

A47/A11 Thickthorn Junction

Scheme Number: TR010037

Volume 6

6.3 Environmental Statement Appendices **Appendix 8.1- Botanical Survey Report**

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009

March 2021

Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms and
Procedure) Regulations 2009**

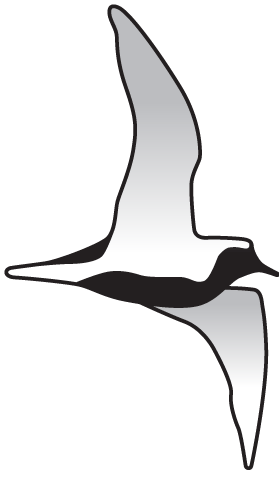
The A47/A11 Thickthorn Junction
Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT APPENDICES

Appendix 8.1 – Botanical Survey Report

Regulation Number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010037
Application Document Reference	TR010037/APP/6.3
BIM Document Reference	HE551492-GTY-EBD-000-RP-LB-30008
Author:	A47/A11 Thickthorn Junction Project Team, Highways England

Version	Date	Status of Version
Rev 0	March 2021	Application Issue



WILD FRONTIER ECOLOGY

A47/A11 Thickthorn Junction



Botanical Survey Report

September 2020

Report produced by	Submitted to
Written by: [REDACTED] BSc MSc Checked by: [REDACTED] BSc CEcol CEnv MCIEEM Authorised by: [REDACTED] BSc CEcol CEnv MCIEEM 23 rd September 2020	Sweco UK Limited Grove House Mansion Gate Drive Leeds, LS7 4DN [REDACTED] www.sweco.co.uk
Wild Frontier Ecology [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] Tel: [REDACTED] [REDACTED]@wildfrontier-ecology.co.uk	

© All rights reserved, Wild Frontier Ecology Ltd 2020. No part of this document to be copied or re-used without the permission of the copyright holder.

Company Registered in England and Wales No 4942219. VAT Reg No. 887 4692 54

Registered Office - Saxon House, Hellesdon Park Road, Drayton High Road, Norwich NR6 5DR

Director [REDACTED] BSc (Hons) CEcol CEnv MCIEEM.

The data which we have prepared and provided is accurate, and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that any opinions expressed are our best and professional bona fide opinions.



This report conforms to the British Standard 42020:2013 Biodiversity - Code of practice for planning and development.



Contents

Contents	2
1. Non-technical summary	7
2. Background.....	8
Figure 1a Survey area.....	9
Figure 1b Proposed scheme design.....	10
3. Relevant legislation and policy.....	11
3.1 Statutory and non-statutory site designations	11
3.1.1 International (european) site designations	11
3.1.2 National (UK) site designations	11
3.1.3 Non-statutory county site designations	11
3.2 Species designation and protection	11
3.2.1 Plants	11
3.3 Priority species and habitats	12
Table 1: Priority Species	13
3.4 Policy.....	14
4. Methods.....	15
4.1 Report objectives	15
4.2 Desk study	15
4.3 Field survey	15
Constancy	16
5. Results	17
5.1 Site survey.....	17
Figure 2 (a-g). Location of units (labelled with letter) and hedgerows (labelled with H-number)	18
Unit A (photo 1)	24
Table 1 Copse:	24
Table 2 Grassland:	24
Unit B (photo 2)	25
Table 3: Unit B	25
Unit C (Photo 3)	25
Table 4: Unit C	25
Unit D (photo 4)	26
Table 5: Unit D	26
Unit E (photo 5)	26
Table 6: Unit E	26



Unit F (photo 6)	27
Table 7: Unit F	27
Unit G (photo 7)	28
Table 8: Unit G	28
Target Note 1 (photo 8)	28
Table 9: TN1	28
Target Note 2 (photo 47).....	29
Table 10: TN2	29
Unit H (photo 9)	29
Table 11:Unit H	29
Unit I (photo 10).....	29
Table 12: Unit 10	30
Unit J (Grassland only) (Photo 11).....	30
Table 13: Unit J	30
Target Note 3 (photo 12).....	30
Table 14: TN3	30
Unit K (photo 13).....	31
Table 15: Unit K.....	31
Unit L (photo 14)	31
Table 16: Unit L.....	31
Unit M (north) (photo 15)	32
Table 17: Unit M north	32
Unit M (south).....	32
Table 18: Unit M south	32
Unit N (photo 16).....	33
Table 19: Unit N.....	33
Unit O (photo 17).....	33
Table 20: Unit O	33
Unit P	34
Table 21: Unit P.....	34
Unit Q (Photo 19).....	34
Table 22: Unit Q	35
Unit R (photo 20).....	35
Table 23: Unit R.....	35
Unit S (photo 21)	36
Table 24: Unit S	36



Unit T (photo 22)	36
Table 25: Unit T	36
Unit U (photo 23)	36
Table 26: Unit U	36
Unit V (Photo 24)	37
Table 27: Unit V	37
Unit W (photo 25)	37
Table 28: Unit W	37
Unit X (photo 26)	37
Table 29: Unit X	37
Unit Y (photo 27)	38
Table 30: Unit Y	38
Unit Z (photo 28)	39
Table 31: Unit Z	39
Unit AA (photo 29)	40
Table 32: Unit AA	40
Unit BB (photo 30)	40
Table 33: Unit BB	41
Unit CC (photo 31)	42
Table 34: Unit CC	42
Unit DD	42
Table 35: Unit DD	42
Unit EE	43
Table 36: Unit EE	43
Meadow Farm Meadow CWS (photo 33)	43
Table 37: Meadow Farm CWS	43
Table 38: Quadrat samples	44
Hedgerow 1 (photo 34)	45
Table 39: Hedgerow 1	45
Hedgerow 2 (photo 35)	46
Table 40: Hedgerow 2	46
Hedgerow 3 (photo 36)	46
Table 41: Hedgerow 3	46
Hedgerow 4 (photo 37)	47
Hedgerow 5 (photo 38)	47
Table 43: Hedgerow 5	47



Hedgerow 6 (photo 39)	47
Table 44: Hedgerow 6	48
Hedgerow 7 (photo 40)	48
Table 45: Hedgerow 7	48
Hedgerow 8 (photo 41)	48
Table 46: Hedgerow 8	48
Hedgerow 9 (photo 42)	49
Table 47: Hedgerow 9	49
Hedgerow 10 (photo 43).....	49
Table 48: Hedgerow 10	49
Hedgerow 11 (photo 44).....	49
Table 49: Hedgerow 11	49
Hedgerow 12 (photo 45).....	50
Table 50: Hedgerow 12	50
Hedgerow 13 (photo 46).....	50
Table 51: Hedgerow 13	50
5.3 Constraints and limitations of survey	51
6. Evaluation of features	52
6.1 Habitat units	52
6.2 Hedgerows.....	53
Table 52: Hedgerow Evaluation.....	53
6.3 Species.....	53
7. Impact assessment	53
7.1. Potential impacts on ecological receptors	53
7.1.2 Positive or negative impacts and effects	54
7.2 Duration of impact or effect	54
7.3 Impact or effect reversibility	55
7.4 Impact or effect significance	55
7.5 Description of impacts or effects.....	55
7.5.1. Change of land use	55
7.5.2. Construction activities	55
7.5.3. Operational activities	55
7.6 Habitats.....	56
7.7 Species.....	56
8. Mitigation	56
8.1 County Wildlife Site.....	56



8.2 Area N.....	56
8.3 Hedgerows.....	56
9. Conclusion.....	58
Appendix 1. Site Photographs.....	59

1. Non-technical summary

Wild Frontier Ecology was commissioned to undertake botanical surveys on a proposed improvement of the A47/ A11 at Thickthorn Junction. A previous study was carried out in 2017 by AECOM.

The entire route was walked over, with the survey covering 32 separate habitat units (including Meadow Farm Meadow County Wildlife Site (CWS)) and 13 Hedgerows.

A strip along the southern edge of the CWS is due to be taken up by a slip road. Intermediate impacts on the CWS are predicted, and mitigation will be required during construction to prevent further degradation of the site. If it cannot be avoided, compensation will need to be calculated for the loss of habitat.

Three units were valued at district level. Only one is due to be impacted by the refined road design - Unit N. Mitigation measures are advised for this unit.

Three potentially biologically important hedgerows were identified. However, none of these are due to be impacted by the refined road design. Other hedgerow lengths affected should be compensated for offsite.

The scheme should be put through the Defra Metric¹ to produce a plan for measurable net gain at an early opportunity, to influence design going forward.

¹Natural England (2019) The Biodiversity Metric 2.0
<http://publications.naturalengland.org.uk/publication/5850908674228224>

2. Background

Wild Frontier Ecology was commissioned to undertake botanical surveys on the proposed improvement of the A47/A11 junction at Thickthorn. The area is shown in Figure 1.

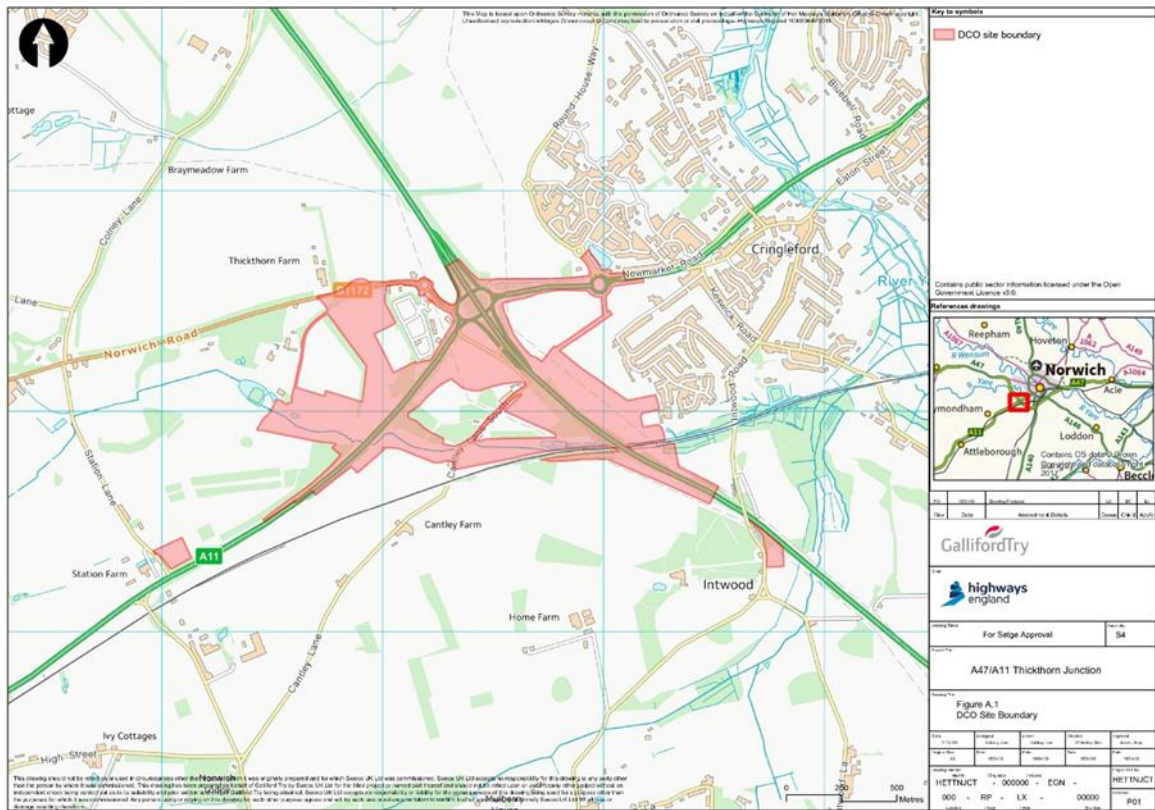
There was a previous study completed in 2017² - this study achieved full coverage of the proposed scheme. It was based on a Phase 1 Habitat Survey completed in 2016. The brief was as follows:

- Detailed walkover surveys of specific habitat types identified in the Phase 1 survey by AECOM (2017) along the proposed development area, assessing dominant species communities and assigning habitats to National Vegetation Classification (NVC) habitat types in the Meadow Farm Meadow County Wildlife Site.
- Evaluation of species-rich hedgerows identified on the AECOM 2016 Phase 1 Habitat map under The Hedgerows Regulations for potential to be classed as 'Important'. For the purposes of section 97 (hedgerows) of the Environment Act 1995 and these Regulations, a hedgerow is "important" if it, or the hedgerow of which it is a stretch, – (a) has existed for 30 years or more; and (b) satisfies at least one of the criteria listed in Part II of Schedule 1A report containing an assessment of the value of the habitat units, and any constraints they pose to future development of the road scheme, with recommendations for any further surveys, avoidance, mitigation or enhancement measures that are required.

² AECOM, (2017). A47 Thickthorn Junction Improvements. Botanical and Hedgerow Survey Report.



Figure 1a. Survey area (highlighted in red).



3. Relevant legislation and policy

3.1 Statutory and non-statutory site designations

3.1.1 International (European) site designations

The European Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) as amended directs the designation of important wildlife sites through the European Community as Special Areas of Conservation (SACs), and gives statutory protection to habitats and species listed in the Directive as being threatened or of community interest. Sites identified as candidate SAC (cSAC) are provided with the same level of protection as SAC.

Annex I of 92/43/EEC as amended lists habitat types which are regarded as being of European importance. Included within these are a number of 'priority habitat types' which are habitats regarded as being in danger of disappearance and whose natural range falls broadly within the European Union. This European law had been transposed into UK legislation by The Conservation (Natural Habitats) & Regulations 1994, now replaced by The Conservation of Habitats and Species Regulations 2017.

Habitats of European-wide importance for birds are listed under the EC Wild Birds Directive (79/409/EEC) as amended. Habitats designated under this Directive are notified as Special Protection Areas (SPAs) and are identified for holding populations > 1% of the reference population as defined in Appendix 4 of the SPA review of bird species listed in Annex 1 of the same Council Directive. Sites identified as potential SPA (pSPA) are provided with the same level of protection as SPA.

Wetlands of International Importance are designated under the Ramsar Convention.

3.1.2 National (UK) site designations

National ecological designations, such as Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs) are also afforded statutory protection. SSSIs are notified and protected under the jurisdiction of the Wildlife and Countryside Act 1981 (WCA 1981) as amended. SSSIs are notified based on specific criteria, including the general condition and rarity of the site and of the species or habitats supported by it.

3.1.3 Non-statutory county site designations

Local authorities may designate certain areas as being of local conservation interest. The criteria for inclusion may vary between areas. Most individual counties have a similar scheme, within Norfolk such sites are designated as County Wildlife Sites (CWS). Designation of such sites does not itself confer statutory protection, but they are a material consideration when planning applications are being determined.

3.2 Species designation and protection

3.2.1 Plants

Schedule 8 of the WCA 1981 lists plant species which are afforded special protection. It is an offence to pick, uproot or destroy any species listed on Schedule 8 without prior authorisation, and all plants are protected from unauthorised uprooting (that is without the landowner's permission) under Schedule 13 of the WCA 1981.

A Vascular Plant Red List for England³ provides a measure of the current state of England's flora measured against standardised IUCN criteria. Any taxon that is threatened - Critically Endangered (CR), Endangered (EN), Vulnerable (VU) - or Near Threatened (NT) does not have statutory protection but should be regarded as a priority for conservation in England. It should be noted that 'threat' is not synonymous with 'rarity', some of the species concerned are still relatively common and widespread.

It is an offence to plant or cause to spread in the wild of certain plant species under Schedule 9 of the Wildlife and Countryside Act 1981. Plant species relevant to the East of England are as follows:

- Himalayan Balsam *Impatiens glandulifera*
- Variegated yellow archangel *Lamiastrum galeobdolon* ssp *argentatum*
- Virginia creeper *Parthenocissus quinquefolia*
- False acacia *Robinia pseudoacacia*
- Water fern *Azolla filiculoides*
- Giant Hogweed *Heracleum mantegazzianum*
- Knotweed species including Japanese knotweed *Fallopia japonica*
- Parrot's feather *Myriophyllum aquaticum*
- Floating pennywort *Hydrocotyle ranunculoides*
- Rhododendron *Rhododendron ponticum*
- Giant rhubarb *Gunnera tinctoria*
- New Zealand Pigmyweed *Crassula helmsii*
- Waterweeds *Elodea* spp.

All waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act 1990 and is classified as controlled waste.

3.3 Priority species and habitats

Other priority species and habitats which are a consideration under the National Planning Policy Framework (NPPF) 2019, placing responsibility on Local Planning Authorities to aim to conserve and enhance biodiversity and to encourage biodiversity in and around developments. There is a general biodiversity duty in the Natural Environment and Rural Communities (NERC) Act 2006 (Section 40) which requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'. Biodiversity, as covered by the Section 40 duty, includes all biodiversity, not just the Habitats and Species of Principal Importance.

Section 41 of the NERC Act lists a number of species and habitats as being Species/Habitats of Principal Importance. These are species or habitats in England (also known as Priority Habitats/ Species) which had been identified as requiring action under the UK BAP, and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework⁴. The protection of either Priority Species or Habitats is not statutory, but specific consideration⁵ should be afforded by Local Planning

³ Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D. & Taylor, I. 2014. A Vascular Plant Red List for England. Botanical Society of Britain and Ireland, Bristol.

⁴ <http://data.jncc.gov.uk/data/587024ff-864f-4d1d-a669-f38cb448abdc/UK-Post2010-Biodiversity-Framework-2012.pdf>

⁵ JNCC (2015) UK BAP priority species and habitats

Authorities when dealing with them in relation to planning and development control. Also, there is an expectation that public bodies would refer to the Section 41 list when complying with the Section 40 duty.

