A358 Taunton to Southfields Dualling Scheme

Ecological Baseline Report - National Vegetation Classification (NVC)

HE551508-ARP-EBD-ZZ-RP-LE-000026

24 May 2022

Table of contents

		Pages
Executive summary		1
1	Introduction	3
1.3	Study area and zone of influence	4
1.4	Legislation	5
1.5	Status of habitats at national level	5
1.6	Status of habitats at county level	6
2	Methodology	9
2.1	Desk study	9
2.4	Data Analysis	11
2.5	Assumptions and limitations	11
3	Results	13
3.1	Desk study	13
3.2	Field study	14
4	Conclusions	25
4.1	Woodland	25
4.2	Grassland	25
Abbreviations List		27
Glossary		27
References		28
Appendices		i
Appendix A	NVC survey site locations	ii
Appendix B	NVC survey results	iii

Table of Figures

Figure 1-1	Scheme plan	4
Figure 3-1	Woodland 13	15
Figure 3-2	Woodland 14	16
Figure 3-3	Woodland 15	17
Figure 3-4	Woodland 16a	18
Figure 3-5	Woodland 23a	19
Figure 3-6	Woodland 23b	20
Figure 3-7	Woodland 26	21
Figure 3-8	Grassland 1	22
Figure 3-9	Grassland 11	23
Figure 3-10	Grassland 12	24

Table of Tables

Table 2-1	Ancient woodland vascular plants in Somerset	10

Table 2-2	Domin scale of abundance	11
Table B-1	Results of NVC survey of woodland 13	iii
Table B-2	Results of NVC survey of woodland 14	v
Table B-3	Results of NVC survey of woodland 15	vi
Table B-4	Results of NVC survey of woodland 16a	viii
Table B-5	Results of NVC survey of woodland 23a	x
Table B-6	Results of NVC survey of woodland 23b	xii
Table B-7	Results of NVC survey of woodland 26	xiv
Table B-8	Results of NVC survey of grassland 1	xvi
Table B-9	Results of NVC survey of grassland 11	xvii
Table B-10	Results of NVC Survey of grassland 12	xviii

Executive summary

The A358 Taunton to Southfields Dualling scheme would provide a dual carriageway along the length of the A358 between Taunton and Ilminster in Somerset, connecting the M5 motorway to the A303 at Ilminster to the south.

National Vegetation Classification (NVC) surveys were commissioned as part of the suite of habitat and protected species surveys commissioned in relation to the scheme. This report presents the results of the NVC surveys undertaken throughout 2021 and aims to inform the ecology baseline for the scheme.

The objectives of this report are to present the results of the NVC surveys, assess the nature conservation value of the survey sites and inform appropriate mitigation and enhancement as required.

The desk study undertaken identified 31 grassland and woodland sites within the study area that required NVC surveys. Of these, 18 had been subject to previous NVC surveys where the following plant communities had been identified:

- Woodland:
  - W8c *Fraxinus excelsior* - *Acer campestre* - *Mercurialis perennis* woodland - *Deschampsia cespitosa* sub-community.
  - W8d *Fraxinus excelsior* - *Acer campestre* - *Mercurialis perennis* woodland - *Hedera helix* sub-community.
  - W8e *Fraxinus excelsior* - *Acer campestre* - *Mercurialis perennis* woodland - *Geranium robertianum* sub-community.
  - W12a *Fagus sylvatica* - *Mercurialis perennis* woodland - *Mercurialis perennis* sub-community.
  - W10a *Quercus robur* - *Pteridium aquilinum* - *Rubus fruticosus* woodland typical sub-community.
  - W8f *Fraxinus excelsior* - *Acer campestre* - *Mercurialis perennis* woodland - *Allium ursinum* sub-community.
- Grassland:
  - MG1a Ar*rhenatherum* elatius grassland - *Festuca rubra* sub-community.
  - MG1e *Arrhenatherum elatius* grassland - *Centaurea nigra* sub-community.
  - MG5 *Cynosurus cristatus* - *Centaurea nigra* grassland community.
  - MG7a *Lolium perenne* leys and related grasslands - *Lolium perenne -Trifolium repens* leys.
  - MG7c *Lolium perenne* leys and related grasslands, *Lolium perenne - Alopecurus pratensis - Festuca pratensis* grassland.
  - MG7d *Lolium perenne - Alopecurus pratensis* grassland.
  - MG10b *Holcus lanatus - Juncus effusus* rush pasture - *Juncus inflexus* sub-community.

Of the remaining 13 sites, three sites identified in the desk study were scoped out as they were either assessed as not being suitable for NVC survey or were deemed unlikely to be affected by the scheme. Therefore, ten sites (three grassland and seven woodland sites) were subject to detailed NVC surveys in 2021.The NVC surveys were undertaken in June 2021 and July 2021 for woodland and August 2021 for grassland.

All of the woodlands surveyed in 2021 corresponded with the W8 *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland with some tendency towards the W10 *Quercus*

robur-Pteridium aquilinum-Rubus fruticosus woodland. The woodland areas surveyed were all classified as of high ecological value.

All woodlands surveyed were considered to be of national level importance.

All grasslands surveyed between 2017 and 2020 were considered to be low diversity grassland types that are common and widespread throughout the British Isles and are of little (local) conservation value, with the exception of the MG5 community (grassland 4) which has been classified as a lowland meadow HPI (a habitat of national importance).

The grassland habitats surveyed consisted of MG1 *Arrhenatherum elatius* grassland and MG9 *Holcus lanatus-Deschampsia cespitosa* grassland. These low diversity grassland types are common and widespread throughout the British Isles and are of low (local) conservation value. Some areas represent coastal and floodplain grazing march (a priority habitat) as a result periodic flooding and the grazed nature of much of the grassland rather than as a result of the grasslands' intrinsic ecological value.

1 Introduction

1.1 Purpose and scope of this document

1.1.1 The A358 Taunton to Southfields Dualling scheme (hereafter referred to as 'the scheme') would provide a dual carriageway along the length of the A358 between Taunton and Ilminster in Somerset, connecting the M5 motorway at Junction 25 to the A303 at Ilminster to the south. National Vegetation Classification (NVC) surveys were part of the suite of habitat and protected species surveys commissioned in relation to the scheme.

1.1.2 This report presents the results of the NVC surveys and aims to inform the ecology baseline for the scheme.

1.1.3 The objectives of this report are to:

- classify habitats within the Zone of Influence (ZoI) using the NVC system
- assess the nature conservation value of the habitats
- inform appropriate mitigation and enhancement as appropriate

1.2 Scheme overview

1.2.1 The scheme is part of a programme of improvements planned along the A303/A358 corridor aimed at improving connectivity between London, the south-east and the south-west. The A303, alongside the A30, forms part of the strategic road network (SRN) and together with the A358, provides the link between London, the south-east and the south-west.

1.2.2 The programme of improvements, as set out in the Government's *Road Investment Strategy* [1]made a commitment to, *"…upgrade all remaining sections of the A303 between the M3 and the A358 to dual carriageway standard, together with creating a dual carriageway link from M5 at Taunton to the A303".*

1.2.3 The scheme directly addresses this long-term commitment and would provide a new rural all-purpose dual carriageway link from the M5 at Taunton (Junction 25) to the A303 at Southfields roundabout. The new dual carriageway would comprise new and upgraded stretches of the existing A358 road. Full details of the scheme will be provided in Chapter 2 *The Project* of the Environmental Statement (ES). Please refer to Figure 1-1 for scheme plan.

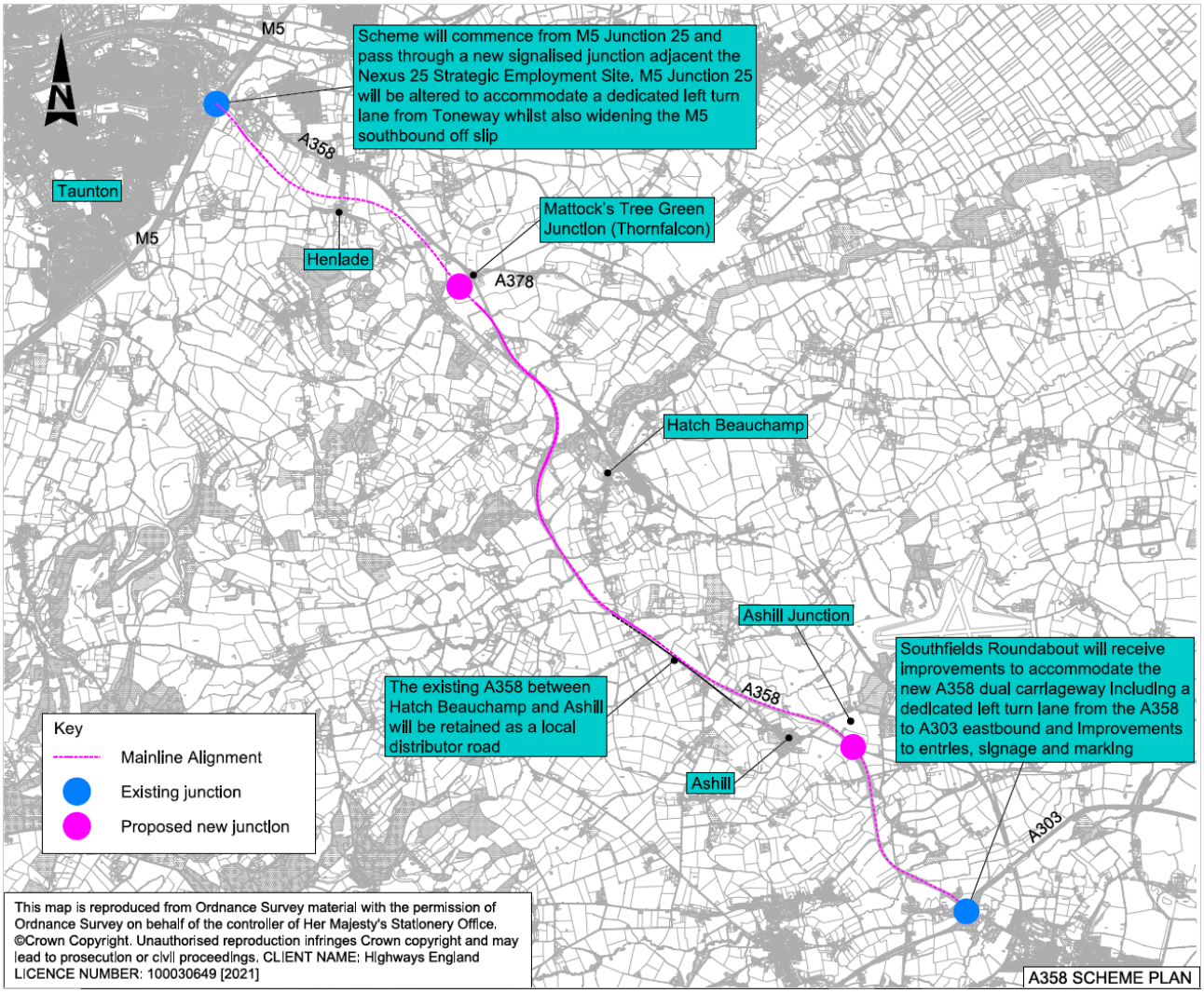

Figure 1-1 Scheme plan

1.3 Study area and zone of influence

1.3.1 The Chartered Institute for Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment* [2] recommend that all potentially important ecological features that occur within the ZoI for a scheme are investigated. The ZoI includes:

- areas to be directly within the land take for the scheme
- areas that would be temporarily affected during construction
- areas likely to be impacted by hydrological disruption
- areas where there is a risk of pollution and noise disturbance during construction and/or operation

1.3.2 The ZoI depends on the ecological features concerned. With regard to the woodland and grassland habitats likely to be affected by the scheme and therefore requiring detailed NVC field surveys. The ZoI has been defined as grassland within 100 metres and woodland within 250 metres of the defined ecology survey zone, which comprises the footprint of the scheme and associated site clearance area. This ZoI is hereafter referred to as the study areas.

