



Ecological Appraisal

*Submitted as part of the Outline Planning Application for
Land to the east of Clitheroe Road (Lawsonsteads Farm), Whalley*

COMMERCIAL ESTATES GROUP

Land East of Clitheroe Road, Whalley, Lancashire Ecological Appraisal

January 2013

Final



baker*consultants*

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Project data

Client	Commercial Estates Group
Reference	Land East of Clitheroe Road
Report title	Ecological Appraisal
File reference	078.03_rep_001_kc.docx
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Revision tracking

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Executive Summary

Land to the east of Clitheroe Road in Whalley, Lancashire has been highlighted as an area for a mixed housing development. The site is located to the east of Clitheroe Road, north-east of the settlement of Whalley in Lancashire, Ordnance Survey grid reference SD 736 366. The site is primarily improved pasture fields. Other habitats include streams, riparian woodland, broad-leaved woodland, mature/veteran trees, hedgerows and marshy grassland. Spring Wood and the A671 road form the eastern boundary of the site, both of which sit outside the application site. The land slopes gently down to the west.

The site is divided into two Natural Areas: Lancashire Plains and Valleys to the south and Forest of Bowland to the North.

Survey work carried out includes:

- Extended Phase I survey.
- Water vole survey.
- Badger survey.
- White-clawed crayfish habitat assessment.
- Hedgerow assessment.
- Bat roost assessment.
- Bat activity survey.
- Breeding bird survey

The site is primarily improved pasture which has low ecological value. However, the site boundaries have ecological value and sensitive concern. The stream and associated riparian woodland to the south has been highlighted as supporting important flora and also provides a significant bat commuting route for common pipistrelle and soprano pipistrelle bats. A number of trees in this area also have the potential to support bat roosts. The woodland to the east is Spring Wood which is an ancient woodland and is also a Biological Heritage Site.

There are also species-rich hedgerows on site, some of which are classed as “important’ under the Hedgerow Regulations.

It has been recommended that the proposed development put in suitable mitigation and avoidance measures to prevent any adverse ecological impact towards these habitats, to safeguard them for the future and to maintain the value of these habitats in the wider landscape.

I Introduction

I.1 The Proposed Development

- I.1.1 Land to the east of Clitheroe Road in Whalley, Lancashire has been highlighted as an area for a mixed housing development.
- I.1.2 Outline planning permission has already been secured for the western part of the site. This was granted in November 2012 (Application ref: 3/2012/0687).
- I.1.3 Commercial Estates Group (CEG) propose to re-submit a planning application for the wider site (seen below in Figure I) based on a revised masterplan.

I.2 Site Description

- I.2.1 The site is located to the east of Clitheroe Road, north-east of the settlement of Whalley in Lancashire, Ordnance Survey grid reference SD 736 366. The site is primarily improved pasture fields. Other habitats include streams, riparian woodland, broad-leaved woodland, mature/veteran trees, hedgerows and marshy grassland. Spring Wood and the A671 road form the eastern boundary of the site, both of which sit outside the application site. The land slopes gently down to the west and Clitheroe Road.
- I.2.2 The site is divided into two Natural Areas: Lancashire Plains and Valleys to the south and Forest of Bowland to the North¹.

Figure I. Site Location



¹ Natural Areas are sub-divisions of England, each with a characteristic association of wildlife and natural features. They provide a way of interpreting the ecological variations of the country in terms of natural features, illustrating the distinctions between one area and another. Each Natural Area has a unique identity resulting from the interaction of wildlife, landforms, geology, land use and human impact.

I.3 Study Scope

I.3.1 Baker Consultants were commissioned by CEG to undertake the following ecological works in relation to the Site:

- Identify the existing habitats within the site
- Check for evidence of protected species within the area
- Assess the potential for protected species to be present in the area
- Carry out a bat roost assessment of relevant features on site
- Bat activity transect survey
- Automated bat detector survey
- Breeding bird survey
- Identify potential ecological impacts relating to the proposed works
- Make recommendations to enhance the ecological value of the site while implementing the construction proposals.
- Advise the client of relevant wildlife and habitat legislation

2 Methodology

2.1 Desk Study

2.1.1 A desktop study was carried out to determine:

- The known presence of any protected or notable species or habitats in the site or 2km of the site.
- The presence of designated conservation sites such as statutory Sites of Special Scientific Interest (SSSI) or non-statutory Biological Heritage Site (BHS) within the site or within 2km radius of the site.

2.1.2 Lancashire Environment Record Network (LERN) was contacted in October 2010 to supply this information.

2.1.3 A further search of web-based source, NBN gateway² was carried out in January 2013 to gain further details for protected species.

2.1.4 The local Environment Agency's fisheries officer for the area was contacted for records of white-clawed *Austropotamobius pallipes* crayfish within the Whalley area.

2.2 Field Survey

Extended Phase I Habitats

2.2.1 Consultant Ecologists Paul Howden-Leach MIEEM and Kelly Clark MIEEM carried out an Extended Phase I ecology survey on 14th September 2010. The weather during the survey was showers with sunny spells. The site was walked and the habitats were described using the Phase I habitat survey methodology³.

2.2.2 Potential nesting habitats for breeding birds were identified, the habitat was assessed for reptiles and the streams were assessed for suitability to support white-clawed crayfish. The study site was also searched for the presence of invasive species such as Japanese knotweed *Fallopia japonica* or Himalayan balsam *Impatiens glandulifera*.

Badger Survey

2.2.3 Paul Howden Leach checked for signs of badger *Meles meles* such as such as setts, dung pits, hairs and tracks of badger, were made across the site and adjacent woodland. The survey was carried out on the 14th September.

² National Biodiversity Network (2008) *NBN Gateway*. Available at <http://data.nbn.org.uk/> [accessed 01/13]

³ JNCC, (2007). *Handbook for Phase 1 Habitat Survey*, Peterborough.

Water Vole Survey

- 2.2.4 Paul Howden-Leach and Kelly Clark walked and checked the streams for evidence of water voles *Arvicola amphibius* (such as latrines, burrows, feeding remains and prints). The survey work was carried out on 13th September 2010; the weather during the survey was heavy rain and the survey was not completed.
- 2.2.5 Paul Howden-Leach continued the survey work on 19th October 2010. The weather during the survey was dry.

Hedgerow Assessment

- 2.2.6 All hedgerows were walked and assessed following the criteria set out in the Hedgerow Regulations 1997. Number of wooded species in the centre 30m of every 100m section were counted and recorded. Any associated wooded ground flora defined in the Regulations was also recorded.

Bat Roost assessment

- 2.2.7 The habitats within the survey area were assessed for their potential to support roosting bats in accordance with current guidance⁴⁵⁶. Features were inspected from ground level for evidence indicating the presence of roosting bats or for features with the potential to provide bat roost habitats. Evidence indicating the presence of bats would normally include droppings, characteristic staining, scratch marks or the presence of live or dead bats. Trees were inspected for the presence of rot holes, scar crevices, loose bark and covering of dense ivy⁷, while a pumping station building immediately adjacent to the site was searched externally for cavities in brickwork, in eaves or roof spaces all of which offer attractive roosting opportunities for bats.
- 2.2.8 Trees were assessed according to the Bat Conservation Trust *Good Practice Guidelines* as high, medium or low roosting potential, or known roost.
- 2.2.9 The ground assessment used close-focusing binoculars to inspect trees to the canopy. A Cluson Clulite (which has a 500m spot beam) was used to inspect dark cavities and features in shaded areas.
- 2.2.10 Trees assessed as medium roosting potential or higher were climbed for further inspection. A site visit was made on 18th and 19th October 2010 by Paul Howden-Leach MIEEM and Martin Derbyshire AIEEM to survey the trees for likely or actual presence of bats. Both surveyors, who hold survey licences from Natural England, are experienced bat

⁴Mitchell-Jones, A.J. & McLeish, A.P. (Eds.). (1999) *The Bat Workers Manual*, 2nd Edition. JNCC, Peterborough.

⁵ Bat Conservation Trust (2012) *Bat Surveys – Good Practice Guidelines*: 2nd Edition

⁶ Bat Conservation Trust (2007) *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

⁷ Typically ivy stems thicker than 4cm create gaps between the stem and the tree that are favoured by bats. As the ivy plant matures the thicker stems push away from the 'host' tree and create a well insulated pocket for bats to shelter.

ecologists and are Lantra trained, therefore qualified in tree climbing and aerial rescue (NPTC level 2 certification).

- 2.2.11 Roped access tree climbing methods were used to reach the upper parts of the trees. A high anchor point was established on the trees and enabled each surveyor to descend from the top of the tree, and move into a suitable position to inspect any features with bat roost potential. Areas on trees showing signs of possible use by bats or having good roost potential were inspected in detail using a torch and flexible fibre-optic video endoscope.

Bat Activity Survey

- 2.2.12 Three bat activity surveys were carried out, using Batbox Duet bat detectors connected to Edirol digital recorders. This involved walking a transect route around the site including features likely to be used by roosting or commuting/foraging bats. Station stops for 2 minutes were carried out in selected locations on route. The survey transect and station stops took approximately 1.5 hrs to complete from sunset. This allowed all early and later emerging bats to be observed, if present, during the survey. Bat calls recorded during the transect were subsequently downloaded for computer analysis of sonograms.
- 2.2.13 Table 1 below shows the weather conditions, dates and personnel carrying out each survey. The transect route is shown on a plan in Appendix 5.

Table 1. Bat survey Conditions

Date	Personnel	Weather	Sunset time	Time of survey
13th Sept 2010	Kelly Clark MIEEM; Paul Howden-Leach MIEEM	100% Cloud/ Beaufort 4, turning to heavy rain	1930hrs	1930hrs
3rd May 2011	Kelly Clark MIEEM; Carlos Abrahams MIEEM	Clear/still. Temp. 13°C falling to 9°C by end of survey	2042hrs	2058hrs
7th June 2011	Kelly Clark MIEEM; Susan White MIEEM	80% cloud/still and dry after heavy showers in the day	2135hrs	2123hrs

Automated Bat Survey

- 2.2.14 A Wildlife Acoustics SM2 automated bat detector was placed along the boundary of Spring Wood with a microphone positioned on the eastern boundary and another set towards the south-eastern corner of the site on 13th/14th September. It was again left on 7/8th June 2011 on the southern stream. The locations of the bat detector are shown in Appendix 5. The detector was left in place to record bat call data overnight on both occasions.

Breeding Bird Survey

2.2.15 The breeding birds survey methodology broadly followed the 'Common Bird Census' (CBC) devised by the British Trust for Ornithology⁸. This technique records the location and behaviour of every bird present within a defined survey area and includes the mapping of breeding bird territories.

2.2.16 Three visits were undertaken to each parts of the site during the bird breeding season in suitable weather conditions. The visits were made between in the early morning or evening, when birds are most active. The surveys were carried out by Senior Ornithologist Susan White BSc MIEEM and Technical Director Carlos Abrahams MIEEM. The dates, times and weather conditions during these surveys are detailed in Table 2.

Table 2. Breeding Birds Survey dates and weather conditions

Date	Times (hrs)	Weather conditions	Sunrise/set time
06.04.11	0900-1100	16°C, 25% cloud, slight breeze	0628/1954
04.05.11	0604-0720	4°C, clear sky, still	0526/2046
07.06.11	1810-1930	19°C, 70% cloud, still, showers	0439/2137

⁸ Marchant, J.H. (1983) *Common Bird Census Instructions*. British Trust for Ornithology, Tring.

3 Results

3.1 Designated Sites

3.1.1 The desk study provided information on the designated sites listed below in Table 3. Full details are presented in Appendix I.

Table 3. Summary of designated sites of nature conservation within 2km radius of the study site

Name	BHS Code	Grid reference	Location/distance
Brocklehurst Wood	73NE01	SD 753 355	2.02km
Thornber Wood	73NE07	SD 751 359	1.66km
Mitton Wood	73NW05	SD 713 377	2.55km
Calderstones Hospital Woodland/Railway line	73NW09	SD 722 376	1.72km
Calder Bank, Broken Brow	73NW10	SD 738 359	0.73km
Sir John's Wood & Lords Park Wood	73NW12	SD 742 356	1.17km
Planes Wood	73NW13	SD 744 355	1.36km
Spring Wood	73NW14	SD 741 363	Adjacent to the site
Barrow Brookfield	73NW17	SD 731 380	1.49km
Hard Hill Common	73NW18	SD 727 383	1.92km
Banks Wood Marsh	73SW07	SD 737 348	1.80km

3.2 Habitats

Habitats Overview

3.2.1 The locations of the following Target Notes (TN) are indicated in Figure I in Appendix 2: Phase One Habitats Survey Map where the location and extent of habitats can also be seen. Appendix 3 contains details of the botanical species recorded during the survey.

TN1: Southern stream and associated riparian woodland

3.2.2 In the southern section of the site is a stream, which is approximately 2m wide with gradual banks and flows east to west. The stream is bounded by riparian woodland and woodland ground flora, which supports species that indicate ancient woodland (Photo 1). A small area of marshy grassland is present on the northern edge of the stream.

3.2.3 Trees species include wych elm *Ulmus glabra*, elder *Sambucus nigra*, sycamore *Acer pseudoplatanus*, hawthorn *Crataegus monogyna*, ash *Fraxinus excelsior*, pedunculate oak *Quercus robur* and alder *Alnus glutinosa*. Ancient woodland ground flora indicators include

dog's mercury *Mercurialis perennis* and wood sedge *Carex sylvatica*. Other species include common nettle *Urtica dioica*, smooth meadow-grass *Poa pratensis*, creeping buttercup *Ranunculus repens*, bramble *Rubus fruticosus* agg., and cock's-foot grass *Dactylis glomerata*. A full species list is present in Appendix 3.

- 3.2.4 The invasive species Himalayan balsam *Impatiens glandulifera* is also abundant along this stream (Photo 2).

Photo 1: Riparian woodland and stream (TN1)



Photo 2: Himalayan balsam



TN2: Improved pasture

- 3.2.5 Improved pasture fields form the majority of the site (Photo 3 and 4). The grassland is managed by grazing and has a short sward. The grass is dominated by species that indicate it's improved nature such as perennial rye-grass *Lolium perenne* and white clover *Trifolium repens*. However, to the west along the woodland edge, other species are present which wouldn't normally be expected to be located within improved pasture. These species include hairy sedge *Carex hirta*, gaucoous sedge *Carex flacca* and bulrush *Typha latifolia*. The full species list is shown in Appendix 3.

Photo 3 and 4: Improved pasture



TN3: Water pipeline clearing/woodland ride tall ruderal

- 3.2.6 To the south-west corner of the site is a section of the woodland kept clear for water pipes (Photo 5). This area consists of tall ruderal vegetation such as pendulous sedge *Carex pendula*, wood horsetail *Equisetum sylvaticum* and ash *Fraxinus excelsior* saplings. The area is approximately 10m wide by 100m long (to the road). The habitat is immediately adjacent to the eastern boundary.

TN4: Ancient woodland – Spring Wood

- 3.2.7 The eastern boundary is formed by ancient woodland known as Spring Wood. This habitat is also a BHS, which is a local designated site for nature conservation. Trees along the eastern boundary comprise ash, sycamore, wych elm, pedunculate oak, elder, and the understory is dominated by bramble *Rubus fruticosus*.

Photo 5: Tall ruderal habitat (TN3)



Photo 6: Spring wood (TN4)

*TN5/6: Veteran pedunculate oak tree/mature ash tree*

- 3.2.8 Towards the south-east of the site is a veteran oak tree that has been damaged by fire. In the north-east corner of the site is a mature ash-tree which forms part of a species-rich hedgerow. The tree has potential to support other species such as bats and birds. These species are discussed further below in Section 3.3

TN7: Species-rich hedgerow

- 3.2.9 The northern boundary of the site is formed by a species-rich hedgerow (Photo 7). The hedgerow is well managed with an approximate height of 5m and a width of 3m. A wet ditch is also present at the base. This hedgerow was assessed under the Hedgerow Regulations 1997 and is discussed below in paragraph 3.2.13

Photo 7: Species-rich hedgerow (TN7)



Photo 8: Western stream (TN8)



TN8: Western stream

- 3.2.10 A further stream on site is present in the western section of the site that flows north to south and joining the southern stream in the south-west corner. The stream is no more than 1m wide with banks supporting improved pasture and scattered scrub (Photo 8). The banks are shallow in the north becoming steeper towards the south but no more than 0.75m in height. Small rocks and pebbles form the substrate of the stream. A full species list of vegetation along the banks is shown in Appendix 3.

TN9: Hardstanding with ephemeral vegetation

- 3.2.11 An area of hardstanding is present to the west, where buildings appeared to have been cleared. Ephemeral vegetation and scrub has since encroached into this area (Photo 9). A full species list is in Appendix 3.

Photo 9: Hardstanding/ephemeral (TN9)



TN10/11: Species-rich defunct hedgerow with trees

3.2.12 Two hedgerows in the southern field are species-rich with trees. The eastern boundary also supports a dry ditch. These hedgerows were assessed under the Hedgerow Regulations 1997 below in Section 3.2.3. A species list for both hedgerows are in Appendix 3.

