

# **Preliminary Environmental Information Report Volume 2**

## **Appendix 8.2 Baseline Report – Habitat Classification Survey**

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**LionLink:**

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# 1 Introduction

## 1.1 Project description

1.1.1 LionLink is a proposed electricity interconnector between Great Britain and the Netherlands that would supply up to 2 gigawatts (GW) of electricity and would connect to Dutch offshore wind via an offshore converter platform in Dutch waters (hereafter the Project).

1.1.2 The Proposed Scheme (defined as the part of the Project within the British jurisdiction) would involve the construction of the proposed Converter Station and the installation of offshore and onshore proposed Underground High Voltage Direct Current Cables (HVDC) to the proposed Converter Station and the proposed Underground High Voltage Alternating Current Cables (HVAC) between the proposed Converter Station and the Kiln Lane Substation.

## 1.2 Overview of survey approach

1.2.1 An Ecology Survey Strategy (ESS) was produced in March 2023, which explained the approach for ecological surveys to inform the baseline for the Proposed Onshore Scheme. The ESS set out the rationale and methods for how and when relevant ecological features would be identified to inform the design process. The aim of the ESS was to ensure that sufficient baseline data would be available to embed the mitigation hierarchy within the design, i.e. to avoid adverse impacts to valuable ecological features wherever possible, and to minimise any unavoidable adverse impacts.

1.2.2 The study area for habitats initially comprised all areas of the Proposed Onshore Scheme Scoping Boundary (shown in Figure 1-2 of the EIA Scoping Report (Ref 1)) in order to provide landscape coverage to inform the design of the Proposed Onshore Scheme in 2023 and 2024. The Proposed Onshore Scheme Scoping Boundary included the proposed Landfall Site at Walberswick and the Landfall Site at Southwold. Subsequently, the Draft Order Limits (DOL) has been fixed in late 2024, reflecting design development and representing a substantial reduction on the Proposed Onshore Scheme Scoping Boundary, including the discounting of the Landfall Site at Southwold and the associated proposed Underground Cable Corridor (refer to **Chapter 3 Alternatives and Design Evolution**). Habitats as a receptor are reported for each of these boundaries.

## 1.3 Purpose and scope of this document

1.3.1 The purpose of this report is to present the results of habitat classification and Biodiversity Net Gain (BNG) condition scoring surveys undertaken for the Proposed Onshore Scheme. The objectives of this report are to:

- present desk study information of relevance to habitat classifications;

- b. detail the results of habitat classification surveys; and
- c. provide sufficient information to inform an assessment of potential impacts to habitats as a result of the Proposed Onshore Scheme or identify where further survey is required to inform such assessment.

## 1.4 Legislation

1.4.1 A framework of international, national and local legislation and planning policy guidance exists to protect and conserve wildlife and habitats. Legislation relevant to and discussed within this report comprises:

- a. Natural Environment and Rural Communities (NERC) Act 2006 (Ref 2).
- b. The Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations'), as amended (Ref 3).
- c. Wildlife and Countryside Act 1981, as amended (Ref 5).

### Natural Environment and Rural Communities Act 2006

1.4.2 The UK Biodiversity Action Plan (UKBAP) 1994 – 2010 has been superseded by the UK Post-2010 Biodiversity Framework (Ref 5) covering the period 2011 – 2020. However, UKBAP priority habitats and species have been used to form the basis for the statutory list of habitats and species of 'principal importance for the conservation of biodiversity in England' as listed in accordance with Section 41 of the NERC Act 2006 (Ref 6).

1.4.3 Section 40 of the NERC Act 2006 requires public bodies, including local authorities, 'to have regard to the conservation of biodiversity in England' when carrying out their normal functions. The local planning authority, therefore, must consider the impact on biodiversity of a proposed development. The NERC Act 2006 identifies habitats and species of 'principal importance for the conservation of biodiversity in England' ((Habitats of Principal Importance (HPI) and Species of Principal Importance (SPI) respectively)) to guide public bodies in implementing their duty. This priority list includes a range of habitat types encountered throughout lowland England. The strategic direction for biodiversity policy for the next decade is set out in 'Biodiversity 2020: a national strategy for England's wildlife and ecosystem services' (Ref 7).

### The Habitats Regulations

1.4.4 Annex I of the Habitats Directive (Ref 8) (as amended by the 2003 Treaty of Accession) comprises a list of 189 habitat types for which Member States must consider designation of Special Areas of Conservation (SAC) for each of the features which occurs in their European territory. This includes the designation of extensive or exceptional areas of Annex I habitats as SAC.

1.4.5 In the context of the UK, 78 Annex I habitat types are believed to occur (Ref 9). A sub-set of the Annex I habitat types are defined as being 'priority' because they are considered to be particularly vulnerable and are mainly, or exclusively, found within the European Union (EU) (Article 1d).

1.4.6 Regulation 9 of the Conservation of Habitats and Species Regulations (CHSR) (Ref 10) aims to set out duties to ensure relevant public authorities are exercising their nature conservation functions in compliance with the Habitats Directive (Ref 9), as written here:

*“9(1) The appropriate authority, the nature conservation bodies and, in relation to the marine area, a competent authority must exercise their functions which are relevant to nature conservation, including marine conservation, so as to secure compliance with the requirements of the Directives”*

1.4.7 Guidance on implementation of the relative principles in relation to Regulation 9 of the CHSR (Ref 11) are:

- a. To maintain or restore, at a favourable conservation status, natural habitats and species of wild fauna and flora, within the national territory taking account of economic, social, and cultural requirements and regional or local characteristics.
- b. The designation, protection, and management of a coherent protected sites network including preventing their deterioration, avoiding disturbance of the species for which the sites have been designated in so far as disturbance could be significant.
- c. The designation, protection, and management of a coherent protected sites network including preventing their deterioration, avoiding disturbance of the species for which the sites have been designated in so far as disturbance could be significant.
- d. Although Britain has now exited the European Union, compliance with the principles outlined in the Habitats Directive, and therefore Regulation 9 of the Conservation of Habitats and Species Regulations 2017, are still to be acknowledged as before despite small changes to the wording of the legislation. This can be interpreted from Regulation 7 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (Ref 12).

### **Wildlife and Countryside Act 1981**

1.4.8 Under the Wildlife and Countryside Act, it is an offence to:

- a. Intentionally or recklessly pick, uproot or destroy any wild plant included on Schedule 8 of the Act; or
- b. Be an unauthorised person intentionally or recklessly uprooting any wild plant not included in Schedule 8 of the Act.

1.4.9 Plants listed on Schedule 8 of the Act are those species which due to their rarity and/or conservation status receive additional protection from picking, uprooting or destruction, and a licence to sell.

## **1.5 Status of habitats at a local level**

1.5.1 Suffolk's archived Biodiversity Action Plan (BAP) outlines those HPI present within Suffolk and actions for their protection (Ref 13). The Suffolk Nature Strategy (Ref 14) sets out the requirement to promote the preservation,

restoration and re-creation of these priority habitats and associated ecological networks ecological networks.

1.5.2 HPI and vascular plant SPI listed on the Suffolk BAP are provided in **Table 1.1**.

**Table 1.1: HPI and vascular plant SPI listed on Suffolk BAP**

Suffolk HPI	Suffolk vascular plant SPI
Arable field margins	Native black poplar ( <i>Populus nigra</i> subsp. <i>betulifolia</i> )
Coastal and floodplain grazing marsh (CFGM)	Spreading hedge-parsley ( <i>Torilis arvensis</i> )
Coastal saltmarsh and intertidal sediments	Greater water-parsnip ( <i>Sium latifolium</i> )
Coastal sand dunes	Small flowered catchfly ( <i>Silene gallica</i> )
Coastal vegetated shingle	Cornflower ( <i>Centrurea cyanus</i> )
Hedgerows	Man orchid ( <i>Orchis anthropophora</i> )
Lowland acid grasslands and heathlands	Pillwort ( <i>Pilularia globulifera</i> )
Lowland calcareous grasslands	Tassel stonewort ( <i>Tolypella intricate</i> )
Lowland fens	Red-tipped cudweed ( <i>Filago lutescens</i> )
Lowland meadows	Tower mustard ( <i>Arabis glabra</i> )
Lowland mixed deciduous woodlands	Shepherd's-needle ( <i>Scandix pecten-vernis</i> )
Marine habitats	Unspotted lungwort ( <i>Pulmonaria obscura</i> )
Maritime cliffs and slopes	-
Open Mosaic	-
Ponds	-
Reedbeds	-
Rivers and streams	-

Suffolk HPI	Suffolk vascular plant SPI
Saline lagoons	-
Traditional orchards	-
Wet woodlands	-
Wood pastures and parklands	-

## 2 Methodology

### 2.1 Desk study

#### Open-source data

2.1.1 A detailed desk study exercise was undertaken, in order to determine the presence of HPI, ancient woodlands and ancient and veteran trees within the Proposed Onshore Scheme Scoping Boundary. The following sources of data were utilised:

- Multi-Agency Geographic Information for the Countryside (MAGIC) (Ref 15);
- Natural England Ancient Woodland Inventory (Ref 16);
- Priority River Habitat Map (Ref 17); and
- Woodland Trust Ancient Tree Inventory (Ref 18).

#### Suffolk Biodiversity Information Service

2.1.2 A detailed biological records search was requested from the Suffolk Biodiversity Information Services (SBIS) in January 2023 to inform the design and assessment of the Proposed Onshore Scheme. This included a search for records from within a 2km radius of the Proposed Onshore Scheme Scoping Boundary. An updated data search was conducted in April 2025 for a 2km search area of the Proposed Onshore Scheme Scoping Boundary, except for the discounted Landfall Site at Southwold.

2.1.3 For the purposes of this report, SBIS data was used to identify ancient and veteran trees, protected and/or notable flora and fungi, as well as to review non-statutory designated sites where the designating features potentially relate to habitat classification, such as unmapped ancient woodlands. SBIS are currently undertaking a review of ancient woodland mapping for the County, accounting for smaller blocks than previous publicly available datasets showed. This data is provided within this report, but understood to be provisional pending Natural England's approval and publication.

2.1.4 Records of plants and fungi over ten years old were omitted as they may not accurately represent the current status of populations in the area. Professional judgement was used to determine where records of species over ten years old may remain of relevance and are therefore reported.

2.1.5 Biological records relating to notable vascular plant and fungi occurring within the Proposed Onshore Scheme Scoping Boundary are summarised within this report. Additionally, SBIS records were reviewed in order to supplement assessment for priority ponds (Ref 19, Ref 20) and rivers (Ref 21) which may qualify through the presence of species or assemblage of particular conservation value.

## Ecological baseline reports

2.1.6 Where other baseline reports are of relevance to this report through aiding in habitat classification, the results are summarised and referenced where relevant. These reports are:

- Designated Sites Report;
- National Vegetation Classification Report;
- eDNA report; and
- River Condition Assessment Report.

## 2.2 Field study

2.2.1 The field surveys were conducted at various dates from May to October 2023, May to August 2024 and May 2025, with the vast majority of survey effort falling within the optimal period for botanical identification (Ref 22).

2.2.2 Each survey was completed by survey teams consisting of two ecologists, with lead ecologists all experienced with botanical species identification required for habitat classification. Handheld electronic devices were utilised to capture geospatial data for individual habitat parcels accurately from the field.

## Habitat classification

2.2.3 Habitats were classified using the UK Habitat Classification (UKHab) methodology (Ref 23). The UKHab system (version 1), which is listed in good practice guidance by the Chartered Institute of Ecology and Environmental Management (CIEEM) 51 (Ref 24), provides a comprehensive approach to classification of terrestrial, coastal and freshwater habitats. Habitat definitions are given in the UK Habitat Classification – Habitat Definitions (Ref 20), and provide the basis for habitat types within the Statutory Biodiversity Metric (Ref 25) used for BNG.

2.2.4 The UKHab classification is based on a hierarchical system suitable for use in terrestrial, freshwater and coastal areas of the UK. The system comprises a principal hierarchy (the primary habitats) – which include ecosystems, broad habitats, HPI and Annex 1 habitats, as well as non-hierarchical Secondary codes (Ref 23). The habitat divisions at each level of the hierarchy are provided in **Table 2.1**.

**Table 2.1: UK habitat classification hierarchy division. Adapted from Butcher, B (et al.) (Ref 23)**

Level 1	Level 2	Level 3	Level 4	Level 5
Major ecosystem, covering terrestrial, freshwater and coastal ecosystems	9 ecosystem types, based upon major habitat types within the EUNIS classification	20 broad habitat types, corresponding with UK Biodiversity Action Plan Broad Habitats and closely to EUNIS	80 habitats, including 47 UK Biodiversity Action Plan Habitats, and further splits of level 3 habitats	104 habitats, including 69 Habitats Directive Annex 1 habitats and further splits of Level 4 habitats

2.2.5 Habitats were recorded to at least Level 4 of the hierarchy (except for modified grassland – Level 3), with further recording to level 5 where appropriate.

2.2.6 Non-hierarchical secondary codes are also used in addition to the primary codes to provide further contextual information relating to habitat mosaics and complexes within mapped primary habitats.

2.2.7 Additional relevant information outside of the UKHab classification or too small to be mapped as a defined habitat parcel, including identification of field signs of protected and/or notable species, has been recorded as target notes. Only target notes pertaining to habitat features and/or notable plant species within the Onshore Scheme Scoping Boundary are referred to in the relevant text within the results section.

### Remote sensing

2.2.8 Given the nature of the Proposed Onshore Scheme, collections of residential properties were largely excluded from survey given these would be avoided in the final design. Further areas which have not been subject to survey in either 2023 or 2024 were due primarily to lack of access permitted by landowners.

2.2.9 In these locations, a remote sensing exercise was undertaken in early 2024 to provide preliminary habitat data with which to guide the design process. The remote sensing exercise utilised 8-band WorldView 2 imagery from 16 June 2023 and 07 July 2023, with the deep learning model trained on the UKHab data collected for the majority of the Proposed Onshore Scheme Scoping Boundary during 2023. The outputs of the model were aggregated (by maximum area of overlap) to OS MasterMap geometries, in order to ensure local context was captured and consistency in geometry when compared to ground surveyed data.

2.2.10 Where survey was subsequently undertaken of these areas in 2024 or early 2025, this field data superseded the remote sensing data.

## Botanical recording

2.2.11 As part of the UKHab survey, surveyors recorded key botanical species present within habitats, particularly any species indicative of the named habitat type, as well as their relative abundance and structural composition. Any protected and/or notable species were also recorded and mapped separately to broader habitats.

2.2.12 The Vascular Plant Red List for England (Ref 26) was used to determine which species identified during field surveys were of particular conservation concern at a national level (England), with the Suffolk Rare Plant Register (Ref 27) used to provide regional context. Vascular plant species identified were also checked against SPI lists (Ref 28) and Schedule 8 of the Wildlife and Countryside Act 1981 (Ref 5).

## Condition scoring

2.2.13 Condition is a measure of the current status and functionality of a defined area of habitat, resulting from environmental and anthropogenic factors, such as management, and is not a reflection of the intrinsic biodiversity value of the habitat. Condition scoring of habitats for BNG was undertaken concurrently with UKHab classification for the majority of the site, using standardised condition scoring criteria (Ref 29) accompanying the Biodiversity Metric 4.0, the most recent iteration at the time of survey.

2.2.14 Condition scoring of watercourses is considerably more complex and requires specialist survey. The results of this survey type are provided in detail in **Appendix 8.9 Baseline Report – River Condition Assessment Survey**.

## Recording of trees

2.2.15 Individual trees were mapped within the Proposed Onshore Scheme Scoping Boundary where these are not an intrinsic component of a wider habitat type. Individual trees were mapped with details recorded on species, position in a rural or urban environment, as well as broad size and condition (criteria required for the BNG metric 4.0). Where the trees are intrinsic to the classification of the wider habitat type, such as woodland, they are not mapped or recorded individually.

2.2.16 Additionally, as irreplaceable habitat features, ancient and veteran trees frequently form an important element of the biodiversity value of lowland Britain, with large numbers of these features known to be associated with hedgerows in Suffolk (Ref 30). Where trees displaying features associated with veteran specimens were identified, either as individual features or within broader habitats such as woodlands or treelines, these trees were mapped as potential veterans. Features used to identify these trees broadly aligned with those from the Recognition of Ancient, Veteran and Notable Trees (RAVEN) methodology (Ref 31). Any trees identified as potential native black poplar *Populus nigra* subsp.

*betulifolia* were recorded, for which Suffolk constitutes a stronghold in the UK (Ref 32).

2.2.17 Whilst the focus of this exercise was to map trees which may constitute irreplaceable habitat, it also aimed to broadly capture any further trees of considerable biodiversity value through their age or decay features. These trees could then be prioritised for avoidance throughout the design development process.

## 2.3 Assumptions and limitations

### Survey coverage

2.3.1 A high coverage of field surveys across the study area was achieved, comprising 4685ha or 87.43% of land within the Proposed Onshore Scheme Scoping Boundary. Remote sensing trained on field data collected for the Proposed Onshore Scheme has been used to infill any gaps within this baseline at this design stage.

2.3.2 As a result of design development an area beyond the Proposed Onshore Scheme Scoping Boundary, south of Middleton Moor, was subject to survey. This area is contiguous with the Onshore Scheme Scoping Boundary and the habitats identified are described within this report given their incorporation into the subsequent DOL.

2.3.3 Several additional areas outside of the Proposed Onshore Scheme Scoping Boundary have been incorporated into the DOL boundary, which do not have field survey or remote sensing data available. These areas are

- Access to the proposed Converter Station Site from the B1121 south of Saxmundham across the River Fromus
- Access from the A12 along Lymballs Lane
- Realignment works to overhead power lines associated with construction of the Kiln Lane Substation

2.3.4 Given the very high portion of the Proposed Onshore Scheme Scoping Boundary which was accessed for detailed survey, survey access is not considered to constitute a significant limitation. This high survey coverage includes 86% of land within the DOL for the Amendment to Kiln Lane Substation Scenario and 83.65% of land within the DOL for the Full Build Out of Kiln Lane Substation Scenario. It is anticipated that access will be obtained in late 2025 or 2026 to survey the vast majority areas which remain within the DOL and are therefore relevant to future assessment within the forthcoming ES.

### Survey Timing

2.3.5 The vast majority of surveys were conducted within the suitable period for botanical identification, broadly taken as May-September (Ref 22), with only a

small number of surveys undertaken outside of this period in October 2023 (within land no longer relevant to the design of the Proposed Onshore Scheme).

2.3.6 It is recognised that several of the survey timings may fall outside of the optimum survey period for specific habitat types. For instance, surveys conducted later in the period fall outside of the optimal survey period for woodlands (April to May) and grasslands (June to July). Given the proximity to the respective optimal survey periods, surveyors were able to assess such habitats with confidence, whilst recognising where key botanical indicator species may have been overlooked. Additionally, where habitats of higher biodiversity value remained at risk of impacts following the early design stages, these have largely been subject to detailed National Vegetation Classification (NVC) survey during the optimal flowering period for the particular habitat type. Where the results of NVC survey have been used to further refine the UKHab classifications, or where such further survey is still required to confirm habitat classification, this is recognised where relevant throughout this report.

2.3.7 Consequently, survey timing is not considered to be a significant limitation.

### **Data divergences**

2.3.8 Where HPI identified in the desk study diverged from field survey result, the field survey result has been taken as the final classification, given that it is based off more contemporary study. In most instances where divergences were identified, the habitat constituted a different HPI type, rather than not being classified as HPI. Most notably, large areas of CFGM HPI identified in floodplains in the desk study, were found to actually constitute a more complex mosaic of wetland HPI types such as lowland fen, coastal saltmarsh, reedbeds and lowland meadow.

### **Habitat classification**

2.3.9 Version 2 of UKHab was issued on 31 July 2023 (Ref 33) after initiation of the habitat surveys, therefore the Proposed Onshore Scheme Scoping Boundary has been classified in version 1. Additionally, finalised condition scoring criteria accompanying the Statutory Metric (Ref 34) were released in November 2023, with criteria for the previous iteration (Biodiversity Metric 4.0) utilised across the broad Proposed Onshore Scheme Scoping Boundary.

2.3.10 Given the relatively minor nature of changes between each of these versions, the use of earlier versions is not considered likely to significantly alter the results of the habitat surveys presented throughout this report. The exception to this is likely to be small areas of standing water, which are primarily classified as r1a eutrophic standing waters in UKHab version 1 given the intensive agricultural landscape, but would likely be classified as r1g other standing water in version 2.

# 3 Results

## 3.1 Desk study

### Habitats of Principal Importance

3.1.1 Numerous HPI were identified within or adjacent to the Proposed Onshore Scheme Scoping Boundary through MAGiC, presented in **Table 3.1**.

**Table 3.1: HPI associated with the Proposed Onshore Scheme Scoping Boundary**

HPI type	Broad distribution within and adjacent to the Proposed Onshore Scheme Scoping Boundary
<b>Coastal saltmarsh</b>	Present within the tidal floodplain of the River Blythe west of Blythburg and surrounding the tidal Dunwich River east of the proposed Landfall Site.
<b>Coastal sand dunes</b>	Adjacent the north of the Proposed Onshore Scheme Scoping Boundary at the proposed Landfall Site.
<b>Maritime cliffs and slopes</b>	Present along the coastline east of the proposed Landfall Site.
<b>Mudflats</b>	Present within the tidal floodplain of the River Blythe west of Blythburg and surrounding the tidal Dunwich River north of the proposed Landfall Site.
<b>Saline lagoons</b>	Immediately adjacent to the Proposed Onshore Scheme Scoping Boundary at Southwold.
<b>CFGM</b>	Extensive within and adjacent to the Proposed Onshore Scheme Scoping Boundary associated with the River Blyth west of Blythburg, River Wang west of Wangford, the floodplain of the Minsmere Old River, with an isolated patch adjacent to the proposed Landfall Site.
<b>Purple moor grass and rush pasture</b>	Extensive within and adjacent to the Proposed Onshore Scheme Scoping Boundary within the Minsmere Old River Floodplain.
<b>Lowland meadow</b>	Present within the floodplain of the Wenhauston watercourse east of Thorington, within an isolated patch north of the Minsmere Old River Floodplain at Middleton, and north of Theberton woods.
<b>Lowland heathland</b>	Within and adjacent to the Proposed Onshore Scheme Scoping Boundary west of Walberswick, with several further areas between Blythburgh and Westleton.
<b>Reedbeds</b>	Within the Proposed Onshore Scheme Scoping Boundary in the floodplain of the tidal River Blythe, with a further patch present adjacent associated with the tidal Dunwich River south of the proposed Landfall Site.
<b>Lowland fens</b>	Isolated patches within and adjacent to the Proposed Onshore Scheme Scoping Boundary within the Minsmere Old River Floodplain.

HPI type	Broad distribution within and adjacent to the Proposed Onshore Scheme Scoping Boundary
Deciduous woodland	Encapsulating Lowland Mixed Deciduous Woodland and Wet Woodland priority habitat types. Frequently occurring as smaller, isolated stands throughout all portions of the Proposed Onshore Scheme Scoping Boundary, with notable larger areas including Thebenton woods, The Wilderness and Big/Common wood.
Traditional orchards	Present in highly isolated patches, particularly within the southern sections of the Proposed Onshore Scheme Scoping Boundary.
Woodpasture and parkland	Present in small, isolated patches in the central and southern areas of the Proposed Onshore Scheme Scoping Boundary, west of Thebenton and Friston respectively.

### Ancient woodland

3.1.2 Ancient woodlands are present within the Proposed Onshore Scheme Scoping Boundary and wider landscape. These woodlands are shown in **Annex A: Ancient woodland, ancient, veteran and notable trees plan**.

3.1.3 Several ancient woodlands within and immediately adjacent to the Proposed Onshore Scheme Scoping Boundary were identified from publicly available data on the AWI. To the south are Great Wood Ancient Semi-Natural Woodland (ASNW) east of North Warren and Grove Wood Ancient Replanted Woodland (ARW) north of Friston. To the north, Hinton Long Spring ASNW and Big/Common Woods ASNW each fall to the south-east of Thorington.

3.1.4 Further data provided by SBIS indicates the additional presence of previously unmapped ancient woodlands within and immediately adjacent to the Proposed Onshore Scheme Scoping Boundary:

- Coltsclose Pickle, south-east of Saxmundham;
- The Forest, south-west of Thebenton;
- Thebenton and Peckover woods, west of Thebenton;
- Hinton round spring, immediately south-east of Hinton Long Spring; and
- Various woodlands east of scoping boundary at Henham Park.

