Begbroke PR8

Scope of 2021 Ecology Update Surveys

Tom Flynn, BSG Ecology 19.03.21

	Significant update survey proposed.
	Update survey likely to be limited to a walkover.
	No update survey necessary.

Task	2017-2018 Survey scope	Key Results	Proposed 2021 Update Surveys
Ecology Desk Study	Search for: international sites 10km, other statutory sites 5km, Ancient Woodland 3km, non-statutory sites 2km, protected and notable species 2km, ponds 500m.	Cherwell Valley CTA overlaps east of site, Rushy Meadow SSSI adjacent to north of site, Oxford Meadows SAC 1.8km south.	Repeat of desk study to identify any additional species record or new designated sites.
Extended Phase 1 habitat survey	Standard survey of whole site.	Arable habitats dominate the site. Some semi-improved grassland in north east. Also hedgerows, ponds, Rowel Brook and mature trees.	Update Phase 1 habitat survey to be carried out in May to July 2021. To include condition assessment or biodiversity calculation.
Hedgerow survey	Hedgerow Regulations assessment of whole site.	53 hedgerows identified, of which 37 species-rich and 30 important under *Wildlife and Landscape* criteria.	Hedgerows to be assessed using Natural England condition assessment criteria (to feed into biodiversity calculation).
Botanical survey	Survey of grassland fields in NE.	Some semi-improved grassland (MG1 community) present.	Walkover of grassland areas by an experienced botanist to determine any significant change to habitat. No further surveys if no such change, on the basis that without significant habitat change, plant populations and vegetation communities would be unlikely to have changed significantly.
Badger survey	Standard survey of whole site.	Setts at centre, north-west, and east of site.	Re-survey of the site. Full badger survey.
Bat assessment of buildings	Standard survey of all buildings on site.	Bat potential at Science Park, and Parkers farm to the east.	Repeat of assessment of buildings to be directly affected by the development.
Bat emergence survey of buildings	Standard surveys of all buildings with bat potential on site.	Pipistrelle and soprano pipistrelle roosts at the science park.	Survey of any buildings with bat potential to be directly affected by the development.
Bat assessment of trees	Standard ground level surveys of trees in development areas.	Nine trees identified with suitability.	Repeat of assessment of trees to be directly affected by the development.
Bat inspection of trees	Endoscope inspection of trees with bat suitability in development areas.		Repeat inspection of trees to be directly affected by the development.
Bat activity surveys	Two transects surveyed monthly April to Oct. Three automated detectors deployed for five nights monthly April to October.	At least 10 bat species recorded, including very small numbers of rarer species, lesser	Walkover to determine any significant change to habitat. No further surveys if no such change, on the basis that without significant habitat or habitat connectivity changes, the bat

		horseshoe and barbastelle.	assemblage would be unlikely to have changed significantly.
Dormouse survey	170 dormouse tubes deployed in suitable hedgerows, checked monthly June to Sept.	No evidence of this species was found.	Walkover to determine any significant change to habitat. No further surveys if no such change, on the basis that without significant habitat or habitat connectivity changes, dormouse is unlikely to have become established at the site.
Water vole survey	Standard survey of the on-site sections of the Rowel brook and suitable ditches.	Present on Rowel Brook. Known presence in Oxford Canal.	Single update survey visit.
Otter survey		Not recorded on site, although likely occasionally present. Known presence of Oxford canal.	
Breeding bird characterization survey	Site-wide transect, surveyed April, May and June.	Typical assemblage for the (mainly farmland) habitats present.	Walkover to determine any significant change to habitat. No further surveys if no such change on the basis that without significant habitat change, the bird assemblage would be unlikely to have changed significantly.
Wintering bird survey	Not surveyed, due to limited habitat suitability at the site, lack of wetland sites in proximity, and lack of significant desk study records on to adjacent to the site.	N/A	Walkover to determine any significant change to habitat. No further surveys if no such change, on the basis that the site is of limited suitability for these species, and without significant habitat change, this is unlikely to have changed.
Great crested HSI assessment	Standard assessment of all accessible ponds within 500m.	Six ponds within the site and seven within 500m of the site. Variable suitability for great crested newts.	Re-assessment of on-site ponds and off-site ponds where accessible.
Great crested newt eDNA survey	Standard survey of all accessible ponds within 250m.	Present in an ornamental pond at the science park.	Re-survey of on-site ponds.
Great crested newt population assessment	Six survey visits on the single pond (at Begbroke Science Park) having a positive eDNA result.	Small population.	For ponds in which there is no change in the presence/absence status, no further survey is necessary. The only pond with this species is an ornamental pond of low suitability, with a very low population size in 2018, and without significant habitat change, this population is unlikely to have changed significantly. If new presence is of this species is detected in ponds, the need for population assessment will be considered (based on distance from proposed development and on surrounding habitats).
Great crested newt terrestrial survey	Survey of suitable on-site habitat in proximity to an off-site pond to which access was not available. 40 carpet sites deployed, in addition to the 20 reptile mats deployed for the reptile survey in this area.	No great crested newts recorded in this part of the site.	Walkover to determine any significant change to habitat. No further surveys if no such change, on the basis that without significant habitat change, the distribution of this species would be unlikely to have changed significantly.

