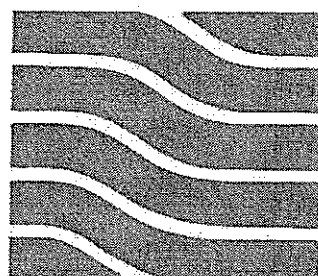


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- LAND AT BARROW BROOK -

**EXTENDED PHASE 1 HABITAT SURVEY
& ECOLOGICAL EVALUATION**

- LAND AT BARROW BROOK -
EXTENDED PHASE 1 HABITAT SURVEY
& ECOLOGICAL EVALUATION

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December 2011

- LAND AT BARROW BROOK -

**EXTENDED PHASE 1 HABITAT SURVEY
& ECOLOGICAL EVALUATION**

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PART 1 INTRODUCTION:

1.1 REASONS FOR SURVEY:

PENNINE Ecological have been commissioned by Avalon Chartered Town Planning to undertake an Extended Phase 1 Survey and Ecological Evaluation of land at Barrow Brook, Clitheroe, Lancashire.

The study includes the following elements:

- Desk based study.
- Extended Phase 1 Habitat Survey.
- Badger Survey.
- Bat roost search in site trees.
- Water Vole Survey of the adjacent stream.
- Evaluation of breeding bird potential.

The study also includes a full evaluation of the ecological significance of the survey findings, and recommendations for future survey where appropriate.

The surveys are required due to a proposal to develop former agricultural land at the Barrow Brook site.

1.2 SITE LOCATION:

The locations of the habitats surveyed are shown on Map 1 in the Appendix.

1.3 SURVEY METHODOLOGY:

1.3.1 Extended Phase 1 Habitat Survey:

An Extended Phase 1 Habitat Survey (*Nature Conservancy Council 1990*) of the survey area was undertaken on 30th November 2011. The site's habitats were fully mapped and higher vascular plant species were recorded and given abundance values according to the standard DAFOR scale, where:

D = Dominant
A = Abundant
F = Frequent
O = Occasional
R = Rare

Where appropriate these values can be prefixed by the letter L (locally) or V (very), to provide more subtle biogeographical data.

1.3.2 Badger Survey:

The badger survey was undertaken in November 2011 and focused on land directly affected by the proposed development only.

The badger survey used standard techniques for establishing the use of the site by badger, and includes searches for evidence of badgers including:

- Setts
- Pathways
- Footprints
- Latrines
- Foraging areas
- Scratching posts

1.3.3 Bat Roost Search:

Following the Phase 1 Survey, the trees on the site were examined for holes that could potentially be used as bat roosts. The surveys were undertaken at ground level using close-focusing binoculars.

1.3.4 Water Vole Survey:

The water vole survey was carried out on 30th November 2011, the survey is based on the standard methodology as outlined in the *Water Vole Conservation Handbook Second Edition*, Strachan, R. & Moorhouse, T. (2006).

Searches were made for the following signs;

- Sightings of individual animals
- Latrines
- Feeding stations
- Burrows
- Runs

1.3.5 Other Species:

In addition to the above, a general assessment of the suitability of the site to support breeding birds was also undertaken as part of this study.

1.4 SURVEY CONSTRAINTS:

1.4.1 Extended Phase 1 Habitat Survey:

The survey was conducted at the end of November, a sub-optimal time for Extended Phase 1 Habitat Survey. The survey timing generated constraints as many species may not be visible at that time. However there was sufficient vegetative evidence present to make a reasonable assessment of the vegetation on site.

1.4.2 Badger Survey:

There were no constraints to the badger survey on the land affected by the proposal.

1.4.3 Bat Roost Search:

The survey was undertaken when the trees on site had lost their leaves, which is the optimum time to examine trees for potential roost sites. There were no constraints.

1.4.4 Water Vole Survey:

The water vole survey was undertaken outside of the optimum survey period which is late April – early October. However the prevailing conditions in the stream meant that this was not a constraint.

