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Cobrey Farm, Coughton, Ross-on-Wye.

Ecology Phase 1 Habitat Survey.

For :- Cobrey Farms

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COBREY FARM ECOLOGICAL SURVEY



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1.0 INTRODUCTION

Cobrey Farm is situated in the Wye Valley, south-east of Ross-on-Wye, Herefordshire. Potatoes and asparagus represent the current main crops and the farm is seeking to increase asparagus production. This will require greater numbers of staff. Thus a survey was carried out for Mr John Chinn, owner of Cobrey Farms, to identify any potential environmental impacts of increasing the accommodation available for seasonal workers. The farm comprises several separate units; however only two units Coleraine Farm and Frogmore were required to be surveyed; site location is identified in Map 1.

1.1 *Brief*

Dr Alison Strange of DLA Ltd was commissioned by John Chinn to carry out an ecological (Phase I Habitat) survey of the site and to ascertain the presence of any protected species. The habitats include farmland, hedgerows and diverse waterbodies.

This report sets out the results of survey work undertaken and assesses the importance of the resource.

2.0 NATURE CONSERVATION DESIGNATIONS

2.1 *Nature Conservation Background*

A desk top study using "MAGIC" (www.magic.gov.uk – a multiple agency web-based interactive mapping site which details key environmental schemes and designations) and the Natural England information site "Nature on the Map" identified no statutory nature conservation designations covering the site. Wigpool Common approximately 5 km to the southeast is a Site of Special Scientific Interest (SSSI) and Coughton Marsh 2 km to the west is also a SSSI. The western section of the site is within an Area of Outstanding Natural Beauty; see Figure 1, whilst the rest of the farm has no designation.