### Ancient and veteran trees

3.1.5 The ancient tree inventory and SBIS data highlighted the presence of numerous ancient, veteran and notable trees within the Onshore Scheme Scoping Boundary. These trees are shown in **Annex A: Ancient woodland, ancient, veteran and notable trees plan**. Key locations include:

- Two veteran pedunculate oak (*Quercus robur*) near to School Road west of Knodishall
- A veteran pedunculate oak adjacent to Harrow Lane north-west of Leiston
- Three veteran and one ancient pedunculate oak adjacent to Thebenton Road south of East Green

- d. Three veteran pedunculate oak adjacent to small country roads (Lymballs Lane, Bowman's Lane, Darsham Road) between Darsham and Hinton
- e. Three veteran and one notable pedunculate oak near the B1125 north of Westleton
- f. A veteran pedunculate oak adjacent to Hinton Road north of Ten Acre Covert
- g. Two veteran sweet chestnut (*Castanea sativa*) and an ancient pedunculate oak within Hoist Covert west of Walberswick
- h. A veteran pedunculate oak adjacent to Hazel Lane south of Blackheath
- i. Three veteran oak and two veteran ash (*Fraxinus excelsior*) within the floodplain of the Wenhaston watercourse south of Blackheath
- j. Seven veteran oak associated with small woodland coves east of Narrow Way in Wenhaston
- k. Two veteran oak associated with a small woodland copse north of Narrow Way in Wenhaston
- l. Five veteran oak and a veteran native black poplar within hedgerows and treelines on the edge of the Blyth floodplain east of Wenhaston
- m. A veteran pedunculate oak within the Blyth floodplain south of Blyford
- n. Two veteran pedunculate oak adjacent to King's Lane north of Blyford
- o. Two veteran pedunculate oak adjacent to Manor Farm Road south of Uggeshall
- p. Two veteran pedunculate oak west of Barnaby Green
- q. One veteran and one notable pedunculate oak adjacent to Rissmere Lane East, west of Reydon Smear

### Notable plants and fungi

3.1.6 A summary of notable vascular plants returned from the SBIS data search are provided in **Table 3.2**.

**Table 3.2: Desk-study records of notable plants and fungi**

Common name	Scientific name	Number of records	Most recent record	Suffolk status*	England status
Marsh mallow	<i>Althaea officinalis</i>	7	2023	2	Near threatened
Green-winged Orchid	<i>Anacamptis morio</i>	3	2024	4	Vulnerable
Stinking chamomile	<i>Anthemis cotula</i>	7	2019	Not on register	Vulnerable
Sandy siltball	<i>Battarrea phalloides</i>	3	2022	N/A	SPI
Quaking grass	<i>Briza media</i>	1	2017	Not on register	Near threatened

Common name	Scientific name	Number of records	Most recent record	Suffolk status*	England status
Heather	<i>Calluna vulgaris</i>	23	2023	Not on register	Near threatened
Sea Bindweed	<i>Calystegia soldanella</i>	7	2022	4	Vulnerable
Harebell	<i>Campanula rotundifolia</i>	11	2024	4	Near threatened
Divided Sedge	<i>Carex divisa</i>	7	2018	2	Vulnerable, Priority Species
Carline thistle	<i>Carlina vulgaris</i>	2	2021	Not on register	Near threatened
Whorl-grass	<i>Catabrosa aquatica</i>	5	2021	Not on register	Vulnerable
Good-King-Henry	<i>Chenopodium bonus-henricus</i>	3	2006	4	Vulnerable
Nettle-leaved Goosefoot	<i>Chenopodium murale</i>	1	2017	4	Endangered
Chicory	<i>Cichorium intybus</i>	7	2022	Not on register	Vulnerable
Sea kale	<i>Crambe maritima</i>	6	2024	2	Locally common
Mossy stonecrop	<i>Crassula tillaea</i>	24	2024	2	Locally common
Crosswort	<i>Cruciata laevipes</i>	5	2022	Not on register	Near threatened
Dodder	<i>Cuscuta epithymum</i>	2	2019	4	Vulnerable
Hound's-tongue	<i>Cynoglossum officinale</i>	10	2023	4	Near threatened
Galingale	<i>Cyperus longus</i>	1	2018	1	Near threatened
Bell heather	<i>Erica cinerea</i>	24	2024	Not on register	Near threatened
Cross-leaved heath	<i>Erica tetralix</i>	3	2021	1	Near threatened
Common Cottongrass	<i>Eriophorum angustifolium</i>	3	2013	1	Vulnerable
Sea holly	<i>Eryngium maritimum</i>	12	2024	4	Near threatened

Common name	Scientific name	Number of records	Most recent record	Suffolk status*	England status
Treacle-mustard	<i>Erysimum cheiranthoides</i>	2	2023	Not on register	Near threatened
Dwarf Spurge	<i>Euphorbia exigua</i>	5	2023	4	Vulnerable
Red-tipped Cudweed	<i>Filago lutescens</i>	5	2023	3a	Endangered, Priority Species, WCA Schedule 8
Small cudweed	<i>Filago minima</i>	13	2023	Not on register	Near threatened
Common cudweed	<i>Filago vulgaris</i>	33	2024	4	Near threatened
Wild strawberry	<i>Fragaria vesca</i>	8	2024	Not on register	Near threatened
Dyer's greenweed	<i>Genista tinctoria</i> subsp. <i>tinctoria</i>	2	2023	4	Vulnerable
Yellow horned-poppy	<i>Glaucium flavum</i>	8	2022	Not on register	Near threatened
Corn Marigold	<i>Glebionis segetum</i>	3	2023	4	Vulnerable
Heath Cudweed	<i>Gnaphalium sylvaticum</i>	1	2022	1	Endangered
Smooth Rupturewort	<i>Herniaria glabra</i>	2	2021	2a	Least concern
Sea Barley	<i>Hordeum marinum</i>	2	2020	2	Vulnerable, Priority Species
Water-violet	<i>Hottonia palustris</i>	4	2021	Not on register	Vulnerable
Bluebell	<i>Hyacinthoides non-scripta</i>	51	2022	Not on register	WCA Schedule 8
Frogbit	<i>Hydrocharis morsus-ranae</i>	8	2023	4	Vulnerable
Marsh pennywort	<i>Hydrocotyle vulgaris</i>	2	2022	Not on register	Near threatened
Henbane	<i>Hyoscyamus niger</i>	3	2017	4	Vulnerable
Smooth Cat's-ear	<i>Hypochaeris glabra</i>	28	2024	2	Vulnerable

Common name	Scientific name	Number of records	Most recent record	Suffolk status*	England status
Sheep's-bit	<i>Jasione montana</i>	2	2013	Not on register	Vulnerable
Field scabious	<i>Knautia arvensis</i>	4	2023	Not on register	Near threatened
Dittander	<i>Lepidium latifolium</i>	11	2024	2a	Least concern
Field pepperwort	<i>Lepidium campestre</i>	2	2023	Not on register	Near threatened
Common sea-lavender	<i>Limonium vulgare</i>	16	2024	Not on register	Near threatened
Bur Medick	<i>Medicago minima</i>	1	2018	2a	Vulnerable
Toothed medick	<i>Medicago polymorpha</i>	3	2019	3	Least concern
Common cow-wheat	<i>Melampyrum pratense</i>	1	2017	1	Near threatened
Corn mint	<i>Mentha arvensis</i>	1	2016	Not on register	Near threatened
Weasel's-snout	<i>Misopates orontium</i>	5	2023	4	Vulnerable
Mousetail	<i>Myosurus minimus</i>	1	2017	4	Vulnerable
Mat-grass	<i>Nardus stricta</i>	1	2017	Not on register	Near threatened
Bird's-nest Orchid	<i>Neottia nidus-avis</i>	7	2022	4	Vulnerable
Tubular Water-dropwort	<i>Oenanthe fistulosa</i>	7	2020	4	Vulnerable, Priority Species
Parsley water-dropwort	<i>Oenanthe lachenalii</i>	8	2023	Not on register	Near threatened
Sainfoin	<i>Onobrychis viciifolia</i>	1	2023	1	Vulnerable
Spiny restharrow	<i>Ononis spinosa</i>	4	2024	Not on register	Near threatened
Prickly Poppy	<i>Papaver argemone</i>	4	2023	4	Endangered
Marsh Lousewort	<i>Pedicularis palustris</i>	5	2018	1	Vulnerable

Common name	Scientific name	Number of records	Most recent record	Suffolk status*	England status
Sand cat's-tail	<i>Phleum arenarium</i>	2	2022	Not on register	Near threatened
Heath milkwort	<i>Polygala serpyllifolia</i>	2	2022	1	Near threatened
Native black poplar	<i>Populus nigra</i> subsp. <i>betulifolia</i>	6	2023	4	Least concern
Red Pondweed	<i>Potamogeton alpinus</i>	2	2015	1	Vulnerable
Grass-wrack Pondweed	<i>Potamogeton compressus</i>	1	2016	3	Endangered, Priority Species
Hoary cinquefoil	<i>Potentilla argentea</i>	15	2024	2	Near threatened
Tormentil	<i>Potentilla erecta</i>	3	2023	Not on register	Near threatened
Borrer's Saltmarsh-grass	<i>Puccinellia fasciculata</i>	5	2017	2	Priority Species
Lesser Spearwort	<i>Ranunculus flammula</i>	5	2024	Not on register	Vulnerable
Knotted pearlwort	<i>Sagina nodosa</i>	1	2023	Not on register	Vulnerable
Wild clary	<i>Salvia verbenaca</i>	6	2024	Not on register	Near threatened
Sanicle	<i>Sanicula europaea</i>	8	2022	Not on register	Near threatened
Annual Knawel	<i>Scleranthus annuus</i>	5	2020	2a	Endangered, Priority Species
Marsh ragwort	<i>Senecio aquaticus</i>	1	2023	Not on register	Near threatened
Sea wormwood	<i>Seriphidium maritimum</i>	7		Not on register	Near threatened
Sand Catchfly	<i>Silene conica</i>	3	2013	2	Endangered
Ragged-robin	<i>Silene flos-cuculi</i>	9	2023	Not on register	Near threatened
Small-flowered Catchfly	<i>Silene gallica</i>	1	2023	3	Endangered, Priority Species

Common name	Scientific name	Number of records	Most recent record	Suffolk status*	England status
Greater Water-parsnip	<i>Sium latifolium</i>	1	2006	1	Endangered, Priority Species
Marsh sow-thistle	<i>Sonchus palustris</i>	8	2018	2a	Least concern
Small Cord-grass	<i>Spartina maritima</i>	1	2013	2a	Endangered, Priority Species
Corn Spurrey	<i>Spergula arvensis</i>	10	2023	4	Vulnerable
Field woundwort	<i>Stachys arvensis</i>	6	2023	4	Near threatened
Shepherd's-cress	<i>Teesdalia nudicaulis</i>	2	2023	4	Near threatened
Strawberry Clover	<i>Trifolium fragiferum</i>	3	2023	Not on register	Vulnerable
Sulphur clover	<i>Trifolium ochroleucon</i>	4	2023	2a	Vulnerable
Marsh arrowgrass	<i>Triglochin palustre</i>	6	2023	Not on register	Near threatened
Marsh valerian	<i>Valeriana dioica</i>	2	2023	Not on register	Near threatened
Common valerian	<i>Valeriana officinalis</i>	5	2021	Not on register	Near threatened
Narrow-fruited Cornsalad	<i>Valerianella dentata</i>	5	2023	1	Endangered
Heath speedwell	<i>Veronica officinalis</i>	7	2024	Not on register	Near threatened
Slender tare	<i>Vicia parviflora</i>	2023	2023	1	Vulnerable
Heath Dog-violet	<i>Viola canina</i>	4	2020	4	Vulnerable
Wild pansy	<i>Viola tricolor</i>	1	2023	4	Near threatened

\* As per Suffolk Rare Plant Register:

1= rare in Suffolk but commoner elsewhere

2 = Frequent in Suffolk but rare elsewhere

3 = Rare everywhere

4 = declining but widespread

a = Suffolk has a significant proportion of the national population

## 3.2 Field surveys

### Ancient, veteran and notable trees

3.2.1 Numerous trees with the potential to be veteran or ancient were identified throughout the Proposed Onshore Scheme Scoping Boundary. Whilst such trees did occur as scattered individuals, generally such trees were clustered in the landscape, associated with a range of features including within woodland, floodplains, historic boundary features and around ponds.

3.2.2 Species recorded as potential veteran trees were predominantly pedunculate oaks, many of which had clearly been subject to historic pollarding which had led to extensive lower girth and associated decay features. Other species recorded included ash, hazel (*Corylus avellana*) and alder (*Alnus glutinosa*).

3.2.3 No potential native black poplar were identified. Hybrid black poplars (*Populus x canadensis*) were identified throughout the Proposed Onshore Scheme Scoping Boundary, generally as planted features in lines, but also as scattered individuals within wetland areas such as Darsham Marshes.

3.2.4 The locations of these potential veteran trees is shown in **Annex A: Ancient woodland, ancient, veteran and notable trees plan**.

### Notable plants and fungi

3.2.5 The locations and status of notable plants identified within the Proposed Onshore Scheme Scoping Boundary are shown in **Annex B: Notable Plants Plan** and provided in **Table 3.3**.

**Table 3.3: Notable flora identified within the Proposed Onshore Scheme Scoping Boundary during field surveys**

Common name	Scientific name	Location(s) identified	Suffolk status*	England status
Common cudweed	<i>Filago vulgaris</i>	Sandy arable margins: south-east of Saxmundham, north of Darsham, north of Dale Covert, north of River Wang floodplain.	4	Near threatened
Stinking chamomile	<i>Anthemis cotula</i>	Arable margins north of Theberton woods	4	Vulnerable
Cornflower	<i>Centaurea cyanus</i>	Probably sown but seemingly growing wild in new orchard west of Middleton.	4	Least concern
Harebell	<i>Campanula rotundifolia</i>	South of the Blyth floodplain west of Blythburgh.	Not on register	Near threatened
Small cudweed	<i>Filago minima</i>	On a heathland edge west of Henham Park.	Not on register	Near threatened

Common name	Scientific name	Location(s) identified	Suffolk status*	England status
Hoary cinquefoil	<i>Potentilla argentea</i>	On a heathland edge west of Henham Park.	2	Near threatened
Jersey cudweed	<i>Laphangium luteoalbum</i>	Within arable land north of the River Wang floodplain.	Not on register	WCA Schedule 8
Corn marigold	<i>Glebionis segetum</i>	Within arable land north of the River Wang floodplain and north of Darsham.	4	Vulnerable
Corn spurrey	<i>Spergula arvensis</i>	Within arable land north of the River Wang floodplain.	4	Vulnerable
Dwarf spurge	<i>Euphorbia exigua</i>	Within an arable field margin east of Uggeshall.	4	Vulnerable
Chicory	<i>Cichorium intybus</i>	Within disturbed loose grassland south of Plumtreehills Covert.	Not on register	Vulnerable
Water violet	<i>Hottonia palustris</i>	Within ditches throughout Darsham Marshes.	Not on register	Vulnerable
Common bistort	<i>Persicaria bistorta</i>	Within damp meadow within the Blyth floodplain	4	Least concern
Parsley water-dropwort	<i>Oenanthe lachenalii</i>	Within rank grassland in Southwold and grassland/saltmarsh border south Walberswick	Not on register	Near threatened
Spiral tasselweed	<i>Ruppia spiralis</i>	Within the brackish lower reaches of the Dunwich river	2	Least concern
Sea pea	<i>Lathyrus japonicus</i>	Within coastal vegetated shingle at crest of shingle beach south of Dunwich	2	Least concern
Sea kale	<i>Crambe maritima</i>	Within coastal vegetated shingle at crest of shingle beach south of Dunwich	2	Least concern
Sand cat's-tail	<i>Phleum arenarium</i>	Within coastal vegetated shingle at crest of shingle beach south of Dunwich	Not on register	Near threatened
Yellow-horned poppy	<i>Glaucium flavum</i>	Within coastal vegetated shingle at crest of shingle beach south of Dunwich	Not on register	Near threatened

\* As per Suffolk Rare Plant Register Ref 27:

1 = rare in Suffolk but commoner elsewhere

2 = Frequent in Suffolk but rare elsewhere

3 = Rare everywhere

4 = declining but widespread

a = Suffolk has a significant proportion of the national population

## UK Habitat classification and condition scoring

### Proposed Onshore Scheme Scoping Boundary

3.2.6 A summary table for each habitat type identified within the Proposed Onshore Scheme Scoping Boundary is provided in **Table 3.4**. Habitats present within the Proposed Onshore Scheme Scoping Boundary are shown in Annex C: UK Habitat classification plan – Proposed Onshore Scheme Scoping Boundary.

**Table 3.4: Summary table of habitats identified within the Proposed Onshore Scheme Scoping Boundary**

UKHab code (lowest level of UKHab recorded)	Habitat type (lowest level of UKHab recorded)
g1a	Lowland dry acid grassland
g1a6	Other lowland dry acid grassland
g1c	Bracken
g1d	Other lowland acid grassland
g3a	Lowland meadows
g3c	Other neutral grassland
g3c5	Arrhenatherum neutral grassland
g3c6	Lolium-Cynosurus neutral grassland
g3c8	Holcus-Juncus neutral grassland
g4	Modified grassland
w1d	Wet woodland
w1d5	Alder woodland on floodplains (H91E0)
w1f	Lowland mixed deciduous woodland
w1f7	Other Lowland mixed deciduous woodland
w1g	Other woodland; broadleaved
w1g6	Line of trees
w1g7	Other broadleaved woodland types
w1h	Other woodland; mixed
w1h5	Other woodland; mixed; mainly broadleaved
w1h6	Other woodland; mixed; mainly conifer
w2b	Other Scot's Pine woodland
w2c	Other coniferous woodland
h1a	Lowland Heathland
h2a	Hedgerow (priority habitat)

UKHab code (lowest level of UKHab recorded)	Habitat type (lowest level of UKHab recorded)
h2b	Other hedgerows
h3	Dense scrub
h3a	Blackthorn scrub
h3a6	Other blackthorn scrub
h3d	Bramble scrub
h3e	Gorse scrub
h3f	Hawthorn scrub
h3h	Mixed scrub
f2a	Lowland fens
f2d	Aquatic marginal vegetation
f2e	Reedbeds
f2f	Other swamps
c1	Arable and horticulture
c1a	Arable field margins
c1a5	Arable margins sown with tussocky grasses
c1a6	Arable margins sown with wild flowers or a pollen and nectar mix
c1a8	Game bird mix strips and corners
c1b	Temporary grass and clover leys
c1c	Cereal crops
c1c5	Winter stubble
c1c6	Game bird mix fields
c1c7	Other cereal crops
c1d	Non-cereal crops
c1d6	Short-rotation coppice
c1d8	Other non-cereal crops
c1e	Intensive orchards
c1f	Horticulture
c1f5	Annuals horticulture
c1f7	Polyculture
u1a	Open Mosaic Habitats on Previously Developed Land
u1b	Developed land; sealed surface
u1b5	Buildings
u1b6	Other developed land

UKHab code (lowest level of UKHab recorded)	Habitat type (lowest level of UKHab recorded)
u1c	Artificial unvegetated, unsealed surface
u1d	Suburban/ mosaic of developed/natural surface
u1e	Built linear features
r1a	Eutrophic standing waters
r1a6	Other eutrophic standing waters
r1b	Mesotrophic lakes
r2a	Rivers (priority habitat)
r2a6	Other priority habitat rivers
r2b	Other rivers and streams
t2a	Coastal saltmarsh
t2a7	Atlantic salt meadows (H1330)
t2g5	Saline lagoons (H1150)

### Draft Order Limits

3.2.7 Detailed descriptions of habitats identified within the DOL are given below. Habitats identified within the DOL are shown in Annex D: UK Habitat classification plan – Draft Order Limits. Where aggregations of ecologically valuable habitats occur together (outside of named designed sites), these are highlighted in Annex E: Habitat Location Groupings Plan.

**g1a – Lowland dry acid grassland**

3.2.8 A single area of grassland considered likely to meet the criteria for lowland dry acid grassland priority habitat was identified within the DOL. This grassland occurred adjacent to the Sallow Walk Covert, west of Walberwick, within the Minsmere to Walberswick designated sites ((SSSI, Ramsar, SAC, special protection area (SPA)). The grassland was typically species-poor dominated by graminoids common bent (*Agrostis capilaris*) and wavy hair-grass (*Deschampsia flexulosa*). Forbs recorded which are indicative of the priority habitat type (Ref 33) included heather (*Calluna vulgaris*), bell heather (*Erica cinerea*), sheep's-sorrel (*Rumex acetosella*) and mouse-ear hawkweed (*Pilosella officinarum*). Bracken (*Pteridium aquilinum*) and gorse *Ulex europaeus* were scattered throughout.

3.2.9 The grassland can be classified to level 5 g1a6 other lowland dry acid grassland.

**g1c – Bracken**

3.2.10 A single area of habitat dominated by bracken occurred within the DOL, on the left-hand bank of the dry channel of the Dunwich River. The bracken was isolated to a fenced-off area, likely used for game-bird rearing.

### g3a – Lowland meadows

3.2.11 Two areas of lowland meadow habitat were identified within the DOL.

3.2.12 The first area is located in the southern section of the Proposed Onshore Scheme, south-east of Saxmundham. A series of pasture fields are present subject to light and intermittent horse grazing. The grasslands were reflective of this light management, with a relatively tall, forb-rich sward.

3.2.13 Graminoid species were diverse including soft brome (*Bromus hordeaceus*), timothy *Phleum pratense*, cock's-foot (*Dactylis glomerata*), perennial rye-grass (*Lolium perenne*) and meadow foxtail (*Alopecurus pratensis*). Forb species were again diverse, including species typical of pasture such as common buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), red clover (*Trifolium arvense*), yarrow (*Achillea millefolium*), ribwort plantain (*Plantago lanceolata*), broad-leaved dock (*Rumex obtusifolius*), hop trefoil (*Trifolium campestre*) and common vetch (*Vicia sativa*), as well as indicators of lowland meadow, such as bird's-foot trefoil (*Lotus corniculatus*), common spotted orchid (*Dactylorhiza fuchsii*), meadow vetchling (*Lathyrus pratense*), agrimony (*Agrimonia eupatoria*) and goat's beard (*Lathyrus pratense*) (Ref 33). The presence of occasional common bent, wavy hair-grass and sheep's sorrel indicates the grassland may have arisen from acidic soils which have become subsequently improved through pasture management.

3.2.14 Additional detailed botanical survey is required in order to confirm that this grassland meets the lowland meadow priority habitat status.

3.2.15 The second area is a large meadow north-east of Theberton woods. The landowner reports that the meadow has never been ploughed or fertilised. Management consists of a single annual hay cut in the late summer. This land-use history and continuous management has led to a tall grass-dominated sward with a patchy distribution of forbs. However, the diversity of both grasses and forb species is relatively high.

3.2.16 Graminoid species present included the consistent presence of Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), meadow foxtail, meadow barley (*Hordeum brachyantherum*) and smooth meadow-grass (*Poa pratensis*), with a patchier distribution of Timothy, cock's foot, red fescue (*Festuca rubra*) and crested dog's tail (*Cynosurus cristatus*). Frequent forbs included meadow buttercup (*Ranunculus acris*), creeping buttercup, hoary ragwort (*Jacobaea erucifolia*), ribwort plantain, red clover and creeping cinquefoil (*Potentilla repens*), with more occasional occurrence of species such as, common vetch, common fleabane (*Pulicaria dysenterica*), spiny restarrow (*Ononis spinosa*), grass vetchling (*Lathyrus nissolia*) and. Indicator species for lowland meadow priority habitat (Ref 33) included bird's-foot-trefoil, common spotted orchid, glaucous sedge (*Carex flacca*), as well as pepper saxifrage (*Silaum silaus*), which is particularly notable as a key indicator for lowland meadow priority habitat given its close association with old, unimproved hay meadows (Ref 35).

3.2.17 NVC survey indicated the meadow most closely aligns to the MG4 NVC community, which forms in lowland conditions where traditional hay-meadow treatment has been applied to seasonally flooded land on alluvial soils. However, a number of significant divergences are noted from MG4 habitat, most notably the lack of winter inundation or winter grazing. Therefore, whilst the meadow is considered to qualify as lowland meadow priority habitat, it is not further classified to level 5 g3a5 lowland hay meadows (H6510).

#### g3c – Other neutral grassland

3.2.18 Neutral grasslands of moderate diversity, neither meeting lowland meadow priority habitat criteria, or being highly modified in nature, were patchily distributed throughout the DOL. The below summarises more notable areas of such grassland identified within the DOL, based on notable ecological features, large area occupied or where aggregations of the habitat type occur.

3.2.19 West of Theberton, an area of unmanaged grassland has formed on a previously landscaped area immediately south of Plumtreehills Covert. The loosely structured grassland had formed in an area of obvious past disturbance, with a broadly southwestern aspect, forming an undulating surface with several well-worn paths and scrub patches throughout. Given the history of disturbance and fine-scale variation in both aspect and substrate, the vegetation composition and structure showed similar variation throughout, with some areas rank and grass-rich, whilst others were largely dominated by lower growing forbs in a looser structure. Of graminoids, Yorkshire fog, smooth meadow-grass and false oat-grass were the most frequent, with sweet vernal, glaucous sedge, cock's-foot, red fescue, creeping bent (*Agrostis stolonifera*) and perennial rye more occasional. Forb diversity was similarly variant, with frequent grass vetchling, meadow buttercup, black medick (*Medicago lupulina*), ribwort plantain, common fleabane, common spotted orchid and cut-leaved crane's-bill (*Geranium dissectum*). Occasional forbs included agrimony, hairy tare (*Vicia hirsuta*), slender tare (*Vicia parviflora*), hoary ragwort, cat's-ear (*Hypochaeris radicata*) and bee orchid (*Orphys apifera*), with species indicative of disturbance including bristly ox-tongue (*Helminthotheca radicata*), chicory (*Cichorium intybus*) and squirrel-tail fescue (*Vulpia bromoides*).

3.2.20 To the north-east of Theberton woods, two small meadows historically used for hay or silage were present, though the presence of a relatively rank sward with numerous elm saplings implies they are currently unmanaged. The meadows are dominated by coarse grasses such as false oat-grass, Yorkshire fog, timothy, cock's-foot. Forbs were scattered, including meadow vetchling, cut-leaved cranesbill and hedge bindweed (*Calystegia sepium*). Pepper saxifrage was also noted, implying that these may have been higher-quality historic hay meadows which have subsequently become rank and unmanaged.

3.2.21 To the north-east of Middleton Moor is loosely managed rough grassland is present, with only occasional grazing by horses and sheep. The field strongly

correlates to the MG6a NVC community, typical of enclosed grazed grasslands. Graminoids were dominated by Yorkshire fog, smooth meadow-grass and crested dog's-tail, with more occasional perennial rye, sweet vernal, red fescue and cock's-foot. Forbs comprised a relatively minor element of the sward, excepting common ragwort which was almost ubiquitous. Other forbs included meadow buttercup, field bindweed (*Convolvulus arvensis*) and white clover (*Trifolium repens*). Yellow rattle (*Rhinanthus minor*) was notable throughout the lower southern section of the field, likely colonising from the adjacent floodplain grasslands.

3.2.22 Further north, within the floodplain of the Minsmere Old River, neutral grassland of greater diversity is present, forming part of the Darsham Marshes nature reserve. These grasslands clearly display a damp influence, resulting from flooding of the watercourse, as well as the defined ditch network running throughout. These grasslands qualify as CFGM priority habitat. Typical graminoids present include Yorkshire fog, common couch (*Elymus repens*), crested dog's-tail, rough meadow-grass (*Poa trivialis*) and marsh foxtail (*Alopecurus geniculatus*), with damper areas characterised by creeping bent, lesser pond-sedge (*Carex acutiformis*), jointed rush (*Juncus articulatus*), hard rush (*Juncus inflexus*) and common spike-rush (*Eleocharis palustris*). Forb diversity is high, with species typical of these damper conditions including water mint (*Mentha aquatica*), southern marsh orchid (*Dactylorhiza praetermissa*), meadowsweet (*Filipendula ulmaria*), yellow flag-iris (*Iris pseudacorus*), marsh marigold (*Caltha palustris*), common hemp-nettle (*Galeopsis tetrahit*) and water chickweed (*Stellaria aquatica*).

3.2.23 To the north of Sallow Walk Covert, a patch of neutral grassland is present dominated by false oat-grass. Full access to the grassland was not possible for detailed inspection, but given the setting of this grassland amongst lowland dry acid grasslands and the presence of acidic indicators such as common bent and bracken, it is considered likely this grassland has arisen from a more acidic grassland type through agricultural improvement.

#### g4 – Modified grassland

3.2.24 Modified grasslands are patchily distributed throughout the DOL, primarily associated with agricultural land, including examples of both intensively grazed areas, silage meadows and unmanaged rank grasslands. The below summarises more notable areas of modified grassland identified, based on notable ecological features, large area occupied or where aggregations of the habitat type occur.

3.2.25 The fields which border the eastern edge of Theberton woods have recently been converted from arable use to management targeted at increasing biodiversity. These fields appear to have been left to colonise naturally and currently reflect the high nutrient burden resulting from the past land use, dominated by coarse grasses. Forbs generally were restricted to creeping thistle (*Cirsium arvense*), curled dock (*Rumex crispus*), creeping buttercup and common

fleabane, though species such as hoary ragwort, red clover and hairy tare were present around the edges, likely colonising from existing margins. Self-seeded saplings were also present amongst the sward.

3.2.26 To the south of Middleton Moor, two large fields are utilised for silage, with a grass dominated sward of soft brome, meadow foxtail, false oat-grass, cock's-foot, perennial rye-grass and Yorkshire fog. The only consistent forb species identified was creeping buttercup.

3.2.27 Further notable areas of modified grasslands in the southern area of the Proposed Onshore Scheme included several fields located to the north-east of Theberton woods and north-west of Middleton respectively, all managed through sheep grazing. Species diversity was low, characterised by an abundance of perennial rye-grass and Yorkshire fog, with forbs typical of intensive grazing including white clover, common cat's-ear, bulbous buttercup (*Ranunculus bulbosus*), ribwort plantain and dandelion (*Taraxacum officinale* agg).

3.2.28 North of the Minsmere Old River, to the west of Westleton, a small silage field was identified. The field included false oat-grass, cock's-foot, red fescue and common bent. Forbs included typical species for such management, such as ribwort plantain, yarrow and creeping thistle.

#### w1d – Wet woodland

3.2.29 Wet woodland occurs in several locations, though all are centred in floodplains of the Minsmere Old River.

3.2.30 The first block is set amongst broad fields of CFGM south of the river, characterised by an open structure dominated by alder with the woodland open to the same grazing and displays a similar wetland ground flora as described previously, typically including lesser pond-sedge, water mint, water horsetail (*Equisetum fluviatile*), yellow flag-iris and lesser water-parsnip (*Berula erecta*).

3.2.31 The second area occurs further north within the floodplain, north of the river, in continuous canopy with drier woodland types. The wet woodland surrounds a large waterbody and several areas of fen and swamp, with the damp ground meaning much of the woodland was inaccessible for detailed inspection. The woodland was comprised predominantly of single age class of semi-mature alders with occasional willow (*Salix spp.*). Visible ground flora included common nettle (*Urtica dioica*) and pockets of sedges.

3.2.32 All wet woodland blocks identified can likely be further classified to level 5 w1d5 alder woodland on floodplains (H91E0), corresponding to the relevant Annex 1 habitat type, though further detailed botanical survey is required to confirm this.

#### w1f – Lowland mixed deciduous woodland

3.2.33 Lowland mixed deciduous woodland, corresponding to the woodland priority habitat type found most commonly in lowland England (Ref 36), occurred within the DOL in several locations.