Hedgerow assessment

3.2.13 All hedgerows on site were assessed against the criteria of the Hedgerow Regulations 1997. There are 3 species-rich hedgerows and 3 species-poor hedgerows. 2 of the 3 species-rich hedgerows are classed as ecologically 'Important'; these are TNs10 and 11. Species lists of the hedgerows are shown in Appendix 3. The detailed results of the hedgerow assessment are shown in Appendix 4.

3.3 Species

Species desk study overview

3.3.1 LERN provided records for protected and notable species such as national Biodiversity Action Plan (BAP) Species and Local BAP species. The full details are shown in Appendix 1. These are summarised below in Table 4.

Table 4. Species records for within a 2km radius of the site

Common name	Scientific name	Date	Grid reference	Distance from site
Great crested newt	<i>Triturus cristatus</i>	1997	SD 7496 3645	1.37km
Great crested newt	<i>Triturus cristatus</i>	1914	SD 74 35	In search area
Great crested newt	<i>Triturus cristatus</i>	1914	SD 74 35	In search area
Great crested newt	<i>Triturus cristatus</i>	1985	SD 7430 3682	0.73km
Unidentified newt	<i>Triturus/Lissotriton</i>	1997	SD 7496 3682	1.38km
Unidentified newt	<i>Triturus/Lissotriton</i>	1997	SD 7464 3760	1.44km
Unidentified newt	<i>Triturus/Lissotriton</i>	1997	SD 7425 3682	0.69km
Common toad	<i>Bufo bufo</i>	1997	SD 7496 3645	1.37km
Common toad	<i>Bufo bufo</i>	1997	SD 7425 3682	0.69km
Common toad	<i>Bufo bufo</i>	1997	SD 7453 3598	1.12km
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	2010	SD 723 373	1.48km
Water vole	<i>Arvicola amphibius</i>	1977	SD 74 38	In search area
Brown hare	<i>Lepus europaeus</i>	1977	SD 74 38	In search area
Brown hare	<i>Lepus europaeus</i>	2001	SD 750 365	1.4km

3.3.2 The NBN Gateway was interrogated for further protected species within the area. The NBN provided a single historic record for otter dated 1953 in the River Ribble over 2km from the site.

- 3.3.3 No additional records were found for within the 2km search area.
- 3.3.4 LERN supplied 240 bird records of 62 species for the search area (see Appendix I). Bird records from Spring Wood, immediately adjacent to the study site, included blackbird *Turdus merula*, blue tit *Parus caeruleus*, carrion crow *Corvus corone*, chaffinch *Fringilla coelebs*, coal tit *Parus ater*, dunnock *Prunella modularis*, great spotted woodpecker *Dendrocopos major*, great tit *Parus major*, long-tailed tit *Aegithalos caudatus*, nuthatch *Sitta europaea*, robin *Erithacus rubecula*, song thrush *Turdus philomelos* and wood pigeon *Columba palumbus*.
- 3.3.5 There are 11 non-statutory designated sites nearby, none of these have been designated for bird interest. The Biological Heritage Sites all contain habitats likely to provide breeding, shelter and foraging habitats for birds and will be considered when assessing the value of connective habitats between the study site and the wider landscape. There is a Lancashire Biodiversity Action Plan (LBAP) for one of the species occurring on the site, song thrush.

Badgers

- 3.3.6 No signs of badgers *Meles meles* such as setts, footprints, and/or dung pits were found in the site or within Spring Woods.

Water Voles/Otters

- 3.3.7 The streams were walked and checked for signs of water vole and otter *Lutra lutra*. The stream to the west (TN8) had several animal tracks near the water edge. However, no signs such as latrines, burrows, footprints were found. The western stream provides no suitable habitat for otter and the southern stream (TN1) is close to a public footpath and subject to regular disturbance. This stream (TN1) was dry on the latter visit on October after a heavy rainfall and it appears the water flow may be controlled by a sluice gate.

White-clawed Crayfish

- 3.3.8 The streams were assessed for their potential to support white-clawed crayfish *Austropotamobius pallipes*. The two streams on site are on the edge of the Forest of Bowland Natural Area where it is known to have mineral rich waters. The water levels of the streams during the survey work were influenced by weather conditions and had a height between 0.3 m and 0.75 m. However, Stream 1 (TN1) was dry during the visit to the site in October which is thought possibly to be due to management of the water flow through a sluice gate connected to the pumping station. White-clawed crayfish are typically found in a watercourse supporting a height of 0.75 to 1.25 m that flow north to south (as does Stream 2 TN8). Stream 2 also has a substrate consisting of pebbles and stones; suitable for juvenile crayfish, although adults would require bigger rocks, plant root systems and overhanging banks, which are largely absent from Stream 2 (TN8). The variation of water height could also affect the suitability of the banks for burrowing crayfish.

- 3.3.9 Overall the streams have limited value for white-clawed crayfish, although it is possible that if present in the catchment, individual juveniles could persist for a short time.

Reptiles

- 3.3.10 The site itself supports limited habitat for reptile species. The margins close to both streams could provide ideal foraging and basking habitat for reptile species such as grass snake *Natrix natrix* but the remaining area (improved pasture) is considered to be unsuitable for reptiles.

- 3.3.11 Areas immediately to the north of the site and a field immediately to the southeast of the site both support ideal habitat for reptile species.

Bat Roost Assessment

- 3.3.12 A number of trees had moderate to high potential for bats. These are summarised in Table 5 below. Tree numbers refer to the tree report⁹, and the Tree Constraints Plan can be seen in Appendix 7.

Table 5. Summary of bat roost potential

Tree No.	Bat Potential	Description
T4	High	A large open-grown oak with one major feature of interest on the northern aspect of the tree. A large split which is fronted by dry dead wood leaving a large cavity behind. No evidence of bats was recorded at the survey.
T19	Moderate	A mature open-grown ash with some roosting potential. However the majority of features are limited and would only be suitable as a temporary roosting site.
T30	High	A semi-mature alder with two large cavities fronted by deadwood, leaving a dry cavity to the rear with good access. No evidence of bats recorded
T31	High	Mature ash with some good bat potential within the cavity on the lower limbs on the south-west of the tree. Evidence of recent occupation by some sort of mammal or bird was evident, as cobwebs had recently been disturbed. This cavity is relatively small and would only be suitable for bats, mice or small birds such as wren. No nesting material was recorded and no other evidence of bats was recorded.
T33/TN5	High	Very mature/veteran oak tree with two stems. Evidence of fires within the base of the tree. This has resulted in hollowing of the lower part of the tree leaving a number of cavities. Higher up on the southern limb is a large cavity fronted with dead wood with a large dry cavity behind. No evidence of bats was recorded.
T39/TN6	High	An open grown mature ash, within a hedgerow. Only one cavity is present in this tree, located on the western aspect. The cavity is fronted by dead wood and a large dry cavity is located behind this. No evidence of bats was recorded.

⁹ JCA Ltd (2010) Appendix 6: Tree constraints plan.

- 3.3.13 There is a water pumping station outside the south-east corner of the site boundary. This was checked for any roosting features due to its proximity to the site. However, the building is modern and in good condition with all windows, door and roof well sealed providing negligible roosting potential.

Bat activity survey

- 3.3.14 The results of the activity survey have been summarised and tabulated in Appendix 6.
- 3.3.15 The site supports a high level of bat activity, particularly common pipistrelle bats, which commute from the village of Whalley towards Spring Wood mainly along the southern stream and the southern boundary (over existing gardens) of the site. It is highly probable that there are maternity roosts in the village of which are using the site for navigation towards Spring Woods, as well as using the site itself for foraging purposes. The results of the transect activity survey also revealed frequent bat activity across the site, particularly foraging along hedgerows and the tree canopy of Spring Wood. Common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, and the occasional *Myotis* sp, and brown long-eared bat *Plecotus auritus* were recorded during the surveys.

Automated bat survey

- 3.3.16 The SM2 bat recorder recorded a small number of common pipistrelle bats in September 2010. However, it recorded 3000 bat passes during the evening in June. Most of these calls were common pipistrelle, with a smaller number of soprano pipistrelle and the occasional *Myotis* sp. The high number is likely to be a combination of being placed on the commuting route to Spring Woods and also in a place used for regular feeding (under the tree canopy).

Breeding birds

- 3.3.17 28 species of birds were recorded during the site surveys, of which one species was confirmed (C) to be breeding and 7 probably (P) breeding (see Appendix 8 for the species list and Appendix 9 for an explanation of these terms). Table 6 lists these birds, their breeding status and the habitat in which the bird was recorded.

Table 6. Species recorded in the breeding bird surveys

Species	Breeding Status	Site Breeding Habitat
Blackbird <i>Turdus merula</i>	Confirmed	Hedgerow and trees
Blue tit <i>Cyanistes caeruleus</i>	Possible	Hedgerow and trees
Blackcap <i>Sylvia atricapilla</i>	Possible	Hedgerow
Buzzard <i>Buteo buteo</i>	Non-breeding	-
Carrion crow <i>Corvus corone</i>	Present	Mature trees
Chaffinch <i>Fringilla coelebs</i>	Probable	Hedgerow and trees
Chiffchaff <i>Phylloscopus collybita</i>	Probable	Hedgerow and trees
Collared dove <i>Streptopelia decaocto</i>	Possible	Mature trees
Dunnoek <i>Prunella modularis</i>	Probable	Hedgerow and trees

Great tit <i>Parus major</i>	Probable	Hedgerow and trees
Greenfinch <i>Carduelis chloris</i>	Possible	Hedgerow
Grey heron <i>Ardea cinerea</i>	Non-breeding	-
Herring gull <i>Larus argentatus</i>	Non-breeding	-
House martin <i>Delichon urbica</i>	Non-breeding	-
Jackdaw <i>Corvus monedula</i>	Possible	Mature trees
Kestrel <i>Falco tinnunculus</i>	Possible	Mature trees
Long-tailed tit <i>Aegithalos caudatus</i>	Possible	Hedgerow
Magpie <i>Pica pica</i>	Possible	Hedgerow and trees
Mallard <i>Anas platyrhynchos</i>	Non-breeding	-
Nuthatch <i>Sitta europaea</i>	Possible	Mature trees
Pheasant <i>Phasianus colchicus</i>	Non-breeding	-
Robin <i>Erithacus rubecula</i>	Probable	Hedgerow and trees
Rook <i>Corvus frugilegus</i>	Non-breeding	Mature trees
Song thrush <i>Turdus philomelos</i>	Probable	Hedgerow and trees
Stock dove <i>Columba oenas</i>	Possible	Mature trees
Swift <i>Apus apus</i>	Non-breeding	-
Woodpigeon <i>Columba palumbus</i>	Probable	Mature trees
Wren <i>Troglodytes troglodytes</i>	Possible	Hedgerow

Great crested newts

3.3.18 The data search provided records for great crested newts. However, no impacts are anticipated towards this species as no suitable breeding ponds were found on site. In addition, interrogation of OS maps did not find any pond close to the site.

4 Assessment

4.1 Legislation and Policy

- 4.1.1 The National Planning Policy Framework (NPPF) was brought into force on 27 March 2012. Its key aim is to help deliver sustainable development, with environmental issues being one of the three dimensions within this. It includes a range of statements and policies relating to biodiversity and nature conservation, with the aim of 'moving from a net loss of biodiversity to achieving net gains for nature' (Paragraph 9).
- 4.1.2 The NPPF states that 'the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government' commitment to halt the overall decline in biodiversity' (Paragraph 109).
- 4.1.3 Local planning authorities should aim to conserve and enhance biodiversity when determining planning applications (Paragraph 118), by ensuring that: significant harm is avoided, mitigated or compensated (especially for irreplaceable habitats); impacts on designated sites are prevented and; biodiversity is incorporated in and around developments. Also, to allow the appropriate consideration of ecological issues within applications, planning decisions, 'should be based on up-to-date information about the natural environment – this should include an assessment of existing and potential components of ecological networks' (Paragraph 165).
- 4.1.4 The NPPF is supported by the detailed Government Circular: Biodiversity and Geological Conservation, ODPM 06/2005.

4.2 Designated Sites

- 4.2.1 The site shares its eastern boundary with Spring Wood BHS, which is ancient woodland. Spring Wood has previously been fragmented by the A671 road, which has split the BHS into two. The majority of woodland is on the eastern side of this road. The woodland next to the site is approximately 1.6ha in size.
- 4.2.2 The new masterplan of the proposed development largely protects the boundary of the woodland with much of the eastern edge being green space. Where a small section of housing backs onto the woodland, this has been protected by a proposed buffer strip of woodland planting.
- 4.2.3 Indirect impacts to consider could include an increase of disturbance from members of the public, new home-owners and dog walkers which may include acts of vandalism and increase in light levels. Although through masterplanning, these potential impacts have

been considered in the design, in addition, it is thought that there will only be minimal impacts towards the small section of woodland to the west of the A671 road.

4.3 Habitats

TN1 Stream and riparian woodland

4.3.1 This southern stream and associated woodland and marshy grassland habitat is considered to have ecological value at a local level. The presence of ancient woodland flora indicates that this area has been wooded for a considerable amount of time and is most likely to have linked (and still does to a certain extent) to 'Spring Wood', and 'Sir John's Wood and Lord's Park Wood' BHSs, which are both ancient woodlands. This habitat area is at present significant to the distribution of bats in the area (discussed below in Section 4.4).

4.3.2 The proposed development also has the potential to spread Himalayan balsam across the site. However, without future management of this part of the site, the presence of Himalayan balsam could result in the loss of woodland flora.

TN2 Improved pasture

4.3.3 The fields of improved pasture are considered to be of limited ecological value and any impact from future potential development would not be ecologically significant.

TN3 Water pipeline

4.3.4 This habitat is adjacent to the site and the species present are of low ecological value. The proposed development is not to affect this area and therefore no impacts are anticipated.

TN4 Spring Wood

4.3.5 The impacts to this woodland have been discussed in the designated sites section above in 4.2.

TN5/6 Veteran Oak and mature ash

4.3.6 These trees were highlighted as having bat potential. The impact towards these trees, along with further mature trees with bat potential are discussed further below in Section 4.4.

TN7, 10 & 11 Species-rich hedgerows

4.3.7 Hedgerows are a UKBAP priority habitat and are considered to have ecological value at local level. Re-establishing a hedgerow composition and structure equivalent to the existing hedgerows will take longer and full re-instatement will not be possible in the short term. These hedgerows were assessed under the Hedgerow Regulations and are discussed further in Section 4.3.10 below.

TN8 Stream

- 4.3.8 Watercourses act as wildlife corridors and it is considered that this stream has ecological value at site level. The stream has been incorporated into the masterplan as green space and therefore shall not be directly lost as a result of the development. However, the proposed development has the potential spread Himalayan balsam and silt downstream if not managed correctly, which would have an adverse ecological impact.

TN9 Ephemeral/hardstanding

- 4.3.9 Ephemeral and hardstanding habitat has low ecological value and no impacts are anticipated as a result of the proposed development.

Hedgerow Regulations

- 4.3.10 The Hedgerow Regulations 1997 contain the detailed arrangements for a system to protect those important hedgerows in England and Wales. The Regulations set out criteria that must be used by local planning authorities in determining which hedgerows are important. The criteria relate to the value of the hedgerows from an archaeological, historical, landscape or wildlife perspective. They exclude hedgerows that are less than 30 years old. Removal of a hedgerow in contravention of the Regulations is a criminal offence.
- 4.3.11 Two of the species-rich hedgerows in the southern field (TN10/11) are considered to be important under the ecological criteria of the Regulations. These hedgerows in question are to be incorporated into the masterplan of the proposed development and no direct impacts are anticipated.

4.4 Species

- 4.4.1 Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places a duty on every public authority to have regard to conserving biodiversity. Section 41 of the same Act requires that the Secretary of State must publish a list of the living organisms and types of habitats that are of 'Principal Importance' for the purpose of conserving biodiversity. The Secretary of State must take steps, as appear reasonably practicable, to further the conservation of those living organisms and habitats in any list published under this section. The list of species and habitats of principal importance currently includes 943 species and 56 habitats.
- 4.4.2 The sections below provide an evaluation, description of potential impacts and assessment of ecological effects for each species or group relevant to the study area.

Badger

- 4.4.3 Badgers are protected under the Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing

badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. Removal of significant areas of badger foraging habitat may also contravene the Act, as it could be regarded as cruelty.

- 4.4.4 No signs of badgers were located during the survey and no records were provided by the record centre. However, badgers are a highly mobile species and can colonise an area at any given time. As there were no badgers present during the survey, no impacts towards this species are anticipated.

Water Vole/Otter

- 4.4.5 Otters and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended by the CROW Act 2000), and under Conservation of Habitats and Species Regulations 2010. In summary, these make it an offence to damage, destroy or obstruct any place used by otters for breeding and shelter, disturb an otter, or kill, injure or take any otter.
- 4.4.6 Water voles are protected under the Wildlife and Countryside Act 1981 (as amended by the CROW Act 2000). This makes it an offence to kill, injure or take any water vole, damage, destroy or obstruct access to any place of shelter or protection that the animals are using, or disturb voles while they are using such a place.
- 4.4.7 Water vole and otter are a UK Biodiversity Action Plan species and is also listed as a Species of Principal Importance under the provisions of the NERC Act 2006.
- 4.4.8 No signs of otters or water vole were found during the surveys. The data search and the NBN gateway provided historic records (1969 and 1977) for water voles from the Great Harwood and Barrow areas. These locations are over 2km from the site. The NBN provided a single historic record for otter dated 1953 in the River Ribble and again is over 2km from the site.
- 4.4.9 The streams were walked and checked for signs of water voles and otter and none were found. The stream and woodland (TN1) provides cover for species such as otter but the area is subjected to disturbance from the adjacent footpath. This stream waterflow is also thought to be controlled by a sluice gate. Stream 2 (TN8) has potential to support water voles but no evidence was found to indicate that they are currently present. Therefore no impacts towards these species are anticipated as a result of the proposed development.

