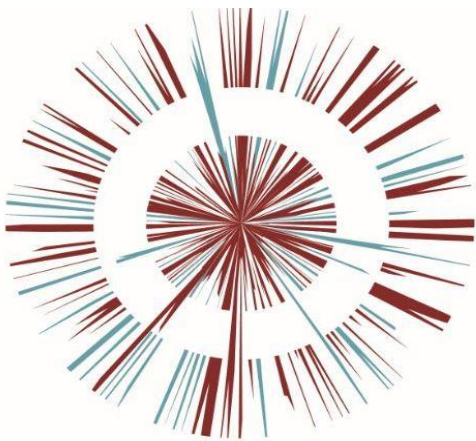




OMEGA ZONE 8, ST HELENS

Omega St Helens Ltd / T. J. Morris Limited



Document Title
ES Vol. 2 Appendix 9.2-9.3 Phase 1
Habitat Survey and Target Notes
Document No. OPP DOC.11.22b

1.1. PHASE I HABITAT SURVEY

- 1.1.1. A habitat survey of the applicant site was carried out between 8th – 12th April 2019 which involved identifying and mapping the dominant habitat types following the Phase 1 habitat survey methodology recommended by Natural England (JNCC 2010¹).
- 1.1.2. Dominant plant species were noted (including aliens), as were any uncommon species or species indicative of habitat types, there was no attempt to compile exhaustive species lists. Botanical names follow Stace 1997². During this field survey, attention was paid to habitats and features that may provide opportunities for protected species to be present at other times of year in the context of the proposals and therefore further survey is recommended where appropriate e.g. water voles, great crested newts.
- 1.1.3. The fieldwork and reporting were led by the following people:

Table 1 Personnel

Name	Survey Type	Degree	CIEEM ³	Licence ref.
Mark Morgan	PEA, fieldwork, reporting	✓	✓	N/A

- 1.1.4. The following report should be read in conjunction with the phase 1 map and target notes provided.

Site Summary

- 1.1.5. The Site (~75.5 ha) is dominated by arable land, currently in crop or existing as improved grassland pasture. Generally, arable fields extend to the field edges leaving a 1-2m improved grassland, tall ruderal, marginal or scrub, strip of vegetation.
- 1.1.6. Broadleaved woodland belts (totalling ~17 ac) exist throughout the Site, largely towards the centre and western boundaries, and are considerable habitat features.

¹ **Joint Nature Conservation Committee 2010** Handbook for Phase I habitat survey: a technique for environmental audit. JNCC, Peterborough.

² **Stace, C. 1997** New Flora of the British Isles. 2nd Ed. Cambridge University Press, Cambridge

³ CIEEM: Chartered Institute of Ecology and Environmental Managers Membership

While the woodlands themselves are afforded value due to their age and size, generally species diversity is low and ground flora is limited across all woodlands, composed largely of bramble with occasional common grasses. Part of the western boundary includes a portion of Booth's Wood which is a designated Local Wildlife Site (LWS), and a greater level of structural heterogeneity and species composition was noted here.

- 1.1.7. A total of 17 ponds are on site or immediately adjacent to the Site boundaries. Most ponds are considerably shaded by woodland, scrub or scattered trees and therefore lack macrophyte cover. The number and size of the ponds within close-proximity increase their ecological value at a local scale, yet it is noted that many ponds are isolated from one another through frequent disturbance to terrestrial habitat (arable fields).
- 1.1.8. A network of dry and wet drainage ditches is present throughout the Site, which are often bordered by scattered tree growth, tall ruderal, improved grassland or scrub. Some wet ditches offer considerable in-ditch marginal vegetation, while the dry ditches generally contain bare-earth banks offering little habitat value aside from potential cover for commuting animals.
- 1.1.9. An unnamed watercourse runs from the north-western extent of the Site, along the western boundary, into the central-western portion of the Site and along the southern boundary. The watercourse generally contains a moderate flow from north to south.
- 1.1.10. A small number of species-poor intact and defunct hedgerows are present on site but are not considered to be particularly valuable owing to their relative lack of species diversity and size.
- 1.1.11. The wider landscape comprises arable land to the south and west, scattered belts of woodland. To the east lies Omega Business Park and to the north is the M62 motorway, with arable land extending beyond.

Woodland/Scrub (A)

- 1.1.12. All woodland and trees have been subject to an ongoing assessment with regards to bats. This has included a ground level tree survey and endoscope surveys of trees scored as 'moderate' and 'high' bat roost potential.

A1.1 Broadleaved woodland

Plain Plantation (TN 1)

- 1.1.13. Plain Plantation is located towards the northwest of the Site. It is a small, mature woodland (~1.6 ac) dominated by sycamore (*Acer pseudoplatanus*) and pedunculate oak (*Quercus robur*), with occasional sessile oak (*Quercus petraea*). The understorey consists of mature and immature hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*) and alder (*Alnus glutinosa*) mostly at the woodland edges. However, the understory is dominated by rhododendron (*Rhododendron ponticum*) throughout the core of the woodland with sycamore saplings and hawthorn scattered throughout. There is a distinct lack of ground flora here, probably due to the presence of rhododendron.
- 1.1.14. Bramble (*Rubus fruticosus*), young hawthorn and grey willow (*Salix cinerea*) dominate the ditch banks to the south of the woodland, where greater herbaceous plant diversity was noted (TN 4).
- 1.1.15. A wet ditch extends through Plain Plantation (TN 4) from the northwest corner of the woodland to the south-western extent. The ditch is approx. 0.5-1m in width at most, containing shallow water (between 1-5cm) throughout.
- 1.1.16. The ditch consists of shallow earth banks which are mostly unvegetated, becoming more vegetated as the ditch extends south beneath scattered scrub and trees. A large area of hemlock water dropwort (TN2) was noted beneath the scattered scrub which is present along the ditch to the north, while becoming sparser.

