E41

High Speed Two Phase 2a (West Midlands - Crewe)

Background Information and Data

Ecology and biodiversity

Ecological baseline data - national vegetation classification and ancient woodland (BID-EC-004-000)

July 2017

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Department for Transport

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Contents

List of tables

1 Introduction

1.1.1 This report presents a summary of the ecological baseline data relating to National Vegetation Classification[1] (NVC).

1.1.2 Ecological baseline data has been collected for the assessment of High Speed Rail (West Midlands – Crewe). The Proposed Scheme will pass through the following community areas (CA):

- CA1: Fradley to Colton;
- CA2: Colwich to Yarlet;
- CA3: Stone and Swynnerton;
- CA4: Whitmore Heath to Madeley; and
- CA5: South Cheshire.

1.1.3 This report should be read in conjunction with Map Series EC-10 in the Background Information and Data, Ecology Map Books.

1.1.4 The following baseline ecology reports can also be referred to:

- Ecological baseline data - phase 1 habitat survey (Background Information and Data: BID-EC-002-000);
- Ecological baseline data - protected and or notable flora (Background Information and Data: BID-EC-003-000);
- Ecological baseline data - hedgerows (Background Information and Data: BID-EC-005-000);
- Ecological baseline data - river habitat, river corridor, and ditch surveys, (Background Information and Data: BID-EC-006-000);
- Ecological baseline data - amphibian and pond surveys (Background Information and Data: BID-EC-007-000);
- Ecological baseline data – reptiles (Background Information and Data: BID-EC-8-000);
- Ecological baseline data – breeding and wintering birds (BID-EC-009-000);
- Ecological baseline data - otter and water vole (Background Information and Data: BID-EC-010-000);
- Ecological baseline data - hazel dormouse (Background Information and Data: BID-EC-011-000);
- Ecological baseline data – bats (Background Information and Data: BID-EC-12-000);

[1] NVC is a detailed survey and classification system that is used to compare plant communities with a range of defined community types

- Ecological baseline data - white clawed crayfish and other invertebrate (Background Information and Data: BID-EC-013-000); and
- Ecological baseline data – fish (Background Information and Data: BID-EC-014-000).

1.1.5 Note that baseline data for badger is not made publically available due to the historic persecution of this species.

1.1.6 The ecological assessment is detailed in the High Speed Rail (West Midlands - Crewe) Environmental Statement[2] (ES):

- Volume 2, Community area reports;
- Volume 3, Route-wide effects;
- Volume 4, Off-route effects; and
- Volume 5, Appendices.

[2] HS2 Ltd (2017), *High Speed Rail (West Midlands - Crewe) Environmental Statement (ES)*, www.gov.uk/HS2

2 National Vegetation Classification

2.1 Methodology

2.1.1 Details of the standard methodology utilised for NVC surveys are provided in the Technical Note HS2 Ecological Surveys: Field Survey Methods and Standards (FSMS) included in the Scope and Methodology Report (SMR) Addendum[3].

2.1.2 The computer programme MATCH[4], created by the Unit of Vegetation Science at the University of Lancaster, was used to provide additional analysis. A similarity coefficient was generated for each classification which provided a 'goodness to fit' of a sample set from a homogenous stand of vegetation to the published NVC community species lists.

2.1.3 In line with the published guidance[5] the MATCH assessments were not used in isolation, a combination of the keys and descriptions within the published NVC handbooks, MATCH assessment, and surveyor experience were used to determine vegetation community types.

2.1.4 The coefficient of similarity generated by MATCH (calculated as a percentage) was used to improve the confidence with which data collected could be assigned to a particular NVC community. As a rough guide, MATCH coefficients below 35% were considered to represent particularly poor fits, while those of 50% or over were considered particularly good fits. Coefficients between 35% and 49% inclusive were not considered to provide a result with confidence and in these cases the published keys and descriptions plus surveyor experience were favoured methods. In some cases, even particularly good fits for MATCH assessments were treated with caution where the result was not considered to be a true reflection of the existing vegetation community by the surveyor.

2.1.5 Details of the locations where the NVC survey was conducted are provided in the accompanying Map series EC-10. Sites for NVC survey were identified as:

- those sites that are within 100m of the land required for the construction of the Proposed Scheme and are within a designated site or comprise habitats of principal importance;
- sites containing other high value habitats;
- sites that contain rare plant species; or
- sites with extensive wetland areas.

2.1.6 Sites for NVC survey were screened using aerial imagery, desk-top information about habitats of principal importance and the results of the Phase 1 habitat surveys.

2.1.7 A total of 21 sites were subject to NVC survey within the West Midlands to Crewe area which are listed in Table 1. The NVC survey site locations are indicated in the Ecology Map Series EC-10.

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[3] *Environmental Impact Assessment Scope and Methodology Report Addendum,* Volume 5: Appendix CT-001-002
[4] Malloch, A.J.C. (1998), *MATCH Version 2,* University of Lancaster
[5] Rodwell, J.S. (2006), *National Vegetation Classification: Users' handbook,* Joint Nature Conservation Committee, Peterborough

Table 1: Summary of NVC surveys undertaken within the West Midlands to Crewe area

Ecology survey code	NVC survey site name	Location	OS grid reference	Habitat types included in survey	Survey date	CA number	Approximate distance from the land required for the construction of the Proposed Scheme (m)
000-PH2-191001	Woodland at Shawlane Farm	King's Bromley	SK113158	Broadleaved semi-natural woodland	1 September 2016	1	Within
000-PH2-192001	Trentside Meadows (centre)	Pipe Ridware	SK103172	Semi-improved neutral grassland	2 September 2016	1	Within
000-PH2-196001	Woodland west of Pipe Wood	Blithbury	SK081195	Broadleaved semi-natural woodland	23 June 2016	1	Within
000-PH2-197001	Woodland at Hurst Wood Farm	Hollow Lane/Blithbury Road junction	SK067207	Broadleaved semi-natural woodland	22 June 2016	1	Within
000-PH2-201002	Spencer's Plantation	North of Hamley Heath	SK039223	Broadleaved semi-natural woodland	24 June 2016	1	Within
000-PH2-201003	Grassland west of Moreton Brook (centre)	Upper Moreton	SK031226	Marshy grassland	20 July 2016	1	Within
000-PH2-203003	Woodland north-west of Tithebarn Farm	East of Great Haywood	SK013232	Broadleaved plantation woodland	6 July 2016	2	Within
000-PH2-204003	Little Covert	East of Great Haywood	SK007234	Broadleaved plantation woodland	6 July 2016	2	Within
000-PH2-221001	Pool House Wood	West of Stone	SJ882333	Broadleaved semi-natural woodland	9 August 2016	3	Within
000-PH2-222001	Highlow Meadows	South-east of Swynnerton	SJ870345	Marshy grassland	8 July 2016	3	Within
000-PH2-224001	Lodge Covert	East of Swynnerton	SJ861357	Broadleaved semi-natural woodland	22 June 2016	3	Within
000-PH2-225001	Stabhill Plantation	North-west of Swynnerton	SJ849365	Broadleaved plantation woodland	24 June 2016	3	Within

Ecology survey code	NVC survey site name	Location	OS grid reference	Habitat types included in survey	Survey date	CA number	Approximate distance from the land required for the construction of the Proposed Scheme (m)
000-PH2-226001	Woodland at Cash's Pit	North-west of Swynnerton	SJ846368	Broadleaved plantation woodland	24 June 2016	3	Within
000-PH2-227001	Clifford's Wood	North-west of Swynnerton	SJ837374	Broadleaved semi-natural woodland	16 June 2016	3	Within
000-PH2-231001	Grassland east of Meece Brook	South of Whitmore	SJ813396	Semi-improved neutral grassland	26 July 2016	4	Within
000-PH2-232001	Woodland at Whitmore Heath	North of Baldwin's Gate	SJ797414	Broadleaved semi-woodland	29 June 2016	4	Within
000-PH2-233001	Whitmore Wood	North of Baldwin's Gate	SJ791416	Broadleaved semi-woodland	25 May 2016	4	Within
000-PH2-234001	Hey Sprink	North of Baldwin's Gate	SJ785425	Broadleaved semi-woodland	11 August 2016	4	Within
000-PH2-237001	Barhill Wood	South-west of Madeley	SJ764440	Broadleaved semi-woodland	25 May 2016	4	Within
000-PH2-240001	Woodland south-west of Randilow Farm	West of Wrinehill	SJ744465	Broadleaved semi-natural woodland	29 July 2016	5	Within
000-PH2-240002	Woodland south-west of Randilow Farm	West of Wrinehill	SJ745466	Broadleaved semi-natural woodland	29 July 2016	5	4m north-east

2.1.8 NVC survey sites which are Ancient Woodland Inventory Sites (AWIS) or potential Ancient Woodland Inventory Sites were subject to a search for vascular plant species that are typically more prevalent in ancient[6] rather than secondary woodlands (Peterken, 1974[7] and Thompson et al, 2003[8]). In particular, the survey involving a search for those ancient woodland plant indicator species that exhibit strong affinity

[6] Ancient woodland sites are those that have had continuity of woodland cover since at least AD 1600
[7] Peterken, G.F. (1974), A method for assessing woodland flora for conservation for using Indicator Species. *Biological Conservation*, 6, 239-245
[8] Thompson, R.J., Butcher, W.G., Williams, P. & Warren, M. (2003), *The use of vascular plants as indicators of ancient woodland in Somerset: The development of a county specific list*. Somerset Archaeology and Natural History

to such sites on the basis of the list compiled by Rose (1999[9]) in consultation with other professional botanists.

2.1.9 A total of three sites were surveyed for ancient woodland plant indicator species within the West Midlands to Crewe area, as described in Table 2.

Table 2: Summary of ancient woodland plant indicator species surveys undertaken within the West Midlands to Crewe area

Ecology survey code	Survey site name	Location	OS grid reference	Habitat types included in survey	Survey date	CA number	Approximate distance from the land required for the construction of the Proposed Scheme (m)
000-AW1-227001	Clifford's Wood	North-west of Swynnerton	SJ837374	Potential Ancient Woodland Site	16 June 2016	3	Within
000-AW1-233001	Whitmore Wood	North of Baldwin's Gate	SJ791416	Ancient Woodland Inventory Site	15 August 2016	4	Within
000-AW1-234001	Hey Sprink	North of Baldwin's Gate	SJ785425	Ancient Woodland Inventory Site	11 August 2016	4	Within

2.2 Deviations, constraints and limitations

2.2.1 No deviations to the standard methodology were applied, and subject to the constraints and limitations identified in the following section, all surveys were conducted as per the standard methodology provided in the Technical Note HS2 Ecological Surveys: Field Survey Methods and Standards included in the Scope and Methodology Report.