White-clawed Crayfish

- 4.4.10 White-clawed crayfish is protected under Wildlife and Countryside Act 1981 (as amended by the CROW Act 2000). This makes it illegal either to take it from the wild or sell it without an appropriate licence from the appropriate nature conservation agency. White clawed crayfish is a UK Biodiversity Action Plan species and is listed as a Species of Principal Importance under the provisions of the NERC Act 2006.

- 4.4.11 No records for white-clawed crayfish from the record centre or the Environment Agency were received. Further interrogation of the NBN Gateway revealed the nearest records are over 10km north in the River Ribble.
- 4.4.12 The habitat assessment of the two streams showed that the streams have some limited potential for crayfish. However, it is considered unlikely that they would be present due to the small size and shallowness of the stream. Therefore no impact towards this species is anticipated as a result of the proposed development.

Reptile

- 4.4.13 All British reptiles are protected under the Wildlife and Countryside Act 1981 (as amended by the CROW Act 2000). Grass snake, slow-worm, common lizard and adder are protected against intentional killing or injury and against sale. In addition, all British reptiles are UKBAP priority species.
- 4.4.14 No records were provided by the record centre for within the search area. The streams provide some limited potential for grass snakes. The adjacent land to the north and the south support habitat characteristics that could potentially provide cover and basking areas for reptile species.

Bat Roost Assessment

- 4.4.15 Bats and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended), and by the Conservation of Habitats and Species Regulations 2010. Taken together, these make it an offence to:
- a) Deliberately capture, injure or kill a bat;
 - b) Deliberately disturb any bat, in particular any disturbance which is likely to (i) impair their ability to survive, breed, reproduce or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or (ii) to affect significantly the local distribution or abundance of the species to which they belong.
 - c) To be in possession or control of any live or dead bat or any part of, or anything derived from a bat;
 - d) Damage or destroy a breeding site or resting place of a bat;
 - e) Intentionally or recklessly obstruct access to any place that bat uses for shelter or protection;
 - f) Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.
- 4.4.16 A bat roost may be any structure (tree/building/bridge etc.) a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected whether or not the bats are present at the time.

- 4.4.17 Seven bat species are listed in the UK Biodiversity Action Plan and are listed as Species of Principal Importance under the provisions of the NERC Act 2006
- 4.4.18 Six trees on site were assessed as having good bat roost potential. Should any future development affect these trees, there could be the potential to disturb and destroy bat roosts. In addition, if bats are present at the time of the works then it is likely that bats would be disturbed and/or potentially killed and injured. Such an impact is likely to give rise to an offence under the legislation set out above.

Bat Activity Survey

- 4.4.19 A significant number of common pipistrelle bats were observed commuting from Whalley village, along the southern stream towards Spring Wood at the east of the site during the three surveys. Common pipistrelle bats were also observed flying east from the village along the southern boundary of the site, over existing gardens from housing that backs onto the site.
- 4.4.20 A moderate number of soprano pipistrelle bats were recorded flying from the village using the southern stream for commuting purposes, although this behaviour was only noted during the September 2010 survey.
- 4.4.21 Pipistrelle bats, *Myotis* sp, and brown long-eared bats were recorded frequently, foraging across the site, mainly using hedgerow boundaries, trees, scrub and woodland canopies for feeding opportunities.
- 4.4.22 The proposed development is unlikely to significantly affect the tree line along the southern stream, and it is anticipated that this route will continue to be used by bats for commuting to Spring Wood and foraging purposes. Therefore it is considered unlikely that the development will disturb the bats by affecting their ability to survive and/or significantly affect the distribution of the local population.

Breeding Bird

- 4.4.23 All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to intentionally or recklessly disturb them while they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.
- 4.4.24 There are eight species of bird confirmed or probably breeding within the survey area and further species present in habitat that has the potential to support breeding.
- 4.4.25 Two species of birds recorded on site during the surveys are Priority Species in the UKBAP, song thrush and dunnock. Song thrush is also a priority species in the Lancashire Species Action Plan.

- 4.4.26 Site clearance or construction works, if undertaken during the bird breeding season, could potentially damage active nests and result in an offence under the legislation. This can be avoided by timing works to remove vegetation in the autumn/winter months outside the bird breeding season, which is generally March to August.
- 4.4.27 The habitats assessed above of highest ecological value on the site are considered to be habitats of value for the birds observed during the survey.
- 4.4.28 The masterplan for the proposed development generally protect these habitats considered to be of value. In addition, the proposed planting scheme and gardens associated with the housing will also provide habitats for foraging and nesting birds. Therefore no impact towards breeding bird habitat is anticipated.

5 Recommendations

5.1 Designated Site

- 5.1.1 It is recommended that a hedgerow and fence be erected between the proposed development site and Spring Wood BHS to create a barrier and deter access and disturbance.
- 5.1.2 It is also recommended that during any construction activities, heavy vehicles must keep at least 30m from the woodland boundary to prevent soil compaction and damage to tree roots.

5.2 Habitats

TNI Stream and riparian woodland

- 5.2.1 It is recommended that this habitat area is protected from the proposed development. This includes leaving the habitat *in situ* as much as it is possible, protect from pollution going into the stream, keeping light levels low or direct away from the woodland, maintaining footpaths to reduce impacts to sensitive areas, and creating a sensible buffer zone from the proposed development.

Himalayan balsam

- 5.2.2 It is recommended that the Himalayan balsam on site is controlled and removed to prevent further spread. Advice from an appropriate company should be sought on the best way to achieve this prior to the start of any proposed development

Bat roost survey/tree works

- 5.2.3 The trees highlighted as having moderate to high bat potential should be avoided as part of the development. However, if this is not possible, Table 7 below summarises the recommendations for each of the trees.

Table 7. Recommendations for trees with high bat roosting potential

Tree no. and species	BCT category	Recommendations
T4 Oak T30 Alder T31 Ash T33 Oak T39 Ash	High	Should these trees require any major pruning, or if they are to be removed as a result of the development, the trees should be re-climbed prior to works being undertaken, and taken down under the supervision of a licensed ecologist. Artificial lighting shining onto the trees should also be avoided.
T19 Ash	Moderate	Should any tree work be required on this tree it is recommended that this is undertaken during the winter months and under the supervision of a licensed ecologist.

If further work is required for the trees and a bat roost is found to be present, then a licence will need to be sought from Natural England prior to felling. In this case, the licence application must demonstrate that alternative approaches to trees being felled have been considered, such as diversion of paths to avoid hazardous trees or removing unsafe limbs instead of the whole tree.

5.3 Mitigation

To offset and/or to avoid any adverse impact from the development, it is recommended that the following mitigation measures should be carried out:

- To avoid committing an offence under the Wildlife and Countryside Act it will be necessary to programme all construction works that might directly impact upon breeding birds to the September-February period outside the bird breeding season.
- Keep existing habitat features, such as mature trees/hedgerows, wherever possible.
- If the removal of hedgerows is unavoidable, then replace with features that could be used by commuting bats, for example with a suitable planting scheme.
- The Masterplan for the development is to include the southern stream as part of open space. Any artificial lighting should avoid this area.
- Artificial lighting should be directed away from Spring Wood. Other bat features within the site should also be protected from unnecessary light spill by using direct lighting, e.g. hoods, shields, and louvers.
- Bollard lighting rather than overhead lighting should be used for lighting footpaths.

6 Summary

6.1.1 Land east of Clitheroe Road in Whalley has been highlighted for potential mixed development. The site is predominately improved pasture which is of low ecological value. However, the boundaries to the site and a stream to the south are of ecological value and have been incorporated into the final layout of the proposed development. However these areas are sensitive and need to be protected by the proposed development. This includes:

- Maintain protection of bat commuting route.
- Buffer zones at Spring Wood and the stream/woodland at TNI to reduce potential disturbance.
- Protection of increase in light levels.
- The removal of Himalayan balsam to prevent further spread.

Appendix I: Data Trawl



Legend

- Buffer_of_Whalley
- Whalley
- Biological Heritage Sites
- SSSI

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Legend

- Buffer_of_Whalley
- Whalley
- Lancashire_BAP_Provisional_Long_List

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Lancashire County Heritage Sites

Biological Heritage Site

Spring Wood



Site Boundary

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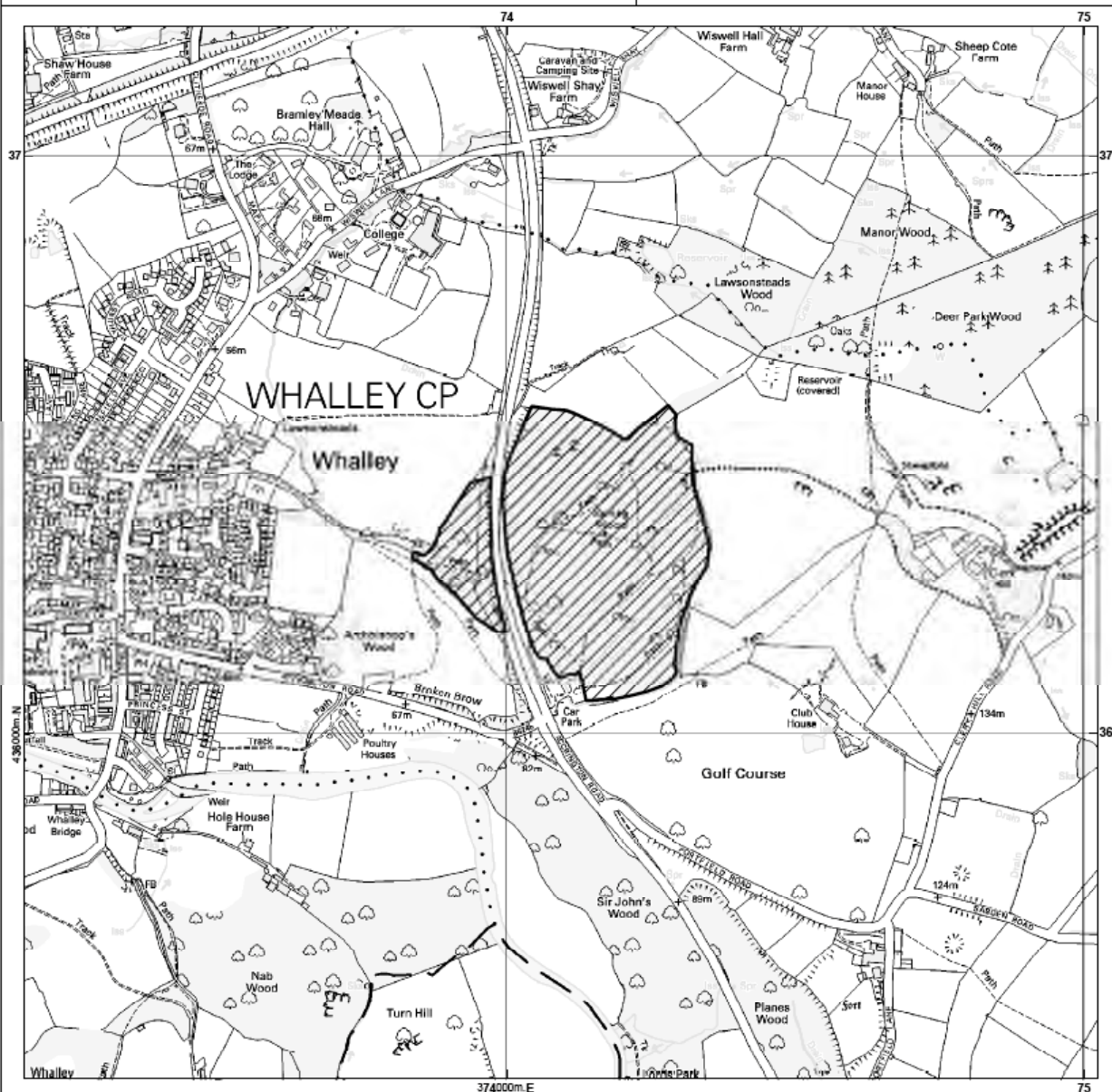
This map shows only the boundary of the Biological Heritage Site named above. It does not show any other designated sites which may occur within the area covered by the map.

Ref No. 73NW14

Biological Heritage Sites Partnership

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Natural England



Grid ref. SD741363

Scale 1:10,000



Lancashire

Boundary revised

Date of map 26/10/10



Blackbird	Turdus merula	Birds of Conservation Concern: Amber, species of medium conservation concern	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Blackbird	Turdus merula	Birds of Conservation Concern: Amber, species of medium conservation concern	Spring Wood, Whalley	23/03/2001	SD742363	
Blackbird	Turdus merula	Birds of Conservation Concern: Amber, species of medium conservation concern		1999	SD73P	1 Count of proved breeding
Blackbird	Turdus merula	Birds of Conservation Concern: Amber, species of medium conservation concern		1999	SD73J	1 Count of proved breeding
Blackbird	Turdus merula	Birds of Conservation Concern: Amber, species of medium conservation concern		1998	SD73N	1 Count of proved breeding
Blackbird	Turdus merula	Birds of Conservation Concern: Amber, species of medium conservation concern	Wiswell	23/11/2001	SD 750 365	
Blackbird	Turdus merula	Birds of Conservation Concern: Amber, species of medium conservation concern		1999	SD73I	1 Count of proved breeding
Blackcap	Sylvia atricapilla	Biodiversity Lists - Long List		1999	SD73P	1 Count of proved breeding
Blackcap	Sylvia atricapilla	Biodiversity Lists - Long List		1999	SD73I	1 Count of proved breeding
Blackcap	Sylvia atricapilla	Biodiversity Lists - Long List		1999	SD73I	1 Count of possible breeding
Blackcap	Sylvia atricapilla	Biodiversity Lists - Long List		1998	SD73N	1 Count of proved breeding
Blackcap	Sylvia atricapilla	Biodiversity Lists - Long List		1999	SD73J	1 Count of proved breeding
Bluetit	Parus caeruleus	Berne Convention Appendix 2		1998	SD73N	1 Count of proved breeding
Bluetit	Parus caeruleus	Berne Convention Appendix 2	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Bluetit	Parus caeruleus	Berne Convention Appendix 2	Spring Wood, Whalley	23/03/2001	SD742363	
Bluetit	Parus caeruleus	Berne Convention Appendix 2		1999	SD73J	1 Count of proved breeding
Bluetit	Parus caeruleus	Berne Convention Appendix 2		1999	SD73I	1 Count of proved breeding
Bluetit	Parus caeruleus	Berne Convention Appendix 2		1999	SD73I	1 Count of proved breeding

Bluetit	Parus caeruleus	Berne Convention Appendix 2 Birds of Conservation Importance (BOCI):Rapidly declining but common British breeding birds Lancs BAP Provisional Long List		1999	SD73P	1 Count of proved breeding
Bullfinch	Pyrrhula pyrrhula			1999	SD73I	1 Count of possible breeding
Carrion Crow	Corvus corone subsp. corone			1999	SD73I	1 Count of proved breeding
Carrion Crow	Corvus corone subsp. corone		Spring Wood BHS 73NW14	2001	SD741363	1 Count
Carrion Crow	Corvus corone subsp. corone		Spring Wood, Whalley	23/03/2001	SD742363	
Carrion Crow	Corvus corone subsp. corone			1999	SD73P	1 Count of proved breeding
Carrion Crow	Corvus corone subsp. corone		Calderstones Hospital Grounds	14/07/2009	SD72063650	2 Count of feeding
Carrion Crow	Corvus corone subsp. corone		Wiswell	23/11/2001	SD 750 365	
Carrion Crow	Corvus corone subsp. corone			1999	SD73J	1 Count of proved breeding
Carrion Crow	Corvus corone subsp. corone			1998	SD73N	1 Count of possible breeding
Chaffinch	Fringilla coelebs	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Chaffinch	Fringilla coelebs	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)	Spring Wood, Whalley	23/03/2001	SD742363	
Chaffinch	Fringilla coelebs	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)	Wiswell	23/11/2001	SD 750 365	
Chaffinch	Fringilla coelebs	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)		1999	SD73I	1 Count of proved breeding
Chaffinch	Fringilla coelebs	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)		1999	SD73J	1 Count of proved breeding
Chaffinch	Fringilla coelebs	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)		1998	SD73N	1 Count of proved breeding
Chaffinch	Fringilla coelebs	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)		1999	SD73P	1 Count of proved breeding