Unnamed Woodland (TN 5)

- 1.1.17. An unnamed woodland located towards the centre-northeast of the Site. It is a small woodland (~1.4 ac) dominated by sycamore, with frequent crack willow (*Salix fragilis*) with elder (*Sambucus nigra*), pedunculate oak and silver birch (*Betula*

pendula) noted as rare. Bramble and bracken (*Pteridium aquilifolium*) make up the ground flora, although soft rush (*Juncus effusus*) and yellow flag iris (*Iris pseudocorus*) were noted at the pond edge, where crack willow features within the pond.

1.1.18. A single pond (~850m²) is present to the western extent of the wood. It is heavily shaded by trees and fish presence was noted. During a Habitat Suitability Index (HSI) survey a small diversity of invertebrates were found to be present, including dragonfly larva.

1.1.19. A disused badger sett was noted within the woodland containing four (4) entrances. The sett has long been disused.

Big Wood Belt (TN 9)

1.1.20. Big Wood Belt (~2.8 ac) is located near the centre of the Site. It is dominated by sycamore with pedunculate oak and hawthorn noted as frequent. Elder, alder (*Alnus glutinosa*), horse chestnut (*Aesculus hippocastanum*), silver birch, large leaved lime (*Tilia platyphyllos*) and beech (*Fagus sylvatica*) were noted as rare. Trees were mostly of the mature age, with plenty of regeneration present within the understory (mostly sycamore). Ground flora consists largely of bare-earth ground with bramble noted as occasional throughout. Common grasses (such as Yorkshire fog (*Holcus lanatus*) and false-at grass (*Arrhenatherum elatius*) were noted extending up to 5m into the northern woodland edge. A small 5m strip of tall ruderal vegetation was recorded along the northern boundary of the woodland adjacent to the arable field.

1.1.21. A single pond (~900m²) exists to the northwest of the woodland. The pond is heavily shaded by woodland and fish presence was noted. Old fishing platforms were observed at the pond edge. No vegetation was observed within the pond.

1.1.22. A small number of species were noted at or near the pond edge, including male fern (*Dryopteris filix-mas*), bittersweet nightshade (*Solanum dulcamara*), bramble, soft rush, silver birch and wood millet (*Milium effusum*). While wood millet is an ancient woodland indicator species, it was not found to be growing in conjunction with other ancient woodland indicator species. Species diversity was considered to be largely poor throughout the woodland.

- 1.1.23. A shallow dry ditch extends from the northeast of the pond , with a second running laterally immediately south of the pond. There was no change in vegetation within these ditches.

Unnamed Woodland (TN 10)

- 1.1.24. An unnamed woodland (~4.3 ac) is connected to Big Wood Belt to the south by a row of trees including sycamore, ash (*Fraxinus excelsior*), hawthorn, alder and elder.
- 1.1.25. The woodland is dominated by horse chestnut and pedunculate oak, with frequent large-leaved lime noted to the north. Sycamore becomes more dominant towards the central and southern portions of the woodland, with young and immature sycamore noted in the understory. The eastern boundary shows greater diversity along a dry ditch with large leaved lime, rowan (*Sorbus aucuparia*), beech, alder, sessile oak, silver birch, horse chestnut, hazel (*Corylus avellana*) and elm all present. The trees are generally of the mature age class.
- 1.1.26. The ground flora consists of bramble throughout the woodland, with locally abundant ivy (*Hedera helix*) at the southern tip of the wood.
- 1.1.27. A pond (~500m²) is situated near the western extent of the woodland. The pond is heavily shaded by woodland, with much leaf litter within the water and no macrophyte cover. Poor invertebrate diversity was noted during a HSI assessment.
- 1.1.28. A wet ditch extends west to east through the woodland to the southeast of the pond. The ditch is mostly dry and void of vegetation, becoming damp-wet towards its eastern extent where a small area of marsh marigold (*Caltha palustris*) and yellow flag iris was present.
- 1.1.29. Scrub on the northern and eastern woodland boundary is dominated by bramble, with occasional grey willow (*Salix cinerea*).

Duck Wood (TN 24)

- 1.1.30. Duck Wood is a moderately sized woodland (~6 ac on-site) located to the southwest of the Site. It contains mostly mature trees with semi-mature trees more present towards the north of the wood. Large-leaved lime is dominant to the south of the woodland, where much ivy is present on the ground, at times covering trees.

- 1.1.31. A dry ditch delineates the southern boundary of the woodland, where the woodland continues offsite to the south. A small area (0.5m x 0.5m) of English bluebells (*Hyacinthoides non-scripta*) is present here (TN 23).
- 1.1.32. The woodland turns to abundant sycamore to the centre and north, where sessile oak, beech and horse chestnut were noted as occasional. Little sycamore regeneration is present. Bramble dominates the ground flora, where it exists, with a small amount of wood millet is present, occurring as rare.
- 1.1.33. The understorey is dominated by a large amount of rhododendron which generally prevents ground flora establishment. Hawthorn was noted occasionally in the understorey. A disused pheasant pen is present within the woodland.
- 1.1.34. A large pond (~1350m²) is present to the northeast of the woodland which is heavily shaded and lacks macrophyte cover (TN 25). Canada geese (*Branta canadensis*) were seen to be sat upon an island nest within the pond.
- 1.1.35. Very little bankside vegetation is present at the pond, which is dominated by bramble, with red campion (*Silene dioica*), remote sedge (*Carex romta*) and bittersweet nightshade noted as rarely occurring.

Booth's Wood (TN 28)

- 1.1.36. Booth's Wood is a large, mature woodland, mostly located offsite to the west and designated as a Local Wildlife Site. An unnamed watercourse bisects the woodland with areas located to the north and east of the watercourse being on site. Approximately 1 ac of Booth's Wood exists within the application boundary.
- 1.1.37. Sycamore occurs most frequently, although a greater heterogenous structure and overall diversity than the other woodland on site was noted. Sessile oak, pedunculate oak, hawthorn, alder and ash were noted as occurring occasionally, with large leaved lime noted as rare.
- 1.1.38. The understorey contains rhododendron (locally abundant), holly (*Ilex aquifolium*) and blackthorn (*Prunus spinosa*) as occasional, with elder, rowan, immature beech and hazel occurring as rare.