1.4 Legislation

1.4.1 A framework of international, European, national and local legislation and planning policy guidance exists to protect and conserve wildlife and habitats. This legislation will be listed in full within Chapter 8 *Biodiversity* of the ES. Legislation relevant to and discussed within this report are:

- The Conservation of Habitats and Species Regulations 2017 (the 'Habitat Regulations 2017')
- Natural Environment and Rural Communities (NERC) Act 2006

1.5 Status of habitats at national level

1.5.1 The NERC Act 2006 is designed to help achieve a rich and diverse natural environment and thriving rural communities. Under Section 40 there is a Duty to conserve biodiversity; specifically, Subsection (1) states *"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity."*

1.5.2 Section 41 of the Act requires the Secretary of State to publish a list of Habitats and Species of Principal Importance (HPI and SPI respectively) for the conservation of biodiversity in England. The Section 41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40. A total of 65 HPI and 1,150 SPI have been identified as the most in need of protection.

1.5.3 The following HPIs (also referred to as priority habitats) are considered relevant to this report:

- Deciduous woodland
- Lowland calcareous grassland
- Coastal and floodplain grazing marsh (CFPGM)
- Wood-pasture and parkland
- Lowland fens
- Rivers
- Ponds

1.5.4 National planning policy in England is set out in the *National Planning Policy Framework (NPPF)* [3], with policies relating to habitats and biodiversity set out in paragraphs 179 and 180. Of particular relevance to this report is paragraph 180c:

"development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists."

1.5.5 Highways England's *Design Manual for Roads and Bridges (LA 108 Biodiversity)* [4] also lists the following areas of habitats as UK or nationally important irreplaceable habitats:

- Ancient woodland
- Ancient or veteran trees
- Blanket bog
- Limestone Pavement
- Sand dunes
- Salt mark

- Lowland fen.

1.5.6 Habitats may also be of importance at the national level if they are listed as Annex I habitats (habitats listed as such in the EU Habitats Directive 92/43/EEC, implemented in the UK under the Conservation of Habitats and Species Regulations 2017), which may be a qualifying feature of a Special Area of Conservation (SAC).

1.6 Status of habitats at county level

1.6.1 The following local policies and guidance relating to biodiversity are of relevance to this report:

- *Taunton Deane Local Plan* [5] with particular focus on Chapter 7, 'Environment and Conservation'
- *Taunton Deane Borough Council Adopted Core Strategy 2011-2028* [6].
- *South Somerset Local Plan (2006-2028)* [7]
- *Taunton Deane Local Biodiversity Action Plan* [8]

The Taunton Deane Local Plan (2004-2011)

1.6.2 *The Taunton Deane Local Plan (2004-2011)* forms the detailed part of the Development Plan for Taunton Deane Council (now Somerset West and Taunton Council). It provides a realistic and comprehensive basis for development, investment and related decisions for the Borough for the period 2004 to 2011. Following the adoption of subsequent plans, predominantly the *Taunton Deane Borough Council Adopted Core Strategy 2011-2028* Core Policy 8, many of the policies no longer apply. However, a small number of policies have been retained and are being reviewed as part of an ongoing update to the Local Plan.

1.6.3 Policies of particular relevance to this report are Policies EN6 and EN7.

Policy EN6: Protection of Trees, Woodlands, Orchards and Hedgerows

1.6.4 Policy EN6 aims to prevent development that would harm trees, woodlands, orchards, historic parklands and hedgerows unless adequate provisions are made to compensate losses, with good management of these features for the purposes of nature conservation should be sought.

Policy EN7: Ancient Woodlands.

1.6.5 Policy EN7 prevents development that would harm the character, landscape, historic and wildlife value of ancient woodlands.

The Taunton Deane Borough Council Adopted Core Strategy (2011-2028)

1.6.6 The primary planning policy document, the Core Strategy sets out the vision for Taunton Deane and the strategic objectives, spatial strategies and policies for meeting that vision. It specifies the locations and quantity of growth to be accommodated within the Borough up to 2028 and identifies the strategic site allocations for developments over five hectares, including mixed-use urban extensions. Of particular relevance to this report is Core Policy 8: Environment.

Core Policy 8

1.6.7 This policy aims to conserve and enhance the natural and historic environment and will not permit developments resulting in adverse impacts to key receptors, in

particular developments resulting in adverse impacts to Natura 2000 and Ramsar Sites and their conservation interests.

1.6.8 The identified network of green infrastructure assets will be protected and enhanced, with enhancement to the network through new green and blue links created in key locations as part of the Taunton Deane Green Infrastructure Strategy. Developments aligning with these aims will be supported.

1.6.9 Development should be directed away from land at risk of flooding, both at present and in the future resulting from climate change and must ensure adoption of measures that prevent exacerbation of flooding elsewhere.

1.6.10 Unallocated greenfield land outside of settlement boundaries will be protected and where possible enhanced. Development within such areas will be strictly controlled in order to conserve the environmental assets and open character of the area.

The South Somerset Local Plan (2006-2028)

1.6.11 The *South Somerset Local Plan (2006-2028)* is a collection of policies which set out the long-term vision and strategic context for managing and accommodating growth within South Somerset up to 2028. The local plan was adopted from 2015.

1.6.12 Key policies relating to biodiversity are EQ4, EQ5 and EQ6, summarised below.

Policy EQ4: Biodiversity

1.6.13 Policy aims protect key biodiversity receptors, including all designated sites, protected and priority habitats and species from impacts arising from development. This includes the promotion of coherent ecological networks, as well as the identification of opportunities to enhance and restore biodiversity features both within developments and the wider landscape.

1.6.14 The policy outlines that all developments should be informed by robust survey and impact assessment of the likelihood of impacts to biodiversity features, with a sequential approach to design prioritising avoidance is required, followed by minimising impacts, with compensatory actions a last resort. Developments that cannot demonstrate it will not result in adverse impacts to key biodiversity receptors will not be permitted.

Policy EQ5: Green Infrastructure

1.6.15 Policy aims to promote the provision of Green Infrastructure throughout the district. This includes the protection of existing areas of public open space, accessible woodland and river corridors from both current and future pressures, as well as enhancing the quality and accessibility of such features for the public.

Developments are required to include appropriate green infrastructure proposals, with suitable mitigation required to compensate for any unavoidable losses in order to protect against any adverse impacts.

Policy EQ6: Woodland and Forest

1.6.16 Policy aims to protect and enhance woodland areas, including ancient and semi-natural sites, to at least 2005 level, with expansion where possible. The council will support the implementation of the South West Woodland and Forestry Framework.

1.6.17 Protection is afforded to ancient woodland and ancient or veteran trees. Where development leads to unavoidable loss of secondary woodland, appropriate provision of at least the same scale is required.

The Taunton Deane Local Biodiversity Action Plan

1.6.18 The *Taunton Deane Local Biodiversity Action Plan* lists ditches and ponds, gardens and urban greenspace, hedgerows and hedgerow trees, roadside verges and green lanes, traditional orchards, water and wetlands, and wood pasture, parkland and veteran trees as having county-wide habitat action plans. Relevant habitats with local (Taunton Deane) action plans include calcareous and neutral grassland, woodland and native wildflowers on arable land.

1.6.19 Habitats may also be of importance at the county level if they are notable habitats which would meet the criteria for Local Wildlife Site (LWS) status in accordance with the Somerset Environmental Records Centre (SERC) criteria [9].

2 Methodology

2.1 Desk study

2.1.1 A desk study was undertaken to identify all habitats that were located partially or entirely within the study area and which of these habitats required NVC surveys, based on existing third party information. The following information was collated and reviewed:

- The *Multi-Agency Geographic Information for the Countryside* (MAGIC) database [10]
- Historic maps [11]
- The *A358 Taunton to Southfields Dualling National Vegetation Classification Technical Report (March 2021)* [12]
- The *A358 Taunton to Southfields Preliminary Ecological Appraisal (PEA), June 2016* [13]
- *A358 Taunton to Southfields Dualling Scheme Ecological Baseline Report – UK Habitat Classification,* which will form Appendix 8.1 of the ES.

2.1.2 The MAGIC database [10] was reviewed to establish the location of areas of designated ancient woodland and priority habitats within 500 metres of the study area.

2.1.3 Historic mapping from between 1888-1913 [11] was reviewed for the presence and locations of woodlands.

2.1.4 Data provided in January 2021 by SERC on protected, priority and notable species within a 2 kilometre radius of the scheme was also reviewed, as was the *Natural England Ancient Woodland Inventory* [14]. Please refer to the *A358 Taunton to Southfields Dualling Scheme Ecological Baseline Report – UK Habitat Classification*, Section 2 for full details (which will form Appendix 8.1 of the ES).

2.1.5 The *A358 Taunton to Southfields Dualling National Vegetation Classification Technical Report (March 2021)* [15] presents the findings of NVC surveys carried out in 2017, 2019 and 2020. The full details and timings of these surveys, which were reviewed as part of the desk study (and for which notable survey results are presented within this report), can be found within the 2021 report.

