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Bramford to Twinstead Reinforcement

Volume 6: Environmental Information

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1. Introduction

1.1 Overview

1.1.1 National Grid Electricity Transmission plc (here on referred to as National Grid) is making an application for development consent to reinforce the transmission network between Bramford Substation in Suffolk, and Twinstead Tee in Essex. The Bramford to Twinstead Reinforcement ('the project') would be achieved by the construction and operation of a new electricity transmission line over a distance of approximately 29km (18 miles), the majority of which would follow the general alignment of the existing overhead line network.

1.1.2 This Habitats Baseline Report has been produced to support the application for development consent and the accompanying Environmental Statement (ES) under the Planning Act 2008.

1.2 Purpose of this Report

1.2.1 This Habitats Baseline Report sets out a factual summary of the terrestrial and aquatic (main rivers, ponds and lakes) habitats present relevant to the project. The objective is to characterise habitats within and immediately adjacent to the Order Limits using the UK Habitat Classification (UKHab) methodology (Butcher *et al.,* 2020) and to define the condition of those habitats for use in the Biodiversity Metric 3.1 (Natural England, 2022d).

1.2.2 The report also identifies the presence of any Habitats of Principal Importance (HPI) in England, Groundwater Dependent Terrestrial Ecosystems (GWDTE) and botanical species of interest (protected, notable or invasive).

1.2.3 The results of the watercourse field survey based on MoRPh (Modular River Physical Survey) methodology and the River Condition Assessment are reported in ES Appendix 7.3: Aquatic Ecology Baseline Report (**application document 6.3.7.3**). The Aquatic Baseline Report also provides details on minor watercourses not discussed in this Habitat Baseline Report.

1.2.4 Ancient Woodland and ancient and veteran trees are also presented separately in ES Appendix 7.4: Ancient Woodland and Potential Ancient Woodland report (**application document 6.3.7.4**). Identification of 'Important Hedgerows' as per the Hedgerow Regulations 1997 is provided in ES Appendix 7.5: Important Hedgerows Assessment (**application document 6.3.7.5**).

1.2.5 The impact assessment of the project relating to habitats and specified botanical species is presented within ES Chapter 7: Biodiversity (**application document 6.2.7**).

1.3 Structure of this Report

1.3.1 The structure of this report is detailed in Table 1.1.

Table 1.1 – Structure of this Report

Chapter	Content
1: Introduction	Introduction to the project and the purpose of this report.

Chapter	Content
2: Methodology	Description of the methodology and criteria used to undertake the desk study and habitats surveys in the field. The study area for desk study and the survey area for field work is defined. Survey limitations are also detailed.
3: Results	Details the results of the desk study and field surveys. These are combined under sub-headings for each habitat feature for example designated sites, HPI, notable plants, Invasive Non-Native Species (INNS), GWDTE and important arable plant assemblages.

1.4 Legal and Policy Context

1.4.1 The Conservation of Habitats and Species Regulations 2017 (as amended) transposes Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('The Habitats Directive') into UK law. Articles 1 and 2 of The Habitats Directive require the maintenance at favourable conservation status of the habitats and species listed in the Annexes to the Directive. Annex I of the Directive lists 78 habitats occurring in the UK (hereafter, Annex I Habitats), and Annex II lists four bryophyte and nine vascular plant species occurring in the UK (Joint Nature Conservation Committee (JNCC), 2014). Twenty-three of the Annex I Habitats are a priority for conservation (hereafter, Priority Annex I Habitats).

1.4.2 The Wildlife and Countryside Act 1981 (as amended) provides additional legislation protecting wild flora. Schedule 8 of the Act lists five fungi, 30 lichens, two stoneworts, 37 bryophytes and 113 vascular plants which are afforded special protection. Annex I of the Act makes it an offence if any person:

- Intentionally picks, uproots or destroys any wild plant included in Schedule 8;
- Not being an authorised person, intentionally uproots any wild plant not included in that Schedule;
- Sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant; or
- Publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things.

1.4.3 Section 14(2) of the Wildlife and Countryside Act 1981 (as amended) makes it an offence to plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9. Schedule 9 is a list of 12 algae and 42 vascular plants that are INNS.

1.4.4 Wild flora and semi-natural habitats are also afforded limited protection by the Natural Environment and Rural Communities (NERC) Act 2006. Section 41 of the Act requires that the Secretary of State publish a list of species and habitats that are of principal importance for the purpose of conserving biodiversity in England. The list of Species of Principal Importance comprises 63 fungi, 95 lichens, nine stoneworts, 77 bryophytes and 150 vascular plants. The list of HPI comprises 40 terrestrial/freshwater habitats and 25 marine habitats. Section 40 of the Act places a duty on any public authority to have regard to the purpose of conserving biodiversity in the exercising of its functions.

1.4.5 In addition to the above statutory designations, several non-statutory conservation statuses exist to describe levels of rarity or threat to wild flora:

- Nationally Rare (NR) and Nationally Scarce (NS) plants – Plant taxa that occur in respectively 1-15 or 16-100 10km Ordnance Survey (OS) grid squares across Great Britain and Ireland. A list of NR and NS vascular plants is maintained by the Botanical Society of Britain and Ireland (BSBI);
- Red lists – Most of the UK flora have been assessed against International Union for the Conservation of Nature (IUCN) criteria and assigned a threat status of Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CR) or Extinct in the Wild (EW). Taxa assessed as VU, EN, CR are considered at threat, and of increasing conservation priority in that order. LC taxa are not threatened;
- A list of internationally threatened species is maintained by the IUCN (IUCN, 2022), and vascular plants have been assessed for England (Stroh *et al.*, 2014) and Great Britain (Cheffings *et al.*, 2005). Other taxonomic groups have been assessed against non-IUCN methodology, e.g. stoneworts (Stewart and Church,1992); and
- County and Vice County lists – Lists of vascular plants that are locally rare or scarce are available for the vice counties of Essex (Essex Field Club (EFC), 2009) and Suffolk (Sanford, 2005).

1.4.6 The legal and conservation statuses referred to in this report and abbreviations used are summarised in Table 1.2.

Table 1.2 – Botanical Legal and Conservation Statuses used in this Report

Legal / Conservation Status	Abbreviation
Listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended)	Schedule 8
Priority Species (species of principal importance)	S41
Nationally Rare	NR
Nationally Scarce	NS
Great Britain Critically Endangered	GB CR
Great Britain Endangered	GB EN
Great Britain Vulnerable	GB VU
Great Britain Near Threatened	GB NT
England Critically Endangered	Eng CR
England Endangered	Eng EN
England Vulnerable	Eng VU
England Near Threatened	Eng NT
Essex Rare	ER
Essex Scarce	ER
Suffolk Rare	SR
Suffolk Scarce	SS

Legal / Conservation Status	Abbreviation
Suffolk priority species	SP
Listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)	Schedule 9

2. Methodology

2.1 Desk Study

2.1.1 A request was made to the local records centres requesting data for protected and notable species and locally designated sites. This was made in February 2021 to support the baseline assessment presented in the Scoping Report (**application document 6.5.1**). The data request was updated in June 2022 based on a 1km study area around the Order Limits.

2.1.2 Additional data from Natural England was also reviewed for European and nationally designated sites, HPI and GWDTE, where the focus was on identifying potential connections between the project and feature rather than a specified study area. An indicative 2km study area was used as a starting point to identify potential connections between statutory designated sites and the project but where potential impacts are identified with SSSI beyond 2km, these are also presented. Potential connections between HPI and GWDTE were investigated based on an initial 1km study area. The receptors and data sources are presented in Table 2.1.

Table 2.1 – Desk Study Data Sources

Receptor	Data sources
Statutory designated sites: Special Area for Conservation (SAC); Special Protection Area (SPA); Ramsar; National Nature Reserve (NNR); Site of Special Scientific Interest (SSSI); and Local Nature Reserve (LNR).	Natural England Open Data Geoportal (Natural England, 2022 last accessed August 2022) Designated Sites Viewer (Natural England, 2022a)
Non-statutory designated sites: Local Wildlife Sites (LoWS) in Essex; County Wildlife Sites (CWS) and Roadside Nature Reserves (RNR) in Suffolk; and Wildlife Trust Reserves.	Essex Wildlife Trust (EWT) Records Centre (2021) Suffolk Biodiversity Information Service (SBIS) (2022)
Habitats of Principal Importance	Priority Habitat Inventory (Natural England, 2022)
Protected, priority and rare species Invasive Non-Native Species (INNS)	EWT Records Centre (2021) SBIS (2022) Essex Field Club (EFC) (2021)

2.1.3 Phase 1 habitat survey (JNCC, 2010), hedgerow and woodland National Vegetation Classification (NVC) surveys were undertaken in 2011 and 2012 based on the project extent at the time, prior to project pause. A summary of the 2011-2012 survey results is given in the desk study results.

2.2 Field Survey

UK Habitat Classification

2.2.1 The UKHab field surveys were undertaken in accordance with the UK Habitat Classification User Manual Version 1.1 (Butcher *et al.*, 2020). Where one habitat type

covered more than 70% of the ground, it was considered that habitat. UKHab secondary codes were used to describe other components present.

2.2.2 Surveying was at the fine scale minimum mapping unit of 25m^2. Linear features comprising hedgerows, ditches, minor watercourses and lines of trees where the width was less than 1m were mapped as a line, with a primary habitat. Where lines of trees were greater than 1m in width, they were mapped using woodland polygons. Hedgerows were surveyed and data recorded using methodologies outlined in UKHab and Hedgerow Survey Handbook (Department for Environment, Food and Rural Affairs (Defra), 2007).

2.2.3 Field surveys were focused on the extent of the Order Limits and were undertaken between June 2021 and June 2022 by ecologists competent in botanical ID skills and experienced in the relevant methodology for the survey type being undertaken. Surveyors collected data using Arc Collector GIS software on global positioning system enabled tablets. The Dominant Abundant Frequent Occasional Rare (DAFOR) scale system (Table 2.2) was used to provide a semi-quantitative estimate of the relative abundance of plant species identified in different habitats.

Table 2.2 – DAFOR Scale

Value	Percentage cover
D – Dominant	> 75%
A – Abundant	51 – 75%
F – Frequent	26 – 50%
O – Occasional	11 – 25%
R – Rare	1 – 10%

Notable Plants

2.2.4 Notable plant species were identified during the UKHab field surveys and were recorded within the species list. A central point of the habitat polygon has been used to show location of the notable species.

