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WARREN HALL

HEDGEROW ASSESSMENT AND WOODLAND NVC SURVEY TECHNICAL REPORT 2018

TEP Technical Report March 2019

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DRAWINGS

G7016.006 HEDGEROW SURVEY

G7016.013 NVC SURVEY

1.0 General Details

Site Name	Warren Hall
Site Location	Flintshire, North Wales, CH4 0SD
Survey Date(s)	May 2018
Surveyor(s)	Principal Ecologist Lee Greenhough
Methods	Hedgerows surveyed in accordance with Hedgerow Regulations (1997). Woodland surveyed to standard National Vegetation Classification methodology (Rodwell, 2006). Further details on methods used are provided within the report.
Seasonal Constraints	None, the surveys were conducted during the recommended survey period for woodland and hedgerow survey (April and May).
Drawing References	G7016.006 and G7016.013

2.0 Introduction

2.1 TEP was commissioned by the Welsh Assembly Government to undertake an ecological assessment of a site off A5104 in North Wales, known as Warren Hall. The purpose is to report on ecological constraints and opportunities that influence the local plan in terms of future development of the site.

2.2 This technical report provides detailed information on the hedgerow and woodland habitat identified on site which will inform the overall ecological assessment (TEP document reference: 7016.012), which in turn will accompany an outline planning application and conforms with CIEEM guidance on Ecological Impact Assessment (EcIA). The approach in terms of methodology and types of survey within this report have been undertaken after consultation with Natural Resources Wales and Flintshire County Council.

2.3 The location of the application site is shown in Figure 1, and the approximate central grid reference is SJ 32475 62539. The site does not contain any buildings.

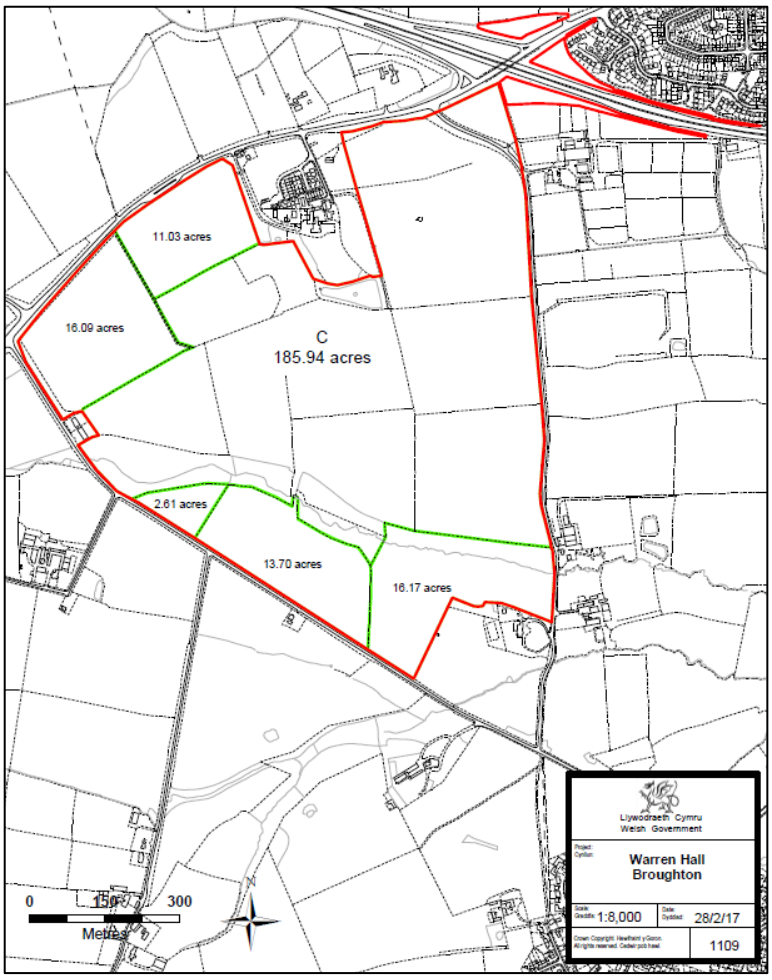


Figure 1: Site Location Plan.

3.0 Method

Hedgerow Assessment

3.1 The Phase 1 habitat survey identified the distribution of native hedgerows within adjacent and to the application site and highlighted the need for further assessment. The hedgerow assessment survey was undertaken by experienced surveyor, Lee Greenhough during May 2018.

3.2 The hedgerows were subject to a detailed sampling survey in accordance with the criteria set out in the Hedgerow Regulations (1997) in terms of wildlife and landscape criteria for determining "important" hedgerows. This entailed recording the number of woody species (as listed on Schedule 3 of the Hedgerow Regulations) within 30m sample sections as well as any features within 2m associated with the hedge. These features include the presence of any bank or wall, ditch, standard trees and ground flora species (as listed on Schedule 2 of the Hedgerow Regulations). Also, the number of connections with adjacent hedgerows was recorded. Hedgerow target notes were made on standard data recording forms. For each hedgerow this included a hedgerow identification number, description of the hedge and detailed plant species list.

3.3 For the purposes of this assessment a hedgerow is defined as a boundary line of native shrubs or a mix of native shrubs and trees over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less than 20m wide. Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow. Only hedgerows consisting predominantly (80% or more cover) of at least one woody UK native species (listed on Schedule 3 of the Hedgerow Regulations) are considered to be native and covered by this assessment.

3.4 The above definition of a hedgerow is largely based on the S41 definition of a hedgerow but it also takes into account details from the Hedgerow Regulations 1997 and Handbook for Phase 1 Habitat survey (JNCC 2010) in order to ensure all hedgerow features considered native are assessed.

3.5 Further factors which are considered during this assessment include the proximity of public by-ways and footpaths, parallel hedgerows, semi-natural woodland and ponds. The presence of these features adjacent to a hedgerow increases the likelihood that it could qualify as "important".

3.6 In addition, presence of or field signs of any legally protected species or species which are listed on Section 7 of the Environment (Wales) Act 2016 were mapped and noted. This includes species which form part of Schedules 1, 5 & 8 of the Wildlife and Countryside Act (WCA), as amended (1981).

3.7 A link to wildlife and landscape criteria for determining "important" hedgerows under the Hedgerow Regulations 1997 is given below:

3.8 http://www.legislation.gov.uk/uksi/1997/1160/schedule/1/made

National Vegetation Classification Survey

3.9 To provide further detailed information the species present and to identify any affinity with any semi-natural woodland communities, the significant woodland blocks onsite were subject to a National Vegetation Classification (NVC) survey. The findings of the survey also inform any mitigation recommendations. The woodland was walked over by an experienced botanist to make a provisional assessment of the boundaries of different vegetation types (as defined by the NVC system (Rodwell, 1991-2000 and 2006).

3.10 The vegetation was sampled using quadrats for woodland this is 10m x 10m according to standard NVC methodology (Rodwell, 2006). Each quadrat was recorded in the field by listing all plants within it along with the abundance of each species and the percentage cover of any bare ground or leaf litter using the Domin scale of abundance. A search was made for any nationally or locally notable plant species, including protected species or those listed in Section 7 of the Environment (Wales) Act 2016.

3.11 The positions of quadrats were recorded using a hand-held GPS (Global Positioning System) with an accuracy of approximately 3m.

3.12 The survey was undertaken by experienced botanist, Principal Ecologist Lee Greenhough (FISC Level 4) during May 2018 when ground flora vegetation would be visible.

3.13 Quadrat data was analysed using the computer program TABLEFIT (Hill) to establish the “goodness of fit” to the NVC community types. The output results from TABLEFIT analysis of the quadrats has been analysed by Val Gateley to assess which vegetation types, as defined by the NVC, are represented across the survey area.

4.0 Results

Hedgerow Assessment

4.1 The hedgerows surveyed, assessed and mapped as a result of this hedgerow assessment are illustrated in Drawing G7016.006. The survey results including species composition and details of further sampling (if identified as having potential importance) are provided in Appendix 1.

4.2 A total of 10 hedgerows from within the Site were identified as requiring further survey following the Hedgerow Regulations method in order to ascertain whether any qualify as “important”.

4.3 One hedgerow, H7 within the Site was found to have sufficient species diversity and associated features to qualify as “important” under the Hedgerow Regulations in terms of the wildlife and landscape criteria. The location of this hedgerows is shown in Drawing G7016.006.