Chiffchaff	Phylloscopus collybita	Biodiversity Lists - Long List		1999	SD73I	1 Count of proved breeding
Chiffchaff	Phylloscopus collybita	Biodiversity Lists - Long List		1998	SD73N	1 Count of proved breeding
Chiffchaff	Phylloscopus collybita	Biodiversity Lists - Long List		1999	SD73P	1 Count of proved breeding
Coal tit	Parus ater	Biodiversity Lists - Long List		1999	SD73I	1 Count of proved breeding
Coal tit	Parus ater	Biodiversity Lists - Long List	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Coal tit	Parus ater	Biodiversity Lists - Long List	Spring Wood, Whalley	23/03/2001	SD742363	
Collared Dove	Streptopelia decaocto	Birds Directive Annex 2.2		1999	SD73I	1 Count of proved breeding
Collared Dove	Streptopelia decaocto	Birds Directive Annex 2.2		1998	SD73N	1 Count of proved breeding
Collared Dove	Streptopelia decaocto	Birds Directive Annex 2.2		1999	SD73J	1 Count of proved breeding
Collared Dove	Streptopelia decaocto	Birds Directive Annex 2.2		1999	SD73P	1 Count of proved breeding
Common Sandpiper	Actitis hypoleucos	Bonn Convention Appendix 2		1999	SD73J	1 Count of proved breeding
Cuckoo	Cuculus canorus	UK Biodiversity Action Plan priority species		1999	SD73I	1 Count of possible breeding
Curlew	Numenius arquata	Farm Environment Plan Guidance 007: Table 2		1999	SD73J	1 Count of proved breeding
Curlew	Numenius arquata	Farm Environment Plan Guidance 007: Table 2		1999	SD73P	1 Count of proved breeding
Curlew	Numenius arquata	Farm Environment Plan Guidance 007: Table 2		1998	SD73N	1 Count of proved breeding
Dipper	Cinclus cinclus	Biodiversity Lists - Long List	Sager Hey Planatation, upstream of Sabden Brook	09/03/1995	SD7535	
Dunnock	Prunella modularis	Bird Population Status: amber		1999	SD73J	1 Count of proved breeding

Dunnock	Prunella modularis	Bird Population Status: amber	Spring Wood BHS 73NW14	27/02/1996	SD741363	
Dunnock	Prunella modularis	Bird Population Status: amber		1999	SD73P	1 Count of proved breeding
Dunnock	Prunella modularis	Bird Population Status: amber		1999	SD73I	1 Count of proved breeding
Dunnock	Prunella modularis	Bird Population Status: amber		1998	SD73N	1 Count of possible breeding
Feral Pigeon	Columba livia feral	Birds Directive Annex 2.1		1999	SD73J	1 Count of proved breeding
Feral Pigeon	Columba livia feral	Birds Directive Annex 2.1		1999	SD73I	1 Count of proved breeding
Garden Warbler	Sylvia borin	The Wildlife (Northern Ireland) Order 1985 (Schedule 1 Part 1)		1998	SD73N	1 Count of proved breeding
Garden Warbler	Sylvia borin	The Wildlife (Northern Ireland) Order 1985 (Schedule 1 Part 1)		1999	SD73I	1 Count of proved breeding
Garden Warbler	Sylvia borin	The Wildlife (Northern Ireland) Order 1985 (Schedule 1 Part 1)		1999	SD73I	1 Count of possible breeding
Goldcrest	Regulus regulus	Biodiversity Lists - Long List		1999	SD73I	1 Count of possible breeding
Goldcrest	Regulus regulus	Biodiversity Lists - Long List		1998	SD73N	1 Count of possible breeding
Goldcrest	Regulus regulus	Biodiversity Lists - Long List		1999	SD73I	1 Count of proved breeding
Goldcrest	Regulus regulus	Biodiversity Lists - Long List		1999	SD73J	1 Count of proved breeding
Goldfinch	Carduelis carduelis	Berne Convention Appendix 2		1998	SD73N	1 Count of proved breeding
Goldfinch	Carduelis carduelis	Berne Convention Appendix 2		1999	SD73J	1 Count of proved breeding
Goldfinch	Carduelis carduelis	Berne Convention Appendix 2		1999	SD73P	1 Count of proved breeding
Goldfinch	Carduelis carduelis	Berne Convention Appendix 2		1999	SD73I	1 Count of proved breeding
Goosander	Mergus merganser	Birds Directive Annex 2.2		1999	SD73J	1 Count of proved breeding

Great Spotted Woodpecker	Dendrocopos major	Berne Convention Appendix 2	Spring Wood, Whalley	23/03/2001	SD742363	
Great Spotted Woodpecker	Dendrocopos major	Berne Convention Appendix 2		1999	SD73I	1 Count of possible breeding
Great Spotted Woodpecker	Dendrocopos major	Berne Convention Appendix 2	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Great Spotted Woodpecker	Dendrocopos major	Berne Convention Appendix 2		1999	SD73P	1 Count of possible breeding
Great Spotted Woodpecker	Dendrocopos major	Berne Convention Appendix 2		1998	SD73N	1 Count of possible breeding
Great tit	Parus major	Berne Convention Appendix 2		1999	SD73J	1 Count of proved breeding
Great tit	Parus major	Berne Convention Appendix 2		1998	SD73N	1 Count of proved breeding
Great tit	Parus major	Berne Convention Appendix 2	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Great tit	Parus major	Berne Convention Appendix 2	Spring Wood, Whalley	23/03/2001	SD742363	
Great tit	Parus major	Berne Convention Appendix 2		1999	SD73I	1 Count of proved breeding
Great tit	Parus major	Berne Convention Appendix 2		1999	SD73P	1 Count of proved breeding
Green Woodpecker	Picus viridis	Berne Convention Appendix 2		1999	SD73I	1 Count of possible breeding
Greenfinch	Carduelis chloris	Biodiversity Lists - Long List		1998	SD73N	1 Count of possible breeding
Greenfinch	Carduelis chloris	Biodiversity Lists - Long List		1999	SD73J	1 Count of proved breeding
Greenfinch	Carduelis chloris	Biodiversity Lists - Long List		1999	SD73P	1 Count of proved breeding
Grey Heron	Ardea cinerea	Lancashire Biodiversity Action Plan Provisional Long List	Old Park Plantation, New Marls Wood and Sager Heys Plantation	1999	SD750349	

Grey Heron	Ardea cinerea	Lancashire Biodiversity Action Plan Provisional Long List	Old Park Plantation, New Marls Wood and Sager Heys Plantation	2000	SD750349	7 Count of Breeding Pair
Grey Partridge	Perdix perdix	Farm Environment Plan Guidance 007: Table 2		1998	SD73N	1 Count of proved breeding
Grey Wagtail	Motacilla cinerea	Bird Population Status: amber		1999	SD73I	1 Count of possible breeding
Grey Wagtail	Motacilla cinerea	Bird Population Status: amber		2000	SD73N	2 Count of proved breeding
Grey Wagtail	Motacilla cinerea	Bird Population Status: amber		1999	SD73J	1 Count of proved breeding
Grey Wagtail	Motacilla cinerea	Bird Population Status: amber		1998	SD73N	2 Count of proved breeding
Grey Wagtail	Motacilla cinerea	Bird Population Status: amber		1999	SD73P	1 Count of proved breeding
Greylag Goose	Anser anser	Birds of Conservation Concern: Amber - species of medium conservation concern		1999	SD73J	1 Count of possible breeding
House Martin	Delichon urbica	Lancashire Biodiversity Action Plan Provisional Long List		1999	SD73I	1 Count of proved breeding
House Martin	Delichon urbica	Lancashire Biodiversity Action Plan Provisional Long List		1998	SD73N	1 Count of proved breeding
House Martin	Delichon urbica	Lancashire Biodiversity Action Plan Provisional Long List		1999	SD73P	1 Count of proved breeding
House Sparrow	Passer domesticus	Priority Species		1999	SD73J	1 Count of proved breeding
House Sparrow	Passer domesticus	Priority Species		1998	SD73N	1 Count of proved breeding
House Sparrow	Passer domesticus	Priority Species		1999	SD73I	1 Count of proved breeding
House Sparrow	Passer domesticus	Priority Species		1999	SD73P	1 Count of proved breeding
Jackdaw	Corvus monedula	Birds Directive Annex 2.2		1999	SD73J	1 Count of proved breeding
Jackdaw	Corvus monedula	Birds Directive Annex 2.2		1998	SD73N	1 Count of possible breeding

Jackdaw	Corvus monedula	Birds Directive Annex 2.2	1999	SD73I	1 Count of proved breeding
Jackdaw	Corvus monedula	Birds Directive Annex 2.2	1999	SD73P	1 Count of possible breeding
Jay	Garrulus glandarius	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)	1999	SD73P	1 Count of possible breeding
Jay	Garrulus glandarius	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)	1999	SD73J	1 Count of proved breeding
Jay	Garrulus glandarius	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)	1999	SD73I	1 Count of possible breeding
Jay	Garrulus glandarius	Wildlife and Countryside Act 1981 (Schedule 3 Part 1)	1999	SD73I	1 Count of proved breeding
Kestrel	Falco tinnunculus	Biodiversity Lists - Long List	1999	SD73I	1 Count of possible breeding
Kestrel	Falco tinnunculus	Biodiversity Lists - Long List	1999	SD73P	1 Count of proved breeding
Kestrel	Falco tinnunculus	Biodiversity Lists - Long List	1998	SD73N	1 Count of possible breeding
Lapwing	Vanellus vanellus	Birds of Conservation Concern: Amber - species of medium conservation concern	1999	SD73I	1 Count of proved breeding
Lapwing	Vanellus vanellus	Birds of Conservation Concern: Amber - species of medium conservation concern	1999	SD73P	1 Count of proved breeding
Lapwing	Vanellus vanellus	Birds of Conservation Concern: Amber - species of medium conservation concern	1999	SD73J	1 Count of proved breeding
Lesser Redpoll	Carduelis cabaret	UK Biodiversity Action Plan priority species	1999	SD73P	1 Count of proved breeding
Linnet	Carduelis cannabina	Lancashire Biodiversity Action Plan Provisional Long List	1999	SD73I	1 Count of proved breeding
Linnet	Carduelis cannabina	Lancashire Biodiversity Action Plan Provisional Long List	1999	SD73P	1 Count of possible breeding
Linnet	Carduelis cannabina	Lancashire Biodiversity Action Plan Provisional Long List	1998	SD73N	1 Count of proved breeding
Long-tailed tit	Aegithalos caudatus		1999	SD73I	1 Count of proved breeding
Long-tailed tit	Aegithalos caudatus				
		Spring Wood BHS 73NW14	27/02/1996	SD741363	

Long-tailed tit	Aegithalos caudatus			1999	SD73P	1 Count of possible breeding
Long-tailed tit	Aegithalos caudatus			1999	SD73J	1 Count of proved breeding
Long-tailed tit	Aegithalos caudatus			1998	SD73N	1 Count of proved breeding
Magpie	Pica pica	Birds Directive Annex 2.2		1998	SD73N	1 Count of proved breeding
Magpie	Pica pica	Birds Directive Annex 2.2	Calderstones Hospital Grounds	14/07/2009	SD72083673	
Magpie	Pica pica	Birds Directive Annex 2.2		1999	SD73J	1 Count of proved breeding
Magpie	Pica pica	Birds Directive Annex 2.2		1999	SD73I	1 Count of proved breeding
Magpie	Pica pica	Birds Directive Annex 2.2		1999	SD73P	1 Count of proved breeding
Mallard	Anas platyrhynchos	Birds Directive Annex 3.1	Pond at Lawsonsteads Tanks, Whalley East	23/07/1997	SD74253682	
Mallard	Anas platyrhynchos	Birds Directive Annex 3.1		1999	SD73P	1 Count of proved breeding
Mallard	Anas platyrhynchos	Birds Directive Annex 3.1		1998	SD73N	1 Count of proved breeding
Mallard	Anas platyrhynchos	Birds Directive Annex 3.1	Wiswell	23/11/2001	SD 750 365	
Mallard	Anas platyrhynchos	Birds Directive Annex 3.1		1999	SD73I	1 Count of proved breeding
Mallard	Anas platyrhynchos	Birds Directive Annex 3.1		1999	SD73J	1 Count of proved breeding
Marsh tit	Parus palustris	Birds of Conservation Concern: Red - species of high conservation concern		1999	SD73I	3 Count of proved breeding
Meadow Pipit	Anthus pratensis	Biodiversity Lists - Long List		1999	SD73I	1 Count of proved breeding
Meadow Pipit	Anthus pratensis	Biodiversity Lists - Long List		1999	SD73J	1 Count of proved breeding
Meadow Pipit	Anthus pratensis	Biodiversity Lists - Long List		1998	SD73N	1 Count of proved breeding

Meadow Pipit	Anthus pratensis	Biodiversity Lists - Long List		1999	SD73P	1 Count of possible breeding
Mistle Thrush	Turdus viscivorus	Birds of Conservation Concern: Amber - species of medium conservation concern		1999	SD73J	1 Count of proved breeding
Mistle Thrush	Turdus viscivorus	Birds of Conservation Concern: Amber - species of medium conservation concern		1999	SD73I	1 Count of proved breeding
Mistle Thrush	Turdus viscivorus	Birds of Conservation Concern: Amber - species of medium conservation concern		1998	SD73N	1 Count of possible breeding
Mistle Thrush	Turdus viscivorus	Birds of Conservation Concern: Amber - species of medium conservation concern		1999	SD73P	1 Count of proved breeding
			Pond at Lawsonsteads Tanks, Whalley East			
Moorhen	Gallinula chloropus	Bonn Convention Appendix 2		23/07/1997	SD74253682	
Moorhen	Gallinula chloropus	Bonn Convention Appendix 2		1999	SD73P	1 Count of possible breeding
Moorhen	Gallinula chloropus	Bonn Convention Appendix 2		1999	SD73J	1 Count of proved breeding
Moorhen	Gallinula chloropus	Bonn Convention Appendix 2		1999	SD73I	1 Count of proved breeding
Nuthatch	Sitta europaea	Biodiversity Lists - Long List		1998	SD73N	1 Count of proved breeding
Nuthatch	Sitta europaea	Biodiversity Lists - Long List	Spring Wood BHS 73NW14	27/02/1996	SD741363	
Nuthatch	Sitta europaea	Biodiversity Lists - Long List	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Nuthatch	Sitta europaea	Biodiversity Lists - Long List	Spring Wood, Whalley	23/03/2001	SD742363	
Nuthatch	Sitta europaea	Biodiversity Lists - Long List		1999	SD73J	1 Count of proved breeding
Nuthatch	Sitta europaea	Biodiversity Lists - Long List		1999	SD73I	1 Count of proved breeding
Oystercatcher	Haematopus ostralegus	RDB Birds - 1b		1999	SD73J	1 Count of proved breeding
Pheasant	Phasianus colchicus	Birds Directive Annex 2.1		1999	SD73P	1 Count of proved breeding
Pheasant	Phasianus colchicus	Birds Directive Annex 2.1		1998	SD73N	1 Count of possible breeding