PART 2 SURVEY RESULTS:

2.1 DESK BASED STUDY:

A request was made to Lancashire Environment Record Network (LERN) - Research & Intelligence Team to obtain details of any biological records relating to the site. In particular requests were made for any records of protected species within a 500m radius of the centre of the site.

A search for Biological Heritage Sites within 500m of the sites was also undertaken.

Species records supplied by LERN are not provided in the appendix as none relate directly to the study area.

Statutory designations (SSSIs etc) were researched on Natural England's 'Nature on the Map' website.

The results of this consultation revealed the following information;

- The site has no statutory or non-statutory wildlife or ecological designations.
- There are no Sites of Special Scientific Interest (SSSI) within 3km of the site.
- There are no Biological Heritage Sites within at least 500m of the study area.
- The protected species search revealed no records of any European protected species, i.e. a species listed in Annex IV to the Habitats Directive, within 500m of the site.
- There are no waterbodies capable of supporting GCN within 500m of the site.
- The search revealed records for water vole at the adjacent Barrow Lodge. The records date from 1977.
- No records of badger were returned within the search area.

No other information or data is known for the site.

2.2 EXTENDED PHASE 1 HABITAT SURVEY:

2.2.1 General Description:

The site of the proposed development is composed of three former agricultural fields that were once divided by boundary hedgerows. The management of these fields appears to have been 'relaxed' which has allowed the development of coarse ruderal vegetation and bramble scrub along the periphery of the field boundaries.

The fields are composed of semi-improved neutral grassland most of which is species-poor, however one of the fields has more species than the others which may indicate greater floristic diversity than was evident during the survey.

A series of relict hedgerows composed of hawthorn and elder are a feature of the site. The hedgerows are defunct and limited in extent due to historical fragmentation that mainly appears to have occurred many years ago. In addition lines of mature trees also indicate the location of former hedge boundaries long since removed.

A swift-flowing stream forms part of the northern boundary while to the west and south-west an immature strip of planted broad-leaved woodland occurs around the edge of the site. A wide strip of mixed woodland of varying age also occurs on the southern boundary.

Linear strips of semi-improved grassland adjacent to the stream contain species that potentially indicate floristic diversity. These include great burnet, meadowsweet and figwort. A small stand of sedge-dominated marsh also features here.

The grasslands whilst obviously originating from agriculture don't appear to be used for stock grazing, however the lack of long grass and 'thatch' associated with abandonment is absent which suggests cutting and removal of grass is taking place.

The site has no public rights of way but the public frequently use the site for informal recreation, mostly dog walking.

A series of photographs showing the general character of the site is provided at the end of this section of the report.

2.2.2 Extended Phase 1 Habitat Survey Target Notes:

The Target Notes are shown on the Extended Phase 1 Habitat Survey Map (Map 1) in the Appendix.

Note: All species nomenclature follows Stace, C. (1996) 'New Flora of the British Isles' - definitive English names.

Target Note No: 1

A swift-flowing brook (Barrow Brook) that has been highly engineered on both its banks and channel bed. These modifications have resulted in a shallow fast flowing stream with no in-channel vegetation.

The banks are composed of stone/concrete masonry that is semi-vegetated mostly by mosses and a sparse cover of common grasses and herbs. Male-fern is occasional and hemlock water-dropwort very occasional.

The channel is shaded by bankside trees and shrubs for most of its length.

See Site Photographs Fig. 7 and 8.

Target Note No: 2

A linear strip of semi-improved neutral grassland adjacent to the stream described above. The flora present is possibly indicative of the species that would once have been found across a wider area of the site before its agricultural improvement.

A small sedge-dominated marsh occurs in this area.

See Site Photographs Fig. 4.

