



**PHASE 1 HABITAT SURVEY**

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## PURPOSE OF STUDY

It has been proposed by Wilts and Berks Trust (WBCT) to create a new canal section linking the Kennet and Avon Canal at Semington Bridge to the River Avon in Melksham. This new section, referred to as the Melksham Link, is close to the course of the original Wilts and Berks canal because restoration of the original canal is not possible due to the development that has taken place since it was abandoned in 1914

The link is planned to pass through Semington Village and Berryfield estates in order to link the two water courses. The development aims to increase amenity value of the watercourses (e.g. cycling, walking), improve the current waterside environment, provide educational opportunities and increase biodiversity.

## INTRODUCTION

As part of the planning process for the Melksham Link, a phase 1 habitat survey of the area has been carried out to examine key target areas of possible conservation. The project leader, Ken Oliver, commissioned this survey to take place as part of a Community Area Partnership, which runs alongside the Wiltshire County Council.

Recommendations based on survey findings will be presented to Wiltshire County Council for their consideration during the planning process.



## METHODOLOGY

Initially a desktop survey was carried out, identifying key points to be investigated together with general land use. Key points were identified to be looked at in more detail. These key points are called **Target Notes**, which were to be further investigated in the field. These points were highlighted because they may have contained flora or fauna of interest that would need to be considered when building the canal.

Standard Phase 1 Habitat Survey methodology was employed, which involved walking the study area and surrounds and noting each habitat type.

## HABITAT TYPES

The following habitats were identified:

- Canal/Hedgerow with Trees
- Hedgerow with Trees
- Drainage Ditch
- Semi-improved Grassland
- Arable

Each is discussed in turn in the Target Notes below. The appropriate appendix and map is referenced.

### 1) Target Note 1 (Canal/Hedgerow with Trees) – Appendix 1 + Map 1

The canal (the Kennet and Avon Canal) is regularly used by canal boats, the path in between the hedge and canal is regularly used by walkers and cyclists.



### Species Observed

Seen on the canal were:

Moorhen (*Gallinula tenebrosa*)  
Mallard (*Anas platyrhynchos*)

Species identified within the hedgerow are:

Ash (*Fraxinus excelsior*)  
Hawthorn (*Crataegus monogyna*)  
Stinging nettles (*Urtica dioica*)

Bugle (*Prunella vulgaris*)  
 Cleavers (*Galium aparine*)  
 Fools Parsley (*anthriscus sylvestris*)  
 Lords and Ladies (*Arum maculatum*)  
 Wood cricket (*Nemobius sylvestris*)  
 Orange tip butterfly (*Anthocharis cardamines*)  
 Bramble (*Rubus fruticosus*)  
 Ivy (*Hedera helix*)  
 Common frog hopper (*Philaenus spumarius*)  
 Fools parsley (*Aethusa cynapium*)  
 Black Medic (*Medicago lupulina*)  
 Clay coloured weevil (*Otiorhynchus singularis*)

2) Target Note 2 (Hedgerow with Trees) – Appendix 2 + Map 1

This target note is a field boundary; a survey was taken place on a fifteen metre stretch of the two hundred and fifty meter hedgerow. This hedgerow area was fairly large and incorporated section of electricity wire poles. (Figure 1)



Figure 1: Electricity Poles

A hedgerow survey was carried out. Species found included;

Dock (*Rumex acetosa*)  
 Nettles (*Urtica dioica*)  
 Spear Thistle (*Cirsium vulgare*)  
 Blackthorn (*Prunus spinosa*)  
 Hazel (*Corylus avellana*)  
 Bramble (*Rubus fruticosus*)  
 Self Heal (*Prunella vulgaris*)  
 Fools Parsley (*anthriscus sylvestris*)  
 Dogwood (*Cornus sanguinea*)  
 Burdock (*Arctium pubens*)  
 White Deadnettle (*Lamium album*)  
 Field Mouse Ear (*Cerastium arvense*)

3) Target Note 3 (Hedgerow with Trees/Drainage Ditch) – Appendix 3 + Map 2

A hedgerow survey was taken at the target note as well as a quadrat survey and water analysis of the drainage ditch; this included testing the water for ammonia and phosphate levels. The following species were found;

#### Hedgerow

Hazel (*Corylus avellana*)  
Hawthorn (*Crataegus monogyna*)  
Nettle (*Urtica dioica*)  
Bugle (*Ajuga reptans*)  
Cleavers (*Galium aparine*)  
Lords and Ladies (*Arum maculatum*)  
Chaffinch (*Fringilla coelebs*)  
Eupteryx aurata  
Lagria hirta  
Bumble Bee (*Bombus lucorum*)

#### Quadrat 1 – Hedgerow – Bank Zone

Bush Vetch  
Nettle (*Urtica dioica*)  
Spear Thistle (*Cirsium vulgare*)  
Bulbus Buttercup  
Cleaver (*Galium aparine*)  
Marsh Foxtail (*Alopecurus geniculatus*)  
Common cord grass (*Spartina anglica*)  
Fat Hen (*Aristolochia rotunda*)  
Dark Bush Cricket (*Pholidoptera griseoptera*)

#### Quadrat 2 – Adjacent Headland

Spear Thistle (*Cirsium vulgare*)  
Common cord grass (*Spartina anglica*)  
Fat Hen (*Aristolochia rotunda*)

#### Drainage Ditch



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Within the drainage ditch an ammonia and phosphate analysis was carried out.

The results are as follows;

Ammonia            Comparator reading of 0.1  
Phosphate        Comparator reading of 2.0

Species Observed within water

Water Cricket (*Velia caprai*)  
Mud Snail (*Lymnaea glabra*)  
Water Cress (*Planorbidae*)  
Flatworm (*Dugesia polychroa*)  
Leech (*Dina lineate*)

Target Note 4 (Pond/Ditch of Field Boundary) – Appendix 4 + Map 3

The fourth target note was a field drainage ditch. It was slightly wider than the rest of the drainage ditch surrounding it and there was more flora present at this point. It is not known whether it was in use or not. The ditch/pond was bone dry.