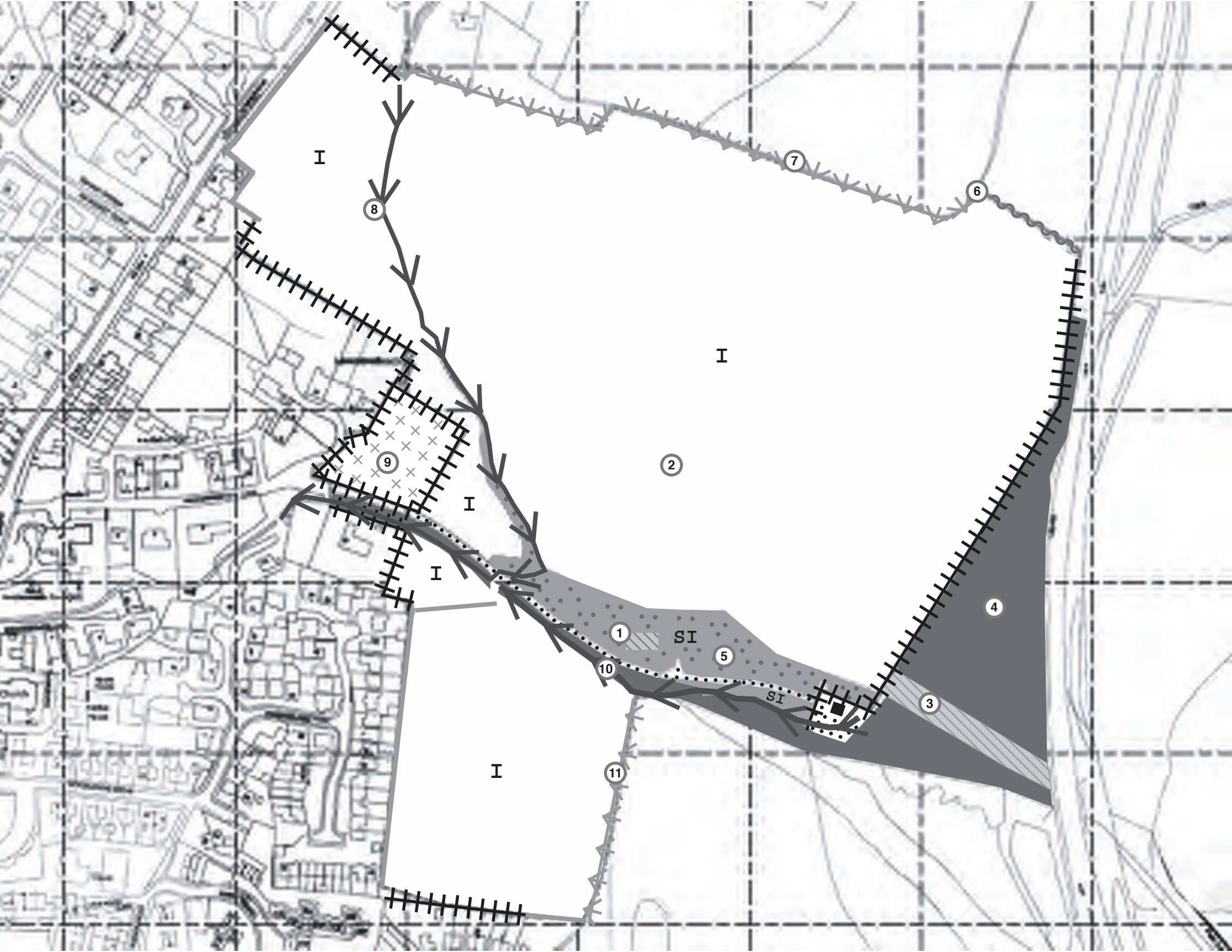
Pied Flycatcher	Ficedula hypoleuca	Biodiversity Lists - Long List		1999	SD73I	1 Count of possible breeding
Pied Wagtail	Motacilla alba subsp. yarrellii			1998	SD73N	1 Count of proved breeding
Pied Wagtail	Motacilla alba subsp. yarrellii			1999	SD73P	1 Count of proved breeding
Pied Wagtail	Motacilla alba subsp. yarrellii			1999	SD73J	1 Count of proved breeding
Redstart	Phoenicurus phoenicurus	Berne Convention Appendix 2		1999	SD73J	3 Count of proved breeding
Redstart	Phoenicurus phoenicurus	Berne Convention Appendix 2		1998	SD73N	2 Count of proved breeding
Reed Bunting	Emberiza schoeniclus	Birds of Conservation Concern: Red, species of high conservation concern	Ribble Valley (vc 59)	March 2008	SD748376	1 Count of Adult Male
Reed Bunting	Emberiza schoeniclus	Birds of Conservation Concern: Red, species of high conservation concern		1999	SD73I	1 Count of proved breeding
Robin	Erithacus rubecula	Berne Convention Appendix 2	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Robin	Erithacus rubecula	Berne Convention Appendix 2	Spring Wood, Whalley	23/03/2001	SD742363	
Robin	Erithacus rubecula	Berne Convention Appendix 2		1999	SD73P	1 Count of proved breeding
Robin	Erithacus rubecula	Berne Convention Appendix 2		1999	SD73J	1 Count of proved breeding
Robin	Erithacus rubecula	Berne Convention Appendix 2	Wiswell	23/11/2001	SD 750 365	
Robin	Erithacus rubecula	Berne Convention Appendix 2		1998	SD73N	1 Count of proved breeding
Robin	Erithacus rubecula	Berne Convention Appendix 2		1999	SD73I	1 Count of proved breeding
Rook	Corvus frugilegus	Birds Directive Annex 2.2		1999	SD73I	1 Count of proved breeding
Rook	Corvus frugilegus	Birds Directive Annex 2.2		1999	SD73P	1 Count of proved breeding
Rook	Corvus frugilegus	Birds Directive Annex 2.2		1999	SD73J	1 Count of proved breeding
Sand Martin	Riparia riparia	Berne Convention Appendix 2	Calderstones Hospital Grounds	14/07/2009	SD72027366 57	50 Count of feeding

Sand Martin	Riparia riparia	Berne Convention Appendix 2	1999	SD73J	6 Count of proved breeding	
Skylark	Alauda arvensis	Birds Directive Annex 2.2	1999	SD73I	6 Count of proved breeding	
Skylark	Alauda arvensis	Birds Directive Annex 2.2	1998	SD73N	2 Count of proved breeding	
Skylark	Alauda arvensis	Birds Directive Annex 2.2	1999	SD73J	1 Count of proved breeding	
Snipe	Gallinago gallinago	Lancashire Biodiversity Action Plan Provisional Long List	1999	SD73I	1 Count of possible breeding	
Song Thrush	Turdus philomelos	Priority Species	1998	SD73N	2 Count of proved breeding	
Song Thrush	Turdus philomelos	Priority Species	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Song Thrush	Turdus philomelos	Priority Species	Spring Wood, Whalley	23/03/2001	SD742363	
Song Thrush	Turdus philomelos	Priority Species	1999	SD73J	4 Count of proved breeding	
Song Thrush	Turdus philomelos	Priority Species	1999	SD73I	2 Count of proved breeding	
Song Thrush	Turdus philomelos	Priority Species	1999	SD73P	2 Count of proved breeding	
Sparrowhawk	Accipiter nisus	Biodiversity Lists - Long List	1999	SD73I	1 Count of possible breeding	
Sparrowhawk	Accipiter nisus	Biodiversity Lists - Long List	1998	SD73N	1 Count of possible breeding	
Sparrowhawk	Accipiter nisus	Biodiversity Lists - Long List	1999	SD73P	1 Count of possible breeding	
Sparrowhawk	Accipiter nisus	Biodiversity Lists - Long List	1999	SD73J	1 Count of proved breeding	
Spotted Flycatcher	Muscicapa striata	Birds of Conservation Concern: Red - species of high conservation concern Lancashire Biodiversity Action Plan	1999	SD73I	2 Count of proved breeding	
Starling	Sturnus vulgaris	Provisional Long List	1999	SD73I	1 Count of proved breeding	
Starling	Sturnus vulgaris	Lancashire Biodiversity Action Plan Provisional Long List	1999	SD73J	1 Count of proved breeding	

Starling	<i>Sturnus vulgaris</i>	Lancashire Biodiversity Action Plan Provisional Long List	1998	SD73N	1 Count of proved breeding
Starling	<i>Sturnus vulgaris</i>	Lancashire Biodiversity Action Plan Provisional Long List	1999	SD73P	1 Count of proved breeding
Swallow	<i>Hirundo rustica</i>	Lancashire Biodiversity Action Plan Provisional Long List	1999	SD73I	1 Count of proved breeding
Swallow	<i>Hirundo rustica</i>	Lancashire Biodiversity Action Plan Provisional Long List	1999	SD73P	1 Count of proved breeding
Swallow	<i>Hirundo rustica</i>	Lancashire Biodiversity Action Plan Provisional Long List	1999	SD73J	1 Count of proved breeding
Swallow	<i>Hirundo rustica</i>	Lancashire Biodiversity Action Plan Provisional Long List	1998	SD73N	1 Count of proved breeding
Swift	<i>Apus apus</i>		1999	SD73J	1 Count of proved breeding
Swift	<i>Apus apus</i>		1998	SD73N	1 Count of proved breeding
Tawny Owl	<i>Strix aluco</i>	Biodiversity Lists - Long List	1999	SD73I	1 Count of possible breeding
Tawny Owl	<i>Strix aluco</i>	Biodiversity Lists - Long List	1998	SD73N	1 Count of proved breeding
Treecreeper	<i>Certhia familiaris</i>	Berne Convention Appendix 2	1999	SD73I	1 Count of proved breeding
Treecreeper	<i>Certhia familiaris</i>	Berne Convention Appendix 2	1999	SD73I	1 Count of proved breeding
Treecreeper	<i>Certhia familiaris</i>	Berne Convention Appendix 2	1998	SD73N	1 Count of possible breeding
Wheatear	<i>Oenanthe oenanthe</i>	Biodiversity Lists - Long List	1999	SD73I	1 Count of possible breeding
Whitethroat	<i>Sylvia communis</i>	RDB Birds - candidate	1999	SD73P	1 Count of proved breeding
Willow Warbler	<i>Phylloscopus trochilus</i>	Biodiversity Lists - Long List	1999	SD73I	1 Count of proved breeding
Willow Warbler	<i>Phylloscopus trochilus</i>	Biodiversity Lists - Long List	1999	SD73P	1 Count of proved breeding
Willow Warbler	<i>Phylloscopus trochilus</i>	Biodiversity Lists - Long List	1998	SD73N	1 Count of proved breeding

Willow Warbler	Phylloscopus trochilus	Biodiversity Lists - Long List	1999	SD73I	1 Count of proved breeding	
Willow Warbler	Phylloscopus trochilus	Biodiversity Lists - Long List	1999	SD73J	1 Count of proved breeding	
Woodcock	Scolopax rusticola	Birds Directive Annex 3.2	1999	SD73I	1 Count of possible breeding	
Woodcock	Scolopax rusticola	Birds Directive Annex 3.2	1998	SD73N	1 Count of proved breeding	
Woodpigeon	Columba palumbus	Birds Directive Annex 2.1	1998	SD73N	1 Count of proved breeding	
Woodpigeon	Columba palumbus	Birds Directive Annex 2.1	Spring Wood BHS 73NW14	2001	SD741363	1 Count
Woodpigeon	Columba palumbus	Birds Directive Annex 2.1	Spring Wood, Whalley	23/03/2001	SD742363	
Woodpigeon	Columba palumbus	Birds Directive Annex 2.1	1999	SD73P	1 Count of proved breeding	
Woodpigeon	Columba palumbus	Birds Directive Annex 2.1	1999	SD73I	1 Count of proved breeding	
Woodpigeon	Columba palumbus	Birds Directive Annex 2.1	1999	SD73J	1 Count of proved breeding	
Wren	Troglodytes troglodytes	Berne Convention Appendix 2	1999	SD73I	1 Count of proved breeding	
Wren	Troglodytes troglodytes	Berne Convention Appendix 2	1998	SD73N	1 Count of proved breeding	
Wren	Troglodytes troglodytes	Berne Convention Appendix 2	1999	SD73P	1 Count of proved breeding	
Wren	Troglodytes troglodytes	Berne Convention Appendix 2	Wiswell	23/11/2001	SD 750 365	
Wren	Troglodytes troglodytes	Berne Convention Appendix 2	1999	SD73J	1 Count of proved breeding	

Appendix 2: Phase I Habitat Plan



Legend	
I	Improved grassland
SI	Species poor semi-improved grassland
	Semi-natural broad-leaved woodland
	Species-poor hedgerow
	Species-rich hedgerow with trees
	Scattered broadleaf trees
	Tall ruderal
	Marshy grassland
	Bare ground
	Running water
	Cultivated/disturbed land
	Building
	Fence
	Wall
①	Target note
	Site boundary

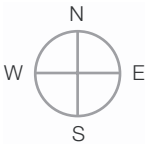
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ECOLOGY DESIGN SUSTAINABILITY

Project Name & No.
Whalley 078.03

Production Date
28-01-13
Project Owner
KC

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PHASE 1 HABITAT PLAN.

Appendix 3: Species list

Common name	Latin name
TNI Riparian woodland/stream	
Wych elm	<i>Ulmus glabra</i>
Elder	<i>Sambucus nigra</i>
Sycamore (NN)	<i>Acer pseudoplatanus</i>
Hawthorn	<i>Crataegus monogyna</i>
Ash	<i>Fraxinus excelsior</i>
Pedunculate oak	<i>Quercus robur</i>
Alder	<i>Alnus glutinosa</i>
<i>Rhododendron</i> sp (NN)	<i>Rhododendron</i> sp
Annual meadow-grass	<i>Poa annua</i>
Smooth meadow-grass	<i>Poa pratensis</i>
Common nettle	<i>Urtica dioica</i>
Creeping buttercup	<i>Ranunculus repens</i>
Hard rush	<i>Juncus inflexus</i>
Broad-leaved dock	<i>Rumex obtusifolium</i>
Tall fescue	<i>Schedonorus arundinaceus</i>
Cleavers	<i>Galium aparine</i>
Ground elder	<i>Aegopodium podagraria</i>
Bramble	<i>Rubus fruticosus</i> agg.
False oat-grass	<i>Arrhenatherum elatius</i>
Cock's foot grass	<i>Dactylis glomerata</i>
Cow's parsley	<i>Anthriscus sylvestris</i>
Perennial rye-grass	<i>Lolium perenne</i>
Wood anemone	<i>Anemone nemorosa</i>
Ransoms	<i>Allium ursinum</i>
Blue bell	<i>Hyacinthoides non-scripta</i>
Lesser celandine	<i>Ranunculus ficaria</i>
Dog's mercury	<i>Mercurialis perennis</i>
Rosebay willowherb	<i>Chamerion angustifolium</i>
Creeping thistle	<i>Cirsium arvense</i>
Red fescue	<i>Festuca rubra</i>
Common sorrel	<i>Rumex acetosa</i>
Herb Robert	<i>Geranium robertianum</i>
Germander speedwell	<i>Veronica chamaedrys</i>
Hogweed	<i>Heracleum sphondylium</i>
Male fern	<i>Dryopteris filix-mas</i>
Giant fescue	<i>Schedonorus giganteus</i>
Wood horsetail	<i>Equisetum sylvaticum</i>
Dropwort	<i>Filipendula vulgaris</i>
White clover	<i>Trifolium repens</i>

Wood sedge	<i>Carex sylvatica</i>
Himalayan balsam (NN)	<i>Impatiens glandulifera</i>

*NN: Non-native

Common name	Latin name
TN2 Improved pasture	
Perennial rye-grass	<i>Lolium perenne</i>
Creeping thistle	<i>Cirsium arvense</i>
White clover	<i>Trifolium repens</i>
Glaucous sedge (WE)	<i>Carex flacca</i>
Yorkshire fog	<i>Holcus lanatus</i>
Cock's foot	<i>Dactylis glomerata</i>
Broadleaved dock	<i>Rumex obtusifolium</i>
Dandelion	<i>Taraxacum agg</i>
Wood horsetail	<i>Equisetum sylvaticum</i>
Hairy sedge (WE)	<i>Carex hirta</i>
Soft rush	<i>Juncus effusus</i>
Creeping bent	<i>Agrostis stolonifera</i>
Common bent	<i>Agrostis capillaris</i>
Chickweed	<i>Stellaria media</i>
Creeping buttercup	<i>Ranunculus repens</i>
Red fescue	<i>Festuca rubra</i>
Bulrush (WE)	<i>Typha latifolia</i>

WE: Woodland edge only

Common name	Latin name
TN3 Water pipeline/woodland ride in Spring Wood	
Pendulous sedge	<i>Carex pendula</i>
Himalayan balsam (NN)	<i>Impatiens glandulifera</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Ash	<i>Fraxinus excelsior</i>
Hogweed	<i>Heracleum sphondylium</i>

Common name	Latin name
TN4 Spring Wood (Ancient woodland)	
Ash	<i>Fraxinus excelsior</i>
Sycamore	<i>Acer pseudoplatanus</i>
Hawthorn	<i>Crataegus monogyna</i>
Wych elm	<i>Ulmus glabra</i>
Elder	<i>Sambucus nigra</i>
Bramble	<i>Rubus fruticosus agg.</i>

Common name	Latin name
TN7 Species-rich hedgerow with trees	
Ash	<i>Fraxinus excelsior</i>
Blackthorn	<i>Prunus spinosa</i>

Hawthorn	<i>Crataegus monogyna</i>
Wych elm	<i>Ulmus glabra</i>
Elder	<i>Sambucus nigra</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Field rose	<i>Rosa arvensis</i>
Pedunculate oak	<i>Quercus robur</i>

Common name	Latin name
TN8 Stream to the western section of the site	
Ash	<i>Fraxinus excelsior</i>
Hawthorn	<i>Crataegus monogyna</i>
Hard rush	<i>Juncus inflexus</i>
Aquatic mint	<i>Mentha aquatica</i>
Creeping thistle	<i>Cirsium arvense</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Common nettle	<i>Urtica dioica</i>
Creeping bent	<i>Agrostis stolonifera</i>
Floating sweet-grass	<i>Glyceria fluitans</i>
Yellow flag	<i>Iris pseudocorus</i>
Bramble	<i>Rubus fruticosus</i> agg.
Cock's foot	<i>Dactylis glomerata</i>
Great willowherb	<i>Epilobium hirsutum</i>
Broadleaved dock	<i>Rumex obtusifolium</i>
Meadow vetchling	<i>Lathyrus pratensis</i>
False oat-grass	<i>Arrhenathium elatius</i>
Tufted hair-grass	<i>Deschampsia cespitosa</i>
Red fescue	<i>Festuca rubra</i>
Giant fescue	<i>Schedonurus giganteus</i>
Wood horsetail	<i>Equisetum sylvaticum</i>
Hairy sedge	<i>Carex hirta</i>
Common hogweed	<i>Heracleum sphondylium</i>
Spurge sp	<i>Euphorbia</i> sp.
Wild angelica	<i>Angelica sylvestris</i>
Soft rush	<i>Juncus effusus</i>
Watercress	<i>Nasturtium officinal</i>
Aquatic forget-me-not	<i>Myosotis scorpioides</i>
White clover	<i>Trifolium repens</i>
Himalayan balsam	<i>Impatiens glandulifera</i>

Common name	Latin name
TN9 Ephemeral vegetation habitat to the west of the site	
Elder	<i>Sambucus nigra</i>
Creeping thistle	<i>Cirsium arvense</i>
Tufted hair-grass	<i>Deschampsia cespitosa</i>
Petty spurge	<i>Euphorbia peplus</i>