Target Note 2 continued:

Species:	Abundance:
Meadow foxtail	D
Ribwort plantain	A
Red fescue	LA
Creeping buttercup	LA
Meadowsweet	VLA
Cock's-foot	F
Yorkshire-fog	F
Great burnet	LF
Wild angelica	LF
Red campion	LF
Cuckooflower	LF
Water mint	VLF
Bush vetch	VLF
Pignut	O
Figwort	O
Yarrow	O
Cow parsley	O
Tufted hair-grass	O
Common knapweed	O
Marsh woundwort	O
Creeping thistle	O
Spear thistle	O
Reed canary-grass	VO

Target Note No: 3

A defunct and fragmented boundary hedgerow dominated by hawthorn with two mature ash trees. The boundary is fenced and a shallow dry ditch features on the outside of the hedge line.

Target Note No: 4

This is a mixed plantation woodland of varying age and height. The older trees include scattered mature larch and very occasional ash that once stood as individual trees, however the woodland has been under-planted within the last 10-15 years or so with a range of broad-leaved trees and shrubs.

The ground flora is composed of the remains of the precursor vegetation which is presumed to have been grassland.

See Site Photographs Fig. 5 and 6.

Target note continued on the following page

Target Note 4 continued:

Species:	Abundance:
-----------------	-------------------

Canopy:

Larch	VLD
Ash	F
Oak sp.	F
Field maple	LF
Pine sp.	O
Silver birch	O

Understorey:

Hawthorn	D
Dog rose	LF
Gelder rose	LF
Holly	O
Ash	O

Ground flora:

Yorkshire-fog	D
Common nettle	LD

Target Note No: 5

A large semi-improved grassland dominated by short grasses and displaying low species diversity

See Site Photographs Fig. 1.

Species:	Abundance:
-----------------	-------------------

Red fescue	D
Meadow-grass sp.	LD
Ribwort plantain	A
Creeping buttercup	LA
Meadow buttercup	LA
White clover	LA
Dandelion sp.	F
Common sorrel	F
Meadow foxtail	LF
Cock's-foot	LF
Soft-rush	O
Common ragwort	VO

Target Note No: 6

A small field of semi-improved grassland dominated by short grasses. The grassland has greater species diversity than the other field parcels.

Species:	Abundance:
Crested dog's-tail	D
Red fescue	D
Ribwort plantain	A
Meadow-grass sp	A
Creeping buttercup	LA
Meadow buttercup	LA
Red clover	LA
Dandelion sp.	F
Moss sp.	F
Cock's-foot	LF
Common sorrel	LF
Meadow vetchling	VLF
Timothy	O
Common mouse-ear	O
Hairy sedge	O
Lesser celandine	O
Common ragwort	O
Common knapweed	VO
Meadowsweet	VO
Soft-rush	VO
Meadow fescue	VO
Amphibious bistort	VO
Tufted hair-grass	VO

Target Note No: 7

These are narrow linear strips of planted juvenile alder to the rear of adjacent housing. Bramble, Yorkshire-fog, common nettle and creeping buttercup are abundant in the field layer.

Target Note No: 8

These are defunct 'gappy' hedgerows composed of hawthorn with occasional elder. Dense stands of scrub dominated by bramble with occasional raspberry have developed through neglect on either side of the hedges. Common nettle is locally abundant here and small juvenile ash also occur.

Target Note No: 9

A small field of semi-improved poor grassland dominated by short grasses. The grassland is similar in character to that described in Target Note 5.

Target note continued on the following page.

Target Note 9 continued:

Species:	Abundance:
Red fescue	D
Yorkshire-fog	LD
Crested dog's-tail	LD
Ribwort plantain	A
Creeping buttercup	A
Meadow buttercup	A
Meadow grass sp.	F
Dandelion	LF
Cocks-foot	O
Common knapweed	O
Common ragwort	O
Red clover	O
Common bent	O
Soft-rush	VO
Cuckooflower	O

Target Note No: 10

A linear strip of semi-improved grassland that displays some floristic diversity, including some marsh species. There is no single dominant species.