Widespread Priority Habitats in East Anglia include:

- arable field margins
- traditional orchards
- hedgerows
- eutrophic standing waters
- ponds
- rivers
- lowland calcareous grassland
- lowland dry acid grassland
- lowland meadows
- lowland fen
- coastal and floodplain grazing marsh
- reedbeds
- lowland mixed deciduous woodland
- wet woodland
- wood-pasture and parkland

Priority species of higher plant in East Anglia (which have no specific legal protection) include:

Table 1: Priority Species

Latin Name	Common Name
<i>Arabis glabra</i>	Tower Mustard
<i>Artemisia campestris</i>	Field Wormwood
<i>Astragalus danicus</i>	Purple Milk-vetch
<i>Blysmus compressus</i>	Flat-sedge
<i>Bupleurum tenuissimum</i>	Slender Hare`s-ear
<i>Calamagrostis stricta</i>	Narrow Small-reed
<i>Carex divisa</i>	Divided Sedge
<i>Carex ericetorum</i>	Rare Spring-sedge
<i>Clinopodium acinos</i>	Basil Thyme
<i>Dryopteris cristata</i>	Crested Buckler-fern
<i>Euphrasia pseudokernerii</i>	Chalk Eyebright
<i>Filago lutescens</i>	Red-tipped Cudweed
<i>Filago pyramidata</i>	Broad-leaved Cudweed
<i>Galeopsis angustifolia</i>	Red Hemp-nettle
<i>Hordeum marinum</i>	Sea Barley
<i>Liparis loeselii</i>	Fen Orchid
<i>Lycopodiella inundata</i>	Marsh Clubmoss
<i>Melampyrum cristatum</i>	Crested Cow-wheat
<i>Muscari neglectum</i>	Grape-hyacinth
<i>Najas marina</i>	Holly-leaved Naiad
<i>Oenanthe fistulosa</i>	Tubular Water-dropwort

<http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx>

<i>Platanthera bifolia</i>	Lesser Butterfly-orchid
<i>Potamogeton acutifolius</i>	Sharp-leaved Pondweed
<i>Potamogeton compressus</i>	Grass-wrack Pondweed
Latin Name	Common Name
<i>Puccinellia fasciculata</i>	Borrer's Saltmarsh-grass
<i>Scandix pecten-veneris</i>	Shepherd's Needle
<i>Scleranthus annuus</i>	Annual Knawel
<i>Silene gallica</i>	Small-flowered Catchfly
<i>Sium latifolium</i>	Greater Water Parsnip
<i>Stellaria palustris</i>	Marsh Stitchwort
<i>Veronica triphyllos</i>	Fingered Speedwell
<i>Veronica verna</i>	Spring Speedwell

Many of these Priority Species are very restricted in range, and are unlikely to occur within the surveyed area.

3.4 Policy

The overarching policy guidance for biodiversity is included within the National Planning Policy Framework (NPPF⁶). Section 15 of this document (Conserving and Enhancing the Natural Environment) outlines the approach that Local Authorities should adopt when considering ecological issues within the planning framework, including the principles of the Mitigation Hierarchy. This espouses that in addressing impacts on valued features, avoidance should be the first option considered, followed by mitigation (minimising negative impacts). Where avoidance and mitigation are not possible, compensation for loss of features can be used as a last resort. Paragraphs 170, 174 and 175 of the NPPF give policy support to the provision of measurable net gains in biodiversity. Paragraph 174 specifies that plans should:

- identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including locally designated sites (such as CWS)
- promote the conservation, restoration and enhancement of priority habitats and ecological networks
- protection and recovery of priority species.

There is also policy guidance outlined in the National Networks National Policy Statement (NN NPS⁷). Section 5 of this document (Generic Impacts) outlines guidance on biodiversity and ecological conservation relating specifically to the construction of highways and railways in the UK. As a general principle the development of these transport links should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives.

⁶ MHCLG (2019). National Planning Policy Framework. UK Government.

⁷ Department for Transport (2015). NN NPS

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/npsnn-web.pdf

4. Methods

4.1 Report objectives

The report sets out the field survey results, and compares it with those found in 2017, updating the assessment where necessary.

4.2 Desk study

No desk study was undertaken for this report, because it was considered that desk data used in 2017 would be sufficient to inform the report. In analysing the habitats and field data, extensive use has been made of aerial imagery⁸, of which there is an intermittent record from 1946 to present.

4.3 Field survey

The site was walked over on 10 June and 22 July 2020 by Robert Yaxley BSc CEcol CEnv MCIEEM, Adam Stickler BSc MSc and Ptolemy McKinnon BSc MSc. All available and accessible areas within the red line on Figure 1 were surveyed.

During the botanical survey, each of the individual habitat units has been subject to walkover survey of vegetation cover and the dominant plant species noted, using the DAFOR scale (D = dominant, A= abundant, F= frequent, O= occasional and R= rare, with L=local often used as a prefix to moderate abundance categories). Photographs were taken of habitats and species. Where rare or scarce species of plant were encountered, the location was recorded and the species photographed.

The NVC survey of Meadow Farm Meadow County Wildlife Site (CWS) was undertaken using quadrat sampling methods⁹. The site was divided into areas of homogeneous-looking stands of vegetation from these images, and stands were sampled with 2x2m quadrats.

Within representative homogeneous stands, 2x2m quadrats were sampled, with selected information being taken from each quadrat. This comprised;

- A single photograph of the vegetation
- A unique reference number
- A generalised name for the stand type, to allow rapid grouping of quadrat data
- Plant species present, with cover values (see Domin scale below)
- Amounts of bare ground or standing water, where present.

Domin Scale

- Cover of 91-100% = Domin 10
- Cover of 76-90% = Domin 9
- Cover of 51-75% = Domin 8
- Cover of 34-50% = Domin 7
- Cover of 26-33% = Domin 6
- Cover of 11-25% = Domin 5
- Cover of 4-10% = Domin 4
- Cover of <4% with many individuals = Domin 3
- Cover of <4% with several individuals = Domin 2

⁸ <http://www.historic-maps.norfolk.gov.uk/mapexplorer/>; Google Earth Pro.

⁹ Rodwell. J.S (1992-2000) British Plant Communities, Vols 1-5. Oxford University Press.

- Cover of <4% with few individuals = Domin 1

Quadrats were mapped and classified. The statistical tool used to aid classification was the MAVIS tool devised by the Centre for Ecology and Hydrology (CEH) specifically for use with NVC data. The accumulation of quadrat data was then analysed separately and as a subdivided dataset for similarity to standard NVC communities. Communities were assigned partially on this basis, but equal weight was given to the NVC written descriptions in the literature, the keys in Rodwell et al (1991-2000) and the frequency tables also in Rodwell et al (1991-2000).

Constancy

Constancy was determined, in line with Rodwell et al (1991-2000). Values are denoted in the tables as follows:

80-100% of quadrats = V (constant)

60-80% of quadrats = IV (constant)

40-60% of quadrats = III (frequent)

20-40% of quadrats = II (occasional)

0-20% of quadrats = I (infrequent)

The number of quadrats obtained to assess each community is denoted at the top of the table by an 'n' value.

Hedgerows were surveyed for species richness, gathering sufficient information to judge whether the hedgerow was likely to be an important hedgerow under the Hedgerow Regulations 1997. Hedges were not subject to a full assessment under the regulations, but an estimate of species richness was made in order to screen hedgerows for likely importance.



5. Results

5.1 Site survey

The site was divided into a number of distinct vegetation units. Where possible, the labelling of these units has followed the previous report for consistency. Units have been given unique new names where they have not previously been surveyed.

There was coverage of the whole site by the survey, with the exception of houses and gardens and Unit EE due to access restrictions during the survey. Any areas not within a unit were not of botanical interest due to being an area of settlement such as house or garden, land cultivated as arable, road, plantation woodland on road edges or roundabouts which could not be accessed safely.

Figure 2 (a-f). Location of units (labelled with letter) and hedgerows (labelled with H-number)