The following species were found;

Nettle (*Urtica dioica*)  
Cleaver (*Galium aparine*)  
Dock (*Rumex obtusifolius*)  
Goat Willow (*Salix caprea*)  
Bramble (*Rubus Rosaceae*)  
Fat Hen (*Aristolochia rotunda*)  
Cow Parsley (*Anthriscus sylvestris*)  
Clover (*Oxalis tetraphylla*)  
Hazel (*Corylus avellana*)  
Cocks Foot (*Dactylis glomerata*)  
Large White Butterfly (*Pieris brassicae*)  
Green Shield Bug (*Palomena prasina*)  
Dark Bush Cricket (*Pholidoptera griseoptera*)  
Lady Bird Larvae (*Coccinella 7-punctata*) -Figure 2  
Chaffinch (*fringilla coelebs*)



Figure 2: Lady Bird Larva

Target Note 5 (Badger Sett) – Appendix 5 + Map 3

On the way to Target Note 4 we found what could be described as a badger hole or sett. This may require further investigation. However, it should be noted that it is not on the route of the proposed canal.

## GRASSLAND SITES

Over the grassland areas we used quadrat sampling to identify species present and their percentage cover within the area. We used species identification books to help us identify wild flowers that we were not familiar with. The quadrats were thrown randomly so as not to bias results and to give us a maximum range of species present. For the hedgerow survey we walked a fifty metre section of the hedgerow identifying tree and shrub species along with ground flora species present, we also took note of any animal activity within the hedgerow.

### Habitat Types

#### Calcarious semi improved grassland (B3.2) containing **Target Note**

- Taraxacum officinale (Dandelion)
- Ranunculus repens (Creeping Buttercup)
- Pheleum bertelonii (Lesser Catstail)
- Galium aparine (Cleavers)
- Chaerophyllum temulemtum (Rough Cherbill)
- Anthriscus sylvestris (Cow Parsley)
- Rumex crispus (doc)
- Lamium album (White Dead Nettle)
- Trifolium repens (White Clover)

#### Hedgerow (J2.1.2 Intact species poor)

- Crataegus monogyna (Hawthorn)
- Ulmus glabra (Wych Elm)
- Prunus spinosa (Blackthorn)
- Hedera helix (Ivy)
- Rubus fruticosus (Bramble)
- Galium aparine (Cleavers)
- Urtica dioica (Common Nettle)
- Arum maculatum (Lords and Ladies)
- Ranunculus ficaria (Lesser Celendine)

Point of interest: Evidence of Badger sett in hedgerow

#### Scrub dense/continuous (A2.1)

- Prunus avium (Wild Cherry)
- Prunus spinosa (Blackthorn)
- Rubus fruticosus (Bramble)
- Acer psuedoplatanus (Sycamore)
- Cupressus cyparisleylandii (Leyland Cypress)
- Crataegus monogyna (Hawthorn)
- Galium aparine (Cleavers)
- Urtica dioica (Common Nettle)
- Ranunculus ficaria (Lesser Celendine)
- Anthriscus sylvestris (Cow Parsley)
- Symphyti radixherba (Comfrey)
- Narcissus sp (Daffodil)
- Arum maculatum (Lords and Ladies)

#### Hedgerow with trees species rich (J2.3.1) **Target Note**



Asculus hippocastanum (Horse Chesnut)  
Cratagus monogyna (Hawthorn)  
Sambucus nigra (Elder)  
Galium aparine (Cleavers)  
Arctium majus (Burdock)  
Rumex crispus (Doc)  
Urtica dioica (Common Nettle)  
Prunus spinosa (Blackthorn)  
Acer psuedoplatanus (Sycamore)  
Arum maculatum (Lords and Ladies)  
Rubus fruticosus (Bramble)  
Anthriscus sylvestris (Cow Parsley)  
Ulmus glabra (Wych Elm)

#### Calcarius semi improved grassland (B3.2) Target Note

Ranunculus repens (Creeping Buttercup)  
Taraxicum officinale (Dandelion)  
Cerastium pumilum (Dwarf Mouse Ear)  
Pheleum berteloni (Lesser Catstail)  
Poa annua (Annual Meadow Grass)

Other types of habitat seen – running water oligotrophic (G2.3)

#### **Discussion**

The areas comprised of common habitats: there is little of special conservation interest, the species present were common in semi improved grassland and hedgerow species were also common.

Much of the area is under cultivation; this means there is likely to be no serious habitat damage.

However it should be noted that this area may be used by protected fauna such as Badgers, Bats, Raptors and Owls.

#### **HEDGEROW SURVEY**

The Phase One habitat survey began with a desk study of adjacent land and the habitat types in them, the majority of which were either arable farmland or improved grassland for pastoral farming. A map of the area was created and the different habitats were coloured in, as the Phase One Habitat Survey describes.

Key points were then highlighted, called **Target Notes**, which were to be further investigated in the field. These points were highlighted because they may have contained flora or fauna of interest that would need to be considered when building the canal. A total of 9 target notes were made.

These target notes were then investigated in the field; three groups of three were used to investigate three points each by walking the area and making records of the target notes. The surveys were carried out according to the Phase One Habitat Survey Handbook. The results were recorded in the standard target note recording forms.

Within three of the chosen target notes there was a watercourse survey, a hedgerow and headland survey and a survey of a hedgerow adjacent to the existing canal and footpath. The watercourse survey was undertaken by using a net to catch some of the organisms in the ditch. After this the contents of the net was placed into a plastic tray to make identification of

species easier. As well as identification of the flora and fauna, levels of phosphate and ammonia were taken using a field testing kit.

These levels were tested by collecting water from the ditch and putting it into a test tube, this was done by a pipette. A tablet, specific to which test was being carried out, was placed into the test tube and crushed up, this was then mixed till the tablet had completely dissolved. After leaving it to settle a chart, provided with the kit, was used to compare what colour the liquid within the test tube was, each colour is paired with a reading.

The hedgerow with headland was investigated where, using identification books, the different flora in the hedgerow was noted. The headland was surveyed by randomly placing two quadrates and identifying which plants were found within them. Only two quadrates were used because the headland was relatively small and appeared to lack biodiversity. Once the quadrates were placed the species within them were identified, it was then estimated, in percentage terms, as to how much of the quadrate they covered, and this was then noted.

For the hedgerow adjacent to the existing canal and path, the first section of the hedgerow chosen for investigation, and was ten metres long. The section was surveyed by using reference books to identify what was within the hedgerow.