2.2.2 Access was limited to a number of sites where NVC and ancient woodland plant indicator surveys were proposed. It is estimated that approximately 29% of NVC sites and 13% of ancient woodland sites were surveyed, including a representative variety of habitats found within the land required for the Proposed Scheme.

2.2.3 The quality of NVC survey is limited by seasonal factors which affect the detectability of plants. This means that the results of survey are affected by the timing of the visits to the site. An NVC survey does not produce a complete list of plants at a site and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. Nevertheless, the results of these surveys permit an assessment of the ecological value of habitats for vegetation communities.

2.2.4 Land access was not available during the appropriate survey period at 49 sites that were selected for NVC assessment. These sites are listed in Table 3.

[9] Rose, F. (1999), *Indicators of ancient woodland: The use of vascular plants in evaluating ancient woods for nature conservation*, British Wildlife, 10, 4, 241-251

Table 3: Summary of locations within the West Midlands to Crewe area where the requirement for NVC survey was identified but access was not available for survey

Survey site name	Location	OS grid reference	Description of proposed survey location	CA	Approximate distance from the land required for the construction of the Proposed Scheme (m)
Little Lyntus	Fradley	SK136127	Broadleaved semi-natural woodland	1	83m north-east
Big Lyntus	Fradley	SK132130	Broadleaved semi-natural woodland	1	Within
Brokendown Wood	Fradley	Sk134137	Broadleaved semi-natural woodland	1	Within
Woodend Common	Fradley	SK 128142	Broadleaved semi-natural woodland	1	69m north-east
Tomlinson's Spinney	South-west of King's Bromley	Sk113163	Broadleaved semi-natural woodland	1	94m north-east
Westfield Covert	West of King's Bromley	SK110167	Broadleaved semi-natural woodland	1	106m south-west
Trentside Meadows (east)	Pipe Ridware	SK 105171	Semi-improved neutral grassland	1	291m north-east
Trentside Meadows (west)	Pipe Ridware	SK 099173	Semi-improved neutral grassland	1	14m south-west
Pipe Wood	South-east of Blithbury	Sk086196	Broadleaved semi-natural woodland	1	134m south-east
Cawarden Springs	North-east of Rugeley Power Station	SK063182	Broadleaved semi-natural woodland	1	Within
Grassland west of Moreton Brook (south)	Lower Moreton	SK039215	Marshy grassland	1	Within
Grassland east of Moreton Brook (south)	Lower Moreton	SK036222	Marshy grassland	1	Within
Grassland west of Moreton Brook (north)	East of Moreton Farm	SK033229	Marshy grassland	2	70m south-west
Tithebarn Covert	East of Great Haywood	SK009232	Broadleaved semi-natural woodland	2	Within

Jewstrump Covert	East of Great Haywood	SK007229	Broadleaved semi-natural woodland	2	Within
Grassland east of River Trent (north)	North-west of Great Haywood	SJ996239	Semi-improved neutral grassland	2	38m north-west
Grassland east of River Trent (south)	North-west of Great Haywood	SJ995236	Semi-improved neutral grassland	2	6m north-west
Grassland west of River Trent (south)	North-west of Great Haywood	SJ994234	Semi-improved neutral grassland	2	Within
Grassland west of River Trent (north)	North-west of Great Haywood	SJ994237	Semi-improved neutral grassland	2	107m north-east
Saltmarsh south of Lionlodge Covert	South-east of Ingestre	SJ987238	Saltmarsh	2	34m north-west
Lionlodge Covert	South-east of Ingestre	SJ987240	Broadleaved semi-natural woodland	2	Within
Flushing Covert	South-west of Ingestre	SJ982238	Broadleaved semi-natural woodland	2	85m north-east
Town Field Plantation	Ingestre Park Golf Club	SJ976242	Broadleaved semi-natural woodland	2	244m north-east
Ingestre Wood (east)	West of Ingestre Hall	SJ972245	Broadleaved semi-natural woodland	2	97m north-east
Ingestre Wood (south)	West of Ingestre Hall	SJ971247	Broadleaved semi-natural woodland	2	15m south-west
Ingestre Wood (north-west)	West of Ingestre Hall	SJ969247	Broadleaved semi-natural woodland	2	35m south-west
Woodland west of Upper Hanyards	West of Upper Hanyards	SJ963245	Broadleaved semi-natural woodland	2	4m north-west
Woodland at Yarlet School (south)	Yarlet	SJ912292	Broadleaved semi-natural woodland	2	Within
Woodland at Yarlet School (north)	Yarlet	SJ912293	Broadleaved semi-natural woodland	2	47m south-east
The Grove	Yarlet	SJ913290	Broadleaved semi-natural woodland	2	Within
Fox Covert	North-east of Yarnfield	SJ870341	Broadleaved semi-natural woodland	3	25m north-east

Birchwood	South-west of Swynnerton	SJ870347	Broadleaved semi-natural woodland	3	Within
Closepit Plantation	North-east of Swynnerton	SJ854363	Broadleaved semi-natural woodland	3	Within
Woodland north of Clifford's Wood	North-west of Swynnerton	SJ836377	Broadleaved semi-natural woodland	3	242m south-west
Woodland Hatton Common	South-east of Stableford	SJ828382	Broadleaved semi-natural woodland	3	6m north-west
Grassland north of Madeley Park	North of Madeley Park	SJ783417	Marshy grassland	4	9m south-east
Woodland north of Whitmore Wood	North of Baldwin's Gate	SJ789422	Broadleaved semi-natural woodland	4	Within
Woodland south of Hey Sprink	North of Baldwin's Gate	SJ786423	Broadleaved semi-natural woodland	4	84m south-west
Woodland south-east of Barhill Wood	South-west of Madeley	SJ768436	Broadleaved semi-natural woodland	4	Within
Wrinehill Wood	West of Madeley	SJ751452	Broadleaved semi-natural woodland	4	38m south-west
Woodland belt east of Wrinehill Wood	West of Madeley	SJ758449	Broadleaved semi-natural woodland	4	118m south-east
Grafton's Wood	North-west of Madeley	SJ759453	Broadleaved semi-natural woodland	4	Within
Woodland at Lower Den Farm	West of Betley	SJ740483	Broadleaved semi-natural woodland	5	332m south-west
Coppice Bank	West of Betley	SJ737485	Broadleaved semi-natural woodland	5	21m north-east
Grassland south-east of Heath Farm	East of Hough	SJ713509	Marshy grassland	5	Within
Woodland at Wychwood Park	Wychwood Park	SJ727513	Broadleaved semi-natural woodland	5	81m south-east
Woodland west of Chorlton Lane	Chorlton Lane	SJ724512	Broadleaved semi-natural woodland	5	33m north-east
Burrow Coppice	South-west of Weston	SJ725519	Broadleaved semi-natural woodland	5	137m south-east

Woodland at Basford Hall (south)	Basford Hall Sorting Sidings	SJ716535	Broadleaved semi-natural woodland	5	38m south-east
Woodland at Basford Hall (north-east)	Basford Hall Sorting Sidings	SJ717537	Broadleaved semi-natural woodland	5	83m north-east
Woodland at Basford Hall (north)	Basford Hall Sorting Sidings	SJ716537	Broadleaved semi-natural woodland	5	Within

2.2.5 Land access was not available during the appropriate survey period at 19 sites that were selected for search of ancient woodland plant indicator species. These sites are listed in Table 4.

Table 4: Summary of locations within the West Midlands to Crewe area where the requirement for ancient woodland plant indicator surveys was identified but access was not available for survey

Survey site name	**Location**	**OS grid reference**	**Site description and reason for selection**	**CA**	**Approximate distance from the land required for the construction of the Proposed Scheme (m)**
Little Lyntus	Fradley	SK136127	Ancient Woodland Inventory Site	1	69m north-east
Westfield Covert	West of King's Bromley	SK110167	Potential Ancient Woodland Inventory Site	1	291m north-east
Pipe Wood	South-east of Blithbury	Sk086196	Ancient Woodland Inventory Site	1	14m south-west
Cawarden Springs	North-east of Rugeley Power Station	SK063182	Ancient Woodland Inventory Site	1	Within
Tithebarn Covert	East of Great Haywood	SK009232	Potential Ancient Woodland Inventory Site	2	107m north-east
Lionlodge Covert	South-east of Ingestre	SJ987240	Potential Ancient Woodland Inventory Site	2	34m north-west
Flushing Covert	South-west of Ingestre	SJ982238	Potential Ancient Woodland Inventory Site	2	Within
Town Field Plantation	Ingestre Park Golf Club	SJ976242	Potential Ancient Woodland Inventory Site	2	85m north-east
Ingestre Wood	West of Ingestre Hall	SJ972245	Potential Ancient Woodland Inventory Site	2	244m north-east

Ingestre Wood	West of Ingestre Hall	SJ971247	Potential Ancient Woodland Inventory Site	2	97m north-east
Ingestre Wood	West of Ingestre Hall	SJ969247	Potential Ancient Woodland Inventory Site	2	Within
The Grove	Yarlet	SJ913290	Potential Ancient Woodland Inventory Site	2	Within
Birchwood	South-west of Swynnerton	SJ870347	Potential Ancient Woodland Inventory Site	3	Within
Lodge Covert	East of Swynnerton	SJ861357	Potential Ancient Woodland Inventory Site	3	6m north-west
Woodland north of Whitmore Wood	North of Baldwin's Gate	SJ789422	Potential Ancient Woodland Inventory Site	4	9m south-east
Woodland south of Whitmore Wood	North of Baldwin's Gate	SJ786423	Potential Ancient Woodland Inventory Site	4	35m south-west
Barhill Wood	Barhill Wood	SJ764440	Ancient Woodland Inventory Site	4	84m south-west
Wrinehill Wood	West of Madeley	SJ751452	Ancient Woodland Inventory Site	4	Within
Woodland belt east of Wrinehill Wood	West of Madeley	SJ758449	Potential Ancient Woodland Inventory Site	4	38m south-west
Grafton's Wood	North-west of Madeley	SJ759453	Ancient Woodland Inventory Site	4	69m north-east

2.3 Baseline

Fradley to Colton (CA1)

Woodland at Shawlane Farm (000-PH2-191001)

Site description and reasons for selection for survey

2.3.1 Lowland mixed deciduous woodland (a habitat of principal importance) is present on land at Shawlane Farm. The surveyed habitat is characteristic of broadleaved semi-natural woodland. The wood is located on relatively flat ground within the Trent Valley.