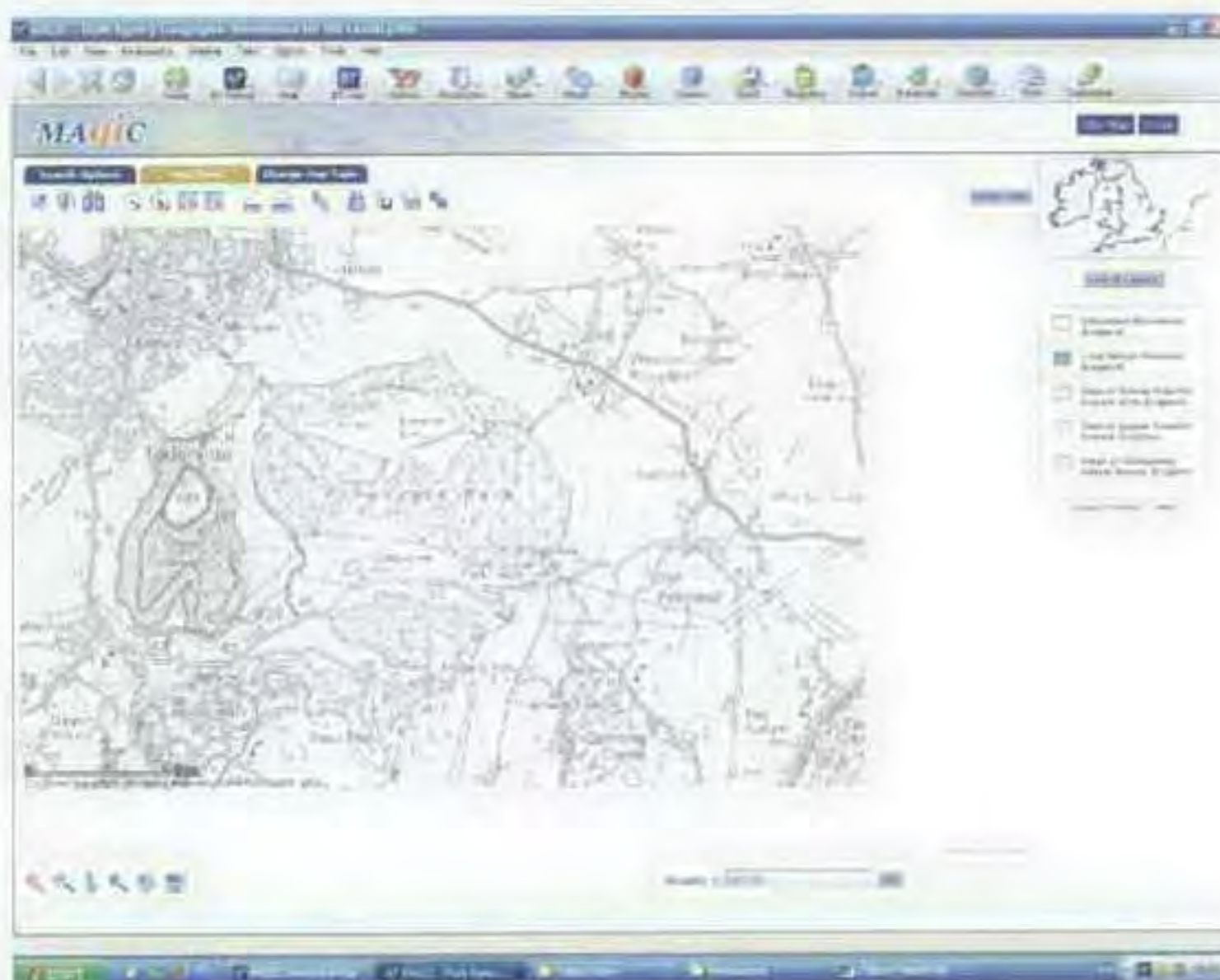


Figure 1. Nature Conservation designations

2.2 *Protected Species*

In this report "protected species" are defined as species that are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and also the Conservation (Natural Habitats) Regulations 1994.

A desktop study using the National Biodiversity Network found that no protected species have been recorded either on the site or in the immediate vicinity.

However, within the 10 km square that includes Cobrey Farm, pipistrelle, lesser horseshoe and brown long-eared bats have been recorded, whilst otter and water vole have also been recorded along the River Wye. Dormice have also been recorded at Coughton Marsh approximately 8 km south of Ross-on-Wye.

2.3 *Badgers*

Badgers are protected under the Protection of Badgers Act (1992) and the Wildlife and Countryside Act (1981) and subsequent Amendment (1985). As such it is an offence to wilfully take, kill, injure or ill-treat a badger. Under the Protection of Badgers Act (1992) their setts are also protected against obstruction, destruction, or damage in any part, and the animals within a sett cannot be disturbed.

2.4 *Hedgerow Regulations 1997*

Under the Hedgerow Regulations (SI No.1160) it is an offence to remove most countryside hedges without permission from the local planning authority.

3.0 METHODOLOGY

3.1 *Vegetation*

A Phase I Habitat Survey was undertaken by Dr Alison Strange (21.08.2008), following the procedures detailed by the Joint Nature Conservation Committee (JNCC). The areas within the farm boundaries that required surveying were provided by Mr Chinn of Cobrey Farm. Each field was assigned a number for ease of reporting as shown in Map 2 and systematically surveyed. Within each field a full species list of vascular plants, with DAFOR abundance scores (Table 1), was recorded. The species list found in Appendix 1 is not exhaustive due to the seasonal appearance of many plants.

Table 1. The DAFOR cover abundance scale

D	Dominant
A	Abundant
F	Frequent
O	Occasional
R	Rare

3.2 *Hedgerow Assessment*

The hedgerows were assessed in terms of the Ecology and Landscape criteria (Schedule 1, Part II, sections 6-8) of the Regulations. Where a hedgerow satisfies at least one of the criteria given in Part II of the Regulations it would qualify as "Important" and would qualify for protection.

3.3 *Nomenclature*

Nomenclature follows that of Stace (1997) for vascular plants.

3.4 *Bats*

Bats favour cracks and holes in trees as roosting places, as well as buildings and underground sites (such as culverts). As with the majority of mammals the sighting of bats is not always possible therefore their presence is largely determined by their characteristic field signs. These are droppings, scratch marks, signs of wear and tear, and staining around roost entrances.