## Results

### Hedge Species

Common Name	Scientific Name
Cleaver	Galium aparine
Hawthorn	Crataegus monogyna
Hazel	Corylus avellana
Lords & Ladies	Arum maculatum

### Quadrat 1

Common Name	Scientific Name	% Cover
Bulbous buttercup	Ranunculus bulbosus	2
Bush Vetch	Vicia sepium	30
Cleaver	Galium aparine	4
Common cord grass	Spartina anglica	21
Fat Hen	Chenopodium album	5
Marsh Foxtail	Alopecurus geniculatus	7
Stinging Nettle	Urtica dioica	30

### Quadrat 2

Common Name	Scientific Name	% Cover
Bulbous buttercup	Ranunculus bulbosus	10
Common cord grass	Spartina anglica	35
Fat Hen	Chenopodium album	35
Spear Thistle	Cirsium vulgare	20

### Other Fauna in the Area

Common Name	Scientific Name
Bee	Apis mellifera
Chaffinch	Fringilla coelebs
Dark Bush Cricket	Pholidoptera griseoaptera
Darkling Beetle	Lagria hirta
Potato Leafhopper	Eupteryx aurata

## Discussion

The results were as expected for the headland of a field, there was limited variety within the headland, and none of the species would be considered scarce or of a particular importance. This may be due to the headland being so close to the arable land that it is also subject to any pesticide or herbicide sprayed on the land. Overall the headland part of this target note has low conservation value and will not provide a problem in the construction of the new canal.

The hedgerow also had a limited variety of species within it but, hedgerow is important as a corridor between habitats. Therefore it has some conservation value. As well as this birds will often use hedgerow for nesting purposes. Both of these factors mean that there is some conservation interest for this target note, but on its own would not be sufficient to prevent any work on the canal being undertaken.

As with any field survey, the results from the survey of the hedgerow with headland may be subject to some inaccuracies. This survey was undertaken by random sampling with quadrates and such a methodology will always have some inherent inaccuracies as random sampling will have some bias within it. Another potential source of error is that the percentages noted for cover of the different species is subjective and another surveyor may estimate a different species cover. The headland and hedgerow surveys may have some inaccuracies as the species were identified in the field, without the additional resources that may be available off site.

The issue of random sampling of the quadrates could be addressed by defining the points using a random number generator or a similar statistical technique. This would remove the potential problem of the surveyor using preference in choosing points to survey.

The potential error in assessing percentage cover as used to survey the quadrates could be reduced by species counts rather than estimation. This form of recording would note how many individuals of each species there is within the quadrate.

The issue of the accuracy of recording of present species could be improved by the use of a specialist surveyor, by taking photos of some of the lesser known species to be identified later and/or to have confirmation on their identification in addition to the reference sources used in the field.

## Conclusion

The use of standard methodologies, within the resources and reference materials available, the survey does provide sufficient information to inform the decision making process.

From the results of the survey there is not anything of specific conservation interest at the shown target notes. All the species that were present are common and the hedgerow habitat is very common for this area.

It is therefore considered there will not be a large impact on the existing habitats if a canal is constructed along the planned route. However, the need for further work may be identified during the consultation phase as the planning process proceeds.

## References

JNCC.2008.*JNCC A4 Handbook for Phase 1 habitat survey April 2008*.pdf Available from <http://www.jncc.gov.uk/pdf/JNCC%20A4%20Handbook%20for%20Phase%201%20habitat%20survey%20April%202008.pdf> [Accessed on 08/06/2010]

The Wilts and Berks Canal Trust.2009.*About the Trust*.Available from; <http://www.wbct.org.uk/about-the-trust> [Accessed on 10/06/2010]

## Target Note record<sup>1</sup> – Hedgerow with Headland

**Survey title:** Hedgerow with Headland

**Habitat(s) included;** (dominant) Hedgerow/Headland

**Target Note:**

The target contains two important habitats, Hedgerow and Headland. The hedgerow is well developed and the headland is a piece of undisturbed grassland in the corner of an arable field.

**Species Recorded:**

Hedgerow

Hawthorn

Hazel

Clover

Lords & Ladies

Quadrat 1

Bush Vetch 30%

Nettle 30%

Clover 4%

Bulbus buttercup 2%

Marsh Foxtail 7%

Fat Hen 5%

Common cord grass 21%

Quadrat 2

Spear Thistle 20%

Common cord grass 35%

Fat Hen 35%

Bulbous Buttercup 10%

Dark Bush Cricket

Chaffinch

Eupteryx aurata

Darkling Beetle

Bee

## WOODLAND SURVEY

### Description of the Site

The site consists of 0.5 hectares of broadleaf woodland plantation (A1.1.2) situated to the west of Melksham in Wiltshire. It is bordered by the A350 to the north-east and Berryfield Lane to the south-west with arable land to the west. Directly bordering the western woodland boundary is a highly contaminated area of open, eutrophic, standing water, through which the proposed canal will run. The woodland area is highly enriched, supporting an abundance of enrichment indicator species such as nettles (*Urtica* spp.), clovers (*Galium aparine*) and wood dock (*Rumex sanguineus*). This is likely to be a result of nutrients seeping into the woodland ecosystem from the neighbouring standing water on large quantities of farm waste. This over enrichment has led to the woodland floor being dominated by enrichment indicator species which block light to the woodland floor, significantly limiting ground flora.

The woodland is dominated with Lombardy Poplar (*Populus nigra* 'Italica') plantation, interspersed with hawthorn (*Crataegus monogyna*). Other species are present, but occur

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<sup>1</sup> The Target Notes have been retyped for clarity by WBCT. The original field records are available in the accompanying document "Phase 1 – Target Notes – Field Records"

primarily in the woodland borders and are occasional or rare in abundance (for full details see target note record). English Elm (*Ulmus procera*) is the only notable tree species present and has suckered beside Berryfield Lane. None of these trees have reached maturity and it is likely that they will succumb to Dutch Elm Disease in the future.

The woodland contains minimal standing and lying deadwood and is largely overgrown. Fly tipping beside Berryfield Lane and the A350 is a problem and the area would benefit from increased management in order to increase its biodiversity. Due to its size, the woodland suffers from edge effect with neighbouring land uses encroaching on the woodland ecosystem. With its low species diversity and highly edge effected nature, combined with its position beside a busy A road, wildlife evidence is limited.