Invasive Non-Native Species

2.2.5 While some INNS were recorded as specific points, often they were recorded within a species list for a habitat. Where the latter occurred, a central point of the habitat polygon has been used to show the indicative location of the INNS. Where INNS were recorded incidentally as part of other surveys, these are also presented in this report.

2.3 Groundwater Dependent Terrestrial Ecosystems

2.3.1 GWDTE were identified following a review of the desk study and field survey data and application of the UK Technical Advisory Group (UKTAG) guidance (2004). Information was derived from designated site citations (Natural England, 2022b; SBIS, 2022b; and EWT, 2021b), OS mapping, previous Phase 1 habitat survey and NVC data from 2012 and the UKHab surveys detailed in this report.

2.3.2 The process for allocating a groundwater dependency score was based on:

- The NVC class, if available: score 1 if clearly groundwater-dependent; 2 if groundwater might contribute; 3 if clearly not groundwater-dependent as per Appendix 1 in UKTAG (2004);
- The observed vegetation types, where they could be generically assessed: score 2 if groundwater might contribute; 3 if unlikely;
- OS mapping where the above information was not available, for example checking for springs and issues on OS mapping: score 1 or 2 if present, 3 if not; and
- Superficial geology if case is doubtful and assign higher score if superficial is a potential aquifer.

2.3.3 The resulting score indicates dependency on groundwater: 3 = low; 2 = moderate; and 1 = high.

2.4 Important Arable Plant Assemblages

2.4.1 Important Arable Plant Areas (IAPA) are arable sites which have the presence of a particular threatened arable plant species, an exceptional arable plant assemblage, and/or priority habitats suitable to support these species. Data from the local record centres and the UKHab survey results were used to identify the location of potentially important arable plant assemblages. Field survey using the Important Arable Plant Area, Outstanding Assemblages survey form (Plantlife, 2022) focused on a minimum of one boundary within each field that was surveyed.

2.4.2 Where important arable plant species were recorded within a habitat, a central point of the polygon has been used to show its location.

2.4.3 Each plant species on the Outstanding Assemblages survey form has a score from one to nine, where one is locally frequent and nine is extremely rare. The combined total of the species recorded were calculated to produce a score which could be cross-referenced with Plantlife's threshold scores for assessing the conservation status of IAPA. These state that for sandy loams, shale and free-draining soils the score would need to be 15-29 to be of County importance; 30-44 for National importance and 45+ for European importance.

2.5 Survey Limitations

2.5.1 Land access was refused at a limited number of land parcels and therefore it was not possible to survey these fields. There were also minor modifications to the Order Limits in some locations after field surveys were completed. This includes the temporary access route that passes through Section G: Stour Valley and Section H: GSP Substation. National Grid is proposing to survey this temporary access route in spring 2023 subject to landowner agreement. The percentage of land access for the project was approximately 80%, which is considered sufficient to provide the information required to support the assessment presented within the ES.

2.5.2 Where field survey was not possible, habitat classification was derived from the desk study (including the 2011-2012 Phase 1 habitat data) and project commissioned detailed aerial photography (2021) to generate a complete habitat map. This approach was used where there were potentially unsafe conditions on site for the survey, for example due to

factors such as livestock presence or wetlands situated on permanently waterlogged ground. The areas which have been mapped using desk based techniques rather than site survey are identified in Annex A (**application document 6.3.7.1.1**).

3. Results

3.1 Statutory Designated Sites

Desk Study

3.1.1 The Stour and Orwell Estuaries SPA and Ramsar are located approximately 5.72km to the south-east of the project. These are shown in Figure 7.1.1 (**application document 6.4**) and detail provided in Table 3.1.

Table 3.1 – European Designated Sites

Qualifying features	Distance and Direction from the Order Limits
Stour and Orwell Estuaries SPA	
• Dark-bellied brent goose (*Branta bernicla*) (Non-breeding); • Northern pintail (*Anas acuta*) (Non-breeding); • Pied avocet (*Recurvirostra avosetta*) (Breeding); • Grey plover (*Pluvialis squatarola*) (Non-breeding); • Red knot (*Calidris canutus*) (Non-breeding); • Dunlin (*Calidris alpina*) (Non-breeding); • Black-tailed godwit (*Limosa limosa islandica*) (Non breeding); • Common redshank (*Tringa totanus*) (Non-breeding); and • Waterbird assemblage of over 20,000 individuals.	5.72km south-east
Stour and Orwell Estuaries Ramsar	
• Ramsar criterion 2: contains seven nationally scarce plants (stiff saltmarsh-grass (*Puccinellia rupestris*), small cord-grass (*Spartina maritima*), perennial glasswort (*Sarcocornia perennis*), lax flowered sea lavender (*Limonium humile*) and eelgrasses (*Zostera angustifolia* and *Z. marina* and *Z. noltei*)); • Ramsar criterion 2: contains five British Red Data Book invertebrates (a muscid fly (*Phaonia fusca*), a horsefly (*Haematopota grandis*), Spiders (*Arctosa fulvolineata* and *Baryphema duffeyi*)) and swollen spire snail (*Mercuria confusa*); • Ramsar criterion 5: assemblages of international importance (63,017 waterfowl – five-year peak mean 1998/9-2002/2003); and • Ramsar criterion 6: species populations occurring at levels of international importance (concurrent with species listed in SPA qualifying features).	5.72km south-east

3.1.2 There are no NNR within 2km of the Order Limits and no potential pathways to effect on a NNR have been identified.

3.1.3 Table 3.2 details the SSSI within the 2km of the Order Limits, ordered east to west. This also includes sites beyond 2km where the Order Limits overlap with the published SSSI Impact Risk Zones for electricity infrastructure projects. These are also shown in

Figure 7.1.1 (**application document 6.4**). Hintlesham Woods SSSI is located within the Order Limits in Section AB: Bramford Substation/Hintlesham.

Table 3.2 – Sites of Special Scientific Interest

SSSI	Citation Summary	Distance and Direction from the Order Limits
Stour Estuary	Designated for its coastal saltmarsh, sheltered muddy shores, two scarce marine invertebrates, vascular scarce plant assemblage and wintering and passage wildfowl and waders. The site is in favourable condition (2010).	9.1km south-east
Orwell Estuary	Designated for its intertidal mud habitats, assemblage of vascular plants, breeding bird assemblage and wintering waterfowl. The site is in overall favourable condition (2009-2010).	5.72km south-east
Cattawade Marshes SSSI	Designated for its grazing marshes with associated open water and fen habitats. These habitats are of major importance for the diversity of their breeding bird community, including waders and wildfowl. The site is in favourable and unfavourable – recovering condition (2012).	8.36km south-east
Little Blakenham Pit	Chalk grassland and large bat hibernation roost used principally by Daubenton's bat (*Myotis daubentonii*), Natterer's bat (*Myotis nattereri*) and brown long-eared bat (*Plecotus auritus*). The bat tunnel is in favourable condition while the chalk pit is in unfavourable but recovering condition (2010).	2.9km north-east
Hintlesham Woods	Ancient semi-natural woodland habitat. The designation includes Wolves Wood, Keeble Grove, Ramsey Wood and Hintlesham Great Wood. Also a Royal Society for the Protection of Birds (RSPB) Reserve. Ramsay Wood and Hintlesham Great Wood are in favourable condition (2021). Further details can be found in Annex B: Hintlesham Woods SSSI Assessment (**application document 6.3.7.1.2**).	Within Section AB: Bramford Substation/Hintlesham
Arger Fen	Designated woodland site with fen and wet and acidic grassland areas. In favourable and unfavourable – recovering condition (2014).	10m south of Section F: Leavenheath/ Assington
Cornard Mere, Little Cornard	A seasonally flooded area of fen, species-rich ruderal herb vegetation, woodland, scrub and neutral grassland. Traditional management plus regular cutting maintains a varied flora with many species typical of wetland communities. It also attracts considerable numbers of over-wintering snipe and provides a habitat for a variety of insects, including an uncommon sawfly. In unfavourable – declining condition (2010).	2km north

3.1.4 There are five LNR within 2km of the Order Limits. These are summarised in Table 3.3 and shown in Figure 7.1.1 (**application document 6.4**). Railway Walk, Hadleigh LNR is located within the Order Limits and forms the boundary between Section AB: Bramford Substation/Hintlesham and Section C: Brett Valley.

Table 3.3 – Local Nature Reserves

LNR	Citation Summary	Distance and Direction from the Order Limits
Railway Walk, Hadleigh	Trees on either on raised banks or on downward slopes, in a surrounding landscape is a patchwork of fields, woodland copses and hedgerows.	Within. On border of Section AB: Bramford Substation/ Hintlesham and Section C: Brett Valley.
Riverside Walk, Hadleigh	The woodland separating these two paths is comprised mostly of willow (*Salix sp.*), sallow (*Salix caprea*) and alder (*Alnus glutinosa*) with poplar (*Poplus sp*.), oak (*Quercus sp*.), ash (*Fraxinus excelsior*) and elder (*Sambucus nigra*) and occasional spindle (*Euonymus europaeus*). Many of the trees are cloaked in Ivy (*Hedera helix*).	1.29km north
Broom Hill, Hadleigh	Grassland, tall herb communities, gorse and broom, scrub and woodland.	1.58km north
Arger Fen	Ancient coppice woodland, new naturally regenerating woodland alongside wet meadows.	410m south-west of temporary access route (overlaps with larger SSSI)
Tiger Hill	Heathland, fen and woodland. Animals include dormice, badgers and bats. Volunteers have produced a 'dormouse corridor' at Tiger Hill to the neighbouring Arger Fen.	380m south of main works, 10m south of temporary access route (also component of Arger Fen SSSI)

Field Survey

3.1.5 UKHab surveys were conducted on Hintlesham Woods SSSI (specifically Hintlesham Little Wood and Ramsey Wood) sites where they were crossed by the Order Limits or located immediately adjacent to the Order Limits. A summary of the results is presented in Table 3.4. Habitat classification is shown in Figure 7.1.4 for habitat areas and Figure 7.1.5 for linear features (**application document 6.4**) as part of the UKHab mapping for the full project and a botanical species list is provided in Annex A (**application document 6.3.7.1.2**).

3.1.6 A subsequent NVC survey of where the Order Limits cross Hintlesham Woods SSSI are detailed in ES Appendix 7.4: Ancient Woodland and Potential Ancient Woodland Report (**application document 6.3.7.4**).