4.4 Currently, no Wildlife & Countryside Act 1981 species, Schedule 1 birds or Schedule 5 bat species use any of the mature trees within the hedgerows as nest or roost sites. A number of the trees within the Site have been identified as having the potential to support bat roosts. Further information on protected species can be found in the Ecological Assessment (TEP document reference: 7016.012).

4.5 Should any nest or roost sites be confirmed in trees associated with hedgerows in the future, then the hedgerows in which they are located would be categorised as “important”. It should also be noted that since the use of nest or roost sites can change within and between years that hedgerows can be classed as ‘important’ even if one of these species is not currently using a known nest or roost site.

National Vegetation Classification Survey

4.6 In order to gain a better understanding of the vegetation communities represented and the ecological value of the habitat, National Vegetation Classification (NVC) surveys were undertaken of the two substantial blocks of woodland within the Site.

4.7 The woodland parcels have been labelled ‘Mature Wood’, and ‘Woodland Plantation’ respectively. The raw quadrat data and TableFit analysis for each quadrat is presented in Appendix 1, followed by a quadrat data and TableFit analysis explanatory note, which provides further detail of the analysis process. Quadrat locations are detailed in Drawing G7016.003. Findings of the NVC survey are discussed below.

'Mature Wood' NVC Analysis Discussion

4.8 Across the quadrats, Tablefit analysis does not show a strong goodness of fit to any recognised NVC community. The majority of quadrats show a 'Poor' and 'Very poor' goodness of fit as they score less than 60. Quadrats 4 and 11 show a 'Fair' goodness of fit scoring 60 and 61 respectively. Quadrat 4 has the strongest affinity to woodland community W8e – the *Geranium robertianum* sub-community of *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland and Quadrat 11 to W12a – the *Mercurialis perennis* sub-community of *Fagus sylvatica-Mercurialis perennis* woodland.

4.9 The lack of goodness of fit in the majority of quadrats may reflect the fact that the woodland is derived from plantation and therefore has not established a near-natural community at this stage. Across all quadrats the most common woodland community type is W8, Fraxinus excelsior-Acer campestre-Mercurialis perennis woodland, with five out of the 12 quadrats represented by this community.

'Woodland Plantation' NVC Analysis Discussion

4.10 Across the quadrats, Tablefit analysis does not show a strong goodness of fit to any recognised NVC community. All quadrats show a 'Very poor' goodness of fit as they score less than 49. Quadrat 8 has the highest goodness of fit of all the quadrats at 43, although this is still classed as 'very poor'. This quadrat has the highest affinity to W15a – the Fagus sylvatica sub-community of Fagus sylvatica-Deschampsia flexuosa woodland. Four out of the ten quadrats came out at 'OV' communities – vegetation of open habitats.

4.11 The lack of goodness of fit in the majority of quadrats is likely to reflect the fact that the woodland is derived from plantation and therefore has not established a near-natural community. Many of the quadrats have non-native trees as the dominant species in the canopy, such as horse chestnut, sycamore, and larch species.

5.0 Conclusions

Hedgerows

5.1 All native hedgerows qualify as S7 habitat. One of the hedgerows, H7, have been assessed to qualify as "important" under the Hedgerow Regulations 1997. Two of the hedges are species-rich during the Phase 1 habitat survey. Hedges provide foraging, commuting and refuge habitat for range of faunal species and form part of a network of hedgerows across the wider landscape. As such, the hedges are considered to have local importance within the landscape.

5.2 Where possible, detailed design should seek to retain all native hedgerows within and appropriate setting in the final design. Mitigation measures should be implemented to protect retained hedgerows within and adjacent to the Site from construction activities, including dust, airborne debris and run-off.

5.3 Where hedgerow retention is not possible, priority for retention should be placed upon the important and species-rich hedgerows, and on hedgerows which provide an important connectivity function. Where hedgerow loss cannot be avoided, losses should be mitigated or compensated for through new hedge planting. New planting and gap-planting of hedgerows could also be implemented to further enhance ecological networks within the site and local landscape and to deliver net biodiversity gain, both in terms of habitat quantity and ecological function.

5.4 All new hedgerows should be planted with a diverse (species-rich) native mix to mitigate and improve this habitat resource within the local area.

Woodland

5.5 Following analysis of the NVC survey findings, the two blocks of woodland where found to have limited affinity with semi-natural woodland communities as defined in the NVC handbook. However, the southern woodland block (Mature Wood), did have some elements of W8 woodland community and was found to support swathes of the ancient woodland indicator species bluebell. Therefore this woodland block does have an element of semi-naturalness, and taking a precautionary approach, should be considered to qualify as S7 woodland habitat.

5.6 The northern woodland block (Woodland Plantation) had little, if any affinity with semi-natural woodland communities, with many quadrats showing greatest affinity with open vegetation communities. Many non-native trees also form the canopy with only a small amount of bluebell present. Therefore, it is not considered to be semi-natural and does not qualify as Section 7 habitat. However it does have ecological value, providing suitable habitat for a range of species including potential bat roosting opportunities for European protected bat species.

5.7 These blocks of woodland provide an important resource for local wildlife. Where possible, detailed design should seek to retain these woodland blocks within an appropriate setting in any future design proposals. Mitigation measures should be implemented to protect retained woodland within and adjacent to the Site from construction activities, including dust, airborne debris and run-off.

5.8 Where woodland loss cannot be avoided, losses should be mitigated or compensated for through provision of new woodland planting. It would take a long time for new planting to establish to a stage where it could be considered to function in a similar capacity to the existing woodland blocks. To ensure a net gain in biodiversity, replacement planting would need to be more extensive than what is lost, the exact requirements would have to be calculated using a biodiversity metric.

5.9 Possible management measures to increase 'naturalness' and improve the ecological value of retained woodland habitat onsite including focusing on restoring W8, *Fraxinus excelsior-Acer campestre-Mercurialis perennis* woodland. This may involve a gradual replacement of the sycamore and larch with native species appropriate to the NVC community W8, e.g. ash *Fraxinus excelsior,* field maple *Acer campestr*e and encouragement of appropriate understorey and ground-flora species e.g. hazel *Corylus avellana* and dog's mercury *Mercurialis perennis*.

6.0 References

Joint Nature Conservation Committee (JNCC) (2010) Handbook for Phase 1 habitat survey: A technique for environmental audit.

Chartered Institute of Ecology and Environmental Management (CIEEM) (2017) Guidelines for Preliminary Ecological Appraisal.

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

APPENDIX 1

HEDGEROW SURVEY DATA AND NVC SURVEY DATA AND ANALYSIS

HEDGEROW REGULATIONS 1997 ASSESSMENT RESULTS

Hedgerows categorised as "important" or not based on criteria under Schedule 1, Part 2, paragraphs 6 to 8 only (Wildlife and landscape) of the Hedgerow Regulations 1997.

Key:
***** - denotes woody species listed in Schedule 3 of the Hedgerow Regulations 1997
****** - denotes woodland species listed in Schedule 2 of the Hedgerow Regulations 1997

Hedge 1

Acer pseudoplatanus	Sycamore
Anthriscus sylvestris	Cow Parsley
Crataegus monogyna	**Hawthorn***
Dactylis glomerata	Cock's-foot
Fraxinus excelsior	**Ash***
Galium aparine	Cleavers
Geranium robertianum	**Herb-Robert****
Hedera helix	Ivy
Heracleum sphondylium	Hogweed
Plantago lanceolata	Ribwort Plantain
Plantago major	Greater Plantain
Poa trivialis	Rough Meadow-grass
Potentilla reptans	Creeping Cinquefoil
Pteridium aquilinum	Bracken
Ranunculus repens	Creeping Buttercup
Rosa canina	**Dog rose***
Rubus fruticosus agg.	Bramble
Rumex obtusifolius	Broad-leaved Dock
Scrophularia nodosa	Common Figwort
Senecio jacobaea	Common Ragwort
Sisymbrium officinale	Hedge Mustard
Stellaria media	Chickweed
Ulmus sp.	**Elm species***
Urtica dioica	Nettle
Veronica chamaedrys	Germander Speedwell

Does the hedge have the appearance of being over 30 years old?	Yes
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	260 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Hawthorn	Hawthorn	Hawthorn
Average of at least one standard tree per 50m?	Y	Dog Rose	Sycamore	Sycamore

3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N	Ash	Dog Rose	Ash
Ditch along at least half of the hedgerow?	N	Elm		
Parallel hedge within 15m of the hedgerow?	N	Sycamore		
Gaps (% of hedgerow length)	<10%			
Connection (within 10m) with another hedgerow?	N			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	Y			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	The hedgerow contains an average of less than six woody species within the sampled sections.