### **Recommendations**

The proposed canal development would run along the western boundary of the woodland, therefore woodland disturbance will be minimal. The neighbouring eutrophic standing water and farm waste would have to be removed in the event of development, to avoid contamination of the new canal from any potential runoff. This would in turn have a positive impact on the woodland, decreasing nutrient enrichment and arguably leading to greater ground flora species diversity.

The woodland would be an ideal location beside the canal to provide amenity woodland for the public. Active management would need to be increased, further benefiting the woodland and increasing biodiversity. For example, the introduction of pathways and glades would create open areas, encouraging invertebrates and birds. The woodland would also act as a sound barrier to the noise from the busy A350.

Overall, the canal development would have a positive impact on the neighbouring woodland area. However, care must be taken during development to ensure minimal disturbance.

### **POND SURVEY**

The area surveyed on this target note is located on the outskirts of the Berryfield estate near to a small wood close to the A350. The aerial photographs supplied by Wiltshire Council Canal Project office showed a small pond/wetland area, this was targeted as an area for further investigation.

Standard Phase 1 Habitat Survey methodology was used, and included walking the area to ascertain the need for further investigation. Permission was granted by the land owner for access to this area, where a more in-depth survey for species and habitats of conservation interest was completed.

### **Habitat Types**

The surrounding area is arable and improved or semi-improved grassland. Adjacent to the pond is a small wood consisting mainly of White Poplar and Willow spp. The area immediately surround the pond appeared to be rough grassland but further investigation revealed that the entire area has been used for dumping chicken manure from the local poultry farm. All the vegetation has grown on top of the manure heaps. The pond is a shallow slurry pit heavily discoloured and contaminated – expected to have very high levels of nitrogen due to the amount of manure. An on-site ammonia test was carried out but the results proved inconclusive due to the high sediment levels. It is of no conservation value and appeared to support no life.

### **Flora and Fauna**

The area is rough grassland growing on top of the manure heaps; mostly rank grasses including cock's-foot, timothy and fat hen. Around the perimeter of the pond area there were common species including broad-leaved dock, stinging nettle, dandelion, cleaver and

burdock. All species common and of no conservation value, the area is deemed to support little or no invertebrate life due to the contamination of the site.

## **Summary**

The pond and the immediate surrounding area is heavily contaminated by the chicken manure, the species found were common therefore the area of this target note is of no conservation value.

It is recommended, however, that due to its proximity to the new canal route the pond area would need to be removed completely to stop further contamination to surrounding land and wood, and prevent leakage into the new canal.

## **DISCUSSION**

### **Hedgerow**

When analysing the results, the target note did not identify any particularly important species. The proposed route of the canal would obviously damage and destroy part of this hedgerow, however this shrubby hedgerow would be considered of low ecological value.

None of the species mentioned in the UKBAP priority species list were observed within the hedgerow, however may be safe to assume that they do not have resistance, it was just the time and type of study carried out was inconclusive.

### **Quadrat Survey**

The quadrat survey helped us to distinguish between the headland biodiversity and the hedgerow bank biodiversity. The results showed a far more abundant species make up in the bank quadrat. This could be due to the proximity of a good water source in the ditch. In addition this area would not be subject to as intense exposure to pesticides and weed suppressants. It was far more diverse in invertebrate fauna than the headland and was a perfect habitat for ground nesting birds and reptiles.

The high percentage cover of nettles (*Urtica* spp.), cleavers (*Galium aparine*) in the hedge-bottom is a broad indication that there is likely to be a species-poor ground flora, probably resulting from nutrient enrichment, for example, from agricultural fertilisers being spread beyond the edge of the crop into the hedgerow base.

### **Ditch water sample**

Nitrates are a form of nitrogen, which is found in several different forms in terrestrial and aquatic ecosystems. These forms of nitrogen include ammonia (NH<sub>3</sub>), nitrates (NO<sub>3</sub>), and nitrites (NO<sub>2</sub>).

Nitrates are essential plant nutrients, but in excess amounts they can cause significant water quality problems. Together with phosphorus, nitrates in excess amounts can accelerate eutrophication, causing dramatic increases in aquatic plant growth and changes in the types of plants and animals that live in the stream (US Environmental Protection Agency.2006).

From the ditch water results it can be seen that the ammonia (NH<sub>4</sub>) reading is not particularly high and therefore of no real consequence to surrounding flora and fauna.

The phosphate level reading seemed unusually high. This may be due to sampling error or may reflect actual conditions. Phosphates occur naturally in the water cycle, derived from rock formations in the earth, these are highly nutritious for plants and animals, however when present in large concentrations this may indicate fertilizer run off, causing decreased oxygen in the water of the ditch, obviously affecting biodiversity. It may be necessary to repeat this test as the project proceeds.

The species found in the water was of little ecological interest.

## **SUMMARY**

The habitats that we studied seem very common and of low nature conservation interest. Mainly consisting of arable fields and improved grassland for pasture.

The species found were basically hedgerow species with various grasses with some additional species found in the ditch areas.

Target Note 5 + Map 5 – the possible badger sett would be an area that would require further investigation and would have to be seriously considered if development at this site was to go ahead. (Protection of Badgers Act 1992).

The route and the target notes can be found on the Phase 1 Habitat survey map in Appendix 6.

## APPENDICES

### Appendix 1 Target note record for Hedgerow/Canal

Survey Title – Hedgerow and Canal

Site name: Semington

Surveyors: Matt, Colette, Neil

Survey Date: 12/08

Target Note:

Ash (10%), Spider, Hawthorn (70%), Bramble, Nettle, Ivy, Bugle, Common frog hopper, cleaver, clay-coloured weevil, cow parsley, chaffinch, Lords and Ladies, Black medic, wood cricket, fools parsley, fly, orange tip butterfly

Key words by habitat: G Open water

### Appendix 2 Hedgerow with trees (15m)

Survey Title – Hedgerow with Trees (15m)

Target Note:

dock, Dogwood, nettles, spear thistle, burdock, blackthorn (5%), hazel (8%), Trees (55%), Bramble (15%), selfheal, fools parsley, unknown (10%), white dead nettle, field mouse ear, fools parsley.