Reptile survey	Survey of suitable habitats at the site using 100 survey mats.	Slow worm, grass snake and common lizard present. Mainly recorded in fields at north-east of site, and near Parkers Farm east of the science park.	Walkover to determine any significant change to habitat. No further surveys if no such change, on the basis that without significant habitat change, reptile populations would be unlikely to have changed significantly.
Crayfish survey	Manual and torchlight survey of Rowel Brook (Oct 2017).	White-clawed crayfish not recorded. American signal crayfish present.	Given presence of American signal crayfish, no realistic potential for establishment of white-clawed crayfish. Update survey not necessary.
Macroinvertebrate sampling of streams	Kick-sampling of five locations on Rowel Brook and tributary, in Oct 2017 and April 2018.	Results indicate moderate water quality.	Walkover to determine any significant change to habitat. No further surveys if no such change.
Terrestrial invertebrate survey	Not considered necessary, given the intensive agricultural use of the majority of the site and the retention of the higher-value habitats (e.g. the semi-improved grassland in the north -east of the site).	N/A	Walkover to determine any significant change to habitat. No further surveys if no such change.

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Based on 2018 Survey, updated in 2021 and 2022. Target note locations are shown on Figure 2.

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1	Belt of dense planted trees around perimeter of Begbroke Science Park. Ca. 5 m wide and 7 m tall. Containing: hazel *Corylus avellana*, wayfaring tree *Viburnum opulus*, field maple *Acer campestre*, dogwood *Cornus sanguinea*, ash *Fraxinus excelsior*, blackthorn *Prunus spinosa*, and osier willow *Salix viminalis*. Sparse ground vegetation.
2	Stream. Rowel Brook. Moderately fast flowing, gravel or silt bottom, meanders. Channel ca. 0.5 to 1.5 m deep. Water ca. 0.1 to 0.5 m. Width 1–1.5 m. Very limited or marginal vegetation visible (mainly pendulous sedge *Carex pendula)*. Forms site boundary to north west, where north bank runs along multiple private gardens. Abundant ad-hoc bank stabilisation along north bank and informal access bridges to gardens.
3	Woodland strip along stream. Generally dominated by pedunculate oak *Quercus robur* with understory of hazel *Corylus avellana* and hawthorn *Crataegus monogyna*, and field layer of bramble *Rubus fruticosus* agg. and ivy *Hedera helix*. Ash *Fraxinus excelsior* and sycamore *Acer pseudoplatanus* present in some areas, and crack willow *Salix fragilis* close to the stream. Stands of tall ruderals (e.g., great willowherb *Epilobium hirsutum*) and bramble on southern edge. Woodland strip very narrow on northern site for the brook from much of its length (i.e., canopy overhang only)
4	Large patch of variegated yellow archangel *Lamiastrum galeobdolon* ssp. *argentatum* growing in woodland adjacent to stream, presumably this has escaped from adjacent gardens. Also rose-of-Sharon *Hypericum calycinum*. Perhaps from adjacent gardens, or possibly planted. No spread evident in 2022.
5	Old access road to Science Park. Flanked by amenity grassland and two heavily trimmed species-poor hedges (dominated by hawthorn with abundant ivy *Hedera helix*) and informal rows of semi-mature trees including walnut *Juglans regia* and willow *Salix* sp.
6	Vegetated earth mounds screening hot heap composting facility. Supports semi-improved neutral grassland and tall ruderal vegetation, including bristly ox-tongue *Helminthotheca echioides*.
7	Mixed plantation woodland, including semi-mature Scots pine *Pinus sylvestris*, birch *Betula pendula*, and Italian alder *Alnus cordata*. Little understorey and no woodland ground flora noted.
8	Small stream which emerges from culvert under railway line and flows northwest into Rowel Brook. Fool's-water-cress *Apium nodiflorum* abundant in some areas. Significant shading by adjacent oak *Quercus robur* and hazel *Corylus avellana* canopy.
9	Semi-natural broad-leaved woodland along small stream dominated by pedunculate oak *Quercus robur*, hazel *Corylus avellana* and alder *Alnus glutinosa*. Some wood avens *Geum urbanum* and false brome *Brachypodium sylvaticum* in the field layer.
10	Area of swamp which dominates a pond with common reed *Phragmites australis* and lesser pond sedge *Carex acutiformis*.
11	Residential property with prefabricated buildings outside Site, surrounded by tall fences/hedgerows. Outside the Site.