2.2 Field study

2.3 A series of Phase 1 Habitat surveys undertaken in 2016 (*A358 Taunton to Southfields Preliminary Ecological Appraisal (PEA), June 2016* [13]) and UK Habitat Classification surveys in 2021 (*A358 Taunton to Southfields Dualling Scheme Ecological Baseline Report – UK Habitat Classification*) (which will form Appendix 8.1 of the ES) identified grassland and woodland locations where detailed NVC surveys were required. Although further NVC surveys were undertaken between 2017 and 2020 (*A358 National Vegetation Classification Technical Report, March 2021* [12]), some sites identified were not able to be accessed, or the survey undertaken was subject to other limitations, therefore a total of ten sites, for which direct impacts from the scheme are anticipated, were surveyed or re-surveyed in 2021 (either fully or partially as detailed below).

2.3.1 The field survey methods followed standard nationally accepted NVC survey protocols [16]. This involved selecting homogenous stands of vegetation that were typical of the communities present in the areas to be surveyed. Sample

areas were located towards the centre of the habitat where possible to avoid any edge habitat. Standardised quadrats (marked using pegs) were used to define the survey sample area. For the grassland habitats the quadrat size was 2x2 metres and for the woodland ground layer areas the quadrat size was 4x4 metres. For woodlands the standard quadrat size for sampling the shrub and canopy was 50x50 metres, however, some of the woodlands sampled during the survey were not of sufficient size to allow standard quadrat sizes to be recorded and therefore these layers were sampled for approximately 10x10 metres around the 4x4 metres quadrat and whilst walking between each quadrat. In total, five quadrats were recorded in each habitat type. The Ordnance Survey grid reference for each quadrat was recorded using the GPS OS app for iPhone.

2.3.2 During the survey all botanical species within quadrats were recorded with the exception of lichens and bryophytes which require a high degree of specialism to identify in the field. In addition, microspecies were not identified, for example, brambles were assigned as *Rubus fruticosus* aggregate. Species considered as Ancient Woodland Vascular Plants (AWVP) in Somerset [17] (see Table 2-1) were recorded at each woodland site. Each species present within the quadrats was assigned a Domin scale of abundance [16] Table 2-1.

Table 2-1 Ancient woodland vascular plants in Somerset

Common name	Scientific name
Alternate-leaved golden-saxifrage	*Chrysosplenium alternifolium*
Autumn crocus	*Colchicum autumnale*
Bird's-nest orchid	*Neottia nidus-avis*
Broad-leaved helleborine	*Epipactis helleborine*
Common polypody	*Polypodium vulgare*
Early dog-violet	*Viola reichenbachiana*
Goldilocks buttercup	*Ranunculus auricomus*
Great wood-rush	*Luzula sylvatica*
Guelder-rose	*Viburnum opulus*
Hairy wood-rush	*Luzula pilosa*
Hard shield-fern	*Polystichum aculeatum*
Herb-Paris	*Paris quadrifolia*
Pendulous sedge	*Carex pendula*
Red currant	*Ribes rubrum*
Small-leaved lime	*Tilia cordata*
Snowdrop	*Galanthus nivalis*
Solomon's-seal	*Polygonatum multiflorum*
Sweet woodruff	*Galium odoratum*
Toothwort	*Lathraea squamaria*
Tutsan	*Hypericum androsaemum*
Wild service tree	*Sorbus torminalis*
Wood anemone	*Anemone nemorosa*
Wood melick	*Melica uniflora*
Wood millet	*Milium effusum*
Wood spurge	*Euphorbia amygdaloides*

Common name	Scientific name
Wood-sorrel	*Oxalis acetosella*
Yellow archangel	*Lamiastrum galeobdolon*

Table 2-2 Domin scale of abundance

Percentage cover in quadrat	Domin scale
91-100%	10
76-90%	9
51-75%	8
43-50%	7
26-33%	6
11-25%	5
4-10%	4
<4% (many individuals)	3
<4% (several individuals)	2
<4% (few individuals)	1

2.3.3 Woodland areas 23a, 23b and 26 were surveyed on 9 June 2021, woodland areas 13, 14, 15 and 16a were surveyed on 1 July 2021 and grassland areas 1, 11 and 12 were surveyed on 27 August 2021. During all surveys the weather was fine and dry with a gentle breeze.

2.3.4 The field survey led by Simon Colenutt BSc (Hons) MCIEEM CEnv. Simon has carried out numerous botanical surveys over the last 16 years on a range of habitats including coastal areas, chalk downland, heathland and woodland and is trained in the use of NVC and is practiced in its application.

2.4 Data Analysis

2.4.1 Following completion of the field survey the field data was analysed and compiled. The frequency of each species within the quadrats was calculated, as was the range of Domin values. This data was then used to identify the communities using the keys in Rodwell Volume 1 [18] and Volume 3 [19] and, where possible, the communities were identified to subcommunity level.

2.5 Assumptions and limitations

2.5.1 The woodland surveys were carried out late in the season when many ground flora species will have been past their peak in flower, meaning some species may have died back and entered a vegetative state and as a result could have been difficult to record. This was largely as a result of access restrictions. This may have resulted in the under-recording of some ancient woodland species which are important in the analysis of woodland vegetation and importance. However, this is not considered to represent a significant limitation, particularly in the context of previous survey information available.

2.5.2 The grassland surveys were carried out a little late in the season when many of the species present were past their flowering peak and this could have resulted in some earlier flowering species being overlooked. However, the grasslands are generally of poor quality with low species diversity and, therefore, this is not considered to represent a significant limitation.

2.5.3 Grassland 12 occurs beyond the 100 metre ZoI for grasslands. The site was added into the survey scope following identification of several key calcareous indicator species during UK Habitat Classification surveys (the results of which will form Appendix 8.1 of the ES) and subject to detailed NVC survey as a potentially restorable area of higher biodiversity value habitat.

3 Results

3.1 Desk study

3.1.1 The desk study identified 15 grasslands requiring NVC surveys within the 100 metre grassland study area. Of these, 12 sites had been subject to previous NVC surveys [15] (grassland sites 0, 2, 3, 4, 5, 5a, 6, 8, 9, 10a, 10b and 10c), whilst two sites had not been subject to previous NVC surveys due to access restrictions (grassland sites 1 and 11). Grassland 12 was identified for further survey during 2021.

3.1.2 Seven grassland plant communities (and sub-communities) were identified during the 2017 to 2020 surveys [12]:

- MG1a *Arrhenatherum elatius grassland - Festuca rubra* sub-community (grasslands 2 and 5a)
- MG1e *Arrhenatherum elatius* grassland - *Centaurea nigra* sub-community (grasslands 0, 3, 5, 10a and 10c)
- MG5 *Cynosurus cristatus - Centaurea nigra* grassland community (grassland 4)
- MG7a *Lolium perenne* leys and related grasslands - *Lolium perenne -Trifolium repens* leys (grasslands 6 and 8)
- MG7c *Lolium perenne* leys and related grasslands, *Lolium perenne - Alopecurus pratensis - Festuca pratensis* grassland (grassland 9)
- MG7d *Lolium perenne - Alopecurus pratensis* grassland (grassland 6)
- MG10b *Holcus lanatus - Juncus effusus* rush pasture - *Juncus inflexus* sub-community (grassland 10b)

3.1.3 No protected or priority species were noted. Full survey findings for the previously surveyed sites are presented in The *A358 Taunton to Southfields Dualling National Vegetation Classification Technical Report (March 2021)* [12].

3.1.4 The desk study also identified 16 woodlands requiring NVC surveys within the 250 metre woodland study area. Of these, six sites had been subject to previous NVC surveys [15] (woodland sites 12, 12a, 17, 18, 20 and 25) whilst seven sites had not been subject to previous NVC surveys due to access restrictions (woodland sites 13, 14, 15, 16a, 23a, 23b and 26). Three further sites within the 250 metre study area had been scoped out of NVC survey during the 2017 to 2020 suite of surveys or at the desk study stage:

- Woodland 16 was scoped out due to expected changes in the redline boundary and therefore resulting in no direct impacts on this small woodland block.
- Woodland 21 was scoped out due to being identified as a residential garden.
- Woodland 24 was scoped out due to being a plantation habitat and, therefore, unsuitable for NVC survey.

3.1.5 Six woodland plant communities (and sub-communities) were identified during the 2017 to 2020 surveys [12]:

- W8c *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland - *Deschampsia cespitosa* sub-community (woodland 17)
- W8d *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland - *Hedera helix* sub-community (woodlands 12, 12a, 20 and 25)

- W8e *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland - *Geranium robertianum* sub-community (woodlands 17, and 20)
- W12a *Fagus sylvatica - Mercurialis perennis* woodland - *Mercurialis perennis* sub-community (woodland 17)
- W10a *Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland typical sub-community (woodland 20)
- W8f *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland - *Allium ursinum* sub-community (woodland 18)

3.1.6 Bluebell (*Hyacinthoides non-scripta*) was noted as present with the woodlands but no other protected or priority species were noted. Full survey findings for the previously surveyed sites are presented in the *A358 Taunton to Southfields Dualling National Vegetation Classification Technical Report (March 2021)* [12].

3.1.7 Consultation of the MAGIC database revealed that all woodlands subject to NVC survey were listed as priority habitat lowland mixed deciduous woodland and woodlands 12, 12a, 13, 14, 15, 17, 18, 20, 23a, 23b and 26 were also listed in the priority habitat inventory - deciduous woodland.

3.1.8 Woodlands 12, 12a and the far western and southern extents of woodland 20 are displayed on MAGIC database as ancient & semi-natural woodland. Woodland 17 and the central sections of woodland 20 are displayed on MAGIC database as ancient re-planted woodland. None of the further woodlands were designated as ancient woodland, although the MAGIC database only displays areas of ancient woodland if the extent is greater than two hectares. As some of the woodland areas subject to survey were smaller than this, they might still comprise ancient woodland without being designated as such in the database.

3.1.9 Consultation of historic mapping from between 1888-1913 [11] indicates that woodlands 13, 14, 15 16, 23b and 26 were present at this time.

3.1.10 It was noted that the south of woodland 15 was connected via a planted treeline along the A358 to Bickenhall Wood which is designated as ancient replanted woodland.

3.1.11 Grassland 1 and 11 were listed as priority habitat, comprising coastal and floodplain grazing marsh which covered an extended area from the Taunton Park and Ride south-east to Henlade. Grassland 12 was not listed as priority habitat.

3.1.12 Further details of priority habitats and protected or priority species are provided in the *A358 Taunton to Southfields Dualling Scheme Ecological Baseline Report – UK Habitat Classification,* Section 3, which will form Appendix 8.1 of the ES).

3.2 Field study

3.2.1 This section summarises the habitat present at each site and assigns an NVC community and where possible a subcommunity. Site identification numbers have been retained in line with previous surveys [12]. The locations of the survey sites are provided in Appendix A *NVC survey site locations*, and detailed survey data is provided in 0 *NVC survey results*.