Prickly sow thistle	<i>Sonchus asper</i>
Wood avens	<i>Geum urbanum</i>
Spurge sp.	<i>Euphorbia sp.</i>
Common nettle	<i>Urtica dioica</i>
Pendulus sedge	<i>Carex pendula</i>
Ivy	<i>Hedera helix</i>
Goat willow	<i>Salix caprea</i>
Bramble	<i>Rubus fruticosus agg.</i>
Cock's foot	<i>Dactylis glomerata</i>
Great willowherb	<i>Epilobium hirsutum</i>
Broadleaved dock	<i>Rumex obtusifolium</i>
Black meddick	<i>Medicago lupulina</i>
Spear thistle	<i>Cirsium vulgare</i>
Dandelion	<i>Taraxacum agg</i>
Hoary willowherb	<i>Epilobium parviflorum</i>
Yorkshire fog	<i>Holcus lanatus</i>
White clover	<i>Trifolium repens</i>
Red clover	<i>Trifolium pratense</i>
Creeping buttercup	<i>Ranunculus repens</i>
Common ragwort	<i>Senecio jacobea</i>
Yarrow	<i>Achillea millifolium</i>

Common name	Latin name
TN10 Species-rich defunct hedgerow with trees	
Ash	<i>Fraxinus excelsior</i>
Hawthorn	<i>Crataegus monogyna</i>
Wych elm	<i>Ulmus glabra</i>
Elder	<i>Sambucus nigra</i>
Hazel	<i>Corylus avellana</i>
Alder	<i>Alnus glutinosa</i>
Beech	<i>Fagus sylvatica</i>

Common name	Latin name
TN11 Species-rich defunct hedgerow with trees	
Ash	<i>Fraxinus excelsior</i>
Sycamore	<i>Acer pseudoplatanus</i>
Hawthorn	<i>Crataegus monogyna</i>
Wych elm	<i>Ulmus glabra</i>
Elder	<i>Sambucus nigra</i>
Hazel	<i>Corylus avellana</i>
Crack willow	<i>Salix fragilis</i>
Field rose	<i>Rosa arvensis</i>
Honeysuckle	<i>Lonicera periclymenum</i>

Appendix 4: Hedgerow Assessment

Hedgerow Regulations (1997) - Hedgerow Evaluation Form

Hedgerow No./Name	TN7
Is hedgerow more than 30years old ¹	yes
Length (m) ²	362
No. of 30m Sections to survey (1 section per 100m)	3
Total length of gaps (m)	8
Length of ditch (m)	237
Length of bank/wall (m)	
Adjacent to public right of way ⁴ (Yes/No)	No
Parallel hedge within 15m (Yes/No)	No
Rare or Protected species present (Yes/No)	No
If Yes, specify	

Points for Connections ³ to:	
Other hedgerows (1 point each)	4
Ponds (2 points each)	
Broadleaved woodland (2 points each)	

Additional Information:	
Average height (m)	5.0
Average width (m)	3.0
Shape/Recent Management:	
Clipped and dense	yes
Unclipped	Yes
Mechanically cut	Yes
Overgrown	Yes
Leggy	Yes
Layed	No
Other (specify)	wet ditch

Notes:

¹ A hedgerow will not qualify as important if less than 30 years old.

² For the Regulations to apply, a hedgerow must have a continuous length of at least 20m or meet another hedgerow at each end or be a stretch of hedgerow forming part of a larger hedgerow. Any gap not exceeding 20m or that has resulted from a contravention of these Regulations shall be treated as part of the hedgerow. Boundaries of dwelling houses do not qualify.

³ A hedgerow is connected if it meets one of the features above or has a point within 10m of it and would meet it if the line of the hedgerow continued. A hedgerow which meets another hedgerow is to be treated as ending at the point of intersection or junction.

⁴ Includes footpaths, bridleways, byways open to all traffic and roads used as public paths. Does not include highways.

Additional Comments:

Criteria for determining Important Hedgerows

Hedgerow No.	TN7
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Calculations

Total No. of standards	4
No. of standards per 50m	0.6
Percentage gaps	2.2
Percentage ditch	65.5
Percentage bank/wall	0.0
Connection points score	4.0
Average No. of woody species	5.3

Associated Features

Bank or Wall $\geq$ 50% of hedgerow length	No
Gaps total $\leq$ 10% of hedgerow length	Yes
At least 1 standard per 50m	No
At least 3 woodland groundflora species	No
Ditch $\geq$ 50% of hedgerow length	Yes
Connections scoring 4 or more points	Yes
Parallel hedge within 15m	No

Assessment Criteria

Rare or Protected species present	No
At least 7 woody species	No
At least 6 woody species and at least 3 associated features	No
At least 6 woody species including black poplar, large-leaved lime, small-leaved lime or wild service tree	No
At least 5 woody species and at least 4 associated features	No
Adjacent to a public right of way with at least 4 woody species and at least 2 associated features	No

This hedgerow does not meet the 'ecological' criteria for an Important Hedgerow, however archaeological and historical criteria have not been assessed here and the hedgerow may still qualify under these criteria.

Additional Comments:

Not important but diverse and species-rich

Schedule 3 Woody Species (Insert 'p' for presence, leave blank if absent)

Species	Section				
	1	2	3	4	5
Alder <i>Alnus Glutinosa</i>					
Apple, Crab <i>Malus sylvestris</i>					
Ash <i>Fraxinus excelsior</i>	p	p	p		
Aspen <i>Populus tremula</i>					
Beech <i>Fagus sylvatica</i>					
Birch, downy <i>Betula pubescens</i>					
Birch, silver <i>Betula pendula</i>					
Blackthorn <i>Prunus spinosa</i>		p			
Box <i>Buxus sempervirens</i>					
Broom <i>Cytisus scoparius</i>					
Buckthorn <i>Rhamnus cathartica</i>					
Buckthorn, alder <i>Frangula alnus</i>					
Butcher's broom <i>Ruscus aculeatus</i>					
Cherry, bird <i>Prunus padus</i>					
Cherry, wild <i>Prunus avium</i>					
Cotoneaster, wild <i>C. cambicus</i>					
Currant, downy <i>Ribes spicatum</i>					
Currant, mountain <i>Ribes alpinum</i>					
Dogwood <i>Cornus sanguinea</i>					
Elder <i>Sambucus nigra</i>	p	p	p		
Elm <i>Ulmus sp.</i>	p				
Gooseberry <i>Ribes uva-crispa</i>					
Gorse <i>Ulex europeaus</i>					
Gorse, dwarf <i>Ulex minor</i>					
Gorse, western <i>Ulex gallii</i>					
Geulder Rose <i>Viburnum opulus</i>					
Hawthorn <i>Crataegus monogyna</i>	p	p	p		
Hawthorn, midland <i>C. laevigata</i>					
Hazel <i>Corylus avelana</i>		p			
Holly <i>Ilex aquifolium</i>		p			
Hornbeam <i>Carpinus betulus</i>					
Juniper, common <i>J. communis</i>					
Lime, large-leaved <i>Tilia platyphyllos</i>					
Lime, small-leaved <i>Tilia cordata</i>					
Maple, field <i>Acer campestre</i>					
Mezereon <i>Daphne mezereum</i>					
Oak, pedunculate <i>Quercus robur</i>			p		
Oak, sessile <i>Quercus petraea</i>					
Osier <i>Salix viminalis</i>					
Pear, plymouth <i>Pyrus cordata</i>					
Pear, wild <i>Pyrus pyraister</i>					
Poplar, black <i>Populus nigra</i> ssp.					
Poplar, grey <i>Populus x canescens</i>					
Poplar, white <i>Populus alba</i>					
Privet <i>Ligustrum vulgare</i>					
Rose <i>Rosa sp.</i>	p	p			

Species	Section				
	1	2	3	4	5
Rowan <i>Sorbus aucuparia</i>					
Sea-buckthorn <i>H. rhamnoides</i>					
Service-tree, wild <i>Sorbus torminalis</i>					
Spindle <i>Euonymus europaeus</i>					
Walnut <i>Juglans regia</i>					
Wayfaring-tree <i>Viburnum lantana</i>					
Whitebeam <i>Sorbus sp.</i>					
Willow <i>Salix sp.</i>					
Yew <i>Taxus baccata</i>					
Other Woody Species not included in Schedule 3 (specify)					
Cherry Prunus Sp					

Hedgerow Trees (insert no.)

Species	No.	Important Tree Species	No.
Alder		Poplar, black	
Apple, crab		Lime, large-leaved	
Ash	3	Lime, small leaved	
Aspen		Service tree, wild	
Beech		Note: Trees only qualify if trunks are greater than 20cm diameter at 1.3m above the ground or greater than 15cm if multi-stemmed.	
Birch, silver			
Birch, downy			
Cherry, bird			
Cherry, wild			
Elm			
Hawthorn			
Holly			
Hornbeam			
Horse chestnut			
Lime, common			
Maple, field			
Oak	1		
Pear, common		Other Tree Species (specify)	No.
Pear, wild			
Poplar, grey			
Poplar, white			
Rowan			
Scots Pine			
Sycamore			
Walnut			
Wayfaring tree			
Whitebeam			
Willow			
Yew			

Schedule 2 Woodland Species (Insert 'p' for presence, leave blank if absent)

Note: This includes woodland species along the entire length of the hedgrow that are within 1m of the hedgerow bottom.

Herbs

Species	
Barren Strawberry <i>Potentilla sterilis</i>	
Bluebell <i>Hyacinthoides non-scripta</i>	
Broad-leaved helleborine <i>Epipactis helleborine</i>	
Bugle <i>Ajuga reptans</i>	
Common cow-wheat <i>Melampyrum pratense</i>	
Common dog-violet <i>Viola riviniana</i>	
Common polypody <i>polypodium vulgare</i>	
Dog's mercury <i>Mercurialis perennis</i>	
Early dog violet <i>Viola reichenbachiana</i>	
Early purple orchid <i>Orchis mascula</i>	
Enchanter's nightshade <i>Circaea lutetiana</i>	
Goldilock's buttercup <i>Ranunculus auricomus</i>	
Great bell-flower <i>Campanula latifolia</i>	
Heath bedstraw <i>Gallium saxatile</i>	
Herb paris <i>Paris quadrifolia</i>	
Herb-robert <i>Geranium robertianum</i>	
Lords-and-ladies <i>Arum maculatum</i>	
Moschatel <i>Adoxa moscatellina</i>	
Nettle-leaved bell-flower <i>Campanula trachelium</i>	
Oxlip <i>Primula elatior</i>	
Pignut <i>Conopodium majus</i>	
Primrose <i>Primula vulgaris</i>	
Ramsons <i>Allium ursinum</i>	
Sanicle <i>Sanicula europaea</i>	
Small cow-wheat <i>Melampyrum sylvaticum</i>	
Sweet violet <i>Viola odorata</i>	
Toothwort <i>Lathraea squamaria</i>	
Tormentil <i>Potentilla erecta</i>	
Wild strawberry <i>Fragaria vesca</i>	
Wood anemone <i>Anemone nemorosa</i>	
Wood avens <i>Guem urbanum</i>	
Wood horsetail <i>Equisetum sylvaticum</i>	
Wood sage <i>Teucrium scorodonia</i>	
Wood sorrel <i>Oxalis acetosa</i>	
Wood speedwell <i>Veronica montana</i>	
Wood spurge <i>Euphorbia amygdaloides</i>	
Woodruff <i>Galium odoratum</i>	
Yellow archangel <i>Lamiasstrum galeobdolon</i>	
Yellow pimpernel <i>Lysimachia nemorum</i>	

Grasses, sedges, rushes

Species	
Giant fescue <i>Festuca gigantea</i>	
Greater wood-rush <i>Luzula sylvatica</i>	
Hairy brome <i>Bromus ramosus</i>	
Hairy woodrush <i>Luzula pilosa</i>	
Wood false-brome <i>Brachypodium sylvaticum</i>	
Wood meadow-grass <i>Poa nemoralis</i>	
Wood melick <i>Melica uniflora</i>	
Wood millet <i>illium effusum</i>	
Wood sedge <i>Carex sylvatica</i>	

Ferns

Species	
Broad buckler fern <i>Dryopteris dilitata</i>	
Hard fern <i>Blechnum spicant</i>	
Hard shield fern <i>Polystichum aculeatum</i>	
Hart's tongue <i>Asplenium scolopendrium</i>	
Lady fern <i>Athyrium filix-femina</i>	
Male fern <i>Dryopteris filix-mas</i>	
Narrow buckler fern <i>Dryopteris carthusiana</i>	

Other species of interest not included in Schedule 2 (specify)

Species	
Horsetail	

Hedgerow Regulations (1997) - Hedgerow Evaluation Form

Hedgerow No./Name	TN10
Is hedgerow more than 30years old ¹	yes
Length (m) ²	93
No. of 30m Sections to survey (1 section per 100m)	1
Total length of gaps (m)	
Length of ditch (m)	
Length of bank/wall (m)	
Adjacent to public right of way ⁴ (Yes/No)	Yes
Parallel hedge within 15m (Yes/No)	No
Rare or Protected species present (Yes/No)	No
If Yes, specify	

Points for Connections ³ to:	
Other hedgerows (1 point each)	2
Ponds (2 points each)	
Broadleaved woodland (2 points each)	4

Additional Information:	
Average height (m)	5.0
Average width (m)	3.0
Shape/Recent Management:	
Clipped and dense	No
Unclipped	Yes
Mechanically cut	No
Overgrown	Yes
Leggy	Yes
Layed	No
Other (specify)	close to stream

Notes:

¹ A hedgerow will not qualify as important if less than 30 years old.

² For the Regulations to apply, a hedgerow must have a continuous length of at least 20m or meet another hedgerow at each end or be a stretch of hedgerow forming part of a larger hedgerow. Any gap not exceeding 20m or that has resulted from a contravention of these Regulations shall be treated as part of the hedgerow. Boundaries of dwelling houses do not qualify.

³ A hedgerow is connected if it meets one of the features above or has a point within 10m of it and would meet it if the line of the hedgerow continued. A hedgerow which meets another hedgerow is to be treated as ending at the point of intersection or junction.

⁴ Includes footpaths, bridleways, byways open to all traffic and roads used as public paths. Does not include highways.

Additional Comments:

stream and riparian woodland close to hedge

Criteria for determining Important Hedgerows

Hedgerow No.	TN10
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Calculations

Total No. of standards	0
No. of standards per 50m	0.0
Percentage gaps	0.0
Percentage ditch	0.0
Percentage bank/wall	0.0
Connection points score	6.0
Average No. of woody species	8.0

Associated Features

Bank or Wall $\geq$ 50% of hedgerow length	No
Gaps total $\leq$ 10% of hedgerow length	Yes
At least 1 standard per 50m	No
At least 3 woodland groundflora species	Yes
Ditch $\geq$ 50% of hedgerow length	No
Connections scoring 4 or more points	Yes
Parallel hedge within 15m	No

Assessment Criteria

Rare or Protected species present	No
At least 7 woody species	Yes
At least 6 woody species and at least 3 associated features	Yes
At least 6 woody species including black poplar, large-leaved lime, small-leaved lime or wild service tree	No
At least 5 woody species and at least 4 associated features	No
Adjacent to a public right of way with at least 4 woody species and at least 2 associated features	Yes

This hedgerow qualifies as an Important Hedgerow.

Additional Comments:

adjacent to stream and riparian woodland (TN1)

Schedule 3 Woody Species (Insert 'p' for presence, leave blank if absent)

Species	Section				
	1	2	3	4	5
Alder <i>Alnus Glutinosa</i>	p				
Apple, Crab <i>Malus sylvestris</i>	p				
Ash <i>Fraxinus excelsior</i>	p				
Aspen <i>Populus tremula</i>					
Beech <i>Fagus sylvatica</i>	p				
Birch, downy <i>Betula pubescens</i>					
Birch, silver <i>Betula pendula</i>					
Blackthorn <i>Prunus spinosa</i>					
Box <i>Buxus sempervirens</i>					
Broom <i>Cytisus scoparius</i>					
Buckthorn <i>Rhamnus cathartica</i>					
Buckthorn, alder <i>Frangula alnus</i>					
Butcher's broom <i>Ruscus aculeatus</i>					
Cherry, bird <i>Prunus padus</i>					
Cherry, wild <i>Prunus avium</i>					
Cotoneaster, wild <i>C. cambricus</i>					
Currant, downy <i>Ribes spicatum</i>					
Currant, mountain <i>Ribes alpinum</i>					
Dogwood <i>Cornus sanguinea</i>					
Elder <i>Sambucus nigra</i>	p				
Elm <i>Ulmus sp.</i>	p				
Gooseberry <i>Ribes uva-crispa</i>					
Gorse <i>Ulex europeaus</i>					
Gorse, dwarf <i>Ulex minor</i>					
Gorse, western <i>Ulex gallii</i>					
Geulder Rose <i>Viburnum opulus</i>					
Hawthorn <i>Crataegus monogyna</i>	p				
Hawthorn, midland <i>C. laevigata</i>					
Hazel <i>Corylus avelana</i>	p				
Holly <i>Ilex aquifolium</i>					
Hornbeam <i>Carpinus betulus</i>					
Juniper, common <i>J. communis</i>					
Lime, large-leaved <i>Tilia platyphyllos</i>					
Lime, small-leaved <i>Tilia cordata</i>					
Maple, field <i>Acer campestre</i>					
Mezereon <i>Daphne mezereum</i>					
Oak, pedunculate <i>Quercus robur</i>					
Oak, sessile <i>Quercus petraea</i>					
Osier <i>Salix viminalis</i>					
Pear, plymouth <i>Pyrus cordata</i>					
Pear, wild <i>Pyrus pyraister</i>					
Poplar, black <i>Populus nigra</i> ssp.					
Poplar, grey <i>Populus x canescens</i>					
Poplar, white <i>Populus alba</i>					
Privet <i>Ligustrum vulgare</i>					
Rose <i>Rosa</i> sp.					