3.2.34 West of Theberton, a linear woodland block is present along the south of Pretty Road, effectively acting as a direct extension of Theberton Woods. Whilst generally of restricted width, the woodland bulges in several areas and clearly shows the structural composition of a functional woodland, with distinct canopy, understorey and ground layer. The canopy is comprised of mature and semi-mature pedunculate oak and ash, including several likely veteran specimens. The distinct understorey contains frequent hazel, with additional elm (*Ulmus spp.*), hawthorn (*Crataegus monogyna*), field maple (*Acer campestre*), hornbeam (*Carpinus betulus*) and holly (*Ilex aquifolium*). The ground flora is diverse, including ancient woodland indicators for the region (Ref 37); wood sedge (*Carex sylvatica*), pignut (*Conopodium majus*), sweet woodruff (*Galium odoratum*), bluebell (*Hyacinthoides non-scripta*), wood speedwell (*Veronica montana*) and bush vetch (*Vicia sepium*). Further ground flora included dogs mercury (*Mercurialis perennis*), wood false-brome (*Brachypodium sylvaticum*), herb-Robert (*Geranium robertianum*), ground ivy (*Glechoma hederacea*), honeysuckle (*Lonicera periclymenum*), wood avens (*Geum urbanum*), greater stitchwort and bugle (*Ajuga reptans*).

3.2.35 Immediately north of Pretty Road, a small copse is present. The canopy comprises mature pedunculate oak, ash, hornbeam, field maple and sycamore (*Acer pseudoplatanus*), including two veteran oaks. The distinct understorey is comprised of hawthorn, blackthorn (*Prunus spinosa*), hazel and wych elm (*Ulmus glabra*). The ground layer included species indicative of mature woodlands, including ancient woodland indicators for the region (Ref 37); remote sedge (*Carex remota*), primrose (*Primula vulgaris*) and wood meadow-grass (*Poa nemoralis*). Further species included field rose (*Rosa arvensis*), wood false-brome, common nettle and cleavers (*Galium aperine*).

3.2.36 To the north west of Theberton is Plumtreehills Covert. Whilst there are some signs of potential past plantation, the woodland is mature and well structured, with clear canopy, understorey and ground layers. Regeneration of canopy trees was clear throughout, though ash dieback was noted. The canopy had abundant ash, with more occasional pedunculate oak, sycamore and field maple, and sweet chestnut as rare. The understorey comprised abundant hornbeam, frequent hawthorn and field maple with occasional sycamore, hazel and holly. The ground layer included species indicative of mature woodlands, including ancient woodland indicators for the region; Spurge laurel (*Daphne laureola*), sanicle (*Sanicula europaea*) and bluebell. Other woodland species included dog's mercury (*Mercurialis perennis*), wood false-brome, ivy (*Hedera helix*), wood avens, ground ivy, herb-Robert, garlic mustard (*Alliaria petiolata*), as well as species indicative of nutrient enrichment such as cleavers, bramble (*Rubus fruticosus agg.*), and common nettle.

3.2.37 Each of the woodlands described above can be classified to level 5 w1f7 Other lowland mixed deciduous woodland.

**w1g – Other woodland; broadleaved**

3.2.38 Broadleaved woodlands not meeting the priority habitat criteria described above were more frequent throughout the length of the DOL and displayed significant variation based on origin, age, location and management.

3.2.39 Within the southern portion of the Proposed Onshore Scheme, two linear blocks of young plantation woodland are present. The immature trees are planted in clear rows and have not yet established to form a distinct canopy and understorey, with the ground layer simply a continuation of the surrounding grassland. Species planted included pedunculate oak, crab apple (*Malus sylvestris*), rowan (*Sorbus aucuparia*), blackthorn, field maple, hawthorn, wild cherry (*Prunus avium*), hazel and dogwood (*Cornus sanguinea*).

3.2.40 West of Theberton, immediately south of Pretty Road, a linear wood is present. The woodland is comprised of primarily semi-mature sweet chestnut and lime (*Tilia spp.*), though with occasional mature oaks, indicating an older woodland which has subsequently been planted up. Ground flora include bluebell, wood avens, wood false-brome and lord's and ladies (*Arum maculatum*).

3.2.41 To the east of Plumtreehill Covert, a loosely structured semi-natural woodland has formed within the crater of an old quarry pit. The canopy comprises mature ash, sweet chestnut and hazel, with a poorly defined understorey comprised of elder (*Sambucus nigra*) and regenerating ash. The ground flora shows signs of significant enrichment and disturbance with common nettle dominant, Alexander's (*Smyrnium olusatrum*), black horehound (*Ballota nigra*) and ground ivy.

3.2.42 In the central portion of the Proposed Onshore Scheme, such woodland occurs to the northern extent of the Minsmere Old River floodplain, bordering Darsham Marshes nature reserve. This woodland is largely unmanaged except for fenced areas used for rearing game birds. The loose canopy is dominated by oak and ash, with a poorly defined understorey including various willow species, elder and occasional hazel coppice. Ground flora diversity is poor, dominated by common nettle, indicating nutrient enrichment.

3.2.43 Each of these woodlands can be classified to level 5 w1g7 other broadleaved woodland types.

3.2.44 Lines of trees w1g6 were present throughout the DOL, though were highly variant in nature. Linear features comprised of mature and/or semi-mature trees were a prevalent feature, generally occurring alongside roads or as well-established field boundaries. Pedunculate oak was by far the most frequent and consistent mature tree species, followed by ash and field maple. Where gaps between larger trees were occupied by less mature or shrubby species these generally comprised English elm (*Ulmus minor*), field maple, and hawthorn, more occasionally hazel. In several instances, along country lanes, farm tracks or the disused railway to the south of the River Blythe, parallel lines of trees formed closed canopies.

3.2.45 Notable lines of trees within the DOL include:

- a. A line of mature pedunculate oak associated with an agricultural drainage ditch north of Friston;
- b. A thick line forming the boundary between two agricultural fields east of Saxmundham, including mature pedunculate oak, field maple, ash and hornbeam, with an understorey of English elm, hazel, dogwood and blackthorn;
- c. Mature pedunculate oak and ash, with hybrid black poplar, field maple and sycamore north of the B1119 east of Saxmundham;
- d. A line of mature pedunculate oak, ash and field maple connecting to the eastern side of Theberton woods;
- e. A line of mature hazel along the bank of the banks of a minor tributary of the Minsmere Old River;
- f. Highly mature pedunculate oaks alongside Hinton Road; and
- g. Mature pedunculate oak and ash with shrubby understorey to the north of Hinton Road.

#### w1h – Other woodland; mixed

3.2.46 Mixed coniferous and broadleaved woodland occurred in two locations within the DOL.

3.2.47 A block at Middleton Moor is relatively young, arising from recent planting. The trees remain largely immature and growing in a structured pattern with defined canopy, understorey and ground layers yet to establish. The tree species include silver birch (*Betula pendula*), pedunculate oak, wild cherry, common dogwood, field maple, hazel, spindle (*Euonymus europaeus*) and ash, as well as various coniferous species. Given the young nature of the woodland, ground flora remains more reflective of grassland than an established woodland, with dominant cock's-foot and Yorkshire fog, with self-heal (*Prunella vulgaris*), white clover, common sorrel (*Rumex acetosa*) and ribwort plantain present throughout. A large number of common spotted orchid was also present.

3.2.48 To the east of Sallow Walk Covert, west of Walberswick, a relatively open, loosely structured woodland is present, with a single storey of semi-mature pedunculate oak, elder, field maple, pine (*Pinus spp.*) and spruce (*Picea spp.*), with understorey predominantly comprised of bracken and bramble.

3.2.49 Each of these woodland blocks can be further classified to level 5 w1h5 Other woodland; mixed; mainly broadleaved.

#### w2b – Other Scot's pine woodland

3.2.50 Woodland comprised predominantly of Scot's pine (*Pinus sylvestris*) was identified in a single location, the Sallow Walk Covert west of Walberswick. Scots pine formed the dominant canopy species, likely from historic planting, with an understorey comprised of dense bracken.

3.2.51 This woodland does not meet the criteria for the relevant priority habitat type (Ref 38) given it is far outside the natural range for this habitat and has arisen through historic planting.

**h2a – Hedgerow (priority habitat)**

3.2.52 Hedgerows constitute one of the primary biodiversity features within the DOL, comprising by far the most frequent boundary feature throughout the Proposed Onshore Scheme. The vast majority of these hedgerows meet the criteria for priority habitat, consisting over 80% of at least one native woody species (Ref 20).

3.2.53 The wide variation in hedgerows was notable, based primarily on their history of management. Where management was absent, this resulted in a large number of either defunct hedgerows with significant gaps between shrubs, or outgrown hedgerows which in some cases become impenetrable scrub banks (classified as dense scrub features). Where management was more active and cyclical, hedgerows clearly maintained greater structure and generally a greater species-richness. Such groups of hedgerows tended to be clustered together in the landscape as landowners prescribed similar management, or lack thereof, across their landholdings.

3.2.54 English elm and hawthorn were the most dominant woody hedgerow species encountered, with more occasional presence of blackthorn, particularly where left unmanaged. Other woody species consistently encountered as hedgerow shrubs included elder, field maple, ash, wych elm and dogwood.

3.2.55 Standard trees were a major feature of many of the hedgerows identified, primarily consisting of pedunculate oaks but with more occasional ash or field maple, and very rarely beech (*Fagus sylvatica*) or limes. In several instances hedgerows crossing the DOL contained highly mature or veteran trees, further increasing their biodiversity value.

3.2.56 A notable feature associated with a large number of hedgerows were ditches, many of which were wet, described separately. This a characteristic of the agricultural landscape in Suffolk given the historic drainage in many areas.

**h3a Blackthorn scrub**

3.2.57 Blackthorn scrub was identified in only a single location, to the east of Theberton Wood as a connected boundary feature. The scrub bank has almost certainly arisen from an unmanaged historic hedgerow given its linear nature and position in the landscape, connected to a woodland and separating two agricultural fields.

3.2.58 This feature can be classified further to level 5 h3a6 Other blackthorn scrub.

**h3h Mixed scrub**

3.2.59 Mixed scrub was limited in occurrence, largely due to the Proposed Onshore Scheme crossing broad open fields separated by linear features such as hedgerows.

3.2.60 However, mixed scrub did occur where these linear features have been left unmanaged for an extensive period of time, succeeding into thick, impenetrable bands of scrub, with occasional taller trees. This form of scrub was notable to the north-east of Theberton Woods, where several bands cross the DOL. These were comprised of species typical of hedgerow habitats from which they formed, hawthorn and blackthorn dominant, with dog rose (*Rosa canina*), English elm and field maple, with mature oak and ash adding to structural diversity.

3.2.61 Another notable band of mixed scrub occurred south of Walberswick, along the northern edge of Lampland marshes. The scrub comprises frequent bramble and blackthorn, as well as infrequent elm. A grove of young and semi-mature white poplar (*Populus alba*) trees is present in the northern section.

3.2.62 Further small and isolated patches of mixed scrub occur throughout the DOL, generally associated with unmanaged edges of larger habitat blocks.

#### f2a Lowland fens

3.2.63 Wetlands meeting the criteria for lowland fen priority habitat (Ref 39) was identified in only two locations within the DOL, each forming part of the wider wetland habitat mosaic with CFGM, swamps and wet woodland habitats in the Minsmere Old River floodplain.

3.2.64 South of the river, the fen had a species composition broadly similar to the adjacent wet grasslands described previously, particularly given the continuum in management through horse grazing between the two habitats. However, the fen displayed a greater prevalence and diversity of wetland and aquatic indicator species given the assumed increased period and frequency of inundation. Species highly indicative of fen habitat included blunt-flowered rush (*Juncus subnodulosus*), lesser pond-sedge, greater pond-sedge (*Carex riparia*), southern marsh orchid, water chickweed, water horsetail, fen bedstraw (*Galium uliginosum*), yellow flag-iris and marsh marigold. Further wetland species included water mint, lesser water-parsnip, marsh bedstraw (*Galium palustre*), water figwort (*Scrophularia auriculata*), meadowsweet, greater bird's-foot trefoil (*Lotus pedunculatus*).

3.2.65 To the north of river, the fen is managed through cattle grazing and occurs among a far larger expanse of fen habitat as part of the Darsham Marshes nature reserve. Typical indicator species included southern marsh orchid, lesser pond-sedge, yellow flag-iris, common valerian (*Valeriana officinalis*), wild angelica (*Angelica sylvestris*), floating sweet grass (*Glyceria fluitans*) and water forget-me-not (*Myosotis scorpioides*). Other wetland species included ragged robin (*Silene flos-cuculi*), marsh horsetail (*Equisetum palustre*), meadowsweet, marsh thistle (*Cirsium palustre*), greater bird's-foot trefoil, branched bur-reed (*Sparganium erectum*), common reed (*Phragmites australis*) and floating sweet-grass. Other species recorded included lady's bedstraw (*Galium verum*), hairy sedge (*Carex hirta*), meadow buttercup, common sorrel and sweet vernal grass.

### f2e Reedbeds

3.2.66 Wetlands meeting the criteria for reedbed priority habitat (Ref 40) was identified in only a single location within the DOL, to the south of the proposed Landfall Site within the Lampland marshes. This extensive area of homogenous common reed is likely to be fed by brackish waters given its position against the tidal portion of the Dunwich River.

### f2f Other swamp

3.2.67 Wetland habitats not meeting the criteria for applicable priority habitat types were identified in a single location within the DOL, on the edge of woodland and CFGM within the Minsmere Old River floodplain. This small area was comparatively dry to the surrounding fen and wet grassland habitats, in an enclosed area not managed through grazing, allowing ruderal vegetation such as common nettle, cleavers and lesser burdock (*Arctium minus*) to dominate. Scattered wetland indicators comprised yellow flag iris, common hemp-nettle and lesser pond sedge.

### c1a – arable field margins

3.2.68 Arable field margins managed for nature were sparsely scattered throughout the DOL.

3.2.69 Arable margins sown with tussocky grasses were identified west of Theberton and south of Blythburgh. Typical species included Yorkshire fog, perennial rye-grass, false oat-grass and soft brome, with forbs such as common sorrel, ribwort plantain and cut-leaved cranesbill. These arable field margins can be further classified to Level 5 c1a5 arable margins sown with tussocky grasses.

3.2.70 Arable margins sown with a high proportion of wildflowers and nectar/pollen mixes were identified north of Friston and south of Blythburgh. These featured a high cover of legumes such as red clover, common vetch, sainfoin (*Onobrychis viciifolia*) and grass vetchling, as well as ribwort plantain, oxeye daisy, bird's-foot trefoil, common knapweed (*Centurea nigra*), lady's bedstraw and hop trefoil. These arable field margins can be further classified to Level 5 c1a6 arable margins sown with wild flowers or a pollen and nectar mix.

### c1b – Temporary grass and clover leys

3.2.71 Arable areas planted with temporary grass crops were identified in several areas of the DOL, primarily in the central sections from Theberton to Darsham. This included both fields which can be classified to the Level 5 categories c1b5 rye-grass and clover ley, and c1b6 Legume-rich ley.

### c1c – Cereal crops

3.2.72 Cereal crops formed one of the major components of the DOL area, given the predominantly arable landscape. Barley (*Hordeum vulgare*), wheat (*Triticum aestivum*) and maize (*Zea mays*) were the primary crop types recorded.

3.2.73 Given the intensive nature of many of these fields, the majority of associated species were common arable weeds, with no notable species recorded within the DOL.

#### c1d – Non-cereal crops

3.2.74 Non-cereal crops again formed one of the major components of the DOL area, spread throughout each section. Frequent crop plants included potatoes (*Solanum tuberosum*), cabbage (*Brassica oleracea* var. *capitata*), courgettes (*Cucurbita pepo*) and rape (*Brassica napus*). Additionally, in the southern section of the DOL north of Friston, several large fields were used for growing Christmas trees. Each of these crops can be classified to Level 5 c1d8 other non-cereal crops.

3.2.75 Similar arable associate species were identified as on the margins of cereal crop fields, with no notable species recorded within the DOL.

#### c1e Intensive orchards

3.2.76 Intensively farmed orchards, generally considered as those with young tree stock and well-managed ground cover, are present to the west of Westleton. Several fields are utilised for blackcurrant (*Ribes nigrum*) or apple (*Malus spp.*) crop, with heavily mown modified grassland between crop rows.

#### u1b Developed land; sealed surface

3.2.77 Hardstanding areas were present throughout the DOL, in the form of highways and paved farm tracks.

#### u1c Artificial unvegetated, unsealed surface

3.2.78 Artificially unvegetated land occurred throughout the DOL, primarily in the form of unpaved farm tracks, with regular disturbance by vehicles keeping the land free of vegetation.

3.2.79 A significant area of artificially unvegetated, unsealed surface was identified as a field in the northern portion of the DOL, south of Blythburgh. This area was used for pig farming at the time of survey, likely in rotation with other fields in the immediate vicinity, with the disturbance from the pigs keeping the land free of vegetation.

#### s3a Coastal sand dunes

3.2.80 South of Walberswick, a linear grassland has formed on the leeward edge of the crest of the shingle beach, sloping down to coastal saltmarsh. Given the significant accretion of sand on the sheltered slope, also being directly connected to a larger dune system to the north, the grassland exhibits a close association to vegetated sand dunes priority habitat type (Ref 41). False oat-grass is the most abundant component, with cock's-foot, red fescue and Yorkshire fog and sea couch (*Elymus athericus*) also present. Marram grass is

patchily abundant throughout, with other species associated with dune habitats including sand cat's-tail (*Phleum arenarium*), common restarrow (*Ononis repens*), sea fern-grass (*Catapodium marinum*), sea mouse-ear (*Cerastium diffusum*) and sea pea (*Lathyrus japonicus*). Other forbs included bird's-foot trefoil, cat's-ear (*Hypochaeris radicata*), common cudweed (*Filago germanica*) and common sow-thistle (*Sonchus oleraceus*). Parsley water-dropwort (*Oenanthe lachenalii*) was located at the base of the slope, in the transition to coastal saltmarsh.

3.2.81 This coastal sand dunes can be further classified to level 5 s3a7 Dune grassland, corresponding to the relevant Annex 1 habitat type.

### **s3b Coastal vegetated shingle**

3.2.82 Vegetated shingle habitats meeting the criteria for the relevant priority habitat was identified in only a single location in the DOL, at the crest of the shingle beach south of Walberswick. Vegetation has formed here outside of the areas subject to storm waves on the active shingle, though still likely receiving salt spray and some sand accretion, though this was primarily deposited on the leeward slope. Characteristic species identified include sea pea, sea sandwort (*Honckenya peploides*), sea kale (*Crambe maritima*), sea campion (*Silene uniflora*) and yellow horned-poppy (*Glaucium flavum*). Other species present included common restarrow, sand cat's-tail, bird's-foot trefoil, curled dock, perennial sow-thistle (*Sonchus arvensis*) sand sedge (*Carex arenaria*), sea couch and beaked hawk's-beard (*Crepis vesicaria*). Bryophytes were patchily abundant across the vegetated shingle strip, including (*Brachythecium albicans*) and (*Syntrichia ruraliformis*).

3.2.83 The vegetated shingle habitat has been further classified to level 5 s2b5 Perennial vegetation of coastal shingle (H1220), corresponding to the relevant priority habitat type. It should be noted however that on the lower portions of vegetated shingle, patches of annual vegetation meeting the criteria for level 5 s3b6 Annual vegetation of drift lines (H1210), occurred in an unmappable mosaic with the mapped perennial vegetation.

### **r1a Eutrophic standing waters**

3.2.84 Standing waterbodies which are considered likely to be high nutrient systems given their position within an intensively agricultural landscape were scattered across the DOL.

3.2.85 The majority of these are drainage ditches associated with agricultural land, many of which are likely to dry for varying periods throughout the year. Such ditches generally displayed no or limited macrophyte growth, more frequently colonised by tall ruderal species such as great willowherb (*Epilobium hirsutum*) and common nettle. The exception to this is the wet ditch network associated with wet grasslands and wetland habitats within the Minsmere Old River floodplain. These ditches appeared to contain water year round and are generally unshaded, leading to greater macrophyte growth, with species such as lesser

pond-sedge, water violet (*Hottonia palustris*), reed sweet-grass, yellow flag-iris, lesser water-parsnip, marsh horsetail, branched bur-reed, water mint and broad-leaved pondweed (*Potamogeton natans*).

3.2.86 Four ponds fall within the DOL.

3.2.87 Immediately south of Pretty Road, a permanent pond is present on the edge of woodland, but is largely unshaded. The pond has a high macrophyte coverage and diversity, with reedmace (*Typha latifolia*), common club-rush (*Schoenoplectus lacustris*), common spike-rush, hard rush, water plantain (*Alisma plantago-aquatica*), false fox-sedge (*Carex otrubae*), broad-leaved pondweed and ivy-leaved duckweed (*Lemna trisulca*). Given the diversity of visible aquatic vegetation, as well as the large number of invertebrate species noted, this pond is considered likely to meet the criteria for pond priority habitat type.

3.2.88 North-west of Westleton, an ephemeral pond is present in the centre of a large agricultural field, fully shaded by a ring of surrounding mature oak and ash, with scrubby hazel, elder and hawthorn. The pond was dry at the time of survey but is considered likely to hold water seasonally. Common nettle was the only species observed within the dry pond area, indicating nutrient enrichment from the surrounding farmland. This pond is considered unlikely to meet the criteria for pond priority habitat type.

3.2.89 North-east of Darsham, adjacent to Lymballs Lane, another ephemeral pond is present on the edge of a large agricultural field, again fully shaded by mature trees and scrub. The pond was also dry at the time of survey but considered likely to hold water seasonally. No visible plant growth was observed within the dry pond bed. This pond is considered unlikely to meet the criteria for pond priority habitat type.

3.2.90 To the east of Hinton in the northern portion of the DOL, a larger, permanent pond is present within a small grassland area surrounded by agricultural fields. The pond is partially shaded by surrounding semi-mature ash and pedunculate oak trees. No visible aquatic macrophyte growth was observed either in open water or marginal areas. This pond is considered unlikely to meet the criteria for pond priority habitat type.

3.2.91 Each of the waterbodies described above can be further classified to level 5 r1a6 Other eutrophic standing waters.

### **r2a Rivers (priority habitat)**

3.2.92 The Minsmere Old River is crossed in the central section of the DOL. The river at this point is lined by mature alders on both banks, generally shading the watercourse, with a broad floodplain occupied by open CFGM beyond this, characterised by an extensive ditch network fed by the river. Refer to river condition assessment (RCA) report for river physical form.

3.2.93 Whilst not mapped as a priority habitat river (Ref 17), and not meeting any of the qualifying criteria relating to near-natural hydromorphological state or high-value riverine habitats, it is considered likely that the river qualifies as priority habitat through supporting species and assemblages of conservation value (Ref 21). eDNA survey of the watercourse and its immediate ditch network identified partially qualifying species water vole (*Arvicola amphibia*), European eel (*Anguila anguila*) and brown trout (*Salmo trutta*), with records of otter (*Lutra lutra*) returned from SBIS. Given the diversity and quality of wetland habitats with immediate connectivity to the river channel at this point, it is considered highly likely that the river supports further qualifying species associated with higher quality riparian environments.

3.2.94 This watercourse can be further classified to level 5 r2a6 other priority habitat rivers.

### **r2b Other rivers and streams**

3.2.95 In the southern part of the DOL, an unnamed tributary of the River Fromus is present, running north to south before turning westwards to join the Fromus south of Saxmundham. The stream is highly channelised, acting essentially as a drainage ditch for the adjoining arable land. Whilst water pools in places, the channel does not flow for the majority of the year. Marginal and ruderal species dominate the banks and channel, including reed canary-grass (*Phalaris arundinacea*), cow parsley (*Anthriscus sylvestris*), common hogweed (*Heracleum sphondylium*) and common nettle.

3.2.96 Further north, the route crosses and two unnamed tributaries of the Hundred River.

3.2.97 At the point of crossing, the southern tributary is culverted beneath the Saxmundham-Leiston railway line. Either side of the culvert, the stream is highly channelised, acting essentially as a drainage ditch for the adjoining arable land. Whilst water pools in places, the channel does not flow for the majority of the year, allowing marginal and ruderal species to colonise the muddy channel bed. Species include fool's water-cress (*Apium nodiflorum*), celery-leaved buttercup (*Ranunculus celeratus*) and great willowherb. The banks are steep and colonised by dense, tall vegetation including bramble, rosebay willowherb (*Chamerion angustifolium*), common hogweed and common nettle.

3.2.98 At the point of crossing, the northern tributary is also highly modified, practically acting as a drainage ditch for the arable fields either side. The stream has been historically straightened and appears to be dry for the majority of the year, again allowing marginal and ruderal species to colonise the muddy channel bed. The banks are dominated by rank tall vegetation, comprising species such as common nettle, false oat-grass, hogweed and great willowherb.

3.2.99 Given their highly modified and degraded nature at the point of crossing, the streams are considered highly unlikely to meet any criteria for the rivers and

streams priority habitat. No records of partially qualifying species associated with higher quality riparian environments were returned for the tributaries and the surrounding habitat is of low suitability to support such species or assemblages.

3.2.100 In the central area of the DOL, the route encapsulates an unnamed tributary of the Minsmere Old River. The watercourse within the DOL was dry at the time of the survey, though is considered likely to flow seasonally, and appears to hold water more consistently further downstream where it enters CFGM with an associated wet ditch network, prior to the confluence with the main river. The section of watercourse within the DOL is heavily straightened to fit field boundaries, being partially shaded by adjacent hedgerows and scrub. Given the highly modified and degraded nature of the watercourse within the DOL, the stream is considered highly unlikely to meet any criteria for the rivers and streams priority habitat. Whilst presence of partially qualifying species water vole was confirmed through both eDNA survey and SBIS records, these were each located downstream, with the section of watercourse within the DOL offering poor suitability to support qualifying species.

3.2.101 In the northern section of the DOL, the Proposed Onshore Scheme crosses the Dunwich River twice; firstly to the south of Hinton, then again close to the mouth of the river before it enters the Blyth estuary.

3.2.102 The upstream section of the watercourse was largely dry at the time of the survey with only some sections of pooling water, though is considered likely to flow seasonally. At this point the river is bordered by large arable fields, and has clearly been straightened to fit the field boundaries. The steep, incised banks are colonised by a mixture of scattered scrub and tall ruderal vegetation and bracken. The riverbed is a mixture of mud and gravel substrates, with some visible aquatic macrophyte growth of water mint and fool's water-cress in damp sections. Given the highly modified and degraded nature at the point of crossing, the river is considered highly unlikely to meet any criteria for the rivers and streams priority habitat. No records of partially qualifying species associated with higher quality riparian environments were returned for the tributaries and the surrounding habitat is of low suitability to support such species or assemblages.

3.2.103 The section of Dunwich River close to the mouth displays a significantly different character. Whilst assessment of the river at this point was somewhat limited by the extensive areas of fringing reedbed and saltmarsh, the river is clearly tidal and brackish, highlighted by the presence of both salt and freshwater fish species within the eDNA sampling. Whilst the margins were generally fringed with common reed, visible aquatic macrophyte observations were limited to algal mats of species including (*Ulva flexuosa*), as well as spiral tasselweed (*Ruppia spiralis*). Given the modified nature at the point of crossing, the river is considered highly unlikely to meet any criteria for the rivers and streams priority habitat. The combination of eDNA survey and SBIS records highlighted the presence of partially qualifying species otter, water vole and European eel, though the habitat suitability for other such species is limited.

### **t2a Coastal saltmarsh**

3.2.104 Coastal saltmarsh priority habitat (Ref 41) was identified in only a single location within the DOL, within Town Salts, east of the proposed Landfall Site. The coastal saltmarsh has formed between the brackish lower reaches of the Dunwich River and the shingle beach.

3.2.105 The saltmarsh showed considerable spatial variation with patches of bare mud, open water and denser vegetation. Sea purslane (*Atriplex portulacoides*), saltmarsh rush (*Juncus gerardii*), common reed, Sea rush (*Juncus maritimus*), and sea couch were each abundant, with saltmarsh grass (*Puccinellia maritima*) locally frequent. More occasional species included greater sea spurrey (*Spergularia media*), Sea aster (*Tripolium pannonicum*), annual sea-blite (*Suaeda maritima*), sea milkwort (*Lysimachia maritima*), common cordgrass (*Spartina anglica*), sea plantain (*Plantago maritima*) and parsley water dropwort. Patches of common glasswort (*Salicornia europaea* agg.) meeting criteria for the level 5 t2a5 Glasswort and other annuals colonising mud and sand (H1310) were locally frequent, but too small to map in isolation.