Vegetation communities present

2.3.2 Pedunculate oak (*Quercus robur*) and ash (*Fraxinus excelsior*) are co-dominant within the canopy. Hawthorn (*Crataegus monogyna*) is abundant, with holly (*Ilex aquifolium*) and blackthorn (*Prunus spinosa*) occasional in the understorey. The field layer is dominated by bramble (*Rubus fruticosus* agg.) with occasional common nettle (*Urtica dioica*). Rough-stalked feather-moss (*Brachythecium rutabulum*) is frequent on the

ground. The species composition at the top of the slope is characteristic of NVC W8e *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland *Geranium robertianum* sub-community. The MATCH coefficient of 32.8 is low and probably because the survey was undertaken late in September when many woodland plant species associated with the W8 plant community are not evident. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.3 Table 5 sets out the NVC survey data from woodland at Shawlane Farm.

Table 5: NVC survey data from woodland at Shawlane Farm (000-PH2-191001)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m × 50m)						
Quercus robur	7	7	7	7	7	V (7)
Fraxinus excelsior	4	4	4	4	4	V (4)
Acer pseudoplatanus	3	3	3	3	3	V (3)
Understorey (10m × 10m)						
Crataegus monogyna	1	6	4	5	-	IV (1-6)
Sambucus nigra	-	4	3	1	-	III (1-4)
Prunus spinosa	5	5	-	-	-	II (5)
Rosa sp.	-	4	4	-	-	II (4)
Lonicera periclymenum	2	1	-	-	-	II (1-2)
Quercus robur	-	5	-	-	-	I (5)
Ilex aquifolium	-	-	-	-	5	I (5)
Field Layer (4m × 4m)						
Rubus fruticosus agg.	9	5	8	4	3	V (3-9)
Hedera helix	3	1	2	6	4	V (1-6)
Silene dioica	-	1	4	1	-	III (1-4)
Brachythecium rutabulum	-	-	5	-	6	II (5-6)
Kindbergia praelonga	-	--	3	1		II (1-3)
Stellaria holostea	-	4	-	-	-	I (4)
Urtica dioica	-	-	4	-	-	I (4)
Crataegus monogyna	-	1	-	-	-	I (1)
Heracleaum sphondylium	-	-	1	-	-	I (1)
Stachys sylvatica	-	-	1	-	-	I (1)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Agrostis capillaris	-	-	-	1	-	I (1)
Ilex aquifolium	-	-	-	1	-	I (1)
Quercus robur	-	-	-	1	-	I (1)
Epilobium sp.	-	-	-	1	-	I (1)
Poa sp.	-	-	-	1	-	I (1)
Dactylis glomerata	-	-	-	1	-	I (1)

Grassland at Trentside Meadows (centre) (000-PH2-192001)

Site description and reasons for selection for survey

2.3.4 Floodplain grazing marsh (a habitat of principal importance) is present at Trentside Meadows Local Wildlife Site (LWS). The surveyed habitat is characteristic of species-rich semi-improved neutral grassland, which is subject to periodic flooding from the River Trent.

Vegetation communities present

2.3.5 The grassland is floristically diverse, located on moist soil and grazed occasionally by cattle. The grassland contains an abundance of red fescue (*Festuca rubra*), crested dog's-tail (*Cynosurus cristatus*), common bird's-foot trefoil (*Lotus corniculatus*), ribwort plantain (*Plantago lanceolata*) and meadow buttercup (*Ranunculus acris*). Common knapweed (*Centaurea nigra*) and sweet vernal-grass (*Anthoxanthum odoratum*) are also widespread although less abundant. The species composition is characteristic of NVC MG5a *Cynosurus cristatus-Centaurea nigra* grassland *Lathyrus pratensis* sub-community. The MATCH coefficient is 61.5. The sampled vegetation is representative of lowland floodplain grazing marsh habitat of principal importance.

2.3.6 Table 6 sets out the NVC survey data from Trentside Meadows (centre).

Table 6: NVC survey data from Trentside Meadows (centre) (000-PH2-192001)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Ranunculus acris	7	5	NS	NS	NS	V (5-7)
Cynosurus cristatus	5	6	NS	NS	NS	V (5-6)
Agrostis capillaris	5	5	NS	NS	NS	V (5)
Trifolium repens	5	4	NS	NS	NS	V (4-5)
Holcus lanatus	5	4	NS	NS	NS	V (4-5)
Plantago lanceolata	4	4	NS	NS	NS	V (4)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Lotus corniculatus	4	4	NS	NS	NS	V (4)
Trifolium pratensis	4	4	NS	NS	NS	V (4)
Poa pratensis	4	4	NS	NS	NS	V (4)
Lolium perenne	5	3	NS	NS	NS	V (3-5)
Leontodon autumnalis	3	4	NS	NS	NS	V (3-4)
Festuca rubra	4	3	NS	NS	NS	V (3-4)
Taraxacum officinale agg.	2	4	NS	NS	NS	V (2-4)
Centaurea nigra	3	2	NS	NS	NS	V (2-3)
Juncus effusus	2	2	NS	NS	NS	V (2)
Hypochoeris radicata	2	2	NS	NS	NS	V (2)
Ranunculus repens	2	1	NS	NS	NS	V (1-2)
Prunella vulgaris	1	1	NS	NS	NS	V (1)
Cardamine pratensis	1	1	NS	NS	NS	V (1)
Agrostis stolonifera	1	1	NS	NS	NS	V (1)
Leucanthemum vulgare	1	1	NS	NS	NS	V (1)
Anthoxanthum odoratum	1	1	NS	NS	NS	V (1)
Rumex acetosa	1	1	NS	NS	NS	V (1)

Woodland west of Pipe Wood (000-PH2-196001)

Site description and reasons for selection for survey

2.3.7 Wet woodland (a habitat of principal importance) is present on the bottom of a slope to the west of Pipe Wood. The surveyed habitat is characteristic of broadleaved semi-natural woodland. The wood is located on the bottom of a slope with a west aspect on moist nutrient-enriched soil.

Vegetation communities present

2.3.8 Due to the small extent of woodland only one quadrat was sampled from the wood west of Pipe Wood. Crack-willow (*Salix fragilis*) is dominant with alder (*Alnus glutinosa*) occasional within the canopy, crack-willow is abundant within the understorey and bramble and common nettle abundant within the field layer. The species composition is characteristic of NVC W6b *Alnus glutinosa-Urtica dioica* woodland *Salix fragilis* sub-community. The MATCH coefficient is 49.9. The sampled vegetation is representative of wet woodland habitat of principal importance.

2.3.9 Table 7 sets out the NVC survey data from wood west of Pipe Wood.

Table 7: NVC survey data from wood west of Pipe Wood (000-PH2-196001)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Canopy (50m × 50m)						
Salix fragilis	9	NS	NS	NS	NS	NA
Alnus glutinosa	4	NS	NS	NS	NS	NA
Understorey (10m × 10m)						
Salix fragilis	4	NS	NS	NS	NS	NA
Sambucus nigra	2	NS	NS	NS	NS	NA
Field Layer (4m × 4m)						
Urtica dioica	9	NS	NS	NS	NS	NA
Poa trivialis	6	NS	NS	NS	NS	NA
Rubus fruticosus agg.	4	NS	NS	NS	NS	NA
Galium aparine	3	NS	NS	NS	NS	NA
Kindbergia praelonga	3	NS	NS	NS	NS	NA
Brachythecium rutabulum	3	NS	NS	NS	NS	NA
Mnium hornum	3	NS	NS	NS	NS	NA
Herachleum sphondylium	2	NS	NS	NS	NS	NA
Dryopteris dilatata	2	NS	NS	NS	NS	NA
Hyacynthoides non-scripta	2	NS	NS	NS	NS	NA
Ranunculus repens	2	NS	NS	NS	NS	NA
Cardamine flexuosa	2	NS	NS	NS	NS	NA

Woodland at Hurst Wood Farm (000-PH2-197001)

Site description and reasons for selection for survey

2.3.10 Lowland mixed deciduous woodland (a habitat of principal importance) is present at Hurst Farm Wood. The surveyed habitat is characteristic of broadleaved semi-natural woodland. The wood is located on a slope with a north-west aspect.

Vegetation communities present

2.3.11 Ash and poplar (*Populus* sp.) are co-dominant within the canopy, hazel (*Corylus avellana*) and hawthorn are abundant within the understorey. Bramble and dog's mercury (*Mercurialis perennis*) are abundant within the field layer. The species composition is characteristic of NVC W8d *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland *Hedera helix* sub-community. The MATCH coefficient of 31.7 is low because the woodland is fragmented and has been planted with poplars and hence

not typical of the W8 plant community.The sampled vegetation is representative of broadleaved woodland.

2.3.12 Table 8 sets out NVC survey data from woodland at Hurst Wood Farm.

Table 8: NVC survey data from woodland at Hurst Wood Farm (000-PH2-197001)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m × 50m)						
Fraxinus excelsior	7	7	7	7	7	V (7)
Populus sp.	7	7	7	7	7	V (7)
Quercus robur	1	1	1	1	1	V (1)
Understorey (10m × 10m)						
Crataegus monogyna	8	8	8	8	8	V (8)
Corylus avellana	6	6	6	6	6	V (6)
Sambucus nigra	5	5	5	5	5	V (5)
Acer campestre	3	3	3	3	3	V (3)
Prunus domestica	2	2	2	2	2	V (2)
Field Layer (4m × 4m)						
Galium aparine	5	5	5	6	5	V (5-6)
Poa trivialis	5	4	4	5	4	V (4-5)
Urtica dioica	6	3	8	8	5	V (3-8)
Alliaria petiolata	7	8	-	-	5	III (5-8)
Rumex obtusifolius	4	3	-	-	2	III (2-4)
Geum urbanum	4	2	-	-	1	III (1-4)
Rubus fruticosus agg.	2	1	-	-	1	III (1-2)
Mercurialis perennis	4	-	-	-	6	II (4-6)
Herachleum sphondylium	-	2	-	-	4	II (2-4)
Anthriscus sylvestris	-	2	-	-	4	II (2-4)
Convolvulus arvensis	-	-	1	1	-	II (1)
Arctium lappa	5	1	-	-	-	I (1-5)
Elytrigia repens	-	-	3	-	-	I (3)
Arrhenatherum elatius	-	-	-	3	-	I (3)
Stellaris media	-	-	-	-	2	I (2)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Bromopsis ramosa	1	-	-	-	-	I (1)
Ranunculus repens	-	-	-	1	-	I (1)
Cirsium arvense	-	-	-	1	-	I (1)
Taraxacum officinale agg.	-	-	-	-	1	I (1)
Ranunculs acris	-	-	-	-	1	I (1)

Spencer's Plantation (000-PH2-201002)

Site description and reasons for selection for survey

2.3.13 Lowland mixed deciduous woodland (a habitat of principal importance) is present on Spencer's Plantation. The surveyed habitat is characteristic of broadleaved semi-natural woodland. The wood is located on a slope with a south-east aspect.