Table 3.4 – Statutory Designated Sites within the Order Limits

Site Name	Citation (Natural England, 2022a)	UK Hab Survey	UKHab Polygon ID (see Annex A)
Hintlesham Woods SSSI	One of the largest areas of ancient coppice-with-standards woodlands in Suffolk dating from at least the 12th century. The woodland is further linked	The habitat within the Order Limits was identified as w1f7 other lowland mixed deciduous woodland. The area below the existing pylons was in	H_A_776 H_A_1041

Site Name	Citation (Natural England, 2022a)	UK Hab Survey	UKHab Polygon ID (see Annex A)
	to other ancient woodland in the vicinity by secondary woodlands from the 16th to 19th century. The variety of soil types through the site allows a wide variety of canopy species to dominate in different areas. The woodland supports a variety of notable species including a large colony of green helleborine (*Helleborus viridis)*, the fern (*Polypodium australe)*, violet helleborine (*Epipactis purpurata)*, bird's-nest orchid (*Neottia nidus-avis)* and herb Paris (*Paris quadrifolia)*.	moderate condition. There was a 10m strip to the north-east which predominately comprised dense blackthorn (*Prunus spinosa)* interspersed with some taller trees such as ash (*Fraxinus excelsior)* and silver birch (*Betula pendula*). Beyond the existing maintenance swathe, the woodland was in good condition with oak (*Quercus robur),* coppiced hazel (*Corylus avellana*) and significant silver birch. The northern area of the SSSI resembled more ancient woodland with an ash canopy, some in poor condition. There was a hazel understorey and ground flora comprising several ancient woodland indicator species. An additional area to the south corner of Hintlesham Little Wood had a younger appearance.	
Railway Walk LNR, Hadleigh	A disused railway line with semi-natural habitats. Of particular note is the area of open chalky bolder clay grassland on the steep banks of a cutting. Species present are typical of unimproved grassland with a chalky influence, including: pyramidal orchid (*Anacamptis pyramidalis*) and quaking grass (*Briza media)*. The hazel dormouse (*Muscardinus avellanarius)* has been noted to be present within this site.	The habitat where the Order Limits cross the LNR was identified as predominantly w1g woodland; other broadleaved in poor condition with some h3h mixed scrub in moderate condition present to the north. The canopy was dominated by pedunculate oak with evidence of historic pollarding and an understory of occasional blackthorn, hawthorn (*Crataegus monogyna*) and elm (*Ulmus sp*.). There was a high proportion (>25%) of bare earth with common ruderal species indicative of nutrient enrichment dominating the ground flora, such as common nettle (*Urtica dioica*) (D), bramble (*Rubus fruticosus agg*) (L,A) and cleavers (*Galium aparine*) (O). One ancient woodland indicator species was identified: false-brome (*Brachypodium sylvaticum*), which was rare to locally abundant to the south.	HL_403

3.2 Non-Statutory Designated Sites

Desk Study

3.2.1 There are 59 locally designated sites within 1km of the Order Limits, consisting of 20 LoWS, 36 CWS and three RNR. The locations of the sites are shown on Figure 7.1.2 (**application document 6.4**) and listed in Table 3.5.

Table 3.5 – Non-Statutory Designated Sites

Site	Name	Citation Summary	Distance and Direction from the Order Limits
Section AB: Bramford Substation/Hintlesham			
CWS	Sproughton Park	A range of habitats including wet grassland, alder carr, veteran trees, hedgerows, ponds, and springs. Fauna associated includes birds, bats, badger (*Meles meles*), otter (*Lutra lutra*), water vole (*Arvicola amphibius*), water shrew (*Neomys fodiens*) and amphibians.	100m south-east
CWS	Miller's Wood	Ancient woodland with coppiced horse chestnut (*Aesculus hippocastanum*), sweet chestnut (*Castanea sativa*) and wild service-tree.	315m north-east
CWS	Burstall Long Wood	Ancient woodland site which holds a scarce plant in Suffolk - wild service-tree (*Sorbus torminalis*). Also supports bluebell (*Hyacinthoides non-scripta*), primrose (*Primula vulgaris*) and early purple orchid (*Orchis mascula*).	680m south
CWS	Bullen Wood	Ancient woodland with diverse plant species and valuable habitats for dead wood invertebrates and woodpeckers	130m south
CWS	Round Wood and Elms Grove	Ancient woodland site noted for supporting a wide range of woodland birds, particularly warblers.	320m east
CWS	Fore and Bushey Groves	Woodland site with wild service-tree present and dog's mercury (*Mercurialis perennis*).	135m north
CWS	Flowtonhall Grove	Ancient woodland	920m north
RNR	92	Sulphur clover (*Trifolium ochroleucon*) and man orchid (*Orchis anthropophora*).	900m north
CWS	Brimlin Wood	Ancient woodland.	650m south
CWS	Squires Wood	Ancient woodland with mature hedgerow providing a valuable wildlife corridor.	550m south
CWS	Long Wood	Ancient woodland with dense hedgerow.	480m south

Site	Name	Citation Summary	Distance and Direction from the Order Limits
CWS	Tom's / Broadoak Wood	Ancient woodland site (although a large proportion has been planted with conifers).	Immediately adjacent – south
CWS	Raydon Great Wood	Ancient woodland. The large size, habitat variation and structural diversity of this site provide habitat opportunities for a wide range of wildlife including invertebrates such as dragonflies and butterflies, small mammals, birds, and reptiles. Several priority species are recorded here including grass snake (*Natrix natrix*), common lizard (*Zootoca vivipara*), bats, Hazel dormouse (*Muscardinus avellanarius*), nightingale (*Luscinia megarhynchos)*, cuckoo (*Cuculus canorus*), song thrush (*Turdus philomelos*) and dunnock (*Prunella modularis*).	205m south
CWS	Valley Farm Meadow	Wet grassland and a drier herb-rich meadow.	Within
CWS	Hadleigh Railway Walk	Former railway line converted into a footpath and bridleway. Contains chalk grassland and woodland habitats and passes through Raydon Great Wood CWS.	Within
Section C: Brett Valley			
CWS	River Brett (Sections)	A large portion of the River Brett has good quality water and is of conservation value. Five sections of the watercourse have been selected as being of particular importance for aquatic wildlife. These sections support a highly diverse wetland flora. Emergent species which grow on the gently-shelving margins include flowering-rush (*Butomus umbellatus*), reedmace (*Typha latifolia*) and greater pond sedge (*Carex riparia*). Starwort (*Callitriche stagnalis*), mare's-tail (*Hippuris vulgaris*), and river water-dropwort (*Oenanthe fluviatilis*) grow well in the unpolluted water.	400m south and 580m north
Section D: Polstead			
CWS	Valley Farm Wood	Mixed wet and ancient woodland and hedges which support hazel dormouse. The site contains several reptile and bird species.	Within
RNR	202	Lesser calamint (*Clinopodium calamintha*).	Immediately adjacent - north

Site	Name	Citation Summary	Distance and Direction from the Order Limits
CWS	Layham Pit Woodland and Meadow	An active quarry with an undisturbed area of wet woodland and unimproved wet meadow. It supports invertebrate, amphibian, reptile, and bird communities.	Within
CWS	Layham Grove	Ancient woodland with tree diversity providing opportunities for invertebrates, birds including the priority species nightingale (*Luscinia megarhynchos*) and hazel dormice.	115m north
CWS	Stack Wood	Ancient Woodland with mature oak, hornbeam (*Carpinus betulus*), cherry (*Prunus* sp.), birch (*Betula* spp), aspen (*Populus tremula*) and wild service tree (*Sorbus torminalis*).	780m north
CWS	Millfield Wood	Ancient woodland site covering two blocks of woodland separated by arable land.	Immediately adjacent – north and south
CWS	Potash Lane Hedge	Ancient hedgerow supporting 19 native species such as dogwood (*Cornus sanguinea*), hazel (*Corylus avellana*), gorse (*Ulex* sps), and broom (*Cytisus scoparius*).	450m north
CWS	Howe Wood	Ancient woodland with small-leaved lime (*Tilia cordata*) (uncommon in Suffolk), wood anemone (*Anemone nemorosa*), wood sorrel (*Oxalis acetosella*), wild service-tree and wood millet (*Milium effusum*).	290m north
CWS	King Harry's Grove	Ancient woodland with a good diversity of flowering plants.	180m north
Section E: Dedham Vale AONB			
CWS	Polstead Acid Grassland	Unimproved grassland. Clustered (*Trifolium glomeratum*) and knotted clovers (*Trifolium striatum*) occur on site; both these species are relatively scarce away from the coast.	460m south
CWS	The Dollops	Ancient woodland site.	Within
CWS	High Trees Farm Wood	Ancient woodland with wild service tree, oak (*Quercus*) standards and wild cherry (*Prunus avium*).	445m north

Site	Name	Citation Summary	Distance and Direction from the Order Limits
CWS	Bushy Park Wood	Ancient woodland site which contains old oak pollards and wet flushes. Hazel dormouse present.	Immediately adjacent – south
CWS	Broom Hill Wood	Ancient Woodland.	Immediately adjacent – north
CWS	River Box Meadows	Floodplain meadows on the River Box with two distinct communities. Eastern half is rush and sedge dominated with wood club-rush (*Scirpus sylvaticus*) (regionally rare species). The southerly end has low lying area where tall species-rich fen dominated by sedges, rushes and meadowsweet (*Filipendula ulmaria*) occur. The meadows as also an important habitat for waders such as snipe (*Gallinago gallinago*).	765m north
Section F: Leavenheath/Assington			
CWS	Leadenhall Wood	Ancient woodland with ash (*Fraxinus excelsior*), small-leaved lime coppice, mature cherry, and oak.	3m south
Suffolk WT Reserve	Arger Fen and Spouse's Vale	Mosaic of ancient coppice woodland and new naturally regenerating woodland alongside wet meadows. Hazel dormouse, barbastelle bat (*Barbastella barbastellus*), badger, common lizard, grass snake and various butterflies present.	4m south
CWS	Assington Meadows	A sloping meadow, stream which supports water vole. The meadow supports a diverse wet grassland community.	495m north
CWS	Assington Thicks	Ancient woodland and one of the largest woods in west Suffolk. Number of ponds provide additional important habitat for woodland invertebrates, particularly dragonflies. Hazel dormice are present.	215m north
RNR	195	Lesser calamint.	Within
CWS	Tiger Hill Long Meadow	Wet acid fen meadow.	235m south