Species:	Abundance:
Yorkshire-fog	A
Red fescue	A
Meadow-grass sp.	A
Common sorrel	A
Creeping buttercup	A
Wild angelica	A
Ribwort plantain	A
Meadowsweet	LA
Cock's-foot	F
Hogweed	F
False oat-grass	F
Moss sp	F
Common knapweed	VLF
Common marsh-bedstraw	O
Common ragwort	O
Tufted hair-grass	O
Red campion	O

Site Photographs:



Fig. 1: General view of the site looking east to west



Fig. 2: View of encroaching bramble/coarse habitats on the northern boundary



Fig. 3: View of encroaching bramble/coarse habitats on the southern boundary



Fig. 4: Linear strip of semi-improved grassland adjacent to Barrow Brook (Target Note 2)



Fig. 5: View of mixed woodland left of centre.



Fig. 6: Interior view of mixed woodland.



Fig. 7: Typical view of Barrow Brook. Note shallow fast-flowing water and lack of channel vegetation.



Fig. 8: Typical view of Barrow Brook. Note hard/stone revetments on bankings

2.3 BADGER SURVEY:

2.3.1 Survey Details and Results:

The badger survey employed standard techniques to establish if badgers are present on site or use the site for foraging/commuting. (See Section 1.3 Survey Methodology)

The following searches were undertaken.

- Searches for setts on site.
- Searches for foraging signs and pathways.
- Boundary searches for runs, pathways and latrines.

The survey results are outlined below.

Sett Search:

The survey found no setts on site and no visible sign of setts on the adjacent land.

Therefore it can be concluded that there are no badger setts on site or near vicinity where land was accessible.

Search for Foraging Signs and Pathways:

The site was searched by walking a transect across the fields for badger pathways or signs of foraging. No sign of badger activity was found therefore it can be concluded that the species is not using this area for foraging or commuting.

Small holes and earth scratchings on site are attributed to dogs that are frequently exercised on this site.

Boundary Search:

All of the boundaries of the site were walked and examined for potential runs, pathways and latrines. The search found no evidence to suggest badger activity along any of the site boundaries.

The absence of any obvious means of ingress indicates that badgers are not entering the site. The absence of latrines indicates a lack of territorial activity in the near vicinity of the site.

2.3.2 Survey Conclusions:

The survey found no evidence of historic, recent or current use of the site by badgers for foraging, commuting or occupation and the species is considered to be absent.

2.4 BATS

2.4.1 Bat Roost and Foraging Area Evaluation:

The trees and shrubs on the site were individually searched for holes and fissures that could potentially be used as bat roosts. The search was undertaken from ground level using close-focusing binoculars.

In addition bat foraging potential on the site was evaluated.

The location of potential bat roosts and foraging areas is shown on Map 2 in the appendix.

Bat Roosts:

The roost search revealed several trees on site with bat roost potential, these are described below.

T1: A single mature ash tree.

T2: A mature oak

T3: A multi-stemmed mature sycamore.

T4: A mature ash in adjacent woodland.

T5: A semi-mature alder.

T6: A mature oak tree.

T7: A mature ash.

T8: A mature ash.

T9: A mature oak.

T10: A mature ash.

Foraging Areas:

Potential foraging areas on site occur around the boundary features of the site. The actual value to bats is not known, however the tall hedgerows, tree lines and boundary stream are expected to provide good invertebrate values and shelter for foraging bats. Therefore bats are expected to forage along the interface of these features and the adjacent grasslands.

Bats might also commute across the site between roosts and foraging areas off site.

2.5 WATER VOLES:

2.5.1 Water Vole Survey & Evaluation:

Barrow Brook was surveyed using the methodology as stated in section 1.3.4 of this report.

The stream has been highly modified by engineering along its entire length, as a result the channel is highly artificial and lacks natural features. The banks are reinforced by stone revetments and the stream bed also appears to have been reinforced with compacted stone/concrete.

The stream is now very shallow, uniform in structure and is little more than a straightened fast-flowing drainage channel.

Potential for water voles is extremely low due to the banks being composed of hard stone, the high velocity of shallow water and the absence of marginal/in-channel vegetation.

No sign of water vole occupation was found during the survey, and despite the sub-optimal survey period it is reasonably safe to assume that water voles are absent.

Following the field survey, reference was made to an earlier survey report* covering Barrow Brook. The earlier survey was undertaken during optimal survey conditions and their findings concur with the findings of this report.