Species	Section				
	1	2	3	4	5
Rowan <i>Sorbus aucuparia</i>					
Sea-buckthorn <i>H. rhamnoides</i>					
Service-tree, wild <i>Sorbus torminalis</i>					
Spindle <i>Euonymus europaeus</i>					
Walnut <i>Juglans regia</i>					
Wayfaring-tree <i>Viburnum lantana</i>					
Whitebeam <i>Sorbus</i> sp.					
Willow <i>Salix</i> sp.					
Yew <i>Taxus baccata</i>					
Other Woody Species not included in Schedule 3 (specify)					
Cherry Prunus Sp					

Hedgerow Trees (insert no.)

Species	No.	Important Tree Species	No.
Alder		Poplar, black	
Apple, crab		Lime, large-leaved	
Ash		Lime, small leaved	
Aspen		Service tree, wild	
Beech		Note: Trees only qualify if trunks are greater than 20cm diameter at 1.3m above the ground or greater than 15cm if multi-stemmed.	
Birch, silver			
Birch, downy			
Cherry, bird			
Cherry, wild			
Elm			
Hawthorn			
Holly			
Hornbeam			
Horse chestnut			
Lime, common			
Maple, field			
Oak			
Pear, common		Other Tree Species (specify)	No.
Pear, wild			
Poplar, grey			
Poplar, white			
Rowan			
Scots Pine			
Sycamore			
Walnut			
Wayfaring tree			
Whitebeam			
Willow			
Yew			

Schedule 2 Woodland Species (Insert 'p' for presence, leave blank if absent)

Note: This includes woodland species along the entire length of the hedgerow that are within 1m of the hedgerow bottom.

Herbs

Species	
Barren Strawberry <i>Potentilla sterilis</i>	
Bluebell <i>Hyacinthoides non-scripta</i>	p
Broad-leaved helleborine <i>Epipactis helleborine</i>	
Bugle <i>Ajuga reptans</i>	
Common cow-wheat <i>Melampyrum pratense</i>	
Common dog-violet <i>Viola riviniana</i>	
Common polypody <i>polypodium vulgare</i>	
Dog's mercury <i>Mercurialis perennis</i>	p
Early dog violet <i>Viola reichenbachiana</i>	
Early purple orchid <i>Orchis mascula</i>	
Enchanter's nightshade <i>Circaea lutetiana</i>	
Goldilock's buttercup <i>Ranunculus auricomus</i>	
Great bell-flower <i>Campanula latifolia</i>	
Heath bedstraw <i>Gallium saxatile</i>	
Herb paris <i>Paris quadrifolia</i>	
Herb-robert <i>Geranium robertianum</i>	
Lords-and-ladies <i>Arum maculatum</i>	
Moschatel <i>Adoxa moscatellina</i>	
Nettle-leaved bell-flower <i>Campanula trachelium</i>	
Oxlip <i>Primula elatior</i>	
Pignut <i>Conopodium majus</i>	
Primrose <i>Primula vulgaris</i>	
Ramsons <i>Allium ursinum</i>	
Sanicle <i>Sanicula europaea</i>	
Small cow-wheat <i>Melampyrum sylvaticum</i>	
Sweet violet <i>Viola odorata</i>	
Toothwort <i>Lathraea squamaria</i>	
Tormentil <i>Potentilla erecta</i>	
Wild strawberry <i>Fragaria vesca</i>	
Wood anemone <i>Anemone nemorosa</i>	p
Wood avens <i>Guem urbanum</i>	
Wood horsetail <i>Equisetum sylvaticum</i>	
Wood sage <i>Teucrium scorodonia</i>	
Wood sorrel <i>Oxalis acetosa</i>	
Wood speedwell <i>Veronica montana</i>	
Wood spurge <i>Euphorbia amygdaloides</i>	
Woodruff <i>Galium odoratum</i>	
Yellow archangel <i>Lamiastrum galeobdolon</i>	
Yellow pimpernel <i>Lysimachia nemorum</i>	

Grasses, sedges, rushes

Species	
Giant fescue <i>Festuca gigantea</i>	
Greater wood-rush <i>Luzula sylvatica</i>	
Hairy brome <i>Bromus ramosus</i>	
Hairy woodrush <i>Luzula pilosa</i>	
Wood false-brome <i>Brachypodium sylvaticum</i>	
Wood meadow-grass <i>Poa nemoralis</i>	
Wood melick <i>Melica uniflora</i>	
Wood millet <i>Illium effusum</i>	
Wood sedge <i>Carex sylvatica</i>	

Ferns

Species	
Broad buckler fern <i>Dryopteris dilatata</i>	
Hard fern <i>Blechnum spicant</i>	
Hard shield fern <i>Polystichum aculeatum</i>	
Hart's tongue <i>Asplenium scolopendrium</i>	
Lady fern <i>Athyrium filix-femina</i>	
Male fern <i>Dryopteris filix-mas</i>	
Narrow buckler fern <i>Dryopteris carthusiana</i>	

Other species of interest not included in Schedule 2 (specify)

Species	
Horsetail	

Hedgerow Regulations (1997) - Hedgerow Evaluation Form

Hedgerow No./Name	TN11
Is hedgerow more than 30years old ¹	yes
Length (m) ²	140
No. of 30m Sections to survey (1 section per 100m)	1
Total length of gaps (m)	
Length of ditch (m)	
Length of bank/wall (m)	
Adjacent to public right of way ⁴ (Yes/No)	No
Parallel hedge within 15m (Yes/No)	No
Rare or Protected species present (Yes/No)	No
If Yes, specify	

Points for Connections ³ to:	
Other hedgerows (1 point each)	2
Ponds (2 points each)	
Broadleaved woodland (2 points each)	2

Additional Information:	
Average height (m)	5.0
Average width (m)	3.0
Shape/Recent Management:	
Clipped and dense	No
Unclipped	Yes
Mechanically cut	No
Overgrown	Yes
Leggy	Yes
Layed	No
Other (specify)	

Notes:

¹ A hedgerow will not qualify as important if less than 30 years old.

² For the Regulations to apply, a hedgerow must have a continuous length of at least 20m or meet another hedgerow at each end or be a stretch of hedgerow forming part of a larger hedgerow. Any gap not exceeding 20m or that has resulted from a contravention of these Regulations shall be treated as part of the hedgerow. Boundaries of dwelling houses do not qualify.

³ A hedgerow is connected if it meets one of the features above or has a point within 10m of it and would meet it if the line of the hedgerow continued. A hedgerow which meets another hedgerow is to be treated as ending at the point of intersection or junction.

⁴ Includes footpaths, bridleways, byways open to all traffic and roads used as public paths. Does not include highways.

Additional Comments:

stream and riparian woodland close to hedge

Criteria for determining Important Hedgerows

Hedgerow No.	TN11
--------------	------

Calculations

Total No. of standards	3
No. of standards per 50m	1.1
Percentage gaps	0.0
Percentage ditch	0.0
Percentage bank/wall	0.0
Connection points score	4.0
Average No. of woody species	6.0

Associated Features

Bank or Wall $\geq$ 50% of hedgerow length	No
Gaps total $\leq$ 10% of hedgerow length	Yes
At least 1 standard per 50m	Yes
At least 3 woodland groundflora species	Yes
Ditch $\geq$ 50% of hedgerow length	No
Connections scoring 4 or more points	Yes
Parallel hedge within 15m	No

Assessment Criteria

Rare or Protected species present	No
At least 7 woody species	No
At least 6 woody species and at least 3 associated features	Yes
At least 6 woody species including black poplar, large-leaved lime, small-leaved lime or wild service tree	No
At least 5 woody species and at least 4 associated features	Yes
Adjacent to a public right of way with at least 4 woody species and at least 2 associated features	No

This hedgerow qualifies as an Important Hedgerow.

Additional Comments:

Schedule 3 Woody Species (Insert 'p' for presence, leave blank if absent)

Species	Section				
	1	2	3	4	5
Alder <i>Alnus Glutinosa</i>					
Apple, Crab <i>Malus sylvestris</i>					
Ash <i>Fraxinus excelsior</i>	p				
Aspen <i>Populus tremula</i>					
Beech <i>Fagus sylvatica</i>					
Birch, downy <i>Betula pubescens</i>					
Birch, silver <i>Betula pendula</i>					
Blackthorn <i>Prunus spinosa</i>					
Box <i>Buxus sempervirens</i>					
Broom <i>Cytisus scoparius</i>					
Buckthorn <i>Rhamnus cathartica</i>					
Buckthorn, alder <i>Frangula alnus</i>					
Butcher's broom <i>Ruscus aculeatus</i>					
Cherry, bird <i>Prunus padus</i>					
Cherry, wild <i>Prunus avium</i>	p				
Cotoneaster, wild <i>C. cambricus</i>					
Currant, downy <i>Ribes spicatum</i>					
Currant, mountain <i>Ribes alpinum</i>					
Dogwood <i>Cornus sanguinea</i>					
Elder <i>Sambucus nigra</i>	p				
Elm <i>Ulmus sp.</i>	p				
Gooseberry <i>Ribes uva-crispa</i>					
Gorse <i>Ulex europeus</i>					
Gorse, dwarf <i>Ulex minor</i>					
Gorse, western <i>Ulex gallii</i>					
Geulder Rose <i>Viburnum opulus</i>					
Hawthorn <i>Crataegus monogyna</i>	p				
Hawthorn, midland <i>C. laevigata</i>					
Hazel <i>Corylus avelana</i>					
Holly <i>Ilex aquifolium</i>	p				
Hornbeam <i>Carpinus betulus</i>					
Juniper, common <i>J. communis</i>					
Lime, large-leaved <i>Tilia platyphyllos</i>					
Lime, small-leaved <i>Tilia cordata</i>					
Maple, field <i>Acer campestre</i>					
Mezereon <i>Daphne mezereum</i>					
Oak, pedunculate <i>Quercus robur</i>					
Oak, sessile <i>Quercus petraea</i>					
Osier <i>Salix viminalis</i>					
Pear, plymouth <i>Pyrus cordata</i>					
Pear, wild <i>Pyrus pyrastrer</i>					
Poplar, black <i>Populus nigra</i> ssp.					
Poplar, grey <i>Populus x canescens</i>					
Poplar, white <i>Populus alba</i>					
Privet <i>Ligustrum vulgare</i>					
Rose <i>Rosa sp.</i>	p				

Species	Section				
	1	2	3	4	5
Rowan <i>Sorbus aucuparia</i>					
Sea-buckthorn <i>H. rhamnoides</i>					
Service-tree, wild <i>Sorbus torminalis</i>					
Spindle <i>Euonymus europaeus</i>					
Walnut <i>Juglans regia</i>					
Wayfaring-tree <i>Viburnum lantana</i>					
Whitebeam <i>Sorbus sp.</i>					
Willow <i>Salix sp.</i>					
Yew <i>Taxus baccata</i>					
Other Woody Species not included in Schedule 3 (specify)					
Cherry Prunus Sp					

Hedgerow Trees (insert no.)

Species	No.	Important Tree Species	No.
Alder		Poplar, black	
Apple, crab		Lime, large-leaved	
Ash		Lime, small leaved	
Aspen		Service tree, wild	
Beech		Note: Trees only qualify if trunks are greater than 20cm diameter at 1.3m above the ground or greater than 15cm if multi-stemmed.	
Birch, silver			
Birch, downy			
Cherry, bird			
Cherry, wild			
Elm			
Hawthorn			
Holly			
Hornbeam			
Horse chestnut			
Lime, common			
Maple, field			
Oak			
Pear, common		Other Tree Species (specify)	No.
Pear, wild			
Poplar, grey			
Poplar, white			
Rowan			
Scots Pine			
Sycamore	3		
Walnut			
Wayfaring tree			
Whitebeam			
Willow			
Yew			

Schedule 2 Woodland Species (Insert 'p' for presence, leave blank if absent)

Note: This includes woodland species along the entire length of the hedgrow that are within 1m of the hedgerow bottom.

Herbs

Species	
Barren Strawberry <i>Potentilla sterilis</i>	
Bluebell <i>Hyacinthoides non-scripta</i>	p
Broad-leaved helleborine <i>Epipactis helleborine</i>	
Bugle <i>Ajuga reptans</i>	
Common cow-wheat <i>Melampyrum pratense</i>	
Common dog-violet <i>Viola riviniana</i>	
Common polypody <i>polypodium vulgare</i>	
Dog's mercury <i>Mercurialis perennis</i>	p
Early dog violet <i>Viola reichenbachiana</i>	
Early purple orchid <i>Orchis mascula</i>	
Enchanter's nightshade <i>Circaea lutetiana</i>	
Goldilock's buttercup <i>Ranunculus auricomus</i>	
Great bell-flower <i>Campanula latifolia</i>	
Heath bedstraw <i>Gallium saxatile</i>	
Herb paris <i>Paris quadrifolia</i>	
Herb-robert <i>Geranium robertianum</i>	
Lords-and-ladies <i>Arum maculatum</i>	
Moschatel <i>Adoxa moscatellina</i>	
Nettle-leaved bell-flower <i>Campanula trachelium</i>	
Oxlip <i>Primula elatior</i>	
Pignut <i>Conopodium majus</i>	
Primrose <i>Primula vulgaris</i>	
Ramsons <i>Allium ursinum</i>	
Sanicle <i>Sanicula europaea</i>	
Small cow-wheat <i>Melampyrum sylvaticum</i>	
Sweet violet <i>Viola odorata</i>	
Toothwort <i>Lathraea squamaria</i>	
Tormentil <i>Potentilla erecta</i>	
Wild strawberry <i>Fragaria vesca</i>	
Wood anenome <i>Anenome nemorosa</i>	p
Wood avens <i>Guem urbanum</i>	
Wood horsetail <i>Equisetum sylvaticum</i>	
Wood sage <i>Teucrium scorodonia</i>	
Wood sorrel <i>Oxalis acetosa</i>	
Wood speedwell <i>Veronica montana</i>	
Wood spurge <i>Euphorbia amygdaloides</i>	
Woodruff <i>Galium odoratum</i>	
Yellow archangel <i>Lamiastrum galeobdolon</i>	
Yellow pimpernel <i>Lysimachia nemorum</i>	

Grasses, sedges, rushes

Species	
Giant fescue <i>Festuca gigantea</i>	
Greater wood-rush <i>Luzula sylvatica</i>	
Hairy brome <i>Bromus ramosus</i>	
Hairy woodrush <i>Luzula pilosa</i>	
Wood false-brome <i>Brachypodium sylvaticum</i>	
Wood meadow-grass <i>Poa nemoralis</i>	
Wood melick <i>Melica uniflora</i>	
Wood millet <i>illium effusum</i>	
Wood sedge <i>Carex sylvatica</i>	