Woodland

Woodland 13

3.2.2 This woodland was located on a ridge to the east of the existing A358. The canopy was ash (*Fraxinus excelsior)* dominated with planted holm oak (*Quercus ilex)*. The scrub layer was open with field maple (*Acer campestre)*, ash and English elm (*Ulmus procera)* being dominant. Wild service tree (*Sorbus torminalis)* was present. The ground flora was well developed but was dominated by ivy (*Hedera helix)* and dog's mercury (*Mercurialis perennis)*. AWVP species recorded included wild service tree and wood melick (*Melica uniflora)*. The woodland falls within W8 *Fraxinus excelsior – Acer campestre - Mercurialis perennis* woodland. The woodland was strongly shaded, due to lack of active coppicing or other management, so falls into the *Hedera helix* sub-community (W8d).

Figure 3-1 Woodland 13

Woodland 14

3.2.3 This woodland occurred as a linear strip along the west side of the existing A358 and was presumably connected to the woodland to the east (woodland 15) before the construction of the existing A358. A small watercourse occurred along the western edge of the woodland and there was some evidence of previous coppice management. The canopy was dominated by pedunculate oak (*Quercus robur)* with occasional beech (*Fagus sylvatica)* and ash. The shrub layer was well developed with hawthorn (*Crataegus monogyna)* being the dominant species although a little hazel (*Corylus avellana)* was also present. The ground layer was dominated by bramble (*Rubus fruticosus agg.)* and ivy but was moderately diverse with a good range of herb species recorded. Wood anemone (*Anemone nemorosa)* (noted within the woodland but not present within the NVC quadrat), wood melick and wood spurge (*Euphorbia amygdaloides)* were the only AWVP species recorded and wood spurge was also listed as a county notable species. The woodland falls within W8 *Fraxinus excelsior – Acer campestre - Mercurialis perennis* woodland, however, due to the abundance of oak it is close to the W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland. The woodland was strongly shaded, due to lack of active coppicing or other management, so falls into the *Hedera helix* sub-community (W8d).

Figure 3-2 Woodland 14

Woodland 15

3.2.4 This area of woodland extended east from the existing A358 along the southern edge of Griffin Lane. It was presumably connected to the woodland 14 before the construction of the A358. The woodland was similar in character to woodland 14 although ash was the canopy dominant rather than pedunculate oak. The shrub layer was well developed with hawthorn being the dominant species although some hazel was also present. The ground layer was dominated by bramble and ivy but with a good diversity of other herbaceous species including bluebell. Wood melick was the only AWVP species recorded and no priority species were recorded. The woodland falls within W8 *Fraxinus excelsior – Acer campestre - Mercurialis perennis* woodland. The woodland was strongly shaded, due to lack of active coppicing or other management, so falls into the *Hedera helix* sub-community (W8d).

Figure 3-3 Woodland 15

Woodland 16a

3.2.5 This was a small area of woodland measuring approximately 0.5 hectares. It was bounded to the north-east and south-west by pasture. To the north and south extended planted tree belts bounding the eastern side of the A358. A pond had recently been excavated within the west of the woodland. The canopy was dominated by pedunculate oak with scattered ash. The scrub layer was moderately diverse being dominated with hazel, with field maple, hawthorn and wych elm (*Ulmus glabra)* also prominent. The ground layer was dominated by bramble, ivy and ramsons (*Allium ursinum),* with bluebell also present. During the survey wood anemone and pendulous sedge were the only AWVP species recorded and no priority species were recorded. The woodland falls between the two main lowland types of W8 *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland and W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland, although is probably closer to the former. The woodland was strongly shaded, due to lack of active coppicing or other management, so falls into the *Hedera helix* sub-communities (W8d and W10c).

Figure 3-4 Woodland 16a

Woodland 23a

3.2.6 Woodland 23a was an ash-dominated woodland with a scatter of planted lime (*Tilia sp.)* and poplar (*Populus sp.)*. The woodland was linked via a treeline to woodland 23b but was otherwise surrounded by arable and pasture land. It has historically been used as a pheasant rearing area and as a result there was planted game cover consisting of stands of introduced Wilson's honeysuckle (*Lonicera nitida)* and cherry laurel (*Prunus laurocerasus)*. The shrub layer was largely open with only scattered specimens present although areas were dominated by cherry laurel. The ground layer had large areas dominated by stinging nettle (*Urtica dioica)* and ivy. During the survey pendulous sedge (*Carex pendula)* was the only AWVP species recorded and no protected or priority species were recorded. The woodland can be assigned to the W8 *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland. The woodland was strongly shaded, due to lack of active coppicing or other management, so falls into the *Hedera helix* sub-community (W8d).

Figure 3-5 Woodland 23a

Woodland 23b

3.2.7 This woodland was a mixed plantation woodland with a range of introduced species growing within an ash-dominated canopy. The woodland was linked via a treeline to woodland 23a but was otherwise surrounded by arable and pasture land. A residential property, Jordans, was located on the southern edge. The scrub layer was largely open although there were scattered elder (*Sambucus nigra)*, and towards the north, a dense stand of cherry laurel had presumably been planted to provide game cover as derelict pheasant pens were present. The ground layer was dominated by ivy and ramsons. Pendulous sedge (noted within the woodland but not present within the NVC quadrat) was the only AWVP species recorded and no protected or priority species were recorded. The woodland can be assigned to the W8 *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland. The woodland was strongly shaded, due to lack of active coppicing or other management, so falls into the *Hedera helix* sub-community (W8d).

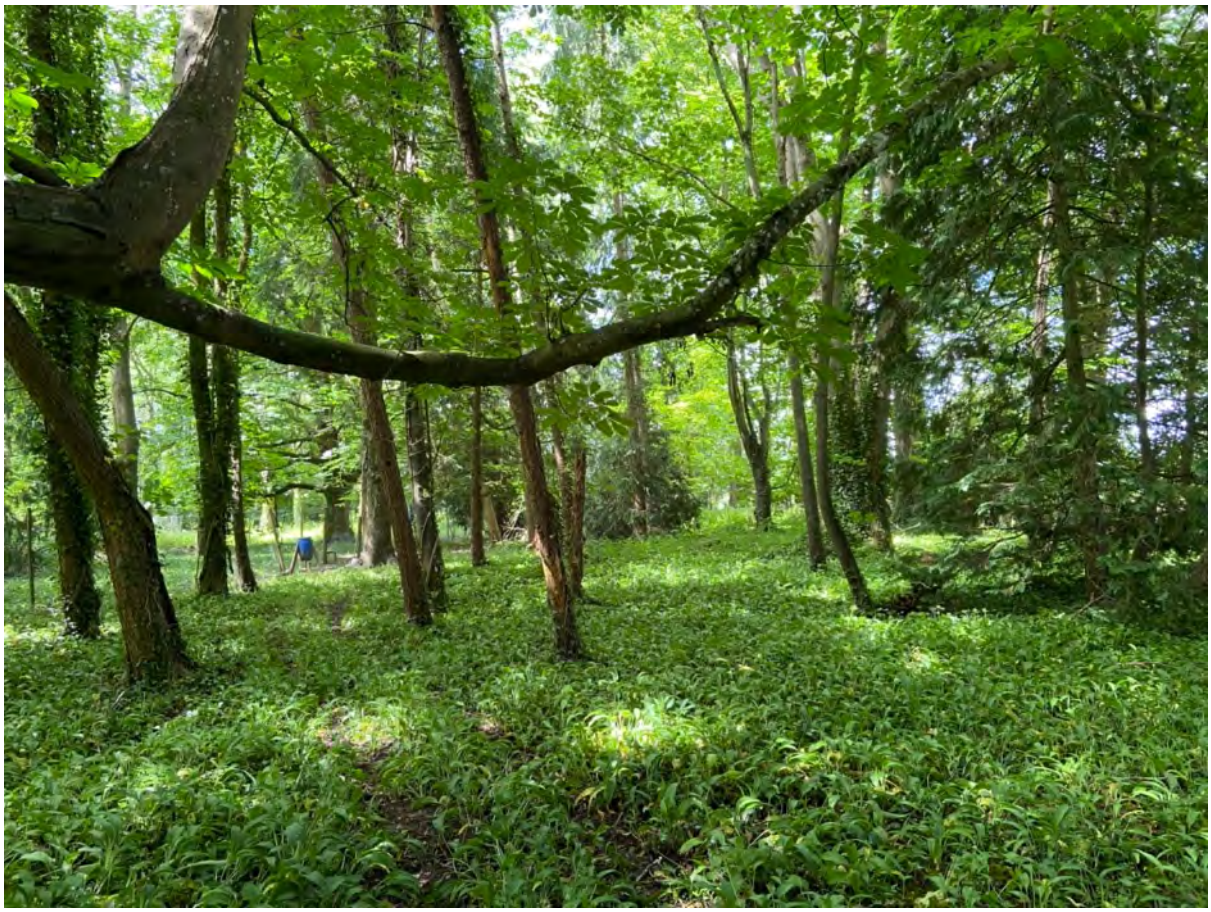

Figure 3-6 Woodland 23b

Woodland 26

3.2.8 Woodland 26 was a small woodland stand measuring approximately 1.1 hectares in area. The woodland was surrounded by arable and pasture land although on the southern edge the woodland adjoined the A358 and was separated from it by a grassy track and a planted treeline. The woodland was dominated by ash and oak with occasional English elm and field maple. The scrub layer was open with scattered elm and field maple shrubs. The ground layer was dominated by bluebell, ivy, cleavers (*Galium aparine)* and dog's mercury. During the survey wood anemone was the only AWVP species recorded and no priority species were recorded. The woodland falls between the two main lowland types of W8 *Fraxinus excelsior – Acer campestre - Mercurialis perennis* woodland and W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland. The woodland was strongly shaded, due to lack of active coppicing or other management, so falls into the *Hedera helix* sub-communities (W8d and W10c).

Figure 3-7 Woodland 26

Grassland

Grassland 1

3.2.9 This small area of grassland was formerly arable land, now abandoned and colonised by a coarse, relatively herb-rich, grassland with stands of colonising bramble, dogwood (*Cornus sp.),* grey willow (*Salix cinerea)*, hawthorn and alder scrub (*Alnus glutinosa*). The north was bordered by a mature hedgerow, the east by a treeline, the west by a line of willow over a watercourse and the south by a ditch dominated by scrub, great willowherb (*Epilobium hirsutum)* and common reed (*Phragmites australis)*. The dominant grass species within the grassland was false oat-grass (*Arrhenatherum elatius)* with Yorkshire-fog (*Holcus lanatus)* also prominent. The most frequent herbaceous species were bristly oxtongue (*Helminthotheca echioides)*, creeping cinquefoil (*Potentilla reptans)*, fleabane (*Pulicaria dysenterica)* and hoary ragwort (*Jacobaea erucifolia)*. The grassland best fits MG1 *Arrhenatherum elatius* grassland and probably falls into the *Festuca rubra* sub-community (MG1a).