Site	Name	Citation Summary	Distance and Direction from the Order Limits
CWS	Mumford's Wood	Ancient woodland. A large proportion has been felled and replanted. The eastern part of the wood contains old coppiced hornbeam. A herb-rich plant community is present, particularly in an open grassy area on the western side of the wood. The scarce plant, trailing St John's-wort (*Hypericum humifusum*) is present along with ancient woodland indicator species.	440m north
CWS	Lord's Wood	Ancient woodland comprised of oak standards with an elder and hazel coppice shrub layer.	975m north
Section G: Stour Valley			
CWS	Appletree Wood/ Meadow	Ancient woodland site, species-rich meadow, and associated butterfly community.	120m north
LoWS	Edgars Farm East Meadow	Damp and marshy grassland within the River Stour flood plain. The sward is characterised by meadow foxtail (*Alopecurus pratensis*), sweet vernal grass (*Anthoxanthum odoratum*), creeping bent-grass (*Agrostis stolonifera*) and crested dog's-tail (*Cynosurus cristatus*), whilst wet areas support ragged robin (*Silene flos-cuculi*), bog stitchwort (*Stellaria alsine*), cuckooflower (*Cardamine pratensis*) and many other species associated with wetlands.	330m south
LoWS	Edgars Farm Meadow	A wet grassland and marsh site supporting very rich flora, including many species of restricted distribution. Species of note include velvet bent-grass (*Agrostis canina*), cuckooflower, marsh bedstraw (*Galium palustre*), ragged robin and creeping jenny (*Lysimachia nummularia*), carnation sedge (*Carex panicea*) and marsh arrowgrass (*Triglochin palustris*).	390m south
LoWS	Daws Hall	Grassland, marsh and aquatic habitats.	5m north
LoWS	Moat Farm/Burnt House Marsh	Comprises a wooded stream with a mix of wet and dry grassland habitats.	10m south
LoWS	Parkhill Wood	Woodland with old pedunculate oak standards with some underplanting of ash and sweet chestnut forma canopy over hazel shrub layer. Bracken (*Pteridium aquilinum*) is widespread, with other typical species being bluebell and primrose.	720m south

Site	Name	Citation Summary	Distance and Direction from the Order Limits
LoWS and Essex WT Reserve	Loshes Meadows Complex	Grassland, woodland, young plantation, hedgerows, and marsh habitats. It supports a variety of flowering plants, breeding birds, butterflies, and reptiles.	Within
LoWS	Alphamstone Meadows	Wet and dry grassland habitats.	Within
LoWS	Alphamstone Complex	Dry grassland (in an old gravel pit), scrub, wet alder, and swamp.	Within
LoWS	Clamps Grove	Woodland comprising pedunculate oak, small-leaved lime, ash and field maple (*Acer campestre*). The understorey is largely hawthorn, elder (*Sambucus nigra*), elm (*Ulmus* sp.) and midland hawthorn (*Crataegus laevigata*) over a ground flora of bluebell and dog's mercury.	650m south
LoWS	Pebmarsh House	Grassland with scattered trees, retains a species-rich sward typified by cock's-foot, crested dog's-tail, sweet vernal grass, quaking grass (*Briza media*) and many common herbs.	Immediately adjacent – east
LoWS	Ansell's Grove/ Ash Ground	Wet woodland and grassland habitat types and open water.	Within
LoWS	Coopersfield Wood	This wood comprises pedunculate oak, ash, birch and poplar (*Populus* sp.).	340m north
LoWS	Fenn Farm Mosaic	The southern end of the site is an alder wood with willow scrub and a marshy ground flora amongst which Angelica (*Angelica sylvestris*), lesser pond sedge (*Carex acutiformis*), giant horsetail (*Equisetum telmateia*), meadowsweet, ramsons (*Allium ursinum*), ragged robin and nettle (*Urtica dioca*) are frequent, with a good cover of bryophytes. North wood is a lake which has good marginal vegetation of soft rush (*Juncus effusus*), reedmace (*Typha latifolia*), water mint (*Mentha aquatica*), brooklime (*Veronica beccabunga*), iris (*Iris* spp), sedge and meadowsweet.	80m north-west

Site	Name	Citation Summary	Distance and Direction from the Order Limits
LoWS	Twinstead Marsh	Comprises a range of wet woodland and grassland habitat types and open water.	Within
Section H: GSP Substation			
LoWS	Twinsteadhall Wood	Ancient wood comprising a mix of broadleaved and coniferous species. The northern section has birch, hazel and old sweet chestnut coppice while the south is mainly planted Scot's pine (*Pinus sylvestris*). Ground flora species bluebell, dog's mercury, wood anemone and yellow pimpernel.	100m north
LoWS	Almshouse Wood	Pedunculate oak, ash and silver birch over hazel coppice constitute the main woody species of this woodland. Bracken and bramble (*Rubus fruticosus* agg) are frequent in ground flora, which also includes primrose and dog's mercury.	425m north
LoWS	Twinstead Green	An area of green comprising damp grassland scattered young trees and a small pond. The principal constituents of turf are creeping bent-grass, meadow foxtail, cock's-foot and Yorkshire fog (*Holcus lanatus*). Field woodrush (*Luzula campestris*) and glaucous sedge (*Carex flacca*) are also present. The assemblage of herbs includes agrimony (*Agrimonia eupatoria*), cuckooflower, meadow vetchling (*Lathyrus pratensis*) and burnet saxifrage (*Pimpinella saxifrage*).	310m south
LoWS	Butler's Wood	Ancient woodland with a canopy of pedunculate oak standards with an understorey of silver birch, English elm (*Ulmus procera*) and some aspen (*Populus tremula*). Ground flora species include wood anemone, bluebell, primrose and wood sorrel.	Immediately adjacent – north
LoWS	Waldegrave Wood	Ancient woodland site, the structure of the ancient wood is pedunculate oak and ash standards, with silver birch and elm (*Ulmus* sp.), over a hazel coppice, hawthorn and elder (*Sambucus nigra*) shrub layer. Among the ground flora are wood anemone, wood sorrel, bluebell and primrose.	Immediately adjacent – south
LoWS	Parsonage Wood	Large ancient wood comprising mainly birch in the canopy and hazel as the shrub layer. Pedunculate oak standards are scattered throughout the wood, with some replanting of conifers in the centre. Among the ground flora species are bluebell, primrose and wood anemone.	780m north

Field Survey

3.2.2 Eleven non-statutory designated sites are located within the Order Limits. These sites were surveyed and the results are presented in Table 3.6 and shown in Figure 7.1.2 (**application document 6.4**). Botanical species lists for each site surveyed is provided in Annex A (**application document 6.3.7.1.2**), referenced by habitat polygon ID.

Table 3.6 – Non-statutory Designated Sites Crossed by the Order Limits

Site Name	Project Section	Citation (EWT, 2021 & SBIS, 2022)	UK Hab Survey	UKHab Polygon ID (see Annex A)
Valley Farm Meadow CWS (Babergh 61)	A/B	Situated adjacently to the north of the Hadleigh Railway Walk (Babergh 60) CWS, the site is on an area of low-lying land and partly remains waterlogged year round. Of botanical note include the species common bistort (*Bistorta officinalis*) which is rare in Suffolk. Cattle grazing maintains the meadow and promotes a wider variety of species in its dryer areas.	The majority of the site comprised g3c other neutral grassland in poor condition with creeping soft grass (*Holcus mollis*) and Yorkshire fog (*Holcus lanatus*) present in abundance. The west of the site was an area of pasture with a high-water table dominated by soft rush (*Juncus effusus*) and brooklime (*Veronica beccabunga*) with scattered grey willow (*Salix cinerea)* scrub comprising f2b purple moor grass and rush pastures (priority habitat). A small area to the south-east transitioned into w1d wet woodland with young grey willow and some semi-mature alder.	H_A_779 H_A_807 H_A_944 H_A_809
Hadleigh Railway Walk CWS (Babergh 60)	A/B and C	A former railway line inclusive of a range of semi-natural habitats and the ancient Raydon Great Wood. Open chalk grassland on the steep banks as a result of cutting contain notable plant communities.	Where the Order Limits crossed the CWS other woodland habitats were identified comprising w1g broadleaved woodland (w1g) in poor condition and h3h mixed scrub in moderate condition, with a high proportion of bare earth and common ruderal species present.	HL_403
Valley Farm Wood CWS (Babergh 81)	D	A secondary woodland with an area on its northern side considered to be ancient. It contains historic footways boarded by hedgerows containing ancient woodland species. Further notable flora is found in the dryer parts of the woodland, with wetter areas partially replanted by non-native species and to it southern extent a large artificially made sport fishing lake.	The western area of the CWS crossed by the Order Limits comprised a former Scots pine (*Pinus sylvestris*) woodland: w1h other woodland mixed in moderate condition with areas for rearing game birds. A watercourse was present to the west but there was no significant change in botanical species composition. The east of the wooded area comprised w1f7 Other Lowland mixed deciduous woodland with planted willow (*Salix* species) and a wet ditch running north to south; however, it was almost dry with no flow at the time of the survey. No mature trees were present. The eastern area was a field of g4 modified grassland in good condition used for grazing livestock.	H_A_773 H_A_784 H_A_799