- 1.1.39. This area of woodland contains undulating ground, with natural damp earth mounds containing mosses, although sparsely covering the ground. The ground flora is limited and consists of remote sedge, bramble, bracken (*Pteridium aquilifolium*), wood millet as occasional with nettle (*Urtica dioica*) and broad buckler fern (*Dryopteris dilatata*) occurring as rare.
- 1.1.40. Where the arable field meets the woodland on the southern aspect of the wood, mechanical damage from flailing was noted. A small number of standing deadwood trees were noted along the woodland edge.
- 1.1.41. A pond is situated east of the unnamed watercourse within the woodland. It was approximately 100m² at the time of survey and heavily shaded by bankside trees and rhododendron. There was no macrophyte cover in the pond, and the water appeared largely black from a decaying heavy litter layer. Hemlock water dropwort (*Oenanthe crocata*) (TN 2) was noted on the western pond bank.

A3.1 Scattered Broadleaved Trees

- 1.1.42. Several areas of scattered broadleaved woodland are present across the site (totalling approximately 3.4 ac). These are confined along ditches or surrounding ponds.
- 1.1.43. The largest continuous area (~1.2 ac) of scattered trees is located along the unnamed watercourse, south of Booth's Wood (TN 20). The tree line is dominated by ash and to west and hawthorn to the east with sycamore, beech, elder, pedunculate oak and crack willow occurring as rare. The understorey here consists of hawthorn, gorse (*Ulex europaeus*) and bramble scrub.
- 1.1.44. Scattered trees along the unnamed watercourse (TN 29), towards the northwest boundary also make up a sizeable portion of the total scattered trees on site. The scattered trees are located on the bankside in this area and comprise of elder, ash, alder, sycamore, aspen (*Populus tremula*), hawthorn and horse chestnut. The understory is a mix of tall ruderal (dominated by nettle), with small ~1m verges of improved grassland, or bramble-dominated scrub.

- 1.1.45. Ditches to the northeast of the site (TN7 and TN34) contain scattered trees with an understory of tall ruderal and marginal vegetation.

A1.1.2 Broadleaved Plantation Woodland

- 1.1.46. A broadleaved plantation woodland belt runs adjacent to the eastern site boundary. The woodland is mostly young and semi-mature trees with a range of native broadleaved tree species. Several bird and bat boxes were noted throughout.

A2.1 Dense Scrub

- 1.1.47. Dense scrub is present (totalling ~1 ac) throughout the Site. It is largely confined to woodland edges and ditches, and almost exclusively dominated by bramble. However, other common species were noted such as grey willow, nettles, red campion and field rose (*Rosa arvensis*).

A2.2 Scattered Scrub

- 1.1.48. Scattered scrub (totalling ~1.3 ac) is present across the Site. Scattered scrub is exclusively found along dry and wet ditches, the unnamed watercourse and ponds. It is often found intermingled with tall ruderal or marginal vegetation. Again, bramble is the dominant species noted, but several other common species were also noted including (among others); nettle, hogweed (*Heracleum sphondylium*), cleavers, creeping thistle (*Cirsium arvensis*) and spear thistle (*Cirsium vulgare*).

Grassland (B)

B4 Improved Grassland

- 1.1.49. A large improved grassland field (~28.5 ac) exists to the southeast of the Site (TN 12). Common agricultural grasses such as Yorkshire fog, perennial ryegrass (*Lolium perenne*) and false-oat grass were common within the sward. Injurious weeds such as spear thistle, broad leaved dock (*Rumex obtusifolius*) and creeping thistle were noted. During surveys the grassland was cut for haylage/silage.
- 1.1.50. The improved grassland, while not considered to be particularly valuable, in conjunction with the three (3) in-field ponds, offers some potential for wintering wading birds.

- 1.1.51. The woodland edges, scattered scrub and hedgerow around this field were considered to offer some poor, limited reptile habitat and refugia was placed for reptile monitoring. No reptiles were found across five (5) visits in suitable conditions.
- 1.1.52. Painted lady (*Vanessa cardui*) butterflies were noted within this field flying adjacent to the plantation woodland along the eastern boundary.
- 1.1.53. A small area of improved grassland is located to the north of the Site immediately west of the bridge crossing upon a bank sloping to the west. The grassland contained a similar species composition and is considered to be of little value. Small tortoiseshell (*Aglais urticae*) butterflies were noted basking on the bank.

B6 Poor Semi-Improved Grassland

- 1.1.54. A motorway grassland verge runs adjacent to the northern site boundary. A narrow 1m wide strip of poor semi-improved grassland is present halfway along the northern boundary, and extends onto the site (TN 32) (too narrow to map). Species is generally poor and dominated by false-oat grass, however a small strip (approximately 15m long and 1m wide at TN 32) contains a greater species diversity including; oxeye daisy (*Leucanthemum vulgare*), mugwort (*Artemisia vulgaris*), and cat's ear (*Hypochaeris radicata*). Part of the grassland verge was included within the reptile survey.
- 1.1.55. Additionally, Purple Rampion-fumitory (*Fumaria purpurea*) was identified within a small area (~2-3m²) along this grassland strip. Purple Rampion-fumitory is a S41 species, endemic and locally rare. The species covers an area on site of approx.. 2-3m².

Tall Herb (C)

C3.1 Tall Ruderal

- 1.1.56. Tall ruderal vegetation exists at some woodland and ditch edges. It is too small in area to measure approximate coverage on site. Tall ruderal largely consists of rosebay willowherb (*Chamerion angustifolium*) and nettle, with hogweed and cleavers frequently occurring. Other species such as greater plantain (*Plantago major*), redshank (*Persicaria maculosa*) and scarlet pimpernel (*Anagallis arvensis*) were noted, among others. Species noted at TN 29 were typical within the

composition. Tall ruderal areas typically run at ditch/watercourse bank tops extending between 1m-5m, and often grew with scattered scrub habitats. They are often the result of disturbance of field margins.