3.5 *Badgers*

A walk over survey was carried out by Dr Fergus Mould (21.08.08). Within the survey area all fence lines, woodland and scrub habitats were systematically

surveyed for evidence of badgers, with respect to:

- a. *Faeces*: badgers deposit faeces in characteristic excavated pits, concentrations of which (latrines) are typically used to delineate range boundaries.
- b. *Setts*: comprising either single isolated holes or a series of holes, likely to be interconnected underground.
- c. *Paths*: between setts or leading to feeding areas.
- d. *Scratching sites*: at the base of tree trunks generally in the close vicinity of setts.
- e. *Snuffle holes*: small scrapes where badgers have searched for insects, earthworms and plant tubers
- f. *"Day nests"*: bundles of grass and other vegetation where badgers may sleep / rest above ground overnight
- g. *Hair traces*: often found on barbed-wire, and
- h. *Tracks*: five toes on each foot producing "palm / heel" impression, claws leave gouge mark in mud.

Table 2. Definition of sett types

Sett type	Definition
Main	Many entrance holes with large spoil heaps and obvious paths emanating from and between sett entrances.
Annexe	Normally less than 150m from main sett, comprising several holes. May not be in use all the time, even if main sett is very active.
Subsidiary	Usually at least 500m from main sett with no obvious paths connecting to other setts. May only be used intermittently.
Outlier	Used sporadically with little spoil outside holes. No obvious paths connecting to other setts. May be used by foxes and rabbits.

Setts were classified using the conventions shown in Table 2, with the level of activity assessed as either a) *well-used*: worn entrance, freshly excavated soil and / or bedding, recent footprints; b) *infrequently used*: holes partially blocked e.g. leaves or twigs in or around entrance, recent plant growth or c) *disused*: holes partially or completely blocked such that considerable excavation required

for reoccupation.

3.6 *Birds*

A visual survey for birds was carried out by Dr Fergus Mould (21.08.08), with particular attention paid to the hedgerows and the open areas of farmland. Using binoculars, mature trees were examined in order to locate any cavities in the trees that would allow access to owls and suitable roosting places. The area around trees and posts were examined for droppings and regurgitated indigestible food in the shape of large pellets.

3.7 *Great crested newts*

An evaluation of the habitat was carried out to ascertain its suitability for Great Crested Newts, paying particular attention to the vegetation in and around the waterbody, whether there were fish or waterfowl present and the underlying substrate type.

3.8 *Otter*

A series of spot checks were carried out at every bridge over all watercourses and an evaluation of the habitat to ascertain its suitability for otter. The spot checks comprised a search of the vegetation, mud and any stones or logs on either side the bridges looking for footprints, spraint, anal jelly and evidence of lying up areas.

4.0 SURVEY RESULTS

4.1 *Farm Description*

Coleraine Farm consists of a series of fourteen fields along the valley between the woodlands of Penyard Park and Hengrove Wood. The land slopes down from the woods towards Coleraine Farm to a stream flowing east-west that drains the valley and eventually voids into the River Wye. The farm boundaries to the north and part of the south are bounded by woodland whilst all other boundaries are hedged. The farm is bisected by a lane that runs down the valley towards Coughton.

Frogmore is a long narrow unit which comprises six fields, aligned north-south and again split by the Coughton lane. All of the fields are hedged. The northern section consists of three fields that follow the contours of the hill down to the lane. The stream, mentioned earlier, forms the eastern boundary of the two most northern fields and there is an irrigation pond to the south in the third field. The southern section consists of three fields that slope down to the lane. There are no watercourses in this section. The whole unit at Frogmore is bounded by trackways or public footpaths and are hedged.

Both farm units are intensively cultivated, in the main potatoes or asparagus, with a single, north-facing field under permanent pasture. (see Map 3).

4.2 *Vegetation*

Coleraine Farm

Field 1

This field has been ploughed and cultivated for organic asparagus and rhubarb. Due to the organic cultivation practice the field is quite weedy. Common couch and rye grass are abundant although not dominating. Widespread species include sterile brome, field bindweed, cleavers, scentless mayweed, hedge parsley, creeping thistle, hogweed, mugwort and bramble.