Vegetation communities present

2.3.14 Ash and pedunculate oak are co-dominant within the canopy, elder (*Sambucus nigra*) and hawthorn are abundant within the understorey. Bramble and dog's mercury are abundant and ivy (*Hedera helix*) occasional within the field layer. The species composition is characteristic of NVC W8d *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland *Hedera helix* sub-community. The MATCH coefficient is 42.1. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.15 Table 9 sets out NVC survey data from Spencer's Plantation.

Table 9: NVC survey data from Spencer's Plantation (000-PH2-201002)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Canopy (50m × 50m)						
Quercus robur	6	-	-	8	7	III (6-8)
Ulmus minor	-	-	-	9	-	I (9)
Fraxinus excelsior	7	-	-	-	-	I (7)
Crataegus monogyna	-	-	-	1	-	I (1)
Understorey (10m × 10m)						
Sambucus nigra	4	-	-	4	5	III (4-5)
Crataegus monogyna	2	-	-	-	-	I (2)
Field Layer (4m × 4m)						
Urtica dioica	3	1	-	4	9	IV (1-9)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Anthriscus sylvestris	7	-	-	7	3	III (3-7)
Herachleum sphondylium	5	-	-	3	2	III (2-5)
Mercurialis perennis	3	-	-	3	4	III (3-4)
Hedera helix	-	10	2	7	-	III (2-10)
Rubus fruticosus agg.	-	1	-	-	5	II (1-5)
Galium aparine	-	-	1	-	3	II (1-3)
Geum urbanum	-	1	-	-	3	II (1-3)
Ilex aquifolium	-	-	1	1	-	II (1)
Bromopsis ramosa	-	-	-	1	1	II (1)
Dactylis glomerata	-	-	1	1	-	II (1)
Poa trivialis	4	-	-	-	-	I (4)
Glechoma hederacea	-	-	-	-	3	I (3)
Sambucus nigra	-	-	3	-	-	I (3)
Kindbergia praelonga	-	-	3	-	-	I (3)
Crataegus monogyna	-	-	2	-	-	I (2)
Arum maculatum	2	-	-	-	-	I (2)
Dryopteris dilatata	-	-	-	-	1	I (1)
Hyacynthoides non-scripta	-	-	-	1	-	I (1)
Silene dioica	-	1	-	-	-	I (1)

Grassland west of Moreton Brook (centre) (000-PH2-201003)

Site description and reasons for selection for survey

2.3.16 Lowland meadow (a habitat of principal importance) is present on the west side of Moreton Brook at Lount Farm LWS. The surveyed habitat is characteristic of marshy grassland.

Vegetation communities present

2.3.17 The marshy grassland is floristically diverse, located on moist soil and grazed occasionally by cattle. The presence of yellow-rattle (*Rhinanthus minor*) and betony (*Betonica officinalis*) are indicative of grassland subject to negligible agricultural improvement. The grassland contains an abundance of Yorkshire-fog (*Holcus lanatus*), red fescue, meadowsweet (*Filipendula ulmaria*), meadow vetchling (*Lathyrus pratensis*), red clover (*Trifolium pratense*), great burnet (*Sanguisorba officinalis*) and meadow buttercup. Meadow foxtail (*Alopecurus pratensis*), hairy sedge (*Carex hirta*),

jointed rush (*Juncus articulatus*) and field horsetail (*Equisetum arvense*) are also widespread although less abundant. The species composition is characteristic of NVC MG4 *Alopecurus pratensis-Sanguisorba officinalis* grassland. The MATCH coefficient is 47.2. The sampled vegetation is representative of lowland meadow habitat of principal importance.

2.3.18 Table 10 sets out NVC survey data from grassland west of Moreton Brook (centre).

Table 10: NVC survey data from grassland west of Moreton Brook (centre) (000-PH2-201003)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Holcus lanatus	8	8	8	7	8	V (7-8)
Centaurea nigra	4	4	4	4	4	V (4-4)
Anthoxanthum odoratum	5	-	5	4	4	IV (4-5)
Festuca rubra	4	4	4	4	-	IV (4)
Carex hirta	-	4	4	4	4	IV (4)
Sanguisorba officinalis	4	4	3	-	4	IV (3-4)
Heracleum spondylium	-	1	2	1	1	IV (1-2)
Lathyrus pratensis	3	4	-	1	4	IV (1-4)
Festuca pratensis	3	-	-	3	4	III (3-4)
Trifolium pratense	-	-	3	4	3	III (3-4)
Kindbergia praelonga	-	2	-	2	4	III (2-4)
Lotus corniculatus	4	-	-	2	1	III (1-4)
Ranunculus acris	1	2	3	-	-	III (1-3)
Dactylis glomerata	-	-	-	4	5	II (4-5)
Plantago lanceolata	-	-	4	-	3	II (3-4)
Arrhenatherum elatius	-	-	-	5	-	I (5)
Cynosurus cristatus	4	-	-	-	-	I (4)
Agrostis stolonifera	-	4	-	-	-	I (4)
Rhinanthus minor	-	-	3	-	-	I (3)
Alopecurus pratensis	-	3	-	-	-	I (3)
Equisetum arvense	-	-	3	-	-	I (3)
Hypochoeris radicata	-	-	-	1	-	I (1)
Trifolium dubium	-	-	1	-	-	I (1)
Ranunculus repens	1	-	-	-	-	I (1)

Colwich to Yarlet (CA2)

Wood north-west of Tithebarn Farm (000-PH2-203003)

Site description and reasons for selection for survey

2.3.19 An unnamed wood is located on the north-west side of Tithebarn Farm, east of Great Haywood. The surveyed habitat is characteristic of broadleaved plantation woodland. The wood is located near the top of a hill with a north-west aspect.

Vegetation communities present

2.3.20 Due to the small extent of woodland only one quadrat was sampled from the wood north-west of Tithebarn Farm. The canopy is dominated by pedunculate oak with frequent ash. The understorey contains elder hawthorn and field maple. The field layer is dominated by bramble and common nettle. The species composition of this habitat is characteristic of NVC W8e *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland *Geranium robertianum* sub-community. The MATCH coefficient of 31.1 is low and probably because the survey was undertaken late in July when many woodland plant species associated with the W8 plant community are not evident. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.21 Table 11 sets out NVC survey data from a wood north-west of Tithebarn Farm.

Table 11: NVC survey data from a wood north-west of Tithebarn Farm (000-PH2-203003)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m × 50m)						
Quercus robur	9	NS	NS	NS	NS	NA
Fraxinus excelsior	3	NS	NS	NS	NS	NA
Castanea sativa	3	NS	NS	NS	NS	NA
Prunus avium	2	NS	NS	NS	NS	NA
Betula pendula	1	NS	NS	NS	NS	NA
Understorey (10m × 10m)						
Crataegus monogyna	4	NS	NS	NS	NS	NA
Sambucus nigra	2	NS	NS	NS	NS	NA
Prunus spinosa	2	NS	NS	NS	NS	NA
Acer campestre	2	NS	NS	NS	NS	NA
Rosa sp.	2	NS	NS	NS	NS	NA
Ilex aquifolium	1	NS	NS	NS	NS	NA
Malus domestica	1	NS	NS	NS	NS	NA

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Field Layer (4m × 4m)						
Rubus fruiticus agg.	8	9	8	8	8	V(8-9)
Urtica dioica	4	2	2	3	5	V(2-5)
Fraxinus excelsior	2	1	4	8	-	IV(1-8)
Hedera helix	1	-	7	2	2	IV(1-7)
Heracleum sphondylium	6	-	1	2	2	IV(1-6)
Geum urbanum	1	-	1	2	2	IV (1-2)
Rumex obtusifolius	1	-	1	1	-	III(1)
Galium aparine	1	-	1	-	-	II(1)
Poa trivialis	3	-	-	-	-	I(3)
Stachys sylvatica	1	-	-	-	-	I(1)
Anthriscus sylvestris	1	-	-	-	-	I(1)
Rosa sp.	1	-	-	-	-	I(1)
Taraxacum officinale agg.	1	-	-	-	-	I(1)
Ilex aquifolium	-	-	1	-	-	I(1)
Convolvulus arvensis	-	-	1	-	-	I(1)
Prunus spinosa	-	-	1	-	-	I(1)
Mnium hornum	-	-	-	1	-	I(1)
Ranunculus repens	-	-	-	-	1	I(1)
Crataegus monogyna	-	-	1	-	-	I(1)

Little Covert (000-PH2-204003)

Site description and reasons for selection for survey

2.3.22 Little Covert is located to the west of Tithebarn Farm, east of Great Haywood. The surveyed habitat is characteristic of broadleaved plantation woodland. Little Covert is located near the top of a hill with a north-west aspect.

Vegetation communities present

2.3.23 Due to the small extent of woodland only one quadrat was sampled from Little Covert. The canopy comprises ash, pedunculate oak, wych elm (*Ulmus glabra*) and sycamore (*Acer pseudoplatanus*). The understorey contains elder and hawthorn. The field layer is dominated by bramble and common nettle is frequent. The species composition of this habitat is characteristic of NVC W8e *Fraxinus excelsior-Acer*

campestre-Mercurialis perennis woodland Geranium robertianum sub-community. The MATCH coefficient of 38.9 is low because of the very small area of woodland and that only one quadrat sample could be surveyed, a close match would not be expected. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.24 Table 12 sets out NVC survey data from Little Covert.

Table 12: NVC survey data from Little Covert (000-PH2-204003)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m × 50m)						
Acer pseudoplatanus	5	NS	NS	NS	NS	NA
Fraxinus excelsior	5	NS	NS	NS	NS	NA
Quercus robur	5	NS	NS	NS	NS	NA
Ulmus glabra	5	NS	NS	NS	NS	NA
Pinus sylvestris	4	NS	NS	NS	NS	NA
Larix decidua	2	NS	NS	NS	NS	NA
Betula pendula	1	NS	NS	NS	NS	NA
Alnus glutinosa	1	NS	NS	NS	NS	NA
Quercus sp.	1	NS	NS	NS	NS	NA
Understorey (10m × 10m)						
Sambucus nigra	3	NS	NS	NS	NS	NA
Ulmus glabra	3	NS	NS	NS	NS	NA
Fraxinus excelsior	2	NS	NS	NS	NS	NA
Crataegus monogyna	2	NS	NS	NS	NS	NA
Acer pseudoplatanus	1	NS	NS	NS	NS	NA
Ilex aquifolium	1	NS	NS	NS	NS	NA
Field Layer (4m × 4m)						
Kindbergia praelonga	3	3	3	3	3	V(3)
Rubus fruticosus agg.	9	7	2	8	8	V(2-9)
Hedera helix	4	2	2	-	7	IV(2-7)
Fraxinus excelsior	-	2	7	2	1	IV(1-7)
Urtica droica	2	5	-	-	5	III(2-5)
Geum urbanum	-	2	-	1	1	III(1-2)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Crataegus monogyna	-	1	1	2	-	III(1-2)
Rumex obtusifolius	-	2	2	-	1	III(1-2)
Dryopteris dilatata	-	1	1	1	-	III(1)
Poa trivialis	-	3	-	3	-	II(3)
Primula vulgaris	2	3	-	-	-	II(2-3)
Rosa sp.	1	-	1	-	-	II(1)
Stactys sylvatica	1	1	-	-	-	II(1)
Ranunculus repens	-	-	1	-	-	I(1)
Acer pseudoplatanus	-	-	1	-	-	I(1)
Silene dioica	-	-	-	-	1	I(1)

Stone and Swynnerton (CA3)

Pool House Wood (000-PH2-221001)

Site description and reasons for selection for survey

2.3.25 Wet woodland (a habitat of principal importance) is present in a wood on the north-east side of Pool House Farm, Stone. The surveyed habitat within Pool House Wood LWS is characteristic of broadleaved semi-natural woodland. The wood is located on a shallow slope with a south-east aspect.

