gardens.
13	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> <li>Ephemeral/short perennial</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Mosaic of habitats and features collectively with potential for reptiles. Ephemeral/short perennial appears to be fallow arable.
14	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> </ul>	Derelict orchards now forming a mosaic of grassland, ruderal, scrub and relic fruit trees.
15	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> <li>Ephemeral/short perennial</li> <li>Scrub</li> <li>Broadleaved plantation</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> <li>Bats</li> </ul>	Mosaic of habitats and features collectively with potential for reptiles. Plantation is dense, developing/maturing with lime, ash, cherry, sweet chestnut and poplar.
16	<ul style="list-style-type: none"> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Birds</li> </ul>	Derelict orchard now scrubbed up but with relic fruit trees.
17	<ul style="list-style-type: none"> <li>Broadleaved semi-natural woodland</li> </ul>	<ul style="list-style-type: none"> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	Unmanaged sweet chestnut coppice. Possible (seasonal) pond on NW edge.
18	<ul style="list-style-type: none"> <li>Tall ruderal</li> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Mosaic of habitats and features collectively with potential for reptiles.
19	<ul style="list-style-type: none"> <li>Broadleaved semi-natural woodland</li> <li>Mixed plantation</li> </ul>	<ul style="list-style-type: none"> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	Churn Wood – much of which is Ancient Woodland. Variable – parts broadleaved semi-natural with oak, ash, sweet chestnut and birch etc, part sweet chestnut coppice and parts planted with Scot's pine and other conifers.



Target Note	Habitats and Features	Potential for Protected Species	Comments
20	<ul style="list-style-type: none"> <li>Broadleaved semi-natural woodland</li> <li>Running water</li> </ul>	<ul style="list-style-type: none"> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	Welsh Wood – LNR and LWS. Ancient woodland with characteristically rich flora. Includes small-leaved lime and the Essex Red Data List thin-spiked wood-sedge <i>Carex strigosa</i> beside the small stream.
21	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Hedgerows</li> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	Small grassland fields with varied structure, hedgerows and scrub between Salary Brook and Churn Wood. Viewed from west.
22	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Trees</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland with varied structure and scattered trees. Not species-rich but includes frequent lady's bedstraw and common knapweed.
23	<ul style="list-style-type: none"> <li>Semi-improved neutral grassland</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Moderately species-rich grassland with frequent lady's bedstraw and common knapweed and range of other grassland species. Potential for reptiles, especially round edges beside hedgerows.
24	<ul style="list-style-type: none"> <li>Semi-improved neutral grassland</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Part of Salary Brook LNR and MWS. Moderately species-rich meadow grassland with frequent or abundant false oat-grass, Yorkshire fog and common bent and occasional tufted hair-grass. Frequent rushes and occasional hairy sedge. Includes range of species characteristic of floodplain meadow grassland, including, meadowsweet, meadow vetchling, common knapweed, sneezewort, bird's foot-trefoil and greater bird's foot-trefoil.
25	<ul style="list-style-type: none"> <li>Broadleaved semi-natural woodland</li> </ul>	<ul style="list-style-type: none"> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	Small woodland with oak, ash, birch and sycamore. Field laye includes locally abundant bluebell.
26	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland with varied structure with potential for reptiles, especially around edges. Although rather species-poor contains range of grassland species including occasional lady's bedstraw, white campion, bird's foot-trefoil, field scabious and autumn hawkbit.
27	<ul style="list-style-type: none"> <li>Running water</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> <li>Water vole</li> <li>Bats</li> </ul>	Salary Brook - part within Salary Brook LNR and MWS. Small watercourse which retains, in parts, a relatively natural structure with features such as riffle and pool. Bed variable - sand and gravel and silt. Parts open and parts shady beneath trees, willow and alder, or among woodland. Stands of emergent and marginal vegetation in more open areas, including branched bur-reed, reedmace, great willowherb, forget-me-not, water pepper, meadowsweet and hemlock water-dropwort. Adjoining semi-natural habitat.
28	<ul style="list-style-type: none"> <li>Swamp</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> <li>Water vole</li> <li>Bats</li> </ul>	Part of Salary Brook LNR and MWS. Relatively extensive areas of swamp/emergent vegetation, comprising stands of common reed, reedmace and reed sweet-grass with scattered scrub on the south east side of the salary brook