### **t2g Saline lagoons**

3.2.106 The larger patches of standing water within the coastal saltmarsh at Town Salts, east of the proposed Landfall Site, are considered likely to meet the criteria for saline lagoon priority habitat (Ref 42). Each lagoon is separated from the sea by the shingle beach, likely fed by the tidal Dunwich River. Little algal growth was noted within the lagoons, possibly as a result of use by waterfowl, though spiral tasselweed was observed in each. Each lagoon was fringed by extensive halophyte species described above in the surrounding coastal saltmarsh.

3.2.107 Each of the saline lagoons described can be further classified to level 5 t2g5 Saline lagoons H1150, corresponding to the relevant Annex 1 habitat type.

### **t2h Beach**

3.2.108 Beach habitat was recorded on in a single location, south of Walberswick to the east of the proposed Landfall Site. The beach here is comprised of large shingle, kept free of vegetation by storm waves.

## 4 Conclusions

4.1.1 Numerous habitat types were identified within the Proposed Onshore Scheme Scoping Boundary, including a wide variety of priority habitat and Annex 1 habitat types. Detailed field survey covered a high proportion of land within both the Proposed Onshore Scheme Scoping Boundary (87.43%) and within the DOL for the Amendment to Kiln Land Substation Scenario (86%) and the Full Build Out of Kiln Lane Substation Scenario (83.65%). Areas not covered by detailed field survey were assessed using a remote sensing model trained of the collected field data.

4.1.2 The landscape was dominated by agricultural land, though it was notable that the floodplains on the main rivers which fell within the Proposed Onshore Scheme Scoping Boundary were frequently bordered by large swathes of higher biodiversity value habitats, particularly wetland habitats such as CFGM, lowland fen, reedbed and wet woodland. Outside of these floodplains, higher biodiversity value habitats were largely located where the Minsmere – Walberswick designated sites fell within the scoping boundary. Inland, this comprised a mixture of lowland dry acid grassland, lowland heathland and lowland mixed deciduous woodland, whereas coastal and wetland habitats predominate south of Walberswick, including coastal saltmarsh, reedbed and coastal vegetated shingle. Notable also was land north of Southwold, where several HPI occurred within and surrounding Easton Marshes county wildlife sites (CWS), including extensive CFGM, as well as lowland dry acid grassland and reedbed.

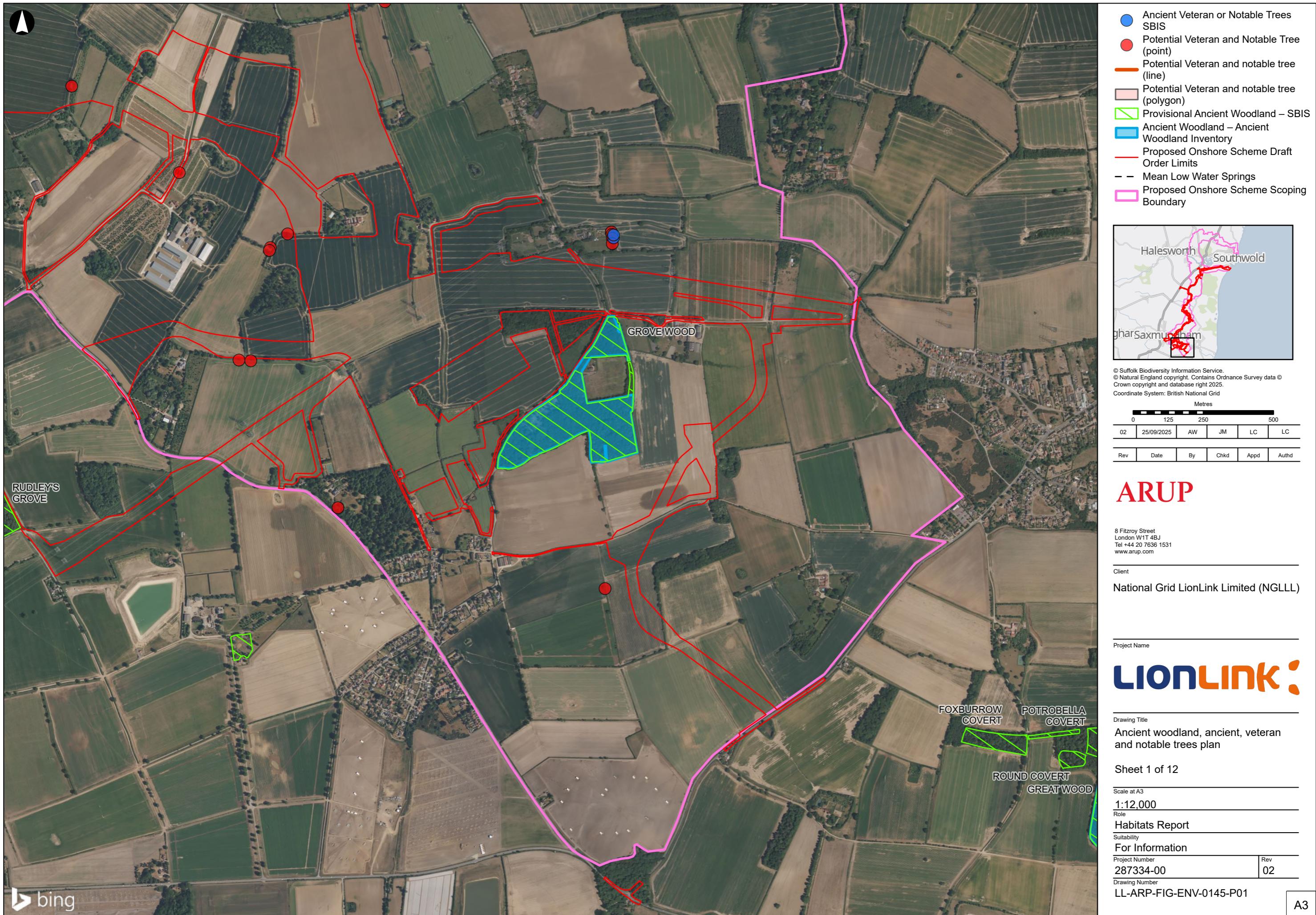
4.1.3 Outside of these defined areas, habitats of higher biodiversity value were more scattered, primarily in the form of named woodlands such as Theberton woods, Great Wood, Grove Wood, Hinton Long Spring and Big/Common Woods, each of which qualifies as ancient woodland. Additionally, several grassland areas meeting criteria for lowland meadow priority habitat were identified amongst the agricultural landscape. Further targeted work is required to definitively classify ponds and rivers as priority habitat, but based off available evidence of use by partially qualifying species, it is considered likely each habitat type occurs within the Proposed Onshore Scheme Scoping Boundary.

4.1.4 Confirmed veteran trees were identified scattered throughout the Proposed Onshore Scheme Scoping Boundary, all pedunculate oaks. Additionally, numerous potential veteran trees, of a wider variety of species, including ash, hazel and alder. Records of a wide range of protected and/or notable vascular plant species were returned from across the Proposed Onshore Scheme Scoping Boundary, generally associated with the larger tracts of defined habitats described above, though notable species were also recorded from more intensive agricultural land.

4.1.5 Within the DOL, the following HPI and Annex 1 habitats were identified:

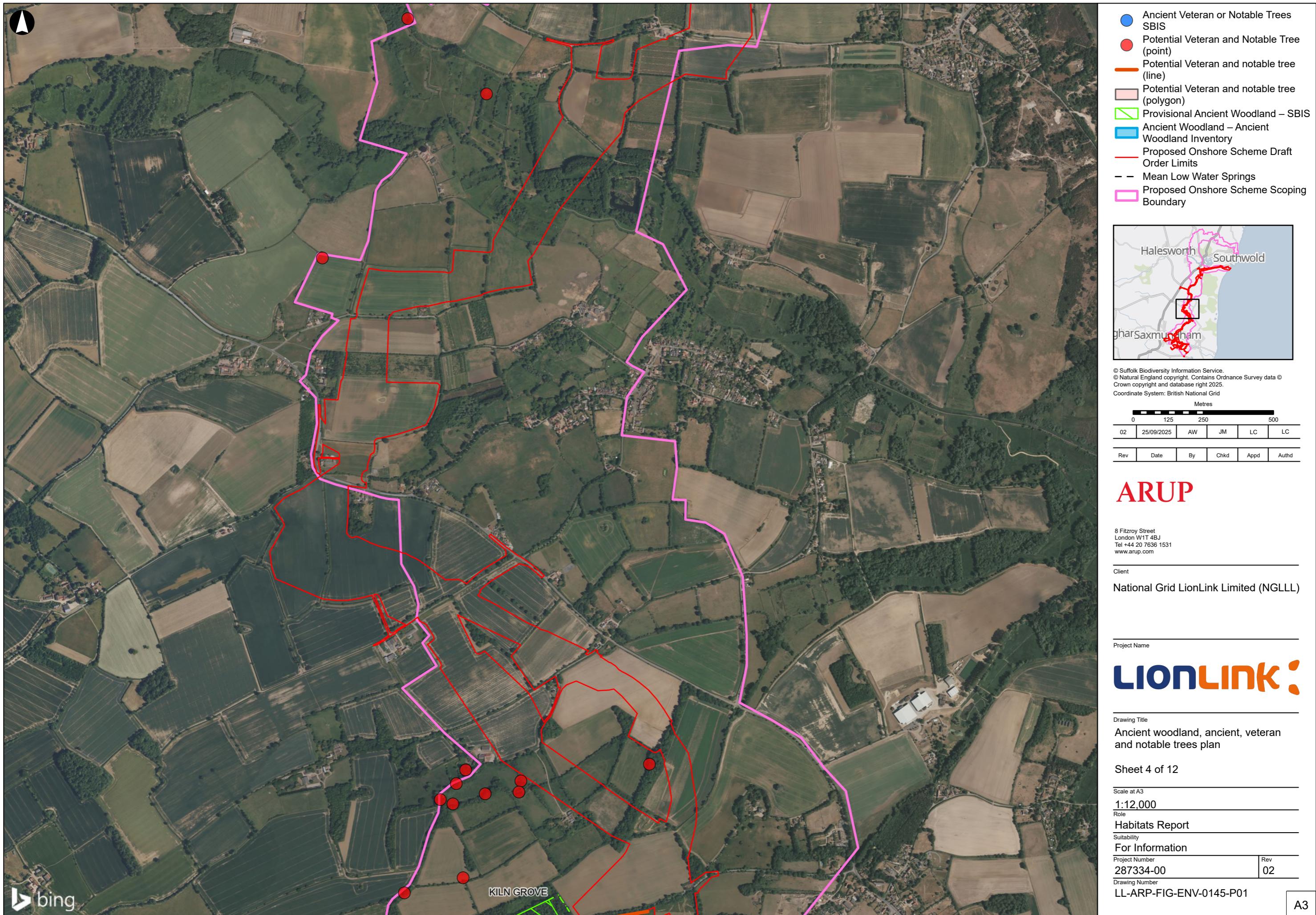
- a. Lowland dry acid grassland;
- b. Lowland meadowsertek;
- c. CFGM;
- d. Wet woodland – corresponding to Annex 1 habitat Alder woodland on floodplains (H91E0);
- e. Lowland mixed deciduous woodland;
- f. Lowland fens;
- g. Reedbed;
- h. Arable field margins;
- i. Coastal sand dunes – corresponding to Annex 1 habitat Dune grassland (H2130);
- j. Coastal vegetated shingle – corresponding to the Annex 1 habitats Perennial vegetation on coastal shingle (H1220) and Annual vegetation on drift lines (H1210);
- k. Ponds priority habitat (requires further survey to confirm);
- l. Rivers priority habitat (requires further survey to confirm);
- m. Coastal saltmarsh – with small patches of Annex 1 habitat Glasswort and other annuals colonising mud and sand (H1310); and
- n. Saline lagoons – corresponding to the Annex 1 habitat Saline lagoons (H1150).