Field 2

Field 2 is long and runs between Penyard Park Wood up to a pumping station, on the western edge. Next to this is a small section of wet woodland with crack willow, hazel and elder. The understorey is dominated by ivy, plus fool's watercress and water speedwell in the wettest parts. The northern boundary of

field 2 is a grassy headland with smooth and rough meadow grass and some

Yorkshire fog. Other species include selfheal, perforate St Johns wort, scarlet pimpernel, sticky mouse-ear and germander speedwell. This field has two additional subsections, 2a and 2b. Field 2a is a narrow strip that runs between the lane and the stream. It is under asparagus which is not managed organically. The headlands are dominated by creeping bent with abundant scentless mayweed along the cultivated edge. At the eastern edge, field 2b is square block of pasture separated from field 2 by a wire fence.

Field 3

This field is long and curved and runs between Penyard Park Wood and Coleraine Farm yard and buildings. There is a sub section (3a) which has caravans for seasonal workers immediately adjacent to the farmyard. Between this and the western boundary, comprising an area of wet grassland dominated by creeping bent, there is a block of asparagus. The northern edge of field 3 is a grassy headland with smooth and rough meadow grass and some Yorkshire fog. Other species include selfheal, perforate St Johns wort, scarlet pimpernel, sticky mouse-ear and germander speedwell. It is currently sown to asparagus with a wide strip of potatoes on the western edge and a small polytunnel beside the stream.

Field 4

Field 4 is down to wheat with narrow headlands made up of common couch and rye grass. Widespread species include sterile brome, field bindweed, cleavers, scentless mayweed, hedge parsley, creeping thistle, hogweed, mugwort and bramble. The field is hedged on all boundaries.

Field 5

This field has been recently planted to asparagus and is completely fenced with approximately 1 m soil and vegetation clearance on either side. The headlands have a sparse flora mainly made up of scentless mayweed and meadow grass.

Field 6

This is an undulating field of rough grassland and a block of young woodland planting that will link up with the mature trees at the northern end of the field. Most of the whips still require Tulley tubes, but are getting underway. The

grassland is made up of Yorkshire fog, meadow grass, false oat grass and

cocksfoot. Other species include bracken, spiny lettuce, creeping thistle, lesser burdock and ragwort.

Field 7

Field 7 slopes down to Cobrey Park and has vines, it is hedged all round. The headlands have a sparse flora mainly made up of scentless mayweed and meadow grass.

Field 8

This field is down to asparagus and is hedged all round with some new hedge planting along the roadside to fill in gaps. The headlands have a sparse flora mainly made up of scentless mayweed and meadow grass.

Field 9

This field is on the southern side of the lane opposite field 8, it is down to asparagus and is hedged all round. The headlands have a sparse flora mainly made up of scentless mayweed and meadow grass.

Field 10

A trackway separates field 10 from the eastern edge of field 9. It is currently under potatoes and is hedged all round with the eastern boundary formed by Hengrove Wood. The headlands overall have a sparse flora mainly made up of scentless mayweed and meadow grass.

Field 11

This field is long and curved and runs between Hengrove Wood and the lane. The southern edge of field 11 below the wood is a grassy headland with smooth and rough meadow grass and some Yorkshire fog. Other species include selfheal, perforate St Johns wort, scarlet pimpernel, sticky mouse-ear and germander speedwell. It is hedged on all other boundaries and is currently cropping asparagus. There is a small pasture on the western boundary that has a hedge separating it from the main field.

Field 12

Field 12 is divided into two sections by a wire fence. The northern section that

runs parallel to the lane is down to asparagus, whilst the southern section that

runs up the hill to a wooded edge is pasture and has approximately 16 Hereford-cross beef steers.

The field edges have some broadleaved dock and there is bracken in the hedges.

Frogmore

Field 1

Situated on the northern side of the lane this triangular field is bounded by the stream on its western edge and a public footpath with hedge on the east. It was previously cropped for oilseed rape, which has been harvested although the stubble has not been ploughed down.

There is an irrigation pond in the south-western corner of the field (described in section 4.4) and immediately above the pond along the western boundary is a wide strip of wet grassland dominated by creeping bent and fete grass.

Field 2

This field is currently cropping asparagus and is bounded by hedges on all margins. The northern and western boundaries both have trackways along them. The headlands overall have a sparse flora mainly made up of scentless mayweed and meadow grass.