Site Name	Project Section	Citation (EWT, 2021 & SBIS, 2022)	UK Hab Survey	UKHab Polygon ID (see Annex A)
Layham Pit Woodland and Meadow CWS (Babergh 171)	D	An active quarry, with areas of undisturbed habitats fed by a cut off tributary with habitats of semi-natural woodland, wet woodland unimproved wet grassland and fen meadow. The site is noted for holding uncommon and rare flora and fauna species.	Where the Order Limits overlap with the CWS, the area comprises woodland habitat. A large proportion of the area comprised w1g7 other broadleaved woodland types in poor condition. The habitat was a secondary woodland with a silver birch dominant canopy layer. There was no understorey and ground flora were those indicative of disturbed land. An area of secondary w1f lowland mixed deciduous woodland was located to the eastern side, in moderate condition.	HL_64 HL_79 HL_76
The Dollops CWS (Babergh 185)	E	A woodland, possibly ancient, situated along the course of a stream. Varying in structure due to a steep topography down to the watercourse. It contains wet woodland HPI dominated by willow in its centre and bordered by oak (*Quercus sp)* and ash (*Fraxinus excelsior)* woodland or hedgerows.	w1f Lowland mixed deciduous woodland and w1d wet woodland, both of moderate condition, was located where the Order Limits cross the CWS. There were numerous fallen and standing deadwood. The area and close vicinity held a wide variety of ancient woodland indicator species, with a further wide variety of flora typical of and transitioning between the dry to wet woodland.	HL_437 HL_43a
RNR 195 (Babergh 179)	F	This site was designated for the presence of lesser calamint.	No site survey undertaken. Aerial photography shows a managed road verge with sparse shrubs bordered by large agricultural fields.	N/A
Alphamstone Meadows LoWS (Bra240)	G	The site contains diverse habitats including wet meadows, dry grassland and marsh. This supports a wide variety of wetland plant species.	Where the Order Limits cross the LoWS, the habitats comprised g3c5 *arrhenatherum* neutral grassland, g1c bracken and w1d wet woodland. A wide diversity of plant species were identified in these habitats. INNS variegated yellow archangel (*Lamiastrum galeobdolon subsp. Argentatum)* and Himalayan balsam (*Impatiens glandulifera)* were both present occasionally. The lack of management at the site is likely resulting in the majority of habitats being in poor condition.	H_A_990 H_A_1131 H_A_981 H_A_980 H_A_989 H_A_982 H_A_987

Site Name	Project Section	Citation (EWT, 2021 & SBIS, 2022)	UK Hab Survey	UKHab Polygon ID (see Annex A)
Alphamstone Complex LoWS (Bra239)	G	The site contains a variety of habitats varying from dry grassland, alder carr, woodland and swamps. A notable quantity of alternate-leaved golden saxifrage (*Chrysosplenium alternifolium*) is present.	Where the Order Limits overlap the LoWS, the habitat is considered to be h3h mixed scrub.	HA3_898
Loshes Meadow Complex LoWS (part EWT Reserve) (Bra241)	G	Majority of the site is managed by EWT and contains a mosaic of grassland, woodland, plantations, hedgerows and marsh. The Loshes Brook to the north of the site provides further habitats for wildlife.	The Order Limits cross the LoWS at two locations. The northern section comprised a mosaic of w1g7 and w1f7 woodlands, h3b hazel scrub, grassland and open mosaic. The g3c other neutral grassland to the east was heavily disturbed and had wet areas as it sloped to the river. The second location where the Order Limits cross the LoWS comprises h3h scrub in poor condition.	H_A_957 H_A_879 H_A_873 H_A_814 H_A_880 HL_129
Ansell's Grove / Ash Ground LoWS (Bra233)	G	Woodland within a valley varying in structure from the damp valley centre to the dryer slopes. Wet woodland indicator species are present as well as ancient woodland indicative species.	The Order Limits cross the higher part of the woodland of the wider LoWS on the valley slope and comprised w1f lowland mixed deciduous woodland and w1d wet woodland. Ancient Woodland Indicator species were present.	H_A_911 H_A_913
Twinstead Marsh LoWS (Bra222)	G	This site holds a wide variety of habitats including alder (*Alnus glutinosa)* and willow (*Salix sp.)* carr, marsh and open water.	Where the Order Limits overlap the site, the habitats identified include alder and willow dominated w1d wet woodland in moderate condition, with ground flora dominated by nutrient enrichment species. A cut area of g3c Other neutral grassland of poor condition was also identified, likely created when the existing pylon was first installed. H3h mixed scrub was also present on the access track verge.	H_A_947 HL_409 H_A_949

3.3 Habitats of Principal Importance

Desk Study

3.3.1 The Priority Habitat Inventory (Natural England, 2022e) identified the following HPI within the Order Limits:

- Deciduous woodland (as a general term for indictive lowland mixed deciduous woodland HPI and other woodland HPI types e.g. wet woodland);
- Coastal and floodplain grazing marsh in two locations, one located to the east of the River Box and one to the west of the River Stour;
- Lowland meadows, located in Section E: Dedham Vale AONB to the south-west of Alder Carr; and
- Lowland dry acid grassland, located in Section G: Stour Valley to the north of Twinstead Road.

Field Survey

3.3.2 The UKHab survey was used to ground truth the areas of HPI within the Order Limits identified by the Priority Habitat Inventory and to identify any additional HPI present, not identified in the inventory.

3.3.3 The field survey identified the following additional HPI to those in the desk study:

- Arable field margins;
- Wet woodland;
- Hedgerows;
- Open mosaic on previously developed land;
- Purple moor grass and rush pastures;
- Lowland fen;
- Rivers;
- Eutrophic standing waters; and
- Ponds.

3.3.4 The HPI identified and confirmed through the UKHab survey are described in

3.3.5 Table 3.7 and shown on Figure 7.1.3 (**application document 6.4**). The definitions of the HPI identified during surveys as outlined in the UK BAP: Priority Habitat Descriptions (Biodiversity Reporting and Information Group, 2011) are also shown in Table 3.7. The detailed descriptions of the HPI are provided in Annex A (**application document 6.3.7.1.1**).

3.3.6 The area defined as lowland meadow in the desk study, located in Section E: Dedham Vale AONB to the south of Alder Carr, was recorded as g4 modified grassland during the UKHab survey (HL_223). The field was cattle grazed with frequent perennial rye-grass (*Lolium perenne*), common bent (*Agrostis capillaris*) and yarrow (*Achillea millefolium*), and occasional ribwort plantain (*Plantago lanceolata*), red fescue (*Festuca rubra*). This area did not meet the criteria for lowland meadow HPI.

3.3.7 The large area defined as lowland acid grassland in the desk study, located in Section G: Stour Valley to the north of Twinstead Road, would appear to be an overestimate of that habitat type. While some of that habitat type was recorded during the site survey (A_1265), it was to a more limited extent. The other habitats included g3c6 *lolium-cynosurus* neutral grassland (HL_116, HL_138), g4 modified grassland (HL_132), g3c other neutral grassland (A_1267) and h3h mixed scrub (HL_129).

Table 3.7 – HPI within the Order Limits

HPI	HPI Definition (BRIG, 2011)	UKHab Survey	Approximate Area (ha) within Order Limits	UKHab polygon ID (see Annex A)
Arable field margins	Arable field margins are herbaceous strips or blocks around arable fields that are managed specifically to provide benefits for wildlife. Located in excess of 2m from hedgerows. Ground flora within 2m is considered part of the boundary feature.	Multiple examples of arable field margin HPI (UKHab code c1a) were located in Section AB: Bramford Substation/Hintlesham. All such habitats are assumed to be HPI and these have not been further subdivided for the purposes of assessment e.g. set-aside habitats.	6.94	H_A_1124; H_A_796; H_A_920; H_A_728; H_A_736; H_A_771; H_A_859; H_A_864; H_A_868; H_A_869; H_A_855; HL_378; HL_366; HL_367; HL_372; HL_374; HL_376; HL_377; HL_382; HL_352; HL_352a; HL_237; HL_153
Coastal and Floodplain Grazing Marsh	Periodically inundated pasture or meadow with ditches that maintain water levels. All areas are either grazed or cut for hay / silage.	This HPI was identified immediately west of River Brett, as g3c neutral grassland sloping down to watercourses with areas of periodic inundation throughout. Occasional rushes (*Juncus sp.)* were recorded. Secondary codes included scattered rushes (14) and coastal and floodplain grazing marsh (25).	0.86	H_A_945
Lowland dry acid grassland	Generally on nutrient poor and free-draining soils with a pH ranging from 4-5.5 overlaying acid rocks or superficial deposits such as sands and gravels.	This HPI comprised areas of g1a lowland dry acid grassland and g1a6 other lowland dry acid grassland. Examples of this habitat types were located north of Twinstead Road.	0.24	HL_26; HL_77; HL_217; A_1265; H_A_1126
Lowland fen	Fens are peatlands which receive water and nutrients from the soil, rock and ground water as well as from rainfall: they are minerotrophic.	One area of UKHab f2 and HPI Lowland fen was identified in the Order Limits associated with Valley Farm Meadow CWS.	0.03	H_A_809

HPI	HPI Definition (BRIG, 2011)	UKHab Survey	Approximate Area (ha) within Order Limits	UKHab polygon ID (see Annex A)
Open mosaic on previously developed land	Primarily successional habitat, and as such unusual in the British landscape, especially the lowlands. The vegetation can have similarities to early/pioneer communities (particularly grasslands) on more 'natural' substrates but, due to the edaphic conditions, the habitat can often persist (remaining relatively stable) for decades without active management (intervention). Stands of vegetation commonly comprise small patches and may vary over relatively small areas, reflecting small-scale variation in substrate and topography.	This UKHab category (u1a) was identified within Loshes Meadows where manmade roads have been left to vegetate and at Layham Quarry.	4.56	HA3_822; HL_63; HL_74; HL_80; HL_137; H_A_787; H_A_757; H_A_873; H_A_972
Purple moor grass and rush pastures	Occur on poorly drained, usually acidic soils in lowland areas of high rainfall. Their vegetation, which has a distinct character, consists of various species-rich types of fen meadow and rush pasture. Purple moor grass (*Molinia caerulea*), and rushes, especially sharp-flowered rush (*Juncus acutiflorus*), are usually abundant.	One area of UKHab f2b and HPI purple moor grass and rush pastures was identified in the Order Limits associated with Valley Farm Meadow CWS.	0.34	H_A_807

HPI	HPI Definition (BRIG, 2011)	UKHab Survey	Approximate Area (ha) within Order Limits	UKHab polygon ID (see Annex A)
Lowland mixed deciduous woodland	Includes woodland growing on the full range of soil conditions, from very acidic to base-rich, and takes in most semi-natural woodland in southern and eastern England.	Multiple areas of UKHab w1f lowland mixed deciduous woodland and w1f7 other lowland mixed deciduous woodland (that comprise this HPI) were recorded across the Order Limits. An example of this habitat is located to the west of Millwood Road in Section D: Polstead.	12.04	HL_262; HL_255; HL_79; HL_43a; H_A_999; HL_295; H_A_911; HL_197; A_1191; A_407; A_529; H_A_1041; H_A_761; H_A_767; H_A_769; H_A_772; H_A_776; H_A_819; H_A_935; H3_1012; H3_1108; HA3_897; H_A_782; A_47; H_A_784; HL_67; A_1017; H_A_798; H3_913; HL_41; H3_1118; H3_932; HL_244; HL_285; A_1296; A_294; A_868; H_A_1016; H_A_1029; H_A_797; H_A_814; H_A_969; H_A_995; H3_1081; H3_1141; H3_1142; H3_943; H3_950; HL_121; HL_162; HL_196; HL_420; HL_86; H_T_897; A_1782; A_716; H_A_1111; HL_21