# Annex A: Ancient woodland, ancient, veteran and notable trees plan

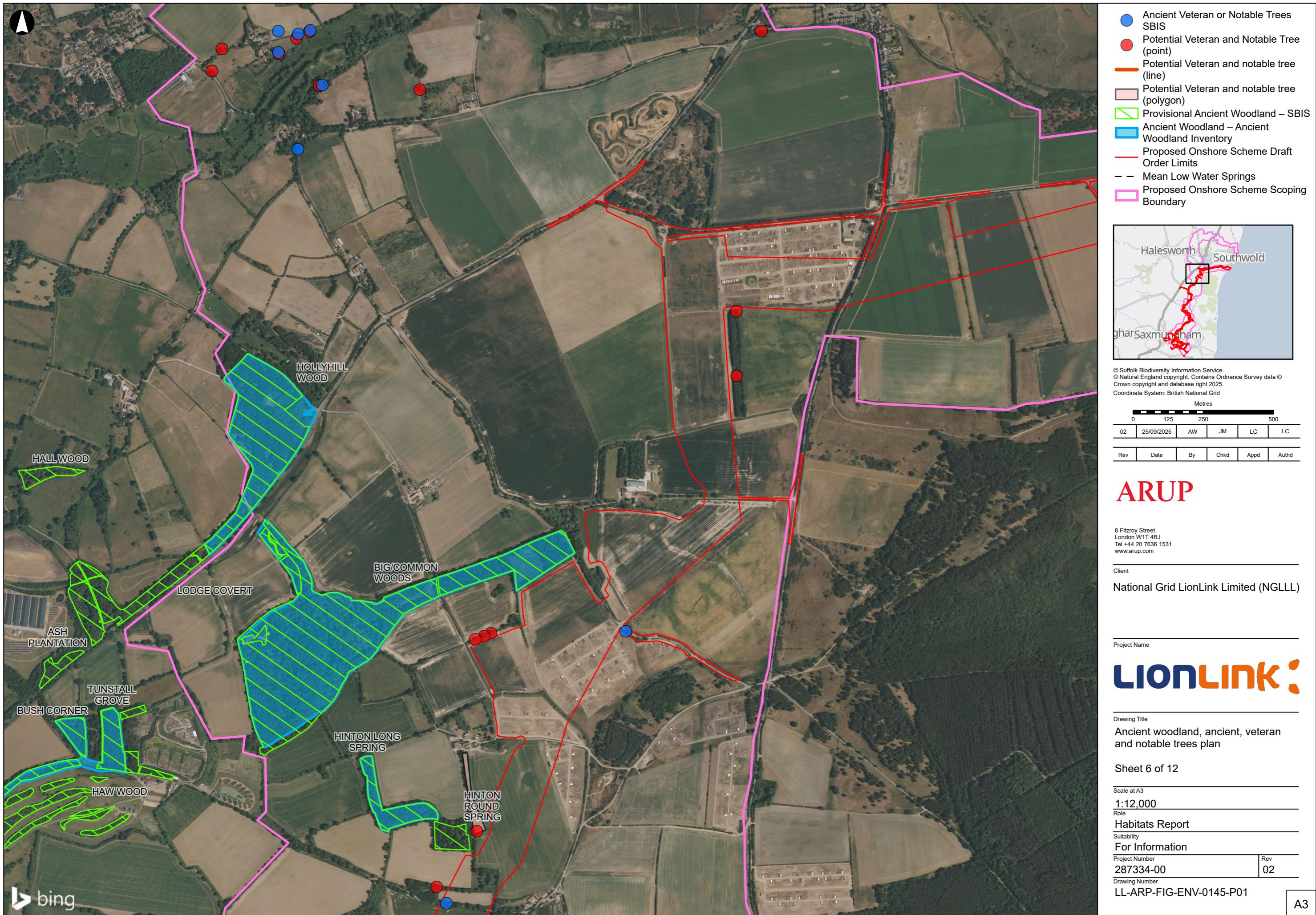


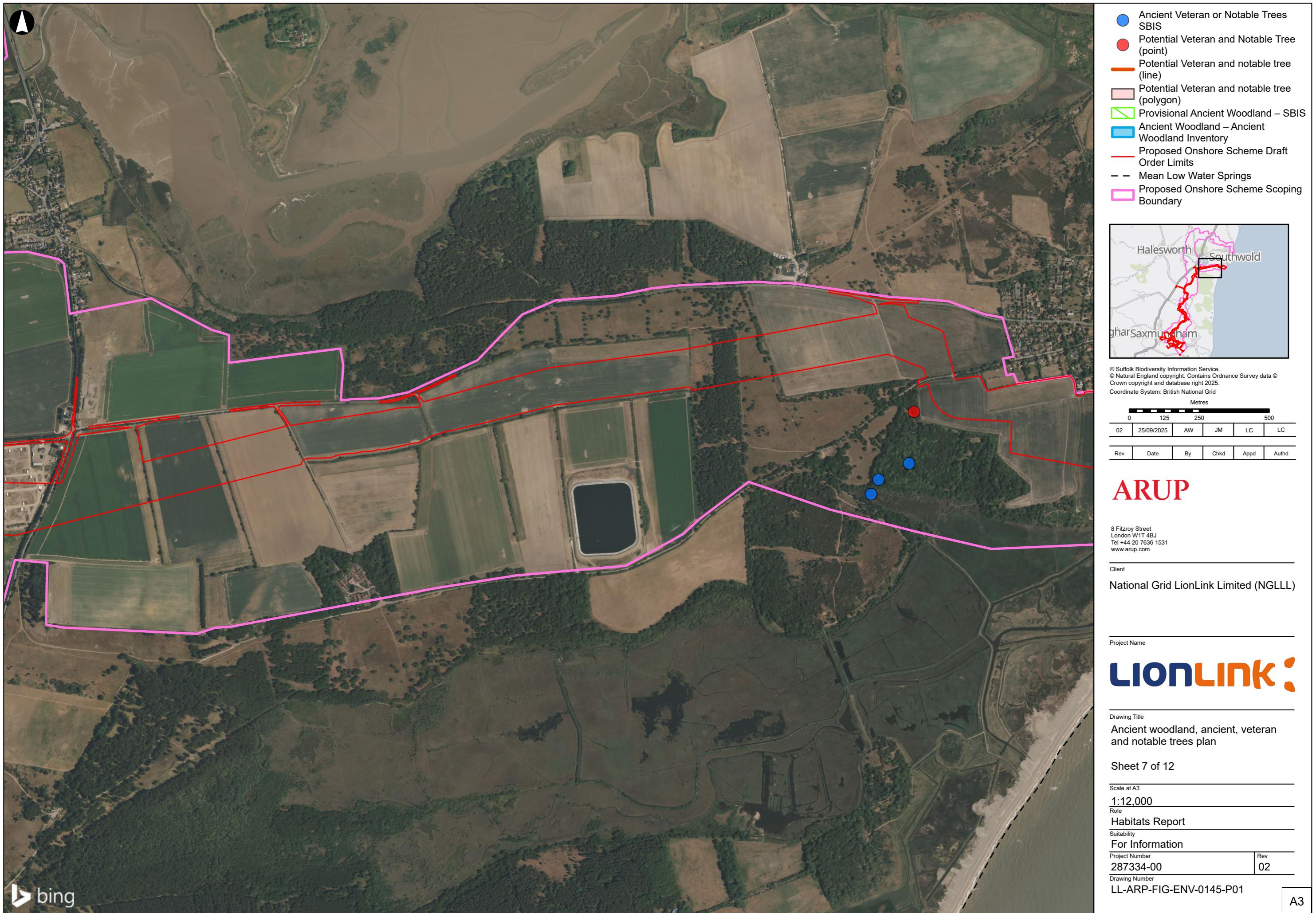








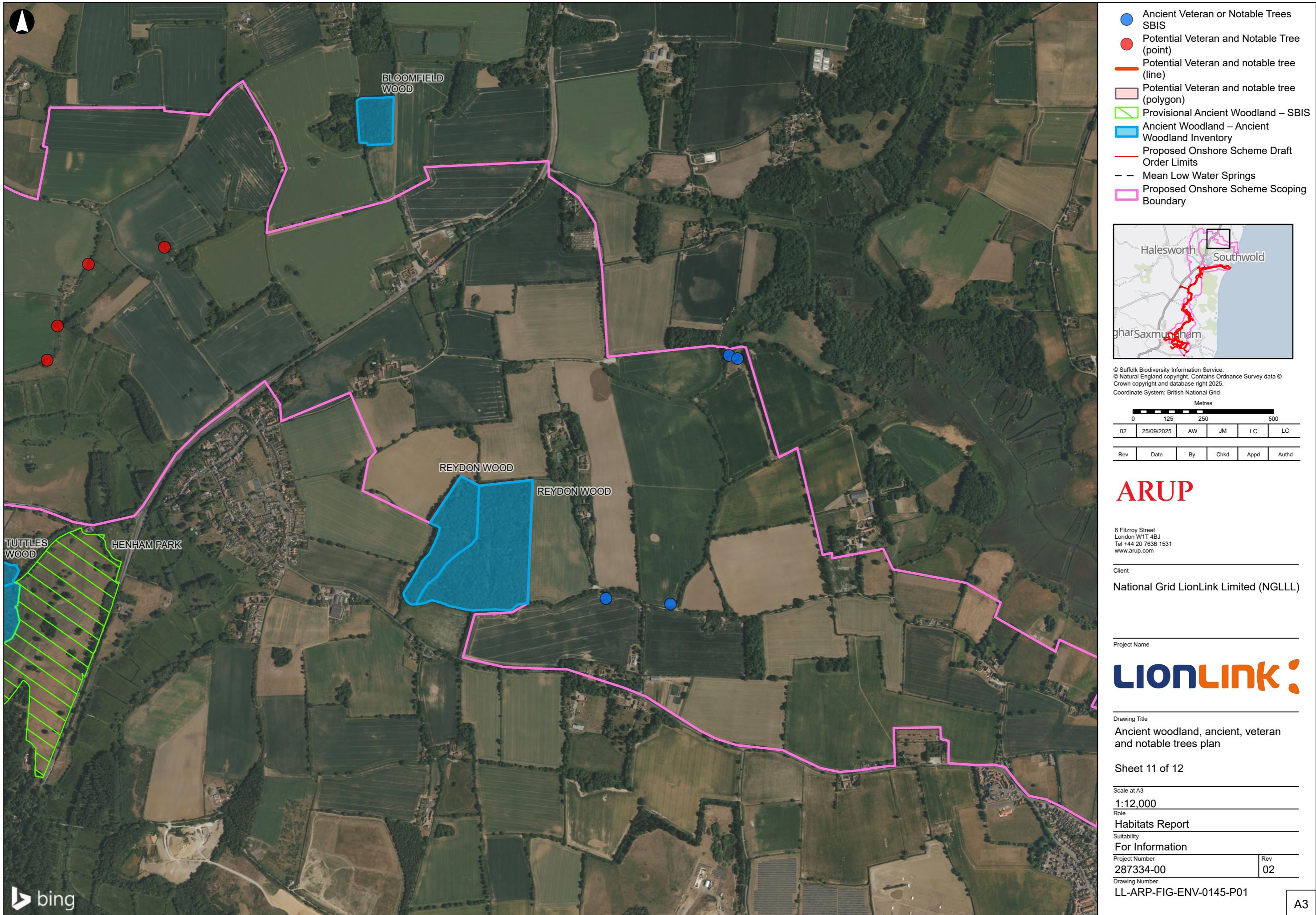














# Annex B: Notable Plants Plan





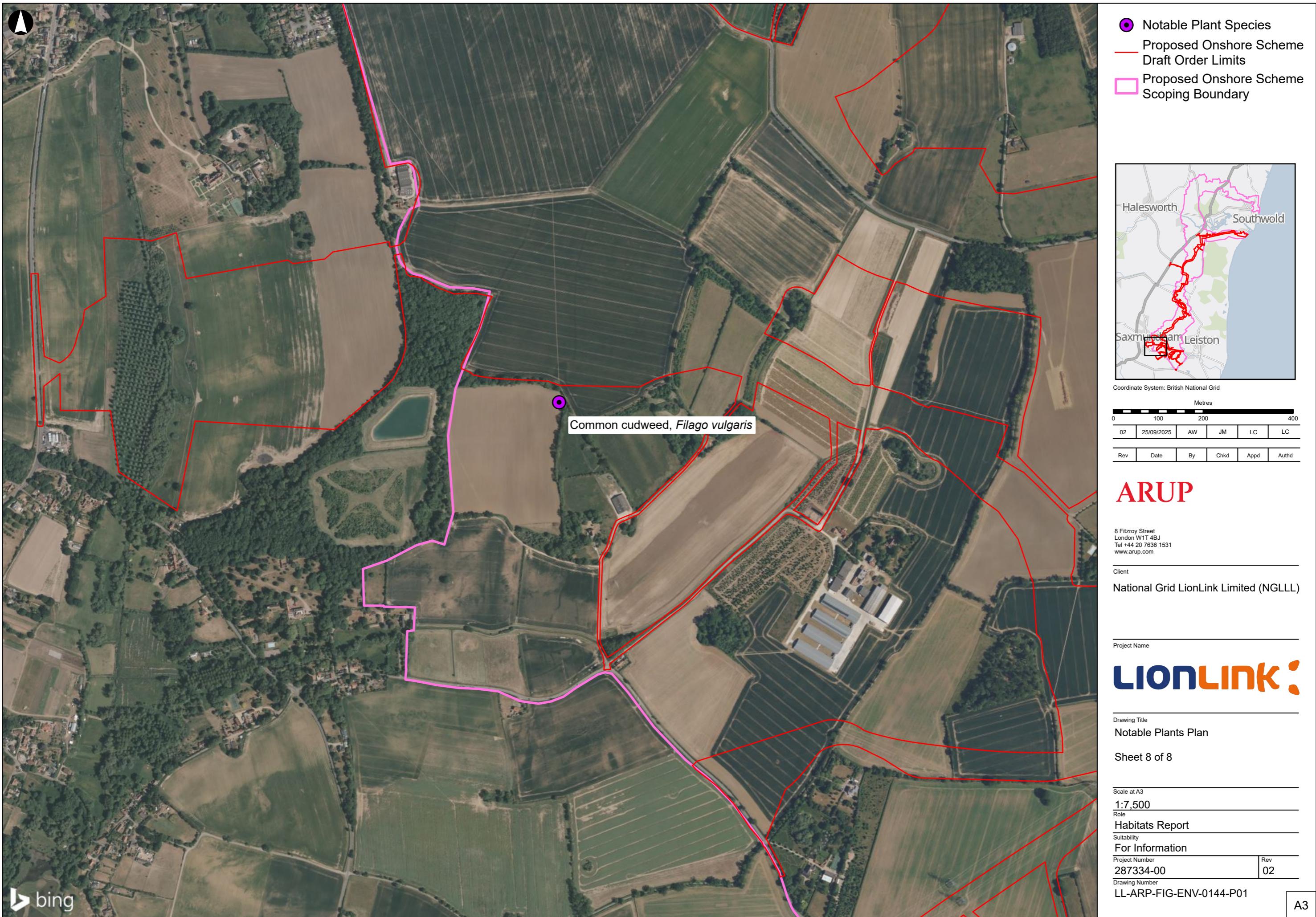




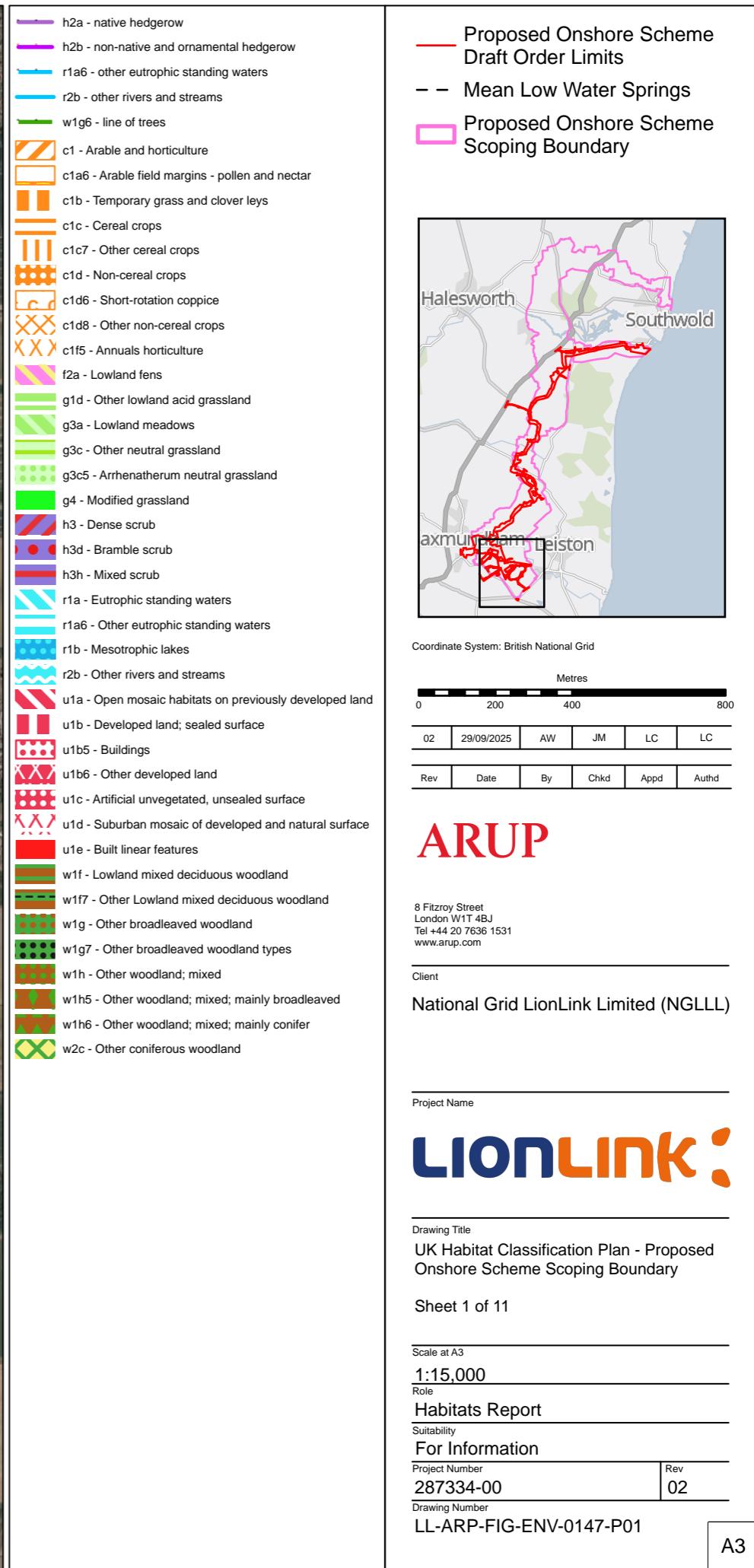
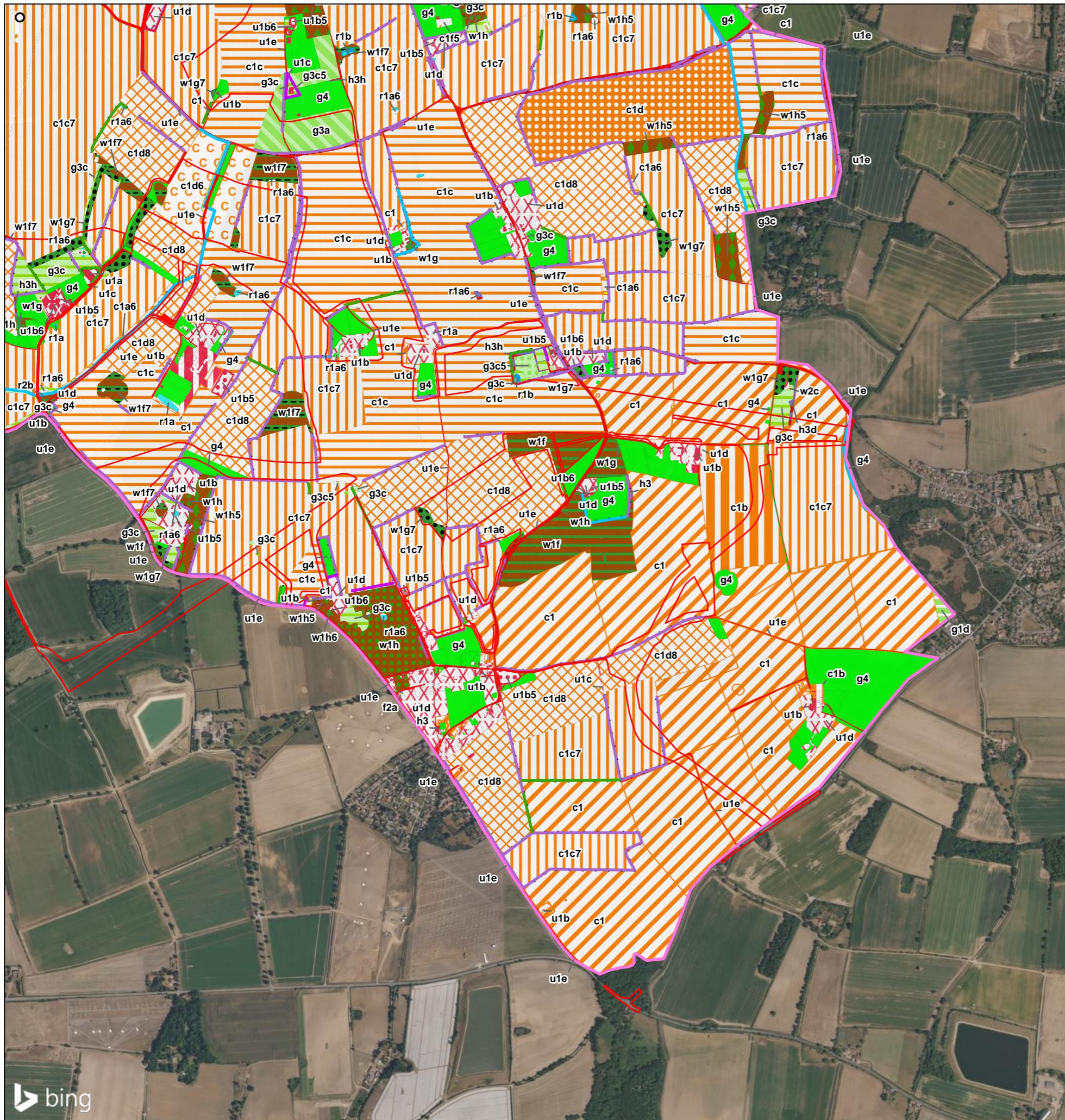


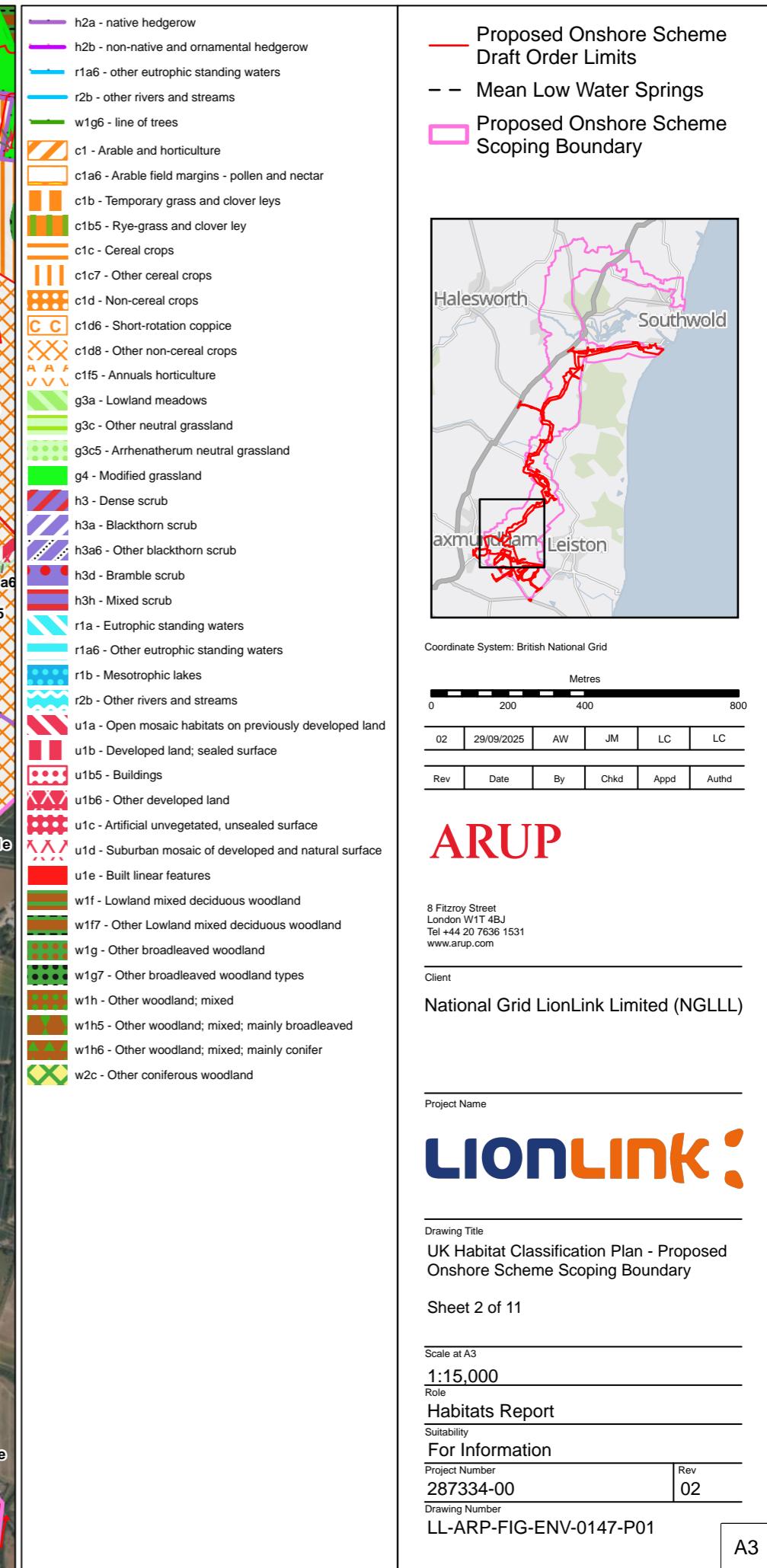
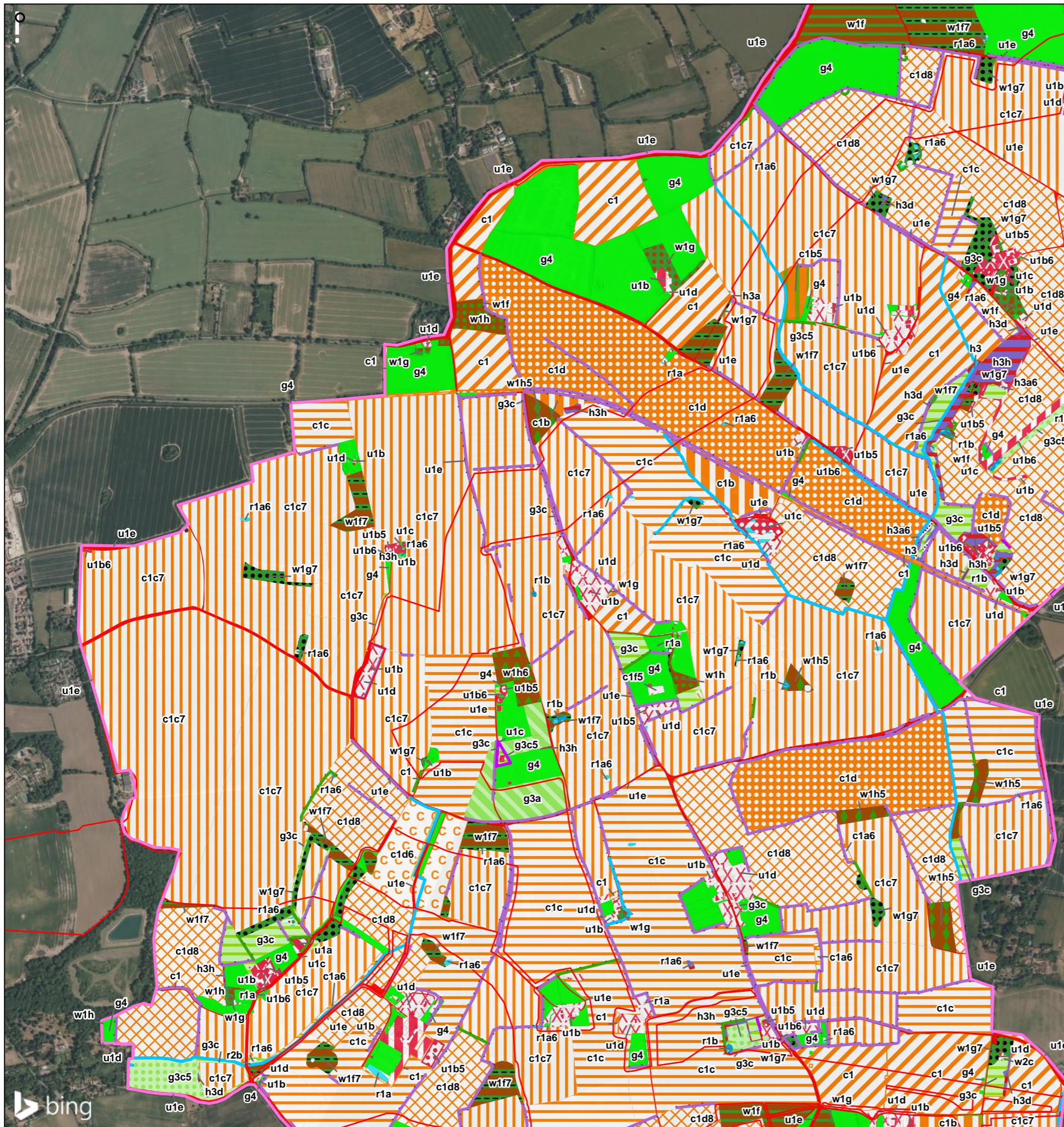


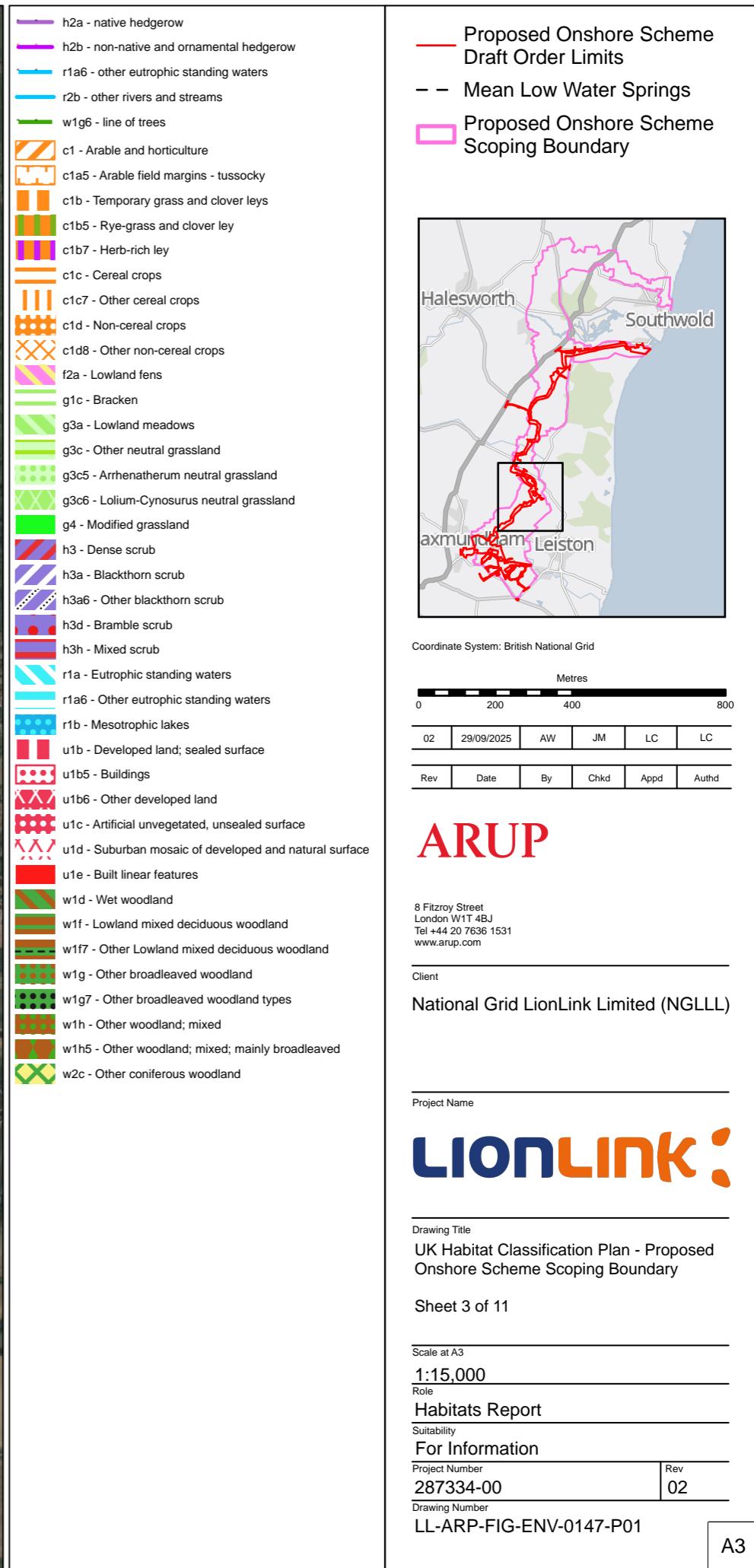
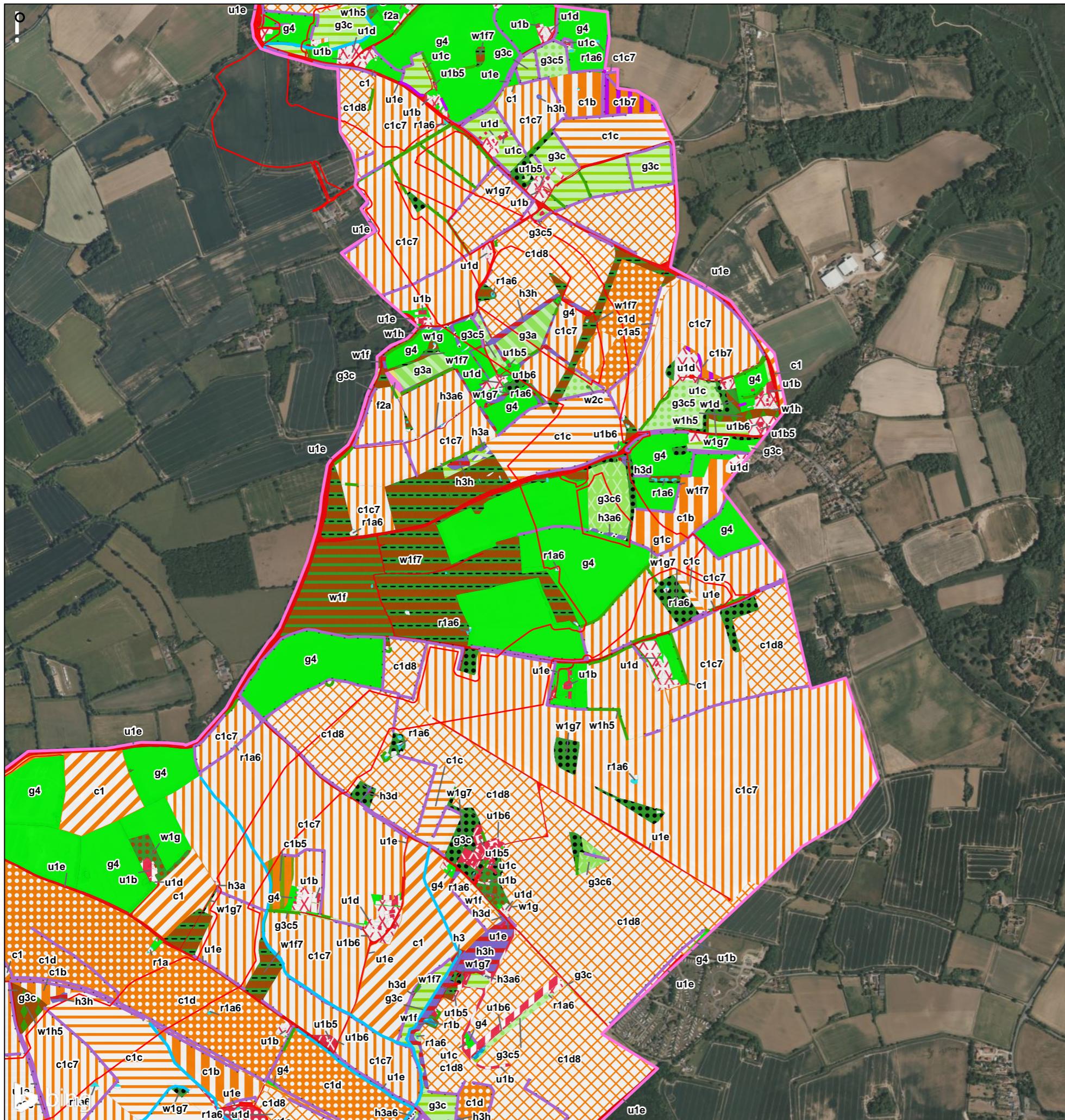


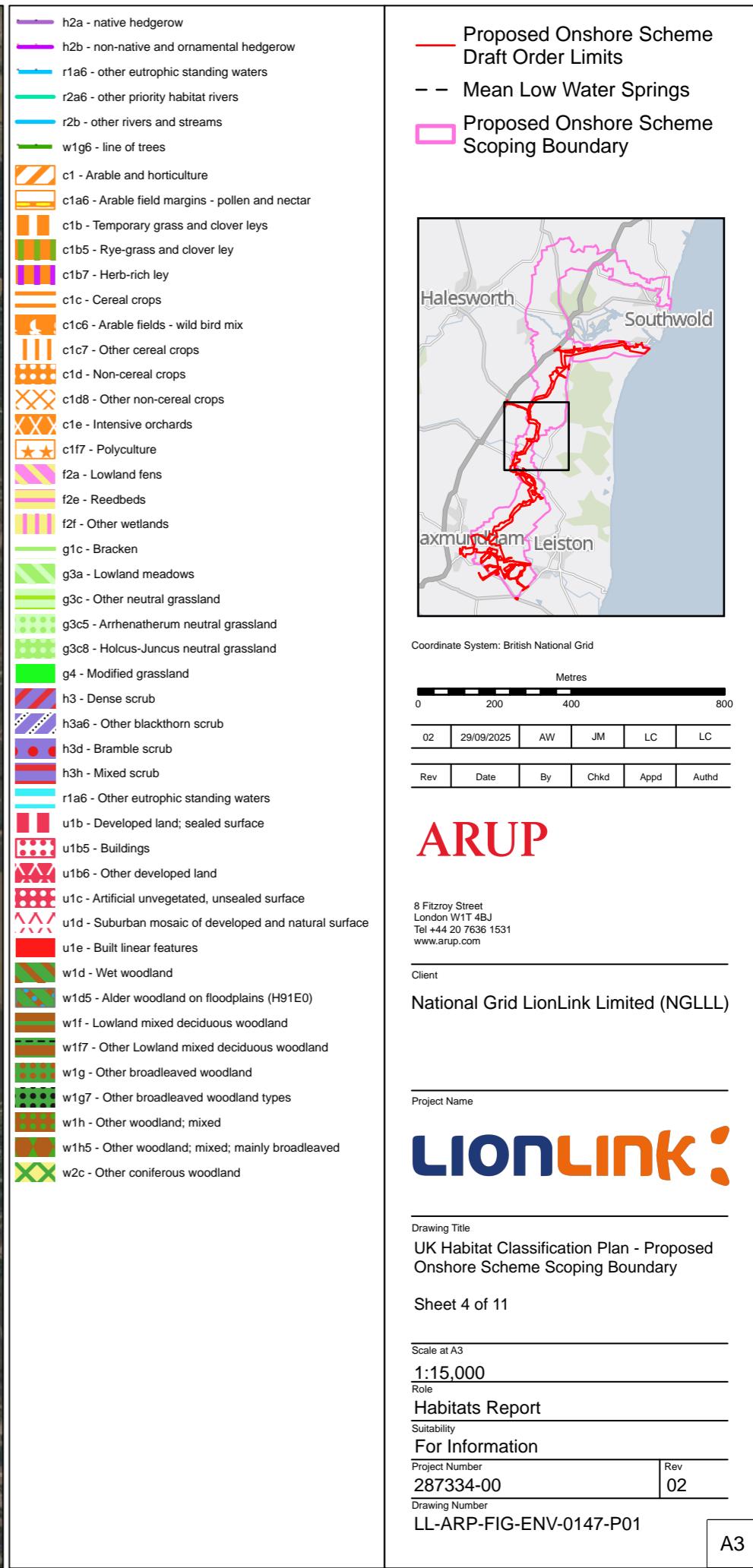
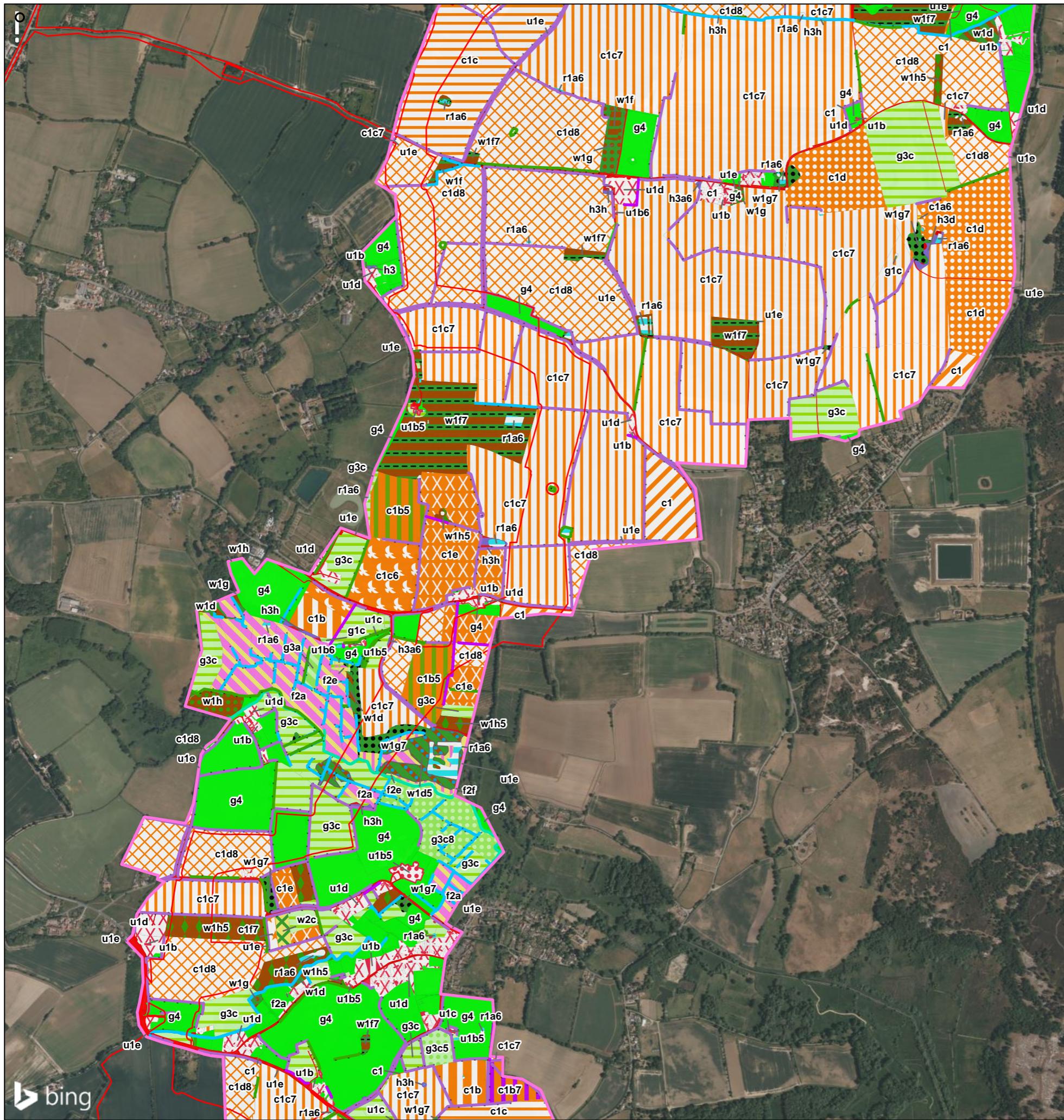