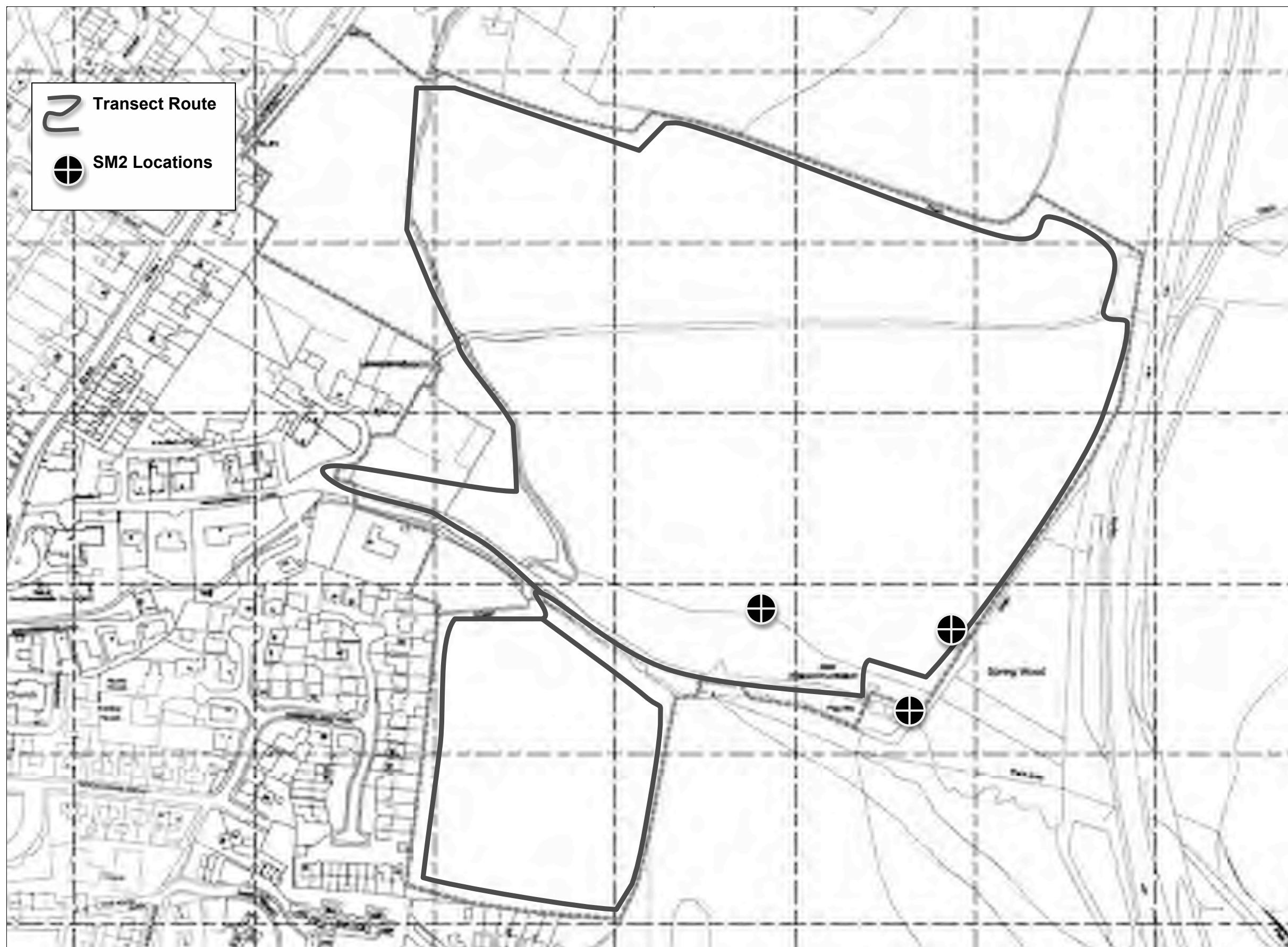
Ferns

Species	
Broad buckler fern <i>Dryopteris dilitata</i>	
Hard fern <i>Blechnum spicant</i>	
Hard shield fern <i>Polystichum aculeatum</i>	
Hart's tongue <i>Asplenium scolopendrium</i>	
Lady fern <i>Athyrium filix-femina</i>	
Male fern <i>Dryopteris filix-mas</i>	
Narrow buckler fern <i>Dryopteris carthusiana</i>	

Other species of interest not included in Schedule 2 (specify)

Species	
Horsetail	

Appendix 5: Bat transect Route



Appendix 6: Bat Activity Results

September 2010

Time (hrs)	Stop number	Number of Pp	Number of Ppy	Comments
1935 - 1939	-	5	-	Commuting east from existing houses along woodland at southern stream
1939 - 1941	1	16	4	As above
1941 - 1945		27	9	As above
1945-1947	2	21	3	As above – 2 bats foraging over marshy grassland
1947-1952		15	6	5 bats feeding around trees along stream
1952 - 1955	3	5	-	Near pumping station, activity has eased
1955 – 2000		2	-	Bats foraging
2001 – 2003	4	1	-	Started to rain
Total		92	22	Potential for maternity roost close to the site
Grand total		114 bat passes		

Pp: Common pipistrelle

Ppy: Soprano pipistrelle

May 2011

Time (hrs)	Stop number	Number of bats	Comments
2058 – 2103	1	7 Pp	Commuting east from existing houses along woodland at southern stream
2103 – 2108	-	26 Pp	As above
2108 – 2110	2	6 Pp	As above
2110 – 2115	-	0	-
2115 – 2120	-	2 Pp	2 bats foraging at north of western stream
2120 - 2125	-	5 Pp	Foraging/commuting along northern hedge boundary
2125 – 2130		2 Pp	Bats foraging along woodland canopy to the east.
2130 – 2133	-	5 Pp	Foraging at SW corner
2133 – 2136	3	10 Pp	As above
2136 – 2141	-	-	-
2141 – 2145	-	3 Pp	Along east of southern stream
2145 – 2150	-	2 Pp/1 Pa/2 Ppy	Foraging along eastern hedgerow of southern field
2150 – 2155	-	0	-
2155 – 2157	4	0	-
2157 – 2201	-	0	-
Total		68 Pp/1 Pa/2 Ppy	
Grand total		71 Bat passes	

Pp: Common pipistrelle Ppy: Soprano pipistrelle Pa: Brown long-eared bat

June 2011

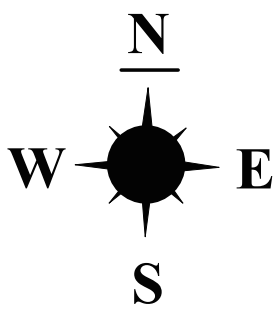
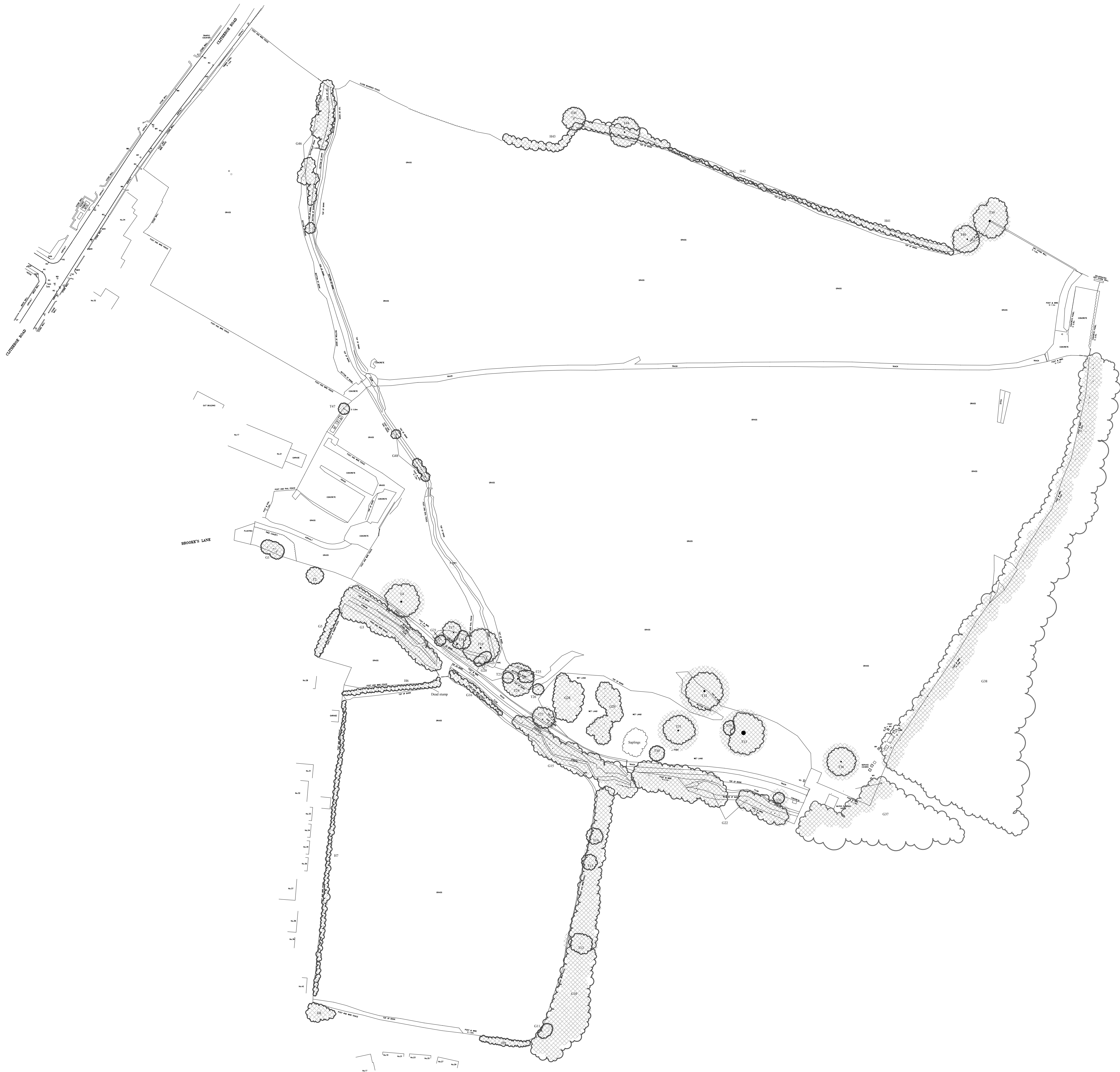
Time (hrs)	Stop number	Number of bats	Comments
2131 – 2136	1	5 Pp	Commuting east from existing houses along woodland at southern stream
2136 – 2141	2	6 Pp	As above
2141 – 2146	3	4 Pp	As above
2146 – 2151	-	18 Pp	Commuting over gardens backing on to southern field from Whalley to Spring Wood
2151 – 2156	4	7 Pp	As above.
2156 – 2201	-	11 Pp	Commuting east from existing houses along woodland at southern stream
2201 – 2207	5	5 Pp	Commuting east from existing houses along woodland at southern stream
2207 – 2209	6	5 Pp/1 Ppy	Foraging north of western stream
2209 - 2215	-	8 Pp/1 Ppy	Foraging and commuting towards Whalley along northern hedgerow
2215 – 2218	7	4 Pp	As above
2218 – 2227	-	1 Myotis sp./12 Pp/4 Ppy	Foraging along NE corner and along Spring Wood tree canopy. Bat passes numbers could be made from bats foraging.
2227 – 2232	8	6 Pp/1 Ppy	Foraging bats at SE corner
2232 – 2237	9	7 Pp	As above
Total		103 Pp/7 Ppy/1 Myotis	Potential for maternity roosts close to the site
Grand total		111 Bat passes	

Pp: Common pipistrelle

Ppy: Soprano pipistrelle

Myotis sp: Unidentified

Appendix 7: Tree constraints plan



Root Protection Area: RPA

THE ROOT PROTECTION AREA (RPA) INDICATES THE LIKELY ROOTING ZONE OF A TREE. THE RPA SHOULD IDEALLY REMAIN UNDISTURBED IF A TREE IS TO BE RETAINED.

THE DEVELOPMENT PROPOSALS SHOULD THEREFORE BE DESIGNED TO AVOID THE RPA OF ANY TREE WHICH IS TO BE RETAINED.

IF IT IS NECESSARY FOR THE DEVELOPMENT TO ENCROACH INTO THE RPA OF A TREE WHICH IS TO BE RETAINED THEN SPECIALIST CONSTRUCTION TECHNIQUES AND MATERIALS MUST BE CONSIDERED.

Appendix 6: Tree Constraints Plan

TITLE:
Land to east of Clitheroe Road, Whalley
Ref: 9759/RG

SCALE : 1:1000 PAPER SIZE : A1

SURVEYED BY: RG DRAWN BY: RG APPROVED BY: TP

**BRITISH STANDARD 5837:2005: 4.3.1
RETENTION CATEGORIES**
Detailed definitions of these categories are at Appendix 2 of our report. N.B. These categories do not necessarily represent or correspond to recommendations for action made in this report.

	CATEGORY A: 'RETENTION MOST DESIRABLE'
	CATEGORY B: 'RETENTION DESIRABLE'
	CATEGORY C: 'TREE WHICH COULD BE RETAINED'
	CATEGORY R: 'TREE FOR REMOVAL'
	ROOT PROTECTION AREA

- CENTRE OF TREE/SHRUB
- CENTRE OF TREE/SHRUB
TO BE REMOVED

JCA LTD
Arboricultural & Forestry Consultants



Appendix 8: Bird species list

Legislative status –

BirDir	Listed in Annex 1 of the Birds Directive (2009)
NERC	Listed as Priority Species on Natural Environment and Rural Communities Act (2006)
WCASch1	Listed in Schedule 1 of the Wildlife and Countryside Act (1981) As amended
BB	Breeding bird, all protected by Wildlife and Countryside Act (1981) As amended.

BoCC –

●	Species is red listed
●	Species is amber listed
●	Species is green listed
No status	Non-native species, not assessed

BAP –

UK	Priority Species in UK Biodiversity Action Plan
LBAP	Priority Species in local Biodiversity Action Plan (Leicester, Leicestershire and Rutland BAP)

Common Name	Scientific Name	Breeding status	Legislative Status	BoCC Status	BAP
Blackbird	<i>Turdus merula</i>	Probable	BB	●	
Blackcap	<i>Sylvia atricapilla</i>	Possible	BB	●	
Blue tit	<i>Cyanistes caeruleus</i>	Possible	BB	●	
Buzzard	<i>Buteo buteo</i>	Flying over	-	●	
Carrion crow	<i>Corvus corone</i>	Present	BB	●	
Chaffinch	<i>Fringilla coelebs</i>	Probable	BB	●	
Chiffchaff	<i>Phylloscopus collybita</i>	Possible	BB	●	
Collared dove	<i>Streptopelia decaocto</i>	Possible	BB	●	
Dunnoek	<i>Prunella modularis</i>	Probable	BB	●	UK
Great tit	<i>Parus major</i>	Probable	BB	●	
Greenfinch	<i>Carduelis chloris</i>	Present	BB	●	
Grey Heron	<i>Ardea cinerea</i>	Flying over	-	●	
Herring gull	<i>Larus argentatus</i>	Flying over	-	●	
House martin	<i>Delichon urbica</i>	Flying over	-	●	
Jackdaw	<i>Corvus monedula</i>	Possible	BB	●	
Kestrel	<i>Falco tinnunculus</i>	Present	BB	●	
Long-tailed tit	<i>Aegithalos caudatus</i>	Possible	BB	●	
Magpie	<i>Pica pica</i>	Flying over	-	●	
Mallard	<i>Anas platyrhynchos</i>	Present	BB	●	
Nuthatch	<i>Sitta europaea</i>	Possible	BB	●	
Pheasant	<i>Phasianus colchicus</i>	Present	BB	No status	
Robin	<i>Erithacus rubecula</i>	Probable	BB	●	
Rook	<i>Corvus frugilegus</i>	Flying over	-	●	

Common Name	Scientific Name	Breeding status	Legislative Status	BoCC Status	BAP
Song thrush	<i>Turdus philomelos</i>	Probable	BB	●	UK and LBAP
Stock dove	<i>Columba oenas</i>	Possible	BB	●	
Swift	<i>Apus apus</i>	Flying over	-	●	
Woodpigeon	<i>Columba palumbus</i>	Probable	BB	●	
Wren	<i>Troglodytes troglodytes</i>	Possible	BB	●	

Appendix 9: Bird Glossary

Birds of Conservation Concern (BoCC)¹⁰

Birds are included on the BoCC list after assessment against a set of objective criteria which places each species on one of three lists, green, amber or red, indicating an increasing level of conservation concern.

Species that meet any of the following criteria are Red listed:

- Species listed by BirdLife International as being Globally Threatened using the International Union for Conservation of Nature (IUCN) criteria.
- Species has demonstrated a severe decline in population between 1800 and 1995 without substantial recovery.
- A severe decline (more than 50%) in the UK breeding population size.
- A severe contraction (more than 50%) in the UK range.

Species that meet the following criteria are Amber listed:

- Categorised as a Species of European Conservation Concern.
- Previously red listed for historical decline but with substantial recent recovery.
- Moderate population decline (between 25 and 50%).
- Moderate range contraction (between 25 and 50%)
- UK breeding population of <300 pairs or a UK non-breeding population of <900 individuals.
- At least 50% of the UK breeding or non-breeding population found in 10 or fewer sites.
- At least 20% of the European breeding or non-breeding population found in the UK.

Breeding Status

The breeding status of birds encountered within the survey area are classified in three categories as a result of behaviour observed during the surveys and following the criteria set out by the European Ornithology Atlas Committee¹¹:

Confirmed breeding: Nest containing eggs located.
Nests with young seen or heard.
Used nests or eggshells found.
Recently fledged or downy young observed.

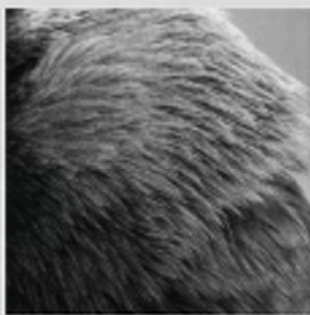
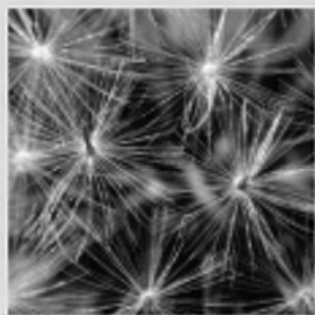
¹⁰ Easton, M.A. *et al* (2209) Birds of Conservation Concern 3: The population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* 102, pp296-341

¹¹ European Ornithology Atlas Committee (1979) *Categories of Breeding Bird Evidence*

Adults entering/leaving nest, particularly if with food or faecal sacs.
Distraction display or injury feigning by disturbed adult.

Probable breeding: Pairs observed in suitable nesting habitat in the breeding season.
Permanent territory presumed through registration or territorial behaviour on at least two different visits at the same place.
Display and courtship behaviour observed.
Birds seen visiting probable nest site.
Agitated behaviour or anxiety calls from adults.
Building nest or excavating nest hole.

Possible breeding: Species observed in breeding season in likely nesting habitat
Singing male(s) present or breeding calls heard.



baker*consultants*