12	Rough semi-improved neutral grassland, scrub and tall ruderal vegetation on the former landfill site in the centre of the Site. With common nettle *Urtica dioica*, hemlock *Conium maculatum*, and some scrub (especially hawthorn *Crataegus monogyna*).
13	Ditch. Wet outside summer period. Depth variable, to ca. 40 cm, width ca. 1 m. Containing abundant aquatic plants including water-cress *Nasturtium officinale*, fool's-water-cress *Apium nodiflorum*, sweet-grass *Glyceria* sp. and creeping bent *Agrostis stolonifera*. Dry and grass dominated during summer period.
14	Small triangular field dominated by dense hawthorn *Crataegus monogyna* scrub, with some tussocky semi-improved grassland (dominated by cock's-foot *Dactylis glomerata*) and tall ruderals (common nettle *Urtica dioica*) around edges. Also creeping bent *Agrostis stolonifera*, hogweed *Heracleum sphondylium*, a St. John's-wort *Hypericum sp*., hairy tare *Vicia hirsuta*, curled dock *Rumex crispus*, a forget-me-not *Myosotis sp.,* hairy bitter-cress *Cardamine hirsuta*, and rough-stalked feather-moss *Brachythecium rutabulum* and dog rose *Rosa canina*.
15	Area of short improved grassland behind tall fence, with poultry and other animal shelters. Used for deer rearing. Close mown/grazed and dominated by agricultural grasses and white clover.
16	Large mature hybrid black poplar *Populus* x *canadensis* close to site boundary but outside Site.
17	Yarnton Lane. Unsurfaced byway between Sandy Lane and A44 Woodstock Road. Deep ditches on both sides and mature hedgerows with abundant oak *Quercus robur*, willow *Salix* species and alder *Alnus glutinosa* trees.
18	Meadow. Poor semi-improved grassland with abundant false oat-grass *Arrhenatherum elatius*. Partially flooded in January 2018. Dry in May 2018.
19	Stand of spotted variegated yellow archangel *Lamiatstrum galeobdolon* ssp. *argentatum* growing on ditch bank.
20	Defunct hedgerow. Ditch adjacent containing lesser pond sedge *Carex riparia*, water cress *Nasturtium aquaticum*, water mint *Mentha aquatica*, soft rush *Juncus effusus*, and reedmace *Typha latifolia*. Tufted hair-grass *Deschampsia cespitosa* adjacent. Dry in September 2018.
21	Large damp meadow, various grasses and herbs, including species indicating disturbance. See habitat description for more details.
22	Area of impenetrable bramble *Rubus fruticosus* agg. scrub.
23	Damp semi-improved neutral grassland, dominated by false oat-grass *Arrhenatherum elatius*, with some creeping bent *Agrostis stolonifera*, cocksfoot *Dactylis glomerata*, common nettle *Urtica dioica*, hogweed *Heracleum sphondylium*, meadowsweet *Filipendula ulmaria and cleavers Galium aparine*. Extensive dense bramble *Rubus fruticosus* agg. scrub in encroaching (dominating) the grassland.
24	Ditch between arable field and hedgerow, close to Oxford Canal with standing water in winter and aquatic vegetation, including greater pond sedge *Carex riparia,* lesser pond sedge *Carex acutiformis*, tufted hair-grass *Deschampsia cespitosa* and floating sweet-grass *Glyceria fluitans*. Dominated by greater willowherb *Epilobium hirsutum*.
25	Small artificial stream flowing around canal lock. Adjacent swamp – see target Note 26.
26	Small area of swamp dominated by reed sweet-grass *Glyceria maxima* and creeping bent *Agrostis stolonifera*. Mature crack willows present.
27	Semi-improved grassland in south-west of Science Park.

28	Planted bed of rose-of-Sharon *Hypericum calycinum*, ornamaental shrub, with a line of mature hybrid black poplars *Populus* × *canadensis*. Begbroke Science Park.
29	Area of former amenity grassland with mature black pine *Pinus nigra* and Scots pine *Pinus sylvestris*, and several apple trees *Malus pumila*, now a cleared construction site for new buildings at the Science Park.
30	Area of former semi-improved neutral grassland dominated by red fescue *Festuca rubra* with abundant forbs and ephemeral species. This grassland had colonised bare sandy ground following demolition of buildings here. Now part of a cleared construction site.
31	Amenity grass verge with mature field maple *Acer campestre* and pedunculate oak *Quercus robur*.
32	Short-mown lawn adjacent to farmhouse, contains various grass, forb and bryophyte species including common bent *Agrostis capillaris,* red fescue *Festuca rubra*, yarrow *Achillea millefolium* daisy *Bellis perennis*, common cat's-ear *Hypochaeris radicata* and springy turf-moss *Rhytidiadelphus squarrosus*. Because of this species richness, this grassland is classed as semi-improved neutral grassland in the Phase 1 habitat survey.