Marginal Vegetation (F2.1)

- 1.1.57. Three (3) distinct areas of marginal vegetation were noted on site. All were along wet ditches at TN 33, TN 21 and TN 7. This vegetation type was clearly dominated by reed canary grass, with species indicative of high nutrient levels frequently occurring, such as nettle and cleavers.

Standing/Running Water (G)

- 1.1.58. Water vole surveys were undertaken at all ponds and wet ditches across the Site. No evidence of their presence has been found.

G1 Ponds

- 1.1.59. A total of 13 ponds are located within the application boundary, with a further four (4) ponds situated immediately adjacent to the boundaries. Most are located within woodland and are broadly described within the above sections.
- 1.1.60. Ponds total approximately 2.4 ac of the total area on site. All woodland ponds are highly shaded and therefore offer little quality in terms of macrophyte or invertebrate diversity. In field ponds (TN 13, TN 14, TN 15 plus additional ponds to the north and west of the site) were found to be prone to silt/soil runoff from surrounding arable land and created poor conditions for biodiversity.
- 1.1.61. A large number of mallards and some geese were found to be present within the ponds to the southeast (TN 13 & TN 14), where broken/eaten eggs were noted at the pond edges within the improved grassland.
- 1.1.62. All ponds onsite (except for Booth's Wood pond TN 28) were tested for great crested newt (*Triturus cristatus*) eDNA scoring negative for presence. The pond within Booth's Wood was included within the application boundary following eDNA testing. However, the pond was assessed for its suitability to support great crested newts and scored as being 'below average'.

- 1.1.63. While there is a fairly large number of ponds scattered around the Site within close proximity, they are mostly isolated from one another by frequent agricultural practices (such as ploughing/harvesting).

G2 Running Water

Unnamed Watercourse (TN 19, TN 29)

- 1.1.64. The unnamed watercourse runs from the northwest corner of the Site, along the western boundary and through part of Booth's Wood where it turns southeast towards the centre of the southern portion of the Site, and finally runs along the southern site boundary.
- 1.1.65. The section northwest of Booth's Wood contains step-sided earth banks, which are generally well vegetated (TN 29), and here the watercourse contains a silted substrate. The width of the watercourse is approximately 1m along this section. As the watercourse extends through Booth's Wood, the banksides become less vegetated due to woodland cover, and the watercourse widens to between 2-3m. The substrate turns to silt and loose pebbles/stones, where small riffles are present.
- 1.1.66. Upon leaving Booth's Wood, the watercourse becomes narrower and silted again (fewer stones/pebbles) and meanders slightly through the Site. The vegetated banks (TN 19) become mostly shallow, with some steep areas, but the banksides are thickly vegetated with bramble scrub and tall ruderal vegetation.
- 1.1.67. Small fish were noted within the watercourse here (likely minnow) and a heron was observed foraging.
- 1.1.68. Himalayan balsam was noted throughout the extent of the watercourse, before running along the southern boundary. In areas, it was locally frequent (TN 2).
- 1.1.69. As the watercourse adjoins the southern boundary, it again widens, and pebbles/stones become more frequent with occasional riffles.
- 1.1.70. The water depth fluctuates between 5cm-30cm throughout.

G2 Wet Ditches

- 1.1.71. In addition to the wet ditches described within woodlands, three other wet ditches are located to the north of the Site. The first is situated north of Big Wood Belt (TN 7). The water is very shallow (1-5cm) with no flow, becoming almost dry in places. Marginal vegetation, dominated by reed canary grass (*Phalaris arundinacea*), is present along the shallow earth banks, which meets with a pond approximately halfway along the ditch. The eastern extent is noticeably drier than the western portion. The width of the ditch is approximately 5m to the east and 2m to the west, while the water does not tend to span more than 0.5m on average.
- 1.1.72. A similar ditch exists further to the north of the site (TN 34). This wet ditch is very similar to the previous, although bare earth banks feature more beneath the scattered trees and the ditch banks are narrower (~1-2m at most). Marginal vegetation is present to its western extent where reed canary grass is dominant and Himalayan balsam (*Impatiens glandulifera*) was noted (TN 3).
- 1.1.73. A ditch running along the southern boundary (TN 21) offers the greatest water vole habitat suitability. It is inundated with marginal vegetation throughout, with steep earth banks, to a depth of ~2.5m. The water is shallow and choked by reed canary grass, mostly to the eastern extent, becoming near dry. A wide variety of herbaceous and grass species is present including; reed canary grass, nettle, cleavers, hogweed, false-at grass, red campion, willowherb species, and brooklime (*Veronica beccabunga*) and hedge woundwort (*Stachys sylvatica*) (among others). This ditch joins to the unnamed watercourse at its easternmost extent.

Cultivated/Disturbed Land (J1)

J1.1 Arable

- 1.1.74. The Site was dominated by arable land (approx. 52 ha), either freshly ploughed or in crop at the time of survey. It is evident the land has been cultivated for many years and all fields are worked very close to the field edges, generally leaving a 1m improved grassland, tall ruderal or marginal vegetation strip.

Hedgerows (J)

J2.1.2 Species-poor Intact Hedgerow

- 1.1.75. Two species-poor intact hedgerows are present on site. The first is located near the centre of the Site (TN 11) separating the improved grassland field from arable to the north. The second (TN 17) is location to the centre-south of the Site and separates the improved grassland from arable land to the west.
- 1.1.76. The northernmost intact hedgerow is a single species, hawthorn dominant hedgerow. The southernmost intact hedgerow is hawthorn dominant with a single elder shrub present. Neither hedgerow is considered to be 'Important' following a hedgerow assessment according to Defra 2007⁴, but qualifies as 'Priority Habitat'.
- 1.1.77. Hedgerow exists immediately offsite along the northern boundary (TN 30). The hedgerow is hawthorn dominant, with a small amount of sessile oak. Scattered sycamore trees are present along its length.