Field 3

This field slopes steeply down to an almost level part of the valley where the stream forms the eastern boundary. The more level area is currently cropped for potatoes whilst above that a wide strip of grassland has been developed. This is made up of smooth and rough meadow grass and occasional Yorkshire fog. Other species include selfheal, perforate St Johns wort, scarlet pimpernel, sticky mouse-ear, heartsease and germander speedwell.

Field 4

This field slopes steeply down to the lane and is currently cropping potatoes. It is hedged all round with a thin hedge separating it from field 5. The headlands have a generally sparse flora dominated by meadow grass and some Yorkshire fog with scentless mayweed.

Field 5

At the top of the hill this field was previously cropped for oilseed rape, which has been harvested leaving just the stubble. It is edged with hedges.

Field 6

This field is down as pasture and has cattle grazing. It is bounded by hedges.

4.3 *Hedgerows*

At Coleraine Farm, the hedges have the appearance of having been in place for many years. There is frequent hazel, hawthorn, dog rose, and elder, with occasional dogwood.

Overall, the hedge sides appear to support a relatively poor ground flora with mainly weedy species such as nettle along many of the hedges although red campion, wild clematis, dogs mercury and bluebell were seen along the roadside hedge. There are few standard trees, other than some very young willow and alder along the stream bank. The hedges are over 100 years old, but would not be classed as "important" under the Hedgerow Regulations as they would not qualify in respect of woody species in the central 30m.

At Frogmore, the hedges are marked on the 1888 Ordnance Survey map and show signs of having been layered many years ago. They have been kept closely cut, but also have a more diverse flora than those at Coleraine Farm. There is frequent hazel, hawthorn, blackthorn, dog rose, and elder, with occasional birch, ash, and cherry. In fields 2 and 3 the long north to south westerly hedge is a double hedge and bank system with a gap between that is wide enough to have once been a pathway. Hedgerow species include hedge mustard, bryony, red campion and wood avens. These hedges, with eight woody species in the central 30m, could qualify as "important" under the Hedgerow regulations.

4.4 *Waterbodies*

The stream that drains the valley is quite spatey and rises very quickly after rainfall. This was evident as on the day of the survey there was a heavy shower and the stream rose approximately 15 cm within minutes of the downpour. The water quickly became heavily coloured through soil suspension and it was evident that there was a large amount of erosion across the drainage area and

in places heavy deposition.

The banks of the stream at Frogmore are shallow and well vegetated whilst at Coleraine, they are trapezoid and steep with a heavy growth of tall herbs such as nettle, great willow herb, creeping thistle and hemp agrimony. Some slump was also noted. There is no channel vegetation visible and the flow is slow to medium, before the rain. The substrate is silt over gravel and in places silt bars have developed. The stream is fed by field drains across the farm. At Frogmore it is joined by another at the edges of fields 1 and 2. This second stream appears not to drain such cultivated fields as the water was significantly less turbid.

In Frogmore field 1, there is an irrigation pond with little emergent vegetation other than occasional clumps of bulrush. The banks appear to be shallow and there is a population of carp. The field adjacent has a pond (although this was outside the survey area) which was heavily vegetated with bulrush to the point that there was little water visible.

At Coleraine in field 5 there is a series of three irrigation ponds which are fenced off from the rest of the field. These all have steep banks and appear to be quite deep. No emergent or submergent vegetation is visible and the water is quite green in colour, probably due to an algal bloom possibly the consequence of a high nitrogen contamination. All of the banks are planted with alder and willow and the understorey is dominated by creeping bent.

4.5 *Bats*

No definite signs of bats were found. It is possible that they could be roosting in the woodlands surrounding the farm, and there were a few hedgerow trees that appeared to be suitable for bat roosts.

4.6 *Birds*

The site and surrounding area provide good habitat for a number of breeding bird species. A variety of birds were seen and heard, typical of such farmland habitat, hedgerows and woodland edges. Table 3 details the species identified during the present survey, however as this listing was conducted over a single day and interrupted with rain, should be considered more as representative than exhaustive.