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Table A4-1. Plant species list for Field A

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False oat-grass	*Arrhenatherum elatius*	D
Bramble	*Rubus fruticosus*	F
Common nettle	*Urtica dioica*	F
Meadow foxtail	*Alopecurus pratensis*	O
Creeping thistle	*Cirsium arvense*	O
Field bindweed	*Convolvulus arvensis*	O
Hedge bindweed	*Convolvulus arvensis*	O
Tufted hair-grass	*Deschampsia cespitosa*	O
Greater willowherb	*Epilobium hirsutum*	O
A horsetail	*Equisetum sp.*	O
Red fescue	*Festuca rubra*	O
Meadowsweet	*Filipendula ulmaria*	O
Cleavers	*Galium aparine*	O
Creeping buttercup	*Ranunculus repens*	O
Curled dock	*Rumex crispus*	O
Garlic mustard	*Alliaria petiolata*	R
Wild angelica	*Angelica sylvestris*	R
Common knapweed	*Centaurea nigra*	R
Cock's-foot	*Dactylis glomerata*	R
Hogweed	*Heracleum sphondylium*	R
Yorkshire fog	*Holcus lanatus*	R
Meadow vetchling	*Lathyrus pratensis*	R
Meadow buttercup	*Ranunculus repens*	R
Broadleaved dock	*Rumex obtusifolius*	R
Smooth sow-thistle	*Sonchus oleraceus*	R

Table A4-2. Plant species list for Field D

F□□d□D□		
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False oat-grass	*Arrhenatherum elatius*	A
Yorkshire fog	*Holcus lanatus*	A
Creeping bent	*Agrostis stolonifera*	F
Meadow foxtail	*Alopecurus pratensis*	F
Cock's-foot	*Dactylis glomerata*	F
Creeping buttercup	*Ranunculus repens*	F
Soft brome	*Bromus hordaceus*	O
Cut-leaved crane's-bill	*Geranium dissectum*	O
White clover	*Trifolium repens*	O

Cow parsley	*Anthriscus sylvestris*	R□
Crested dog's-tail	*Cynosurus cristata*	R
Lady's bedstraw	*Galium verum*	R
Hogweed	*Heracleum sphondylium*	R
Hard rush	*Juncus inflexus*	R
Meadow vetchling	*Lathyrus pratensis*	R
Ox-eye daisy	*Leucanthemum vulgare*	R
Bird's-foot trefoil	*Lotus corniculatus*	R
Ribwort plantain	*Plantago lanceolata*	R
Meadow buttercup	*Ranunculus repens*	R
Yellow rattle	*Rhinanthus minor*	R
Common sorrel	*Rumex acetosa*	R
Broad leaved dock	*Rumex obtusifolius*	R
Greater burnet	*Sanguisorba officinalis*	R
Hoary ragwort	*Senecio erucifolia*	R
Field sow-thistle	*Sonchus arvensis*	R
Lesser stitchwort	*Stellaria graminea*	R
Dandelion	*Taraxacum official*	R
Lesser trefoil	*Trifolium dubium*	R
Red clover	*Trifolium pratense*	R
Germander speedwell	*Veronica chamaedrys*	R
Common vetch	*Vicia sativa*	R
Smooth tare	*Vicia tetrasperma*	R

Table A4-3. Plant species list for Field E

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Yorkshire fog	*Holcus lanatus*	A
False oat-grass	*Arrhenatherum elatius*	D
Creeping thistle	*Cirsium repens*	O
Hedge bindweed	*Convolvulus sepium*	O
Red fescue	*Festuca rubra*	O
Meadow vetchling	*Lathyrus pratensis*	O
Smooth meadow-grass	*Poa pratensis*	O
Dewberry	*Rubus caesius*	O
Smoot tare	*Vicia tetrasperma*	O
Urtica dioica	*Common nettle*	R
Curled dock	*Rumex crispus*	R

Table A4-4. Plant species list for Field F

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Common nettle	*Urtica dioica*	A
False oat-grass	*Arrhenatherum elatius*	D
Cow parsley	*Anthriscus sylverstir*	F□

Field bindweed	*Calystegia arvensis*	F
Cock's-foot	*Dactylis glomerata*	F
Hemlock	*Conium maculatum*	O
Red fescue	*Festuca rubra*	O
Creeping cinquefoil	*Potentilla reptans*	O
Meadow fescue	*Schedonorus pratensis*	O
Horseradish	*Amoracia rusticana*	R
Welted thistle	*Carduus cripsus*	R
Spear thistle	*Cirsium vulgare*	R
Senecio jacobaea	*Common ragwort*	R
Cleavers	*Galium aparine*	R
Ground ivy	*Glechoma hederacea*	R
Hogweed	*Heracleum spondylium*	R
Smooth meadow-grass	*Poa pratensis*	R
Comfrey	*Symphytum officinale*	R
Goat's-beard	*Tragopogon pratensis*	R

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Table A4-5. Plant species list for Field B