Vegetation communities present

2.3.26 Wet woodland is present on moist nutrient enriched soil. Alder and crack-willow are co-dominant within the canopy, grey willow (*Salix cinerea*) and elder are abundant within the understorey. Common nettle is abundant and ivy occasional within the field layer. The species composition at the bottom of the slope is characteristic of NVC W6d *Alnus glutinosa-Urtica dioica* woodland *Sambucus nigra* sub-community. The MATCH coefficient is 39.7. The sampled vegetation is representative of wet woodland habitat of principal importance.

2.3.27 Table 13 sets out NVC survey data from Pool House Wood.

Table 13: NVC survey data from Pool House Wood (000-PH2-221001)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Canopy (50m x 50m)						
Alnus glutinosa	-	6	5	9	-	III (5-9)
Salix fragilis	8	8	4	-	-	III (4-8)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Acer pseudoplatanus	-	-	4	-	-	I (4)
Fraxinus excelsior	-	-	4	-	-	I (4)
Quercus robur	1	-	-	-	-	I (1)
Betula pendula	1	-	-	-	-	I (1)
Understorey (10m x 10m)						
Salix fragilis	8	4	2	1	-	IV (1-8)
Salix cinerea	4	1	2	1	-	IV (1-4)
Sambucus nigra	2	2	2	1	-	IV (1-2)
Alnus glutinosa	1		2	1	-	III (1-2)
Crataegus monogyna	1	2	2	-	-	III (1-2)
Corylus avellana	-	-	-	1	-	I (1)
Querus robur	1	-	-	-	-	I (1)
Viburnum opulus	1	-	-	-	-	I (1)
Acer psuedoplatanus	-	-	2	-	-	I (2)
Prunus spinosa	-	-	1	-	-	I (1)
Salix aurita	-	-	1	-	-	I (1)
Rosa sp.	-	-	1	-	-	I (1)
Field Layer (4m x 4m)						
Silene dioica	8	4	4	1	-	IV (1-8)
Urtica dioica	7	5	3	3	-	IV (3-7)
Poa trivialis	2	7	3	9	-	IV (2-9)
Glechoma hederacea	7	2	3	-	-	III (2-7)
Dryopteris dilatata	1	-	1	-	2	III (1-2)
Rubus fruticosus agg.	-	5	-	-	9	II (5-9)
Stachys sylvatica	1	3	-	-	-	II (1-3)
Ranunculus repens	-	1	-	2	-	II (1-2)
Galium aparine	1	1	-	-	-	II (1)
Heracleum sphondylium	1	1	-	-	-	II (1)
Arum maculatum	1	-	1	-	-	II (1)
Circaea lutetiana	-	-	1	-	1	II (1)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Angelica sylvestris	-	3	-	-	-	I (3)
Hedera helix	-	-	3	-	-	I (3)
Ribes sp.	-	-	2	-	-	I (2)
Arrhenatherum elatius	-	2	-	-	-	I (2)
Filipendula ulmaria	-	1	-	-	-	I (1)
Epilobium hirsutum	-	-	-	1	-	I (1)
Sonchus arvensis	-	1	-	-	-	I (1)
Dryopteris filix-mas	-	-	1	-	-	I (1)
Geum urbanum	-	-	1	-	-	I (1)
Equisetum arvense	-	-	-	1	-	I (1)
Alnus glutinosa	-	-	-	1	-	I (1)
Rumex obtusifolius	-	-	-	1	-	I (1)

Grassland at Highlow Meadows (000-PH2-222001)

Site description and reasons for selection for survey

2.3.28 Grassland with no sign of recent management is present on the west side of the M6 at Highlow Meadows LWS. There is no sign of recent grassland mamagement and a tall sward has established. The surveyed habitat is characteristic of marshy grassland.

Vegetation communities present

2.3.29 The grassland is floristically diverse, located on moist soil and grazed occasionally by cattle. The grassland contains an abundance of Yorkshire-fog, red fescue, ribwort plantain, common sorrel (*Rumex acetosa*), meadowsweet and meadow buttercup. Great burnet and red clover (*Trifolium pratense*) are occasional. Jointed rush, soft-rush (*Juncus effusus*), compact rush (*Juncus conglomeratus*), hairy sedge and carnation sedge (*Carex panicea*) are frequent. Glaucous sedge (*Carex flacca*), pale sedge (*Carex pallescens*) and oval sedge (*Carex leporina*) are occasional. The species composition is characteristic of NVC MG4 *Alopecurus pratensis-Sanguisorba officinalis* grassland. The MATCH coefficient is 43.4 and lower than expected because meadow foxtail was not recorded and hence not typical of the MG4 plant community. The sampled vegetation is representative of lowland meadow habitat of principal importance.

2.3.30 Table 14 sets out NVC survey data from grassland at Highlow Meadows.

Table 14: NVC survey data from grassland at Highlow Meadows (000-PH2-222001)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Holcus lanatus	6	8	8	7	5	V (5-8)
Lotus pedunculatus	4	6	3	7	7	V (3-7)
Festuca rubra	5	7	2	2	6	V (2-7)
Ranunculus repens	2	4	7	3	4	V (2-7)
Plantago lanceolata	4	4	6	1	4	V (1-6)
Rumex acetosa	1	1	1	4	3	V (1-4)
Cirsium palustre	5	3	4	4	3	V (3-5)
Poa trivialis	4	3	5	3	3	V (3-5)
Centaurea nigra	5	5	2	3	1	V (1-5)
Lathyrus pratensis	1	1	4	3	5	V (1-5)
Juncus articulatus	5	5	2	1	4	V (1-5)
Galium palustre	3	1	2	3	1	V (1-3)
Anthoxanthum odoratum	6	7	5	-	6	IV (5-7)
Filipendula ulmaria	1	1	4	7	-	IV (1-7)
Deschampsia cespitosa	1	-	5	3	2	IV (1-5)
Agrostis stolonifera	5	2	3	-	1	IV (1-5)
Prunella vulgaris	1	1	2	-	4	IV (1-4)
Potentilla erecta	4	1	1	-	2	IV (1-4)
Prunella vulgaris	1	1	2	-	4	IV (1-4)
Potentilla erecta	4	1	1	-	2	IV (1-4)
Silene flos-cucili	-	3	1	3	4	IV (1-4)
Agrostis capillaris	3	1	3	-	3	IV (1-3)
Ranuculus acris	1	2	1	-	1	IV (1-2)
Juncus effusus	-	3	4	-	5	III (3-5)
Dactylorhiza fuschii	3	4	4	-	-	III (3-4)
Ranuculus flammula	4	-	3	4	-	III (3-4)
Juncus conglomeratus	5	2	-	4	-	III (2-5)
Carex panicea	2	4	-	1	-	III (1-4)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Carex hirta	-	4	1	-	4	III (1-4)
Rumex conglomeratus	-	1	-	1	3	III (1-3)
Dactylis glomerata	7	4	-	-	-	II (4-7)
Pulicaria dysenterica	-	-	-	7	2	II (2-7)
Carex flacca	4	-	-	-	2	II (2-4)
Trifolium pratense	-	1	-	-	3	II (1-3)
Cerastium fontanum	1	3	-	-	-	II (1-3)
Luzula campestris	-	-	-	1	3	II (1-3)
Potentilla anserina	-	2	-	-	2	II (2)
Sanguisorba officinalis	2	-	1	-	-	II (1-2)
Cirsium vulgare	-	-	-	1	1	II (1)
Arrhenatherum elatius	-	5	-	-	-	I (5)
Carex pallescens	4	-	-	-	-	I (4)
Eleocharis sp.	-	-	-	-	3	I (3)
Vicia cracca	-	-	3	-	-	I (3)
Taraxacum officinale agg.	2	-	-	-	-	I (2)
Senecio jacobaea	1	-	-	-	-	I (1)
Carex leporina	-	1	-	-	-	I (1)
Epilobium montanum	-	-	-	1	-	I (1)
Schedonorus arundinaceus	-	-	-	1	-	I (1)
Stellaria graminea	-	-	-	1	-	I (1)
Cirsium arvense	1	-	-	-	-	I (1)

Lodge Covert (000-PH2-224001)

Site description and reasons for selection for survey

2.3.31 Lowland mixed deciduous woodland (a habitat of principal importance) is present to the east of Swynnerton. The surveyed habitat at Lodge Covert LWS is characteristic of broadleaved semi-natural woodland. The woodland belt is located across a valley with a south-east aspect.

Vegetation communities present

2.3.32 Pedunculate oak and sycamore are co-dominant within the canopy, elder and rhododendron are present within the understorey. Bluebell is abundant with bramble and bracken occasional within the field layer. The species composition is characteristic of NVC W10c *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland *Hedera helix* sub-community. The MATCH coefficient is 40.5. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.33 Table 15 sets out NVC survey data from Lodge Covert.