### Appendix 3 Target note record for Hedgerow inc Hedgerow/Quadrat (Headland)

Survey Title – Hedgerow including Hedgerow/Quadrat(Headland)

Surveyors: Matt, Colette, Neil

Note: Q1 Bank of Hedgerow, Q2 further into Headland towards arable

Target Note:

Bush Vetch Q1 (30%), Chaffinch, Nettle Q1 (30%),  
Spear Thistle Q1 (2%), Dark Bush Cricket Q1, Cleaver Q1 (4%),  
Bulbus buttercup Q1 (2%),

Hawthorn (H), Hazel (H), Lords & Ladies (H),  
eupteryx aurata (H), Lagria Hirta (H),

Bee,

Spear thistle Q2, common cord grass Q2, Fat Hen (5%), Common cord grass Q1 (21%)

Key Words by habitat

B Grassland

J Miscellaneous – Hedgerow drainage ditch



## Ditch

Survey Title – Ditch

Target Note:

Water crickets, ramshorn snail, leach, water crest.

Ammonia 0.1, Phosphate 2.0

## Hedgerow 539.5m Long

Survey Title: Hedgerow 539.5m Long

Survey Date: 12/05/10

Habitats Included

Dominant	Hedgerow, Bank, Headland	Alphanumeric code J.2.3
Other	Ditch	Alphanumeric code J.2.6

Target Note:

Study area hedgerow and adjacent bank, ditch, Headland of arable field

Q1: Bank of hedgerow

Q2: Headland towards arable field

*Ditch from Crickets*      *15th*  
*BUTTERCUP*      *SPINCH.*  
*CHRYSAEID*      *LARVA HIRTA.*

Key words by habitat:

Grassland, Miscellaneous

Species Recorded

Hedgerow J.2.6

Hawthorn (Cm), Hazel (Cu), Lords and Ladies, Clevers (Gap), Nettles (Va)

Ditch J.2.6

Water Cricket, Mid Snail, Water Cress, Flatworm, Leech

Other Species of interest:

Hedgerow Bank

Bush Vetch, Nettle (Va), Spear Thistle (Car), Bulbous Buttercup (Rs), Clever (Gap), Marsh Earon (Alg), Common Cord Grass (Sp), Fat Hen

## Appendix 4 Pond/Ditch

Survey Title – Pond/Ditch

Target Note:

Nettle, cleaver, bramble, fat hen, cow parsley, clover, sedge,  
large white butterfly, green shield butterfly, dark bush cricket,  
crows foot, ladybird, chaffinch.

## Appendix 6 Map of Semington Bridge and environs



## **Appendix 6 Map Sheet Record – Wilts & Berks Canal Survey**

Survey Title: Wilts and Berks Canal Survey

Site name: Semington

Survey Date: 12/05/10

Notes: Aerial photos maps 1 to 4, 539 metre length of hedgerow.

Habitat measurements: 15 metres studied.

Habitat Name	Standard Phase 1 Alphanumeric code	Length(m)
Hedgerow with trees:	J.2.3	250
Hedgerow intact:	J.2.1	258
Hedgerow ditch:	J.2.6	15

## Appendix 7 The NCC/RSNC habitat classification (revised 1984)

First level hierarchy	Second level hierarchy	Third level hierarchy	Fourth level Hierarchy
A Woodland and scrub	1 Woodland	1 Broadleaved	1 Semi-natural
		2 Coniferous	2 Plantation
	2 Scrub	3 Mixed	[1 Acidic]
		1 Dense/continuous	[2 Neutral]
B Grassland	3 Parkland and scattered trees	2 Scattered	[3 Basic]
		4 Recently felled woodland	
	1 Acidic	1 Unimproved	1 Upland
		2 Semi-improved	2 Lowland
2 Neutral			
C Tall herb and fern	3 Basic/calcareous	1 Upland	
		2 Lowland	
	4 Improved/reseeded	1 Continuous	
		2 Scattered	
D Heathland	5 Marshy grassland	1 Ruderal/ephemeral	
		2 Other	
	1 Dry dwarf shrub heath	1 Acidic	1 Upland
		2 Basic	2 Lowland
	2 Wet dwarf shrub heath	1 Upland	
		2 Lowland	
3 Lichen/bryophyte heath			
	4 Montane heath/dwarf herb		
E Bog and flush	5 Dry heath/acidic grass mosaic		
		6 Wet heath/acidic grass mosaic	
E Bog and flush	1 Bog	1 Blanket bog	1 Open <i>Sphagnum</i> carpets
		2 Upland raised	2 <i>Eriophorum vag.</i> and other bog veg. over <i>Sphagnum</i>
		3 Lowland raised bog	3 Mosaic of 1 and 2
		4 Valley bog	4 Bog veg. over <i>Sphagnum</i> (no <i>Eriophorum vag.</i> )
		5 Basin mire	5 Mosaic of 1 and 4
			6 Wet heath over deep peat (no <i>Sphagnum</i> )
			7 Dry heath over deep peat (no <i>Sphagnum</i> )
			8 Bare peat
			9 Open bog pools