Hedge 2

Acer pseudoplatanus	Sycamore
Anthriscus sylvestris	Cow Parsley
Cirsium arvense	Creeping Thistle
Cirsium vulgare	Spear Thistle
Crataegus monogyna	**Hawthorn***
Galium aparine	Cleavers
Geranium robertianum	**Herb-Robert****
Hedera helix	Ivy
Heracleum sphondylium	Hogweed
Poa trivialis	Rough Meadow-grass
Ranunculus acris	Meadow Buttercup
Ranunculus repens	Creeping Buttercup
Rosa canina agg.	**Dog Rose***
Rubus fruticosus agg.	Bramble
Rumex obtusifolius	Broad-leaved Dock
Sambucus nigra	**Elder***
Urtica dioica	Nettle

Does the hedge have the appearance of being over 30 years old?	Yes
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	215 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Hawthorn	Hawthorn	

Average of at least one standard tree per 50m?	N	Dog Rose	Dog Rose	
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N	Elder	Elder	
Ditch along at least half of the hedgerow?	N	Sycamore		
Parallel hedge within 15m of the hedgerow?	N			
Gaps (% of hedgerow length)	<10%			
Connection (within 10m) with another hedgerow?	N			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	Y			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	An average of less than six woody species was noted within the sampled sections.

Hedge 3

Alliaria petiolata	Garlic Mustard
Alopecurus pratensis	Meadow Foxtail
Anthriscus sylvestris	Cow Parsley
Arrhenatherum elatius	False Oat-grass
Brachypodium sylvaticum	False Brome
Cirsium arvense	Creeping Thistle
Crataegus monogyna	**Hawthorn***
Dactylis glomerata	Cock's-foot
Fraxinus excelsior	**Ash***
Galium aparine	Cleavers
Geum urbanum	**Wood Avens****
Hedera helix	Ivy
Heracleum sphondylium	Hogweed
Holcus lanatus	Yorkshire-fog
Ilex aquifolium	**Holly***
Poa trivialis	Rough Meadow-grass
Prunus spinosa	**Blackthorn***
Rosa canina	**Dog rose***
Rubus fruticosus agg.	Bramble
Rumex obtusifolius	Broad-leaved Dock
Scrophularia nodosa	Common Figwort
Tamus communis	Black Bryony
Urtica dioica	Nettle
Veronica chamaedrys	Germander Speedwell
Vicia cracca	Tufted Vetch

Does the hedge have the appearance of being over 30 years old?	Yes
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	500 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Dog Rose	Ash	Hawthorn
Average of at least one standard tree per 50m?	N	Hawthorn	Blackthorn	Blackthorn
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N	Blackthorn	Hawthorn	
Ditch along at least half of the hedgerow?	N		Holly	
Parallel hedge within 15m of the hedgerow?	N			
Gaps (% of hedgerow length)	>10%			
Connection (within 10m) with another hedgerow?	Y			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	Y			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	An average of less than 6 woody species was noted within the sampled sections.

Hedge 4

Acer pseudoplatanus	Sycamore
Alliaria petiolata	Garlic Mustard
Cirsium arvense	Creeping Thistle
Cirsium vulgare	Spear Thistle
Crataegus monogyna	**Hawthorn***
Hedera helix	Ivy
Larix sp.	Larch species
Poa annua	Annual Meadow-grass
Poa trivialis	Rough Meadow-grass
Rosa canina	**Dog rose***
Rubus fruticosus agg.	Bramble
Silene dioica	Red Campion

Does the hedge have the appearance of being over 30 years old?	Yes
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections	**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*

Hedge length (m)	180 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Hawthorn	Hawthorn	
Average of at least one standard tree per 50m?	Y	Sycamore	Dog Rose	
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N	Dog Rose	Sycamore	
Ditch along at least half of the hedgerow?	Y	Larch		
Parallel hedge within 15m of the hedgerow?	N			
Gaps (% of hedgerow length)	>10%			
Connection (within 10m) with another hedgerow?	Y			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	N			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	An average of less than 6 woody species was noted within the sampled sections.

Hedge 5

Anthriscus sylvestris	Cow Parsley
Arctium minus	Lesser Burdock
Arrhenatherum elatius	False Oat-grass
Cirsium vulgare	Spear Thistle
Crataegus monogyna	**Hawthorn***
Dactylis glomerata	Cock's-foot
Epilobium montanum	Broad-leaved Willowherb
Galium aparine	Cleavers
Geranium robertianum	**Herb-Robert****
Hedera helix	Ivy
Heracleum sphondylium	Hogweed
Holcus lanatus	Yorkshire-fog
Lonicera periclymenum	Honeysuckle
Plantago major	Greater Plantain
Poa trivialis	Rough Meadow-grass
Prunus spinosa	**Blackthorn***
Quercus sp	**Oak species***
Rosa canina	**Dog rose***
Rubus fruticosus agg.	Bramble
Rumex obtusifolius	Broad-leaved Dock
Tamus communis	Black Bryony
Taraxacum officinale agg.	Dandelion
Urtica dioica	Nettle

Does the hedge have the appearance of being over 30 years old?	Yes
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted

Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	600 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Hawthorn	Hawthorn	Hawthorn
Average of at least one standard tree per 50m?	Y	Oak	Blackthorn	Blackthorn
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N	Blackthorn	Dog Rose	Oak
Ditch along at least half of the hedgerow?	Y	Dog Rose		
Parallel hedge within 15m of the hedgerow?	Y			
Gaps (% of hedgerow length)	>10%			
Connection (within 10m) with another hedgerow?	Y			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	N			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	The hedgerow contains an average of less than six woody species within the sampled sections.

Hedge 6

Alliaria petiolata	Garlic Mustard
Anthriscus sylvestris	Cow Parsley
Crataegus monogyna	**Hawthorn***
Dactylis glomerata	Cock's-foot
Galium aparine	Cleavers
Geranium robertianum	**Herb-Robert****
Holcus lanatus	Yorkshire-fog
Lolium perenne	Perennial Ryegrass
Rubus fruticosus agg.	Bramble
Rumex obtusifolius	Broad-leaved Dock
Sambucus nigra	**Elder***
Tamus communis	Black Bryony
Urtica dioica	Nettle

Does the hedge have the appearance of being over 30 years old?	No
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	160 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Hawthorn		
Average of at least one standard tree per 50m?	N	Elder		
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N			
Ditch along at least half of the hedgerow?	N			
Parallel hedge within 15m of the hedgerow?	N			
Gaps (% of hedgerow length)	>10%			
Connection (within 10m) with another hedgerow?	Y			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	Y			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	An average of less than 6 woody species was noted within the sampled sections.

Hedge 7

Acer pseudoplatanus	Sycamore
Anthriscus sylvestris	Cow Parsley
Cirsium arvense	Creeping Thistle
Cirsium vulgare	Spear Thistle
Crataegus monogyna	**Hawthorn***
Corylus avellana	**Hazel***
Dactylis glomerata	Cock's-foot
Equisetum sp.	Horsetail species
Fraxinus excelsior	**Ash***
Galium aparine	Cleavers
Geranium robertianum	**Herb-Robert****
Geum urbanum	**Wood Avens****
Hedera helix	Ivy
Heracleum sphondylium	Hogweed
Hyacinthoides non-scripta	**Bluebell****
Ilex aquifolium	**Holly***
Poa trivialis	Rough Meadow-grass
Prunus spinosa	**Blackthorn***
Quercus sp.	**Oak species***
Ranunculus acris	Meadow Buttercup
Ranunculus repens	Creeping Buttercup
Rubus fruticosus agg.	Bramble
Sambucus nigra	**Elder***
Silene dioica	Red Campion
Tamus communis	Black Bryony

Urtica dioica	Nettle
Veronica chamaedrys	Germander Speedwell

Does the hedge have the appearance of being over 30 years old?	Yes
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	Yes (Bluebell – WCA8)
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	450 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Oak	Oak	Oak
Average of at least one standard tree per 50m?	Y	Hawthorn	Hawthorn	Hawthorn
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N	Elder	Elder	Ash
Ditch along at least half of the hedgerow?	Y	Hazel	Sycamore	Sycamore
Parallel hedge within 15m of the hedgerow?	Y	Holly	Ash	Blackthorn
Gaps (% of hedgerow length)	<10%	Blackthorn		
Connection (within 10m) with another hedgerow?	Y			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	N			