Table 15: NVC survey data from Lodge Covert (000-PH2-224001)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m x 50m)						
Quercus robur	8	7	6	6	4	V (4-8)
Acer pseudoplatanus	5	6	4	4	7	V (4-7)
Ulmus glabra	-	2	2	3	1	IV (1-3)
Fraxinus excelsior	-	-	1	6	5	III (1-6)
Betula pendula	2	2	4	-	-	III (2-4)
Sorbus aucuparia	-	-	1	-	-	I (1)
Understorey (10m x 10m)						
Sambucus nigra	1	3	3	3	3	V (1-3)
Ilex aquifolium	-	2	1	-	1	III (1-2)
Crataegus monogyna	-	-	-	2	3	II (2-3)
Rhododendron ponticum	1	-	2	-	-	II (1-2)
Field Layer (4m x 4m)						
Hyacinthoides non-scripta	6	4	-	3	-	III (3-6)
Silene dioica	-	-	1	5	6	III (1-6)
Dryopteris dilatata	1	5	-	1	-	III (1-5)
Acer pseudoplatanus	-	1	1	-	1	III (1)
Pteridium aquilinum	4	1	-	-	-	II (1-4)
Rubus fruticosus agg.	5	-	-	-	-	I (5)
Claytonia sibirica	-	-	-	-	4	I (4)
Dryopteris filix-mas	2	-	-	-	-	I (2)
Hedera helix	-	-	-	-	2	I (2)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Rubus idaeus	-	-	-	-	2	I (2)

Stabhill Plantation (000-PH2-225001)

Site description and reasons for selection for survey

2.3.34 This woodland is present to the north-west of Swynnerton. The surveyed habitat is characteristic of broadleaved plantation woodland. This tiny wood is located on a slope with a north-east aspect.

Vegetation communities present

2.3.35 Due to the small extent of woodland only one quadrat was sampled from Stabhill Plantation. Pedunculate oak is dominant within the canopy, elder and rhododendron are present within the understorey. Bluebell is abundant with bramble occasional within the field layer. The species composition is characteristic of NVC W10c *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland *Hedera helix* sub-community. The MATCH coefficient of 35.8 is low because of the very small area of woodland and that only one quadrat sample could be surveyed, a close match would not be expected. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.36 Table 16 sets out NVC survey data from Stabhill Plantation.

Table 16: NVC survey data from Stabhill Plantation (000-PH2-225001)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Canopy (50m × 50m)						
Quercus robur	8	NS	NS	NS	NS	NA
Acer pseudoplatanus	5	NS	NS	NS	NS	NA
Understorey (10m x 10m)						
Betula pendula	2	NS	NS	NS	NS	NA
Rhododendron ponticum	1	NS	NS	NS	NS	NA
Sambucus nigra	1	NS	NS	NS	NS	NA
Field Layer (4m x 4m)						
Dryopteris dilatata	5	NS	NS	NS	NS	I (5)
Geranium robertianum	1	NS	NS	NS	NS	I (1)
Geum urbanum	1	NS	NS	NS	NS	NA
Hedera helix	2	NS	NS	NS	NS	NA
Hyacinthoides non-scripta	5	NS	NS	NS	NS	NA

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Lonicera periclymenum	1	NS	NS	NS	NS	NA
Rubus fruticosus agg.	4	NS	NS	NS	NS	NA
Viola sp.	1	NS	NS	NS	NS	NA

Woodland at Cash's Pit (000-PH2-226001)

Site description and reasons for selection for survey

2.3.37 The woodland is present to the north-west of Swynnerton. The surveyed habitat is characteristic of broadleaved plantation woodland. The woodland belt is located on a slope with west aspect.

Vegetation communities present

2.3.38 Ash and sycamore are present within the canopy, with elder and rhododendron in the understorey. Bluebell is abundant with bramble and bracken occasional within the field layer. The species composition is characteristic of NVC W8e *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland *Geranium robertianum* sub-community. The MATCH coefficient is 32.3 is lower than expected because of the localised abundance of non-native rhodendron and snowberry which suppress woodland plant species that are characteristic of the W8 plant community.

2.3.39 Table 17 sets out NVC sample survey data from woodland at Cash's Pit.

Table 17: NVC sample survey data from woodland at Cash's Pit (000-PH2-226001)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Canopy (50m × 50m)						
Acer pseudoplatanus	9	7	8	7	8	V (7-9)
Fraxinus excelsior	2	5	5	6	4	V (2-6)
Ulmus glabra	2	2	3	4	2	V (2-4)
Castanea sativa	3	3	1	2	-	IV (1-3)
Understorey (10m x 10m)						
Sambucus nigra	4	4	4	3	2	V (2-4)
Corylus avellana	-	-	-	-	2	I (2)
Betula pendula	-	-	-	-	1	I (1)
Crataegus monogyna	1	-	-	-	-	I (1)
Rhododendron ponticum	-	1	-	-	-	I (1)
Symphoricarpos albus	-	-	-	-	1	I (1)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Field Layer (4m x 4m)						
Dryopteris dilatata	4	6	-	3	3	IV (3-6)
Lolium perenne	4	5	8	2	-	IV (2-8)
Hyacinthoides non-scripta	5	6	2	-	4	IV (2-6)
Mnium hornum	4	6	-	-	2	III (2-6)
Silene dioica	4	2	2	-	-	III (2-4)
Claytonia sibirica	5	-	9	-	-	II (5-9)
Acer pseudoplatanus	3	2	-	-	-	II (2-3)
Pteridium aquilnum	1	-	-	2	-	II (1-2)
Dryopteris filix-mas	-	-	2	-	-	I (2)
Rubus fruticosus agg.	-	-	-	9	-	I (9)
Urtica dioica	9	7	8	7	8	I (3)
Poa trivialis	1	-	-	-	-	I (1)

Clifford's Wood (000-PH2-227001 and 000-AW1-22700110360)

Site description and reasons for selection for survey

2.3.40 Lowland mixed deciduous woodland (a habitat of principal importance) is present to the north-west of Swynnerton. The surveyed habitat within Clifford's Wood LWS comprises plantations of non-native trees including conifers. The woodland is located on a slope with a north-west aspect.

Vegetation communities present

2.3.41 Much of the surveyed woodland has been planted with non-native conifers. Pedunculate oak and sycamore are present within the canopy, elder and rhododendron are present within the understorey. Bluebell and bracken are abundant with bramble occasional within the field layer. The species composition is characteristic of NVC W10a *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland typical sub-community. The MATCH coefficient of 34.2 is low probably because of the localised abundance of non-native conifers which suppress woodland plant species that are characteristic of the W10 plant community. The sampled vegetation is representative of mixed plantation.

Ancient woodland vascular plant indicator species present

2.3.42 In total three vascular plant species that are indicative of ancient woodland were recorded from Clifford's Wood: bluebell, wood-sorrel (*Oxalis acetosella*) and wild cherry (*Prunus avium*). It is not possible to determine the presence of ancient woodland from the low number of indicator species recorded. The presence of three

indicator species needs to be considered in conjunction with historical evidence to help determine if the survey site is ancient woodland.

2.3.43 Table 18 sets out NVC survey data from Clifford's Wood.

Table 18: NVC survey data from Clifford's Wood (000-PH2-227001)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m x 50m)						
Larix sp.	6	7	-	1	3	IV (1-7)
Quercus robur	-	-	7	8	6	III (6 – 8)
Acer pseudoplatanus	-	-	6	2	4	III (2-6)
Fagus sylvatica	-	-	2	2	-	II (2)
Pinus sylvestris	-	2	-	1	-	II (1-2)
Castanea sativa	-	1	-	-	1	II (1)
Tilia x europaea	-	-	-	-	4	I (4)
Prunus avium	-	-	-	-	2	I (2)
Picea sitchensis	-	-	1	-	-	I (1)
Understorey (10m x 10m)						
Sambucus nigra	4	3	2	2	3	V (2-4)
Prunus laurocerasus	5	5	4	3	-	IV (3-5)
Rhododendron ponticum	-	-	4	-	-	I (4)
Field Layer (4m x 4m)						
Hyacinthoides non-scripta	3	4	7	7	7	V (3-7)
Pteridium aquilinum	4	3	4	5	6	V (3-6)
Dryopteris dilatata	8	4	-	4	-	III (4-8)
Oxalis acetosella	7	-	-	-	4	II (4-7)
Holcus lanatus	3	9	-	-	-	II (3-9)
Rubus fruticosus agg.	3	-	-	5	-	II (3-5)
Silene dioica	-	1	-	-	3	II (1-3)
Acer pseudoplatanus	-	-	1	-	1	II (1)
Quercus robur	1	1	-	-	-	II (1)
Urtica dioica	-	-	-	-	4	I (4)
Claytonia sibirica	-	-	-	-	3	I (3)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Digitalis purpurea	-	2	-	-	-	I (2)
Polytrichastrum sp.	-	-	-	-	2	I (2)
Poa trivialis	1	-	-	-	-	I (1)

Whitmore Heath to Madeley (CA4)

Grassland east of Meece Brook (000-PH2-231001)

Site description and reasons for selection for survey

2.3.44 The species-rich semi-improved neutral grassland is located on the east side of the Meece Brook, approximately 1km south of Whitmore. The meadow is occasionally grazed by cattle. The presence of quaking-grass (*Briza media*), yellow-rattle (*Rhinanthus minor*), betony (*Betonica officinalis*), field scabious (*Knautia arvensis*), meadow crane's-bill (*Geranium pratense*) are indicative of meadows with limited agricultural improvement.

Vegetation communities present

2.3.45 Crested dog's-tail, common bird's-foot trefoil, red fescue, Yorkshire-fog and common knapweed are abundant and present across the meadow. Lady's bedstraw (*Galium verum*) and yellow oat-grass (*Trisetum flavescens*) are locally abundant. The species composition of this habitat is characteristic of NVC MG5b *Cynosurus cristatus-Centaurea nigra* grassland *Galium verum* sub-community. The MATCH coefficient is 59. The sampled vegetation is representative of lowland meadow habitat of principal importance.

2.3.46 Table 19 sets out NVC survey data from grassland east of Meece Brook.

Table 19: NVC survey data from grassland east of Meece Brook (000-PH2-231001)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Holcus lanatus	6	5	7	4	5	V(4-7)
Centaurea nigra	6	6	4	5	6	V(4-6)
Agrostis capillaris	3	4	5	4	4	V(3-5)
Rumex acetosa	2	4	4	4	2	V(2-4)
Ranunculous acris	1	2	4	4	4	V(1-4)
Rhinanthus minor	2	-	2	3	4	IV(2-4)
Anthoxanthum odoratum	3	1	3	5	-	IV(1-5)
Bromus hordeaceus	1	2	1	-	1	IV(1-2)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Geranium pratense	-	1	1	2	1	IV(1-2)
Phleum pratense	-	1	2	2	2	IV(1-2)
Vicia cracca	4	-	4	-	8	III(4-8)
Lotus corniculatus	-	-	6	6	4	III(4-6)
Festuca rubra	4	-	4	4	-	III(4)
Trisetum flavescens	-	-	3	4	3	III(3-4)
Achillea millefolium	-	-	4	2	2	III(2-4)
Leucanthemum vulgare	-	1	4	5	-	III(1-5)
Poa trivialis	3	4	-	-	1	III(1-4)
Trifolium repens	1	-	-	4	3	III(1-4)
Cynosurus cristatus	1	-	2	2	-	III(1-2)
Galium verum	-	-	1	2	1	III(1-2)
Lotus pedunculatus	8	6	-	-	-	II(6-8)
Alopecurus pratensis	5	5	-	-	-	II(5)
Plantago lanceolata	2	2	-	-	-	II(2)
Leontodon hispidus	-	-	1	4	-	II(1-4)
Trifolium pratense	1	-	-	-	3	II(1-3)
Dactylis glomerata	2	1	-	-	-	II(1-2)
Prunella vulgaris	1	-	-	2	-	II(1-2)
Cirsium arvense	4	-	-	-	-	I(4)
Briza media	-	-	-	2	-	I(2)
Lolium perenne	2	-	-	-	-	I(2)
Vicia sativa	2	-	-	-	-	I(2)
Betonica officinalis	-	-	-	1	-	I(1)
Galium album	-	-	-	-	1	I(1)
Knautia arvensis	-	-	1	-	-	I(1)
Primula veris	-	-	-	1	-	I(1)

Woodland at Whitmore Heath (000-PH2-232001)

Site description and reasons for selection for survey

2.3.47 Lowland mixed deciduous woodland (a habitat of principal importance) is present to the north of Baldwin's Gate. The surveyed habitat is characteristic of broadleaved semi-natural woodland. There is no sign of recent woodland management. The woodland is located on a steep slope with a north-west aspect.