Figure 3-8 Grassland 1

Grassland 11

3.2.10 This was an area of species-poor grassland derived from abandoned pasture land. To the west and east the grassland was bounded by hedgerows and the south was open to further pasture. To the north the grassland was bounded by a ditch dominated by scrub and great willowherb with common reed. This ditch formed the southern boundary to grassland 1. The dominant grass species in the sward was false oat-grass with abundant red fescue (*Festuca rubra*). Herb species were few and were dominated by abundant creeping cinquefoil, bristly oxtongue and common fleabane. The grassland best fits MG1 *Arrhenatherum elatius* grassland and probably falls into the *Festuca rubra* sub-community (MG1a).

Figure 3-9 Grassland 11

Grassland 12

3.2.11 This area of grassland occurred on a moderate steep north-facing slope bounded by woodland and mature hedgerows to the north, south and west and by a permanent pasture to the east. It was an unmanaged, tussocky and species-poor grassland. The sward was dominated by coarse grasses such as tufted hairgrass (*Deschampsia cespitosa)*, false oat-grass and cock's-foot (*Dactylis glomerta).* Few herb species were present although calcicolous species such as common quaking-grass (*Briza media*), common bird's-foot trefoil (*Lotus corniculatus)*, lady's bedstraw (*Galium verum)* and salad burnet (*Sanguisorba minor)* were recorded. Patches of scrub were present within the grassland consisting of bramble, elder, hazel and dog-rose (*Rosa canina*). When viewed in the context of the wider landscape, it was considered likely that this grassland may have once been calcareous grassland that has been degraded through improvement by grazing over time. In its current state, the grassland falls into MG9 *Holcus lanatus-Deschampsia cespitosa* grassland and fits the *Arrhenatherum elatius* subcommunity (MG9b).

Figure 3-10 Grassland 12

4 Conclusions

4.1 Woodland

4.1.1 The woodlands surveyed between 2017 and 2020 [12] within the 250 metre woodland study area fall into a range of plant community classifications (W8c *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland - *Deschampsia cespitosa* sub-community, W8d *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland - *Hedera helix* sub-community, W8e *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland - *Geranium robertianum* sub-community, W12a *Fagus sylvatica - Mercurialis perennis* woodland - *Mercurialis perennis* sub-community, W10a *Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland typical sub-community, W8f *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland - *Allium ursinum* sub-community).

4.1.2 All the woodlands surveyed in 2021 corresponded with the W8 *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland with some tendency towards the W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland. Typical canopy species associated with this woodland type were ash, pedunculate oak and field maple while AWVPs such as wood anemone (woodlands 14, 16a and 26), wood melick (woodlands 13, 15 and 15), pendulous sedge (woodlands 16a, 23a and 23b), wild service tree (woodland 13) and wood spurge (also a county notable species, woodland 14) were recorded. These woodlands represent typical climax forest on base-rich soils found over much of lowland England, although large areas of these woodlands have been modified through forestry and farming practices.

4.1.3 The woodland areas were all identified as being of high ecological value, and while none of the woodland areas were designated as ancient woodland, the woodlands all fall under the lowland mixed deciduous woodland priority habitat and, with the exception of woodland 1, are all listed in the priority habitat inventory as deciduous woodland. The woodlands are therefore considered to be of national level importance [4].

4.2 Grassland

4.2.1 The grasslands surveyed between 2017 and 2020 [12] within the 100 metre grassland study area fall into a range of plant community classifications (MG1a *Arrhenatherum elatius grassland - Festuca rubra* sub-community, MG1e *Arrhenatherum elatius* grassland - *Centaurea nigra* sub-community, MG5 *Cynosurus cristatus - Centaurea nigra* grassland community, MG7a *Lolium perenne* leys and related grasslands - *Lolium perenne -Trifolium repens* leys, MG7c *Lolium perenne* leys and related grasslands, *Lolium perenne - Alopecurus pratensis - Festuca pratensis* grassland, MG7d *Lolium perenne - Alopecurus pratensis* grassland, MG10b *Holcus lanatus - Juncus effusus* rush pasture - *Juncus inflexus* sub-community). All of these grasslands are considered to be low diversity grassland types that are common and widespread throughout the British Isles and are of little (local) conservation value, with the exception of the MG5 community (grassland 4) which has been classified as a lowland meadow HPI (a habitat of national importance [4]).

4.2.2 The grassland habitats surveyed in 2021 consisted of MG1 *Arrhenatherum elatius* grassland (grassland 1 and grassland 11) and MG9 *Holcus lanatus-Deschampsia cespitosa* grassland (grassland 12).

4.2.3 The MG1 community is a grassland dominated by false oat-grass and other coarse grasses such as cock's-foot and Yorkshire-fog. Herb species are generally poorly represented but here creeping cinquefoil, hoary ragwort and fleabane were conspicuous. These grasslands are typical of ungrazed grassland characteristic of circumneutral soils found throughout Britain and occurring in a wide range of areas such as roadsides and neglected pastures. Without management these grassland habitats can be rapidly invaded by shrubs, as in the case of grassland 1 where dogwood in particular was invading the grassland. Grassland 11 is also likely to rapidly progress towards this shrub stage. The grassland in area 11 is therefore considered a temporary stage towards a succession to scrub and then woodland.

4.2.4 MG9 grassland at grassland 12 is a coarse and species-poor grassland dominated by tufted hairgrass, although towards the bottom of the slope on which this grassland is located species such as false oat-grass and cock's-foot that dominate. Much of the area was dominated by dense tussocks of tufted hairgrass interspersed with anthills formed by yellow meadow-ant. These anthills have a short sward where species such as annual meadow-grass, common mouse-ear and red fescue occurred. Tufted hairgrass typically occurs on moist ground with gleyed circumneutral soils, where this species has a competitive advantage over other grass species and so becomes dominant through vegetative growth. Tufted hairgrass is generally unpalatable to livestock and this may account for this area of grassland having developed on this slope, the grassland being of little value for foraging or as a hay crop. It is considered likely that this grassland may have once been calcareous grassland that has been degraded over time, with potential for future restoration through management.

4.2.5 Both MG1and MG9 community grasslands are low diversity grassland types that are common and widespread throughout the British Isles and are of little (local) conservation value. Grasslands 1 and 11 are covered by the 'priority habitat inventory - coastal and floodplain grazing marsh, due to periodic flooding and the grazed nature of much of the grassland within the priority habitat rather than as a result of the grasslands intrinsic ecological value.

4.2.6 Bluebell was the only protected species recorded and wood spurge was the only county notable species recorded. No priority species were recorded within the study area.

Abbreviations List

Please refer to Environmental Statement Chapter 17 Abbreviations.

Glossary

Please refer to Environmental Statement Chapter 18 Glossary.

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Appendices

Appendix A NVC survey site locations

GRASSLAND 0

GRASSLAND 2

GRASSLAND 1

GRASSLAND 11

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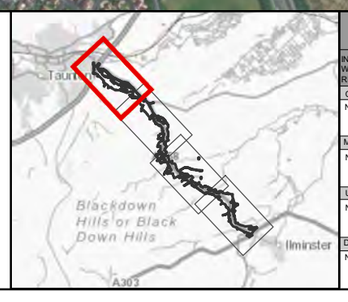

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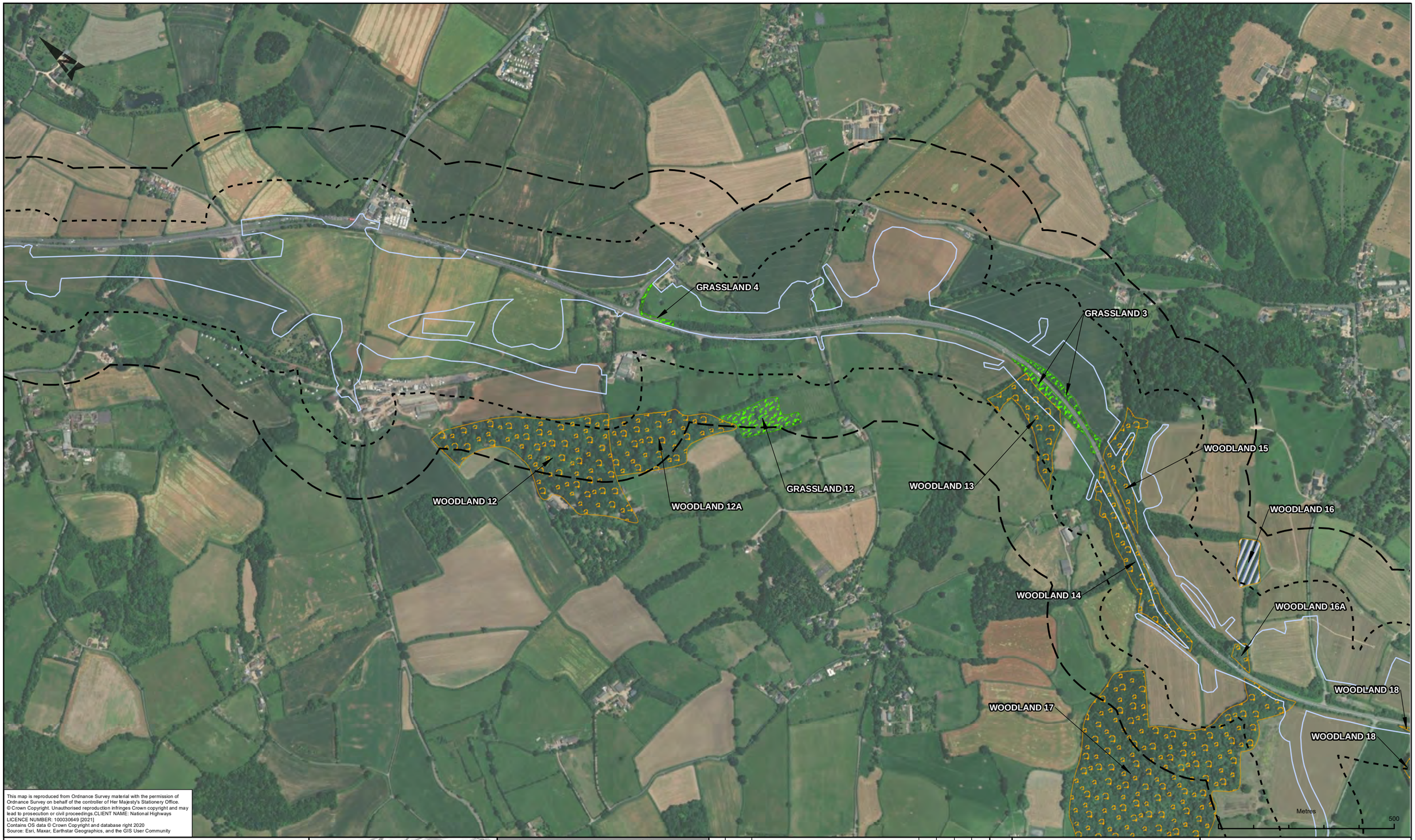