Does this hedge meet the wildlife and countryside criteria for Importance?	**Yes**	Protected species present (bluebell)

Hedge 8

Cirsium arvense	Creeping Thistle
Crataegus monogyna	**Hawthorn***
Galium aparine	Cleavers
Geranium robertianum	**Herb-Robert****
Hedera helix	Ivy
Poa trivialis	Rough Meadow-grass
Prunus spinosa	**Blackthorn***
Ranunculus acris	Meadow Buttercup
Ranunculus repens	Creeping Buttercup
Rubus fruticosus agg.	Bramble
Rumex obtusifolius	Broad-leaved Dock
Silene dioica	Red Campion
Urtica dioica	Nettle

Does the hedge have the appearance of being over 30 years old?	Yes
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	250 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Hawthorn	Hawthorn	
Average of at least one standard tree per 50m?	N	Blackthorn	Blackthorn	
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N			
Ditch along at least half of the hedgerow?	N			
Parallel hedge within 15m of the hedgerow?	N			
Gaps (% of hedgerow length)	>10%			
Connection (within 10m) with another hedgerow?	Y			
Connection (within 10m) with a pond?	Y			
Connection (within 10m) broadleaved woodland?	Y			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	An average of less than 6 woody species was noted within the sampled sections.

Hedge 9

Cirsium arvense	Creeping Thistle
Cirsium vulgare	Spear Thistle
Crataegus monogyna	**Hawthorn***
Galium aparine	Cleavers
Geranium robertianum	**Herb-Robert****
Hedera helix	Ivy
Rosa canina	**Dog rose***
Rubus fruticosus agg.	Bramble
Rumex obtusifolius	Broad-leaved Dock
Sambucus nigra	**Elder***
Silene dioica	Red Campion
Urtica dioica	Nettle

Does the hedge have the appearance of being over 30 years old?	Unknown
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted

Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	280 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Hawthorn	Hawthorn	
Average of at least one standard tree per 50m?	N	Elder	Elder	
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N	Dog Rose	Dog Rose	
Ditch along at least half of the hedgerow?	N			
Parallel hedge within 15m of the hedgerow?	N			
Gaps (% of hedgerow length)	<10%			
Connection (within 10m) with another hedgerow?	Y			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	N			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	An average of less than 6 woody species was noted within the sampled sections.

Hedge 10

Alliaria petiolata	Garlic Mustard
Cirsium arvense	Creeping Thistle
Crataegus monogyna	**Hawthorn***
Dactylis glomerata	Cock's-foot
Galium aparine	Cleavers
Geranium robertianum	**Herb-Robert****
Hedera helix	Ivy
Poa trivialis	Rough Meadow-grass
Prunus spinosa	**Blackthorn***
Rosa canina	**Dog rose***
Rubus fruticosus agg.	Bramble
Silene dioica	Red Campion

Does the hedge have the appearance of being over 30 years old?	Unknown
Does the hedge run alongside a bridleway, footpath or road used as a public path or a byway open to all traffic?	No
Protected species noted? (WCA Sch 1, 5, 8: RDB birds, vascular plants/insects/other)	None noted
Further assessment (30m sampling) required and undertaken?	Yes

Features and Connections		**Woody species present in 30m samples (listed on Schedule 3 of the *Hedgerow Regulations 1997*) -** *For hedgerows 30-100m in length, species in the central 30m have been recorded. For hedgerows 100-200m species in the central 30m stretches of each half of the hedgerow have been recorded. For hedgerows >200m, species present in the central stretch of 30m within each third of the hedgerow have been recorded.*		
Hedge length (m)	450 m	**Sample 1**	**Sample 2**	**Sample 3**
Wall/bank along at least half its length?	N	Hawthorn	Hawthorn	
Average of at least one standard tree per 50m?	N	Dog Rose	Dog Rose	
3+ woodland ground flora species (***listed on Sch. 2 of the Hedgerow Regulations***) within 1m?	N	Blackthorn	Blackthorn	
Ditch along at least half of the hedgerow?	N			
Parallel hedge within 15m of the hedgerow?	N			
Gaps (% of hedgerow length)	<10%			
Connection (within 10m) with another hedgerow?	Y			
Connection (within 10m) with a pond?	N			
Connection (within 10m) broadleaved woodland?	N			

Does this hedge meet the wildlife and countryside criteria for Importance?	**No**	An average of less than 6 woody species was noted within the sampled sections.

WOODLAND SURVEY RESULTS:

'Mature Wood' Quadrats and Tablefit Analysis

Quadrat 1

Species List

Holcus lanatus	6
Fagus sylvatica, Canopy	5
Poa trivialis	5
Urtica dioica	4
Galium aparine	3
Pteridium aquilinum	3
Quercus cerris, Canopy	3
Rubus fruticosus agg.	3
Silene dioica	3
Betula pendula, Canopy	2
Acer pseudoplatanus, Canopy	1
Bare Ground	1
Geum urbanum	1
Sambucus nigra, Canopy	1
Schedonorus arundinaceus	1

TableFit Results

W24 56 | 79 52 70 55| Rub fr-Hol la underscb
W24a 54 | 75 54 65 54| Rub fr-Hol la underscb Cir arv-Cir vul
W25 36 |100 42 32 33| Pte aq-Rub fr underscb
W 6 34 | 80 38 45 34| Aln glut-Urtic dio wood
W 6d 34 | 71 51 29 33| Aln glut-Urtic dio wood Sambucus nigra

Survey Comments
Mature wood
X: 332281
Y: 362341

Quadrat 2

Species List

Acer pseudoplatanus, Canopy	7
Hyacinthoides non-scripta	7
Larix sp., Canopy	7
Bare Ground	4
Digitalis purpurea	2
Dryopteris filix-mas	2
Galium aparine	2
Silene dioica	2
Sambucus nigra, Understorey	1

TableFit Results

W25a 31 | 54 52 36 34| Pte aq-Rub fr underscb Hyacinth non-sc
W 8e 22 | 34 58 22 49| Fra exc-Ace cam-Mer per Geranium robert
MC12a 20 | 19 18 61 34| Fest rubra-Hyacin non-s Ranunc ficaria
W 8b 20 | 26 41 30 48| Fra exc-Ace cam-Mer per Anemone nemoros
W10e 19 | 33 43 20 61| Que rob-Pte aqu-Rub fru Ace pse-Oxa ace

Survey Comments

X: 332301
Y: 362315

Quadrat 3

Species List

Galium aparine	7
Pinus sylvestris, Canopy	7
Aesculus hippocastanum, Canopy	6
Bare Ground	6
Hyacinthoides non-scripta	4
Urtica dioica	4
Acer pseudoplatanus, Canopy	3
Rubus fruticosus agg.	3
Crataegus monogyna, Understorey	1
Dryopteris dilatata	1

TableFit Results

W21b 43 | 67 69 33 53| Crat mono-Hedera scrub Mercur perennis
W 6e 42 | 71 57 49 32| Aln glut-Urtic dio wood Betula pubesc
W 6 38 | 76 53 30 41| Aln glut-Urtic dio wood
W21a 36 | 73 58 21 38| Crat mono-Hedera scrub Hed hel-Urt dio
W24 33 | 56 56 39 34| Rub fr-Hol la underscb

Survey Comments
Wood by stream
X: 332309
Y: 362303

Quadrat 4

Species List

Fraxinus excelsior, Canopy	7
Acer pseudoplatanus, Canopy	6
Urtica dioica	6
Hyacinthoides non-scripta	5
Ficaria verna	4
Galium aparine	4
Geranium robertianum	4
Geum urbanum	4
Anthriscus sylvestris	3
Bare Ground	3
Sambucus nigra, Understorey	2
Asplenium scolopendrium	1
Dryopteris dilatata	1
Dryopteris filix-mas	1
Hedera helix	1

TableFit Results

W 8e 60 | 69 69 60 81| Fra exc-Ace cam-Mer per Geranium robert
W21b 47 | 77 51 48 59| Crat mono-Hedera scrub Mercur perennis
W 8b 41 | 53 51 49 61| Fra exc-Ace cam-Mer per Anemone nemoros
W 9a 33 | 41 66 32 70| Fra exc-Sor auc-Mer per Typical
OV24 32 | 76 29 72 28| Urtica-Gal ap tall herb