J2.2.2 Species-poor Defunct Hedgerow

- 1.1.78. A species-poor defunct hedgerow was observed to the centre-north of the Site (TN 8). The hedgerow contains hawthorn only, and gaps of up to 10m are present. The hedgerow is not 'Important' but qualifies as Priority Habitat.

Table 2: Species List

Common name	Latin name	Common name	Latin name
Sycamore	<i>Acer pseudoplatanus</i>	Perennial ryegrass	<i>Lolium perenne</i>
Pedunculate oak	<i>Quercus robur</i>	False oat-grass	<i>Arrhenatherum elatius</i>
Sessile oak	<i>Quercus petraea</i>	Cock's-foot	<i>Dactylis glomerata</i>
Hawthorn	<i>Crataegus monogyna</i>	Hart's tongue fern	<i>Asplenium scolopendrium</i>
Bramble	<i>Rubus fruticosus</i>	Agrostis sp.	<i>Agrostis sp.</i>
Grey willow	<i>Salix cinerea</i>	Field horsetail	<i>Equisetum arvense</i>
Hemlock water dropwort	<i>Oenanthe crocata</i>	Field forget me not	<i>Myosotis arvensis</i>
Himalayan balsam	<i>Impatiens glandulifera</i>	Hoary willowherb	<i>Epilobium parviflorum</i>
Remote sedge	<i>Carex romta</i>	American willowherb	<i>Epilobium adenocaulon</i>
Hogweed	<i>Heracleum sphondylium</i>	Scarlet pimpernel	<i>Anagallis arvensis</i>
Barren brome	<i>Bromus sterilis</i>		

⁴ **Defra 2007** Hedgerow Survey Handbook: A standard procedure for local surveys in the UK. Defra, London

Common name	Latin name
Colt's foot	<i>Tussilago farfara</i>
Redshank	<i>Persicaria maculosa</i>
Creeping thistle	<i>Cirsium arvense</i>
Spear thistle	<i>Cirsium vulgare</i>
Bristly oxtongue	<i>Helminthotheca echinoides</i>
Foxglove	<i>Digitalis purpurea</i>
Chickweed	<i>Stellaria media</i>
Bracken	<i>Pteridium aquilinum</i>
Broad-leaved dock	<i>Rumex obtusifolius</i>
Rosebay willowherb	<i>Chamerion angustifolium</i>
Greater willowherb	<i>Epilobium hirsutum</i>
Cleavers	<i>Galium aparine</i>
Yellow flag iris	<i>Iris pseudacorus</i>
Soft rush	<i>Juncus effusus</i>
Yorkshire fog	<i>Holcus lanatus</i>
Alder	<i>Alnus glutinosa</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Wood millet	<i>Milium effusum</i>
Bittersweet nightshade	<i>Solanum dulcamara</i>
Ivy	<i>Hedera helix</i>
Male fern	<i>Dryopteris filix-mas</i>
Elm	<i>Ulmus minor var. vulgaris</i>
Large leaved lime	<i>Tilia platyphyllos</i>
Beech	<i>Fagus sylvatica</i>
Dandelion	<i>Taraxacum officinale</i>
Nettle	<i>Urtica dioica</i>
White clover	<i>Trifolium repens</i>
Bulbous buttercup	<i>Ranunculus bulbosus</i>
Greater plantain	<i>Plantago major</i>

Common name	Latin name
Crack willow	<i>Salix fragilis</i>
Red campion	<i>Silene dioica</i>
Osier willow	<i>Salix viminalis</i>
Wild angelica	<i>Angelica sylvestris</i>
Common sorrel	<i>Rumex acetosa</i>
Rhododendron	<i>Rhododendron ponticum</i>
Rowan	<i>Sorbus aucuparia</i>
Blackthorn	<i>Prunus spinosa</i>
Hazel	<i>Corylus avellana</i>
Hedge woundwort	<i>Stachys sylvatica</i>
Brooklime	<i>Veronica beccabunga</i>
Cow parsley	<i>Anthriscus sylvestris</i>
Herb Robert	<i>Geranium robertianum</i>
Cut-leaved cranesbill	<i>Geranium dissectum</i>
Compact rush	<i>Juncus conglomeratus</i>
Mouse-ear chickweed	<i>Cerastium vulgatum</i>
Dog rose	<i>Rosa canina</i>
Pineapple weed	<i>Matricaria discoidea</i>
Scentless mayweed	<i>Tripleurospermum inodorum</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>
Mugwort	<i>Artemisia vulgaris</i>
Cat's ear	<i>Hypochaeris radicata</i>
Purple Ramping-fumitory	<i>Fumaria purpurea</i>
Dove's-foot cranesbill	<i>Geranium molle</i>
Field rose	<i>Rosa arvensis</i>
Hedge bindweed	<i>Calystegia sepium</i>
White dead nettle	<i>Lamium album</i>
Sheppard's purse	<i>Capsella bursa-pastoris</i>
White poplar	<i>Populus alba</i>
Goat willow	<i>Salix caprea</i>
Silver birch	<i>Betula pendula</i>

Common name	Latin name
Holly	<i>Ilex aquifolium</i>
Broad buckler fern	<i>Dryopteris dilatata</i>
Marsh marigold	<i>Caltha palustris</i>
Aspen	<i>Populus tremula</i>