## **Appendix 8**

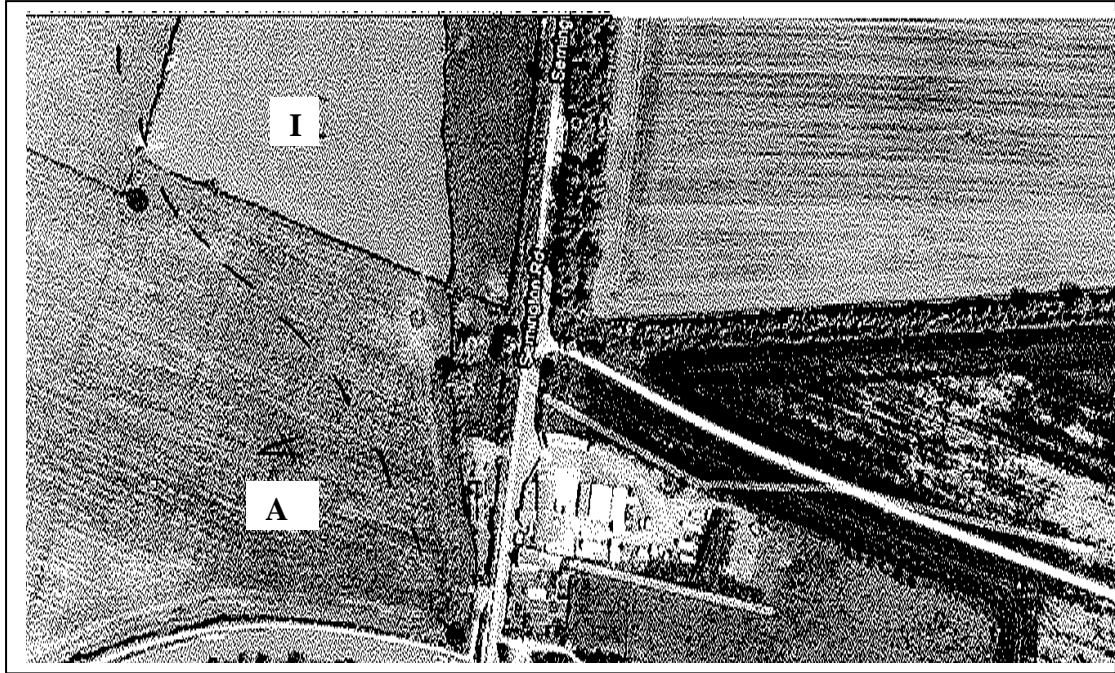
### **Relationship between Phase 1 habitat categories and National Vegetation Classification communities in *British plant communities Volumes 1-5***

This table is not definitive, but gives provisional guidance only. Few of the correspondences are exact and many NVC communities correspond to more than one Phase 1 category. Some correspondences are only at sub-community level (details not given here). A fuller version will be made available via the JNCC website in due course.

<b>Code</b>	<b>Phase 1 Category</b>	<b>Principal assoc. NVC Communities</b>
<b>A</b>	<b>Woodland and scrub</b>	
A1	Woodland	
A1.1.1	Broadleaved woodland Semi-natural	W4-12, W14-17,W2 & W19 (birch)
A1.1.2	Broadleaved woodland Plantation	W8-12, W14-17
A1.2.1	Coniferous woodland Semi-natural	W13, W18; W16 (self-sown pine)
A1.2.2	Coniferous woodland Plantation	W6, W10-11, W16, W18
A1.3.1	Mixed woodland Semi-natural	W8, W8-18
A1.3.2	Mixed woodland Plantation	W8-11,W14-18
A2	Scrub	W1-7,W19-25;M15 & M25 (with tall <i>Myrica</i> dominant)
A3	Parkland and scattered trees	Various grassland, heathland, scrub
<b>B</b>	<b>Grassland and marsh</b>	
B1.1	Acid grassland – unimproved	U1-6;SD10-11 (inland stands)
B1.2	Acid grassland Semi-improved	U4 and others
B2.1	Neutral grassland Unimproved	MG1-5, MG8-10, MG12
B2.2	Neutral grassland Semi-improved	MG1, MG6, MG9-10, MG12-13
B3.1	Calcareous grassland Unimproved	CG1-14, OV37
B3.2	Calcareous grassland Semi-improved	CG2-4
B4	Improved grassland	MG6-7
B5	Marsh/marshy grassland	MG8,MG10, M22-28
B6	Poor semi-improved Grassland	MG6 and others
<b>C</b>	<b>Tall herb and fern</b>	
D1.1	Dry dwarf shrub heath –acid	H1-4,H6, H8-10,H12-22
D1.2	Dry dwarf shrub heath –basic	H6-8, H10
D2	Wet dwarf shrub heath	M15-16,H5
D3	Lichen/bryophyte heath	H1,H13-14,H17,H19-20,U1,U10, SD11

# MAPS

## Map 1



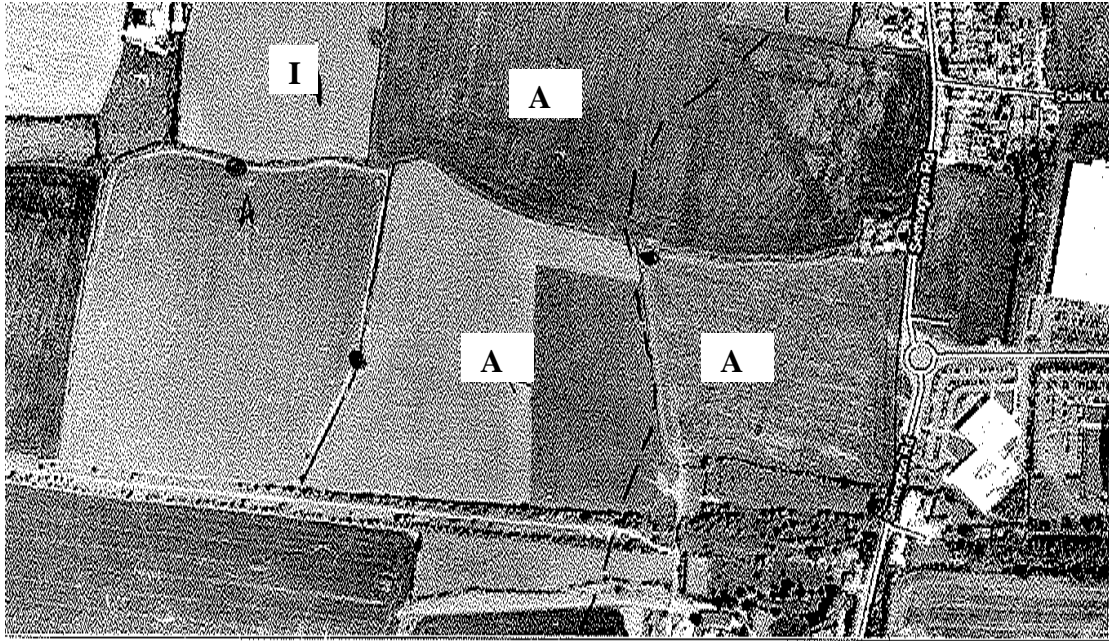
### Notes:

SI-B2 (semi-improved), Improved (I) – bright green LAM and even, Arable (A)