Figure 2a

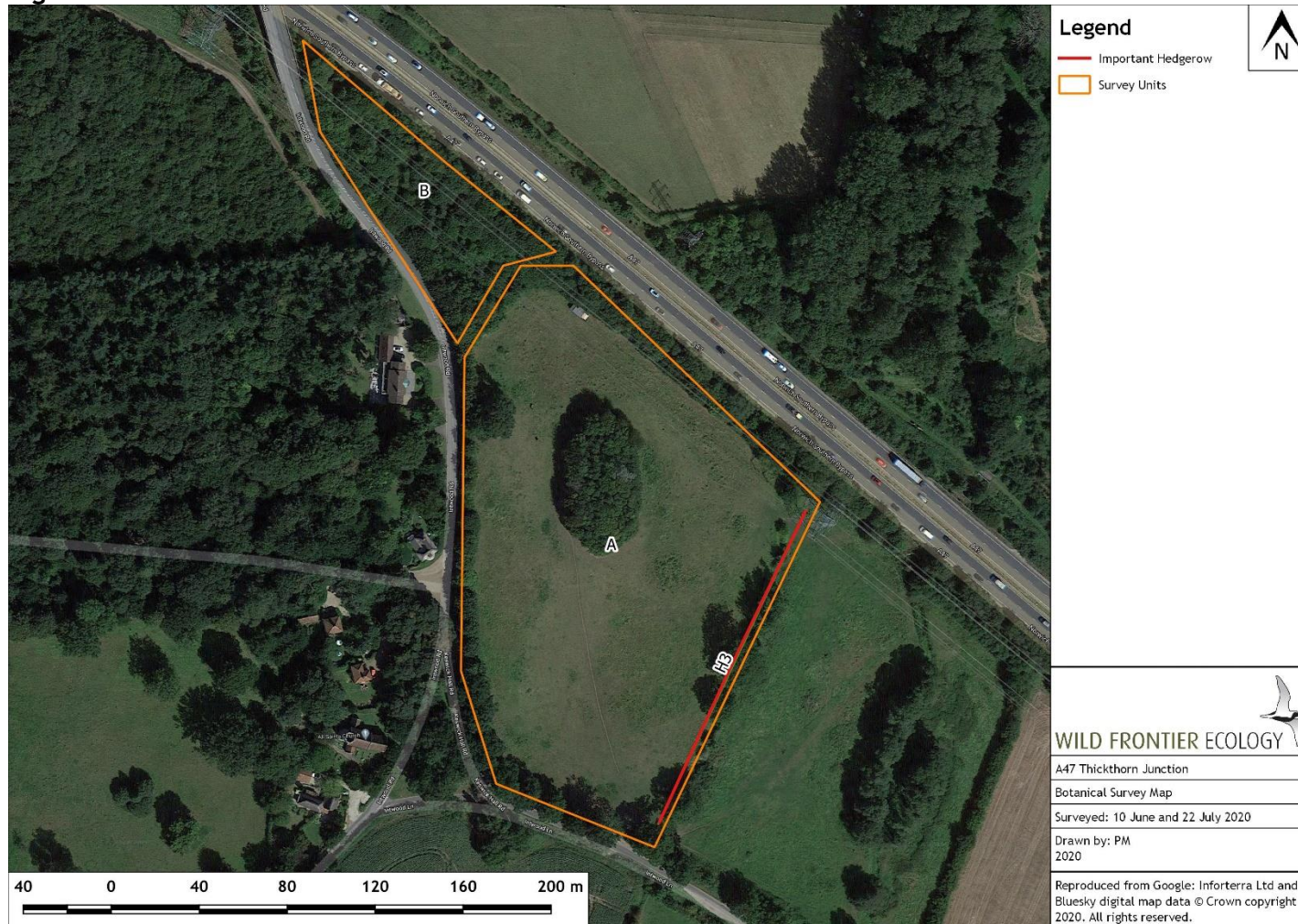


Figure 2b

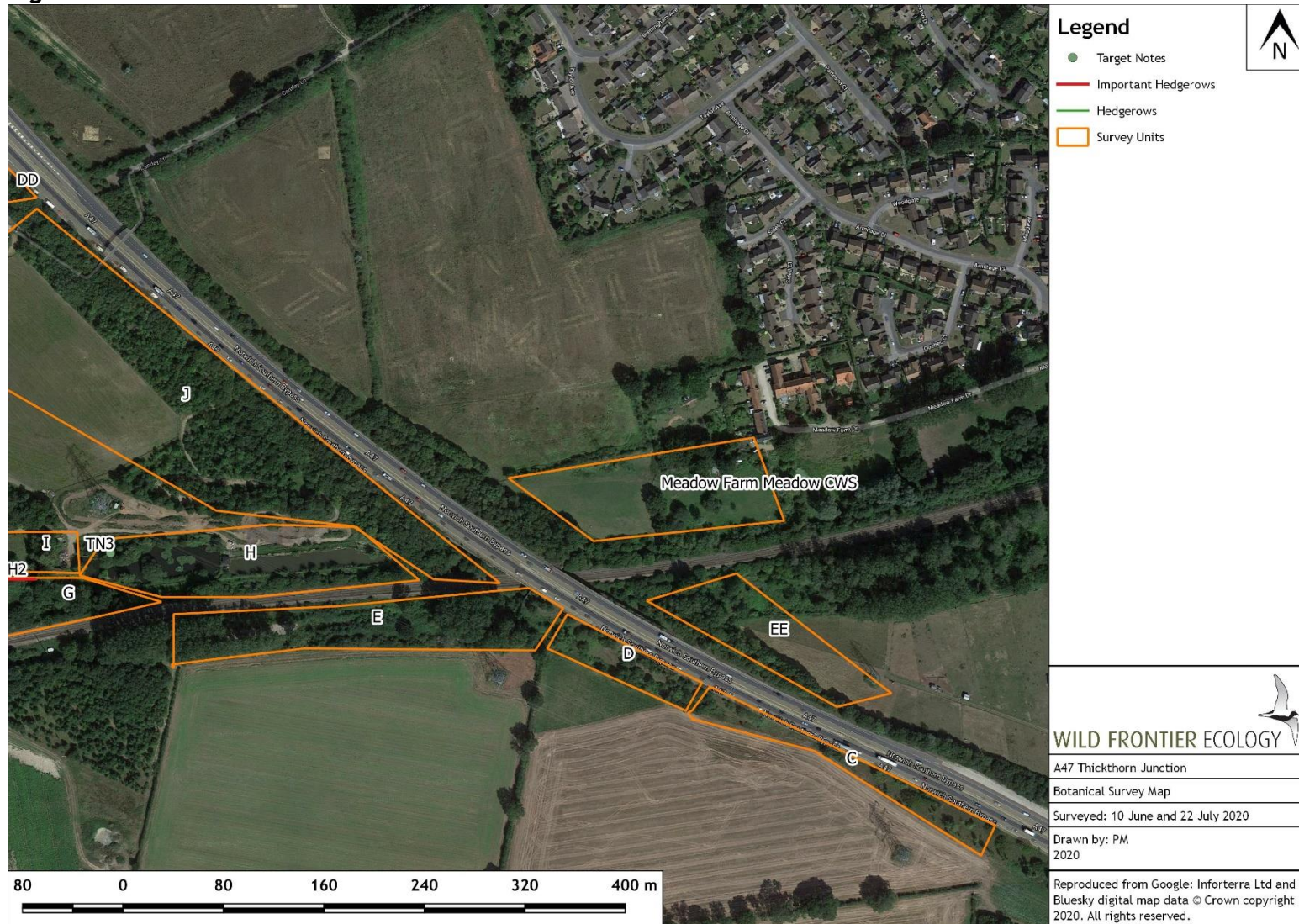


Figure 2c

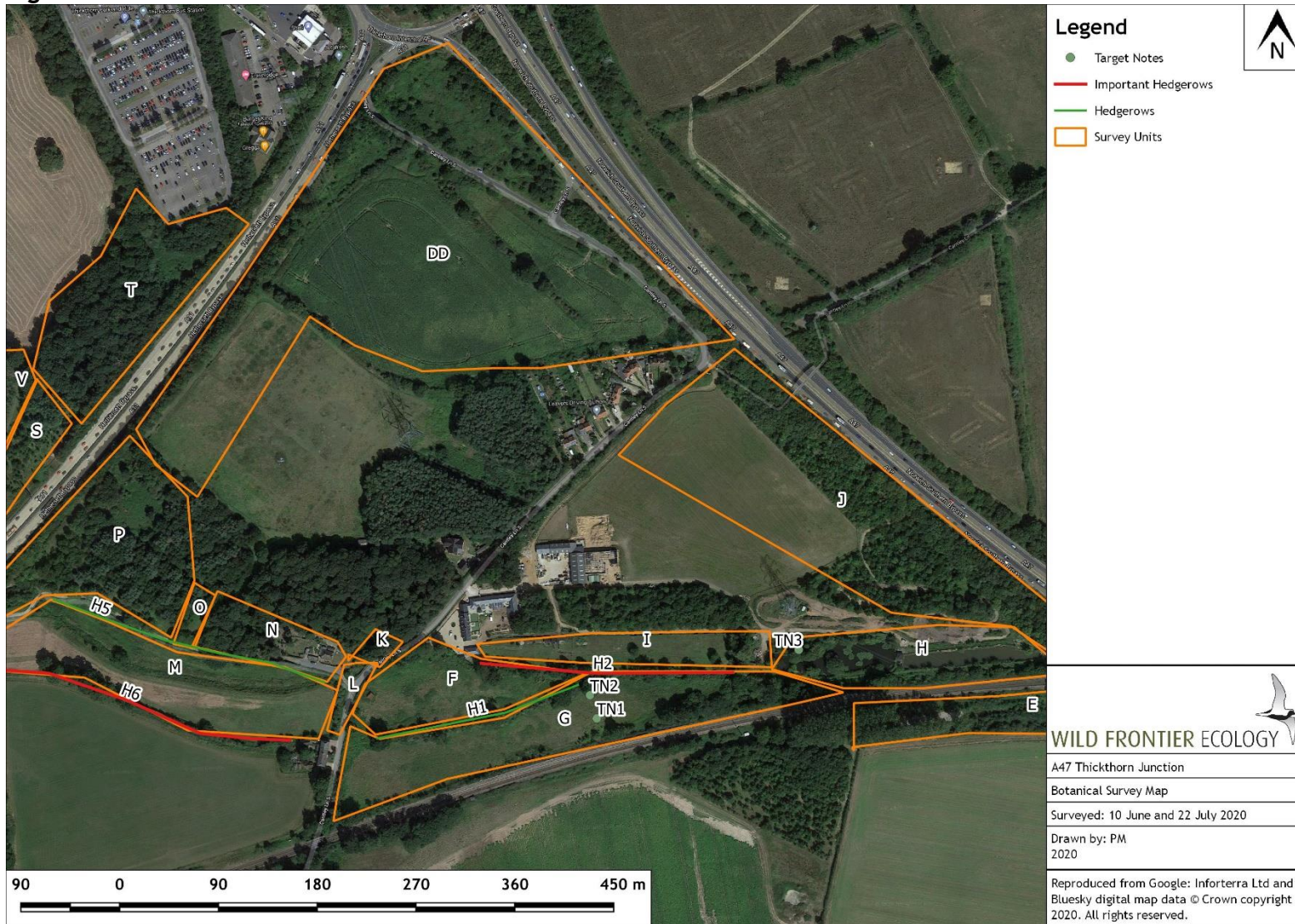


Figure 2d

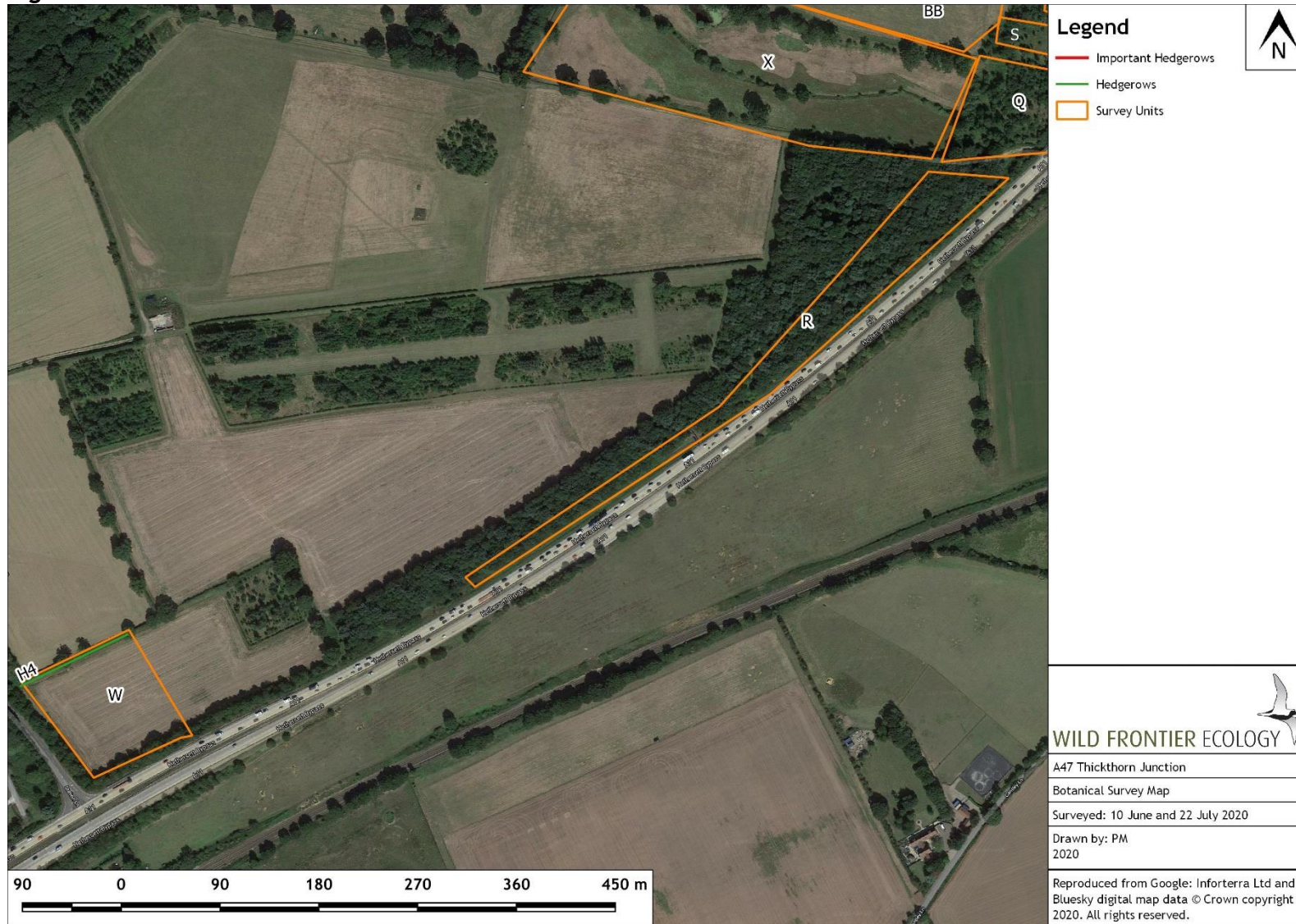


Figure 2e

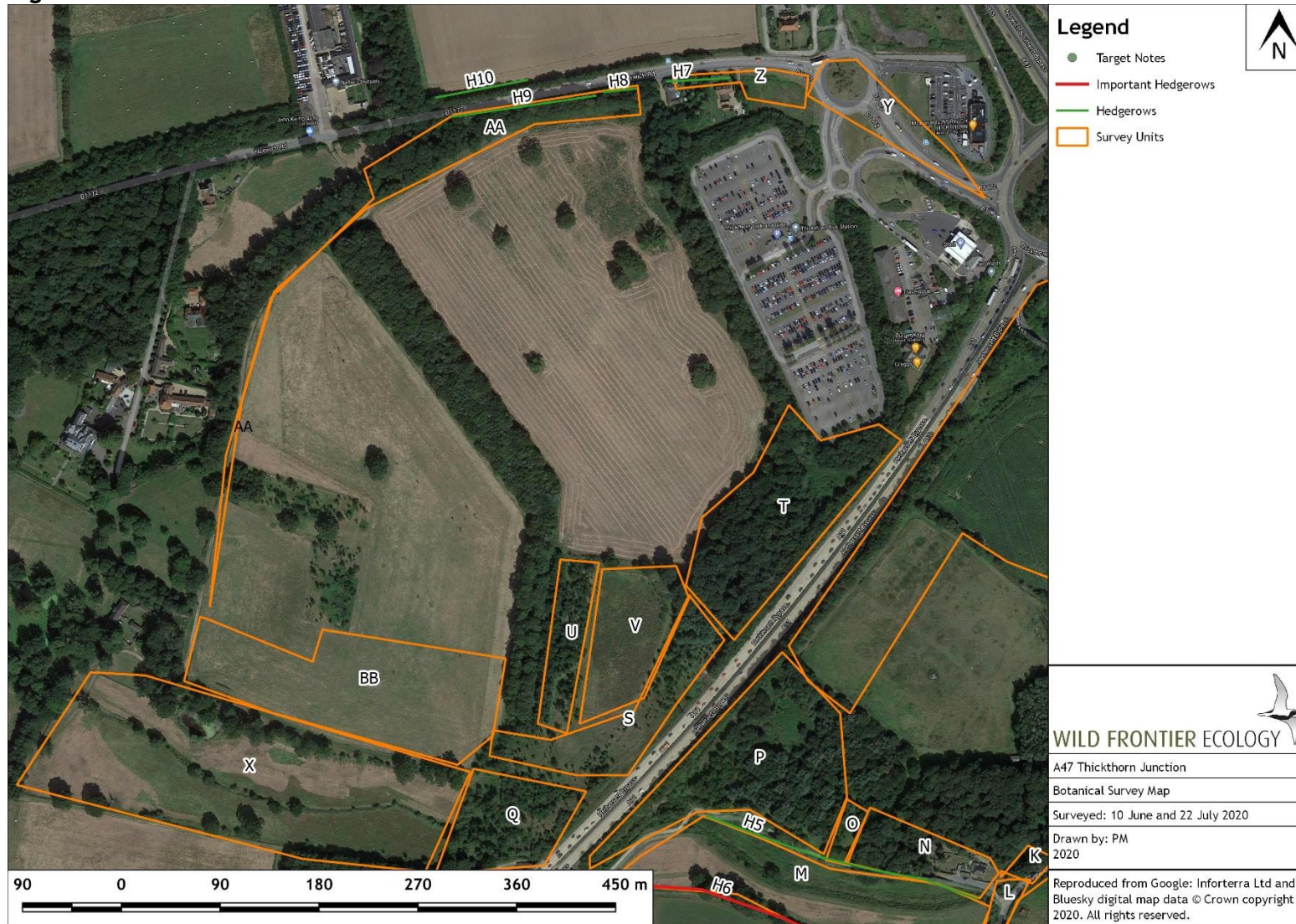
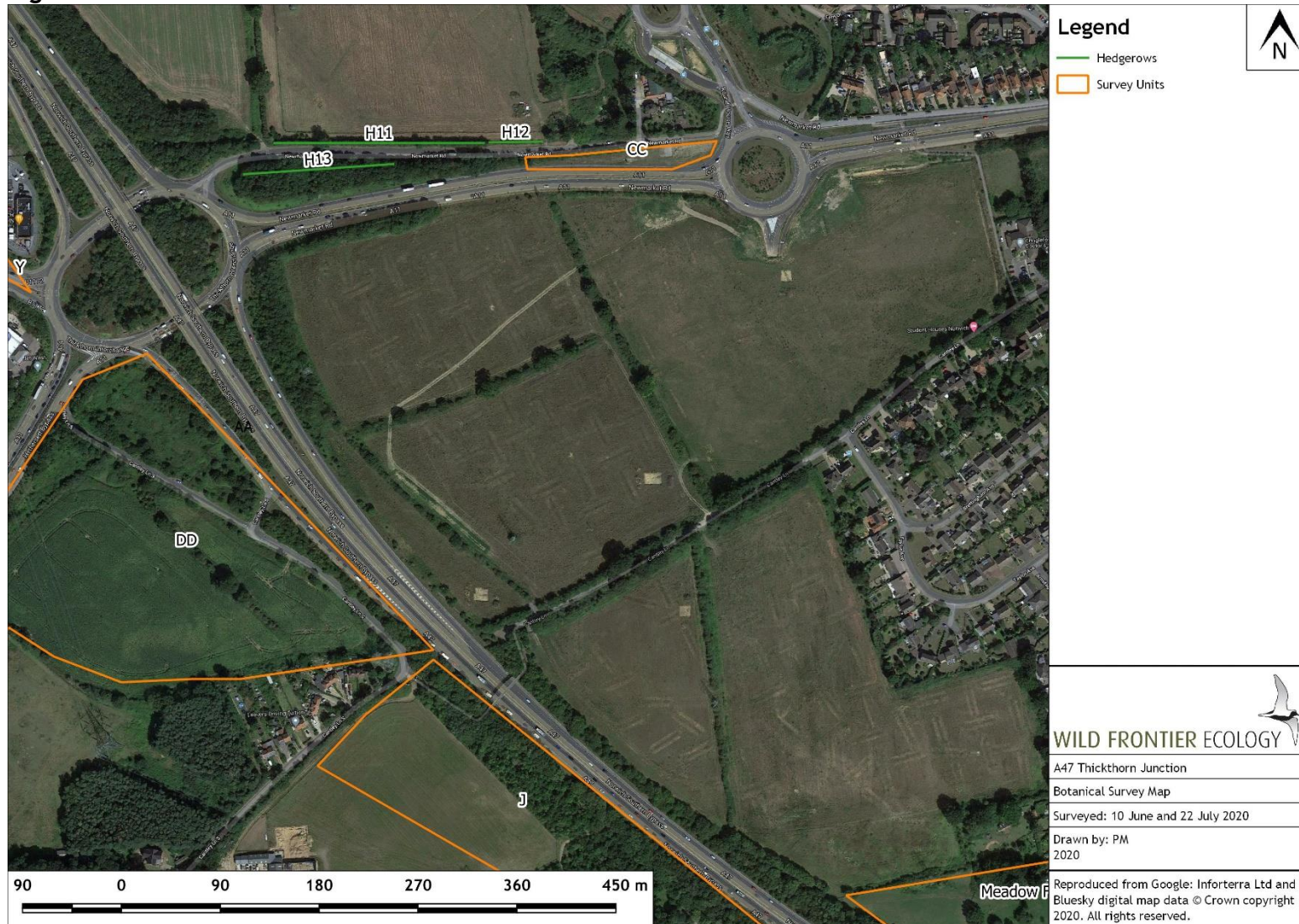


Figure 2f





Unit A (photo 1)

An area of horse-grazed poor semi-improved grassland with a small copse of woodland including field maple and a ground layer comprised mainly of nettle and rough meadow grass. On the eastern edge of this grassland is Hedgerow 1. It is bordered to the west by Unit B, an area of semi-natural broad-leaved woodland. In 1988 this unit was part of an arable field extending to the north.

Table 1 Copse:

Common name	Latin name	DAFOR rating	Notes
Field Maple	<i>Acer campestre</i>	A	Canopy
Sycamore	<i>Acer pseudoplatanus</i>	F	Canopy
Ash	<i>Fraxinus excelsior</i>	F	Canopy
Pedunculate Oak	<i>Quercus robur</i>	O	Canopy
Willow Sp.	<i>Salix sp.</i>	O	Canopy
Wild Cherry	<i>Prunus avium</i>	O	Canopy
Grey Poplar	<i>Salix cinerea</i>	R	Canopy
Beech	<i>Fagus sylvatica</i>	R	Canopy
Common Hawthorn	<i>Crataegus monogyna</i>	F	Understorey
Bramble	<i>Rubus agg.</i>	F	Understorey
Dog Rose	<i>Rosa canina</i>	O	Understorey
Apple	<i>Malus domestica</i>	R	Understorey
Rough Meadow Grass	<i>Poa trivialis</i>	A	Ground Layer
Cleavers	<i>Galium aparine</i>	F	Ground Layer
Field Forget-me-not	<i>Myosotis arvensis</i>	O	Ground Layer

Table 2 Grassland:

Common name	Latin name	DAFOR rating	Notes
Yorkshire Fog	<i>Holcus lanatus</i>	A	Grassland
Broad-leaved Dock	<i>Rumex obtusifolius</i>	F	Grassland
Creeping Bent	<i>Agrostis stolonifera</i>	F	Grassland
Creeping Thistle	<i>Cirsium arvense</i>	F	Grassland
Dandelion	<i>Taraxacum agg.</i>	F	Grassland
White Clover	<i>Trifolium repens</i>	F	Grassland
Ragwort	<i>Jacobaea vulgaris</i>	F	Grassland
Doves-foot Cranesbill	<i>Geranium molle</i>	F	Grassland
Creeping Buttercup	<i>Ranunculus repens</i>	F	Grassland
Germander Speedwell	<i>Veronica chamaedrys</i>	F	Grassland
Burdock	<i>Arctium spp.</i>	F	Grassland
Spear Thistle	<i>Cirsium vulgare</i>	F	Grassland
Ground Ivy	<i>Glechoma hederacea</i>	F	Grassland
Lesser Trefoil	<i>Trifolium dubium</i>	F	Grassland
Common Nettle	<i>Urtica dioica</i>	F	Grassland
Common Cat's Ear	<i>Hypochaeris radicata</i>	O	Grassland
Creeping Cinquefoil	<i>Potentilla reptans</i>	O	Grassland
Annual Meadow Grass	<i>Poa annua</i>	O	Grassland
Cut-leaved Cranesbill	<i>Geranium dissectum</i>	O	Grassland
Selfheal	<i>Prunella vulgaris</i>	O	Grassland
Redshank	<i>Persicaria maculosa</i>	R	Grassland
Smooth Sow Thistle	<i>Sonchus oleraceus</i>	R	Grassland



Unit B (photo 2)

Area of broad-leaved plantation on the south side of the A47 with Intwood Road bordering to the west. This is landscape planting associated with the construction of the A47 bypass in 1992.

Table 3: Unit B

Common name	Latin name	DAFOR rating	Notes
Field Maple	<i>Acer campestre</i>	A	Canopy
Hazel	<i>Corylus avellana</i>	A	Canopy
Sycamore	<i>Acer pseudoplatanus</i>	F	Canopy
Common Hawthorn	<i>Crataegus monogyna</i>	F	Canopy
Pedunculate Oak	<i>Quercus robur</i>	R	Canopy
Elm	<i>Ulmus sp.</i>	R	Canopy
Goat Willow	<i>Salix caprea</i>	R	Canopy
Elder	<i>Sambucus nigra</i>	F	Understorey
Common Nettle	<i>Urtica dioica</i>	A	Ground Layer
Bramble	<i>Rubus agg.</i>	F	Ground Layer

Unit C (Photo 3)

Semi-improved neutral grassland, with scattered planted trees. The mix of species suggests there has been some sowing of wildflower seed mix, likely as a bank in the creation of the A47 construction in 1992.

Table 4: Unit C

Common name	Latin name	DAFOR rating	Notes
Cocks-foot	<i>Dactylis glomerata</i>	A	n/a
Oxeye Daisy	<i>Leucanthemum vulgare</i>	A	n/a
False Oat Grass	<i>Arrhenatherum elatius</i>	A	n/a
Knapweed	<i>Centaurea nigra</i>	A	n/a
Common Vetch	<i>Vicia sativa</i>	F	n/a
Yarrow	<i>Achillea millefolium</i>	F	n/a
Hogweed	<i>Heracleum sphondylium</i>	F	n/a
Lady's Bedstraw	<i>Galium verum</i>	F	n/a
Common Bent	<i>Agrostis capillaris</i>	F	n/a
Horseshoe Vetch	<i>Hippocrepis comosa</i>	F	n/a
Bird's-foot Trefoil	<i>Lotus corniculatus</i>	O	n/a
Selfheal	<i>Prunella vulgaris</i>	O	n/a
Field Forget-me-not	<i>Myosotis arvensis</i>	O	n/a
Rosebay Willowherb	<i>Chamerion angustifolium</i>	O	n/a
Common Nettle	<i>Urtica dioica</i>	O	n/a
Cow Parsley	<i>Anthriscum sylvestris</i>	O	n/a
Spear Thistle	<i>Cirsium vulgare</i>	O	n/a
Creeping Thistle	<i>Cirsium arvense</i>	O	n/a
Meadow Cranesbill	<i>Geranium pratense</i>	O	n/a
Poppy	<i>Papaver rhoeas</i>	R	n/a
Red Campion	<i>Silene dioica</i>	R	n/a



Common name	Latin name	DAFOR rating	Notes
Primrose	<i>Primula vulgaris</i>	R	n/a
Creeping Buttercup	<i>Ranunculus repens</i>	R	n/a
Ground Ivy	<i>Glechoma hederacea</i>	R	n/a
Elder	<i>Sambucus nigra</i>	n/a	Scattered scrub
Ash	<i>Fraxinus excelsior</i>	n/a	Scattered scrub
Dog Rose	<i>Rosa canina</i>	n/a	Scattered scrub
Bramble	<i>Rubus agg.</i>	n/a	Scattered scrub
Common Hawthorn	<i>Crataegus monogyna</i>	n/a	Scattered scrub
Sycamore	<i>Acer pseudoplatanus</i>	n/a	Scattered scrub
Pedunculate Oak	<i>Quercus robur</i>	n/a	Scattered scrub
Dogwood	<i>Cornus sanguinea</i>	n/a	Scattered scrub
Goat Willow	<i>Salix caprea</i>	n/a	Scattered scrub

Unit D (photo 4)

Early-mature planted woodland - closed canopy with little understorey and sparse ground vegetation. Landscape planting associated with the construction of the A47 bypass in 1992.

Table 5: Unit D

Common name	Latin name	DAFOR rating	Notes
Sycamore	<i>Acer pseudoplatanus</i>	F	Canopy
Field Maple	<i>Acer campestre</i>	F	Canopy
Grey Willow	<i>Salix cinerea</i>	F	Canopy
Pedunculate Oak	<i>Quercus robur</i>	F	Canopy
Ash	<i>Fraxinus excelsior</i>	O	Canopy
Common Hawthorn	<i>Crataegus monogyna</i>	F	Understorey
Elder	<i>Sambucus nigra</i>	O	Understorey
Dogwood	<i>Cornus sanguinea</i>	O	Understorey
Bramble	<i>Rubus agg.</i>	A	Ground Layer
Nettle	<i>Urtica dioica</i>	A	Ground Layer
Oxeye Daisy	<i>Leucanthemum vulgare</i>	O	Ground Layer
Ground Ivy	<i>Glechoma hederacea</i>	O	Ground Layer
Red Campion	<i>Silene dioica</i>	O	Ground Layer
Cleavers	<i>Galium aparine</i>	O	Ground Layer
Cow Parsley	<i>Anthriscus sylvestris</i>	R	Ground Layer

Unit E (photo 5)

Area of patchy scrub with one dense block of scrub towards the western end bordering a cleared area of trees at the west end of this unit. At the eastern end is an area of cleared trees with a low diversity of herbaceous plants. The Cantley Stream runs out of the sluice here with scattered trees planted on the ground above the sluice, up to the southern edge of the A47.