Target Note #	Description
1	Plain Plantation. Mature woodland dominated by sycamore and pedunculate oak with occasional sessile oak present. The understory is dominated by Rhododendron with elder (O) and hawthorn (O) with sycamore regeneration. Hazel (O) noted at eastern woodland edge.
2	Hemlock water dropwort
3	Himalayan balsam
4	<p>Wet ditch in Plain Plantation.</p> <p>Water depth between 1-5cm. Shallow earthen banks. The northern extent of the ditch contains sparse bankside vegetation. Bankside vegetation increase to the south under scattered trees and scrub including; remote sedge (R), hogweed (O), hawthorn (F), cleavers (O), hemlock water dropwort (LF), hart's tongue fern (LA), and field horsetail (R).</p> <p>The bank tops become quite vegetated (tall ruderal) beneath the scattered trees and scrub to the south, including; bristly oxtongue (R), field forget me not (R), hoary willowherb (R), yorkshire fog (O), American willowherb (O), scarlet pimpernel (O), colt's foot (R), perennial ryegrass (F), redshank (R), broadleaved dock (O), cleavers (O), nettle (F), hogweed (O), creeping thistle (O), red campion (O), foxglove (R), <i>Agrostis sp.</i> (O), cocks foot (O), chickweed (R).</p>
5	<p>Broadleaved woodland, likely old plantation, with mature and regenerating trees. Sycamore (D), crack willow (F), elder (R), pedunculate oak (R), silver birch (R).</p> <p>Understory is species-poor and sparse but populated with bramble (A) and bracken (A).</p> <p>A disused badger sett with x4 entrances noted at GR: SJ 55 058 90 824 (west of pond). X1 entrance with signs of use by rabbit. The 'sett' has long been disused.</p> <p>Pond in woodland (POND 2): yellow flag iris and soft rush noted at pond edge.</p> <p>Phase 2 water vole surveys: Evidence of rat and field/bank vole only. No water vole presence.</p>
6	<p>Dry ditch. Over-shaded by from alder (F), sycamore (O) and hawthorn (O), which turns to low growth elder, hawthorn scrub with bramble to south of ditch.</p> <p>The ditch is unvegetated. A 1.5 improved grassland strip is present at the bank tops including; cleavers (F), common horsetail (R), Yorkshire fog (A), creeping thistle (O), common ragwort (O), bramble (F).</p> <p>Ditch not suitable for water vole.</p>

Target Note #	Description
7	<p>Wet ditch with scattered trees.</p> <p>Ditch inundated with reed canary grass. Bank tops up to ~1-2m strip including Yorkshire fog (F), nettles (F) cleavers (F), false-oat grass (F), cock's foot (O), barren brome (F), perennial ryegrass (O), foxglove (O).</p> <p>Scattered trees include beech and pedunculate oak. Grey willow and sycamore scrub noted as rare.</p> <p>Northern banks offer some limited reptile habitat.</p> <p>Water vole and reptile survey undertaken along here.</p>
8	<p>Species-poor defunct hedgerow containing hawthorn. Not important. Qualifies as Priority Habitat.</p>
9	<p>Big Wood Belt.</p> <p>Sycamore dominated woodland to south with;</p> <p>Pedunculate oak (A)</p> <p>Hawthorn (F)</p> <p>Elder (R)</p> <p>Alder (R) – more frequent around pond</p> <p>Large leaved lime (R)</p> <p>Horse chestnut (R)</p> <p>Silver birch (R)</p> <p>Beech (R)</p> <p>Mostly mature tree growth with regeneration understory.</p> <p>Post and wire fence with bramble scrub on eastern boundary.</p> <p>Ground flora is mostly bare ground with bramble noted as occasional.</p> <p>Ground flora near POND 7:</p> <p>Male fern (R)</p> <p>Bittersweet nightshade (R)</p> <p>Bramble (F)</p> <p>Soft rush (O)</p> <p>Silver birch (R)</p> <p>Wood millet (R)</p>

Target Note #	Description
	<p>A single pond (~900m²) is exists to the northwest of the woodland. The pond is heavily shaded by woodland and fish presence was noted. Old fishing platforms were observed at the pond edge.</p> <p>Old fishing platforms at pond edge.</p> <p>A 5m tall ruderal vegetated strip exists to along the northern boundary of the woodland including:</p> <p>American willowherb Scarlet pimpernel Greater plantain Soft rush Redshank Cocks foot False-oat grass</p>
10	<p>Horse chestnut and pedunculate dominant species to north of wood with frequent large leaved lime.</p> <p>Woodland becomes sycamore dom. to centre and south of wood with young and imm trees noted.</p> <p>Towards south and eastern boundary:</p> <p>Lime (F) Rowan (R) Beech (O) Alder (R) Sessile oak (O) Silver birch (R) Horse chestnut (O) Elm (R) Hazel (O)</p> <p>Largely bare ground due to over-shading.</p> <p>Bramble dominant throughout wood. Ivy locally abundant to southern woodland tip where rabbit/fox earth present.</p> <p>The eastern and northern woodland boundary is dominated by dense bramble scrub with occasional grey willow.</p> <p>Ground flora species noted at pond edge:</p>

Target Note #	Description
	<p>Wood millet (O) Male fern (R) Bittersweet nightshade (R) Cock's foot (O) Bramble (F)</p> <p>Wet ditch is mostly dry and void of vegetation, becoming more wet towards eastern extent. False-oat grass noted on the ditch banks. Marsh marigold noted at eastern end of ditch and yellow flag iris.</p> <p>Rubble piles containing asbestos noted at GR: SJ 55 035 90 382</p> <p>Pond ~500m² = heavily shaded. No macrophyte cover.</p> <p>Stickleback within pond during GCN survey.</p>
11	<p>Species-poor intact hedgerow.</p> <p>Single species, hawthorn hedgerow.</p> <p>10m gap at western extent before hedgerow meets woodland. A post and wire fence is present within hedgerow.</p> <p>Hedgerow is not important.</p>
12	<p>Improved grassland.</p> <p>Yorkshire fog Perennial ryegrass Agrostis sp. False-oat grass White clover Dandelion Spear thistle Creeping thistle Broadleaved dock Bulbous buttercup</p> <p>Grassland cut for haylage during surveys.</p>
13	<p>POND 11</p> <p>Many mallards and some Canada goose and oystercatcher use pond.</p> <p>Flat earth banks. High level of waterfowl disturbance.</p>