HPI	HPI Definition (BRIG, 2011)	UKHab Survey	Approximate Area (ha) within Order Limits	UKHab polygon ID (see Annex A)
Wet woodland	Wet woodland occurs on poorly drained or seasonally wet soils, usually with alder, birch and willows as the predominant tree species, but sometimes including ash, oak, pine and beech on the drier riparian areas. It is found on floodplains, as successional habitat on fens, mires and bogs, along streams and hill-side flushes, and in peaty hollows. These woodlands occur on a range of soil types including nutrient-rich mineral and acid, nutrient-poor organic ones.	Wet woodland HPI comprising UKHab categories w1d wet woodland and w1d5 alder woodland were identified in the Order Limits, usually associated with watercourses, for example the River Box.	7.27	H_A_882; H_A_897; H_A_944; HA3_949; HL_76; HA3_950; HL_437; HL_126; H_A_1044a; H_A_1044b; H_A_1131; H_A_913; H_A_947; H_A_975; H_A_980; H_A_990; HL_108; H_A_875
Hedgerows	Any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less that 20m wide. Must consist of predominantly (i.e. 80% or more cover) of at least one woody UK native species.	Multiple native species rich and poor hedgerows, UKHab category h2a hedgerows, were identified within the Order Limits. All were typical of field boundaries in an agricultural landscape.	N/A	See Table A-3 in Annex A.
Rivers	River waterbodies that are considered to be near-natural or because they fulfil one or more specific criteria relating to BAP priority species, Annex II Habitats Directive species, or to particular habitat types.	River Stour, River Box, River Brett, Belstead Brook and Henny Meadow Fleet identified as a HPI, UKHab category r2a. Please refer to ES Appendix 7.1.3: Aquatic Ecology Baseline (**application document 6.3.7.3**) for further information on rivers.	0.89	A_1377; W_1038; H_A_831; W_1069; W_1072; H_A_866; H_A_881

HPI	HPI Definition (BRIG, 2011)	UKHab Survey	Approximate Area (ha) within Order Limits	UKHab polygon ID (see Annex A)
Ponds	Permanent and seasonal standing water bodies up to 2ha in extent which support protected and notable species, exceptional assemblages of biotic groups, have excellent ecological quality or have other distinguishing features.	As all ponds (UKHab category r1) within the Order Limits are assumed to support great crested newt (*Triturus cristatus*) and are therefore considered HPI. Secondary code 19.	0.87	A_1364; HL_344; HL_224; W_1023; W_1070; W_1066; W_1065; W_1064; W_1061; W_1060; W_1058; W_1054; W_1048; W_1047; W_1044; W_1043; W_1045; W_1046; W_1037; W_1036; W_1029; W_1034; W_1017; W_1018; W_1020; W_1030; W_1033; W_1035
Eutrophic standing waters			0.16	H_A_765; H_A_948; H_A_991; W_1032
Mesotrophic lakes			0.20	HL_66

3.4 UKHab Surveys

Desk Study

3.4.1 The Phase 1 habitat survey undertaken in 2012 identified a highly agricultural landscape, dominated by arable and pasture bordered with a range of boundary hedgerow types. Occasional blocks of semi-natural broadleaved woodland and plantations interspersed the study area, some of ancient origin, some recently planted. What limited grassland diversity existed was located to the west of the study area, in the main associated with Section G: Stour Valley. The survey in 2012 identified valuable habitats including semi-natural ancient woodlands, wet woodlands, species-rich hedgerows, river valleys and ponds.

Field Survey

3.4.2 The Order Limits of the project in 2022 were similar to the area surveyed in 2012. The UKHab categories identified in 2021 and 2022 are shown in Figure 7.1.4 for habitat areas and Figure 7.1.5 for linear features (**application document 6.4**). The habitats present in each section are described below, from east to west. All habitats identified during the surveys and their species list are presented within Table A-1 in Annex A (**application document 6.3.7.1.1**). Table A-2 lists all the lines of trees identified and Table A-3 lists all hedgerows identified and their species lists.

3.4.3 The following descriptions (while acknowledging the different survey methodology) indicate that habitats appear broadly consistent and where changes have been identified, these, in the main, relate to recent tree planting and formation and/or expansion of arable field margins.

Section AB: Bramford Substation/Hintlesham

3.4.4 This section is predominantly comprised of c1 arable and horticulture including HPI c1a arable field margins. Examples of these habitats are located to the north of Hintlesham Woods. Smaller areas of g grassland were identified throughout this section and included g4 modified grassland and g3c other neutral grassland. Examples of these habitats were located to the south of Hintlesham Village.

3.4.5 The Order Limits comprised a linear strip of w1f7 other lowland mixed deciduous woodland beneath the existing pylons within Hintlesham Woods. The wider Hintlesham Woods habitats comprised w1f7 other lowland mixed deciduous woodland, as also categorised as ancient woodland. The woodland habitat was identified as w1f7 other lowland mixed deciduous woodland with detailed NVC survey information provided in ES Appendix 7.4: Ancient Woodland and Potential Ancient Woodland (**application document 6.3.7.4**).

3.4.6 The land to the north of Hintlesham Woods comprised predominantly c1 arable and horticulture with borders of c1a arable field margins. The area to the south-west of Hintlesham Woods comprised c1a arable field margins (HPI), c1 arable and horticulture and h3h mixed scrub.

3.4.7 Other woodland areas were present including w1g other broadleaved woodland, and HPI w1f lowland mixed deciduous woodland and w1d wet woodland, examples located to the west of Burstall and to the south-west of Hadleigh respectively. The Order Limits also

cross several linear features including h2a hedgerows (a HPI) and w1g6 line of trees, see Figure 7.1.5 **(application document 6.4)**.

Section C: Brett Valley

3.4.8 This section also predominantly comprised c1 Arable and horticulture. A small area to the north-west of Lower Layham comprised w1h Other woodland; mixed and g4 modified grassland. The central section contiguous to the River Brett comprised grassland including g3c other neutral grassland and g4 modified grassland. The Order Limits cross several linear features including h2a hedgerows (a HPI) and w1g6 line of trees habitat.

Section D: Polstead

3.4.9 The east of this section, to the west of Layham, comprised g4 modified grassland, u1 built-up areas and gardens, and areas of woodland including w1h other mixed woodland, w1f7 other lowland mixed deciduous woodland and w1g7 other broadleaved woodland. The west of this section, near Polstead Heath, comprised c1 arable and horticulture habitats including c1d8 other non-cereal crops and c1a8 game bird mix strips and corners. The central area of the section comprised an inactive quarry where HPI u1a open mosaic habitats on previously developed land, w1d wet woodland and w1f lowland mixed woodland were identified. The Order Limits cross several h2a hedgerows (a HPI) and two w1g6 line of trees habitat.

Section E: Dedham Vale AONB

3.4.10 This section predominantly comprised c1 arable and horticulture habitat to the east, near Whitestreet Green and g4 modified grassland habitat, to the west of the River Box. HPI w1d wet woodland was identified in the centre of the section, to the north of Alder Carr, and small areas of w1f lowland mixed deciduous woodland, w1d wet woodland and c1a arable field margins were identified to the north of Polstead. The Order Limits cross several h2a hedgerows (a HPI).

Section F: Leavenheath/Assington

3.4.11 This section comprised habitats of c1 arable and horticulture including c1c5 winter stubble. HPI w1d wet woodland, w1f lowland mixed deciduous woodland and u1a Open Mosaic Habitats on previously developed land were identified within the centre of Section F, to the south of Assington and a small area of w1f to north of Leavenheath. The Order Limits cross several linear features including h2a hedgerows (a HPI) and w1g6 line of trees.

Section G: Stour Valley

3.4.12 This section predominantly comprised c1 arable and horticulture, g4 modified grassland and g3c other neutral grassland. The east of the section, to the east of the River Stour, comprised c1 arable and horticulture interspersed with g3c5 *arrhenatherum* neutral grassland. The central section, to the north of Henry Back Road, comprised HPI w1d wet woodland. The south-west of the section, to the west of Alphamstone, predominantly comprised c1 arable and horticulture, including areas of c1c5 winter stubble, c1c7 other cereal crops and HPI c1a arable field margins. The Order Limits cross several h2a hedgerows (a HPI) and w1g6 line of trees.

Section H: Grid Supply Point Substation

3.4.13 This section predominantly comprised c1 Arable and horticulture. Smaller areas of grassland, g3c other neutral grassland and g4 modified grassland were present throughout the section. One location of HPI w1d wet woodland was recorded to the north-west of Wickham St Paul. The Order Limits cross several linear features including h2a hedgerows (a HPI), h2b other hedgerows and w1g6 line of trees habitat.

Consolidated Site Survey Results

3.4.14 All of the habitats identified during the UKHab surveys within the Order Limits are shown in Table 3.8 (areas) and Table 3.9 (linear features). Habitat classification is shown in Figure 7.1.4 for habitat areas and Figure 7.1.5 for linear features (**application document 6.4**).