Vegetation communities present

2.3.48 The canopy is dominated by silver birch (*Betula pendula*). Rowan (*Sorbus aucuparia*), sessile oak (*Quercus petraea*) and downy birch (*Betula pubescens*) are frequent within the understorey. Silky forklet-moss (*Dicranella heteromalla*) is abundant on the ground. The species composition of this habitat is characteristic of NVC W16b *Quercus spp.-Betula spp.-Deschampsia flexuosa* woodland *Vaccinium myrtillus-Dryopteris dilatata* sub-community. The MATCH coefficient is 39.9. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.49 Table 20 sets out NVC survey data from woodland at Whitmore Heath.

Table 20: NVC survey data from woodland at Whitmore Heath (000-PH2-232001)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m × 50m)						
Betula pendula	5	8	9	NS	NS	V (5-9)
Quercus petraea	5	1	4	NS	NS	V (1-5)
Betula pubescens	2	-	-	NS	NS	II (2)
Understorey (10m × 10m)						
Sorbus aucuparia	6	7	5	NS	NS	V (5-7)
Betula pubescens	1	4	3	NS	NS	V (1-4)
Quercus petraea	-	-	4	NS	NS	II (4)
Ilex aquifolium	1	2	-	NS	NS	II (1-2)
Field Layer (4m × 4m)						
Dicranella heteromalla	2	2	3	NS	NS	V(2-3)
Pteridium aquilinum	5	1	6	NS	NS	V(1-6)
Dryopteris dilatata	5	3	1	NS	NS	V(1-5)
Sorbus aucuparia	2	1	3	NS	NS	V(1-3)
Ilex aquifolium	2	1	1	NS	NS	V(1-2)
Brachythecium rutabulum	2	2	-	NS	NS	IV(2)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Plagiothecium undulatum	-	-	3	NS	NS	II(3)
Hypnum cupressiforme	-	-	3	NS	NS	II(3)
Poa trivialis	-	-	2	NS	NS	II(2)
Rubus fruticosus agg.	1	-	-	NS	NS	II(1)
Polytrichastrum formosum	1	-	-	NS	NS	I(1)
Kindbergia praelonga	-	1	-	NS	NS	II(1)
Tetraphis pellucida	-	1	-	NS	NS	II(1)

Whitmore Wood (000-PH2-233001 and 000-AW1-233001)

Site description and reasons for selection for survey

2.3.50 Lowland mixed deciduous woodland (a habitat of principal importance) is present to the north-west of Whitmore Heath. The surveyed habitat is characteristic of broadleaved semi-natural woodland. The central and south-west parts of the Whitmore Wood LWS have been planted with conifers. There is a ravine on the north side of the wood with a steep slope with a north-west aspect.

Vegetation communities present

2.3.51 The canopy comprises downy birch which is abundant with rowan which is occasional. Hazel is occasional within the canopy and understorey. Swan's-neck thyme-moss (*Mnium hornum*) is frequent on the ground. The species composition of this habitat is characteristic of NVC W9a *Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis* woodland typical sub-community. The MATCH coefficient is 40.1. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

Ancient woodland vascular plant indicator species present

2.3.52 In total 11 vascular plant species that are indicative of ancient woodland were recorded from Whitmore Wood: moschatel (*Adoxa moschatellina*), ramsons (*Allium ursinum*), climbing corydalis (*Ceratocapnos claviculata*), opposite-leaved golden-saxifrage (*Chrysosplenium oppositifolium*), bluebell, holly, yellow archangel (*Lamiastrum galeobdolon*), yellow pimpernel (*Lysimachia nemorum*), dog's mercurys perennis, wood-sorrel and greater stitchwort (*Stellaria holostea*). Whitmore Wood is an Ancient Woodland Inventory Site and the presence of 11 indicator species is fairly typical for central England on non-calcareous soil.

2.3.53 Table 21 sets out NVC survey data from Whitmore Wood.

Table 21: NVC survey data from Whitmore Wood (000-PH2-233001)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m × 50m)						
Betula pubescens	-	1	4	5	4	IV (1-5)
Larix decidua	9	9	8	-	-	III (8-9)
Fraxinus excelsior	-	-	-	4	5	II (4-5)
Corylus avellana	-	-	-	4	4	II (4)
Quercus petraea	-	-	-	1	1	II (1)
Sambucus nigra	-	-	-	-	4	I (4)
Sorbus aucuparia	-	-	-	4	-	I (4)
Crataegus monogyna	-	-	-	-	1	I (1)
Ilex aquifolium	-	-	-	-	1	I (1)
Understorey (10m × 10m)						
Sambucus nigra	1	1	2	-	4	IV (1-4)
Corylus avellana	-	-	2	-	8	II (2-8)
Prunus padus	-	-	-	-	1	I (1)
Quercus petraea	-	-	1	-	-	I (1)
Field Layer (4m × 4m)						
Dryopteris dilatata	6	2	5	5	3	V(2-6)
Kindbergia praelonga	5	5	3	4	4	V(3-5)
Ilex aquifolium	2	1	2	1	1	V(1-2)
Hyacinthoides non-scripta	4	-	8	5	7	IV(4-8)
Brachythecium rutabulum	3	4	3	-	3	IV(3-4)
Hypnum cupressiforme	3	3	3	3	-	IV(3)
Pteridium aquilinum	5	8	7	2	-	IV(2-8)
Holcus mollis	4	-	2	6	3	IV(2-6)
Rubus fruticosus agg.	4	1	2	-	1	IV(1-4)
Oxalis acetosella	-	2	-	4	3	III(2-4)
Mnium hornum	-	1	-	1	2	III(1-2)
Lamiastrum galeobdolon	-	-	-	4	4	II(4)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Stellaria holostea	-	-	-	2	3	II(2-3)
Pseudotaxiphyllum elegans	1	-	-	-	4	II(1 - 4)
Dryopteris filix-mas	-	-	-	3	1	II(1-3)
Cardamine flexuosa	-	-	-	1	2	II(1-2)
Dicranella heteromalla	1	2	-	-	-	II(1-2)
Sorbus aucuparia	2	-	-	1	-	II(1-2)
Lonicera periclymenum	1	-	-	-	1	II(1)
Silene dioica	1	-	-	1	-	II(1)
Urtica dioica	-	-	1	-	1	II(1)
Adoxa moschatellina	-	-	-	-	4	I(4)
Agrostis stolonifera	-	-	-	4	-	I(4)
Allium ursinum	-	-	-	-	4	I(4)
Atrichum undulatum	-	-	-	-	4	I(4)
Chrysosplenium oppositifolium	-	-	-	-	4	I(4)
Circaea lutetiana	-	-	-	-	4	I(4)
Pellia epiphylla	-	-	-	-	4	I(4)
Poa trivialis	-	-	-	-	4	I(4)
Agrostis capillaris	3	-	-	-	-	I(3)
Ficaria verna	-	-	-	-	3	I(3)
Lysimachia nemorum	-	-	-	-	3	I(3)
Deschampsia cespitosa	-	-	-	2	-	I(2)
Fissidens taxifolius	-	-	-	-	2	I(2)
Fraxinus excelsior	-	-	-	2	-	I(2)
Lophocolea bidentata	2	-	-	-	-	I(2)
Stellaria alsine	-	-	-	-	2	I(2)
Abies alba	-	-	-	1	-	I(1)
Ajuga reptans	-	-	-	-	1	I(1)
Athyrium filix-femina	-	-	-	-	1	I(1)
Betula pubescens	1	-	-	-	-	I(1)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Ceratocapnos claviculata	1	-	-	-	-	I(1)
Crataegus monogyna	-	-	-	-	1	I(1)
Geum urbanum	-	-	-	-	1	I(1)
Isothecium myosuroides	-	-	-	1	-	I(1)
Prunus laurocerasus	1	-	-	-	-	I(1)
Prunus padus	-	-	-	-	1	I(1)
Quercus petraea	1	-	-	-	-	I(1)
Ranunculus repens	-	-	-	-	1	I(1)
Orthotrichum affine	-	-	-	-	1	I(1)
Polytrichastrum formosum	-	1	-	-	-	I(1)

Hey Sprink (000-PH2-234001 and 000-AW1-234001)

Site description and reasons for selection for survey

2.3.54 Lowland mixed deciduous woodland (a habitat of principal importance) is present to the north-west of Whitmore Wood. The surveyed habitat is characteristic of broadleaved semi-natural woodland. Hey Sprink LWS is situated on a slope with a south-west aspect.

Vegetation communities present

2.3.55 The canopy is dominated by downy birch and sycamore. Hazel is occasional. Swan's-neck thyme-moss is frequent on the ground. The species composition of this habitat is characteristic of NVC W9a *Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis* woodland typical sub-community. The MATCH coefficient is 40.8. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

Ancient woodland vascular plant indicator species present

2.3.56 In total nine vascular plant species that are indicative of ancient woodland were recorded from Hey Sprink Wood: field maple (*Acer campestre*), golden-scaled male-fern (*Dryopteris affinis*), bluebell, holly, yellow archangel, wood millet (*Milium effusum*), wood-sorrel, wych elm and wood speedwell (*Veronica montana*). Hey Sprink is an Ancient Woodland Inventory Site and the presence of nine indicator species is fairly typical for central England on non-calcareous soil.