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Yorkshire fog	*Holcus lanatus*	D
Silverweed	*Potentilla anserina*	A
Tall fescue	*Schedonorus arundinacea*	A
False oat-grass	*Arrhenatherum elatius*	O
Smooth meadow-grass	*Poa pratensis*	O
Perforate St John's wort	*Sweet vernal grass*	O
Garlic mustard	*Alliaria petiolata*	R
Wild angelica	*Angelica sylvestris*	R
Lesser burdock	*Arctium minus*	R
Wintercress	*Barbarea vulgaris*	R
Soft brome	*Bromus hordaceus*	R
Field bindweed	*Calystegia arvensis*	R
Hairy sedge	*Carex hirta*	R
Creeping thistle	*Cirsium arvense*	R
Spear thistle	*Cirsium vulgare*	R
Cock's-foot	*Dactylis glomerata*	R
Tufted hair-grass	*Deschampsia cespitosa*	R
Broad-leaved willowherb	*Epilobium montanum*	R
A horsetail	*Equisetum sp.*	R□
Cleavers	*Galium aparine*	R
Ox-eye daisy	*Leucanthemum vulgare*	R
Creeping cinquefoil	*Potentilla reptans*	R
Self-heal	*Prunella vulgaris*	R

Common fleabane	*Pullicaria dysenterica*	R
Meadow buttercup	*Ranunculus arvensis*	R
Creeping buttercup	*Ranunculus repens*	R
Bramble	*Rubus fruticosus agg.*	R
Curled dock	*Rumex crispus*	R
Water figwort	*Scrophularia aquatica*	R
Hoary ragwort	*Senecio erucifolia*	R
Hedge woundwort	*Stachys sylvatica*	R
Dandelion	*Taraxacum officinalis*	R
Common nettle	*Urtica dioica*	R
Germander speedwell	*Veronica chamaedrys*	R

Table A4-6. Plant species list for Field C

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Tall fescue	*Schedonorus arundinacea*	D
Yorkshire fog	*Holcus lanatus*	F
Wild angelica	*Angelica sylvestris*	R
Soft brome	*Bromus hordaceus*	R
False fox sedge	*Carex otrubae*	R
Common mouse-ear	*Cerastium fontanum*	R
Meadowsweet	*Filipendula ulmaria*	R
Cut-leaved crane's-bill	*Geranium dissectum*	R
Cat's-ear	*Hypochaeris radicata*	R
Meadow vetchling	*Lathyrus pratensis*	R
Creeping buttercup	*Ranunculus repens*	R
Meadow buttercup	*Ranunculus repens*	R
Yellow rattle	*Rhinanthus minor*	R
Curled dock	*Rumex crispus*	R
Dandelion	*Taraxacum officinale*	R
Lesser trefoil	*Trifolium dubium*	R
Red clover	*Trifolium repens*	R
Tufted vetch	*Vicia cracca*	R
Smooth tare	*Vicia tetrasperma*	R

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Table A4-8. Plant species list for improved grassland in the south-west of the Site.

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Perennial rye-grass	*Lolium perenne*	A
Creeping buttercup	Ranunculus repens	F□
Poa pratensis	*Smooth meadow-grass*	F
White clover	Trifolium repens	F
Cock's-foot	*Dactylis glomerata*	O

Red fescue	Festuca rubra	O
Cerastium fontanum	Common mouse-ear	R
Ribwort plantain	Plantago lanceolata	R
Broad-leaved plantain	Plantago major	R
Meadow buttercup	*Ranunculus acris*	R
Dandelion	*Taraxacum officinale*	R
Lesser trefoil	*Trifolium dubium*	R

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Table A4-9. Plant species list for amenity grassland near Begbroke Science Park

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Red fescue	*Festuca rubra*	F
Perennial rye-grass	*Lolium perenne*	F
Smooth meadow-grass	*Poa pratensis*	F
Common bent	*Agrostis capillaris*	O
Creeping bent	*Agrostis stolonifera*	O
Common daisy	*Bellis perennis*	O
Yarrow	*Achillea millefolium*	R
Rough-stalked feather-moss	*Brachythecium rutabulum*	R
Field woodrush	*Luzula campestris*	R
Ribwort plantain	*Plantago lanceolata*	R
Self-heal	*Prunella vulgaris*	R
Springy turf-moss	*Rhytidiadelphus squarrosus*	R
Lesser trefoil	*Trifolium dubium*	R
White clover	*Trifolium repens*	R

□

[illegible]

[illegible]

Table A5-1: Habitat condition assessment information for Fields A, D , E and F, based on Natural England (2023) guidance