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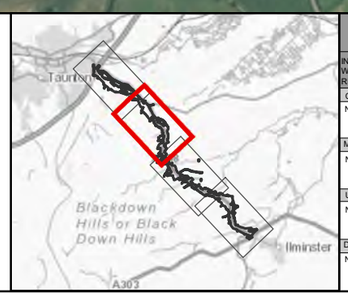

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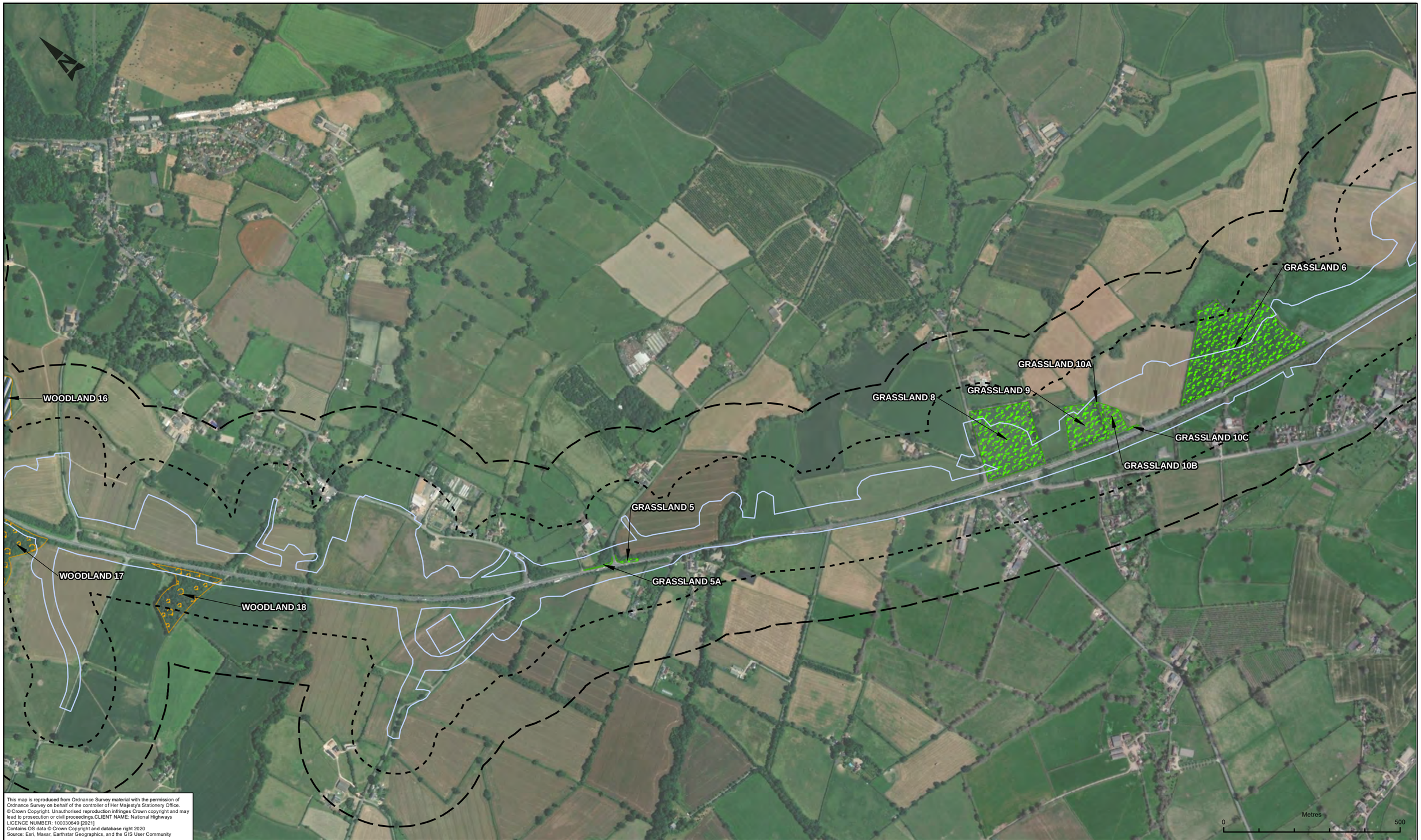

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LEGEND

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NVC WOODLANDS WITHIN 250M

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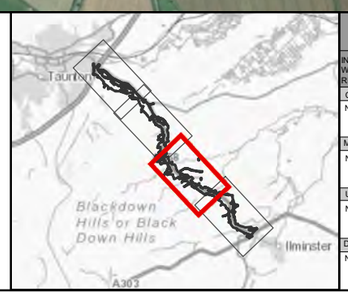

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Location | Type | Role | Number

Revision: P02

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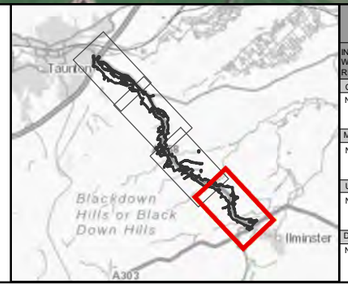
LEGEND

- ECOLOGY SURVEY ZONE
- ECOLOGY SURVEY AREA BUFFER - 250M
- ECOLOGY SURVEY AREA BUFFER - 100M
- NVC GRASSLAND WITHIN 100M

NVC WOODLANDS WITHIN 250M

- SCOPED IN FOR NVC SURVEY
- SCOPED OUT OF NVC SURVEY



SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS (REFERENCE SHALL ALSO BE MADE IN THE DESIGN HAZARD LOG)

CONSTRUCTION
NONE

MAINTENANCE / CLEANING
NONE

USE
NONE

DECOMMISSIONING / DEMOLITION
NONE

Rev.	Date	Description	By	Chk'd	App'd	Auth'd
P02	13/05/22	ISSUE FOR INFORMATION	AC	MA	JS	SV

Suitability: S2
Drawing Status: SUITABLE FOR INFORMATION

TAYLOR WOODROW together @ VINCI
ARUP RAMBOLL

Client: national highways

Project Title: A358 TAUNTON TO SOUTHFIELDS DUALLING SCHEME

Drawing Title: NATIONAL VEGETATION CLASSIFICATION (NVC) SURVEY SITE LOCATIONS SHEET 4 OF 4

Scale	By	Checked	Approved	Authorised
1:10,000	AC	MA	JS	SV

Original Size	Date	Date	Date	Date
A3	13/05/22	13/05/22	13/05/22	13/05/22

Drawing Number: HE PIN HE551508 - ZZ (Location) | Originator ARP | Volume - VES | Type - DR | Role - LE | Number - 000274
Revision: P02

Appendix B NVC survey results

B.1 Woodland

B.1.1 Woodland 13

Table B-1 Results of NVC survey of woodland 13

Common name	Scientific name	Domin value
Tree layer species		
Ash	*Fraxinus excelsior*	9
Field maple	*Acer campestre*	2
Holm oak	*Quercus ilex*	2
Turkey oak	*Quercus cerris*	6
Shrub layer species		
Ash	*Fraxinus excelsior*	4
Beech	*Fagus sylvatica*	1
Elder	*Sambucus nigra*	2
Elm	*Ulmus procera*	4
Field maple	*Acer campestre*	4
Hawthorn	*Crataegus monogyna*	1
Hazel	*Corylus avellana*	2
Ivy	*Hedera helix*	4
Pedunculate oak	*Quercus robur*	1
Privet	*Ligustrum vulgare*	1
Sycamore	*Acer pseudoplatanus*	1
Turkey oak	*Quercus cerris*	1
Wayfaring tree	*Viburnum lantana*	1
Wild service tree	*Sorbus torminalis*	1

Wych elm	*Ulmus glabra*	1						
Ground flora species								
Common name	**Scientific name**	**Domin value per quadrat (grid reference)**					**Species frequency**	**Domin value range**
		Q1 (ST 29343 20946)	**Q2 (ST 29360 20964)**	**Q3 (ST 29382 20979)**	**Q4 (ST 29400 20976)**	**Q5 (ST 29408 20964)**		
Cleavers	*Galium aparine*	7	3		1	4	4	1-7
Common dog violet	*Viola riviniana*	1	2	2		1	4	1-2
Dog's mercury	*Mercurialis perennis*	8	10	9	10	9	5	8-10
English elm (sapling)	*Ulmus procera*	2	1	1			3	1-2
Hawthorn (sapling)	*Crataegus monogyna*			1		1	2	1
Hedge garlic	*Alliaria petiolata*	2				1	2	1-2
Herb-robert	*Geranium robertianum*	2					1	2
Ivy	*Hedera helix*	10	10	10	10	10	5	10
Lords-and-ladies	*Arum maculatum*				1		1	1
Privet (sapling)	*Ligustrum vulgare*		2		2	1	3	1-2
Spurge laurel	*Daphne laureola*		4	4			2	4
Stinging nettle	*Urtica dioica*	4	3	1	2	4	5	1-4
Stinking iris	*Iris foetidissima*	4	4	1	1	2	5	1-4
Sweet violet	*Viola odorata*	3	2				2	2-3
Wood avens	*Geum urbanum*			3		1	2	1-3
Wood dock	*Rumex sanguineus*		2	1		1	3	1-2
Wood false brome	*Brachypodium sylvaticum*	1		3	3	4	4	1-4
Wood melick	*Melica uniflora*			1	1		2	1
Wood sedge	*Carex sylvatica*			1			1	1