Survey Comments
Area by stream. Open canopy, partially shaded.
X: 332347

Y: 362293

Quadrat 5

Species List

Fraxinus excelsior, Canopy	8
Poa trivialis	7
Acer pseudoplatanus, Canopy	6
Rumex sanguineus	4
Anemone nemorosa	3
Crataegus monogyna, Understorey	3
Geum urbanum	3
Veronica chamaedrys	3
Galium aparine	2
Hyacinthoides non-scripta	2
Milium effusum	2
Ulmus sp., Canopy	2
Arum maculatum	1

TableFit Results

W 8b 44 | 68 65 32 65| Fra exc-Ace cam-Mer per Anemone nemoros
W 8e 40 | 50 53 46 70| Fra exc-Ace cam-Mer per Geranium robert
W21b 28 | 67 48 12 48| Crat mono-Hedera scrub Mercur perennis
W 8 26 | 43 45 28 56| Fra exc-Ace cam-Mer per (subcomms a-d)
W 8g 26 | 29 44 41 54| Fra exc-Ace cam-Mer per Teucrium scorod

Survey Comments

Embankment
X: 332370
Y: 362300

Quadrat 6

Species List

Fraxinus excelsior, Canopy	7
Acer pseudoplatanus, Canopy	6
Geum urbanum	6
Geranium robertianum	5
Galium aparine	3
Sambucus nigra, Canopy	3
Urtica dioica	3
Anemone nemorosa	2
Hyacinthoides non-scripta	2
Arum maculatum	1
Heracleum sphondylium	1
Rumex obtusifolius	1

TableFit Results

W 8e 52 | 60 69 49 92| Fra exc-Ace cam-Mer per Geranium robert
W21b 34 | 70 56 17 47| Crat mono-Hedera scrub Mercur perennis
OV27d 34 | 59 36 41 54| Chamerion tall herb Ace pse-Sam nig
W 8b 32 | 56 58 25 48| Fra exc-Ace cam-Mer per Anemone nemoros
W 8g 30 | 31 51 39 69| Fra exc-Ace cam-Mer per Teucrium scorod

Survey Comments

X: 332411
Y: 362260

Quadrat 7

Species List

Larix sp., Canopy	7
Rubus fruticosus agg.	7
Bare Ground	4
Acer pseudoplatanus, Canopy	3
Fraxinus excelsior, Canopy	3
Galium aparine	1
Hedera helix	1
Sambucus nigra, Understorey	1

TableFit Results

W21a 44 | 69 70 33 51| Crat mono-Hedera scrub Hed hel-Urt dio
W12a 41 | 62 81 28 56| Fagus syl-Merc per wood Mercur perennis
W21 40 | 66 71 25 53| Crat mono-Hedera scrub
OV27d 39 | 65 67 32 41| Chamerion tall herb Ace pse-Sam nig
W24 39 | 43 55 51 61| Rub fr-Hol la underscb

Survey Comments

Wooded clough area. Larch dominates.
X: 332077
Y: 362290

Quadrat 8

Species List

Fraxinus excelsior, Canopy	8
Geum urbanum	7
Poa trivialis	7
Bare Ground	5
Geranium robertianum	4
Hyacinthoides non-scripta	4
Silene dioica	4
Urtica dioica	4
Galium aparine	3
Rubus fruticosus agg.	3
Crataegus monogyna, Understorey	2
Heracleum sphondylium	1

TableFit Results

W 8e 49 | 60 75 47 66| Fra exc-Ace cam-Mer per Geranium robert
W24 48 | 85 72 39 31| Rub fr-Hol la underscb
W21b 44 | 77 65 28 49| Crat mono-Hedera scrub Mercur perennis
W24a 40 | 68 69 36 31| Rub fr-Hol la underscb Cir arv-Cir vul
W 8 38 | 54 67 33 61| Fra exc-Ace cam-Mer per (subcomms a-d)

Survey Comments

X: 332517
Y: 362220

Quadrat 9

Species List

Hyacinthoides non-scripta	7
Fagus sylvatica, Canopy	6
Castanea sativa, Canopy	4
Bare Ground	3

Larix sp., Canopy	2
Dryopteris affinis	1

TableFit Results

W15a 39 | 78 32 82 36| Fagus syl-Des flex wood Fagus sylvatic
W15 29 | 31 38 54 47| Fagus syl-Des flex wood
MC12a 28 | 19 29 61 52| Fest rubra-Hyacin non-s Ranunc ficaria
W10b 27 | 29 44 38 67| Que rob-Pte aqu-Rub fru Anemone nemoros
W12c 26 | 41 32 53 36| Fagus syl-Merc per wood Taxus baccata

Survey Comments
X: 332087
Y: 362347

Quadrat 10

Species List

Hyacinthoides non-scripta	8
Fagus sylvatica, Canopy	7
Fraxinus excelsior, Canopy	4
Bare Ground	3
Betula pendula, Canopy	2
Ficaria verna	2
Tilia sp., Canopy	2
Rubus fruticosus agg.	1

TableFit Results

W12a 53 | 55 73 59 74| Fagus syl-Merc per wood Mercur perennis
W12 48 | 60 59 56 58| Fagus syl-Merc per wood
MC12a 41 | 43 47 63 54| Fest rubra-Hyacin non-s Ranunc ficaria
W15 41 | 47 41 69 50| Fagus syl-Des flex wood
W14 38 | 53 47 58 42| Fagus syl-Rubus fr wood

Survey Comments
X: 332111
Y: 362370

Quadrat 11

Species List

Fraxinus excelsior, Canopy	7
Hyacinthoides non-scripta	7
Bare Ground	4
Rubus fruticosus agg.	4
Betula pendula, Canopy	3
Fagus sylvatica, Canopy	3
Hedera helix	3
Acer pseudoplatanus, Canopy	2
Dryopteris filix-mas	1
Galium aparine	1

TableFit Results

W12a 61 | 85 88 41 74| Fagus syl-Merc per wood Mercur perennis
W 8e 44 | 50 76 43 77| Fra exc-Ace cam-Mer per Geranium robert
W12 44 | 76 63 31 47| Fagus syl-Merc per wood

W10b 42 | 57 49 45 73| Que rob-Pte aqu-Rub fru Anemone nemoros
W10a 41 | 71 60 30 51| Que rob-Pte aqu-Rub fru Typical

Survey Comments
X: 332077
Y: 362382

Quadrat 12

Species List

Fraxinus excelsior, Canopy	7
Hyacinthoides non-scripta	7
Geranium robertianum	5
Rubus fruticosus agg.	5
Acer pseudoplatanus, Canopy	4
Galium aparine	3
Geum urbanum	3
Crataegus monogyna, Understorey	1

TableFit Results

W 8e 55 | 60 100 51 85| Fra exc-Ace cam-Mer per Geranium robert
W 8b 46 | 49 77 47 76| Fra exc-Ace cam-Mer per Anemone nemoros
W 8 44 | 51 87 39 80| Fra exc-Ace cam-Mer per (subcomms a-d)
W12a 42 | 56 65 40 61| Fagus syl-Merc per wood Mercur perennis

Survey Comments
Large wood
X: 332014
Y: 362395

'Woodland Plantation' Quadrats

This is a square parcel of woodland mixed with some evidence of buildings and disturbed ground. Cattle access it. Ground undulates.