**Ribble Valley Enterprise Park, Clitheroe – Report of Survey for Water Voles. (ERAP August 2011).*

2.6 BIRDS:

2.6.1 Bird Evaluation:

Bird surveys were not undertaken at the site as the survey was undertaken in winter. Instead a general evaluation of the site for nesting bird potential was made based on the conditions observed on site.

The following points should be considered in respect of the site's potential to support ground nesting birds. These are as follows;

- The fields are established semi-improved grasslands.
- The fields are small and largely surrounded by hedgerows, trees and woodlands which offer perches for predators such as Corvids.
- Their management possibly includes an annual grass crop, and reference to aerial photographs indicate field marks consistent with grass cutting.
- The site is directly adjacent to a housing estate and domestic cats will hunt in these areas.
- The site is well used by pedestrians and dogs and such regular disturbance limits the value of the grasslands for ground-nesting birds further.

- The general prevailing conditions as listed above are not considered conducive to the breeding success of ground-nesting birds, and given the conditions it is very unlikely that birds such as lapwing or skylark would attempt to nest on site.

In regards to non-ground nesting birds, the woodland, hedgerows, trees and scrub on site will be used by typical common passerines such as blackbird, robin, dunnoek, wren, chaffinch, titmice, magpie and woodpigeon for example.

Records were made of bird species present through the visit, these include blackbird, blue tit, great tit, bullfinch, magpie and wren.

PART 3 ECOLOGICAL EVALUATION:

3.1 EVALUATION OF SURVEY FINDINGS:

The following section evaluates the site in relation to statutory/non-statutory sites, protected species and species/habitats listed on the UK Biodiversity Action Plan Priority List, Section 41 Species/Habitats of Principal Importance in England (NERC) Act 2006, and the Lancashire Biodiversity Action Plan.

3.1.1 Statutory Sites:

There are no statutory wildlife sites within 3 km of the site.*

(*Source – Nature on the Map)

3.1.2 Biological Heritage Sites:

The area affected by the proposed works fails to meet any of the guidelines for selection associated with the Lancashire Biological Heritage Site scheme.

Desks based study show that there are no BHSs within 500m of the site.

3.1.3 Protected Species:

There are a number of trees on the site that have bat roost potential

The hedgerows, tree-lines, wood edge and stream side habitats have potential foraging value to bats, however the importance of the site for foraging bats is not known. Bats may also commute across the site

Desk-based studies and field surveys indicate that there are no potential great crested newt (GCN) ponds within 500m of the site. The only waterbodies present form part of a complex of formal fishing lakes at Pendle View Fishery. These features are considered to be unsuitable habitat for breeding GCN.

There are no badger setts on site and there is no evidence of badger foraging on site, or runs entering the site through boundaries.

The prevailing conditions on site are not considered to be conducive to the breeding success of ground nesting birds.

Common birds will use the relict hedgerows, trees, scrub and woodland as nest sites.

3.1.4 Biodiversity Action Plan (BAP) Habitats and Species:

Hedgerows are a UK BAP Priority Habitat, and there is a single fragmented hedgerow that conforms to the UK BAP on the site.

There are no other UK BAP Priority Habitats/Species present on site.

3.1.5 Section 41 (S41) Habitats and Species of Principal Importance in England Natural Environment and Rural Communities (NERC) Act 2006:

The hedgerow is a Section 41 Habitat.

3.1.6 Lancashire Biodiversity Action Plan Habitats & Species:

Rivers and Streams is a Lancashire BAP Habitat category, however Barrow Brook on the northern boundary of the site is considered to be a very poor example of the type of habitat that the LBAP represents. This is due to the highly modified/engineered status of the watercourse.

Broad-leaved and Mixed Woodland is a LBAP Habitat, although the examples present on site are generally of recent origin and lack the typical features of established woodland.