B.1.2 Woodland 14

Table B-2 Results of NVC survey of woodland 14

Common name	Scientific name	Domin value						
Tree layer species								
Ash	*Fraxinus excelsior*	4						
Beech	*Fagus sylvatica*	4						
Pedunculate oak	*Quercus robur*	10						
Shrub layer species								
Beech	*Fagus sylvatica*	2						
Blackthorn	*Prunus spinosa*	2						
Cherry laurel	*Prunus laurocerasus*	1						
Field maple	*Acer campestre*	2						
Field rose	*Rosa arvensis*	1						
Hawthorn	*Crataegus monogyna*	6						
Hazel	*Corylus avellana*	2						
Holly	*Ilex aquifolium*	2						
Ivy	*Hedera helix*	2						
Privet	*Ligustrum vulgare*	2						
Yew	*Taxus baccata*	1						
Ground flora species								
Common name	**Scientific name**	**Domin value per quadrat (grid reference)**					**Species frequency**	**Domin value range**
		Q1 (ST 29343 20946)	**Q2 (ST 29360 20964)**	**Q3 (ST 29382 20979)**	**Q4 (ST 29400 20976)**	**Q5 (ST 29408 20964)**		
Ash (sapling)	*Fraxinus excelsior*	1	2	3	3		4	1-3
Beech (sapling)	*Fagus sylvatica*	1					1	1
Blackthorn (sapling)	*Prunus spinosa*			3			1	3

Common name	Scientific name	Domin value						
Bramble	*Rubus fruticosus*	8	6	8	9	7	5	6-9
Field maple (sapling)	*Acer campestre*				1	1	2	1
Field rose	*Rosa arvensis*	2					1	2
Hawthorn (sapling)	*Crataegus monogyna*		1				1	1
Hazel (sapling)	*Corylus avellana*				1		1	1
Honeysuckle	*Lonicera periclymenum*	1			1		2	1
Ivy	*Hedera helix*	9	10	9	9	10	5	9-10
Pedunculate oak (sapling)	*Quercus robur*	1				1	2	1
Privet (sapling)	*Ligustrum vulgare*		2	1	4	2	4	1-4
Ramsons	*Allium ursinum*	5	4		1	4	4	1-5
Raspberry	*Rubus idaeus*	4	2	2			3	2-4
Stinking iris	*Iris foetidissima*	2	2	2		1	4	1-2
Turkey oak (sapling)	*Quercus cerris*				1		1	1
Wild madder	*Rubia peregrina*	4	2		2	1	4	1-4
Wild strawberry	*Fragaria vesca*	3				1	2	1-3
Wood melick	*Melica uniflora*	3	1			2	3	1-3
Wood spurge	*Euphorbia amygdaloides*		1				1	1

B.1.3 Woodland 15

Table B-3 Results of NVC survey of woodland 15

Common name	Scientific name	Domin value
Tree layer species		
Ash	*Fraxinus excelsior*	5
Beech	*Fagus sylvatica*	4
Field maple	*Acer campestre*	2

Common name	Scientific name	Domin value						
Larch	*Larix decidua*	2						
Pedunculate oak	*Quercus robur*	1						
Turkey oak	*Quercus cerris*	2						
Wych elm	*Ulmus glabra*	1						
Shrub layer species								
Ash	*Fraxinus excelsior*	3						
Elder	*Sambucus nigra*	3						
Hazel	*Corylus avellana*	5						
Holly	*Ilex aquifolium*	3						
Privet	*Ligustrum vulgare*	2						
Wych elm	*Ulmus glabra*	2						
Ground flora species								
Common name	**Scientific name**	**Domin value per quadrat (grid reference)**					**Species frequency**	**Domin value range**
		Q1 (ST 29449 20763)	**Q2 (ST 29480 20778)**	**Q3 (ST 29511 20789)**	**Q4 (ST 29536 20799)**	**Q5 (ST 29564 20810)**		
Ash (sapling)	*Fraxinus excelsior*	1	2	1	3	1	5	1-3
Black bryony	*Dioscorea communis*	1		2		2	3	1-2
Bluebell	*Hyacinthoides non-scripta*	1	4	3		4	4	1-4
Bramble	*Rubus fruticosus*	9	5	5	5	6	5	5-9
Cleavers	*Galium aparine*	3	1	1	1	2	5	1-3
Common dog violet	*Viola riviniana*		3	3			2	3
Creeping bent	*Agrostis stolonifera*		3	3			2	3
Lords-and-ladies	*Arum maculatum*				1		1	1
Dog’s mercury	*Mercurialis perennis*	4	4	6	1	5	5	1-6

Common name	Scientific name	Domin value						
Enchanter's nightshade	*Circaea lutetiana*	2	2			4	3	2-4
Field maple (sapling)	*Acer campestre*	1	1				2	1
Hawthorn (sapling)	*Crataegus monogyna*			4	1	1	3	1-4
Herb-robert	*Geranium robertianum*	4	3			4	3	3-4
Holly (sapling)	*Ilex aquifolium*		1			1	2	1
Honeysuckle	*Lonicera periclymenum*				1	2	2	1-2
Ivy	*Hedera helix*	10	10	10	10	10	5	10
Lady fern	*Athyrium filix-femina*	2	1				2	1-2
Privet (sapling)	*Ligustrum vulgare*		1		3	1	2	1
Ramsons	*Allium ursinum*	1	4	2	1	4	5	1-4
Rose sp.	*Rosa species*		1	1	1		3	1
Stinging nettle	*Urtica dioica*	2	2			2	3	2
Stinking iris	*Iris foetidissima*			1	2		3	1-2
Wood avens	*Geum urbanum*	2				1	3	1-2
Wood false brome	*Brachypodium sylvaticum*	3	3	5	2	4	5	2-5
Wood melick	*Melica uniflora*	3		5		4	3	3-5
Wood sedge	*Carex sylvatica*		1		1	1	3	1

B.1.4 Woodland 16A

Table B-4 Results of NVC survey of woodland 16a

Common name	Scientific name	Domin value
Tree layer species		
Ash	*Fraxinus excelsior*	4
Pedunculate oak	*Quercus robur*	10

Common name	Scientific name	Domin value						
Shrub layer species								
Ash	*Fraxinus excelsior*	4						
Bramble	*Rubus fruticosus*	5						
Field maple	*Acer campestre*	4						
Hawthorn	*Crataegus monogyna*	5						
Hazel	*Corylus avellana*	6						
Privet	*Ligustrum vulgare*	2						
Spindle	*Euonymus europaeus*	1						
Wych elm	*Ulmus glabra*	4						
Ground flora species								
Common name	**Scientific name**	**Domin value per quadrat (grid reference)**					**Species frequency**	**Domin value range**
		Q1 (ST 29296 20160)	**Q2 (ST 29299 20150)**	**Q3 (ST 29302 20142)**	**Q4 (ST 29303 20133)**	**Q5 (ST 29303 20117)**		
Ash (sapling)	*Fraxinus excelsior*	1		1			2	1
Black bryony	*Dioscorea communis*	1	1				2	1
Blackthorn (sapling)	*Prunus spinosa*				1		1	1
Bluebell	*Hyacinthoides non-scripta*	3	1				2	1-3
Bramble	*Rubus fruticosus*	8	1			4	3	1-8
Cleavers	*Galium aparine*	2	3		1	1	4	1-3
Creeping soft grass	*Holcus mollis*	1					1	1
Enchanter's nightshade	*Circaea lutetiana*	2	2			1	3	1-2
Hawthorn (sapling)	*Crataegus monogyna*		1	1			2	1
Ivy	*Hedera helix*	10	9	8	10	9	5	8-10
Lords-and-ladies	*Arum maculatum*				1		1	1
Pendulous sedge	*Carex pendula*	1	1	2	1		4	1-2
Primrose	*Primula vulgaris*			1			1	1

Common name	Scientific name	Domin value						
Privet	*Ligustrum vulgare*	2	2	4	3	1	5	1-4
Ramsons	*Allium ursinum*		8	4		3	3	3-8
Raspberry	*Rubus idaeus*		4	2			2	2-4
Stinging nettle	*Urtica dioica*		4	3			2	3-4
Stinking iris	*Iris foetidissima*	4	2	1		1	4	1-4
Wood anemone	*Anemone nemorosa*	2				2	2	2
Wood false brome	*Brachypodium sylvaticum*	2					1	2

B.1.5 Woodland 23a

Table B-5 Results of NVC survey of woodland 23a

Common name	Scientific name	Domin value
Tree layer species		
Ash	*Fraxinus excelsior*	9
Lime (hybrid)	*Tilia species*	2
Pedunculate oak	*Quercus robur*	2
Poplar (hybrid)	*Populus species*	4
Sycamore	*Acer pseudoplatanus*	7
Shrub layer species		
Cherry laurel	*Prunus laurocerasus*	3
Elder	*Sambucus nigra*	2
English elm	*Ulmus procera*	1
Holly	*Ilex aquifolium*	1
Privet	*Ligustrum vulgare*	1
Sycamore	*Acer pseudoplatanus*	2
Wilson's honeysuckle	*Lonicera nitida*	1

Common name	Scientific name	Domin value						
Ground flora species								
Common name	**Scientific name**	**Domin value per quadrat (grid reference)**					**Species frequency**	**Domin value range**
		Q1 (ST 33698 16280)	**Q2 (ST 33689 16293)**	**Q3 (ST 33674 16303)**	**Q4 (ST 33655 16304)**	**Q5 (ST 33636 16302)**		
Ash (sapling)	*Fraxinus excelsior*	1	1				2	1
Bramble	*Rubus fruticosus*	1		1		4	3	1-4
Cleavers	*Galium aparine*					4	1	4
Elder	*Sambucus nigra*	1					1	1
English elm (sapling)	*Ulmus procera*				4		1	1
Hedge garlic	*Alliaria petiolata*	2	2				2	2
Hogweed	*Heracleum sphondylium*		5				1	5
Ivy	*Hedera helix*	9	9	9	10	10	5	9-10
Lords-and-ladies	*Arum maculatum*	1				1	2	1
Pendulous sedge	*Carex pendula*	6					1	6
Privet (sapling)	*Ligustrum vulgare*					2	1	2
Ramsons	*Allium ursinum*	6	5	10	9	9	5	5-10
Stinging nettle	*Urtica dioica*	2	7	4		4	4	4
Sycamore (sapling)	*Acer pseudoplatanus*	1	1	1			3	1
Wood avens	*Geum urbanum*	2	4				2	2-4
Wood dock	*Rumex sanguineus*	2	4				2	2-4
Wood speedwell	*Veronica montana*	4					1	4

B.1.6 Woodland 23b

Table B-6 Results of NVC survey of woodland 23b

Common name	Scientific name	Domin value
Tree layer species		
Ash	*Fraxinus excelsior*	7
Beech	*Fagus sylvatica*	2
Cedar sp.	*Cedrus species*	3
English elm	*Ulmus procera*	1
False acacia	*Robinia pseudoacacia*	1
Horse chestnut	*Aesculus hippocastanum*	6
Larch	*Larix decidua*	1
Poplar (hybrid)	*Populus species*	5
Sycamore	*Acer pseudoplatanus*	5
Turkey oak	*Quercus cerris*	2
Yew	*Taxus baccata*	4
Shrub layer species		
Elder	*Sambucus nigra*	5
Cherry Laurel	*Prunus laurocerasus*	4
Cedar sp.	*Cedrus species*	2
Hazel	*Corylus avellana*	1
Holly	*Ilex aquifolium*	1
Hawthorn	*Crataegus monogyna*	1