Target Note	Habitats and Features	Potential for Protected Species	Comments
29	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> <li>Trees</li> <li>Scrub</li> <li>Standing water</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> <li>Water vole</li> <li>Bats</li> </ul>	Part of Salary Brook LNR and MWS. Mosaic of variable grassland, including some mown areas, ruderal, trees and scrub with three ponds. Ponds have stands of emergent and marginal vegetation, waterfowl and appear stocked with fish.
30	<ul style="list-style-type: none"> <li>Broadleaved semi-natural woodland</li> <li>Mixed plantation</li> </ul>	<ul style="list-style-type: none"> <li>Birds</li> <li>Dormice</li> <li>Bats</li> </ul>	Home Wood – LWS. Ancient woodland with oak, sweet chestnut, ash and birch. Some (eastern) parts planted with conifers including pine. Viewed from east and west.
31	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Vegetation structure suitable for reptiles but small area and relatively isolated.
32	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Mosaic habitat either side of track with vegetation structure suitable for reptiles but relatively isolated.
33	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland with variable structure suitable for reptiles.
34	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> <li>Scrub</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> </ul>	Mosaic habitat comprising grassland, derelict orchards, scrub and hedgerows.
35	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Standing water</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland with variable structure and OS map shows ponds present
36	<ul style="list-style-type: none"> <li>Tall ruderal</li> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> <li>Birds</li> </ul>	On railways embankments
37	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Scrub</li> <li>Trees</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Parts of Colne LNR. Possibly sown grassland of variable structure includes common knapweed, bird's foot-trefoil, field scabious, red clover and lesser stitchwort. Scattered trees and scrub with adjoining hedges.
38	<ul style="list-style-type: none"> <li>Standing water</li> </ul>	<ul style="list-style-type: none"> <li>Great crested newt</li> </ul>	Water body not viewed directly but present on OS map and aerial images. Surrounded by dense scrub.
39	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland of variable structure with adjoining hedges.
40	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland and ruderal strip of variable structure with adjoining hedges etc.
41	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Part of Wivenhoe Cross Pit LWS. A small area of undulating ground with grassland (incl. weld Reseda luteola, common centaury and perforate St. Johns-wort) of variable structure and scrub.
42	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	A small area of grassland of variable structure (fleabane, common centaury, smooth and hairy tare, marsh thistle and red bartsia) and scrub.
43	<ul style="list-style-type: none"> <li>Standing water</li> </ul>		Relatively large pond (ex-gravel working). Small stands of reedmace and yellow iris. Fishing.
44	<ul style="list-style-type: none"> <li>Tall ruderal</li> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Part of Wivenhoe Cross Pit LWS. Area of tall ruderal (ex-arable) with some grassland enclosed within hedges with many oaks but rather gappy shrub layer.
45	<ul style="list-style-type: none"> <li>Standing water</li> <li>Scrub</li> <li>Poor semi-improved grassland</li> <li>Tall ruderal</li> </ul>	<ul style="list-style-type: none"> <li>Great crested newts</li> <li>Reptiles</li> <li>Birds</li> </ul>	Includes Wivenhoe Gravel Pit SSSI. Pond with adjoining habitat potentially suitable for great crested newts but quite isolated.

Target Note	Habitats and Features	Potential for Protected Species	Comments
46	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland of variable structure. Not species-rich but includes large stands of the nationally Scarce dittander <i>Lepidium latifolium</i> . Also seasonally wet area with much rush, fleabane and wood small reed <i>Calamagrostis epijegos</i>
47	<ul style="list-style-type: none"> <li>Standing water</li> <li>Tall ruderal</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Ponds not viewed but present on OS map and aerial images.
48	<ul style="list-style-type: none"> <li>Poor semi-improved grassland</li> <li>Hedgerows</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland of variable structure, including wide field margin and adjoining hedges.
49	<ul style="list-style-type: none"> <li>Standing water</li> </ul>		Relatively large pond, apparently of quite recent origin (ex-gravel working) with adjoining short grassland.
50	<ul style="list-style-type: none"> <li>Running water</li> <li>Poor semi-improved grassland</li> <li>Scrub</li> </ul>	<ul style="list-style-type: none"> <li>Reptiles</li> </ul>	Grassland of variable structure with trees and scrub beside the Sixpenny Brook
51	<ul style="list-style-type: none"> <li>Standing water</li> </ul>		Relatively large pond. Not viewed but present on OS maps and aerial images.