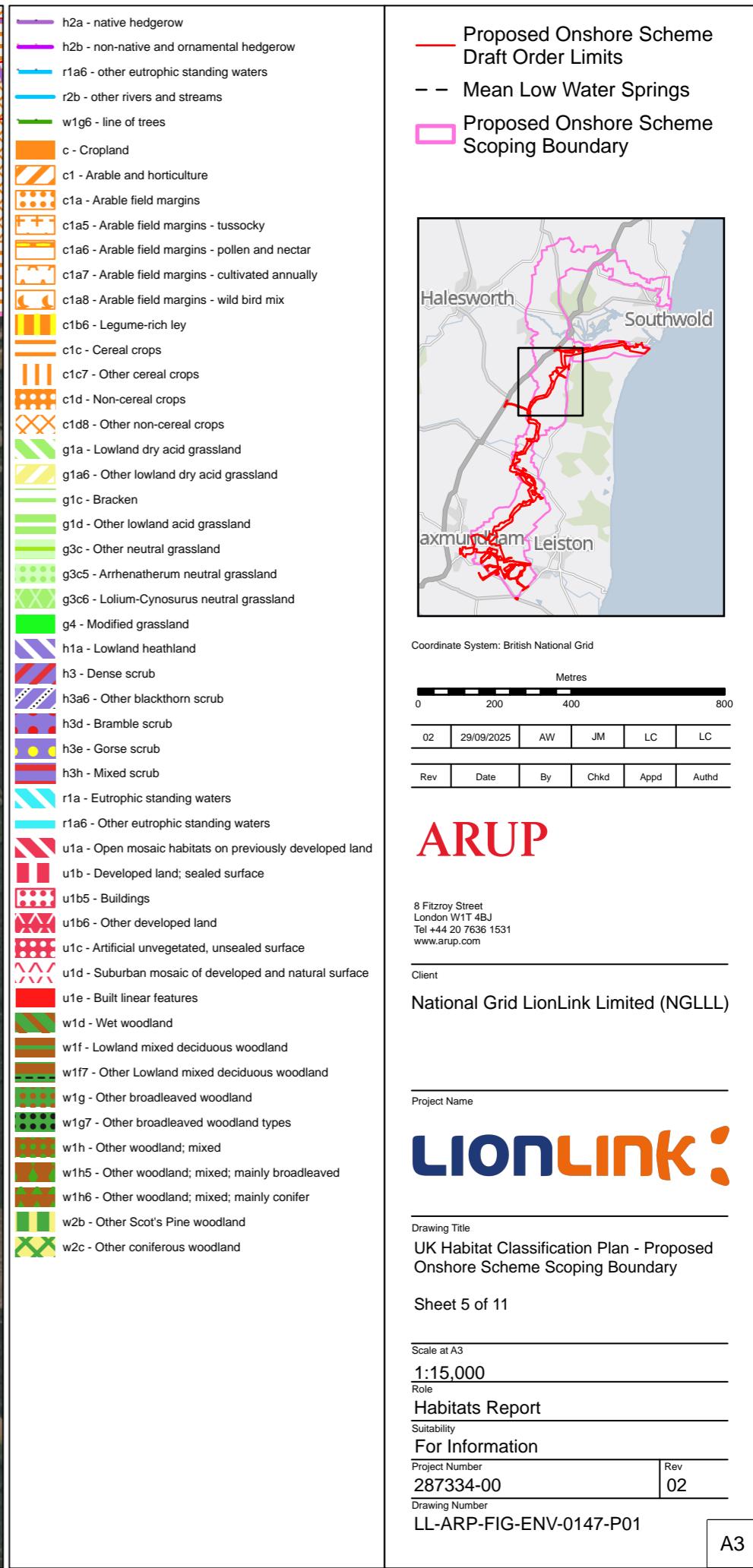
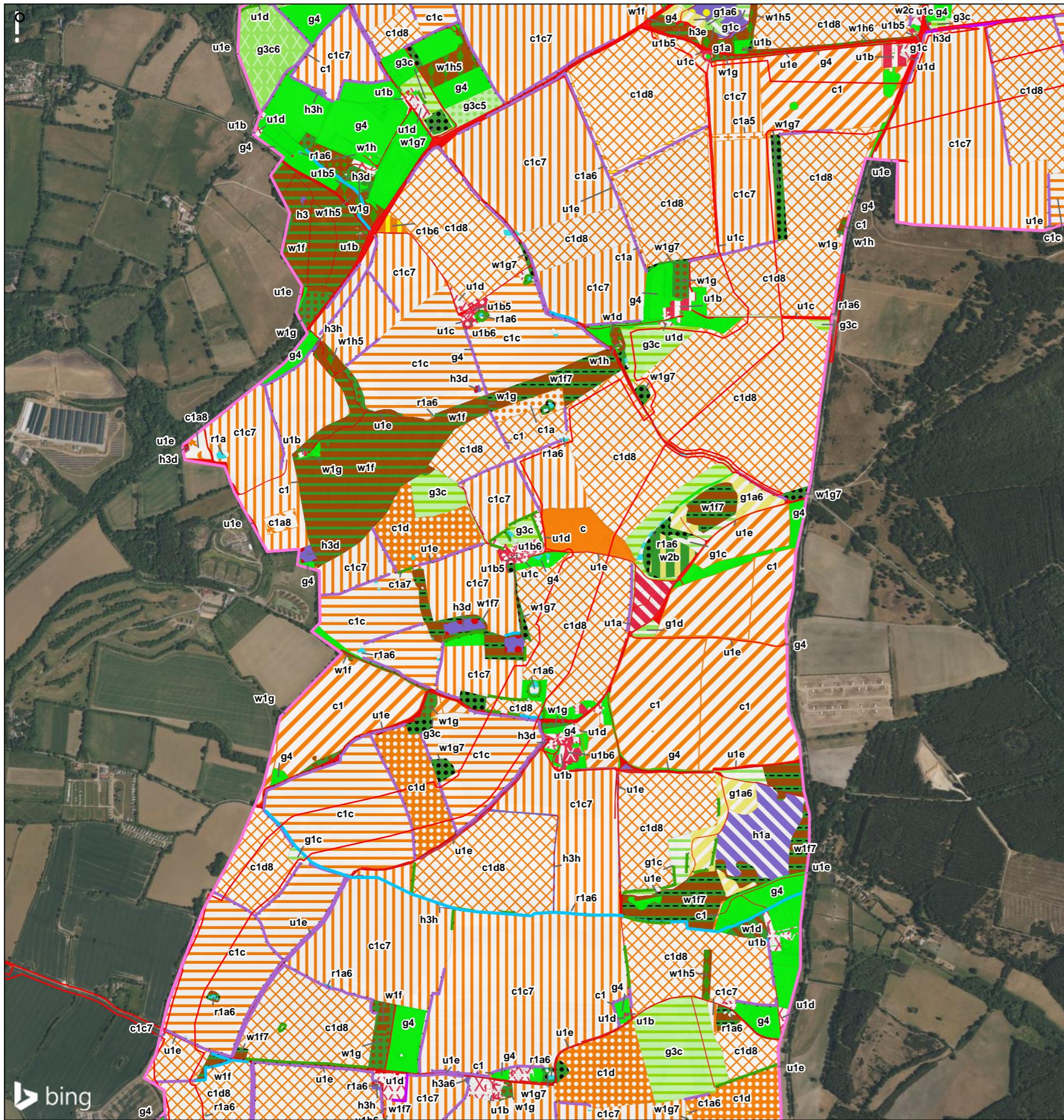
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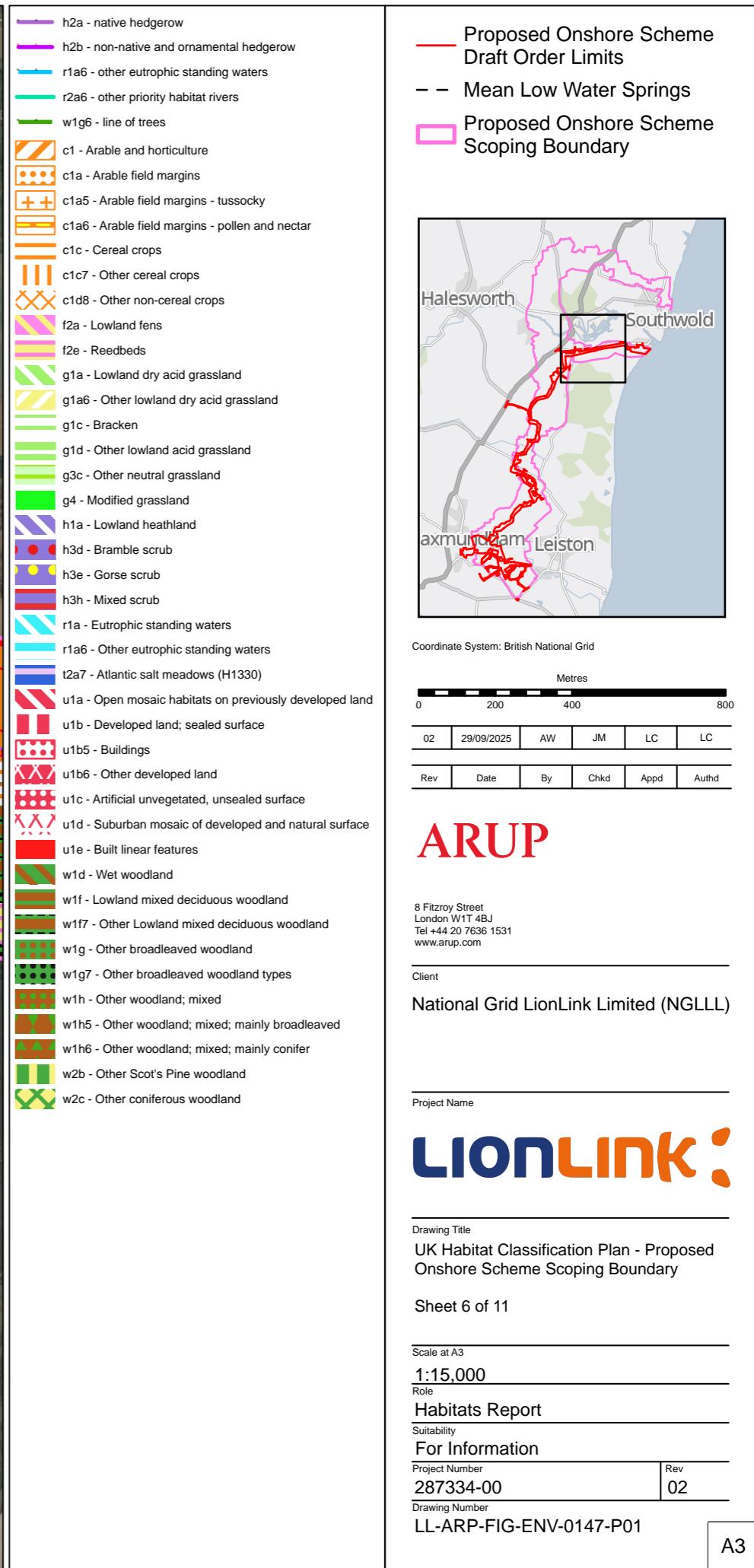
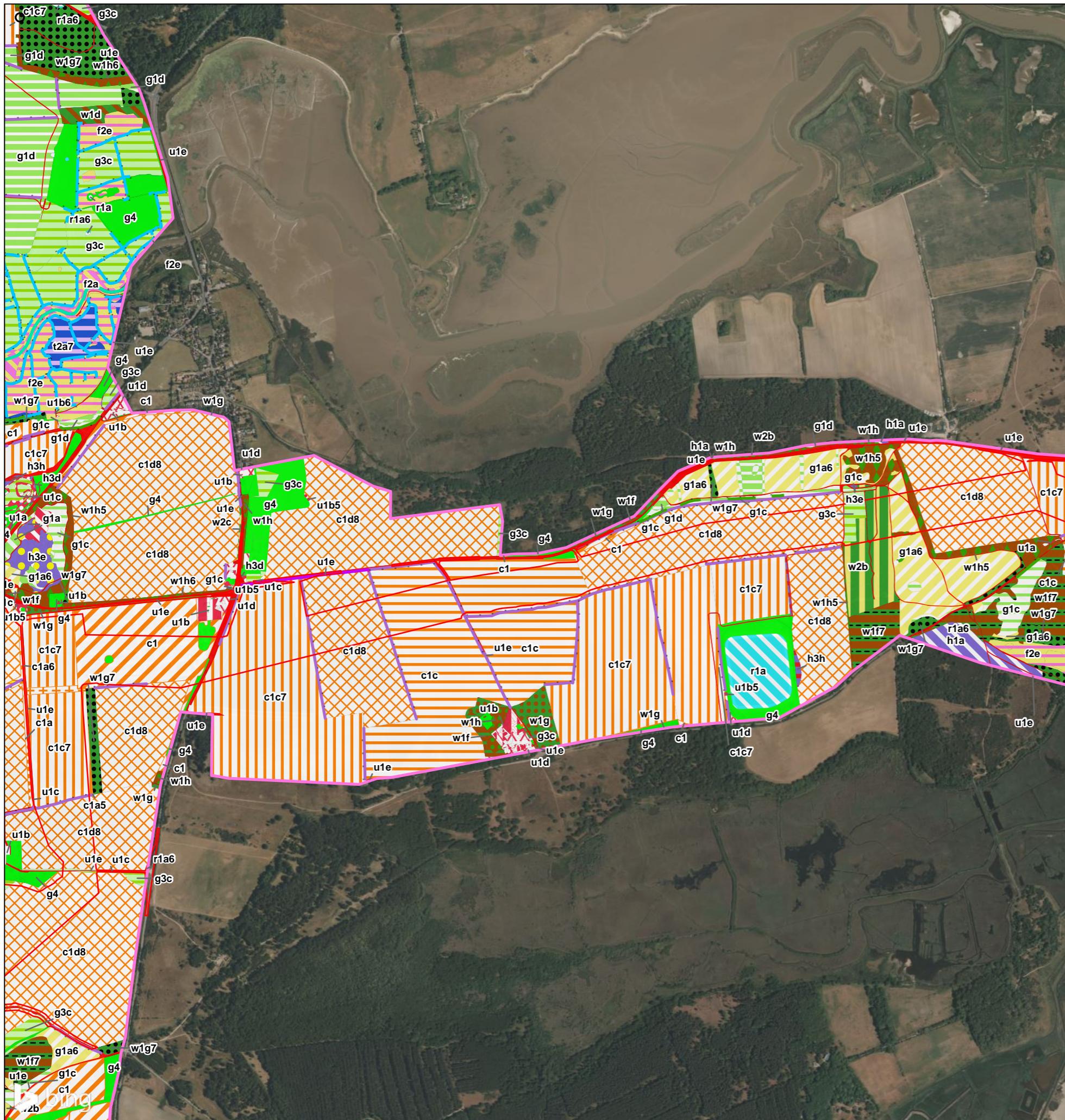


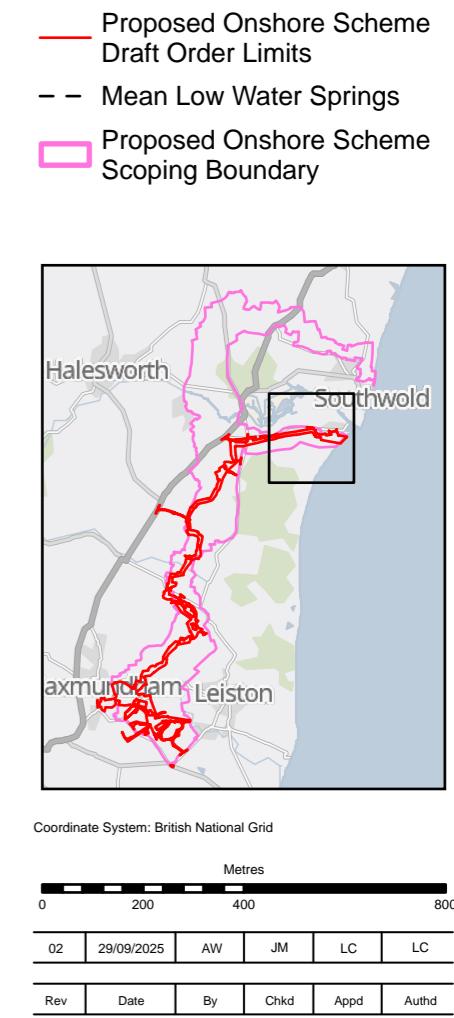
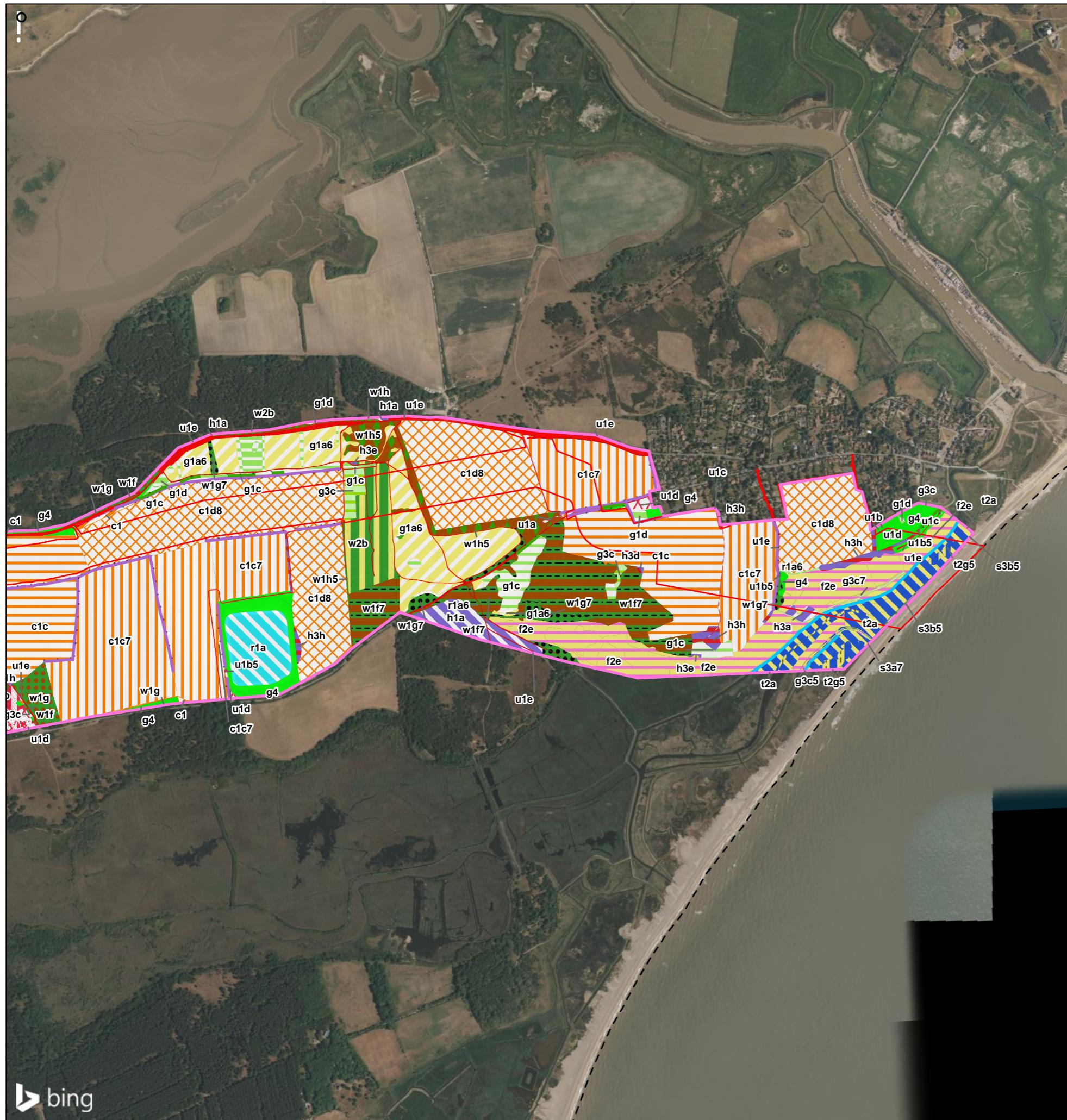