Quadrat 1

Species List

Urtica dioica	8
Pinus sylvestris, Canopy	7
Rumex obtusifolius	4
Acer pseudoplatanus, Canopy	3
Arctium minus	3
Poa trivialis	3
Ranunculus repens	3
Sambucus nigra, Understorey	3
Silene dioica	3
Chenopodium album	2
Lapsana communis	2
Rubus fruticosus agg.	2
Cirsium vulgare	1
Fraxinus excelsior, Canopy	1
Stellaria media	1

TableFit Results

OV24 37 | 63 21 87 44| Urtica-Gal ap tall herb
OV24a 33 | 66 15 100 38| Urtica-Gal ap tall herb Typical
W 6e 32 | 67 28 47 47| Aln glut-Urtic dio wood Betula pubesc
W 7a 32 | 60 49 26 49| Aln glu-Fra exc-Lys nem Urtica dioica
W 6d 31 | 61 41 28 51| Aln glut-Urtic dio wood Sambucus nigra

Survey Comments

X: 332159
Y: 362670

Quadrat 2

Species List

Persicaria maculosa	6
Pinus sylvestris, Canopy	5
Poa trivialis	5
Larix decidua, Canopy	4
Capsella bursa-pastoris	3
Urtica dioica	3
Poa annua	2
Pteridium aquilinum	2
Bare Ground	1
Digitalis purpurea	1
Prunus sp., Canopy	1
Salix caprea, Understorey	1
Stellaria media	1

TableFit Results

OV33 25 | 52 43 25 37| Pers lap-Poa ann muddy
OV12a 25 | 58 47 11 47| Poa triv-Myos arve weed Typical
OV19b 20 | 54 35 12 50| Poa ann-Tripl inod weed Lol per-Cap bur
OV10 19 | 65 34 8 17| Poa ann-Senec vulg weed
OV10b 18 | 57 36 8 20| Poa ann-Senec vulg weed Pol avi-Matric

Survey Comments

X: 332159
Y: 362670

Quadrat 3

Species List

Quercus sp., Canopy	7
Bare Ground	4
Poa trivialis	4
Urtica dioica	4
Persicaria maculosa	3
Poa annua	3
Ranunculus repens	3
Acer pseudoplatanus, Canopy	2
Galium aparine	2
Hyacinthoides non-scripta	2
Rumex obtusifolius	2
Silene dioica	2
Digitalis purpurea	1

Pinus sylvestris, Canopy	1
Pteridium aquilinum	1
Rhododendron ponticum	1

TableFit Results

W25a 24 | 80 41 3 14| Pte aq-Rub fr underscb Hyacinth non-sc
OV12a 23 | 58 37 17 37| Poa triv-Myos arve weed Typical
OV24 22 | 78 27 26 27| Urtica-Gal ap tall herb
W 7a 22 | 48 39 24 34| Aln glu-Fra exc-Lys nem Urtica dioica
OV24a 21 | 91 23 28 23| Urtica-Gal ap tall herb Typical

Survey Comments
X: 332159
Y: 362670

Quadrat 4

Species List

Larix sp., Canopy	6
Bare Ground	5
Pinus contorta, Canopy	5
Urtica dioica	4
Betula pendula, Canopy	3
Persicaria maculosa	3
Poa annua	3
Pteridium aquilinum	3
Rumex obtusifolius	3
Capsella bursa-pastoris	2
Poa trivialis	2
Prunus sp., Canopy	2
Stellaria media	2
Galium aparine	1
Hyacinthoides non-scripta	1
Rhododendron ponticum,	1
Silene dioica	1

TableFit Results

W25a 23 | 80 38 8 17| Pte aq-Rub fr underscb Hyacinth non-sc
OV33 20 | 57 35 17 22| Pers lap-Poa ann muddy
W25 19 | 79 30 9 17| Pte aq-Rub fr underscb
OV12a 18 | 58 35 10 20| Poa triv-Myos arve weed Typical
OV24 18 | 78 25 24 16| Urtica-Gal ap tall herb

Survey Comments
X: 332159
Y: 362670

Quadrat 5

Species List

Aesculus hippocastanum, Canopy	8
Larix sp., Canopy	6
Bare Ground	4
Pteridium aquilinum	4
Persicaria maculosa	3
Pinus sylvestris, Canopy	3

Urtica dioica	3
Chenopodium album	2
Poa annua	2
Poa trivialis	2
Prunus sp., Canopy	2
Silene dioica	2
Symphoricarpos albus,	2
Digitalis purpurea	1
Hyacinthoides non-scripta	1
Rumex obtusifolius	1
Stellaria media	1

TableFit Results

W25 21 | 79 30 18 17| Pte aq-Rub fr underscb
OV33 21 | 62 39 14 11| Pers lap-Poa ann muddy
W25a 20 | 66 32 17 17| Pte aq-Rub fr underscb Hyacinth non-sc
OV12a 19 | 63 38 4 10| Poa triv-Myos arve weed Typical
OV10b 14 | 57 27 7 7| Poa ann-Senec vulg weed Pol avi-Matric

Survey Comments
X: 332159
Y: 362670

Quadrat 6

Species List

Pinus contorta, Canopy	7
Pteridium aquilinum	4
Bare Ground	3
Persicaria maculosa	3
Pinus sylvestris, Canopy	3
Urtica dioica	3
Poa trivialis	2
Capsella bursa-pastoris	1
Myosotis sp.	1
Poa annua	1
Ranunculus repens	1
Rumex obtusifolius	1
Stellaria media	1

TableFit Results

OV12a 27 | 67 54 1 12| Poa triv-Myos arve weed Typical
OV33 25 | 62 52 11 12| Pers lap-Poa ann muddy
OV28b 20 | 57 46 0 8| A sto-R rep muddy grass Poa ann-Pol avi
OV19b 19 | 61 39 5 10| Poa ann-Tripl inod weed Lol per-Cap bur
OV10c 18 | 47 53 1 5| Poa ann-Senec vulg weed Agr sto-Rum cri

Survey Comments
X: 332159
Y: 362670

Quadrat 7

Species List

Quercus sp., Canopy	8
Arctium minus	4

Bare Ground	4
Symphoricarpos albus,	4
Urtica dioica	3
Acer pseudoplatanus, Canopy	2
Betula pendula, Canopy	2
Persicaria maculosa	2
Poa trivialis	2
Pteridium aquilinum	2
Rumex obtusifolius	2
Digitalis purpurea	1
Silene dioica	1

TableFit Results

W25 18 | 74 32 3 8| Pte aq-Rub fr underscb
W16a 13 | 60 25 3 5| Que spp-Bet spp-Des fle Quercus robur
W25a 12 | 47 29 3 8| Pte aq-Rub fr underscb Hyacinth non-sc
OV24 11 | 54 22 11 10| Urtica-Gal ap tall herb
OV24a 11 | 66 19 12 9| Urtica-Gal ap tall herb Typical

Survey Comments
X: 332159
Y: 362670

Quadrat 8

Species List

Fagus sylvatica, Canopy	7
Tilia sp., Canopy	6
Arctium minus	3
Digitalis purpurea	3
Silene dioica	2
Stellaria media	2
Galium aparine	1

TableFit Results

W15a 43 | 78 22 100 46| Fagus syl-Des flex wood Fagus sylvatic
W15 37 | 31 27 68 62| Fagus syl-Des flex wood
W12c 32 | 41 22 67 46| Fagus syl-Merc per wood Taxus baccata
W12b 31 | 27 36 57 57| Fagus syl-Merc per wood Sanicul europae
W12 30 | 31 28 52 63| Fagus syl-Merc per wood

Survey Comments
X: 332159
Y: 362670

Quadrat 9

Species List

Quercus sp., Canopy	6
Urtica dioica	5
Bare Ground	4
Sambucus nigra, Understorey	4
Arctium minus	3
Digitalis purpurea	3
Poa trivialis	3
Ranunculus repens	3

Rumex obtusifolius	3
Hyacinthoides non-scripta	2
Persicaria maculosa	2
Salix caprea, Understorey	2
Silene dioica	2
Stellaria media	2
Galium aparine	1
Poa annua	1

TableFit Results

W 6 27 | 68 28 37 39| Aln glut-Urtic dio wood
OV24 26 | 78 27 43 26| Urtica-Gal ap tall herb
OV24a 25 | 91 23 50 23| Urtica-Gal ap tall herb Typical
W 6d 24 | 53 35 27 39| Aln glut-Urtic dio wood Sambucus nigra
OV12a 24 | 67 43 8 20| Poa triv-Myos arve weed Typical

Survey Comments
X: 332159
Y: 362670

Quadrat 10

Species List

Acer pseudoplatanus, Canopy	8
Bare Ground	6
Persicaria maculosa	3
Poa trivialis	2
Urtica dioica	2
Poa annua	1
Rumex obtusifolius	1
Stellaria media	1

TableFit Results

OV12a 28 | 58 80 1 13| Poa triv-Myos arve weed Typical
OV33 25 | 52 74 11 13| Pers lap-Poa ann muddy
OV27d 20 | 27 27 28 95| Chamerion tall herb Ace pse-Sam nig
OV19b 19 | 47 52 5 13| Poa ann-Tripl inod weed Lol per-Cap bur
OV28b 18 | 43 60 0 8| A sto-R rep muddy grass Poa ann-Pol avi

Survey Comments
X: 332159
Y: 362670

Quadrat Data and TableFit Explanation

1.1 When recording and analysing vegetation there are two significant properties of the vegetation types that help define the different communities and sub-communities. Firstly there is abundance, this refers to the dominance of any particular plant within a stand, that is to say the proportion of ground that the plant occupies. For the purposes of NVC analysis the cover abundance is recorded using the Domin scale, where Domin is an abbreviation of dominance. The scale runs from 1, where there may be only one or two individuals in any given sample area to 10 where the dominant species may well occupy 100 % of the plot; as, for example, Common Reed in a dense reedbed. The full scale is as follows:

Percentage cover		**Domin value**
91 -100%		10
76 - 90%		9
51 - 75%		8
34 - 50%		7
26 - 33%		6
11 - 25%		5
4 - 10%		4
< 4%	Many individuals	3
	Several individuals	2
	Few individuals	1

1.2 These percentage bands give an approximation of the abundance of each species in a quadrat in the field. Whilst it is frequent for the upper limits of each band to exceed 100% when the score for each plant is accumulated, especially in layered vegetation such as woodlands, the total upper percentage cannot be less that 100% unless other features such as bare ground, leaf litter or open water are recorded, a quick calculation in the field prevents species being under-recorded.