## Habitats

### Arable

2.3.28 Arable is the most widespread and abundant habitat within the Site, especially in the east and south. Arable weeds are largely confined to often narrow field margins. Species recorded include those listed below.

- |                             |                                  |
|-----------------------------|----------------------------------|
| • Common poppy              | <i>Papaver rhoeas</i>            |
| • Field pansy               | <i>Viola arvensis</i>            |
| • Small-flowered cranesbill | <i>Geranium pusillum</i>         |
| • Cut-leaved cranesbill     | <i>Geranium dissectum</i>        |
| • Sand spurry               | <i>Spergularia rubra</i>         |
| • Common cudweed            | <i>Filago vulgaris</i>           |
| • Pinappleweed              | <i>Matricaria discoidea</i>      |
| • Small nettle              | <i>Mercurialis annua</i>         |
| • Fathen                    | <i>Chenopodium album</i>         |
| • Fig-leaved goosefoot      | <i>Chenopodium ficifolium</i>    |
| • Field sowthistle          | <i>Sonchus arvensis</i>          |
| • Greater plantain          | <i>Plantago major</i>            |
| • Broad-leaved willowherb   | <i>Epilobium montanum</i>        |
| • Square-stalked willowherb | <i>Epilobium tetragonum</i>      |
| • Water pepper              | <i>Persicaria hydropiper</i>     |
| • Redshank                  | <i>Persicaria maculosa</i>       |
| • Pale persicaria           | <i>Persicaria lapathifolia</i>   |
| • Knotgrass                 | <i>Polygonum arviculare</i>      |
| • Field madder              | <i>Sherardia arvensis</i>        |
| • Wall speedwell            | <i>Veronica verna</i>            |
| • Dwarf mallow              | <i>Malva neglecta</i>            |
| • Common mallow             | <i>Malva sylvestris</i>          |
| • Field pepperwort          | <i>Lepidium campestre</i>        |
| • Sun spurge                | <i>Euphorbia helioscopia</i>     |
| • White campion             | <i>Silene latifolia</i>          |
| • Scentless mayweed         | <i>Tripleurospermum inodorum</i> |

- Swinecress *Coronopus squamatus*
- Scarlet pimpernel *Anagallis arvensis*
- Field bindweed *Convolvulus arvensis*
- Barren brome *Anisantha sterilis*
- Black grass *Alopecurus myosuroides*
- Soft brome *Bromus mollis*

2.3.29 The Site is relatively large, with a range of differing environmental conditions, and the arable weed flora tends to reflect this, for example the presence of species such as sand spurrey, small-flowered cranesbill and common cudweed in areas of sandy soil.

### Grassland

2.3.30 Grassland is scattered throughout the Site. However, there is a concentration within and adjoining the valley of the Salary Brook. Much of the grassland is species poor, comprising coarse swards dominated by false oat-grass *Arrhenatherum elatius* and other bulky grasses, horse paddocks or amenity grassland.

2.3.31 However, there are several areas of somewhat richer grassland, of which the most notable lie within the Salary Brook Valley. For example the grassland in the valley bottom at TN22 supports a range of species characteristic of unimproved floodplain meadows, such as meadowsweet *Filipendula ulmaria*, meadow vetchling *Lathyrus pratensis*, common knapweed *Centaurea nigra*, sneezewort *Achillea ptarmica*, bird's foot-trefoil *Lotus corniculatus* and greater bird's foot-trefoil *Lotus pedunculatus*. The adjoining grassland on the valley side at TN21 is also moderately species-rich. Other areas of more varied grassland include those at TN39 and 40. Grassland along the verges of some of the roads and lanes also retain or support some diversity.

### Ruderal Vegetation

2.3.32 Stands of tall ruderal vegetation, including species such as thistles *Cirsium* spp., nettle *Urtica dioica* and docks are scattered across the Site. The most extensive stands are at TN14, among a derelict orchard, and on ex-arable at TN42.

2.3.33 Some areas of what appears to be fallow arable support ephemeral/short perennial vegetation. This includes a range of arable weed, other ruderal and grassland species.

### Woodland and Scrub

2.3.34 Woodland is distributed throughout the Site. Larger woods and concentrations of woodland are present at Bullock Wood Ancient Woodland and SSSI in the north west of the Site, within and

beside the valley of the Salary Brook, including Wall's Wood (Ancient Woodland, TN9), the Broomhangings (TN10), Churn Wood (Ancient Woodland, TN17), Welsh Wood (Ancient Woodland, TN18), Thousand Acres (Ancient Woodland) and Home Wood (Ancient Woodland, TN28).