Table 3.8 – UK Hab Classification Survey Results - Areas

Habitat Code	Status	Habitat Type	Approximate Size (ha)
c1	-	Arable and horticulture	237.74
c1a	HPI	Arable field margins	5.49
c1a5	Subset of HPI	Arable field margins sown with tussocky grasses	0.47
c1a7	Subset of HPI	Arable field margins cultivated annually with annual flora	0.19
c1a8	Subset of HPI	Game bird mix strips and corners	0.79
c1b	-	Temporary grass and clover leys	3.79
c1c	-	Cereal crops	86.17
c1c5	-	Winter stubble	21.06
c1c6	-	Game bird mix fields	5.64
c1c7	-	Other cereal crops	10.73
c1d	-	Non-cereal crops	19.83
c1d8	-	Other non-cereal crops	13.74
c1e	-	Intensive orchards	6.47
f	-	Wetland	0.02
f2		Fen marsh and swamp	0.03
f2b	HPI	Purple moor grass and rush pastures	0.34
f2f		Other swamps	0.98
g		Grassland	8.13
g1a	HPI	Lowland dry acid grassland	0.03

Habitat Code	Status	Habitat Type	Approximate Size (ha)
g1a6	Subset of HPI	Other lowland dry acid grassland	0.21
g1c		Bracken	0.67
g3c		Other neutral grassland	37.50
g3c5		*Arrhenatherum* neutral grassland	9.28
g3c6		Lolium-Cynosurus neutral grassland	3.48
g3c8		Holcus-Juncus neutral grassland	0.16
g4		Modified grassland	82.49
h		Heathland and scrub	1.11
h3		Dense scrub	0.18
h3a		Blackthorn scrub	0.10
h3b		Hazel scrub	0.11
h3d		Bramble scrub	0.86
h3e		Gorse scrub	0.04
h3h		Mixed scrub	7.66
r1	HPI	Standing open water and canals	0.87
r1a	HPI	Eutrophic standing waters	0.09
r1a6	Subset of HPI	Other eutrophic standing waters	0.07
r1b	HPI	Mesotrophic lakes	0.20
r2a	HPI	Rivers (priority habitat)	0.89
u		Urban	1.97
u1		Built-up areas and gardens	0.94
u1a	HPI	Open Mosaic Habitats on Previously Developed Land	4.56
u1b		Developed land; sealed surface	6.56
u1b5		Buildings	0.01
u1c		Artificial unvegetated, unsealed surface	1.93
u1d		Suburban/ mosaic of developed/ natural surface	0.52
u1e		Built linear features	23.67
w		Woodland and forest	0.29

Habitat Code	Status	Habitat Type	Approximate Size (ha)
w1		Broadleaved mixed and yew woodland	1.36
w1d	HPI	Wet woodland	5.91
w1d5	Annex 1 Habitat and Subset of HPI	Alder woodland on floodplains (H91E0)	1.36
w1f	HPI	Lowland mixed deciduous woodland	2.53
w1f7	Subset of HPI	Other Lowland mixed deciduous woodland	9.51
w1g		Other woodland; broadleaved	2.69
w1g7		Other broadleaved woodland types	5.58
w1h		Other woodland; mixed	2.54
w1h5		Other woodland; mixed; mainly broadleaved	0.44
w2c		Other coniferous woodland	0.02

Table 3.9 – UK Hab Classification Survey Results – Linear Features

Habitat Code	Status	Habitat Type	Approximate Length (km)
w1g6		Line of trees	5.1
h2		Hedgerow	4.2
h2a	HPI	Hedgerow	31
h2b		Other hedgerows	0.2

3.5 Notable Plants

Desk Study and Field Survey

3.5.1 The desk study identified a range of protected and notable botanical species present within 1km of the Order Limits within the past 15 years. The results of the desk study and the additional species recorded during site surveys are listed in

3.5.2 Table 3.10 and shown on Figure 7.1.6 **(application document 6.4**). Arable plants of interest are discussed separately in Section 3.8.

Table 3.10 – Protected and Notable Plant Species

Species	Status	Plant Description (BSBI, 2022)	Field Survey (FS) / Number of Records	Year of Record(s)	Approximate Distance to the Order Limits (m)
Fine-leaved sandwort (*Minuartia hybrida*)	NS, S41, Eng EN	Annual that grows on light soils in dry places. Its natural habitat is dry, rocky, calcareous grassland on chalk and limestone. However, it is more frequent in artificial habitats such as abandoned arable fields, quarries, old walls, trackways, railway banks and sidings.	FS	2022	Within Order Limits
Man Orchid (*Orchis anthropophora)*	NS	Perennial herb is found in old chalk-pits and limestone quarries, calcareous grassland and on road verges. Continuous heavy grazing is detrimental, eventually causing its demise.	FS 3	2022 2011-2020	Within Order Limits 825m
Black Poplar (*Populus nigra subsp. betulifolia)*	ER SR	A majestic, broad-crowned tree which grows by watercourses, by ponds and in hedgerows, especially on lowland floodplains. Many trees are old and in decline.	FS 1	2022 2010	Within Order Limits 445m
Lesser Calamint (*Clinopodium calamintha)*	NS	Short-lived perennial herb of dry, south facing banks and rough grassland. Formerly a pasture plant, it is now largely confined to roadsides, railway banks, churchyards and waste ground.	17	2010-2017	Within Order Limits
Common Valerian *(Valeriana officinalis)*	Eng NT ER	Perennial herb found in a wide range of habitats. Widespread decline has taken place in S.E. England.	1	2011	25m
Yellow-rattle (*Rhinanthus minor)*	ER	Annual root-hemiparasite of nutrient-poor grasslands. Declined throughout the 20th century.	5	2010-2013	25m
Wild Marjoram (*Origanum vulgare*)	ER	Herbaceous perennial herb of dry, infertile, calcareous soils found in grassland, hedge banks, and scrub, and is a colonist of bare or sparsely vegetated ground, including quarries and road verges.	1	2011	25m

Species	Status	Plant Description (BSBI, 2022)	Field Survey (FS) / Number of Records	Year of Record(s)	Approximate Distance to the Order Limits (m)
Large Bitter-cress (*Cardamine amara)*	ER	Perennial winter-green herb of stream sides and marshes, wet meadows and wet woodland. Local losses in S.E. England which are presumably attributable to agricultural improvements.	1	2011	25m
Bluebell (*Hyacinthoides non-scripta)*	Schedule 8	Bulbous perennial herb occurring, sometimes abundantly, in a wide variety of deciduous woodlands, in hedgerows.	27	2010-2021	35m
Jersey Cudweed (*Gnaphalium luteoalbum*)	Schedule 8	Previously a national rarity but is now considered a pavement weed in London and crops up across England as a casual plant on waste ground.	1	2018	40m
Alternate-leaved Golden-saxifrage	ER	Perennial, stoloniferous herb found in boggy ground in woods, by stream sides. In decline.	3	2013-2018	40m
Opposite-leaved Golden-saxifrage (*Chrysosplenium oppositifolium)*	ER	Perennial, stoloniferous herb found in boggy ground in woods, by stream sides. Found in more acidic habitats than *C. alternifolium* (above).	2	2013-2018	40m
Slender Tufted-sedge (*Carex acuta)*	ER	Rhizomatous perennial of shallow water or wet ground at the edges of rivers and streams. Declined in many areas, principally because of drainage.	3	2011-2013	40m
Clustered Clover (*Trifolium glomeratum*)	SS ER	A winter-annual typically occurring in short open communities on light, drought-prone often somewhat acidic sandy or stony soils near the coast. It is a rare casual inland.	2	2015-2019	55m
Water violet (*Hottonia palustris*)	Eng VU	Stoloniferous perennial of still, shallow, base-rich, clear and not eutrophicated water bodies. Loss due to drainage, vegetation clearance, eutrophication, boat traffic and trampling by cattle. Most of these losses occurred before 1930, but have continued, particularly in S.E. England.	6	2011-2016	70m

Species	Status	Plant Description (BSBI, 2022)	Field Survey (FS) / Number of Records	Year of Record(s)	Approximate Distance to the Order Limits (m)
Greater Dodder (*Cuscuta europaea)*	SS, ES	Annual, rarely perennial, rootless twining holoparasite of damp nitrophilous places, especially the banks of rivers, but also hedges and ditches. Its primary host is usually nettle (*Urtica dioica*). Restricted to S.E. England.	2	2011-2021	75m
Fen Bedstraw (*Galium uliginosum)*	ER	Perennial herb of base-rich marshes and fens. Widespread UK decline.	1	2011	90m
Lizard orchid *(Himantoglossum hircinum*)	Schedule 8	Winter-green perennial herb growing on chalk and, rarely, limestone in open grassland, on roadsides and in quarries.	1	2014	250m
Irish spurge (*Euphorbia hyberna*)	GB VU Eng VU	Rhizomatous perennial of woodland glades, hedgerows and shaded stream banks. Single record in Suffolk.	1	2016	265m
Large-leaved lime (*Tilia platyphyllos*)	ES	Occurs as a native in old, mixed deciduous woodland on calcareous or, rarely, acidic soils, typically as a large tree or coppice stool.	1	2016	265m
Unbranched Bur-reed *(Sparganium emersum)*	ER	Perennial herb of still or slowly flowing water.	1	2011	300m
Marsh Dock (*Rumex palustris)*	SS, ES	Annual, biennial or short-lived perennial, typical of wet, nutrient-rich mud exposed in summer and autumn, most often in marshes and beside ponds and ditches, but also in clay- and gravel-pits and on damp disturbed ground. It is also an occasional weed of dry open sites and has been recorded as a ballast alien. Previously in decline, now stable.	1	2010	445m
Narrow Buckler-Fern (*Dryopteris carthusiana)*	ER	Deciduous fern is found in a range of damp habitats.	1	2010	445m

Species	Status	Plant Description (BSBI, 2022)	Field Survey (FS) / Number of Records	Year of Record(s)	Approximate Distance to the Order Limits (m)
Hard Shield-fern (*Polystichum aculeatum)*	ER	Evergreen species is characteristic of mountain gorges and steep wooded river valleys. Rarely plentiful in southern England, usually occurring as scattered individuals and only becoming common in the north of its range.	1	2016	460m
Lesser spearwort (*Ranunculus flammula)*	Eng VU	Perennial herb of wet habitats, particularly those with seasonal water level fluctuations. Loss in SE England but frequent elsewhere.	7	2012-2018	490m
Annual beard-grass (*Polypogon monspeliensis*)	SR, ER	Annual of thin soils by the sea, in damp, cattle-trodden grazing marshes, at the edges of dried-up brackish pools and ditches, and in the uppermost parts of saltmarshes.	1	2018	870m
Common Calamint (*Clinopodium ascendens)*	ER	Perennial of hedge banks, road verges, rough scrubby grassland and rocky outcrops.	1	2011	1000m

3.6 Invasive Non-Native Species

Desk Study and Field Survey

3.6.1 Schedule 9 INNS were identified in the desk study within 1km of the Order Limits within the past 15 years and were also recorded incidentally during field surveys. Both the results of the desk study and field survey are shown on Figure 7.1.7 (**application document 6.4**) and are detailed in Table 3.11.