## Map 2



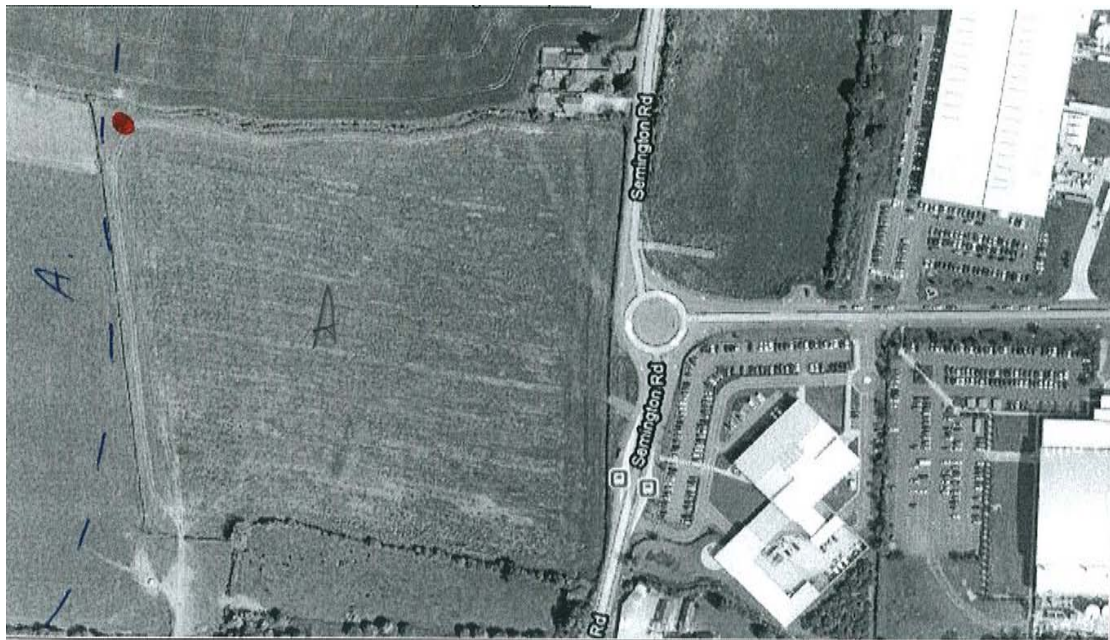
**Map 3**



**Map 4**



**Map 5 : Possible Badger Sett (Map renumbered by WBCT)**



Possible Badger Sett (Red Dot)

Full Grid Ref – 3898114.01, 161818.474  
100m Grid Ref – ST 989 618  
Lat/Long: 51.35, 2.15  
539.448 metres



## TECHNICAL APPENDICES

### 1) Hedgerow Woody Species

#### Environmental Stewardship Farm Environment Plan Guidance 001

## Hedgerow Woody Species

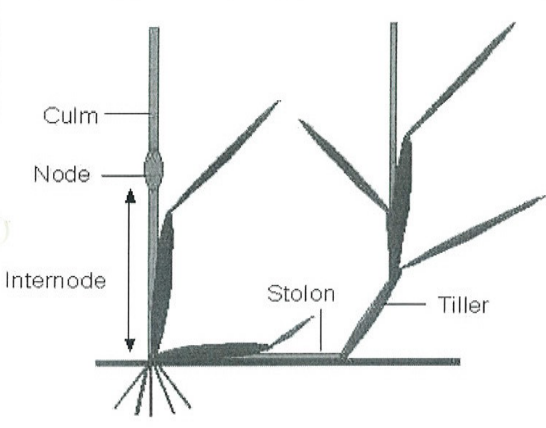
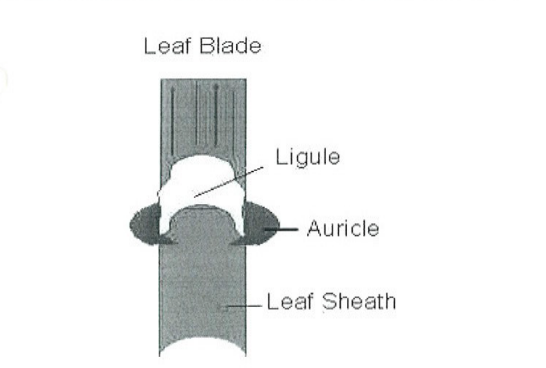
From Schedule 3 of Hedgerow Regulations 1997

Alder ( <i>Alnus glutinosa</i> )	Hazel ( <i>Corylus avellana</i> )
Apple, crab ( <i>Malus sylvestris</i> )	Holly ( <i>Ilex aquifolium</i> )
Ash ( <i>Fraxinus excelsior</i> )	Hornbeam ( <i>Carpinus betulus</i> )
Aspen ( <i>Populus tremula</i> )	Juniper, common ( <i>Juniperus communis</i> )
Beech ( <i>Fragus sylvatica</i> )	Lime, large-leaved ( <i>Tilia platyphyllos</i> )
Birch, downy ( <i>Betula pubescens</i> )	Lime, small-leaved ( <i>Tilia cordata</i> )
Birch, silver ( <i>Betula pendula</i> )	Maple, field ( <i>Acer campestre</i> )
Black-poplar ( <i>Populus nigra sub-species betulifolia</i> )	Mezereon ( <i>Daphne mezereum</i> )
Blackthorn ( <i>Prunus spinosa</i> )	Oak, pedunculate ( <i>Quercus robur</i> )
Box ( <i>Buxus sempervirens</i> )	Oak, sessile ( <i>Quercus petraea</i> )
Broom ( <i>Cytisus scoparius</i> )	Osier ( <i>Salix viminalis</i> )
Buckthorn ( <i>Rhamnus cathartica</i> )	Pear, Plymouth ( <i>Pyrus cordata</i> )
Buckthorn, alder ( <i>Frangula alnus</i> )	Pear, wild ( <i>Pyrus pyraster</i> )
Butcher's-broom ( <i>Ruscus aculeatus</i> )	Poplar, grey ( <i>Populus x canescens</i> )
Cherry, bird ( <i>Prunus padus</i> )	Poplar, white ( <i>Populus alba</i> )
Cherry, wild ( <i>Prunus avium</i> )	Privet, wild ( <i>Ligustrum vulgare</i> )
Cotoneaster, wild ( <i>Cotoneaster integerrimus/ cambricus</i> )	Rose ( <i>Rose species</i> )
Currant, downy ( <i>Ribes spicatum</i> )	Rowan ( <i>Sorbus aucuparia</i> )
Currant, mountain ( <i>Ribes alpinum</i> )	Sea-buckthorn ( <i>Hippophae rhamnoides</i> )
Dogwood ( <i>Cornus sanguinea</i> )	Service-tree, wild ( <i>Sorbus torminalis</i> )
Elder ( <i>Sambucus nigra</i> )	Spindle ( <i>Euonymus europaeus</i> )
Elm ( <i>Ulmus species</i> )	Walnut ( <i>Juglans regia</i> )
Gooseberry ( <i>Ribes uva-crispa</i> )	Wayfaring-tree ( <i>Viburnum lantana</i> )
Gorse ( <i>Ulex europaeus</i> )	Whitebeam ( <i>Sorbus species</i> )
Gorse, dwarf ( <i>Ulex minor</i> )	Willow ( <i>Salix species</i> )
Gorse, western ( <i>Ulex gallii</i> )	Yew ( <i>Taxus baccata</i> )
Guelder Rose ( <i>Viburnum opulus</i> )	
Hawthorn ( <i>Crataegus monyogyna</i> )	
Hawthorn, midland ( <i>Crataegus laevigata</i> )	