1.3 The second way that plant species can make their presence felt in any NVC community is by frequency, also known as constancy. Common Reed is expected to be dominant in a set of reedbed samples and it is also very likely to be constant; that is occurring in a high percentage of the samples. On the other hand a species such as Hemp Agrimony often occurs with reeds and can be at very low levels of abundance. It is quite possible for Hemp Agrimony to be present at a Domin level of 2 in eight out of ten reedbed samples. In this case Hemp Agrimony (occurring in 80% of the samples) would also be a constant species, that is to say it is almost as equally frequent as Common Reed, although nowhere near as abundant. The combinations of abundance and frequency are used to define NVC communities and in this case reedbeds with constant Hemp Agrimony would more likely be S26 type than S4 which is more of a reed monoculture. The definitions of frequency are as follows, depending on what percentage of samples a particular species is recorded in:

Percentage occurrence	**Description**	**Frequency Class**
81 -100%	Constant	**V**
61 - 80%	Constant	**IV**
41 - 60%	Frequent	**III**
21 - 40%	Occasional	**II**
1 -20%	Scarce	**I**

1.4 In the NVC floristic tables, published for every vegetation community and sub-community described in the National Vegetation Classification, the frequency is always expressed at a Roman numeral (from **I** -**V**) with the range of dominances

recorded (Domin 1 -10) expressed in Arabic numerals, say (7 - 9) for a more dominant species and (1 - 2) for a much less dominant species. In recognising many NVC communities the frequency of a species can be just as significant as the dominance.

1.5 When entering data into TableFit, or other similar programmes such as MATCH, MAVIS or TURBOVEG, it usually only the Domin levels of each species that are known, the frequency can then be worked out once a full dataset has been entered; how this is done varies from programme to programme. It is possible to work out frequency values for each species in advance of allocating NVC types if so desired. In that case the manual dichotomous keys in each of the five volumes of the NVC can be utilised, having first drawn up floristic tables specific to the site to compare with the floristic tables nationally.

1.6 TableFit version 1.0 is a tried and tested vegetation analysis programme compiled by Dr Mark Hill of the Institute of Terrestrial Ecology in 1996. TableFit has been adopted as standard by TEP ecologists. When NVC samples have been collected, using the approved methodology, the species and Domin data are entered and the programme makes an objective analysis of which vegetation community it most closely matches. However, as the 2000 review of the NVC shows, the classification system is still evolving to some extent and there are some communities that occur in the British Isles that have not yet been classified, this has an effect on the accuracy of some of the output and it is very frequent, for example, for inland grasslands dominated by Red Fescue to be spuriously analysed as Maritime Grasslands even though far from any coastal influence. Therefore, the TableFit output needs to be interpreted carefully, especially when the goodness-of-fit rating descends to Fair or lower (Poor and Very Poor). Whilst the TableFit output is always useful as a guide, the manual keys, the community descriptions and the floristic tables are just as useful and they should all be used together to help an experienced ecologist make the best interpretation.

1.7 The TableFit goodness-of-fit rating can range from 0 to 100, with increasing closeness of fit with ascending scores, the ratings are as follows:

Goodness-of-fit	**Rating**
80 - 100	Very good
70 - 79	Good
60 - 69	Fair
50 - 59	Poor
0 - 49	Very poor

1.8 Even when a very good rating is indicated it is always worth checking through the community descriptions and floristic tables to double check, but these higher ratings are more often than not accurate and provide a very useful tool in helping to identify NVC community types.

1.9 However there are many instances where the top rating of the five best fits should not simply be accepted, in some cases different communities have very similar scores or the scores are simply too low to give any confidence. There are many factors involved: there may well be zones of transition between communities that have been sampled, or in the case of many sites that we are called on to survey, the vegetation is still simply too young to have developed fully into one of the semi-natural community types that the NVC was designed to define. TableFit analysis can be very useful in recognising different communities in transition and sometimes a transitional type is identified and mapped as such. Many samples of developing

vegetation simply cannot be identified to sub-community level and are allocated as undifferentiated communities with no sub-community suffix. The experience of the ecological surveyors is important as they will be able to balance the dominant and frequent species recorded from site and compare various floristic tables and descriptions to arrive at logical conclusions.

1.10 The TableFit output indicates the NVC community type of the top five matches in the first column, the second column then gives the overall 'goodness-of-fit' rating, this is not a percentage but a classification derived from the average of four individual values that are also included in the output table.

1.11 The first column of these four values relates to the fit of the species composition of each sample with the NVC data nationally, but with increased weighting for the species with higher frequency values (**III**-**V**).

1.12 The second column is the mean constancy of species in the sample, as a proportion of what would be expected for each community. For species-poor sample this column 2 number tends to be low, but column 1 value would be high.

1.13 In the third column the figures represent dominance satisfaction, that is to say it checks that species that are expected to have a high Domin value in that community do in fact fulfil that characteristic. This number can be high in samples with a single dominant where that species is present at high Domin levels.

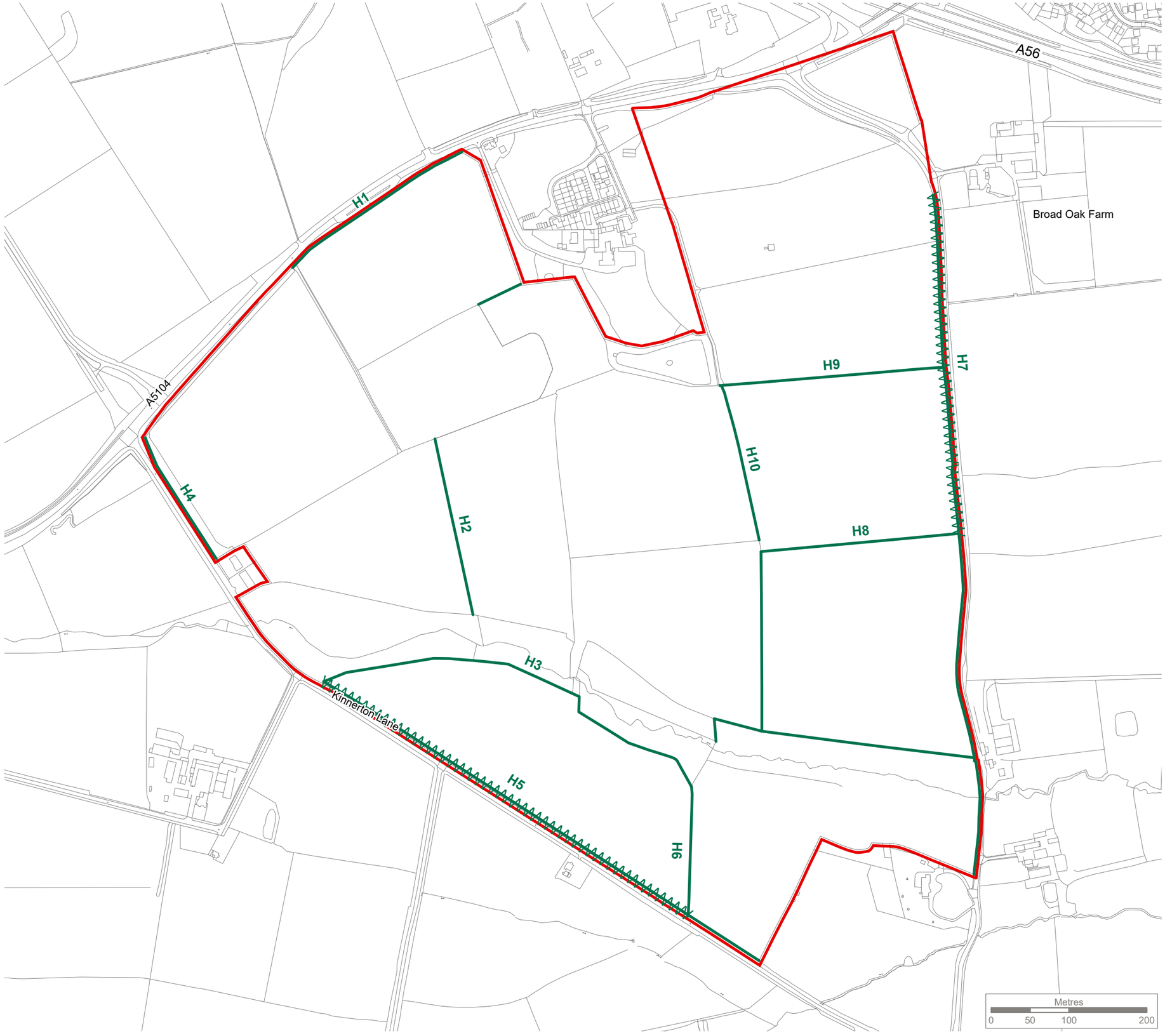
1.14 For the final column the species are weighted by the 0.75 power of their cover value to give a weighted mean constancy