Table 6: Unit E

Common name	Latin name	DAFOR rating	Notes
Elder	<i>Sambucus nigra</i>	A	Scrub
Common Hawthorn	<i>Crataegus monogyna</i>	A	Scrub
Bramble	<i>Rubus agg.</i>	A	n/a



Common name	Latin name	DAFOR rating	Notes
Common Nettle	<i>Urtica dioica</i>	A	
White Deadnettle	<i>Lamium album</i>	F	Cleared Areas
Spear Thistle	<i>Cirsium vulgare</i>	F	Cleared Areas
Creeping Thistle	<i>Cirsium arvense</i>	F	Cleared Areas
Goat Willow	<i>Salix caprea</i>	F	Scrub
Red Campion	<i>Silene dioica</i>	F	Cleared Areas
Water Mint	<i>Mentha aquatica</i>	LF	Stream
White Campion	<i>Silene latifolia</i>	O	Cleared Areas
Burdock	<i>Arctium sp.</i>	O	Cleared Areas
Cleavers	<i>Galium aparine</i>	O	Cleared Areas
Cow Parsley	<i>Anthriscus sylvestris</i>	O	Cleared Areas
Herb Robert	<i>Geranium robertianum</i>	O	Cleared Areas
Ground Ivy	<i>Glechoma hederacea</i>	O	n/a
Bird's Foot Trefoil	<i>Lotus corniculatus</i>	O	n/a
Field Forget-me-not	<i>Myosotis arvensis</i>	O	n/a
Grey Willow	<i>Salix cinerea</i>	O	Scrub
Pedunculate Oak	<i>Quercus robur</i>	R	n/a
Dog Rose	<i>Rosa canina</i>	R	Cleared Areas
Hard Rush	<i>Juncus inflexus</i>	R	Stream
Yellow Flag Iris	<i>Iris pseudacorus</i>	R	Stream

Unit F (photo 6)

This is an area of semi-improved neutral grassland with a stream on the northern boundary.

Table 7: Unit F

Common name	Latin name	DAFOR rating	Notes
False Oat Grass	<i>Arrhenatherum elatius</i>	A	n/a
Yorkshire Fog	<i>Holcus lanatus</i>	A	n/a
Blunt-flowered Rush	<i>Juncus subnodulosus</i>	LA	n/a
Sheep's Sorrel	<i>Rumex acetosella</i>	LA	n/a
Bracken	<i>Pteridium aquilinum</i>	LA	n/a
Lesser Stitchwort	<i>Stellaria graminea</i>	F-A	n/a
Creeping Buttercup	<i>Ranunculus repens</i>	F	n/a
Creeping Thistle	<i>Cirsium arvense</i>	F	n/a
Meadow Foxtail	<i>Alopecurus pratensis</i>	F	n/a
Field Woodrush	<i>Luzula campestris</i>	LF	n/a
Field Bindweed	<i>Convolvulus arvensis</i>	LF	n/a
Germander Speedwell	<i>Veronica chaemedrys</i>	O-LF	n/a
Perforate St. John's Wort	<i>Hypericum perforatum</i>	O	n/a
Ground Ivy	<i>Glechoma hederacea</i>	O	n/a
Common Nettle	<i>Urtica dioica</i>	O	n/a
Curled Dock	<i>Rumex crispus</i>	O	n/a
Field Forget-me-not	<i>Myosotis arvensis</i>	O	n/a
Soft Rush	<i>Juncus effusus</i>	O	n/a
Cleavers	<i>Galium aparine</i>	R	n/a
Hard Rush	<i>Juncus inflexus</i>	R	n/a
Red Campion	<i>Silene dioica</i>	R	n/a
Cut-leaved Cranesbill	<i>Geranium dissectum</i>	R	n/a



Common name	Latin name	DAFOR rating	Notes
Dame's Rocket	<i>Hesperis matronalis</i>	R	n/a
Water Figwort	<i>Scrophularia auriculata</i>	R	n/a

Unit G (photo 7)

Area of semi-improved neutral grassland which includes the Target Notes TN1 and TN2. There is the Cantley Stream running along the northern boundary of this unit. The eastern end of this area was pasture in 1946 and 1988, while the western half appears to be under arable cultivation in 1946 - this correlates well with the quality of the vegetation observed.

Table 8: Unit G

Common name	Latin name	DAFOR rating	Notes
Hairy Sedge	<i>Carex hirta</i>	A	Grassland
Hard Rush	<i>Juncus inflexus</i>	A	Stream
Common Nettle	<i>Urtica dioica</i>	A	Grassland
Creeping Thistle	<i>Cirsium arvense</i>	A	Grassland
Red Fescue	<i>Festuca rubra</i>	LA	Grassland
Bittersweet	<i>Solanum dulcamara</i>	LA	Stream
Mint species	<i>Mentha sp.</i>	F	Stream
Cleavers	<i>Galium aparine</i>	F	Grassland
Iris	<i>Iris sp.</i>	F	Stream
Reed Canary Grass	<i>Phalaris arundinacea</i>	F	Stream
Hairy Willowherb	<i>Epilobium hirsutum</i>	O	Stream
Water Figwort	<i>Scrophularia auriculata</i>	O	Stream
Field Woodrush	<i>Luzula campestris</i>	O	Grassland
Thyme-leaved Sandwort	<i>Arenaria serpyllifolia</i>	R	Grassland
Smooth Cat's-ear	<i>Hypochaeris glabra</i>	R	Grassland

Target Note 1 (photo 8)

This is an area within Unit G which has species of interest such as thyme-leaved sandwort and smooth cat's-ear (Red Data Book near-threatened species). This is an area of open, sandy/ gravelly soil.

Table 9: TN1

Common name	Latin name	DAFOR rating	Notes
Hairy Sedge	<i>Carex hirta</i>	A	n/a
Creeping Cinquefoil	<i>Potentilla reptans</i>	A	n/a
Common Cudweed	<i>Filago vulgaris</i>	A	n/a
Fairy Flax	<i>Linum catharticum</i>	A	n/a
Bracken	<i>Pteridium aquilinum</i>	LA	n/a
False Oat	<i>Arrhenatherum elatius</i>	F-A	n/a
Perforate St. John's Wort	<i>Hypericum perforatum</i>	F	n/a
Mouse-ear Hawkweed	<i>Pilosella officinarum</i>	F	n/a
Red Fescue	<i>Festuca rubra</i>	O-F	n/a
Bramble	<i>Rubus agg.</i>	O-F	n/a
Common Bent	<i>Agrostis capillaris</i>	O-F	n/a

Common name	Latin name	DAFOR rating	Notes
Dove's-foot Cranesbill	<i>Geranium molle</i>	O	n/a
Yarrow	<i>Achillea millefolium</i>	O	n/a
Wall Speedwell	<i>Veronica arvensis</i>	O	n/a
Field Woodrush	<i>Luzula campestris</i>	O	n/a
Hoary Mullein	<i>Verbascum pulverulentum</i>	O	n/a
Thyme-leaved Sandwort	<i>Arenaria serpyllifolia</i>	R	n/a
Smooth Cat's-ear	<i>Hypochaeris glabra</i>	R	n/a

Target Note 2 (photo 47)

This was target note 62 from the 2017 AECOM report which is unchanged in area. Species of interest in this damp area include greater bird's-foot trefoil and square-stalked St John's-wort.

Table 10: TN2

Common name	Latin name	DAFOR rating	Notes
Hard Rush	<i>Juncus inflexus</i>	A	n/a
Common Nettle	<i>Urtica dioica</i>	A	n/a
Creeping Thistle	<i>Cirsium arvense</i>	A	n/a
Red Fescue	<i>Festuca rubra</i>	LA	n/a
Water Figwort	<i>Scrophularia auriculata</i>	F	n/a
False Oat Grass	<i>Arrhenatherum elatius</i>	F	n/a
Silverweed	<i>Potentilla anserina</i>	LF	n/a
Marsh Thistle	<i>Cirsium palustre</i>	O	n/a
Water Mint	<i>Mentha aquatica</i>	O	n/a
Greater Bird's Foot Trefoil	<i>Lotus pedunculatus</i>	O	n/a
Square-stalked St John's-wort	<i>Hypericum tetrapterum</i>	R	n/a

Unit H (photo 9)

A small pocket of scrub mainly comprised of grey willow and bramble.

Table 11: Unit H

Common name	Latin name	DAFOR rating	Notes
Bramble	<i>Rubus agg.</i>	A	n/a
Grey willow	<i>Salix cinerea</i>	A	n/a
Pedunculate Oak	<i>Quercus robur</i>	O	n/a
Elder	<i>Sambucus nigra</i>	O	n/a

Unit I (photo 10)

Area of grazed semi-improved neutral grassland with two species of orchid and herb-rich turf. This area, in the shallow valley created by the Cantley Stream (a tributary of the River Yare) was mainly pasture in 1946 and this area (together with the eastern end of Unit G and TN1 and TN2) is likely a remnant of a significant ecological corridor.

**Table 12: Unit 10**

Common name	Latin name	DAFOR rating	Notes
Yarrow	<i>Achillea millefolium</i>	F	n/a
Common Sorrel	<i>Rumex acetosa</i>	F	n/a
Creeping Cinquefoil	<i>Potentilla reptans</i>	F	n/a
Ribwort Plantain	<i>Plantago lanceolata</i>	F	n/a
Lesser Stitchwort	<i>Stellaria graminea</i>	F	n/a
Lesser Trefoil	<i>Trifolium dubium</i>	F	n/a
False Oat Grass	<i>Arrhenatherum elatius</i>	F	n/a
Red Fescue	<i>Festuca rubra</i>	F	n/a
Common Mouse-ear	<i>Cerastium fontanum</i>	F	n/a
Field Wood-rush	<i>Luzula campestris</i>	LF	n/a
White Clover	<i>Trifolium repens</i>	O-F	n/a
Common Spotted Orchid	<i>Dactylorhiza fuchsii</i>	O	n/a
Southern Marsh Orchid	<i>Dactylorhiza praetermissa</i>	O	n/a
Cat's Ear	<i>Hypochaeris radicata</i>	O	n/a
Selfheal	<i>Prunella vulgaris</i>	O	n/a
Thyme-leaved Speedwell	<i>Veronica serpyllifolia</i>	O	n/a
Ragwort	<i>Jacobaea vulgaris</i>	O	n/a
Common Centaury	<i>Centaureum erythraea</i>	O	n/a
Meadow Buttercup	<i>Ranunculus acris</i>	R	n/a

Unit J (Grassland only) (Photo 11)

An area of species poor dry grassland of recent origin which does include the red-data book species common cudweed. This was arable farmland in 1988.

Table 13: Unit J

Common name	Latin name	DAFOR rating	Notes
Red Fescue	<i>Festuca rubra</i>	A	n/a
Common Cudweed	<i>Filago vulgaris</i>	F-A	n/a
Weld	<i>Reseda luteola</i>	O-F	n/a
Wild Mignonette	<i>Reseda lutea</i>	O-F	n/a
Poppy	<i>Papaver rhoeas</i>	O	n/a
Perforate St John's-wort	<i>Hypericum perforatum</i>	F	n/a

Target Note 3 (photo 12)

Area noted as Target Note 40 in the 2017 AECOM report. This is an area of scrub which includes mainly aspen, cherry and field maple. There is bramble and blackthorn on the edge of this patch of scrub and silver birch is found in localised areas.

Table 14: TN3

Common name	Latin name	DAFOR rating	Notes
Aspen	<i>Populus tremula</i>	A	n/a
Bramble	<i>Rubus agg.</i>	A	Edge
Maple	<i>Acer campestre</i>	F	n/a



Common name	Latin name	DAFOR rating	Notes
Cherry	<i>Prunus avium</i>	F	n/a
Blackthorn	<i>Prunus spinosa</i>	F	Edge
Silver Birch	<i>Betula pendula</i>	LF	n/a
Dogwood	<i>Cornus sanguinea</i>	O	n/a
Wild Privet	<i>Ligustrum vulgare</i>	O	n/a
Hawthorn	<i>Crataegus monogyna</i>	O	n/a
Elder	<i>Sambucus nigra</i>	O	n/a
Dog Rose	<i>Rosa canina</i>	O	n/a
Bracken	<i>Pteridium aquilinum</i>	O	n/a
Hazel	<i>Corylus avellana</i>	R	n/a

Unit K (photo 13)

Area of tall ruderal vegetation adjacent to the Cantley Stream.

Table 15: Unit K

Common name	Latin name	DAFOR rating	Notes
Bracken	<i>Pteridium aquilinum</i>	LD	n/a
Common Nettle	<i>Urtica dioica</i>	LD	n/a
Yarrow	<i>Achillea millefolium</i>	LA	n/a
Hairy Willowherb	<i>Epilobium hirsutum</i>	F	n/a
False Oat Grass	<i>Arrhenatherum elatius</i>	F	n/a
Bramble	<i>Rubus agg.</i>	O	n/a
Cleavers	<i>Galium aparine</i>	O	n/a
Mugwort	<i>Artemisia vulgaris</i>	O	n/a
Water Figwort	<i>Scrophularia auriculata</i>	n/a	Stream
Water Forget-me-not	<i>Myosotis scorpioides</i>	n/a	Stream
Fool's Watercress	<i>Apium nodiflorum</i>	n/a	Stream
Brooklime	<i>Veronica beccabunga</i>	n/a	Stream

Unit L (photo 14)

An area of scrub including elder and hawthorn. This included a tall ruderal verge dominated by nettle, hogweed and red campion.

Table 16: Unit L

Common name	Latin name	DAFOR rating	Notes
Common Nettle	<i>Urtica dioica</i>	D	n/a
Hogweed	<i>Heracleum sphondylium</i>	A	n/a
Red Campion	<i>Silene dioica</i>	A	n/a
Spear Thistle	<i>Cirsium arvense</i>	A	n/a
Bramble	<i>Rubus agg.</i>	A	n/a
False Oat Grass	<i>Arrhenatherum elatius</i>	A	n/a
Cock's Foot	<i>Dactylis glomerata</i>	O	n/a
Hop	<i>Humulus lupulus</i>	O	n/a
Broad-leaved Dock	<i>Rumex obtusifolius</i>	O	n/a
Elder	<i>Sambucus nigra</i>	n/a	Scrub
Hawthorn	<i>Crataegus monogyna</i>	n/a	Scrub
Elm	<i>Ulmus sp.</i>	n/a	Single Tree



Unit M (north) (photo 15)

An area of semi-improved neutral grassland with the Cantley Stream running along the southern edge, separating this area from an area of poor semi-improved grassland in the southern half of this unit. Shows as grassland in 1946 and 1988.

Table 17: Unit M north

Common name	Latin name	DAFOR rating	Notes
Meadow Foxtail	<i>Alopecurus pratensis</i>	A	n/a
Perforate St. John's Wort	<i>Hypericum perforatum</i>	A	n/a
False Oat Grass	<i>Arrhenatherum elatius</i>	A	n/a
Annual Meadow Grass	<i>Poa annua</i>	A	n/a
Yorkshire Fog	<i>Holcus lanatus</i>	A	n/a
Hemlock	<i>Conium maculatum</i>	LA	n/a
Hogweed	<i>Heracleum sphondylium</i>	LA	n/a
Creeping Thistle	<i>Cirsium arvense</i>	F	n/a
Field Forget-me-not	<i>Myosotis arvensis</i>	F	n/a
Hairy Willowherb	<i>Epilobium hirsutum</i>	A	Grassland and Cantley Stream
White Clover	<i>Trifolium repens</i>	F	n/a
False Fox Sedge	<i>Carex otrubae</i>	O	n/a
Greater Stitchwort	<i>Stellaria holostea</i>	O	n/a
Cock's Foot	<i>Dactylis glomerata</i>	O	n/a
Hard Rush	<i>Juncus inflexus</i>	O	n/a
Broad-leaved Dock	<i>Rumex obtusifolius</i>	O	n/a
Curled Dock	<i>Rumex crispus</i>	O	n/a
Cut-leaved Cranesbill	<i>Geranium dissectum</i>	O	n/a
Reed Canary Grass	<i>Phalaris arundinacea</i>	O	n/a
Reedmace	<i>Typha latifolia</i>	D	Cantley Stream only
Yellow Flag Iris	<i>Iris pseudacorus</i>	O	Cantley Stream

Unit M (south)

Area of poor-semi-improved grassland which was noted as semi-improved neutral grassland in the 2017 AECOM report.

Table 18: Unit M south

Common name	Latin name	DAFOR rating	Notes
Meadow Foxtail	<i>Alopecurus pratensis</i>	D	n/a
Cut-leaved Cranebill	<i>Geranium dissectum</i>	A	n/a
Annual Meadow Grass	<i>Poa annua</i>	A	n/a
Yorkshire Fog	<i>Holcus lanatus</i>	A	n/a
Common Mouse-ear	<i>Cerastium fontanum</i>	LA	n/a
Common Nettle	<i>Urtica dioica</i>	LA	n/a
Red Fescue	<i>Festuca rubra</i>	F	n/a
Common Chickweed	<i>Stellaria media</i>	F	n/a
Spear Thistle	<i>Cirsium vulgare</i>	O	n/a
Creeping Buttercup	<i>Ranunculus repens</i>	O	n/a
Germander Speedwell	<i>Veronica chaemedrys</i>	O	n/a
Thyme-leaved Speedwell	<i>Veronica serpyllifolia</i>	O	n/a



Common name	Latin name	DAFOR rating	Notes
Broad-leaved Dock	<i>Rumex obtusifolius</i>	O	n/a
Curled Dock	<i>Rumex crispus</i>	O	n/a
Cut-leaved Cranesbill	<i>Geranium dissectum</i>	O	n/a
Reed Canary Grass	<i>Phalaris arundinacea</i>	O	n/a
Yellow Flag Iris	<i>Iris pseudacorus</i>	O	Stream

Unit N (photo 16)

Broad-leaved woodland consisting of sweet chestnut, sycamore and oak. The presence of bluebell and wood avens and possibly other species are suggestive of an ancient origin. Indeed the area is shown as woodland on a tithe map of 1840¹⁰, and is shown as Priority Habitat (though not as ancient woodland) on MAGIC¹¹ maps.

Table 19: Unit N

Common name	Latin name	DAFOR rating	Notes
Sweet Chestnut	<i>Castanea sativa</i>	A	Canopy
Sycamore	<i>Acer pseudoplatanus</i>	A	Canopy
Pedunculate Oak	<i>Quercus robur</i>	O	Canopy
Elder	<i>Sambucus nigra</i>	O	Understorey
Common Nettle	<i>Urtica dioica</i>	LD	Ground Layer
Foxglove	<i>Digitalis purpurea</i>	LA	Ground Layer
Bracken	<i>Pteridium aquilinum</i>	LA	Ground Layer
Common Bluebell	<i>Hyacinthoides non-scripta</i>	F	Ground Layer
Cleavers	<i>Galium aparine</i>	F	Ground Layer
Garlic Mustard	<i>Alliaria petiolata</i>	F	Ground Layer
Ivy	<i>Hedera helix</i>	O	Ground Layer
Red Campion	<i>Silene dioica</i>	R	Ground Layer

Unit O (photo 17)

A small area of semi-improved neutral grassland surrounded by woodland. Several bee orchid spikes (photo 18) were recorded here as well as the Red Data Book species, common cudweed. The west end of this area had more cudweed and hoary mullein.