2.3.57 Table 22 sets out NVC survey data from Hey Sprink.

Table 22: NVC survey data from Hey Sprink (000-PH2-234001)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Canopy (50m × 50m)						
Acer pseudoplatanus	5	7	8	9	9	V(5-9)
Betula pubescens	6	4	1	5	2	V(2-6)
Quercus robur	1	1	-	2	1	IV(1-2)
Larix decidua	7	6	1	-	-	III(1-7)
Ilex aquifolium	-	2	-	3	-	II(2-3)
Sorbus aucuparia	-	1	2	-	-	II(1-2)
Tsuga heterophylla	-	-	8	-	-	I(8)
Understorey (10m × 10m)						
Sambucus nigra	-	-	-	-	2	I(2)
Corylus avellana	-	-	-	1	-	I(1)
Crataegus monogyna	-	-	-	-	1	I(1)
Castanea sativa	-	-	-	1	-	I(1)
Fraxinus excelsior	-	-	-	-	1	I(1)
Field Layer (4m × 4m)						
Rubus fruticosus agg.	5	6	4	5	5	V(4-6)
Kindbergia praelonga	4	4	3	3	2	V(2-4)
Hyacinthoides non-scripta	-	3	3	3	3	IV(3)
Pteridium aquilinum	9	5	2	-	-	III(2-9)
Dryopteris dilatata	-	6	2	-	3	III(2-6)
Hypnum cupressiforme	-	3	3	-	2	III(2-3)
Mnium hornum	-	-	2	2	2	III(2-2)
Deschampia flexuosa	-	-	1	1	3	III(1-3)
Brachythecium rutabulum	3	-	-	-	-	I(3)
Dryopteris filix-mas	-	-	-	-	3	I(3)
Milium effusum	-	1	-	3	-	II(1-3)
Athyrium filix-femina	-	-	-	-	2	I(2)
Lamiastrum galeobdolon	-	-	-	-	2	I(2)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Urtica dioica	2	-	-	-	-	I(2)
Circaea lutetiana	-	-	1	-	-	I(1)
Digitalis purpurea	-	-	1	-	-	I(1)
Dryopteris affinis	-	-	-	1	-	I(1)
Fissidens taxifolius	-	-	-	-	1	I(1)
Geranium robertianum	-	-	-	-	1	I(1)
Lophocolea heterophylla	-	1	-	-	-	I(1)
Polytrichastrum formosum	-	-	1	-	-	I(1)

Barhill Wood (000-PH2-237001)

Site description and reasons for selection for survey

2.3.58 Lowland mixed deciduous woodland (a habitat of principal importance) is present to the south-west of Madeley. The surveyed habitat is characteristic of broadleaved semi-natural woodland which has been planted with non-native trees. The woodland is situated on a steep slope with a predominantly east aspect.

Vegetation communities present

2.3.59 The canopy is co-dominated by sycamore and pedunculate oak, with occasional ash and wych elm. Rowan is abundant, sycamore is frequent and elder is occasional within the understorey. Rough-stalked feather-moss is frequent on the ground. The species composition of this habitat is characteristic of NVC W9a *Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis* woodland typical sub-community. The MATCH coefficient is 30.2 is lower than expected because it has been planted with non-native trees which suppress the ground flora that are characteristic of W9 plant community. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.60 Table 23 sets out Woodland NVC sample survey data from Barhill Wood.

Table 23: Woodland NVC sample survey data from Barhill Wood (000-PH2-237001)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Canopy (50m × 50m)						
Acer pseudoplatanus	7	7	7	8	7	V (7-8)
Quercus robur	6	4	4	5	5	V (4-6)
Castanea sativa	1	4	-	-	6	IV (1-6)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Sorbus aucuparia	4	6	-	-	4	III (4-6)
Betula pubescens	5	5	-	4	-	III (4-5)
Ulmus glabra	-	-	-	-	1	I (1)
Fraxinus excelsior	-	-	-	1	-	I (1)
Larix decidua	-	-	1	-	-	I (1)
Pinus sylvestris	-	-	1	-	-	I (1)2
Understorey (10m × 10m)						
Sorbus aucuparia	2	4	4	4	4	V (2-4)
Ilex aquifolium	2	1	9	5	-	IV (1-9)
Acer pseudoplatanus	4	-	-	5	5	III (4-5)
Sambucus nigra	-	2	-	-	1	II (1-2)
Field Layer (4m × 4m)						
Hyacinthoides non-scripta	6	7	4	7	7	V(4-7)
Dryopteris dilatata	7	6	2	5	6	V(2-7)
Kindbergia praelonga	3	3	2	2	2	V(2-3)
Hypnum cupressiforme	3	2	-	5	4	IV(2-5)
Mnium hornum	4	-	2	4	3	IV(2-4)
Pteridium aquilinum	-	6	-	-	-	III(5-6)
Brachythecium rutabulum	3	-	-	4	4	III(3-4)
Digitalis purpurea	1	-	-	1	2	III(1-2)
Rubus fruticosus agg.	-	1	-	2	2	III(1-2)
Silene dioica	-	1	-	1	1	III(1)
Pseudotaxiphyllum elegans	-	2	2	-	-	II(2)
Betula pubescens	-	-	5	-	-	I(5)
Dicranella heteromalla	-	-	-	-	2	I(2)
Prunus avium	-	-	-	-	1	I (1)
Acer pseudoplatanus	-	-	-	-	1	I(1)
Ceratocapnos claviculata	-	1	-	-	-	I(1)
Holcus mollis	-	-	-	-	1	I(1)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Ilex aquifolium	1	-	-	-	-	I(1)
Lophocolea bidentata	1	-	-	-	-	I(1)
Quercus robur	-	-	-	-	1	I(1)
Polytrichastrum formosum	-	-	-	-	1	I(1)

South Cheshire (CA5)

Woodland south-west of Randilow Farm (000-PH2-240001 and 000-PH2-240002)

Site description and reasons for selection for survey

2.3.61 Lowland mixed deciduous woodland and wet woodland (habitats of principal importance) are present at a small wood to the south-west of Randilow Farm, Wrinehill. The surveyed habitat is characteristic of broadleaved semi-natural woodland. The wood is located on a slope with a north-west aspect.

Vegetation communities present

2.3.62 Lowland mixed deciduous woodland is present at the top of slope on dry brown earth soil. Pedunculate oak is dominant within the canopy, hazel is dominant within the understorey and bramble, bracken and bluebell are abundant within the field layer. The species composition at the top of the slope is characteristic of NVC W10c *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland *Hedera helix* sub-community. The MATCH coefficient is 40.8. The sampled vegetation is representative of lowland mixed deciduous woodland habitat of principal importance.

2.3.63 Table 24 sets out NVC survey data from woodland (top of slope) south-west of Randilow Farm.

Table 24: NVC survey data from woodland (top of slope) south-west of Randilow Farm (000-PH2-240001)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Canopy (10m × 10m)						
Quercus robur	1	1	-	-	1	III (1)
Fraxinus excelsior	-	1	1	1	-	III (1)
Betula pendula	1	-	1	-	-	II (1)
Salix fragilis	-	-	-	1	-	I (1)
Understorey (10m × 10m)						
Corylus avellana	8	10	7	10	5	V (5-10)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Sambucus nigra	-	-	-	2	-	I (2)
Crataegus monogyna	-	-	-	-	2	I (2)
Field Layer (4m × 4m)						
Hyacinthoides non-scripta	8	7	8	7	5	V (5-8)
Rubus fruticosus agg.	-	5	1	1	4	IV (1-5)
Pteridium aquilinum	3	5	2	-	-	III (2-5)
Hedera helix	-	-	-	2	-	I (2)
Galeopsis tetrahit	-	-	-	-	2	I (2)
Stachys sylvatica	-	-	-	-	2	I (2)
Dryopteris dilatata	-	-	1	-	-	I (1)
Silene dioica	-	-	-	1	-	I (1)
Rosa arvensis	-	-	-	-	1	I (1)

2.3.64 Wet woodland is present at the bottom of slope on moist nutrient enriched soil. Crack-willow is dominant with alder occasional within the canopy, grey willow is dominant within the understorey and bramble and common nettle abundant with bittersweet (Solanum dulcumara) occasional within the field layer. The species composition at the bottom of the slope is characteristic of NVC W6b Alnus glutinosa-Urtica dioica woodland Salix fragilis sub-community. The MATCH coefficient is 45.1. The sampled vegetation is representative of wet woodland habitat of principal importance.Table 25 sets out NVC survey data from woodland (bottom of slope) south-west of Randilow Farm.

Table 25: NVC survey data from woodland (bottom of slope) south-west of Randilow Farm (000-PH2-240002)

Species	Quadrat locations					Constancy (Domin range)
	Q1	Q2	Q3	Q4	Q5	
Canopy (10m × 10m)						
Salix fragilis	-	2	2	-	2	III (2-2)
Alnus glutinosa	1	-	-	1	-	II (1-1)
Quercus robur	1	-	-	1	-	II (1-1)
Betula pendula	1	-	1	-	-	II (1-1)
Understorey (10m × 10m)						
Salix cinerea	-	2	1	-	1	III (1-2)

Species	**Quadrat locations**					**Constancy (Domin range)**
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	
Sambucus nigra	2	-	2	-	-	II (2-2)
Crataegus monogyna	2	-	-	2	-	II (2-2)
Corylus avellana	1	-	-	-	-	I (1-1)
Field Layer (4m × 4m)						
Rubus fruticosus agg.	5	6	7	6	5	V (5-7)
Kindbergia praelonga	-	3	1	3	3	IV (1-3)
Urtica dioica	1	-	-	4	5	III (1-5)
Silene dioica	4	-	-	-	3	II (3-4)
Hyacinthoides non-scripta	5	-	2	-	-	II (2-5)
Solanum dulcamara	-	2	4	-	-	II (2-4)
Dryopteris dilatata	-	1	2	-	-	II (1-2)
Rumex crispus	-	-	4	-	-	I (4-4)

3 References

HS2 Ltd (2017), *the High Speed Rail (West Midlands – Crewe) Environmental Statement (ES).* Available online at: www.gov.uk/HS2.

Malloch, A.J.C. (1998), *MATCH Version 2,* University of Lancaster.

Peterken, G.F. (1974), *A method for assessing woodland flora for conservation for using Indicator Species,* Biological Conservation, 6, 239-245.

Rodwell, J.S. (2006), *National Vegetation Classification: Users' Handbook*, Joint Nature Conservation Committee, Peterborough.

Rose, F. (1999), *Indicators of ancient woodland: The use of vascular plants in evaluating ancient woods for nature conservation,* British Wildlife, 10, 4, 241-251.

Thompson, R.J., Butcher, W.G., Williams, P. & Warren, M. (2003), *The use of vascular plants as indicators of ancient woodland in Somerset: The development of a county specific list*, Somerset Archaeology and Natural History.

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