Criterion	Field A	Field D	Field E	Field F	[illegible]
[illegible]	[illegible] Clearly *Arrhenatherum* neutral grassland.	[illegible] A range of neutral indicator species present, although at low cover.	[illegible] Clearly *Arrhenatherum* neutral grassland.	[illegible] Clearly *Arrhenatherum* neutral grassland, although heavily grass dominated with allow cover of forbs.	[illegible] A range of neutral indicator species are present.
[illegible]	N[illegible] Uniform tall sward. No signs of management in recent years.	N[illegible] Uniform tall sward. Assume manged by one annual cut.	N[illegible] Uniform tall sward.	N[illegible] Uniform tall sward.	N[illegible] Uniformly short mown[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	N[illegible] Bramble patches occupy >5% of the field.	[illegible] Neither present.	[illegible] Neither present on grassland (central area of scrub mapped separately as scrub habitat).	[illegible]	[illegible] Neither present.
[illegible]	[illegible]	[illegible]	N[illegible]. Common nettle cover is ca. 10%.	N[illegible]. Common nettle cover is estimated to be 5-10%.	[illegible]
[illegible]	N[illegible] Varies between 3 ad 5 across 5 quadrats.	N[illegible]. Varies between 5 and 8 across 5 quadrats.	N[illegible]. Varies between 3 and 6 across 5 quadrats	N[illegible]. Varies between 3 and 4 across 5 quadrats	N[illegible] Varied between 5 and 8 across 5 quadrats.
[illegible]	3	4	3	3	4
[illegible]	Moderate	Moderate	Moderate	Moderate	Moderate

[illegible]

Table A5-2: Habitat condition assessment information for Fields B and C based on Natural England (2023) guidance

Criterion	Field B	Field C
[illegible]	N[illegible] Varies between 4 and 7 across 5 quadrats.	N[illegible]. Varies between 3 and 5 across 5 quadrats.
[illegible]	[illegible]	N[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	N[illegible] Bare and wheel-rutted areas present.	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	5	5
[illegible]	Moderate	Moderate

[illegible]

Table A5-3: Habitat condition assessment information for Improved grassland

[illegible]	[illegible]	[illegible]
[illegible]	N[illegible] 4 or fewer species per m^2.	N[illegible] 5 or fewer species per m^2.
[illegible]	N[illegible]	N[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	5	5
[illegible]	Moderate	Moderate

[illegible]

Table A5-4: Habitat condition assessment information for Improved grassland

[illegible]	[illegible]	[illegible] Parker's Farm
[illegible]	2	1
[illegible]	2	2
[illegible]	2	3
[illegible]	3	3
[illegible]	3	3
[illegible]	3	3
[illegible]	2	1
[illegible]	3	3
[illegible]	2	1
[illegible]	2	1
[illegible]	1	1
[illegible]	2	1
[illegible]	3	2
[illegible]	30	25
[illegible]	Moderate	Poor

□□□ A□□□□d□□□□□ □d□r□□ □□r□□□D□□□□

Table A6-1: Hedgerow data.

ID□	□□□d□□□□□ □□d□□□□□□□	□ □□d□□ □□□□□□□□ □□r□□□ □	I□ □□r□□□	□□□□□□□□□□N□□□□	□□□□□□□ r□□□	□□□d□□□□□□□□□ □□□r□r□N□□□□	□□d□□□
□□	Fe, Up, Rc, Lv, Cm, Ps, Vl, Rhc, Ac, Sn, Pa	7	Important	7 woody species.	Species-rich	A1-D2. No trees in hedgerow so E1 and E2 N/A.	Good
□□	Rc, Cm, Ca, Ps, Rhc, Vl, Ac	6		6 woody species and 3 features, but <30 years old (planted around 2011).	Species-rich	A1-D2. No trees in hedgerow so E1 and E2 N/A.	Good
□□	Cm, Fe, Sxf	2	-	-	-	Fails C2 and D2. No trees in hedgerow so E1 and E2 N/A.	Good
□□	Up, Sn, Ps, Ap, fe, Rhc, Rc, Ca, Ms	7	Important	7 woody species.	Species-rich	Passes all criteria A1-E2.	Good
□□	Cm, Sn, Ia, Up, Fe	5	Important	4 woody species and adjacent to public right of way.	Species-rich	Fails C2 and D2. No trees in hedgerow so E1 and E2 N/A.	Good
□□	Rc, Cm, Ca, Ps, Rhc, Vl, Ac	6	-	-	Species-rich	Fails A1, A2, C1. No trees in hedgerow so E1 and E2 N/A.	Moderate
□□	Fe, Cm, Ps, Rhc, Ca, Sn	4	-	Adjacent to residential property.	-	Fails B2, C1, C2, D2. No trees in hedgerow so ignore E1 and E2 N/A.	Moderate
□□	Sxf, Fe, Cm, Sn, Up, Rc, Ac, Fs	5	Important	5 woody species and 4 features.	Species-rich	Fails D2 only. Passes E1 and E2.	Good
□□	Fe, Cm, Ca, Rhc, Sn, Sxf, Ac, Up, Qr, Rc	8	Important	7 woody species.	Species-rich	Passes all criteria A1-E2.	Good
□□□	Cm, Ms, Ac, Sn, Qr	5	Important	4 woody species and adjacent to public right of way.	Species-rich	Fails B1, B2, C2, D2. No trees in hedgerow so E1 and E2 N/A.	Moderate
□□□	Ac, Cm, Cs, Up, Ps, Sn	5	-	-	Species-rich	Passes all criteria A1-E2.	Good
□□□	Fe, Rc, Rhc, Cm, Up, Ps, Sn	4	-	-	-	Passes A1-D2. E1 and E2 are N/A.	Good
□□□	Ac, Ca, Ps	3	-	-	-	Only fails B2. Passes E1 and E2	Good
□□□	Up, Sn, Fe, Ac, Ca	3	-	-	-	Fails B1 and B2, C2, D2. No trees in hedgerow so E1 and E2 N/A.	Moderate
□□□	Fe, Ac, Rhc, Sn, C, Ps, Up, Qr	6	-	-	Species-rich	Fails B1 and B2. Passes E1 and E2	Moderate
□□□	Cm, Ps, Qr, Up, Rc, Fe, Rhc,	7	Important	7 woody species	Species-rich	Passes all criteria A1-E2	Good
□□□	Cm	1	-	Adjacent to residential property.	-	Fails B1, C1, C2. ignore E1 and E2 are N.A.	Moderate
□□□	Fe, PS, Cm, Rc, Ac, Sn	4	-	-	-	Passes A1-D2. No trees in hedgerow so E1 and E2 N/A.	Good
□□□	Cm, Ca, Vl, Rhc, Rc, Ps	6			Species-rich	Passes B2. No trees in hedgerow so E1 and E2 N/A.	Good
□□□	Ee, Cm, Ac, Qr, Ps, Fe,	4	-	-	-	Fails B1, C1, C2, D2. Passes E1 and E2	Moderate