Table 20: Unit O

Common name	Latin name	DAFOR rating	Notes
Creeping Cinquefoil	<i>Potentilla reptans</i>	A	n/a
Germander Speedwell	<i>Veronica chamaedrys</i>	A	n/a
Hoary Mullein	<i>Verbascum pulverulentum</i>	A	n/a
Yorkshire Fog	<i>Holcus lanatus</i>	LA	n/a
Yarrow	<i>Achillea millefolium</i>	F	n/a
Ribwort Plantain	<i>Plantago major</i>	F	n/a
Bramble	<i>Rubus agg.</i>	F	n/a
Ground Ivy	<i>Glechoma hederacea</i>	O	n/a
Forget-me-not	<i>Myosotis sp.</i>	O	n/a
Common Cudweed	<i>Filago vulgaris</i>	O	n/a
Hard Rush	<i>Juncus inflexus</i>	O	n/a

¹⁰ <http://www.historic-maps.norfolk.gov.uk/mapexplorer/>

¹¹ <https://magic.defra.gov.uk/magicmap.aspx>

Common name	Latin name	DAFOR rating	Notes
False Oat Grass	<i>Arrhenatherum elatius</i>	O	n/a
Bee Orchid	<i>Ophrys apifera</i>	R	Several spikes
Creeping Buttercup	<i>Ranunculus repens</i>	n/a	n/a
Rough Meadow Grass	<i>Poa trivialis</i>	n/a	n/a
Perforate St John's-wort	<i>Hypericum perforatum</i>	n/a	n/a

Unit P

Belt of mature mixed plantation woodland with sparse or no understorey and sparse ground layer. Overall the planting does not support any significant assemblage of ancient woodland species. There is an area of hawthorn dominant scrub and planted trees as landscaping at the west end of this unit, by the A11.

Table 21: Unit P

Common name	Latin name	DAFOR rating	Notes
Hawthorn	<i>Crataegus monogyna</i>	D	Scrub
Alder	<i>Alnus glutinosa</i>	LA	Scrub
Sycamore	<i>Acer pseudoplatanus</i>	F	Scrub and landscaping
Dogwood	<i>Cornus sanguinea</i>	O	Scrub
Dog Rose	<i>Rosa canina</i>	O	Scrub
Ash	<i>Fraxinus excelsior</i>	n/a	Road Screening
Scot's Pine	<i>Pinus sylvestris</i>	n/a	Canopy
European Beech	<i>Fagus sylvatica</i>	n/a	Canopy
Field Maple	<i>Acer campestre</i>	n/a	Canopy and landscaping
Wild Cherry	<i>Prunus avium</i>	n/a	Canopy and landscaping
Sweet Chestnut	<i>Castanea sativa</i>	n/a	Canopy
Pedunculate Oak	<i>Quercus robur</i>	n/a	Canopy and landscaping
Box	<i>Buxus sempervirens</i>	n/a	Understorey
Bramble	<i>Rubus agg.</i>	n/a	Understorey
Snowberry	<i>Symphoricarpos albus</i>	n/a	Understorey
Germander Speedwell	<i>Veronica chaemedrys</i>	n/a	Ground Layer
Creeping Cinquefoil	<i>Potentilla reptans</i>	n/a	Ground Layer
False Oat Grass	<i>Arrhenatherum elatius</i>	n/a	Ground Layer
Bracken	<i>Pteridium aquilinum</i>	n/a	Ground Layer
Hoary Mullein	<i>Verbascum pulverulentum</i>	n/a	Ground Layer
Creeping Cinquefoil	<i>Potentilla reptans</i>	n/a	Ground Layer
Perforate St John's-wort	<i>Hypericum perforatum</i>	n/a	Ground Layer
Shepherd's Purse	<i>Capsella bursa-pastoris</i>	n/a	Ground Layer
Foxglove	<i>Digitalis purpurea</i>	n/a	Ground Layer

Unit Q (Photo 19)

Young broad-leaved plantation over species poor grassland dominated by false oat, bramble and stinging nettle.

Table 22: Unit Q

Common name	Latin name	DAFOR rating	Notes
False Oat Grass	<i>Arrhenatherum elatius</i>	D	Grassland
Bramble	<i>Rubus agg.</i>	LD	Understorey
Common Nettle	<i>Urtica dioica</i>	LD	Grassland
Cocks-foot	<i>Dactylis glomerata</i>	A	Grassland
Ground Ivy	<i>Glechoma hederacea</i>	F	Grassland
Yorkshire Fog	<i>Holcus lanatus</i>	F	Grassland
Broad-leaved Dock	<i>Rumex obtusifolius</i>	F	Grassland
Common Hawthorn	<i>Crataegus monogyna</i>	F	Plantation
Elder	<i>Sambucus nigra</i>	F	Plantation
Willow	<i>Salix sp.</i>	F	Plantation
Ash	<i>Fraxinus excelsior</i>	O	Plantation
Oak	<i>Quercus robur</i>	O	Plantation
Wild Cherry	<i>Prunus avium</i>	O	Plantation
Rowan	<i>Sorbus aucuparia</i>	O	Plantation
Silver Birch	<i>Betula pendula</i>	O	Plantation
Hemlock	<i>Conium maculatum</i>	O	Grassland
Cow Parsley	<i>Anthriscus sylvestris</i>	O	Grassland
Red Campion	<i>Silene dioica</i>	O	Grassland
Oxeye Daisy	<i>Leucanthemum vulgare</i>	O	Grassland

Unit R (photo 20)

A long-standing mixed plantation on the north side of the A11. The ground layer is species poor with very little undergrowth.

Table 23: Unit R

Common name	Latin name	DAFOR rating	Notes
Common Nettle	<i>Urtica dioica</i>	D	Ground Layer
Ash	<i>Fraxinus excelsior</i>	LD	Canopy
Garlic Mustard	<i>Alliaria petiolata</i>	A	Ground Layer
Red Campion	<i>Silene dioica</i>	A	Ground Layer
Bramble	<i>Rubus agg.</i>	A	Understorey
Wild Cherry	<i>Prunus avium</i>	F	Canopy
Scot's Pine	<i>Pinus sylvestris</i>	F	Canopy
Field Maple	<i>Acer campestre</i>	F	Canopy
Sycamore	<i>Acer pseudoplatanus</i>	F	Canopy
Hogweed	<i>Heracleum sphondylium</i>	F	Ground Layer
Cow Parsley	<i>Anthriscum sylvestris</i>	F	Ground Layer
Cleavers	<i>Galium aparine</i>	F	Ground Layer
Annual Meadow Grass	<i>Poa trivialis</i>	F	Ground Layer
Elder	<i>Sambucus nigra</i>	F	Understorey
Pedunculate Oak	<i>Quercus robur</i>	O	Canopy
Box	<i>Buxus sempervirens</i>	O	Understorey



Unit S (photo 21)

Semi-improved neutral grassland comprising false oat grass, annual meadow grass and an abundance of the Red Data Book species, common cudweed. There is a selection of other herbaceous species such as meadow cranesbill and storksbill.

Table 24: Unit S

Common name	Latin name	DAFOR rating	Notes
Common Nettle	<i>Urtica dioica</i>	LD	n/a
Creeping Thistle	<i>Cirsium arvense</i>	A	n/a
Common Cudweed	<i>Filago vulgaris</i>	A	n/a
Annual Meadow Grass	<i>Poa annua</i>	LA	n/a
Marsh Thistle	<i>Cirsium palustre</i>	LA	n/a
Hoary Mullein	<i>Verbascum pulverulentum</i>	O	n/a
Storksbill	<i>Erodium cicutarium</i>	O	n/a
Meadow Cranesbill	<i>Geranium pratense</i>	O	n/a
Weld	<i>Reseda luteola</i>	O	n/a

Unit T (photo 22)

Woodland dominated by grey poplar and nettle. The northern section of this woodland was dominated by bluebell. This woodland shows up on the tithe map of 1840, and in subsequent Ordnance Survey maps, though the poor canopy and ground layer diversity suggests it has been overplanted or otherwise altered with at some point.

Table 25: Unit T

Common name	Latin name	DAFOR rating	Notes
Grey Poplar	<i>Salix cinerea</i>	D	Canopy
Sycamore	<i>Acer pseudoplatanus</i>	O	Canopy
Elder	<i>Sambucus nigra</i>	n/a	Understorey
Lilac	<i>Syringa vulgaris</i>	n/a	Understorey
Ash	<i>Fraxinus excelsior</i>	n/a	Understorey
Common Nettle	<i>Urtica dioica</i>	D	Ground Layer
Bluebell	<i>Hyacinthoides non-scripta</i>	LD	Ground layer (north)
Ground Ivy	<i>Glechoma hederacea</i>	A	Ground Layer
Cleavers	<i>Galium aparine</i>	F	Ground Layer
Red Campion	<i>Silene dioica</i>	O	Ground Layer

Unit U (photo 23)

Fairly recently planted broad-leaved plantation with closed canopy, no definable understorey and very poorly developed ground layer.

Table 26: Unit U

Common name	Latin name	DAFOR rating	Notes
Cherry	<i>Prunus avium</i>	D	n/a
Common Nettle	<i>Urtica dioica</i>	D	n/a
Beech	<i>Fagus sylvatica</i>	F	n/a
Pedunculate Oak	<i>Quercus robur</i>	F	n/a
False Oat Grass	<i>Arrhenatherum elatius</i>	F	n/a
Ground Ivy	<i>Glechoma hederacea</i>	F	n/a



Common name	Latin name	DAFOR rating	Notes
Cleavers	<i>Galium aparine</i>	F	n/a
Silver Birch	<i>Betula pendula</i>	O	n/a
Ash	<i>Fraxinus excelsior</i>	O	

Unit V (Photo 24)

Area of tall ruderal.

Table 27: Unit V

Common name	Latin name	DAFOR rating	Notes
Common Nettle	<i>Urtica dioica</i>	A	n/a
Cleavers	<i>Galium aparine</i>	A	n/a
Common Sorrel	<i>Rumex acetosa</i>	A	n/a
Broad-leaved Dock	<i>Rumex obtusifolius</i>	A	n/a
Forget-me-not	<i>Myosotis sp.</i>	A	n/a
False Oat Grass	<i>Arrhenatherum elatius</i>	A	n/a
Ragwort	<i>Jacobaea vulgaris</i>	F	n/a
Spear Thistle	<i>Cirsium vulgare</i>	O	n/a
Creeping Thistle	<i>Cirsium arvense</i>	O	n/a
Hemlock	<i>Conium maculatum</i>	O	n/a
Pendulous Sedge	<i>Carex pendula</i>	O	n/a
Perforate St John's-wort	<i>Hypericum perforatum</i>	O	n/a

Unit W (photo 25)

This area is mainly arable land with hedgerow on the western side and broad-leaved plantation on the south and eastern boundary. The plantation is recently planted with very little ground cover.

Table 28: Unit W

Common name	Latin name	DAFOR rating	Notes
Field Maple	<i>Acer campestre</i>	A	Canopy
Pedunculate Oak		F	Canopy
Lime	<i>Tilia sp.</i>	O	Canopy
Hazel	<i>Coryllus avellana</i>	A	Understorey
Dogwood	<i>Cornus sanguinea</i>	F	Understorey
Elder	<i>Sambucus nigra</i>	F	Understorey
Bramble	<i>Rubus agg.</i>	F	Understorey
Common Nettle	<i>Urtica dioica</i>	A	Ground Layer

Unit X (photo 26)

Semi-improved neutral grassland with the Cantley Stream running through. Scattered alder, hazel and hawthorn area present along the stream.

Table 29: Unit X

Common name	Latin name	DAFOR rating	Notes
Common Nettle	<i>Urtica dioica</i>	LD	n/a
Yorkshire Fog	<i>Holcus lanatus</i>	A	n/a

Common name	Latin name	DAFOR rating	Notes
Cock's Foot	<i>Dactylis glomerata</i>	A	n/a
Creeping Buttercup	<i>Ranunculus repens</i>	A	n/a
Creeping Thistle	<i>Cirsium arvense</i>	F	n/a
Lesser Stitchwort	<i>Stellaria graminea</i>	F	n/a
Meadow Foxtail	<i>Alopecurus pratensis</i>	F	n/a
Soft Brome	<i>Bromus hordeaceus</i>	F	n/a
Spear Thistle	<i>Cirsium vulgare</i>	F	n/a
Cat's Ear	<i>Hypochaeris radicata</i>	F	n/a
Broad-leaved Dock	<i>Rumex obtusifolia</i>	O	n/a
Ground Ivy	<i>Glechoma hederacea</i>	O	n/a
Cow Parsley	<i>Anthriscus sylvestris</i>	O	n/a
Cut-leaved Cranesbill	<i>Geranium dissectum</i>	O	n/a
Common Vetch	<i>Vicia sativa</i>	R	n/a
Bramble	<i>Rubus agg.</i>	R	n/a
Soft Rush	<i>Juncus effusus</i>	R	n/a
Crested Dog's-Tail	<i>Cynosurus cristatus</i>	R	n/a
Alder	<i>Alnus glutinosa</i>	n/a	Stream
Hawthorn	<i>Crataegus monogyna</i>	n/a	Stream
Herb Robert	<i>Geranium robertianum</i>	n/a	Stream
Rosebay Willowherb	<i>Chamerion angustifolium</i>	n/a	Stream
Hazel	<i>Corylus avellana</i>	n/a	Stream
Pedunculate Oak	<i>Quercus robur</i>	n/a	Stream
Hard Rush	<i>Juncus inflexus</i>	n/a	Stream
Yellow Flag	<i>Iris pseudacorus</i>	n/a	Stream

Unit Y (photo 27)

An area of diverse neutral grassland located beside the Thickthorn Interchange Park & Ride (P&R) and on the roundabout, with small trees and bushes planted. Most of the species are typical of recently disturbed soils.

Table 30: Unit Y

Common name	Latin name	DAFOR rating	Notes
Creeping Cinquefoil	<i>Potentilla reptans</i>	A	n/a
Daisy	<i>Bellis perennis</i>	A	n/a
Common Cudweed	<i>Filago vulgaris</i>	F	n/a
Common Centaury	<i>Centaurium erythraea</i>	F	n/a
Red Fescue	<i>Festuca rubra</i>	F	n/a
Yorkshire Fog	<i>Holcus lanatus</i>	F	n/a
Nipplewort	<i>Lapsana communis</i>	F	n/a
Purple Toadflax	<i>Linaria purpurea</i>	O	n/a
Curled Dock	<i>Rumex crispus</i>	O	n/a
Perforate St. John's-wort	<i>Hypericum perforatum</i>	O	n/a
Mallow	<i>Malva sylvestris</i>	O	n/a
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	O	n/a
Ground Ivy	<i>Glechoma hederacea</i>	O	n/a
Ragwort	<i>Jacobaea vulgaris</i>	R	n/a
Selfheal	<i>Prunella vulgaris</i>	O	n/a

Common name	Latin name	DAFOR rating	Notes
Cat's Ear	<i>Hypochaeris radicata</i>	O	n/a
Bramble	<i>Rubus agg.</i>	O	n/a
Creeping Thistle	<i>Cirsium arvense</i>	O	n/a
Yarrow	<i>Achillea millefolium</i>	O	n/a
Scarlet Pimpernel	<i>Anagallis arvensis</i>	O	n/a
Fat Hen	<i>Chenopodium album</i>	R	n/a
Holly	<i>Ilex aquifolium</i>	n/a	Planted
Cotoneaster	<i>Cotoneaster sp.</i>	n/a	Planted
Silver Birch	<i>Betula pendula</i>	n/a	Planted
Laurel	<i>Prunus laurocerasus</i>	n/a	Planted
Guelder Rose	<i>Viburnum opulus</i>	n/a	Planted on roundabout
Dogwood	<i>Cornus sanguinea</i>	n/a	Planted on roundabout
Pedunculate Oak	<i>Quercus robur</i>	n/a	Saplings planted on roundabout

Unit Z (photo 28)

Similar to Unit Y, that it is an area of neutral grassland beside a stretch of the B1172 to the north of the Thickthorn P&R, which had been recently cut. Most of the species are typical of recently disturbed soils.

Table 31: Unit Z

Common name	Latin name	DAFOR rating	Notes
Common Stork's-bill	<i>Erodium cicutarium</i>	LA	n/a
Bramble	<i>Rubus agg.</i>	LA	n/a
Ground Ivy	<i>Glechoma hederacea</i>	LA	n/a
Annual Meadow Grass	<i>Poa annua</i>	F	n/a
Soft Brome	<i>Bromus hordeaceus</i>	F	n/a
Nipplewort	<i>Lapsana communis</i>	F	n/a
Common Cudweed	<i>Filago vulgaris</i>	F	n/a
Yarrow	<i>Achillea millefolium</i>	F	n/a
Buck's-horn Plantain	<i>Plantago coronopus</i>	F	n/a
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	F	n/a
Viper's Bugloss	<i>Echium vulgare</i>	LF	n/a
Hoary Mullein	<i>Verbascum pulverulentum</i>	O	n/a
Curled Dock	<i>Rumex crispus</i>	O	n/a
Creeping Thistle	<i>Cirsium arvense</i>	O	n/a
Cat's Ear	<i>Hypochaeris radicata</i>	O	n/a
Dandelion	<i>Taraxacum agg.</i>	O	n/a
Bristly Oxtongue	<i>Helminthotheca echioides</i>	O	n/a
Yarrow	<i>Achillea millefolium</i>	O	n/a
Canadian Fleabane	<i>Conyza canadensis</i>	O	n/a
Common Mallow	<i>Malva sylvestris</i>	O	n/a
Scarlet Pimpernel	<i>Anagallis arvensis</i>	O	n/a
Bird's Foot Trefoil	<i>Lotus corniculatus</i>	O	n/a
Spear Thistle	<i>Cirsium arvense</i>	O	n/a
Common Nettle	<i>Urtica dioica</i>	R	n/a



Small Nettle	<i>Urtica urens</i>	R	n/a
--------------	---------------------	---	-----

Unit AA (photo 29)

An area of broad-leaved plantation bordering a track which runs south-west. The plantation has a very poor ground layer, dominated by nettles and ground ivy. The track is mainly poor semi-improved grassland. To the south of here is an area cultivated for arable with scattered oaks and was of low botanical interest.