3.2 SUMMARY EVALUATION:

3.2.1 Vegetation – Habitats and Species:

The survey found no habitats of obvious high biodiversity value. The habitats present are common and include areas of semi-improved grassland with generally low diversity, short lengths of fragmented hedgerow, plantation woodland of limited age and several mature - semi-mature trees.

The linear strips of grassland adjacent to Barrow Brook have floristic interest on a site-local level.

The longer length of hedgerow is a UKBAP/S41 habitat.

3.2.2 Badgers:

There is no evidence of badger occupation/use on the site, or where visible, off site. The species is considered to be absent in the immediate locality.

3.2.3 Bats:

There are a number of trees on the site that have bat roost potential. The site also provides potential bat foraging and bats may also commute across the site.

3.2.4 Water Vole:

There is no evidence of water vole occupation along the course of Barrow Brook, and conditions for the species are considered to be unsuitable.

3.2.5 Birds:

The site is considered to have no significant value to ground-nesting birds.

Common birds will use the hedgerows, trees, woodland and scrub as nest sites.

PART 4 RECOMMENDATIONS:

4.1 HABITATS:

The findings of the Extended Phase 1 Survey are considered to be representative of the flora/habitats present on site and no further survey is recommended.

4.2 FAUNA:

4.2.1 Badger:

There was a total absence of any evidence of activity that could be associated with badger on the site. Therefore no further survey in respect of badger is recommended.

4.2.2 Bats:

Several of the trees have bat roost potential and the site provides potential foraging areas for bats. It is recommended that bat surveys are undertaken to confirm bat roost status in the trees, and to evaluate the sites status for foraging bats.

The roost surveys must be undertaken by a licensed bat ecologist. Bats and their roosts are fully protected by law and any tree identified as having a potential bat roost must not be felled or pruned without taking advice from a licensed bat ecologist.

4.2.3 Birds:

Surveys in spring/summer are considered unlikely to reveal any population greater of site-local significance, therefore additional surveys are not recommended.

However if any of the trees/shrubs are to be felled then this must be done outside of the bird breeding season during September-February. Removal in the period March-August must not be undertaken unless the acting ecologist has inspected the site and deemed the trees/shrubs to be clear of nesting birds.