ID							
	Cm, Ca, Cs, Ee, Qr, Vl, Ac, Ia,Ps	7		Adjacent to residential property.	Species-rich	Fails B1, B2, C1. E1 and E2 are N/A.	Moderate
	Up, Cm, Ac, Qr, Rc, Ps, Ca	5	-	-	Species-rich	Passes A1-D2. E1 and E2 are N/A.	Condition
	Cm, Ac, Qr, Sxcap,	4	Important	4 woody species and adjacent to public right of way.	-	Fails C1 and C2. E1 and E2 are N/A.	Moderate
	Cm, Rc, Ac, Qr, Up	4	Important	4 woody species and adjacent to public right of way.	-	Fails C1 and C2. E1 and E2 are N/A.	Moderate
	Ps, Cm, Ac, Sn, Ca, Qr, Cs, Sxcap, Up, Fe, Rhc, Jr	8	Important	7 woody species	Species-rich	Fails C2. E1 and E2 are N/A.	Good
	Ac, Cm, Fe, Up, Rc	4	-	-	-	Passes A1-D2. E1 and E2 are N/A.	Good
	Ps, Ca, Fe, Cm, Ac	4	-	Adjacent to public right of way.	-	Fails B1, C2 and E1.	Moderate
	Up, Ac, Ps, Cm, Ca, Fe, Qr	5	-	-	Species-rich	Passes all criteria A1-E2.	Good
	Cm, Ac, Sn, Iaq, Ps, Ee	4	-	-	-	Fails B1, B2, C2. E1 and E2 are N/A.	Moderate
	PS, Sn, Sxf, Sxcap, Cm, Ac, Qr,	5	-	-	Species-rich	Fails B1, B2, C1, C2, D2, E1.	Poor
	Cm, Sxf, Fe, Qr, Sxcap, Ps, Rc	7	Important	7 woody species	Species-rich	Fails C2. Passes E1 and E2.	Goo
	Cm, Fe, Sn, Ac	3				Fails D2. E1 and E2 are N/A.	Good
	Ac, Ps, Cm, Qr, Ca, Sn	6	Important	6 woody species and 3 features	Species-rich	Fails B1, C2. Passes E1 and E2.	Good
	Ca. Cm, Ps, Sn, Up, Fe, Ee, Ac, Cs	7	Important	7 woody species	Species-rich	Fails C2. Passes E1 and E2.	Good
	Qr, Fe, Ca, Cm, Ms, Sxcap, Cs	7	Important	7 woody species	Species-rich	Fails A2, B1, B2, C1, D1. Passes E1 and E2.	Moderate
	Ac, Fe, Ps, Cm, Up, Cs, Rc, Qr, Sxf, Vo	7	Important	7 woody species	Species-rich	Fails E1 only.	Good
	Cm, Qr, Up, Sn, Sxcap, Rc, Fe, Vo	6	Important	6 woody species and 3 features	Species-rich	Passes A1-E2.	Good
	Cm, Ca, Cs, Qr, Fe, Rc, Rhc, Sxf	4	-	-	-	Fails B2 and E1.	Good
	Ca, Cm, Fe, Qr, Cs, Ps, Rc, Ia, Sn	6	Important	6 woody species and 3 features	Species-rich	Passes A1-E2.	Good
	Ac, Cm, Fe, Qr, Ca, Sxcap, Ps, Ac	6	Important	6 woody species and 3 features	Species-rich	Passes A1-E2.	Good
	Sxcap, Ca, Rc, Cm, Qr, Sxf, Ps, Ac	6	Important	6 woody species and 3 features	Species-rich	Fails C2 and E2.	Good
	Ac, Cm, Ca, Sn, Sxf, Ag, Ps, Ms, Fe, Qr, Rc	9	Important	7 woody species	Species-rich	Passes A1-E2.	Good
	Cm, Sxf, Sxv, Ag, Qr, Ps ,Sn, Cl, Rc	6	Important	6 woody species and 3 features	Species-rich	Fails C2. Passes E1 and E2.	Good