Table 32: Unit AA

Common name	Latin name	DAFOR rating	Notes
Sweet Chestnut	<i>Castanea sativa</i>	A	Canopy
Pedunculate Oak	<i>Quercus robur</i>	F	Canopy
Elm	<i>Ulmus minor</i>	F	Canopy
Sycamore	<i>Acer pseudoplatanus</i>	F	Canopy
Wild Cherry	<i>Prunus avium</i>	O	Canopy
Common Nettle	<i>Urtica dioica</i>	D	Ground Layer and track
Holly	<i>Ilex aquifolium</i>	F	Understorey
Elder	<i>Sambucus nigra</i>	O	Understorey
Ground Ivy	<i>Glechoma hederacea</i>	D	Ground Layer
Ivy	<i>Hedera helix</i>	O	Ground Layer
Red Campion	<i>Silene dioica</i>	O	Ground Layer
Hogweed	<i>Herculeum sphondylium</i>	O	Ground Layer
Hedge Woundwort	<i>Stachys sylvatica</i>	R	Ground Layer
False Oat Grass	<i>Arrhenatherum elatius</i>	D	Track
Creeping Bent	<i>Agrostis stolonifera</i>	LA	Track
Annual Meadow Grass	<i>Poa annua</i>	A	Track
Dove's-foot Cranesbill	<i>Geranium molle</i>	A	Track
Silverweed	<i>Potentilla anserina</i>	LA	Track
Wild Barley	<i>Hordeum spontaneum</i>	LA	Track
Fat Hen	<i>Chenopodium album</i>	F	Track
Daisy	<i>Bellis perennis</i>	F	Track
Soft Brome	<i>Bromus hordeaceus</i>	F	Track
White Deadnettle	<i>Lamium album</i>	F	Track
Perennial Rye Grass	<i>Lolium perenne</i>	F	Track
Creeping Thistle	<i>Cirsium arvense</i>	F	Track
Cock's Foot	<i>Dactylis glomerata</i>	F	Track
Great Plantain	<i>Plantago major</i>	F	Track
Ribwort Plantain	<i>Plantago lanceolata</i>	F	Track
Small Nettle	<i>Urtica urens</i>	O	Track
Burdock	<i>Arctium sp.</i>	O	Track
Knotgrass	<i>Polygonum aviculare</i>	O	Track
Mallow	<i>Malva sylvestris</i>	O	Track
Common Stork's-bill	<i>Erodium cicutarium</i>	O	Track

Unit BB (photo 30)

An area of poor semi-improved grassland with common species throughout and a scattering of sapling trees. It was marked as improved grassland in the previous report, but no grass dominates and there is a reasonable diversity of herbaceous plants. At the southern boundary of this unit is a green lane, bordering a narrow stretch of broad-leaved

woodland. The trees in this woodland are mature but the grassland below is reasonably species poor.

Table 33: Unit BB

Common name	Latin name	DAFOR rating	Notes
Creeping Buttercup	<i>Ranunculus repens</i>	A	Grassland
White Clover	<i>Trifolium repens</i>	A	Grassland
Red Clover	<i>Trifolium pratense</i>	A	Grassland
Yarrow	<i>Achillea millefolium</i>	A	Grassland
Selfheal	<i>Prunella vulgaris</i>	A	Grassland
Annual Meadow Grass	<i>Poa annua</i>	A	Grassland
False Oat Grass	<i>Arrhenatherum elatius</i>	A	Grassland and Green Lane
Dandelion	<i>Taraxacum agg.</i>	A	Grassland
Selfheal	<i>Prunella vulgaris</i>	A	Grassland
Rough Meadow Grass	<i>Poa trivialis</i>	A	Woodland Ground Layer
Bird's-foot Trefoil	<i>Lotus corniculatus</i>	LA	Grassland
Perennial Rye Grass	<i>Lolium perenne</i>	F	Grassland
Cock's Foot	<i>Dactylis glomerata</i>	F	Grassland and Green Lane
Broad Leaved Dock	<i>Rumex obtusifolia</i>	F	Grassland and Green Lane
Wild Carrot	<i>Daucus carota</i>	F	Grassland
Spear Thistle	<i>Cirsium vulgare</i>	F	Grassland
Knapweed	<i>Centaurea nigra</i>	F	Grassland and Green Lane
Creeping Bent	<i>Agrostis stolonifera</i>	F	Grassland and Green Lane
Pedunculate Oak	<i>Quercus robur</i>	F	Woodland Canopy
Silver Birch	<i>Betula pendula</i>	F	Woodland Canopy
Dove's-foot Cranesbill	<i>Geranium molle</i>	F	Woodland Ground Layer
Oxeye Daisy	<i>Leucanthemum vulgare</i>	O	Grassland
Burdock	<i>Arctium sp.</i>	O	Grassland and Green Lane
Daisy	<i>Bellis perennis</i>	O	Grassland and Green Lane
Ragwort	<i>Jacobaea vulgaris</i>	O	Green Lane
Common Mouse-ear	<i>Cerastium fontanum</i>	O	Green Lane
Greater Chickweed	<i>Stellaria neglecta</i>	O	Green Lane
White Clover	<i>Trifolium repens</i>	O	Grassland and Green Lane
Red Fescue	<i>Festuca rubra</i>	O	Green Lane
Hawthorn	<i>Crataegus monogyna</i>	O	Woodland Understorey
Gorse	<i>Ulex europaeus</i>	O	Woodland Undergrowth
Hogweed	<i>Heracleum sphondylium</i>	O	Woodland Ground Layer
Bramble	<i>Rubus agg.</i>	O	Woodland Undergrowth
Lesser Stitchwort	<i>Stellaria graminea</i>	R	Grassland
Ash	<i>Fraxinus excelsior</i>	R	Woodland Canopy

Holly	<i>Ilex aquifolium</i>	R	Woodland Undergrowth
-------	------------------------	---	----------------------

Unit CC (photo 31)

An area of neutral grassland alongside the A11 Newmarket Road which includes species typical of disturbed ground including buck's-horn plantain (photo 32) corn spurrey (RDB near-threatened) and annual mercury.

Table 34: Unit CC

Common name	Latin name	DAFOR rating	Notes
Buck's-horn Plantain	<i>Plantago coronopus</i>	A	n/a
Corn Spurrey	<i>Spergula arvensis</i>	A	n/a
Yarrow	<i>Achillea millefolium</i>	F	n/a
Ribwort Plantain	<i>Plantago lanceolata</i>	F	n/a
Hop Trefoil	<i>Trifolium campestre</i>	F	n/a
Lesser Trefoil	<i>Trifolium dubium</i>	F	n/a
White Clover	<i>Trifolium repens</i>	F	n/a
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	F	n/a
Hare's-foot Clover	<i>Trifolium arvense</i>	F	n/a
Wild Radish	<i>Raphanus raphanistrum</i>	F	n/a
Wild Carrot	<i>Daucus carota</i>	F	n/a
Red Fescue	<i>Festuca rubra</i>	F	n/a
Yorkshire Fog	<i>Holcus lanatus</i>	F	n/a
Red Clover	<i>Trifolium pratense</i>	O	n/a
Poppy	<i>Papaver rhoeas</i>	O	n/a
Scarlet Pimpernel	<i>Anagallis arvensis</i>	O	n/a
Sun Spurge	<i>Euphorbia helioscopia</i>	O	n/a
Field Penny-cress	<i>Thlaspi arvense</i>	O	n/a
Hoary Mullein	<i>Verbascum pulverulentum</i>	O	n/a
Broad-leaved Dock	<i>Rumex obtusifolia</i>	R	n/a
Viper's Bugloss	<i>Echium vulgare</i>	R	n/a
Annual Mercury	<i>Mercurialis annua</i>	R	n/a

Unit DD

This is an area of land mainly cultivated for arable with maize growing. There are scattered areas of scrub and trees. An area of landscape planting is located along the west side of the A47 which includes oak and sycamore.

Table 35: Unit DD

Common name	Latin name	DAFOR rating	Notes
Sycamore	<i>Acer pseudoplatanus</i>	n/a	Scrub and planted
Goat Willow	<i>Salix caprea</i>	n/a	Scrub
Pedunculate Oak	<i>Quercus robur</i>	n/a	Planted and scattered trees
Field Maple	<i>Acer campestre</i>	n/a	Scrub
Blackthorn	<i>Prunus spinosa</i>	n/a	Scrub



Elder	<i>Sambucus nigra</i>	n/a	Scrub
Common Hawthorn	<i>Crataegus monogyna</i>	n/a	Scrub
Hazel	<i>Corylus avellana</i>	n/a	Scrub and planted
Gorse	<i>Ulex europaeus</i>	n/a	Scrub
Sweet Chestnut	<i>Castanea sativa</i>	n/a	Planted
Dogwood	<i>Cornus sanguinea</i>	n/a	Scrub
Bramble	<i>Rubus agg.</i>	n/a	Scrub
Common Nettle	<i>Urtica dioica</i>	n/a	Scrub margins
Bracken	<i>Pteridium aquilinum</i>	n/a	Scrub margins

Unit EE

An area of poor semi-improved grassland that could not be accessed. This was viewed from outside the unit, hence the lack of DAFOR ratings. The previous report noted this area as improved grassland, but there was enough herbaceous plant diversity and no uniform structure to be able to categorise it as poor semi-improved in the 2020 survey.

Table 36: Unit EE

Common name	Latin name	DAFOR rating	Notes
False Oat Grass	<i>Arrhenatherum elatius</i>	n/a	n/a
Yorkshire Fog	<i>Holcus lanatus</i>	n/a	n/a
Common Bent	<i>Agrostis capillaris</i>	n/a	n/a
Verbascum	<i>Verbascum sp.</i>	n/a	n/a
Common Nettle	<i>Urtica dioica</i>	n/a	n/a
Spear Thistle	<i>Cirsium vulgare</i>	n/a	n/a
Autumn Hawkbit	<i>Leontodon autumnalis</i>	n/a	n/a
Weld	<i>Reseda luteola</i>	n/a	n/a
Broad-leaved Dock	<i>Artemisia vulgaris</i>	n/a	n/a
Cut leaved cranesbill	<i>Geranium dissectum</i>	n/a	n/a

Meadow Farm Meadow CWS (photo 33)

This County Wildlife Site is mainly a pair of horse grazed paddocks, but also has a small area of impoverished Fen Meadow (NVC Category M22) in the eastern paddock, which has been fenced off from horse grazing. It is a Priority Habitat and includes large amounts of the characteristic blunt-flowered rush and abundant lesser pond sedge, which is likely to indicate affinity to the M22d *Iris pseudacorus* sub-community. This is a groundwater dependent community¹²

Table 37: Meadow Farm CWS

Common name	Latin name	DAFOR rating	Notes
Blunt-flowered Rush	<i>Juncus subnodulosus</i>	A	n/a
Water Mint	<i>Mentha aquatica</i>	A	n/a
Lesser Pond Sedge	<i>Carex acutiformis</i>	A	n/a
Hemp-agrimony	<i>Eupatorium cannabinum</i>	O	n/a
Marsh Thistle	<i>Cirsium palustre</i>	O	n/a
Greater Bird's Foot Trefoil	<i>Lotus corniculatus</i>	O	n/a

¹² Rodwell, J.S ed(1991) British Plant Communities, Volume II.



Square-stalked St John's-wort	<i>Hypericum tetrapterum</i>	R	n/a
Hard Rush	<i>Juncus inflexus</i>	R	n/a
Red Clover	<i>Trifolium pratense</i>	R	n/a
Clustered Dock	<i>Rumex conglomeratus</i>	R	n/a

The tight-grazed paddock areas were quadrat sampled. There were shallow basin areas in which the vegetation was clearly influenced by the presence of moisture; it is not clear if this comes from periodic inundation or from groundwater, or a mixture of both.

Quadrat samples are given below. Note the DOMIN scale is used, as detailed in the Methods section:

Table 38: Quadrat samples

Species	Quadrat number										Constancy
	1	2	3	4	5	6	7	8	9	10	
<i>Prunella vulgaris</i>	5	5	5	3	5	3	6	2	3	5	V (2-6)
<i>Trifolium repens</i>	5	4	3	3	5		3	4		5	IV (3-5)
<i>Carex hirta</i>	4	4	5	3	4			4	5		IV (3-5)
<i>Bellis perennis</i>	2		1		1		2	1	2	1	IV (1-2)
<i>Ranunculus repens</i>	5	3	4	5	3					3	III (3-5)
<i>Leontodon autumnalis</i>	3				2		3	4	5		III (2-5)
<i>Pulicaria dysenterica</i>		3	4	4	4	3		3			III (3-4)
<i>Festuca rubra</i>	3	3	3			3	5	3			III (3-5)
<i>Juncus articulatus</i>		3	5	3							II (3-5)
<i>Argentina anserina</i>		2	3			2				5	II (2-5)
<i>Potentilla reptans</i>	1						3		4		II (1-4)
<i>Plantago lanceolata</i>	3						4		3		II (3-4)
<i>Sagina procumbens</i>	1						1		3		II (1-3)
<i>Mentha aquatica</i>		1	2		2	1					II (1-2)
<i>Ranunculus acris</i>		1					2	3			II (1-3)
<i>Agrostis capillaris</i>	3						3	3		3	II (3)
<i>Achillea millefolium</i>							1	3	2		II (1-3)
<i>Geranium molle</i>							1	2	3		II (1-3)
<i>Carex flacca</i>						7					I (7)
<i>Cerastium fontanum</i>	2							4			I (2-4)
<i>Agrostis stolonifera</i>						3		5			I (3-5)
<i>Centaurium erythraea</i>							3	1			I (1-3)
<i>Medicago lupulina</i>								2	3		I (2-3)
<i>Jacobaea vulgaris</i>	3										I (3)
<i>Lolium perenne</i>	3										I (3)
<i>Glyceria fluitans</i>			1								I (1)
<i>Equisetum palustre</i>			2								I (2)
<i>Cardamine pratensis</i>			1	3							I (1-3)
<i>Apium nodiflorum</i>				3	1						I (1-3)
<i>Persicaria bistorta</i>				1							I (1)
<i>Plantago major</i>					1					1	I (1)
<i>Hypochaeris radicata</i>							2				I (2)
<i>Cirsium vulgare</i>							1				I (1)
<i>Verbascum thapsus</i>								1			I (1)
<i>Holcus lanatus</i>								3			I (3)



Species	Quadrat number										Constancy
	1	2	3	4	5	6	7	8	9	10	
<i>Filago vulgaris</i>								1	3		I (1-3)
<i>Anagallis arvensis</i>									1		I (1)
<i>Dactylis glomerata</i>									2		I (2)
<i>Arenaria serpyllifolia</i>									2		I (2)
<i>Verbena officinalis</i>											Present in sward
<i>Verbascum pulverulentum</i>											Present in sward
<i>Rumex obtusifolius</i>											Present in sward
<i>Urtica dioica</i>											Present in sward
<i>Odontites verna</i>											Present in sward
Sward height (cm)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Bare ground %	0	1	3	0	0	0	0	0	0	0	
Surface water	0	0	0	0	0	0	0	0	0	0	

Overall, the assemblage does not show close affinity to any particular NVC community, with the most common species not being strong indicators. This may be a product of the intense horse grazing in the main field. However, there are patches of plant species which rely on high levels of soil moisture such as jointed rush *Juncus articulatus*, cuckoo flower *Cardamine pratensis* and bistort *Persicaria bistorta* which suggest that a more diverse habitat would develop if horse grazing were relaxed.

These results are broadly in agreement with the 2017 survey, though there are some differences in constant species. Given the 2020 results, a community of MG10 does not seem correct - there are no prominent tussocks of rushes and *Holcus lanatus*, and it quite herb-rich, unlike the NVC description¹³ - however the observation that “*The grassland was relatively species-rich but quite variable in character through the sward. The results of the survey were consistent with the citation for the CWS*” remains valid.

Hedgerow 1 (photo 34)

Species poor hedgerow containing four wood species and four oak standards. There is a dry ditch running along it. This is not categorised as an important hedgerow due to the lack of woody species.

Table 39: Hedgerow 1

Common name	Latin name	DAFOR rating	Notes
Elder	<i>Sambucus nigra</i>	n/a	Hedge
Ash	<i>Fraxinus excelsior</i>	n/a	Hedge
Hawthorn	<i>Crataegus monogyna</i>	n/a	Hedge
Pedunculate Oak	<i>Quercus robur</i>	n/a	Hedge and Four Standard Trees
Hop	<i>Humulus lupulus</i>	n/a	Hedge

¹³ Rodwell, J.S ed(1991) British Plant Communities, Volume II.



Hedgerow 2 (photo 35)

Species rich hedge which runs along the south side of the Cantley Stream. This will qualify as an important hedgerow under the Hedgerow Regulations as it contains six or more species located evenly along each 30m length of hedgerow.

Table 40: Hedgerow 2

Common name	Latin name	DAFOR rating	Notes
Horse Chestnut	<i>Aesculus hippocastanum</i>	n/a	Hedge
Ash	<i>Fraxinus excelsior</i>	n/a	Hedge
Sycamore	<i>Acer pseudoplatanus</i>	n/a	Hedge
Pedunculate Oak	<i>Quercus robur</i>	n/a	Hedge
Buckthorn	<i>Rhamnus cathartica</i>	n/a	Hedge
Hazel	<i>Corylus avellana</i>	n/a	Hedge
Hawthorn	<i>Crataegus monogyna</i>	n/a	Hedge
Elder	<i>Sambucus nigra</i>	n/a	Hedge
Wild Privet	<i>Ligustrum vulgare</i>	n/a	Hedge

Hedgerow 3 (photo 36)

Hedgerow to the south of the site on the south side of the A47 which lies on the western boundary of Unit A. The hedgerow has a ditch with species such as water figwort and gypsywort in it. It will qualify based on ecological characteristics as an 'Important' hedgerow under The Hedgerow Regulations.

Table 41: Hedgerow 3

Common name	Latin name	DAFOR rating	Notes
Bramble	<i>Rubus agg.</i>	A	Hedgerow
Ivy	<i>Hedera helix</i>	A	Hedgerow
Field Maple	<i>Acer campestre</i>	F	Hedgerow
Hawthorn	<i>Crataegus monogyna</i>	F	Hedgerow
Gypsywort	<i>Lycopus europaeus</i>	F	Hedgerow
Water Figwort	<i>Scrophularia umbrosa</i>	F	Ditch
Creeping Buttercup	<i>Ranunculus repens</i>	F	Ditch
Ground Ivy	<i>Glechoma hederacea</i>	F	Ditch
Blackthorn	<i>Prunus spinosa</i>	O	Hedgerow
Crab Apple	<i>Malus sylvestris</i>	O	Hedgerow
Holly	<i>Ilex aquifolium</i>	O	Hedgerow
Ash	<i>Fraxinus excelsior</i>	O	Hedgerow
Hazel	<i>Corylus avellana</i>	O	Hedgerow
Dog Rose	<i>Rosa canina</i>	O	Hedgerow
Hairy Willowherb	<i>Epilobium hirsutum</i>	O	Ditch
Hairy Sedge	<i>Carex hirta</i>	O	Ditch
Elder	<i>Sambucus nigra</i>	R	Hedgerow
Grey Willow	<i>Salix cinerea</i>	R	Hedgerow
Dogwood	<i>Cornus sanguinea</i>	R	Hedgerow
Black Bryony	<i>Dioscorea communis</i>	R	Hedgerow
Bittersweet	<i>Solanum dulcamara</i>	R	Ditch



Wood Avens	<i>Geum urbanum</i>	R	Ditch
------------	---------------------	---	-------

Hedgerow 4 (photo 37)

A hawthorn dominant hedgerow runs along land cultivated as arable in Unit W. Three standards of oak are present. This hedge is of no botanical importance as it is comprised of one species.