Table 3.11 – Invasive Non-Native Species (Schedule 9)

Species	Field Survey (FS) / Number of Records	Year of Record(s)	Approximate Distance to the Order Limits (m)
Montbretia (*Crocosmia x crocosmiiflora*)	FS	2022	Within the Order Limits
Variegated yellow archangel (*Lamiastrum galeobdolon subsp. argentatum)*	FS 2	2021 2011-2012	Within the Order Limits 400m
Rhododendron (*Rhododendron ponticum)*	1	2021 2020	Within the Order Limits 790m
Himalayan balsam (*Impatiens glandulifera)*	FS	2022	Within the Order Limits

Species	Field Survey (FS) / Number of Records	Year of Record(s)	Approximate Distance to the Order Limits (m)
	16	2010-2021	85m
Giant hogweed (*Heracleum mantegazzianum)*	FS 5	2022 2011-2013	Within the Order Limits 165m
New Zealand pigmyweed *(Crassula helmsii*)	3	2018 - 2022	Within the Order Limits
Wall cotoneaster *(Cotoneaster horizontalis*)	1	2017	Within the Order Limits
Nuttall's Waterweed *(Elodea nuttallii)*	1	2011	190m
Canadian Waterweed (*Elodea canadensis)*	2	2010	25m
Water fern (*Azolla filiculoides*)	1	2014	340m

3.6.2 Other species which are considered non-native or invasive in their local environment but not listed in Schedule 9 also identified in the desk study included:

- Butterfly-bush (*Buddleja davidii*);
- Spanish bluebell (*Hyacinthoides hispanica*);
- Winter heliotrope (*Petasites fragrans*);
- Alexanders (*Smyrnium olusatrum*);
- Canadian goldenrod (*Solidago canadensis*); and
- Lesser bulrush (*Typha angustifolia*).

3.7 Groundwater Dependent Terrestrial Ecosystems

Desk Study

3.7.1 Twenty-two potential GWDTE were identified through the desk study within or adjacent the Order Limits (Table 3.12 and shown on ES Figure 7.1.3 (**application document 6.4**)). No GWDTE with high ground water dependency were identified. Moderate dependency on groundwater was found in a number of wet woodland and fen habitats.

Field Survey

3.7.2 Of the 22 sites identified during the desk study, 15 were subject to field survey. The results are shown in Table 3.12. Bushy Park Wood CWS was not surveyed as its inclusion in the desk study was due to it being adjacent to a proposed enhancement area, where the proposals are unlikely to affect the site. Sproughton Park CWS was not surveyed as the proposed project works in this area related to removal of existing pylons only. It was not possible to undertake detailed survey of GWDTE 1 due to the presence dense vegetation. In these cases, a precautionary moderate dependency has been assumed in Table 3.12.

3.7.3 GWDTE 9, 14, 15, 16 and 17 were screened out as the UKHab field surveys determined them as not being groundwater dependent and therefore are not considered GWDTE. Additional descriptions of the GWDTE sites are shown in Annex A.

Table 3.12 – GWDTE

GWDTE_ID	Project Section	Habitat ID	UKHab Code Identified During Site Surveys	Designated Site (if applicable)	Comments	Groundwater Indicated on OS Map	Groundwater Dependency (1=High; 2=Moderate; 3=Low)
Sproughton Park CWS	A/B	N/A	Not surveyed	Sproughton Park CWS	Wet grassland (impeded drainage - calcareous seepage zones and springs). Wet woodland - Alder Carr.	Stream	2
GWDTE 13	A/B	HA3_949	f2 - Fen marsh and swamp; w1d – wet woodland; f2b - Purple moor grass and rush pastures;	Valley Farm Meadows CWS	Mosaic of damp habitats. 2012 NVC survey identified M27 *Filipendula ulmaria - Angelica sylvestris* mire	Stream	2
GWDTE 11	D	HL_75	f2f - Other swamps	Layham Pit Woodland and Meadow CWS	Dominated by bulrush	Pond and stream	3
GWDTE 10	D	HL_76	w1d - Wet woodland	Layham Pit Woodland and Meadow CWS	Old area for quarry water which is under succession to woodland. Contains stream flowing to pond to west. 2012 NVC survey identified W6 *Alnus glutinosa - Urtica dioica* woodland.	Pond and stream	3
GWDTE 1	E	HL_437	w1d - Wet woodland	Dollops Wood CWS	Steep sided valley, supporting mixed deciduous woodland (w1f7) of moderate to good condition on the slopes and wet woodland (w1d) which could not be accessed in the centre.	Stream, pond	2
Bushy Park Wood CWS	E	N/A	Not surveyed	Bushy Park Wood CWS	W6 *Alnus glutinosa - Urtica dioica* woodland	Collects	3

GWDTE_ID	Project Section	Habitat ID	UKHab Code Identified During Site Surveys	Designated Site (if applicable)	Comments	Groundwater Indicated on OS Map	Groundwater Dependency (1=High; 2=Moderate; 3=Low)
GWDTE 19	E	HL_222	f2f - Other swamps	-	Dense patches of wetland arising within pasture from occasional springs.	Issues nearby	2
GWDTE 18	E	HA3_950	w1d - Wet woodland	Alder Carr	Alder wet woodland, wet under foot with ditch running northern border of woodland.	Stream, Issues	2
GWDTE 8	F	HL_126	w1d - Wet woodland	N/A	Brook running as boundary through area of wet woodland. As head east topography slowly increased. Stream lacked vegetation. Over mature hazel coppice to western aspect.	Stream	2
GWDTE 12	F	HA3_860	f2f - Other swamps	-	Swamp that does not meet other UKHab definitions. High proportion of ruderal species including nettles and willow herb. Sedges and bulrush.	Stream, Collects	2
GWDTE 7	G	N/A not within OL	w1d5 - Alder woodland on floodplains (H91E0)	Moat Farm/Burnt House Marsh LoWS	Alder-lined stream, predominantly planted with Cricket Bat Willow (*Salix alba var. caerulea*) over areas of wet and dry grassland.	Stream	2
GWDTE 6	G	H_A_1036	f2f – Other swamps	N/A	Fen HPI transitioning to alder woodland.	Stream, Issues	2
GWDTE 3	G	N/A not within OL	f2f – Other swamps	Alphamstone Complex LoWS	North-west side of the stream was dominated by Alder woodland. Stream to 1m wide with shallow clear water. Understory variously elder, blackthorn, hazel. Occasional dead standing trees. Frequent, small glades. To the south-east of the stream much wetter, deep organic soils. Dominated by willow with open stands of lesser pond sedge.	Stream, Issues	2

GWDTE_ID	Project Section	Habitat ID	UKHab Code Identified During Site Surveys	Designated Site (if applicable)	Comments	Groundwater Indicated on OS Map	Groundwater Dependency (1=High; 2=Moderate; 3=Low)
GWDTE 4	G	N/A not within OL	w1d5 - Alder woodland on floodplains (H91E0)	N/A	Alder dominated woodland with stems to 40cm DBH. Stream present at 1m wide with shallow clear water. Understory variously elder, blackthorn, hazel. Occasional dead standing trees, ground cover variously dominated by nettle, fern and dogs Mercury but nettle most abundant. Frequent, small glades. To the south-east of the stream the habitat was much wetter with deep organic soils. Dominated by willow with open stands of lesser upon sedge and frequent giant horsetail.	Stream	2
GWDTE 5	G	N/A not within OL	w1d5 - Alder woodland on floodplains (H91E0)	N/A	Alder dominated narrow strip of woodland following the stream. Trees to 25m, moderately dense. This area formed the lower extent of a private garden with paths and bridges throughout and managed for wildlife. Planted species include small leaved lime, box hazel and holly. Ground flora varied with some ferns and sedges.	Stream, pond	2
GWDTE 2	G	HL_108	w1d - Wet woodland	N/A	Woodland along stream, mature trees and canopy cover limiting light to ground. Lots of bear earth and where vegetation present dominated by nettles.	Stream	2
Twinstead Marsh LoWS	G	H_A_947	w1d - Wet woodland	Twinstead Marsh LoWS	Alder, willow carr, swamp, marsh and open water. Incredibly dense. Access limited due to boggy nature. Ground flora dominated by nutrient enrichment species.	Issues, pond	2

3.8 Important Arable Plant Assemblages

Desk Study

3.8.1 The desk study identified a range of notable arable plant species within 1km of the Order Limits within the past 15 years. These include prickly poppy (*Papaver argemone*) (also GB VU and Eng EN), smooth cat's ear (*Hypochaeris glabra*) (GB VU and EN VU) and common cudweed (*Filago vulgaris*) within the Order Limits.

3.8.2 The desk study also identified Important Arable Plant Areas Threatened Species (Plantlife, 2022) including mousetail (*Myosurus minimus*), dwarf spurge (*Euphorbia exigua*), field woundwort (*Stachys arvensis*), weasel's-snout (*Misopates orontium*), spreading hedge-parsley (*Torilis arvensis*), corn spurrey (*Spergula arvensis*) and shepherd's-needle (*Scandix pecten-veneris*) within the 1km study area.

3.8.3 Other arable plants identified within the desk study included common broomrape (*Orobanche minor*), smooth tare (*Vicia tetrasperma*) and wild pansy (*Viola tricolor*).

3.8.4 All notable arable plant species are shown on Figure 7.1.6 (**application document 6.4**).

Field Survey

3.8.5 Where arable fields showed potential to support notable arable plants or assemblages during the UKHab survey, these were surveyed further. The important arable plant areas (IAPA) surveyed are shown in Table 3.12. The IAPA scores for each habitat were calculated to ascertain whether the habitat was an IAPA and at what level. Two habitats were identified as having county conservation importance for arable plant assemblages as shown in Table 3.12 and on Figure 7.1.6 (**application document 6.4**).

Table 3.12 – Important Arable Plant Areas

Project Section	IAPA ID	IAPs Found During Survey (Plantlife, 2022)	IAPA Score	IAPA Threshold Reached (County, National, European)
F	IAPA_1	Corn parsley (*Petroselinum segetum*)	3	N/A
F	IAPA_2	Common cudweed	6	N/A
G	IAPA_3	Common cudweed	6	N/A
G	IAPA_4	Common cudweed	6	N/A
G	IAPA_5	Bur-chervil *(Anthriscus caucalis)*	3	N/A
G	IAPA_6	Common cudweed and Field madder *(Sherardia arvensis)*	7	N/A
G	IAPA_7	Corn parsley	3	N/A
G	IAPA_8	Cornflower (*Centaurea cyanus*) and Corn Marigold *(Glebionis segetum)*	**15**	**County**
G	IAPA_9	Cornflower and Corn Marigold	**15**	**County**
H	IAPA_10	Common cudweed	6	N/A

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