Table 3. Bird species observed (listed following the Voous sequence)

Species	Latin name	Activity / location	Conservation concern status*
Grey Heron	<i>Ardea cinerea</i>	Feeding – Frogmore pond	
Mallard	<i>Anas platyrhynchos</i>	Ponds by fox hound kennels	
Golden Eye	<i>Bucephala clangula</i>	Ponds by fox hound kennels	
Buzzard	<i>Buteo buteo</i>	Foraging / soaring over site	
Kestrel	<i>Falco tinnunculu</i>	Foraging over site	SPEC3, BoCCA
Pheasant	<i>Phasianus colchicus</i>	Common, feeding in headlands	
Wood Pigeon	<i>Columba palumbus</i>	Common, feeding	
Collared Dove	<i>Streptopelia decaocto</i>	Common, feeding	
Swift	<i>Apus apus</i>	Foraging across site	
Green Woodpecker	<i>Picus viridis</i>	Heard / seen feeding	SPEC2, BoCCA
Skylark	<i>Alauda arvensis</i>	Territories on arable land	SPEC3, BoCCR
Swallow	<i>Hirundo rustica</i>	Foraging across the site	SPEC3, BoCCA
Meadow Pipit	<i>Anthus pratensis</i>	Territories on arable areas	BoCCA
Pied Wagtail	<i>Motacilla alba</i>	Around farm buildings	
Wren	<i>Troglodytes troglodytes</i>	Common in hedgerows	
Robin	<i>Erithacus rubecula</i>	Common across site	
Blackbird	<i>Turdus merula</i>	Common across site	
Song thrush	<i>Turdus philomelos</i>	Common across site	SPEC3, BoCCA
Fieldfare	<i>Turdus iliacus</i>	Gregarious, by stream	BoCCA
Blackcap	<i>Sylvia atricapilla</i>	Woodland	
Chiffchaff	<i>Phylloscopus collybita</i>	Woodland by stream	
Willow Warbler	<i>Phylloscopus trochilus</i>	Woodland by stream	
Long-tailed Tit	<i>Aegithalos caudatus</i>	By stream near farm buildings	
Great Tit	<i>Parus major</i>	Common across site	
Blue Tit	<i>Parus caeruleus</i>	Common across site	
Jay	<i>Garrulus glandarius</i>	Heard / seen in woodlands	
Magpie	<i>Pica pica</i>	Seen across site	
Rook	<i>Corvus frugilegus</i>	Seen feeding on site	
Carrion crow	<i>Corvus corone</i>	Seen feeding on stubble	
Raven	<i>Corvus corax</i>	Soaring / tumbling over site	
Starling	<i>Strunus vulgaris</i>	Gregarious, farm buildings	BoCCR
House Sparrow	<i>Passer domesticus</i>	Occasional, farm buildings	SPEC3, BoCCR

Chaffinch	<i>Fringula coelebs</i>	Woodlands / scrub across site	
Goldfinch	<i>Carduelis carduelis</i>	Woodlands / scrub across site	
Greenfinch	<i>Carduelis chloris</i>	Woodlands / scrub across site	
Yellowhammer	<i>Emberiza citrinella</i>	Seen perched on poles	BoCCR

* SPEC3: Species designated to be of "unfavourable" European Conservation Concern;
BoCC - Bird of conservation concern (RSPB / BTO listing) where R - high and A - medium concern

4.7 Badgers

4.7.1 Badger Activity

A considerable number of mammal paths were identified within the farm boundaries. Whilst they were used largely by badgers, the paths identified appeared also to be used by fox plus roe and other deer possibly either muntjac or sika. It was also impossible to identify many pathways as exclusively badger due to the level of farming and recreational activity (e.g. dog / horse exercising) across the site.

While typical badger tracks (Figure 2), snuffle holes, faeces and hair were found across the site it appeared that the extensive fencing undertaken is likely to have resulted in access to specific foraging areas being restricted and to social groups or territories possibly being disrupted. The perimeter fencing of the asparagus plantation in the north-west section (bounded by Penyard Park, Gatley Grove and Chase Wood) is an example of this where, as it restricts access to the sett in Chase Wood, new pathways have been developed along the altered fence line, possibly crossing the territory of a neighbouring social group.