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**Habitats Report**

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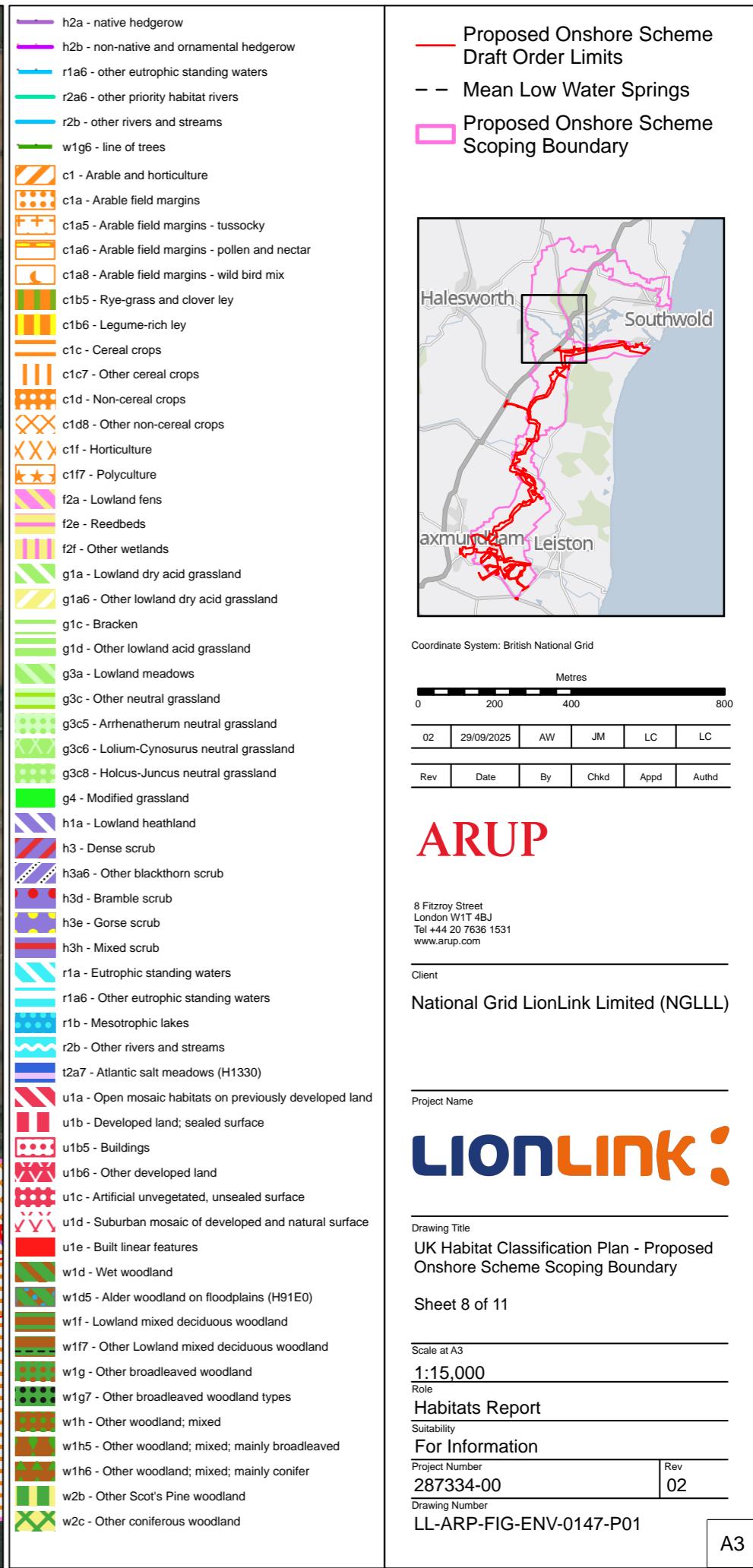
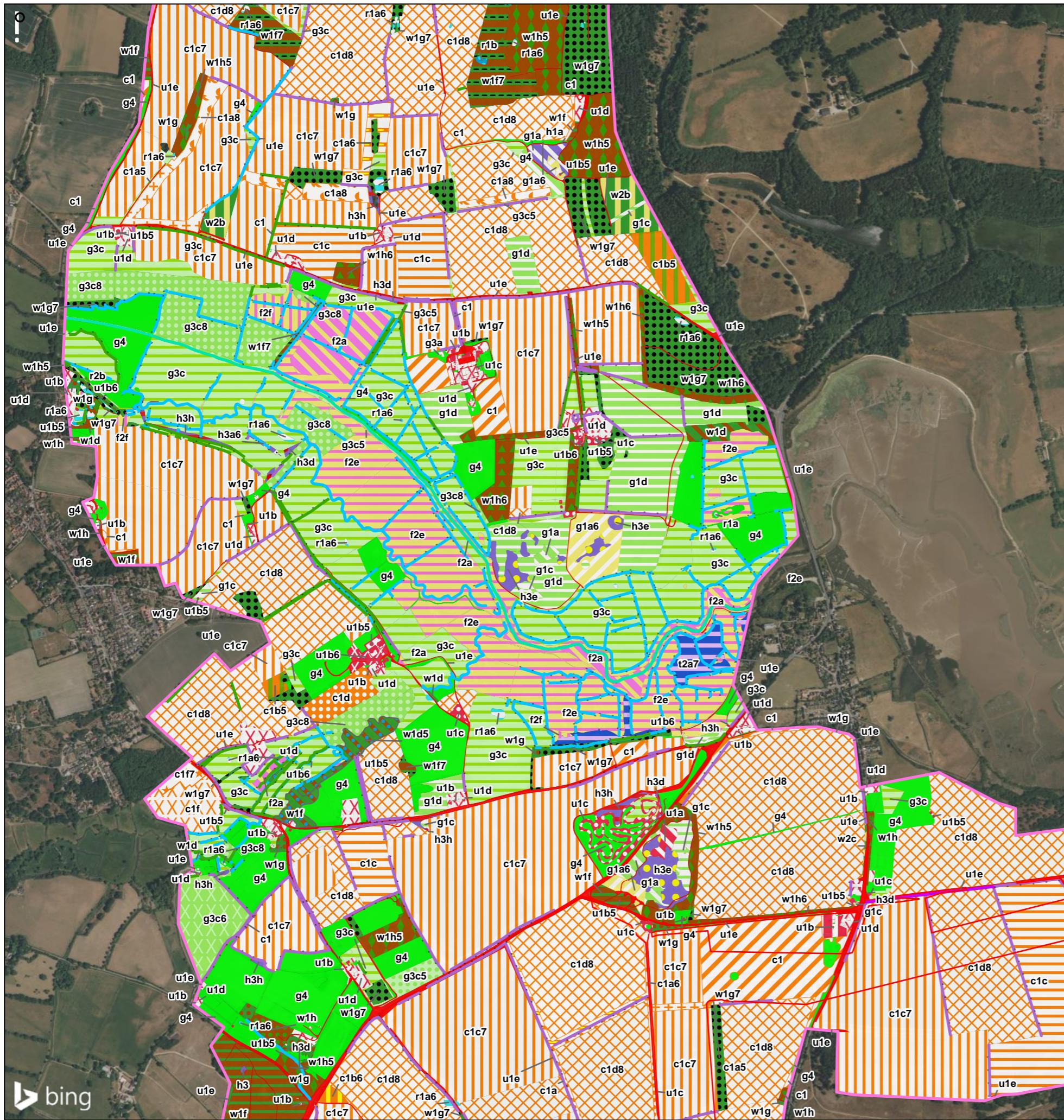
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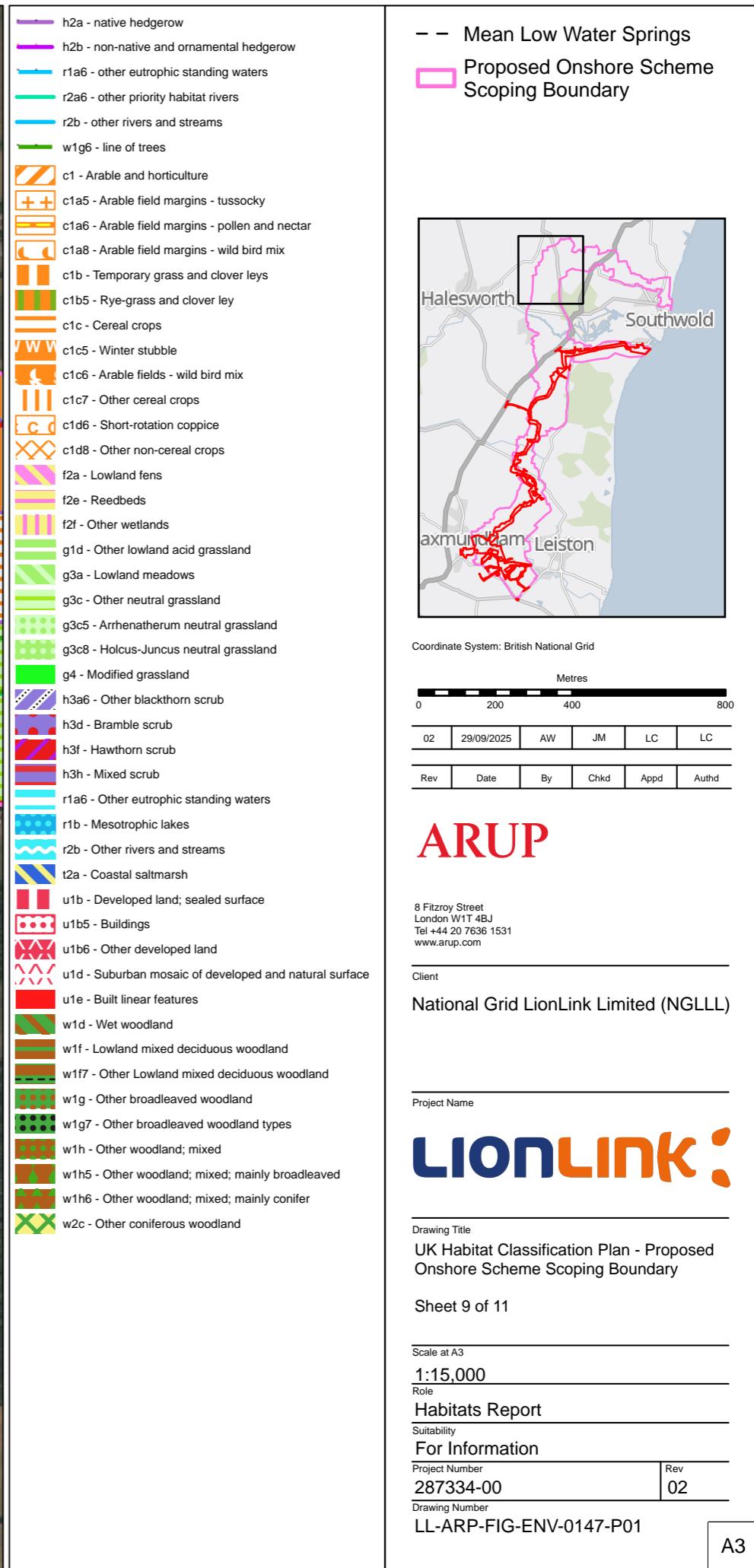
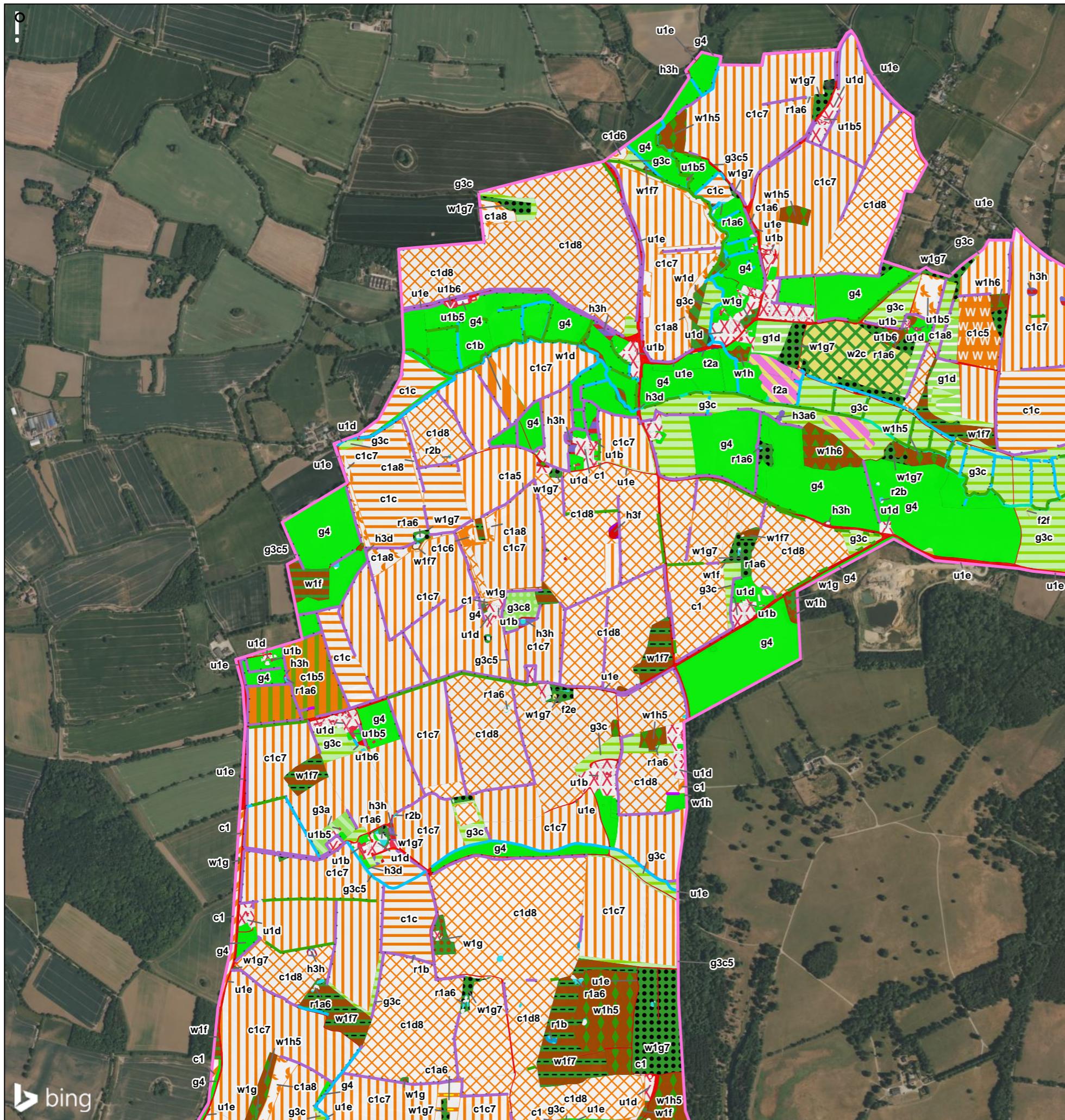
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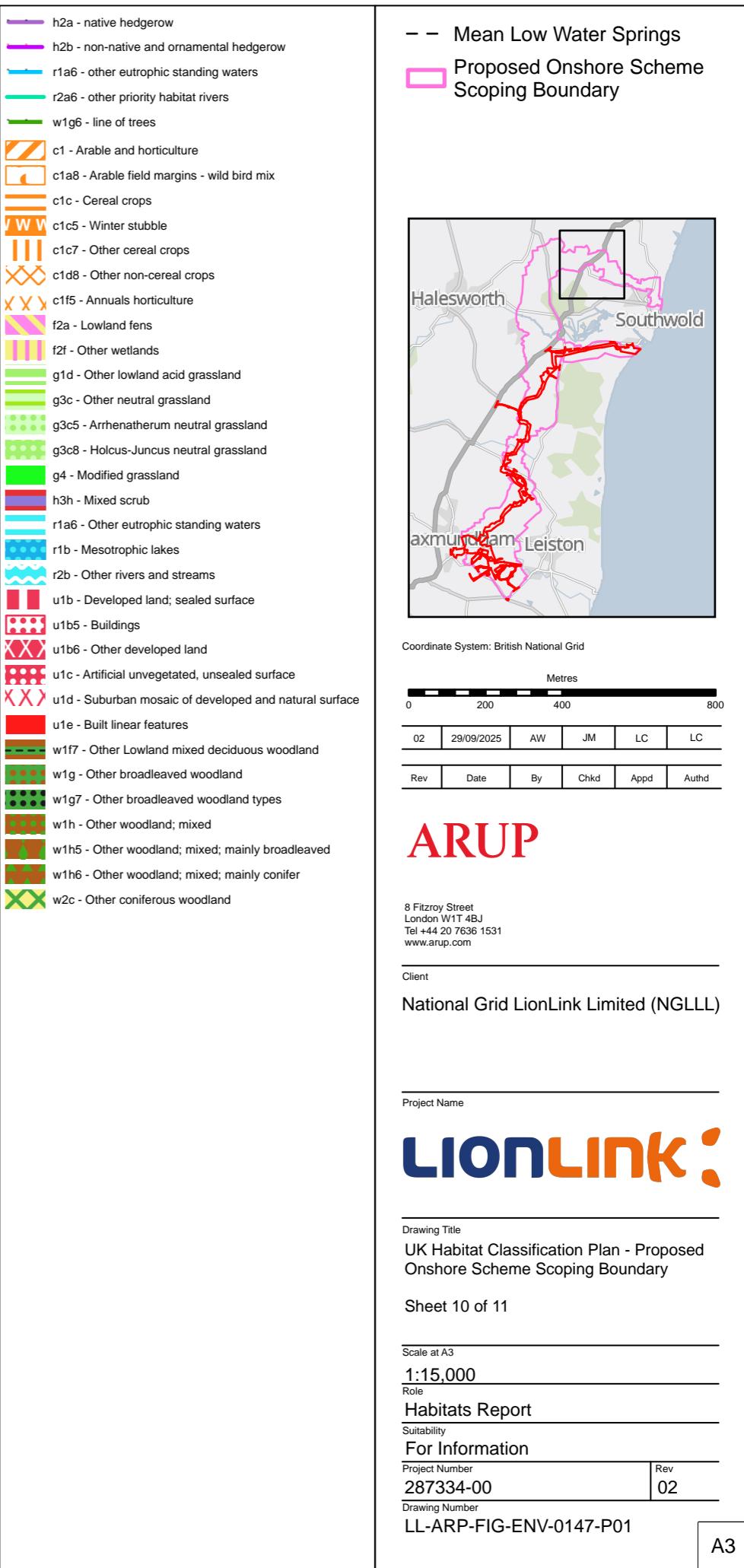
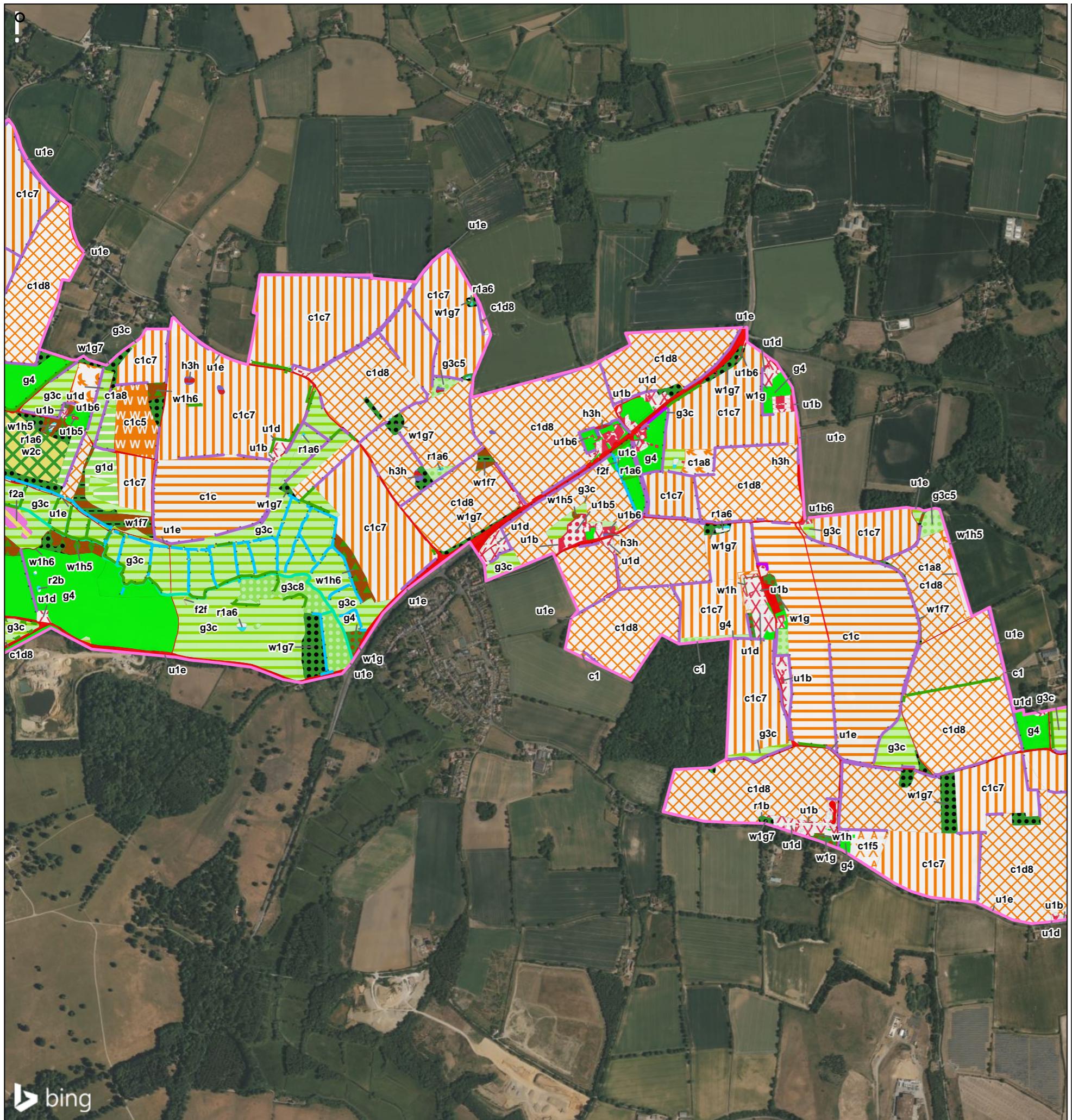
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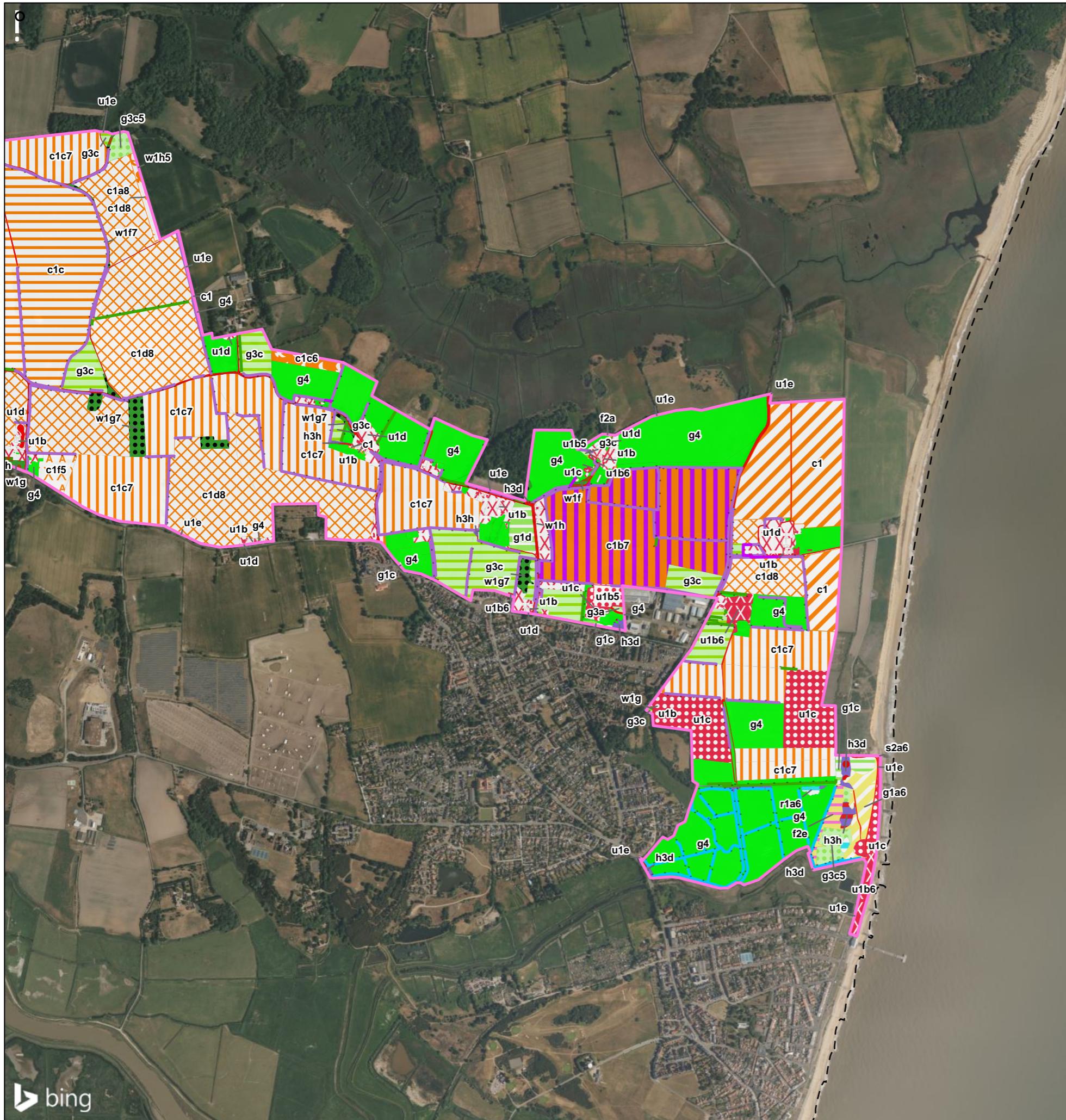
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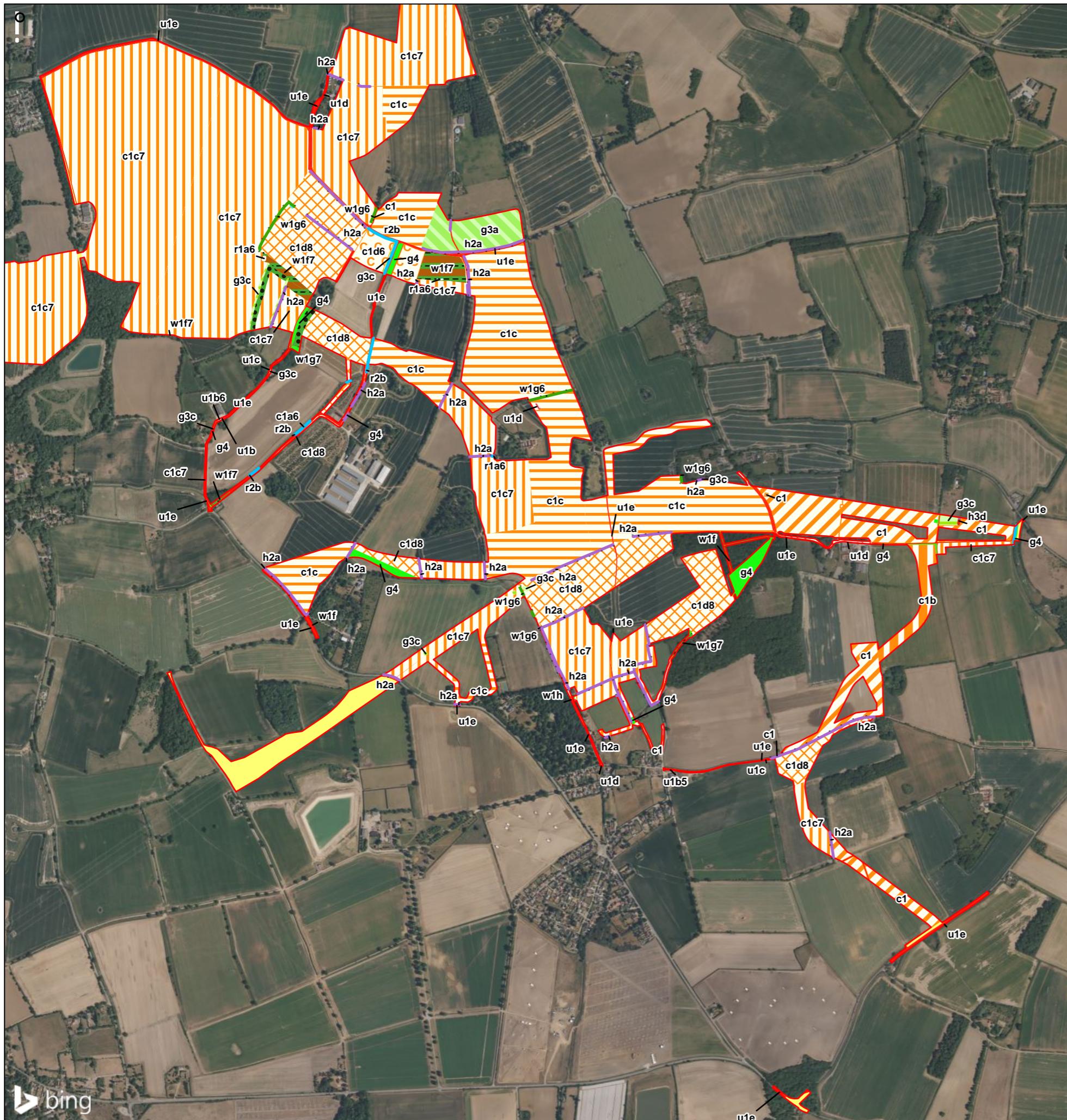