Target Note #	Description
	<p>Grey willow and alder, white poplar scrub on western and eastern banks.</p> <p>Vegetation at pond edge: Hoary willowherb (O) Curled dock (R) Broadleaved dock (O) Soft rush (F) Creeping thistle (LA) Greater plantain (R)</p> <p>Mature trees: X3 sessile oak and x1 alder</p>
14	<p>POND 15</p> <p>Earth banks flat – shallow. Mallards in pond. Water highly disturbed and turbid.</p> <p>Vegetation at pond edge: Rosebay willowherb (LF) Creeping thistle (LF) Mayweed sp (R) Creeping buttercup (O) Cock's foot (F) Perennial ryegrass (F) Broadleaved dock (O) Hoary willowherb (O) Foxglove (R) Nettle (LA) Cleavers (LA)</p> <p>Trees: Ash (R) Alder (F) Osier willow (R)</p> <p>Scrub: Grey willow (O) – eastern bank Bramble (LA) Hawthorn (O)</p> <p>Rat droppings noted.</p>
15	POND 16

Target Note #	Description
	<p>Scrub:</p> <p>Grey willow (LA)</p> <p>Osier willow (western bank)</p> <p>Goat willow (R)</p> <p>Much soft rush at pond edge</p> <p>Cleavers (A)</p> <p>Hoary willowherb (LA)</p> <p>Creeping thistle (F)</p> <p>Cock's foot</p> <p>Yorkshire fog</p> <p>Perennial ryegrass</p> <p>GCN survey found male smooth newt here.</p>
16	<p>Southeast boundary.</p> <p>Broadleaf trees overhanging site but not on site itself.</p> <p>Elder and alder trees on bank behind post and wire fence.</p> <p>Scattered scrub consists of bramble.</p> <p>Much common hogweed present along boundary.</p>
17	<p>Species-poor intact hedgerow.</p> <p>Hawthorn dominant hedgerow with a single area of elder, unmanaged on eastern aspect. Western aspect showed signs of recent management.</p> <p>Hedgerow = not important although Priority Habitat.</p> <p>Occasional bramble scrub on eastern aspect of hedgerow.</p> <p>Improved grassland extends beneath hedgerow canopy, with hogweed common and improved grassland grasses.</p>
18	<p>Arable field sprayed with herbicide during phase 1 survey.</p> <p>Lapwing observed stood in field during site visits.</p>
19	<p>Southern extent of unnamed watercourse</p> <p>Brook becomes narrower (~0.5-1m).</p> <p>Small fish noted within brook.</p>

Target Note #	Description
	<p>Hemlock water dropwort noted along brook. Himalayan balsam along brook.</p> <p>Scrub/tall ruderal along brook: Bramble (LA) Nettle (A) Hogweed (LA) Bittersweet nightshade (LF) Cleavers (A) False-oat grass (A) Reed canary grass (O) Creeping thistle (F) Red campion (F)</p> <p>Heron noted in brook to south.</p> <p>Young ash and sycamore noted as rare along bank.</p>
20	<p>Scattered trees on brook bank.</p> <p>Understory to east consists of hawthorn, gorse and bramble scrub.</p> <p>Tree line extending from Booth's Wood:</p> <p>Sycamore (R) Beech (R) Hawthorn (throughout) Elder (R) Pedunculate oak (R) Crack willow (R) Ash – dominant for ~30m to Booth's Wood beyond bridge crossing</p>
21	<p>Ditch 9</p> <p>The best water vole habitat on site.</p> <p>Marginal vegetation: Reed canary grass (A) Nettle (A) – many peacock butterfly caterpillars noted on nettle. Cleavers (LA) Male fern (R) Common sorrel (R) Brooklime in ditch (LF)</p> <p>Bank top vegetation is approx.. 1-2m in width, including:</p>

Target Note #	Description
	<p>Hogweed (F) Barren brome (LA) Cleavers (LA) Bittersweet nightshade (R) False-oat grass (F) Red campion (F) Greater willowherb (R) Nettle (A) Bramble (D) Wild angelica (R) Yorkshire fog (O) Field horsetail (R) Hedge woundwort (O)</p> <p>Reed canary grass choking ditch in areas making it near dry.</p> <p>Abundant vegetation for water vole suitability here.</p>
22	<p>Scattered tree line extending to Duck Wood.</p> <p>Ash Sycamore Pedunculate oak Holly Hawthorn</p> <p>Dense bramble scrub in understory</p>
23	<p>Small native bluebell stand noted off site, south of ditch in Duck Wood</p>
24	<p>Duck Wood:</p> <p>Earl-mature.</p> <p>Large leaved lime dominates the southern extent of woodland</p> <p>Sycamore (A) Sessile oak (O) Beech (O) Horse chestnut (O)</p> <p>Understory: Scarce sycamore regeneration Hawthorn Bramble dominant to southern portion of woodland. Rhododendron abundant to north and central portion of woodland.</p>

Target Note #	Description
	<p>Bramble dominates ground flora, with occasional wood millet. Very limited due to dense canopy and rhododendron cover.</p> <p>Ivy is dominant across southern extent of woodland, and at times grows on trees, becoming quite dense.</p> <p>An old pheasant pen within wood.</p> <p>Dry ditch along western boundary is unvegetated and unsuitable for water vole.</p>
25	<p>POND 13</p> <p>Large pond (~1350m²). No macrophyte cover.</p> <p>Canada geese breeding on central bank.</p> <p>Pond highly shaded by woodland canopy.</p> <p>Limited bankside vegetation: Bramble (D) Red campion (R) Bittersweet nightshade (R) Remote sedge (R)</p>
26	<p>DITCH 11</p> <p>Steep clay banks.</p> <p>Ditch dry during Phase 1 survey but noted as holding a small amount of water during other site visits.</p> <p>X2 pedunculate oak trees noted along ditch</p> <p>Ditch scattered scrub: Gorse (R) Bramble (F)</p> <p>Bank tops: Creeping thistle (F) Foxglove (LF) Creeping buttercup (O) Cleavers (A)</p>