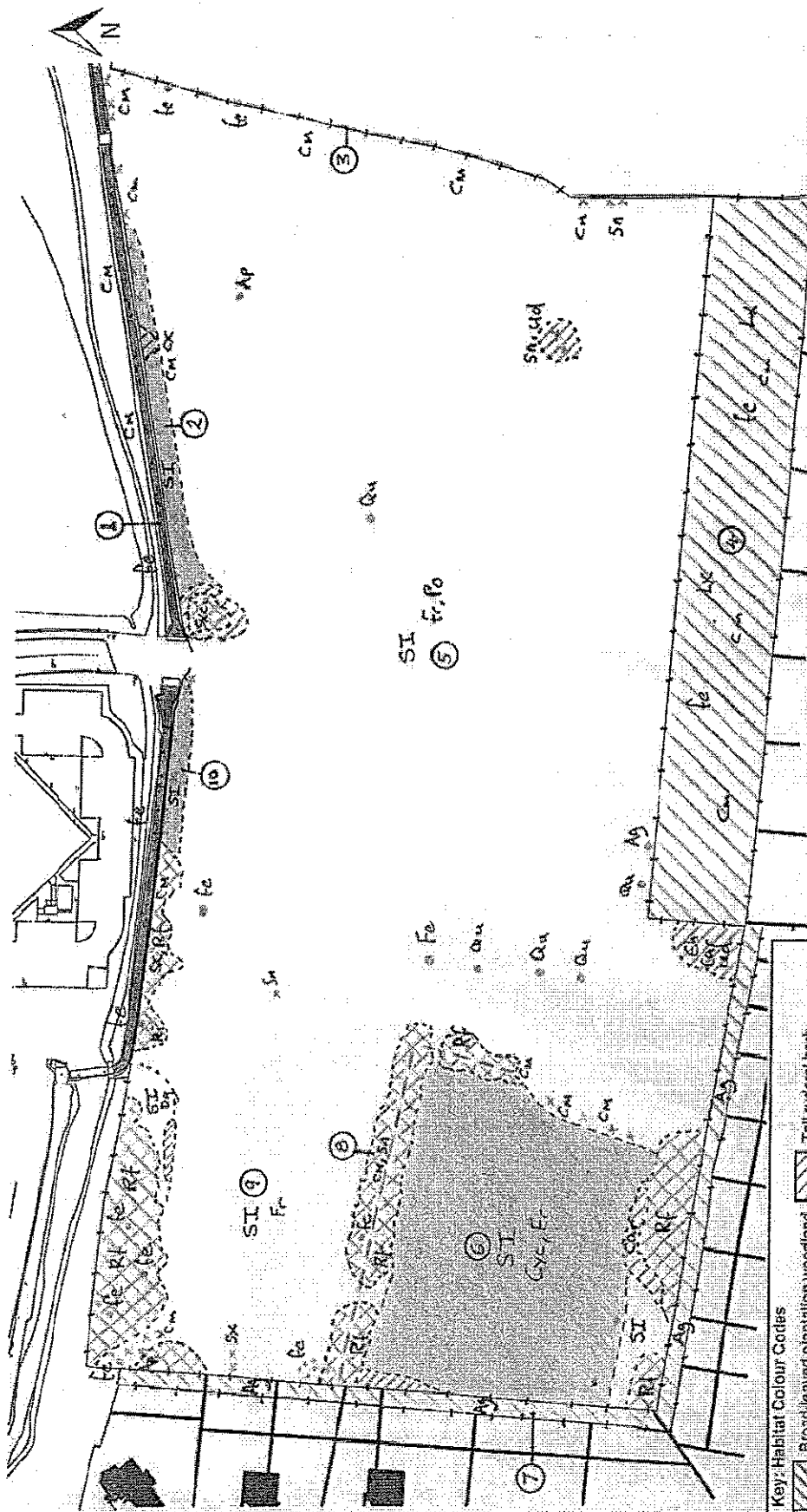
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- Web Sites:**
- Bing Maps.
- Google Earth.
- Lancashire Biodiversity Partnership website
- MARIO.
- Natural England – Nature on the Map.
- UKBAP website.

APPENDIX:

Map 1: Extended Phase 1 Habitat Survey
Map 2: Potential Bat Roosts and Foraging Areas