# Annex D: UK Habitat classification plan – Draft Order Limits



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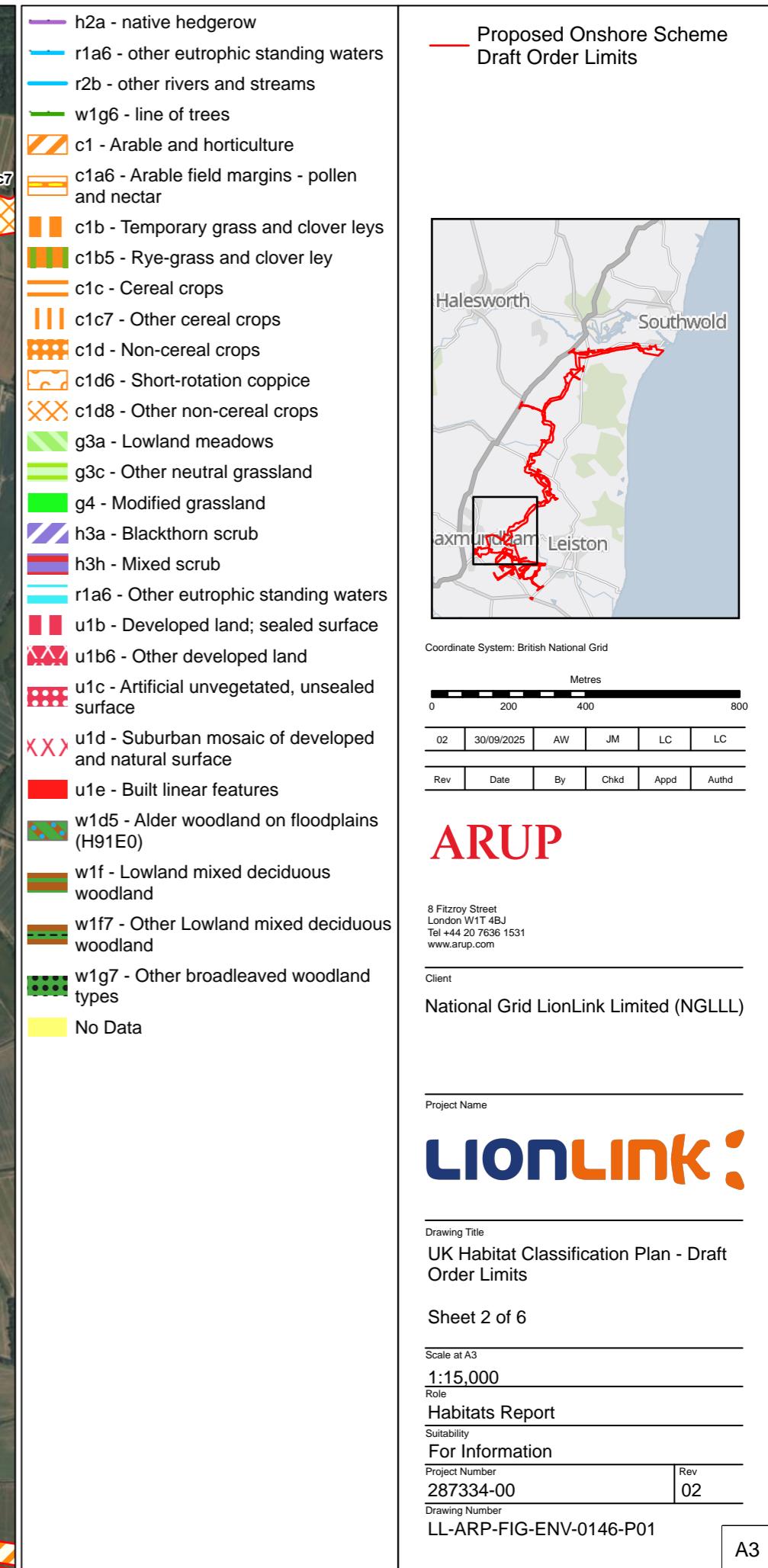
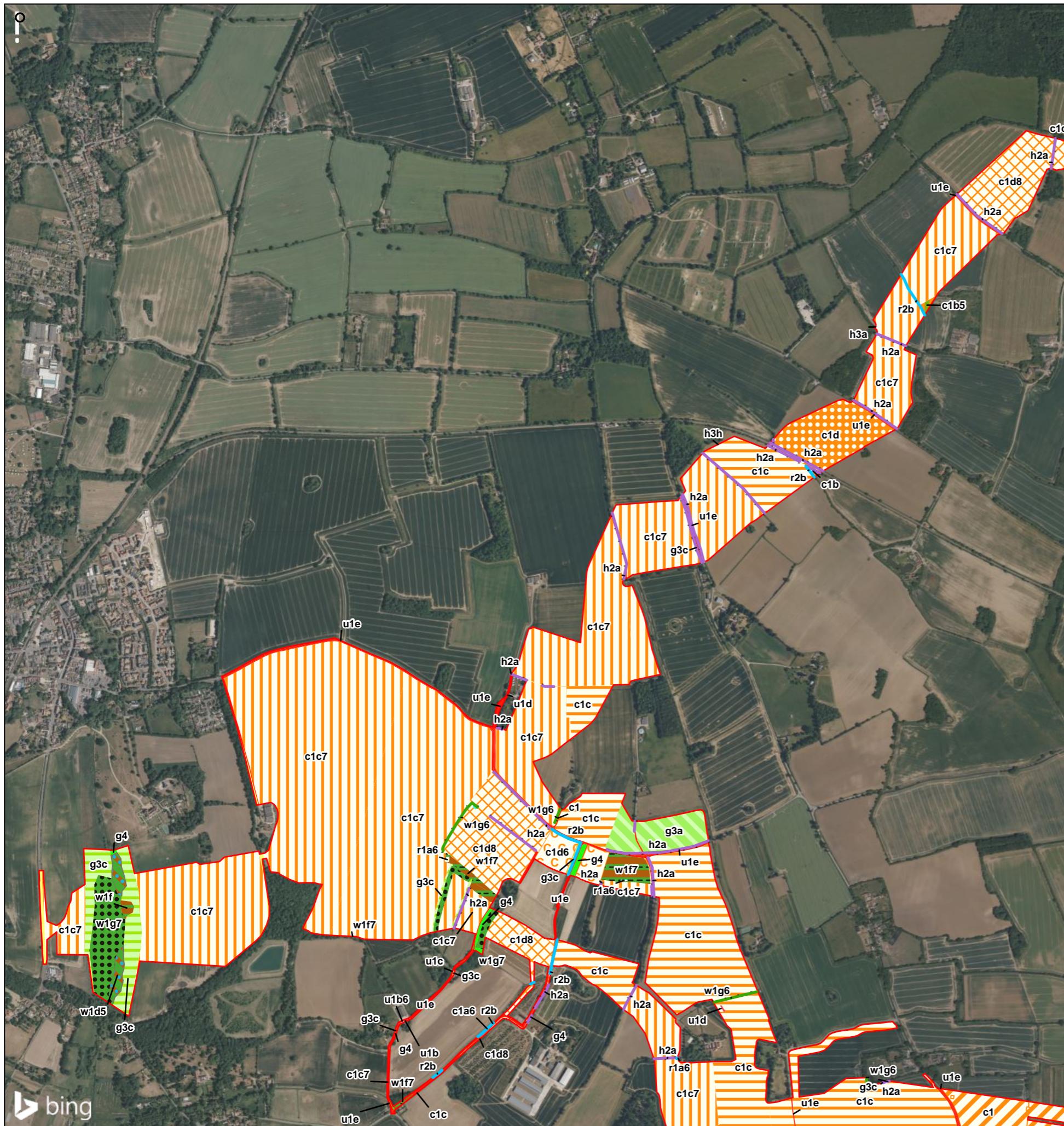
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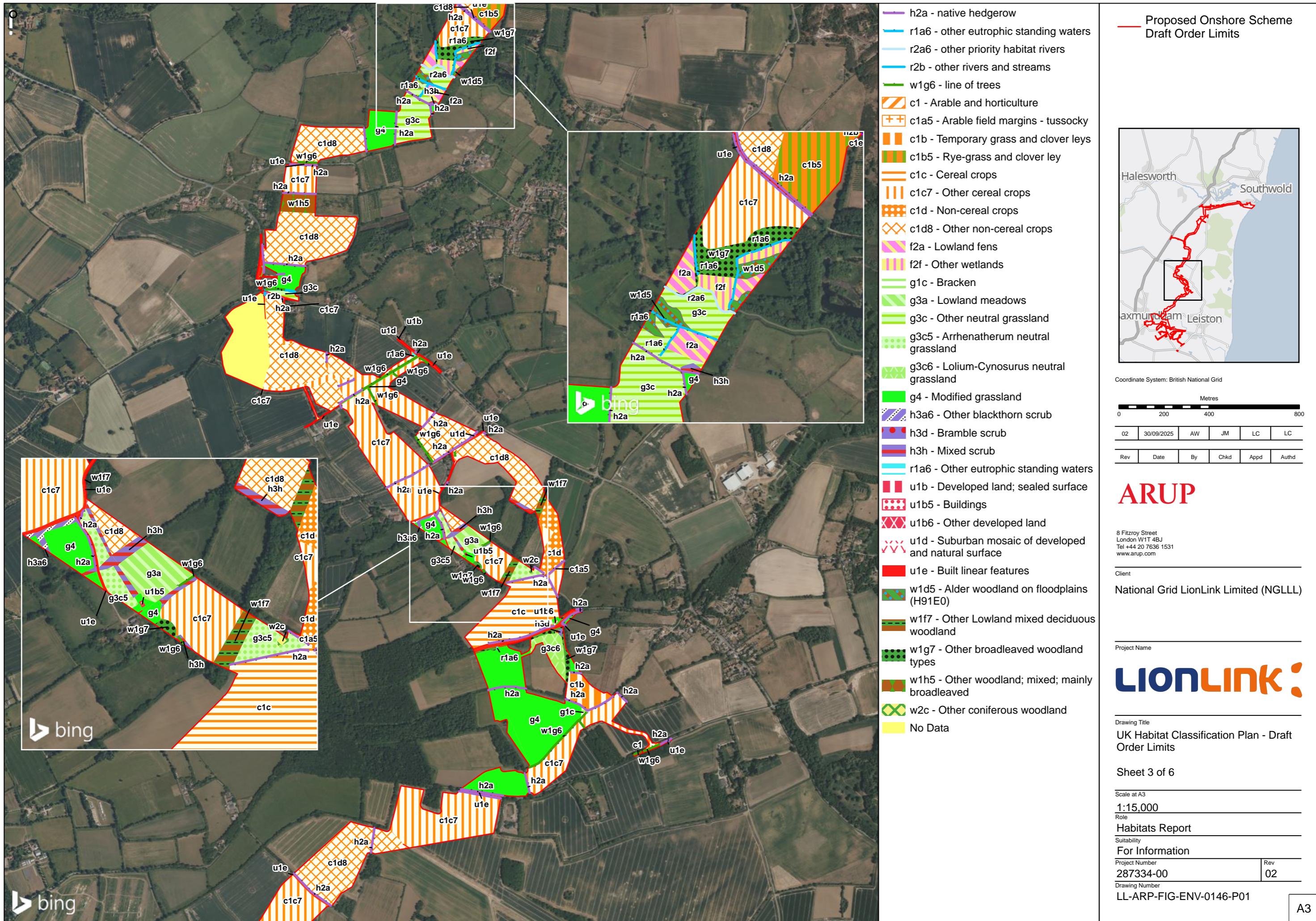
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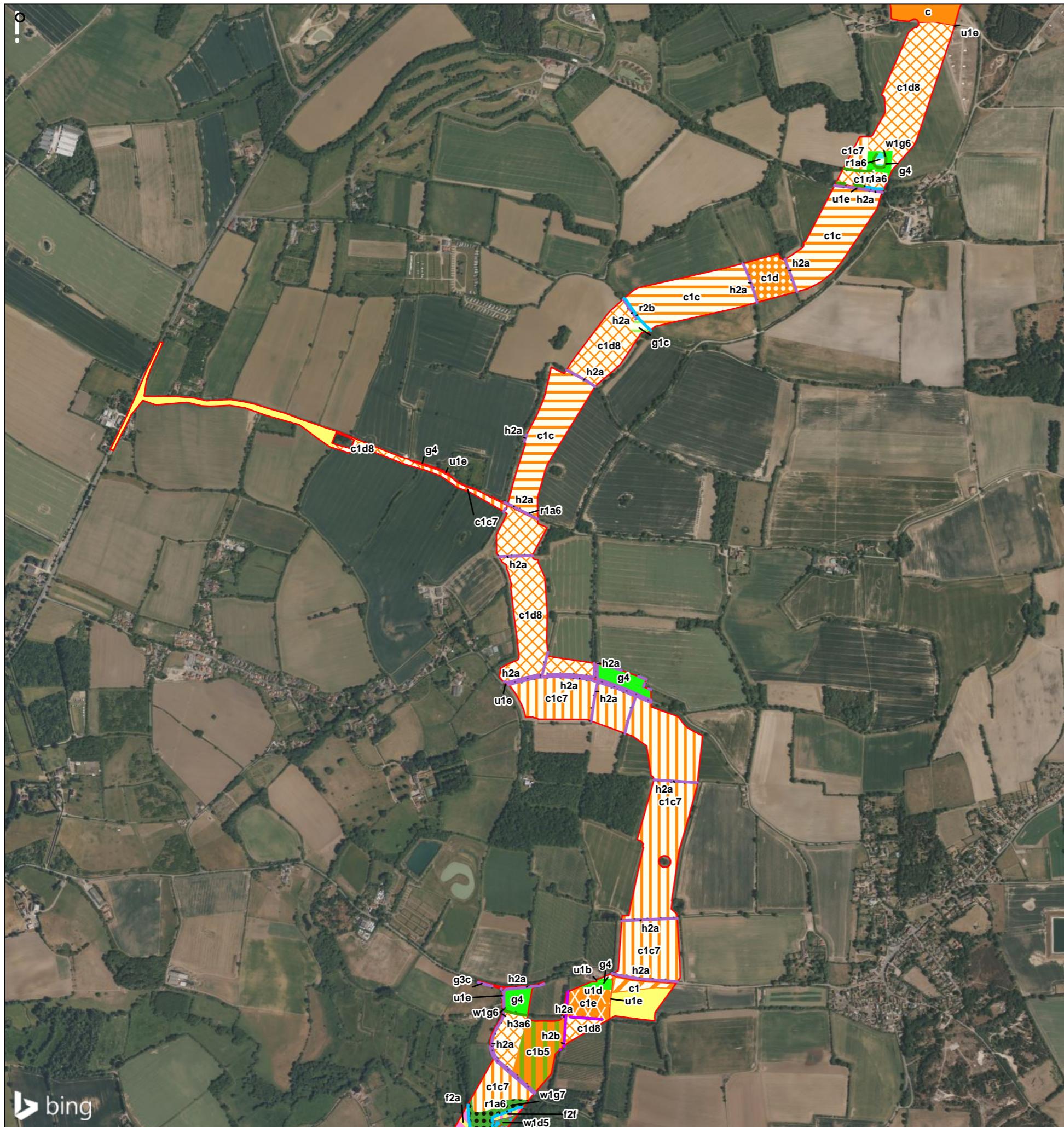
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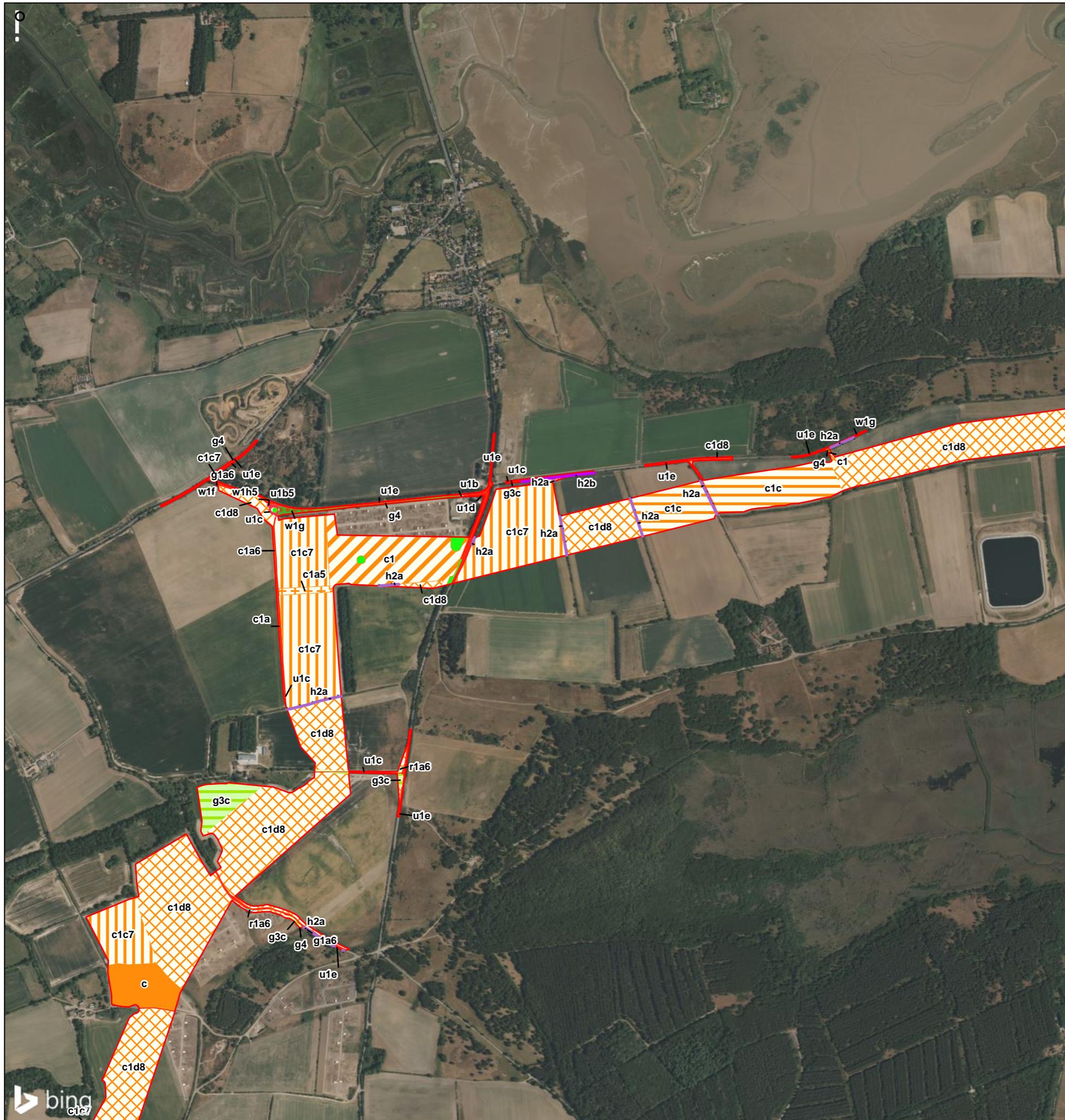
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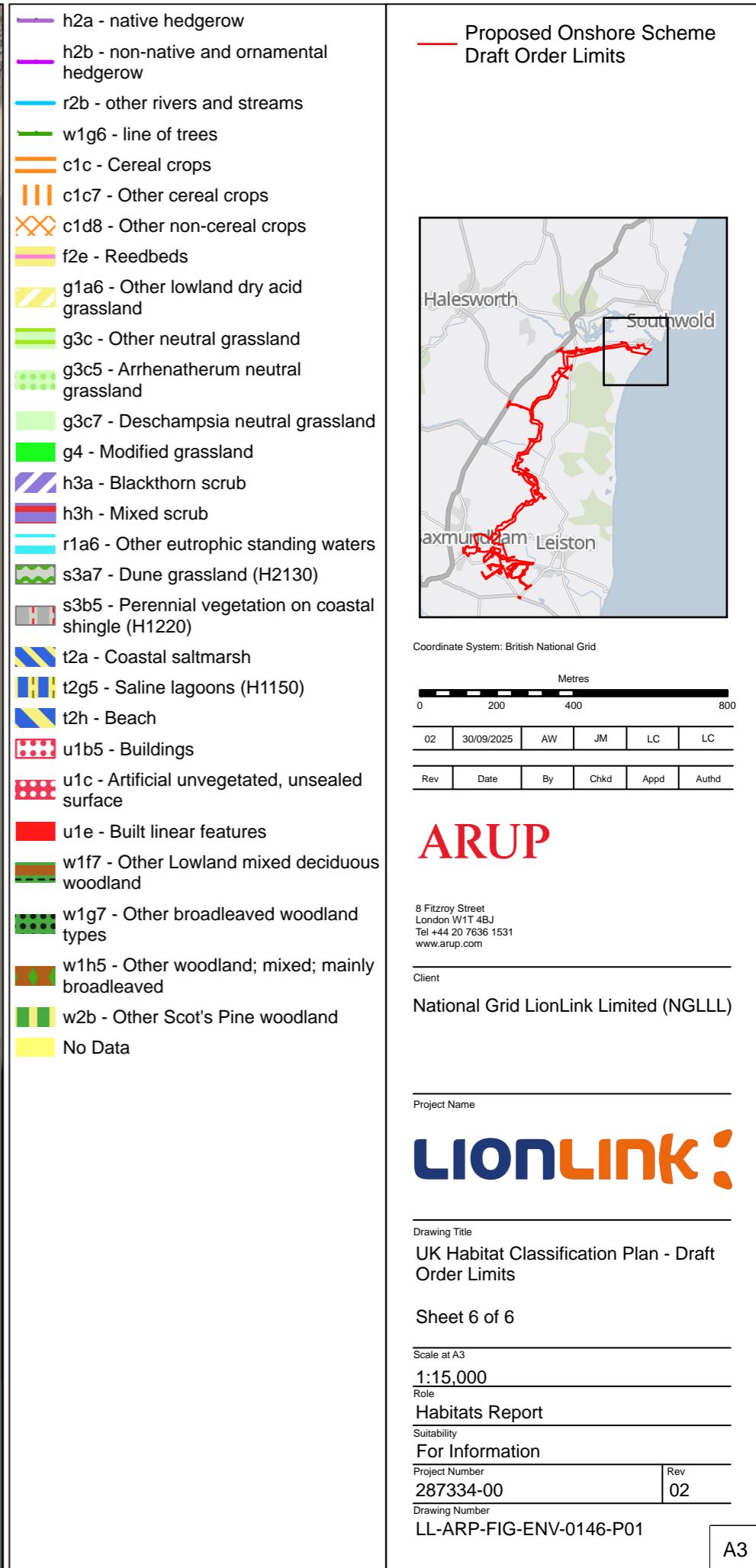
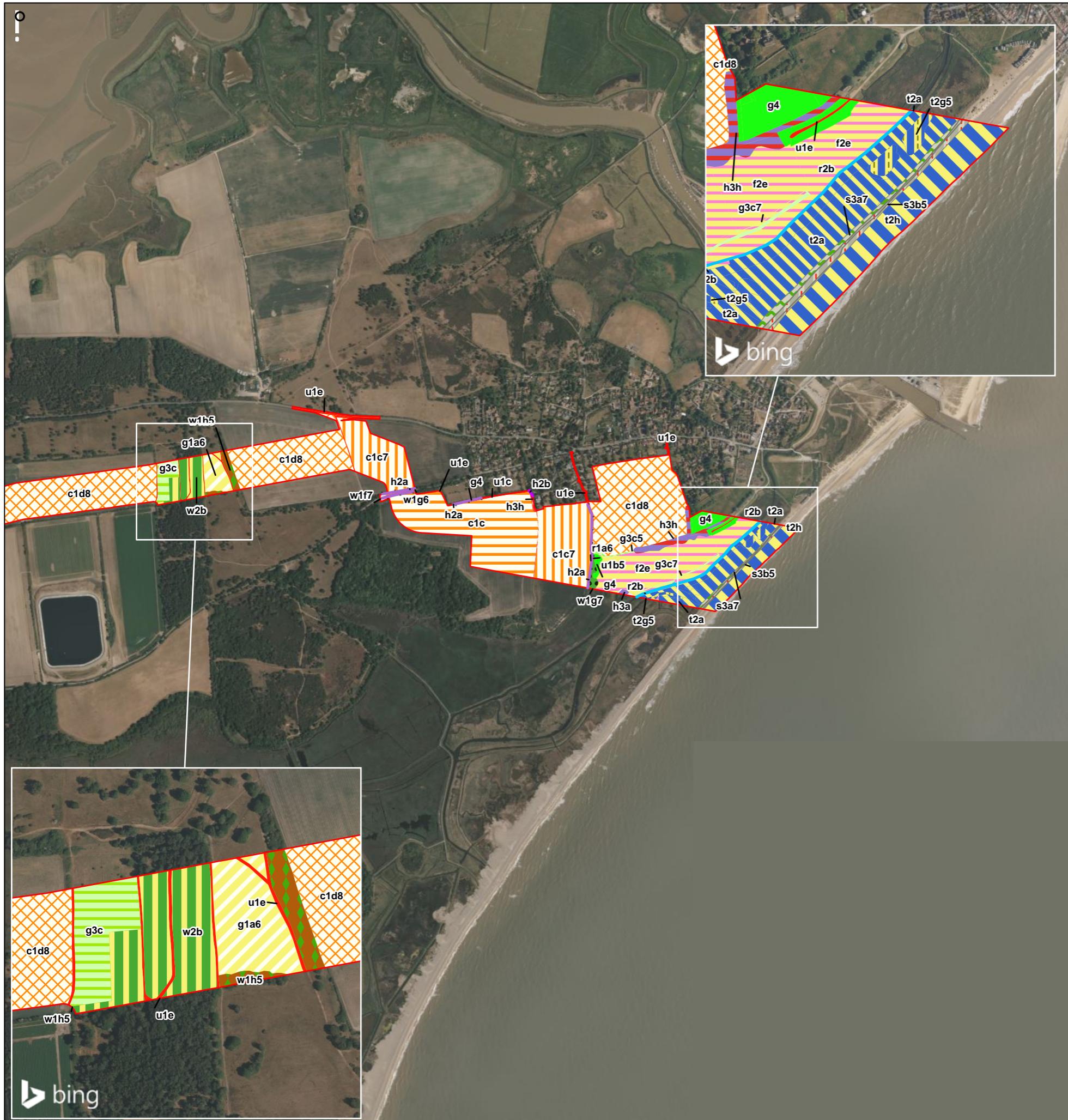
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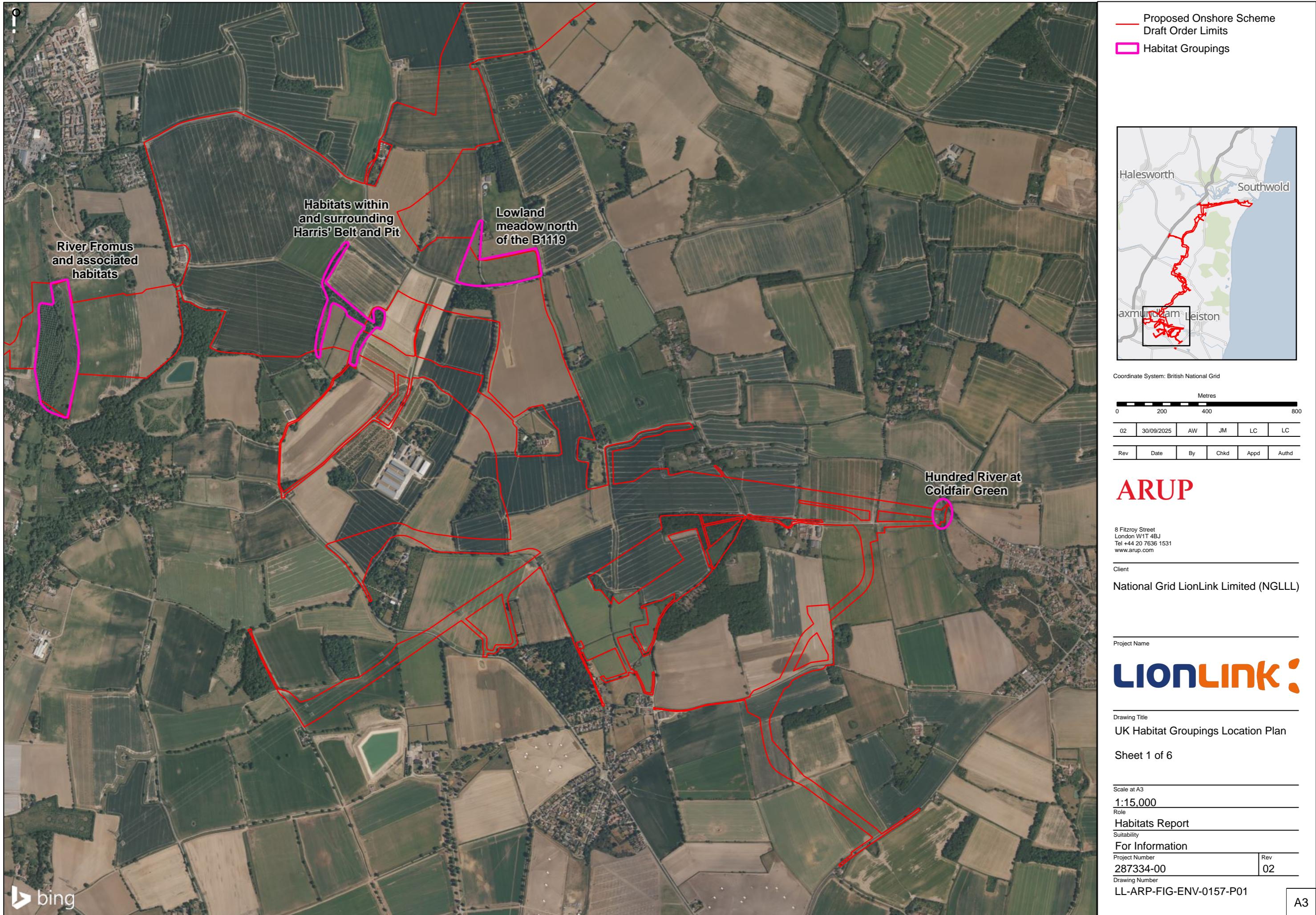
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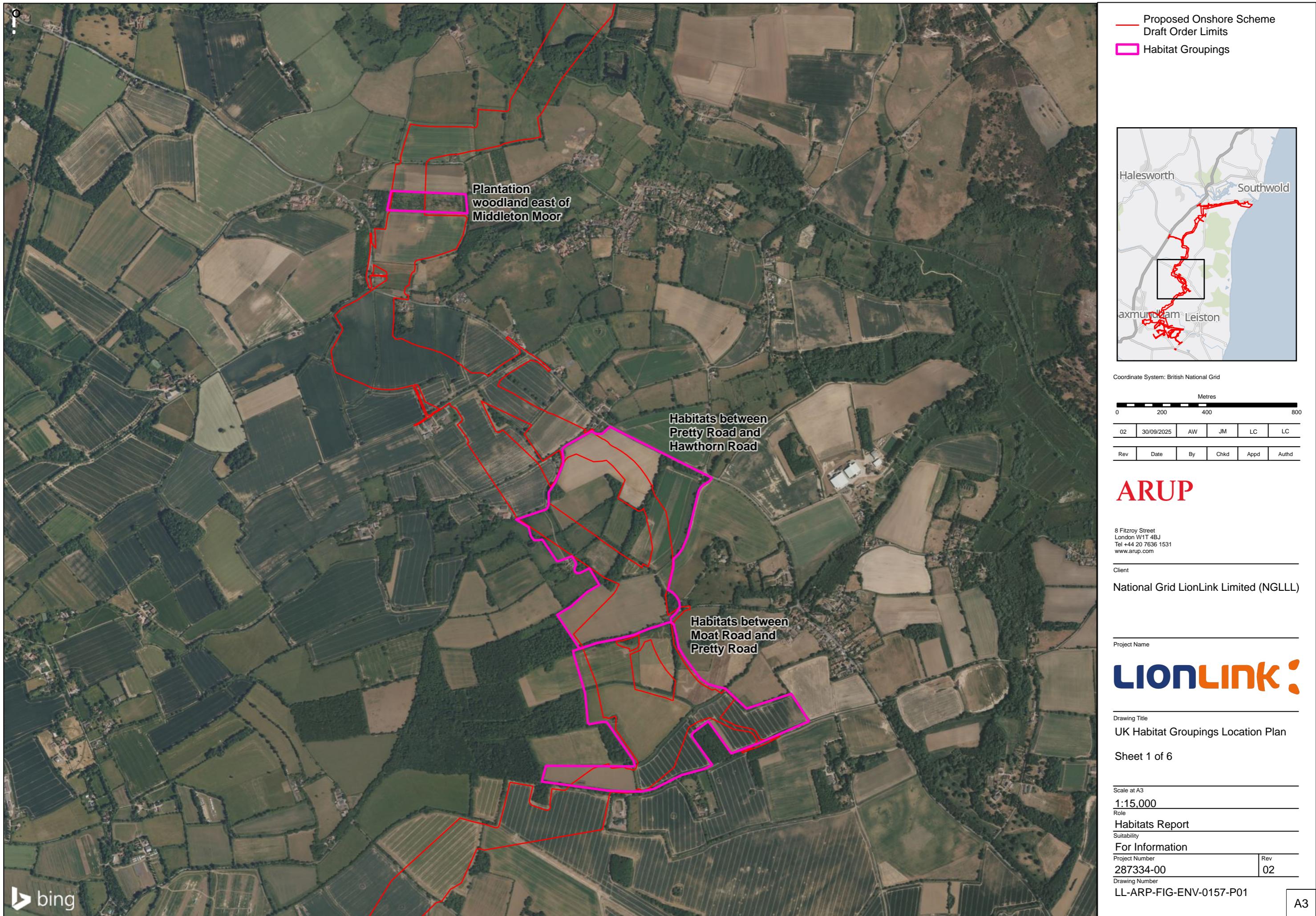
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# Annex E: Habitat Location Groupings Plan













# Glossary and Abbreviations

Term	Definition
ASNW	Ancient Semi-Natural Woodland
ARW	Ancient Replanted Woodland
BAP	Biodiversity Action Plan
BNG	Biodiversity Net Gain
CFGM	Coastal Floodplain and Grazing Marsh
CHSR	Conservation of Habitats and Species Regulations
CIEEM	Chartered Institute of Ecology and Environmental Management
CWS	County Wildlife Sites
DOL	Draft Order Limits
ES	Environmental Statement
ESS	Ecology Survey Strategy
EU	European Union
GW	Gigawatts
HPI	Habitats of Principal Importance
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
MAGIC	Multi Agency Geographic Information for the Countryside
NERC	Natural Environment and Rural Communities Act 2006
NVC	National Vegetation Classification
RCA	River Condition Assessment
SAC	Special Area of Conservation
SBIS	Suffolk Biodiversity Information Services
SPA	Special Protection Area
SPI	Species of Principal Importance
UKBAP	The UK Biodiversity Action Plan 1994 – 2010
UKHAB	UK Habitat Classification

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