Table 42: Hedgerow 4

Common name	Latin name	DAFOR rating	Notes
Common Hawthorn	<i>Crataegus monogyna</i>	D	Hedgerow
Pedunculate Oak	<i>Quercus robur</i>	n/a	Three Standard Trees

Hedgerow 5 (photo 38)

Hedgerow to the north of semi-improved grassland, with a wet ditch. This is unlikely to qualify as an important hedgerow under the Hedgerow Regulations due to the lack of woody species.

Table 43: Hedgerow 5

Common name	Latin name	DAFOR rating	Notes
Common Hawthorn	<i>Crataegus monogyna</i>	A	Hedgerow
False Oat Grass	<i>Arrhenatherum elatius</i>	A	Margin
Common Nettle	<i>Urtica dioica</i>	A	Margin
Creeping Cinquefoil	<i>Potentilla reptans</i>	LA	Margin
Common name	Latin name	DAFOR rating	Notes
Blackthorn	<i>Prunus spinosa</i>	F	Hedgerow
Elder	<i>Sambucus nigra</i>	F	Hedgerow
Creeping Thistle	<i>Cirsium arvense</i>	F	Margin
Cleavers	<i>Galium aparine</i>	F	Margin
Pedunculate Oak	<i>Quercus robur</i>	O	Hedgerow and Standard Tree
Hop	<i>Humulus lupulus</i>	O	Hedgerow
Burdock	<i>Arctium sp.</i>	O	Margin
Hemlock	<i>Conium maculatum</i>	O	Margin
Hazel	<i>Corylus avellana</i>	R	Hedgerow
Lords & Ladies	<i>Arum maculatum</i>	R	Margin
Wood Avens	<i>Geum urbanum</i>	R	Margin
Ivy	<i>Hedera helix</i>	n/a	Hedgerow
Black Bryony	<i>Dioscorea communis</i>	n/a	Hedgerow
White Bryony	<i>Bryonia dioica</i>	n/a	Hedgerow

Hedgerow 6 (photo 39)

Species rich hedge with oak and ash standards to south of poor semi-improved grassland. There are minimum of six locally native woody species and these all occur within any 30m section so it is considered likely to qualify based on ecological characteristics as an 'Important' hedgerow under The Hedgerow Regulations.

Table 44: Hedgerow 6

Common name	Latin name	DAFOR rating	Notes
Common Hawthorn	<i>Crataegus monogyna</i>	D	Hedgerow
Common Nettle	<i>Urtica dioica</i>	D	Margin
Creeping Thistle	<i>Cirsium arvense</i>	A	Margin
Cleavers	<i>Galium aparine</i>	A	Margin
Blackthorn	<i>Prunus spinosa</i>	O	Hedgerow
Elder	<i>Sambucus nigra</i>	O	Hedgerow
Common name	Latin name	DAFOR rating	Notes
Burdock	<i>Arctium sp.</i>	O	Margin
Pedunculate Oak	<i>Quercus robur</i>	R	Hedgerow and Standard tree
Ash	<i>Fraxinus excelsior</i>	n/a	Standard Tree
Hop	<i>Humulus lupulus</i>	n/a	Hedgerow
Ivy	<i>Hedera helix</i>	n/a	Hedgerow

Hedgerow 7 (photo 40)

A species poor hedgerow on the south of Norwich Road, B1172, with two oaks as standard trees within the hedgerow. With few woody species and species poor verge, this is unlikely to be an important hedgerow.

Table 45: Hedgerow 7

Common name	Latin name	DAFOR rating	Notes
Common Hawthorn	<i>Crataegus monogyna</i>	A	Hedgerow
False Oat Grass	<i>Arrhenatherum elatius</i>	A	Verge
Cock's Foot	<i>Dactylis glomerate</i>	A	Verge
Ivy	<i>Hedera helix</i>	A	Hedgerow
Creeping Thistle	<i>Cirsium arvense</i>	F	Verge
Beech	<i>Fagus sylvatica</i>	O	Hedgerow
Ash	<i>Fraxinus excelsior</i>	O	Hedgerow
Elder	<i>Sambucus nigra</i>	R	Hedgerow
Broad-leaved Dock	<i>Rumex obtusifolius</i>	R	Verge
Bramble	<i>Rubus agg.</i>	R	Hedgerow
Pedunculate Oak	<i>Quercus robur</i>	n/a	Two standards

Hedgerow 8 (photo 41)

Still on the south side of Norwich Road, following from Hedgerow 7 after a gap (comprising a driveway to a residential property). This is unlikely to qualify as an important hedgerow under the Hedgerow Regulations due to the presence of only two woody species.

Table 46: Hedgerow 8

Common name	Latin name	DAFOR rating	Notes
Hazel	<i>Corylus avellana</i>	A	Hedgerow

Holly	<i>Ilex aquifolium</i>	A	Hedgerow
Ivy	<i>Hedera helix</i>	A	Hedgerow
Honeysuckle	<i>Lonicera periclymenum</i>	R	Hedgerow

Hedgerow 9 (photo 42)

Hedgerow running along the edge of plantation woodland on the south side of Norwich Road. This will not qualify as an important hedgerow under the Hedgerow Regulations.

Table 47: Hedgerow 9

Common name	Latin name	DAFOR rating	Notes
Pedunculate oak	<i>Quercus robur</i>	A	Hedgerow
Field Maple	<i>Acer campestre</i>	F	Hedgerow
Ivy	<i>Hedera helix</i>	F	Hedgerow

Hedgerow 10 (photo 43)

A species poor hedgerow on the north side of Norwich Road. It consists of field maple and hawthorn. This is unlikely to qualify as an important hedgerow under the Hedgerow Regulations.

Table 48: Hedgerow 10

Common name	Latin name	DAFOR rating	Notes
Field Maple	<i>Acer campestre</i>	A	Hedgerow
Hawthorn	<i>Crataegus monogyna</i>	A	Hedgerow
White Bryony	<i>Bryonia dioica</i>	O	Hedgerow
Bramble	<i>Rubus agg.</i>	R	Hedgerow

Hedgerow 11 (photo 44)

Species poor hedge alongside Newmarket Road, with a species poor road verge. There are two ash standards in this hedgerow. This is unlikely to qualify as an important hedgerow under the Hedgerow Regulations.

Table 49: Hedgerow 11

Common name	Latin name	DAFOR rating	Notes
Bramble	<i>Rubus agg.</i>	A	Hedgerow and verge
Common Hawthorn	<i>Crataegus monogyna</i>	A	Hedgerow
Wild Carrot	<i>Dauca carota</i>	A	Verge
False Oat Grass	<i>Arrhenatherum elatius</i>	A	Verge
Dove's foot Cranesbill	<i>Geranium molle</i>	A	Verge
Fat Hen	<i>Chenopodium</i>	A	Verge
Greater Plantain	<i>Plantago major</i>	LA	Verge
Common name	Latin name	DAFOR rating	Notes
Ribwort Plantain	<i>Plantago lanceolata</i>	F	Verge
Yarrow	<i>Achillea millefolium</i>	F	Verge
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	F	Verge
Daisy	<i>Bellis perennis</i>	F	Verge



Weld	<i>Reseda luteola</i>	O	Verge
Canadian Fleabane	<i>Conyza canadensis</i>	O	Verge
Common Cudweed	<i>Filago vulgaris</i>	O	Verge
Groundsel	<i>Senecio vulgaris</i>	O	Verge
Hogweed	<i>Heracleum sphondylium</i>	O	Verge
Ash	<i>Fraxinus excelsior</i>	R	Hedgerow and two standards
Elder	<i>Sambucus nigra</i>	R	Hedgerow
Pedunculate Oak	<i>Quercus robur</i>	R	Hedgerow

Hedgerow 12 (photo 45)

A very sparse species poor hedge dominated by hawthorn and bramble with a species poor verge.

Table 50: Hedgerow 12

Common name	Latin name	DAFOR rating	Notes
Bramble	<i>Rubus agg.</i>	D	Hedgerow and verge
Common Hawthorn	<i>Crataegus monogyna</i>	D	Hedgerow
Wild Carrot	<i>Dauca carota</i>	A	Verge
False Oat Grass	<i>Arrhenatherum elatius</i>	A	Verge
Dove's foot Cranesbill	<i>Geranium molle</i>	A	Verge
Fat Hen	<i>Chenopodium</i>	A	Verge
Greater Plantain	<i>Plantago major</i>	LA	Verge
Ribwort Plantain	<i>Plantago lanceolata</i>	F	Verge
Yarrow	<i>Achillea millefolium</i>	F	Verge
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	F	Verge
Daisy	<i>Bellis perennis</i>	F	Verge
Weld	<i>Reseda luteola</i>	O	Verge
Canadian Fleabane	<i>Conyza canadensis</i>	O	Verge
Common Cudweed	<i>Filago vulgaris</i>	O	Verge
Groundsel	<i>Senecio vulgaris</i>	O	Verge
Hogweed	<i>Heracleum sphondylium</i>	O	Verge

Hedgerow 13 (photo 46)

A species poor hedgerow on Newmarket Road, close to the A11, running parallel with it on the north side of the A11.

Table 51: Hedgerow 13

Common name	Latin name	DAFOR rating	Notes
Common Hawthorn	<i>Crataegus monogyna</i>	A	n/a
Ivy	<i>Hedera helix</i>	F	n/a
Ash	<i>Fraxinus excelsior</i>	R	n/a
Elder	<i>Sambucus nigra</i>	R	n/a

5.3 Constraints and limitations of survey

The optimal period to undertake botanical survey including identification of plant species is between April and September. The botanical survey was completed in mid-July which is within the optimal survey window. Therefore this is not considered to be a limitation to the accurate assessment of the habitats and the dominant species of the respective vegetation types were visible and identifiable.

Access was generally available across the survey area except for areas which were unsafe like roundabouts on the A11 and any houses and gardens. All units were accessible except Unit EE which was surveyable from the north-eastern boundary fence. Apart from this there were no known limitations in areas where access was required.

6. Evaluation of features

6.1 Habitat units

The CWS is important at county level with M22 NVC Habitat, and diverse neutral grassland. Units G, I and N are important at a district level due to demonstrable longevity of habitat and species richness and quality.

Unit	NVC type	Ecological value
A	n/a	Local
B	Plantation - n/a	Local
C	n/a	Local
D	n/a	Local
E	n/a	Local
F	n/a	Local
G	n/a	District
H	n/a	Local
I	n/a	District
J	n/a	Local
K	n/a	Local
L	n/a	Local
M	n/a	Local
N	n/a	Local
O	n/a	Local
P	n/a	Local
Q	n/a	Local
R	n/a	Local
S	n/a	Local
T	n/a	Local
U	n/a	Local
V	n/a	Local
W	n/a	Local
X	n/a	Local
Y	n/a	Local
Z	n/a	Local
AA	n/a	Local
BB	n/a	Local
CC	n/a	Local
DD	n/a	Local
EE	n/a	Local
Meadow Farm Meadow CWS	M22	Priority Habitat - district

6.2 Hedgerows

Table 52: Hedgerow Evaluation

Hedgerow	Likely to be important?
H1	No
H2	Yes
H3	Yes
H4	No
H5	No
H6	Yes
H7	No
H8	No
H9	No
H10	No
H11	No
H12	No
H13	No

6.3 Species

The following Near-threatened red data book species were recorded:

- Common cudweed *Filago vulgaris*
- Smooth catsear *Hypochaeris glabra*
- Corn spurrey *Spergula arvensis*

While these species are given an elevated ecological status nationally, they are all relatively frequently encountered at a local scale, especially in light soils, and are often associated with soil disturbance and brownfield land. Their occurrence within the survey area is therefore not surprising.

7. Impact assessment

7.1. Potential impacts on ecological receptors

Impact assessment is made with reference to the CIEEM EcIA Guidelines¹⁴.

Throughout, italicised words are used in the technical sense defined within the CIEEM guidance. This refers to the geographical context of the impact or effect. The following geographical frame of reference will be used to describe the ecological impacts and effects, or adapted to suit local circumstances:

- International and European
- National
- Regional
- County
- Local

The geographical contexts are outlined in the table below:

¹⁴ CIEEM (2018) Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland: 3rd edition. Chartered Institute of Ecology and Environmental Management, Winchester

Table 53: Geographical Contexts of the proposal

Local	Civil Parishes of Cringleford, Hethersett and Ketteringham
County	Norfolk
Regional	East Anglia

The EclA guidelines espouse a quantification of impact and effect magnitude where possible. Where this is not available or uncertain, impact magnitude categories and criteria are defined based on Byron (2000)¹⁵. These categories are often also used as shorthand to summarise magnitude.

- *Major negative* - that which has a harmful effect on the integrity of a conservation site or the conservation status of a population of a species within a defined geographical area; e.g., fundamentally reduces the capacity to support wildlife for the entirety of a conservation site, or compromises the persistence of a species' population at a defined locality.
- *Intermediate negative* - that which has no adverse effect on the integrity of a conservation site or the conservation status of a species' population, but does have an important adverse effect in terms of achieving certain ecological objectives; e.g., sustaining target habitat conditions and levels of wildlife for a conservation site, or maintaining population growth for a species.
- *Minor negative* - some minor detrimental effect is evident, but not to the extent of the above.
- *Neutral* - that which has no predictable effect.

7.1.2 Positive or negative impacts and effects

The nature of a predicted impact is as per CIEEM definition¹⁶:

“Positive impact - a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment.

Negative impact - a change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution.”

7.2 Duration of impact or effect

¹⁵ Byron H. (2000) Biodiversity Impact - Biodiversity and environmental impact assessment: a good practice guide for road schemes. The RSPB, WWF-UK, English Nature and the Wildlife Trusts, Sandy
¹⁶<https://cieem.net/wp-content/uploads/2019/02/Combined-EclA-guidelines-2018-compressed.pdf>

Impacts/ effects are described as short, medium or long-term, and as either permanent or temporary.

7.3 Impact or effect reversibility

Reversibility is judged per the CIEEM Guidelines for Ecological Impact Assessment description: “An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.”

7.4 Impact or effect significance

The CIEEM Guidelines for Ecological Impact Assessment provide a working definition of ‘significant effects’ which includes the statements:

“For the purpose of EclA, ‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general.” and “In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).”

In this assessment, a significant impact is not attributed to any effect on a receptor which is predicted to occur at no greater than minor negative magnitude. Similarly any impact, regardless of magnitude, is not regarded as significant if its geographic scale of importance is lower than a local/ parish level.

7.5 Description of impacts or effects

A number of impacts or effects on ecological receptors may result from the proposed development. Impacts are based on Figure 1b¹⁷, which shows a refined layout.

7.5.1. Change of land use

This impact will be the most important for valued habitats. A new route will permanently alter existing habitats. Some will have capacity to be recreated elsewhere, others can be regarded as irreplaceable (for example ancient woodland, or old species rich meadows). A new road can also cause fragmentation and severance of existing habitats. There are also opportunities for new cuttings or embankments to create new corridors of habitat, or for cut-off sections of land to be managed for biodiversity.

7.5.2. Construction activities

The land required for construction may be greater than the final footprint of the road. Construction vehicles, materials storage and other activities may destroy or devalue existing habitats.

7.5.3. Operational activities

A new road will have similar in-use impacts to the existing road, although an increase in vehicle use may increase non-direct effects such as diffuse pollution.

¹⁷<https://assets.highwaysengland.co.uk/roads/road-projects/A47+thickthorn/Scheme+design+map+July+2020.pdf>

7.6 Habitats

All habitat units and hedgerows are within the proposed works area, implying they will all be impacted to some extent by the proposed works.

The impacts on the CWS appear to indicate that a narrow strip along the southern edge will be directly affected by a new slip road. Insertion of a new drainage ditch, as proposed, could have *intermediate to major* impacts on the M22 fen meadow community, and may also affect the unclassified CWS grassland which is influenced by soil moisture levels, either through inundation or groundwater influence. Turf and soil could become compacted or churned up by tracking vehicles, which could cause intermediate impacts on the habitats. Mitigation is advised.

Three units area valued at district level (eastern end of Area G, Area I, Area N). The whole of Unit G and Unit I will be avoided by the works, and a neutral impact is predicted for these two units. Precautionary mitigation is advised.

The southern edge of Area N, a priority habitat and potentially ancient woodland (present since at least 1840) will be impacted by a new road. This will be an intermediate impact on this feature. Mitigation is advised.

The three important hedgerows (H2, H3, H6) will not be bisected by the works. Neutral impacts on these hedgerows are predicted.

7.7 Species

Populations of the three plant species of elevated conservation status may be moderately adversely affected by the works. However, new suitable habitat is likely to be created for these species post-works, as they are all able to colonise bare light soils quite quickly. Overall, neutral impacts are predicted.

8. Mitigation

8.1 County Wildlife Site

Maintaining the integrity of the existing CWS should be paramount. Encroachment into the grassland will be kept to a minimum. No vehicles will track over the grassland, or if this is absolutely necessary, heavy duty ground protection matting or similar will be used, with the aim of protecting the integrity of the soil and turf. Any area lost to the road should be compensated for, using a suitable metric to calculate compensation.

No new drainage should be inserted into the CWS, and any road runoff should be directed away from the CWS. No landscape planting should encroach further into the CWS than it does at present.

8.2 Area N

Where possible the road should be re-routed slightly to the south to avoid Area N. Encroachment into the area should be avoided. If this is not possible, any loss of habitat will be compensated for, using a suitable metric to calculate compensation.

8.3 Hedgerows



No specific mitigation is proposed for the hedgerows identified as important, as these will not be impacted by the proposed scheme. Other hedgerow lengths affected should be compensated for within the proposed scheme.



9. Conclusion

The current design avoids major impacts on most valued habitat features, with the exception of the County Wildlife Site and woodland in Unit N. The Meadow Farm Meadows CWS is vulnerable, as works will cause an intermediate impact and without careful mitigation, the whole CWS could be adversely affected and degraded.