ID	Ac, Cm, Sxf, Sn, Lp, Ag, Sxcap, Up, Qr, Ps, Ia, Ms, Rc	7.7	Important	7 woody species	Species-rich	Fail B1 and B2, C2, E2.	Moderate
	Cm, Fe, Rc, Sn, Ac, Ca, Qr, Ma	7	Important	7 woody species	Species-rich	Fails C1 and E2.	Good
	Ca, Sn, Rc, Sn, Cm, Qr, Ac, Iq, Ps, Lv, Sxcap, Ca, Sxf, Up	8	Important	7 woody species	Species-rich	Fails B2, C2, E1 and E2.	Moderate
	Sxf, Ps, Up, Sn, Cm, Fe, Rc, Ms, Ia, Cs,	7.5	Important	7 woody species	Species-rich	Fails B2, C2, and E1.	Moderate
	Cm, Ac, Ca, Rc, Fe, Ag, Rc, Ps, Qr, Sxf, Sn	7	Important	7 woody species	Species-rich	Fails E2.	Good
	Sxcap, Ug, Sn, Fe, Rc, Cm, Up, Qr, Cs, Ia	10	Important	7 woody species	Species-rich	Fails E2.	Good
	Rc, Ug, Sxf, Up, Cm, Cs, Sn, Fe, Ia, Ac, Rc, Ca	7.33	Important	7 woody species	Species-rich	Fails B1, C2, E2.	Moderate
	Cm, Ac, Ca, Rc, Fe, Qr, Sxf, Sn, Up, Sxcap, Sn, Lv	7	Important	7 woody species	Species-rich	Fails B1, C2. Passes E and E2.	Good
	Cm, Ac, Fe, Up, Ms, Ag, Lv, Ee, Sn, Sxcap, Cs, Qr	5.67	Important	5 woody species and 4 features	Species-rich	Fails B2, C1, E1 and E2.	Moderate
	Cm, Sn, Ac, Sxf	4	-	-	-	Passes A1-D2. E1 and E2 are N/A.	Good
	Sn, Cm, Ca, Ac, Fe, Rc, Qr, Ps	5	Important	6 woody species and 3 features	Species-rich	Fails C2. Passes E1 and E2.	Good

A field maple *Acer campestre*
A alder *Alnus glutinosa*
hawthorn *Crataegus monogyna*
dogwood *Cornus sanguinea*
spindle *Euonymus europaeus*
F ash *Fraxinus excelsior*
L holly *Ilex aquifolium*
L wild privet *Ligustrum vulgare*
L honeysuckle *Lonicera periclymenum*
M crab apple *Malus syivestris*
wild cherry *Prunus avium*
blackthorn *Prunus spinosa*
r pedunculate oak *Quercus robur*
R dog rose *Rosa canina*
R buckthorn *Rhamnus cathartica*
elder *Sambucus nigra*
goat willow *Salix caprea*
crack willow *Salix fragilis*
wych elm *Ulmus glabra*
English elm *Ulmus procera*
guleder rose *Viburnum lantana*

[illegible]

Table A7-1: Results of great crested newt habitat suitability assessment. For further details of criteria and HIS calculation see ARG UK (2010).

[illegible]	[illegible]									
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1. Location	1	1	1	1	1	1	1	1	1	1
2. Pond area	0.4	0.05	0.05	0.2	0.05	0.2	0.8	0.6	0.9	0.1
3. Pond drying	0.9	0.1	0.1	0.9	0.1	0.5	0.9	1	1	1
4. Water	1	0.33	0.33	0.67	0.67	0.67	1	1	1	0.67
5. Shade	1	0.2	0.2	1	1	0.6	1	1	1	1
6. Fowl	1	1	1	1	1	1	1	1	1	1
7. Fish	1	1	1	0.33	1	1	0.67	1	1	1
8. Ponds	0.92	0.92	0.92	0.92	0.82	0.82	0.92	0.95	0.92	0.82
9. Terrestrial	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	1
10. Macrophytes	0.8	0.4	0.4	0.6	0.4	0.4				
[illegible]	0.84	0.39	0.39	0.66	0.49	0.62	0.89	0.91	0.94	0.75
[illegible] [1]	E	P	P	A	P	A	E	E	E	G

[1] Suitability classes: E: excellent; G: good; A: average; BA: below average; P: poor.