Target Note #	Description
27	<p>POND 12</p> <p>Steep earth banks with pedunculate oak, sycamore and alder surrounding pond.</p> <p>Fish noted within pond.</p> <p>Ground flora at pond edge:</p> <p>Soft rush (LF) Bittersweet nightshade (LA) to southwest pond edge Male fern (R) Bramble (A) Cleavers (A) Nettle (A)</p> <p>Arable field extends right to tree canopy.</p>
28	<p>Booth's Wood extension</p> <p>POND 14: Pond approx. 100m² at time of survey. Approx 90% shaded by tree canopy/rhododendron. Water is black from leaf decay and unlikely to support diverse invertebrates. Rat-tailed maggot only when netting. Bankside vegetation consists of dense rhododendron on the north and east banks.</p> <p>Hemlock water dropwort noted on the western pond edge.</p> <p>Trees surrounding ponds: Sycamore (O) Alder (O)</p> <p>Woodland: Sessile oak (O) Pedunculate oak (O) Sycamore (F) Hawthorn (O) at woodland edge Alder (O) Ash (O) Large leaved lime (R)</p> <p>Understory: Holly (O) Elder (R) Rowan (R)</p>

Target Note #	Description
	<p>Immature beech (R) Blackthorn (O) Hazel (R)</p> <p>Ground flora: Limited ground flora. Largely undulating bare earth, but damp. Mosses present, but mostly at near the pond.</p> <p>A small number of ferns are present near the pond edge. Remote sedge (O) Bramble (O) Bracken (O) Wood millet (O) Nettle (R) Broad buckler fern (R)</p> <p>Woodland has greater structural heterogeneity than other areas of woodland on site.</p> <p>Mechanical damage on trees/understory along the southern boundary of wood (flail)</p> <p>An ephemeral semi-dry pond was present immediately southeast of the main pond. This pond was heavily silted with leaf litter and black in colour. It was approximately 5m x 10m.</p> <p>Trees along the northern boundary of Booth's Wood:</p> <p>Ash Holly Pedunculate oak Sycamore Elder Alder Horse chestnut</p> <p>Some standing deadwood trees present.</p>
29	<p>Brook approx. 2-3m wide. Water depth never reaching over 30cm, but mostly 5-10cm deep with a moderate flow.</p> <p>Small pebbles along brook creating riffles. Steep sided banks under canopy with occasional hart's tongue fern, bracken, liverworts, Himalayan balsam, male fern, dandelion, hogweed.</p>

Target Note #	Description
	<p>Bank tops along northern edge of Booth's Wood: 1-3m vegetated strip from watercourse bank to canopy edge: Cow parsley (O) Hogweed (O) Red campion (R) Cleavers (LA) Creeping thistle (O) Great willowherb (O) Rosebay willowherb (LF) Male fern (R) Herb Robert (R) Broad leaved dock (O) Nettle (A) False oat grass (A) Perennial ryegrass (F) Bramble (F) Cut-leaved cranesbill (R) Cock's foot (O) Yorkshire fog (O) Compact rush (R) Creeping buttercup (O) Foxglove (O) Mouse-ear chickweed (O) White clover (O) Silver birch saplings (R) Bracken (LA)</p> <p>The northern extent of the brook (extending from the northwest corner and southeast to Booth's Wood) contains scattered trees: Sycamore (D) Elder (R) Alder (O) Ash (R) Aspen (R) Horse chestnut (R) Hawthorn (O)</p> <p>A tall ruderal understory is present at times (species list above). Some dense bramble scrub is present, although small in area, and a thin ~1m improved grassland strip of common grasses exists occasionally at the field margin.</p>
30	<p>(Off site) Intact species-poor hedgerow along northern boundary</p> <p>Hawthorn dominant. Small amount of sessile oak</p>

Target Note #	Description
	<p>Scattered dog rose throughout, abundant in the hedgerow at times. Scattered sycamore trees present.</p> <p>Hedgerow is not important, but is Priority Habitat.</p>
31	<p>An improved grassland verge is present along the length of the northern boundary.</p> <p>Comprising:</p> <ul style="list-style-type: none"> Hogweed Nettle Cleavers Pineapple weed Yorkshire fog False oat grass Barren brome Scentless mayweed Broadleaved dock
32	<p>Semi-improved grassland verge</p> <p>A small semi-improved grassland verge extends onto site providing a ~1m verge.</p> <p>Scattered scrub is present although in low abundance.</p> <p>Species noted include:</p> <ul style="list-style-type: none"> Oxeye daisy Mugwort Spear thistle Nettle Perennial ryegrass Doves-foot cranesbill Rosebay willowherb Cows parsley Creeping thistle Dandelion Cat's ear Hoary willowherb Field rose <p>Purple Rampion-fumitory present (~2-3m² on site). S41, vulnerable and local BAP species.</p>
33	<p>Ditch 2</p> <p>Ditch with shallow water (2-5 cm).</p> <p>Reed canary grass dominant along ditch, with:</p>

Target Note #	Description
	<p>Yorkshire fog (LA) Nettle (LD) Red campion (LF) Cleavers (LD) Bramble (LA) Creeping thistle (O) Rosebay willowherb (F) Boradleaved dock (O) Hedge bindweed (LF) Bittersweet nightshade (LA)</p> <p>Himalayan is locally abundant to northern extent.</p>
34	<p>Scattered tree line along Ditch 2</p> <p>Elder (R) Hazel (O) Alder (O) Pedunculate oak (R) Hawthorn (F)</p>
35	<p>Pond 9</p> <p>Alder and ash surrounding pond</p> <p>Grey willow and sycamore growing within the pond.</p> <p>Highly shaded.</p> <p>Abundant reed canary grass.</p> <p>Himalayan balsam on western bank</p>
36	<p>Plantation woodland belt</p> <p>A diverse woodland, with regeneration and mature species.</p> <p>Dense woodland. Contains bat and bird boxes throughout.</p> <p>Species: Field Maple (F) Hawthorn (D) Oak species (F) Beech (O) Silber birch (R) Holly (R) White poplar (R)</p>

Target Note #	Description
	Hawthorn is dominant along the site boundary.
37	Brown hare sighting