1.15 TableFit carries out all these background calculations and leaves us with simply the 'goodness-of-fit' value to help with interpretation of the field data.

DRAWINGS

G7016.006 HEDGEROW SURVEY

G7016.013 NVC SURVEY



KEY

- Survey Boundary
- Native Species-rich Intact Hedge
- Species-poor Intact Hedge

Note

Hedge 7 is of significant importance

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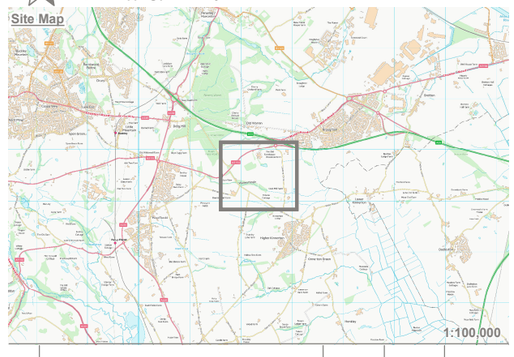
Base mapping provided by client

Site Map



Rev	Description	Drawn	Approved	Date

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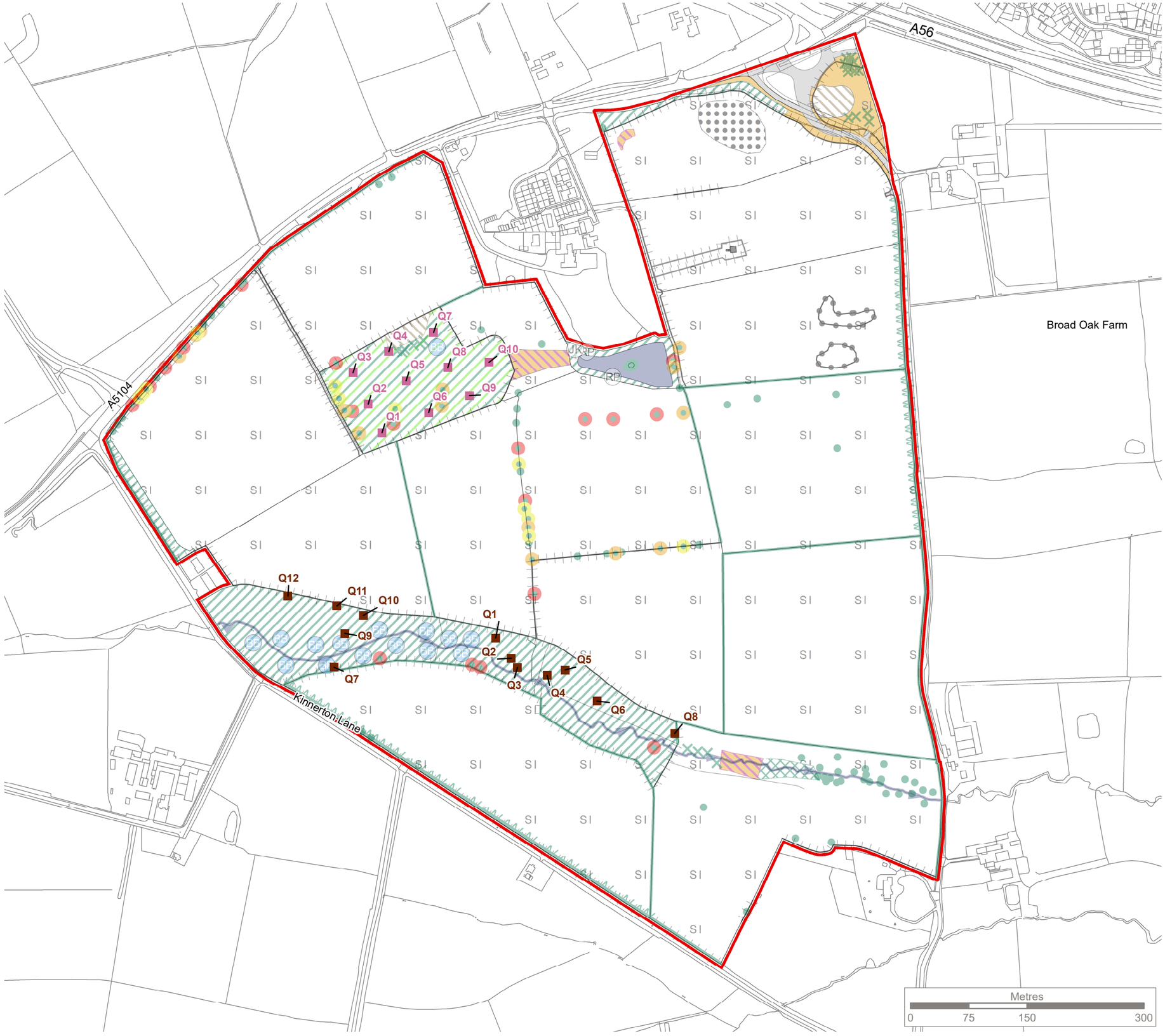
Project
Warren Hall Phase 1 and Phase 2 Ecology Survey

Title
Hedgerow Assessment

Drawing Number
G7016.006

Drawn	Checked	Approved	Scale	Date
CR	JS	JC	1:5,000 @ A3	15/03/2019



KEY

- Survey Boundary
- **National Vegetation Classification Quadrat**
- Quadrats Located in Woodland Plantation
- Quadrats Located in Mature Wood
- Bluebell
- Scattered Scrub
- Scattered Broad-leaved Trees
- Broad-leaved Tree with Low Bat Potential
- Broad-leaved Tree with Moderate Bat Potential
- Broad-leaved Tree with Bat Potential
- Japanese Knotweed
- Rhododendron Ponticum
- Running Water
- Native Species-rich Intact Hedge
- Species-poor Intact Hedge
- Fence
- Earth Bank
- Semi-natural Broad-leaved Woodland
- Plantation Broad-leaved Woodland
- Plantation Mixed Woodland
- Dense/Continuous Scrub
- Semi-improved Neutral Grassland
- Marsh/Marshy Grassland
- Poor Semi-improved Grassland
- Tall Ruderal
- Standing Water
- Buildings
- Bare Ground
- Hardstanding

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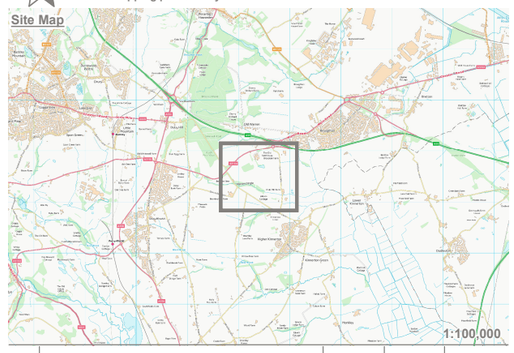
Base mapping provided by client

Site Map



Rev	Description	Drawn	Approved	Date

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Warren Hall

Title
Phase 1 Habitat Survey with National Vegetation Classification Quadrat Locations

Drawing Number
G7016.013

Drawn	Checked	Approved	Scale	Date
CR	RE	JC	1:5,000 @ A3	15/03/2019

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