Appendix 1. Site Photographs



Photo 1. Unit A

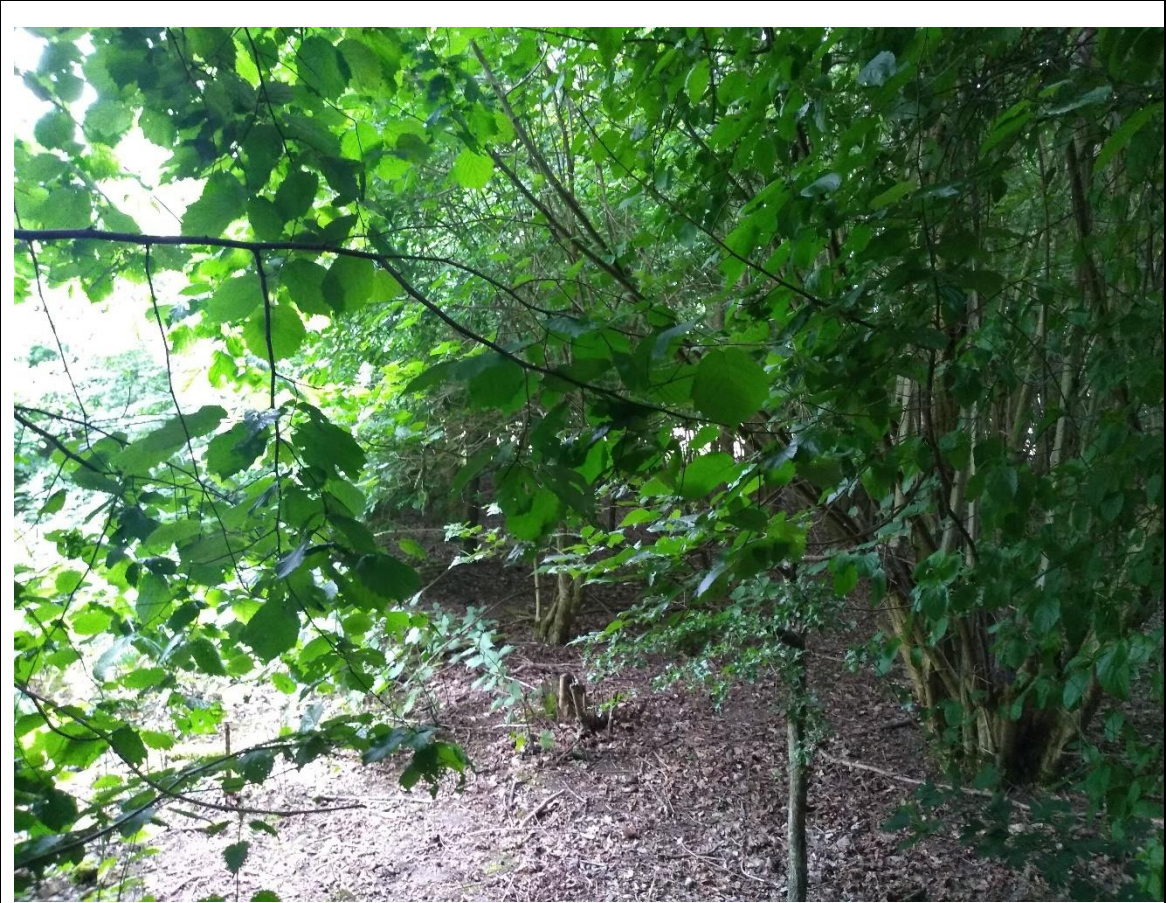


Photo 2. Unit B



Photo 3. Unit C



Photo 4. Unit D



Photo 5. Cleared Area in Unit E



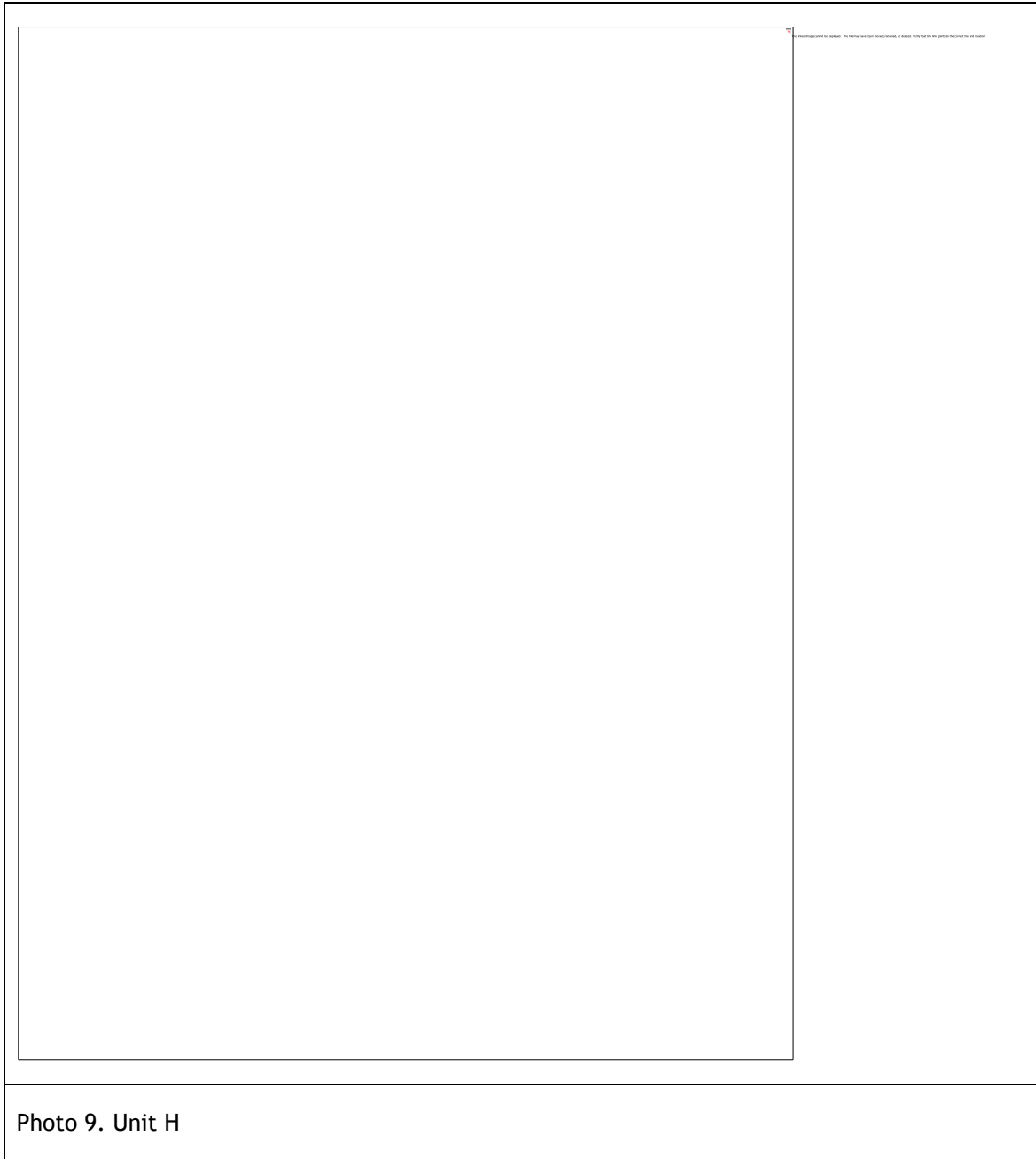
Photo 6. Unit F

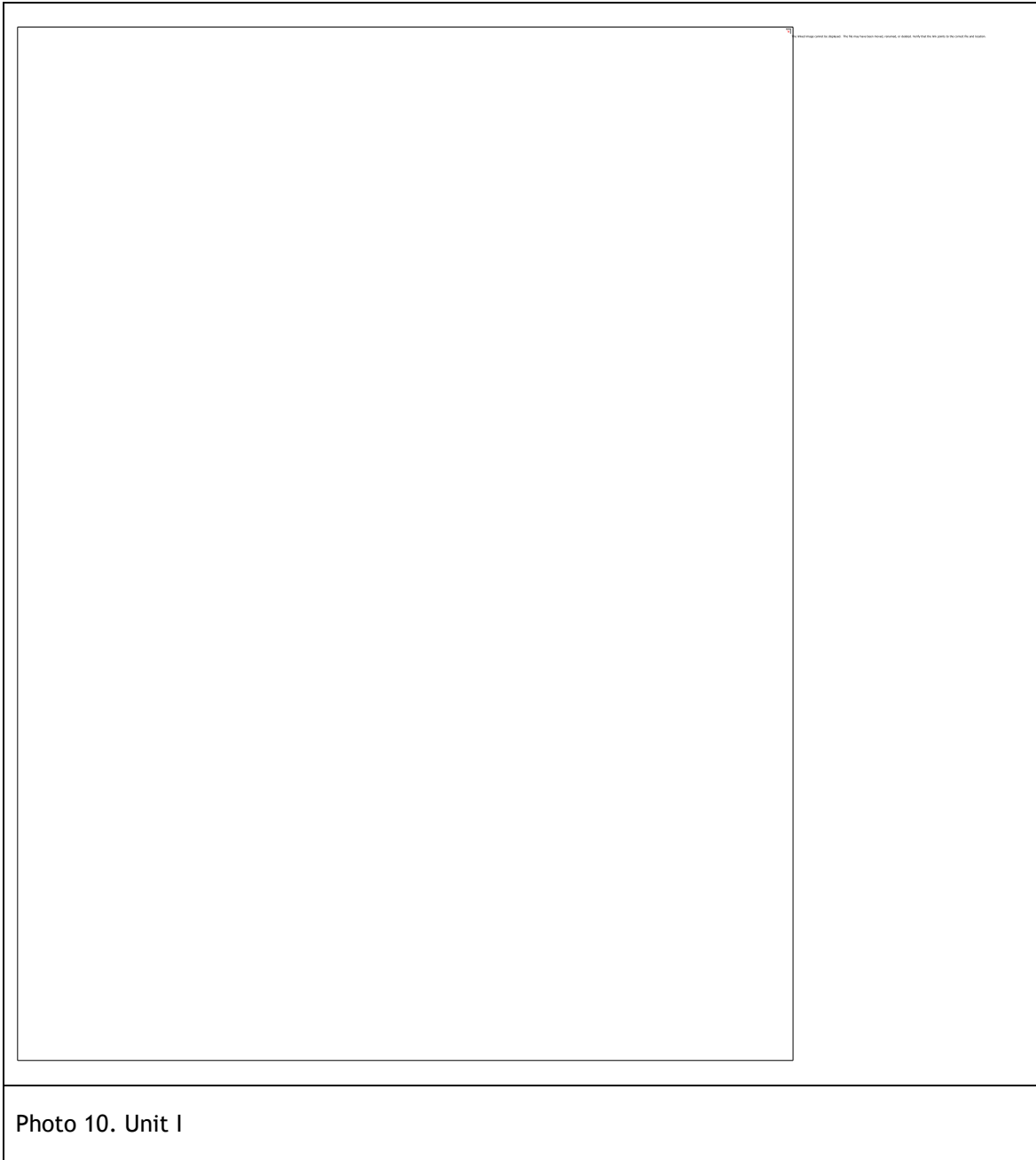


Photo 7. Unit G - TN1



Photo 8. Target Note 1





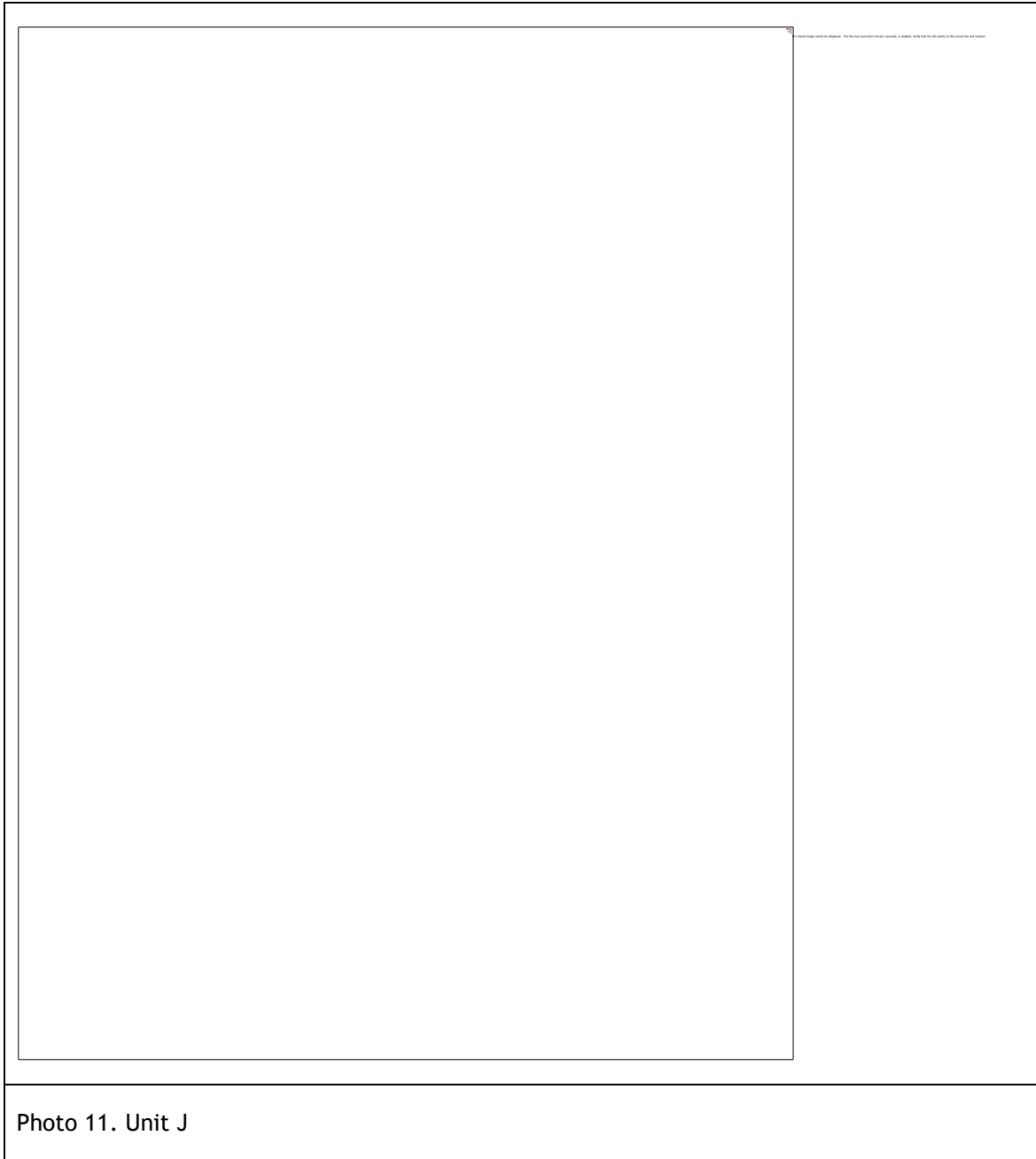




Photo 12. Example of Target Note 3



Photo 13. Unit K



Photo 14. Unit L



Photo 15. Unit M



Photo 16. Unit N



Photo 17. Unit O



Photo 18. Bee Orchid in Unit O



Photo 19. Unit Q



Photo 20. Unit R



Photo 21. Unit S



Photo 22. Unit T



Photo 23. Unit U



Photo 24. Unit V



Photo 25. Unit W



Photo 26. Unit X



Photo 27. Unit Y



Photo 28. Unit Z



Photo 29. Plantation in Unit AA



Photo 30. Unit BB- Grassland with green lane and woodland to left



Photo 31. Unit CC



Photo 32. Buck's-horn Plantain beside Ribwort Plantain in Unit CC



Photo 33. Meadow Farm Meadow County Wildlife Site - M22 fen meadow



Photo 34. Hedgerow 1 Example



Photo 35. Hedgerow 2



Photo 36. Hedgerow 3



Photo 37. Arable field and Hedgerow 4 on left



Photo 38. Hedgerow 5



Photo 39. Hedgerow 6



Photo 40. Hedgerow 7



Photo 41. Hedgerow 8



Photo 42. Hedgerow 9

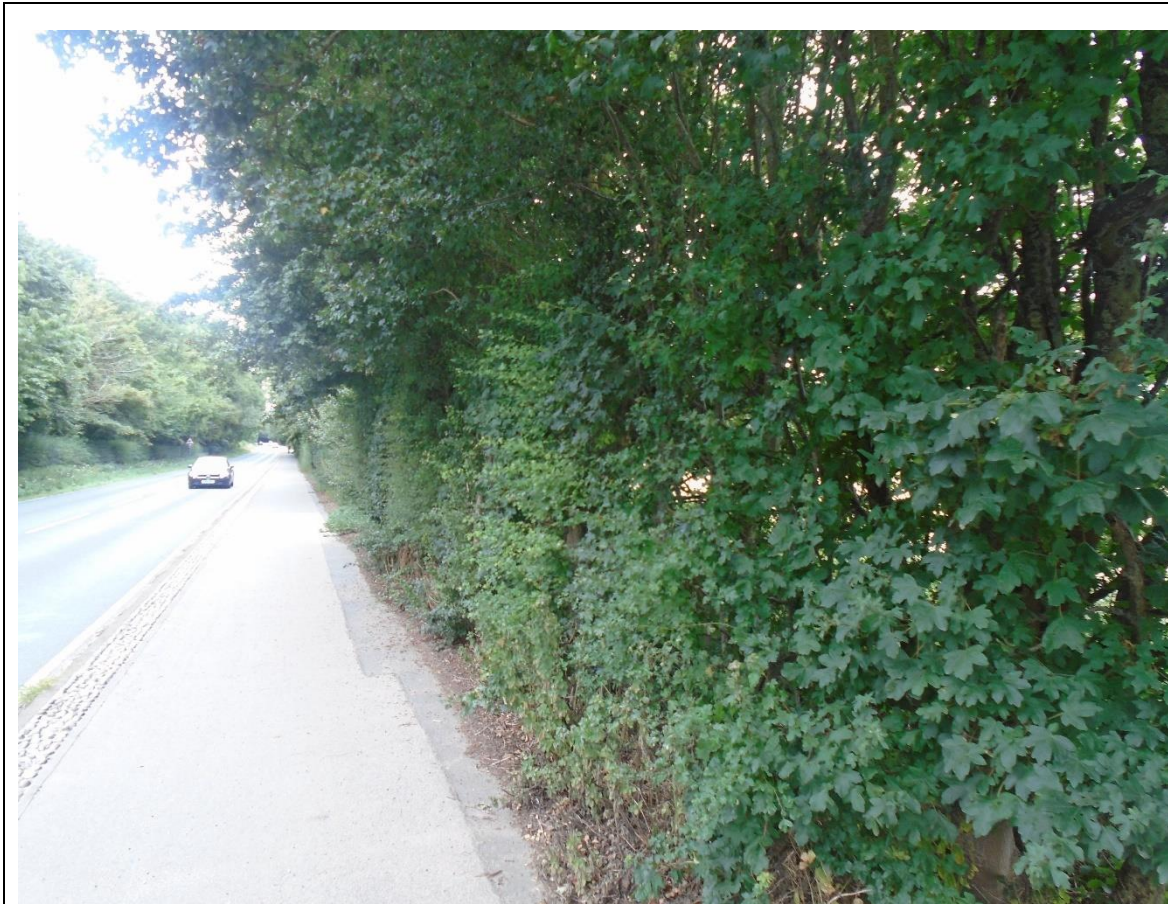


Photo 43. Hedgerow 10



Photo 44. Hedgerow 11



Photo 45. Hedgerow 12



Photo 46. Hedgerow 13



Photo 47. Target Note 2