Common name	Scientific name	Domin value						
Ground flora species								
Common name	**Scientific name**	**Domin value per quadrat (grid reference)**					**Species frequency**	**Domin value range**
		Q1 (ST 33927 15983)	**Q2 (ST 33905 15970)**	**Q3 (ST 33884 15955)**	**Q4 (ST 33865 15942)**	**Q5 (ST 33851 15922)**		
Ash (sapling)	*Fraxinus excelsior*				1		1	1
Bare ground				6			1	6
Black bryony	*Dioscorea communis*				1		1	1
Bluebell (hybrid)	*Hyacinthoides x massartiana*				1	5	1	1-5
Bramble	*Rubus fruticosus*	1			5	7	3	1-7
Cleavers	*Galium aparine*	1			1	1	3	1
Elder (sapling)	*Sambucus nigra*					1	1	1
Holly (sapling)	*Ilex aquifolium*	1					1	1
Horse chestnut (sapling)	*Aesculus hippocastanum*	1	2	1			3	1-2
	Ivy *Hedera helix*	9	9	5	10	10	5	5-10
Lords-and-ladies	*Arum maculatum*	1	1		1		3	1
Male fern	*Dryopteris filix-mas*	1					1	1
Ramsons	*Allium ursinum*	8	8	8	5	1	5	1-8
Stinging nettle	*Urtica dioica*				4		1	4
Sycamore (sapling)	*Acer pseudoplatanus*		1	1	1		3	1
Wood avens	*Geum urbanum*				1		1	1
Wood false brome	*Brachypodium sylvaticum*		1				1	1

B.1.7 Woodland 26

Table B-7 Results of NVC survey of woodland 26

Common name	Scientific name	Domin value						
Tree layer species								
Ash	*Fraxinus excelsior*	9						
Elm	*Ulmus procera*	2						
Field maple	*Acer campestre*	4						
Pedunculate Oak	*Quercus robur*	9						
Turkey oak	*Quercus cerris*	1						
Shrub layer species								
English elm	*Ulmus procera*	5						
Field maple	*Acer campestre*	4						
Hawthorn	*Crataegus monogyna*	1						
Holly	*Ilex aquifolium*	2						
Ground flora species								
Common name	**Scientific name**	**Domin value per quadrat (grid reference)**					**Species frequency**	**Domin value range**
		Q1 (ST 34228 15590)	**Q2 (ST 34231 15575)**	**Q3 (ST 34233 15564)**	**Q4 (ST 34236 15547)**	**Q5 (ST 34235 15531)**		
Ash (sapling)	*Fraxinus excelsior*			1			1	1
Bare ground				8	6		2	6-8
Bluebell	*Hyacinthoides non-scripta*	5	7	8	8	2	5	2-8
Cleavers	*Galium aparine*	8	8	8	9	7	5	7-9
Common dog violet	*Viola riviniana*	1		1	1		3	1
Cow parsley	*Anthriscus sylvestris*	2				4	2	2-4
Dog's mercury	*Mercurialis perennis*	5	1			5	3	1-5
English elm (sapling)	*Ulmus procera*		1	4	4	1	4	1-4

Common name	Scientific name	Domin value						
Field maple (sapling)	*Acer campestre*		1				1	1
Hawthorn (sapling)	*Crataegus monogyna*		1				1	1
Hedge garlic	*Alliaria petiolata*		2				1	2
Herb-robert	*Geranium robertianum*	1					1	1
Ivy	*Hedera helix*	9	9	7	9	10	5	7-10
Ivy-leaved speedwell	*Veronica hederifolia*				1		1	1
Lords-and-ladies	*Arum maculatum*			1	1	1	3	1
Prunus sp. (sapling)	Prunus sp.			1			1	1
Ramsons	*Allium ursinum*		4				1	4
Stinging nettle	*Urtica dioica*	2			2	7	3	2-7
Stinking iris	*Iris foetidissima*					1	1	1
Sycamore (sapling)	*Acer pseudoplatanus*			1			1	1
Wood anemone	*Anemone nemorosa*	4	2			4	3	2-4
Wood avens	*Geum urbanum*	1	1				2	1
Wood dock	*Rumex sanguineus*			2	2		2	2

B.2 Grassland

B.2.1 Grassland 1

Table B-8 Results of NVC survey of grassland 1

Common name	Scientific name	Domin value per quadrat (grid reference)					Species frequency	Domin value range
		Q1 (ST 26005 24179)	Q2 (ST 26014 24168)	Q3 (ST 26024 24155)	Q4 (ST 26035 24142)	Q5 (ST 26046 24126)		
Blackthorn (sapling)	*Prunus spinosa*	1					1	1
Bramble (sapling)	*Rubus fruticosus*	1				1	1	2
Bristly oxtongue	*Helminthotheca echioides*	2	8	5	8	8	5	2-8
Broad-leaved willowherb	*Epilobium montanum*		3	1	1	4	4	1-4
Creeping bent	*Agrostis stolonifera*	4	4	5	3		4	3-4
Creeping cinquefoil	*Potentilla reptans*	7	8	8	8	8	5	7-8
Creeping thistle	*Cirsium arvense*	4	1	3		2	4	1-4
Curled dock	*Rumex crispus*		1	1			2	1
Cut-leaved cranesbill	*Geranium dissectum*			1			1	1
False oat-grass	*Arrhenatherum elatius*	6	5	4	5	4	5	4-6
Field bindweed	*Convolvulus arvensis*	2					1	2
Fleabane	*Pulicaria Dysenterica*	2	1	1	6	1	5	1-6
Goat willow (sapling)	*Salix caprea*				1		1	1
Great willowherb	*Epilobium hirsutum*			2			1	2
Hoary ragwort	*Jacobaea Erucifolia*	2	2	2	2	2	5	2
Perennial sow-thistle	*Sonchus arvensis*		1				1	1

Common name	Scientific name	Domin value per quadrat (grid reference)					Species frequency	Domin value range
		Q1 (ST 26005 24179)	Q2 (ST 26014 24168)	Q3 (ST 26024 24155)	Q4 (ST 26035 24142)	Q5 (ST 26046 24126)		
Red fescue	*Festuca rubra*		4			2	2	2-4
Rough meadow-grass	*Poa trivialis*	5	5	4	4	5	5	4-5
Self-heal	*Prunella vulgaris*		4				1	4
Stone parsley	*Sison amomum*	1					1	1
White clover	*Trifolium repens*	4					1	4
Yorkshire-fog	*Holcus lanatus*	6	8	7	8	9	5	6-9

B.2.2 Grassland 11

Table B-9 Results of NVC survey of grassland 11

Common name	Scientific name	Domin value per quadrat (grid reference)					Species frequency	Domin value range
		Q1 (ST 25964 24155)	Q2 (ST 25970 24138)	Q3 (ST 25978 24122)	Q4 (ST 25987 24107)	Q5 (ST 25995 24094)		
Black medick	*Medicago lupulina*			2	4	4	3	2-4
Bristly oxtongue	*Helminthotheca echioides*				4		1	4
Cock's-foot	*Dactylis glomerta*	5	5	7	4	5	5	4-7
Common cat's-ear	*Hypochaeris radicata*					2	1	2
Common ragwort	*Jacobaea vulgaris*			2	1		2	1-2
Common sorrel	*Rumex acetosa*	2					1	2
Creeping bent	*Agrostis stolonifera*		4	4	4	4	4	4
Creeping cinquefoil	*Potentilla reptans*		9	7	5	9	4	5-9
Dandelion agg.	*Taraxacum species*	4		4	8	1	4	1-8

Common name	Scientific name	Domin value per quadrat (grid reference)					Species frequency	Domin value range
		Q1 (ST 25964 24155)	Q2 (ST 25970 24138)	Q3 (ST 25978 24122)	Q4 (ST 25987 24107)	Q5 (ST 25995 24094)		
Dove's-foot cranesbill	*Geranium molle*	2					1	2
False oat-grass	*Arrhenatherum elatius*	8	7	9	7	8	5	7-8
Goat's-beard	*Aruncus dioicus*			1		1	2	1
Hairy sedge	*Carex hirta*					1	1	1
Meadow buttercup	*Ranunculus acris*					1	1	1
Meadow foxtail	*Alopecurus pratensis*					4	1	4
Oxeye daisy	*Leucanthemum vulgare*	4					1	4
Red clover	*Trifolium pratense*			4	4		2	4
Red fescue	*Festuca rubra*	9	7	7	9	8	5	7-9
Rose sp.	*Rosa sp.*			1			1	1

B.2.3 Grassland 12

Table B-10 Results of NVC Survey of grassland 12

Common name	Scientific name	Domin value per quadrat (grid reference)					Species frequency	Domin value range
		Q1 (ST 28917 21525)	Q2 (ST 28897 21546)	Q3 (ST 28886 21589)	Q4 (ST 28847 21607)	Q5 (ST 28827 21624)		
Ash (sapling)	*Fraxinus excelsior*		1				1	1
Cock's-foot	*Dactylis glomerata*	9	8	4	8	8	5	4-9
Common dog violet	*Viola riviniana*		1				1	1
Creeping bent	*Agrostis stolonifera*	2			2	4	3	2-4
Creeping cinquefoil	*Potentilla reptans*	4			4	1	3	1-4

Common name	Scientific name	Domin value per quadrat (grid reference)					Species frequency	Domin value range
		Q1 (ST 28917 21525)	Q2 (ST 28897 21546)	Q3 (ST 28886 21589)	Q4 (ST 28847 21607)	Q5 (ST 28827 21624)		
Creeping thistle	*Cirsium arvense*		8		1	5	3	1-8
False oat-grass	*Arrhenatherum elatius*	7	8	4	6	4	5	4-8
Hedge bedstraw	*Galium mollugo*		1	2			2	1-2
Meadow buttercup	*Ranunculus acris*	2					1	2
Red fescue	*Festuca rubra*	5	4	5	4	4	5	4-5
Salad burnet	*Sanguisorba minor*		1				1	1
Self-heal	*Prunella vulgaris*		1				1	1
Spear thistle	*Cirsium vulgare*			1	1	1	3	1
Tufted hairgrass	*Deschampsia cespitosa*			9	8	9	3	8-9
Yorkshire fog	*Holcus lanatus*					1	1	1

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