- 2.3.35 Canopy species include both pedunculate and sessile oak *Quercus robur* and *petraea*, ash *Fraxinus excelsior*, sweet chestnut *Castanea sativa*, silver birch *Betula pendula* and locally small-leaved lime (e.g. Welsh Wood TN18). Hawthorn *Crataegus monogyna* and hazel *Corylus avellana* are the most frequent and abundant shrub species although holly is locally frequent (e.g. Wall's Wood TN9). The field layer is variable and reflects the local conditions, for example frequent and abundant bracken on acids sands and gravels in the eastern part of Walls Wood, and the age of the woodland, with Ancient Woodland areas tending to support a relatively rich flora comprising a range of characteristic species.
- 2.3.36 There is a smaller concentration of woodland beside the Sixpenny Brook in the east of the Site and elsewhere there are scattered small woodlands and plantations.
- 2.3.37 Dense and scattered scrub, including hawthorn, blackthorn *Prunus spinosa*, willow *Salix* spp., rose *Rosa* spp. elm *Ulmus* sp. and elder *Sambucus nigra*, is distributed throughout the Site, for example among unmanaged grassland at TN3, beside the Salary Brook (e.g. TN26 and 27), among the derelict orchard at TN14 and at Wivenhoe Cross Pit LWS (TN39 and 42).

### Hedgerows

- 2.3.38 There is a network of hedgerows throughout the Site. Many of these are relatively species poor, dominated by hawthorn and/or blackthorn with small amounts of, and only occasional other species, such as rose, willow, elm, elder. However, some hedges have a better representation of these species and are richer overall. Many of the hedges have mature trees, especially oak (both pedunculate and sessile), but also ash, and locally willow and alder in wetter areas.
- 2.3.39 Management and condition is very variable. Some hedges are clearly regularly cut, such as many of those beside roads or between arable fields, while others appear to have been unmanaged for some time, such as many within the Salary Brook LNR and LWS. Again, some hedges are dense and continuous while others are quite gappy.
- 2.3.40 Many of the hedges also have associated land drains or ditches. Most of these were dry at the time of the survey, though some did still carry small amounts of water.

### Wetland

### Running Water

- 2.3.41 Two watercourses cross the Site, broadly from north to south, the Salary Brook and the smaller Sixpenny Brook. The Salary Brook is a small watercourse a few metres across which retains, in parts, a relatively natural features such as riffle and pool. The bed is variable, with sand and gravel and silt in different parts. Parts are open and parts shady beneath trees, especially willow and alder, or among woodland. There are stands of emergent and marginal vegetation in more open areas. The Brook has a number of small tributaries, for example those which pass through Welsh Wood and Churn Wood, at least some of which may be seasonal.
- 2.3.42 The Sixpenny Brook is a very small and possibly seasonal watercourse which at least in parts supports small stands of wetland species, such as watercress *Nasturtium officinale*.

### Standing Water

- 2.3.43 There are a number of ponds in the eastern part of the Site, presumably created through historic gravel extraction, including the relatively small Wivenhoe Gravel Pit (SSSI, TN43), and the larger waterbodies south of TN30 and at TN47 and 49. The first two of these were viewed from a distance and appear to support very limited aquatic, emergent or marginal vegetation and are set within amenity or other short grassland.
- 2.3.44 There are three ponds within Salary Brook LNR and LWS. These support stands of a range of emergent species, including reedmace *Typha* spp., branched bur reed *Sparganium erectum* and pond sedge *Carex* sp.. A number of waterfowl species were observed, including moorhen, mallard and cormorant, and the ponds appear to be stocked with fish and are actively fished.
- 2.3.45 A number of small ponds are associated with houses and gardens, such as at Fen Farm near TN48 and at Parsonage Farm TN33.

### Swamp

- 2.3.46 Swamp or emergent vegetation is present beside the Salary Brook, and particularly to the east of the Brook, where there are quite large stands of common reed *Phragmites australis*, reedmace and reed sweet-grass *Glyceria maxima*. Other species present include branched bur-reed, great willowherb *Epilobium hirsutum* and woody nightshade *Solanum dulcamara*.

### Protected Species