Reproduced from:

Rural Development Service, Environmental Stewardship, Farm Environment Plan  
Guidance 001, First edition, Published March 2005

## 2) Grass Structure

The Grass Plant	
 <p>The roots are fibrous</p>	<p><b>Grass Stems</b> - are mostly hollow, cylindrical and interrupted at intervals by swollen joints or nodes.</p> <p>Stems are rarely branched above the ground and are called CULMS.</p> <p>Some grasses have stems which creep along the surface of the ground and give rise to new shoots (TILLERS) at their nodes. The horizontal stems are called STOLONS.</p> <p>If the horizontal stems go underground they are called RHIZOMES.</p> <p>Leaves - originate from the nodes. The lower portion of the leaf forms a sheath, which encloses and protects the young shoots. The second half of the leaf then opens out into the leaf blade.</p>
	<p>The leaf blade is usually long and narrow, with parallel sides and veins and tapering to a pointed or blunt tip.</p> <p>At the junction of the sheath and blade there is a small membranous flap of tissue called the LIGULE (<i>image here</i>). This is sometimes just a fringe of hairs (<i>image here</i>).</p> <p>In some grasses there are also projections on either side of the ligule called AURICLES.</p> <p><b>The structure and dimensions of the sheath, blade and ligule, and their hairiness provide good diagnostic features for identification.</b></p>

### 3) UK Biodiversity Action Plan priority species associated with hedgerows

#### **Mammals**

Barbastelle bat *Barbastella barbastella*  
Bechstein's bat *Myotis bechsteinii*  
Greater mouse-eared bat *Myotis myotis*  
Greater horseshoe bat *Rhinolophus ferrum-equinum*  
Lesser horseshoe bat *Rhinolophus hipposideros*  
Pipistrelle bat *Pipistrellus pipistrellus*  
Brown hare *Lepus europaeus*  
Dormouse *Muscardinus avellanarius*  
Red squirrel *Sciurus vulgaris*

#### **Reptiles and amphibians**

Great crested newt *Triturus cristatus*  
Sand lizard *Lacerta agilis*

#### **Birds**

Bullfinch *Pyrrhula pyrrhula*  
Cirl bunting *Emberiza cirlus*  
Grey partridge *Perdix perdix*  
Linnet *Carduelis cannabina*  
Reed bunting *Emberiza schoeniclus*  
Red-backed shrike *Lanius collurio*  
Song thrush *Turdus philomelos*  
Spotted flycatcher *Muscicapa striata*  
Tree sparrow *Passer montanus*  
Turtle dove *Streptopelia turtur*

#### **Insects**

Maple wood-boring beetle *Gastrallus immarginatus*  
Noble chafer beetle *Gnorimus nobilis*  
Stag beetle *Lucanus cervus*  
Dotted bee-fly *Bombylius discolor* (adults)  
Pearl-bordered fritillary butterfly *Boloria euphrosyne*  
Barberry carpet moth *Pareulype berberata*  
Buttoned snout moth *Hypena rostralis*  
Heart moth *Dicycla* sp.  
Square-spotted clay moth *Xestia rhomboidea*  
White-spotted pinion moth *Cosmia diffinis*

#### **Fungi**

Sandy stilt puffball *Battarraea phalloides*

#### **Plants and lichens**

Purple ramping fumitory *Fumaria purpurea*  
Western ramping fumitory *Fumaria occidentalis*  
Lichen *Bacidia incompta*  
Lichen *Teloschistes chrysoththalmus*  
Orange-fruited elm-lichen *Caloplaca luteoalba*  
Round-leaved feather-moss *Rhynchostegium rotundifolium*

(Source: Simonson, W. and Thomas, R. (1999). Biodiversity: making the links. English Nature, Peterborough).

## REFERENCES

**UKBAP.**2010. Ancient and/or species-rich hedgerows [online].

Available from <http://www.ukbap.org.uk/ukplans.aspx?id=7>

[Accessed June 2010].

**J.Baudry & F Burel.**1990. Social, aesthetic & ecological aspects of hedgerows in rural landscapes as a framework for greenways. *Landscape and Urban Planning*. Vol 33, Issue1-3, Oct.

**Mynors, Charles.** 2002. *The Law of Trees Forests and Hedgerows*. Sweet & Maxwell. London.

**Defra.** 2007.Hedgerow Survey Handbook [online].

Available from <http://www.defra.gov.uk/foodfarm/landmanage/landscape/documents/hedgerow-survey-handbook.pdf> [Accessed June 2010]

**Magic Maps.**2010. Map of target note [online].

Available from <http://www.magic.gov.uk/website/magic> [accessed June 2010]

**Offwell Woodland & Wildlife Trust.** 2004. Ecological Sampling Methods [Online]

Available from <http://www.countrysideinfo.co.uk/howto.htm> [ June 2010]

**US Environmental Protection Agency.**2006. Monitoring and Assessing Water Quality.

Available from <http://www.epa.gov/volunteer/stream/vms57.html> [Accessed June 2010]