Job title:
- Land at Barrow Brook -

Extended Phase 1 Survey & Ecological Evaluation
Job Ref: N/A

Map 1: Extended Phase 1 Survey Map

DRAWING Ian Ryding	SCALES Not to scale	DATE: 30 November 2011
PENNINE ecological		

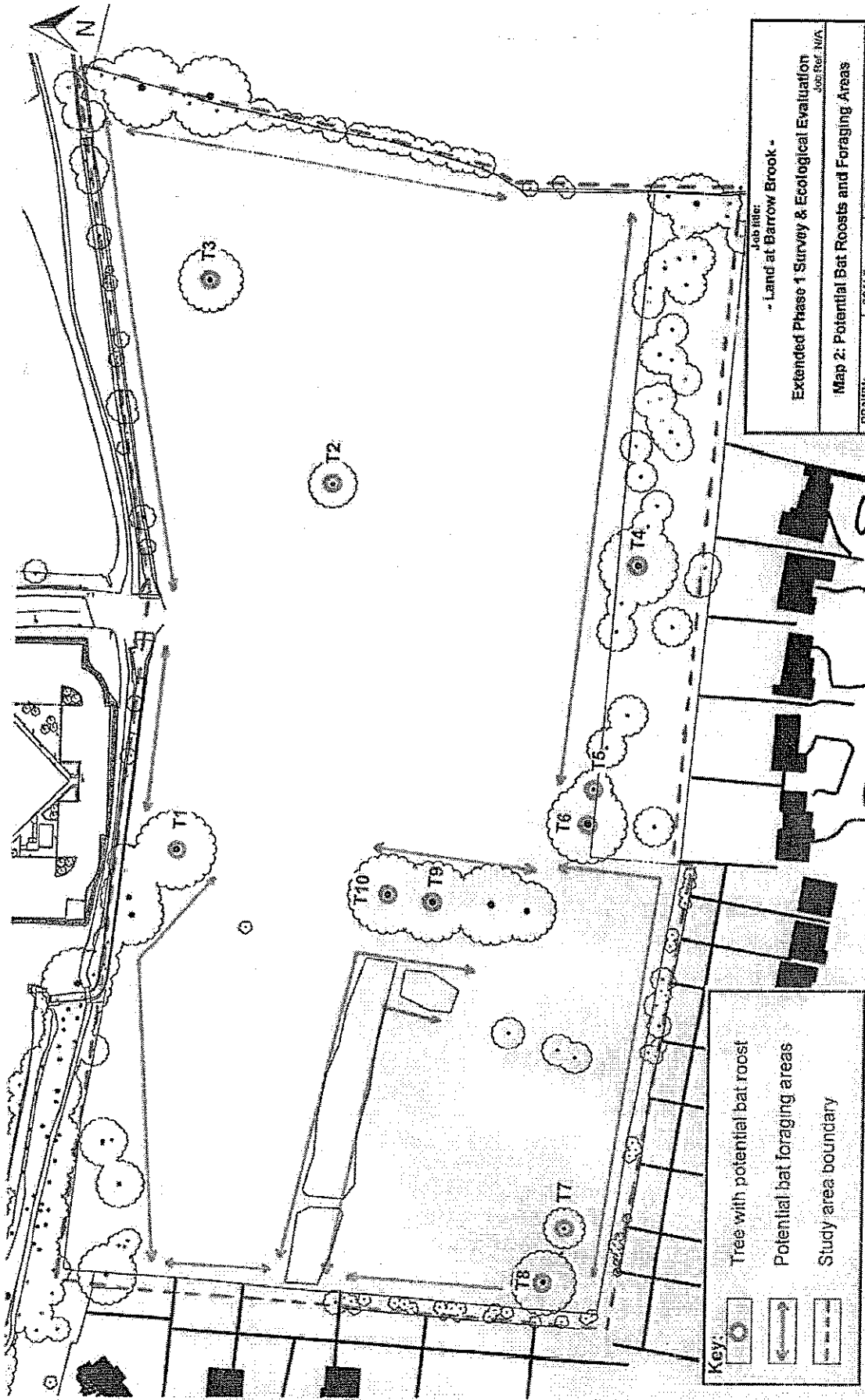
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 NR: 01775 50041
 SR: 1000000000, 1000000000, 1000000000
 TS: www.pennineecological.co.uk

Key: Dominant Species Codes

Ag	Alder	Lx	Larch
Ap	Sycamore	Po	Meadow-grass sp.
Cm	Hawthorn	Qr	Oak sp.
Cx	Sedge sp.	Rf	Bramble
Cyc	Crested dog's-tail	Ri	Raspberry
Dg	Cock's-foot	Sn	Elder
Eh	Great willowherb	Sx	Willow sp.
Fa	Ash	Sxcl	Grey willow
Fr	Red fescue	Ud	Common nettle

Key: Habitat Colour Codes

	Broad-leaved plantation woodland		Tall ruderal herb
	Mixed plantation woodland		Running water
	Dense scrub		Defunct hedge species-poor
	Scattered scrub		Fence
	Scattered trees		Wall
	Semi-improved neutral grassland		Target note
	Semi-improved poor grassland		Study area boundary
	Marsh/marshy grassland		



Job title: - Land at Barrow Brook -		
Extended Phase 1 Survey & Ecological Evaluation		
Client: N/A		
Map 2: Potential Bat Roosts and Foraging Areas		
DRAWN: PENNINE	SCALE: Not to scale	DATE: 30th November 2011
IN: 1 Moss Cottage, North Road, Batherston, Leyland PR26 9AY Tel: 01772 884441 Email: info@pennineecological.co.uk Web: www.pennineecological.co.uk		
ecological		