Figure 2. Badger tracks

There are remains of a sett in the north-east corner of the field above the old mill works at Parkfield. These appear abandoned and are now over-grown (bramble and nettles) which made an extensive investigation difficult. Excavations in the south-east corner of that field (although again apparently abandoned) also indicate earlier badger activity.

A third, relatively small, sett was found in the most northerly section of Frogmore surveyed. This was situated in the hedgerow along the top of western edge of the field near to Birches Barn and appeared very active with numerous paths radiating from it together with fresh tracks. The distance between this, the old excavations near Parkfields and the sett in Chase Wood, suggests at least two, possibly even three social groups of badgers are active within this estate. It is therefore considered likely that the region, immediately neighbouring this farm, supports a large and active badger population due to its varied geography and intensive agricultural practices.

4.7.3 *Badger Assessment*

Overall the site offered a great deal of suitable foraging habitat e.g. short to medium vegetation that had developed on field margins, cereal crops, both between and within polytunnels and in the various areas of adjoining woodland

and scrub. For rural badgers earthworms form a significant proportion of the diet throughout the year and are generally obtained from areas where ground cover is less than five centimetres as foraging efficiency is reduced where grass is longer. However as non-fastidious omnivores badgers exploit a wide range of food sources and readily consume fruit (including soft fruit), tubers, grain, seeds, acorns and other tree nuts in late summer and autumn to build up fat deposits for the leaner winter period.

4.8 *Wild boar*

Tracks, extensive damage to grassland (rooting), typical faeces and paths through hedgerows / undergrowth, typical of that associated with wild boar were identified at two sites; namely the headlands above asparagus planting which bound Penyard Park woodlands and within the fenced area opposite the kennels where it abutted Chase Wood, where it appeared access had been obtained through an open gate. In addition signs of rooting within asparagus crops and along fences installed to prevent boar / rabbit / badger movement were observed along the northern and western boundaries. See Figures 3 (rooting), 4 (faeces) and 5 (fence).



Figure 3. Boar rooting



Figure 4. Boar faeces



Figure 5. Exclusion fencing

4.9 *Great crested newts*

The National Biodiversity Network has no historical records for great crested newts in that 2km square and no great crested newts were seen. Habitat appears to be variable as regards to suitability and due to its spatey nature, the stream would be a barrier to their movement. See Table 4 for a list of the ponds and their suitability for great crested newts, where * = least suitable and ***** = most suitable

Table 4. Showing the suitability of each pond for great crested newts

Attribute \ Pond					
	A	B	C	D	E
Silt	n/k	n/k	n/k	n/k	n/k
Overshaded	no	no	no	no	no
Fish	yes	yes	yes	yes	yes
Waterfowl	yes	yes	yes	yes	yes
Emergent vegetation	yes	yes	no	no	no
Bankside vegetation	yes	yes	yes	yes	yes
Suitability	**	**	*	*	*

4.10 *Otter*

No signs of otters were found. The watercourses are quite spatey, see section 4.4, so it is quite feasible for any footprints and spraints to have been washed away during the survey period. Anecdotal evidence from Mr Chinn notes that neither he nor his family have seen an otter or traces for over 6 years. However it is unusual to see otters as they are notoriously timid and tend to be most active at night. The habitat appears to be quite suitable as there is plenty of vegetation for otters to lie up in and there is also the large pond with carp so the otters would have a food supply.

5.0 IMPACT ASSESSMENT

This section examines any possible environmental impacts (temporary and permanent) that are likely to occur as a result of erection of polytunnels at Cobrey Farm.

Overall, there will be little change to land management. However there does appear to be a significant problem with drainage and levels of soil erosion across the land. It was noticeable that after the very heavy shower on the day of the survey, there was a large volume of water which dispersed to the lowest point through overland flow. As cultivation of asparagus requires relatively weed free conditions much of the soil is not stabilised through an understorey of vegetation such as grasses. Whilst at Cobrey Farm measures have been taken to minimise this effect such as ploughing and planting across the hillsides, access points/tracks are still required to go uphill and these are proving to act as drainage routes for water passage making a high sediment loaded runoff inevitable and leaving scoured areas, see Figures 6 and 7. The problem could be reduced through the use of box-drains across trackways, but ideally a hydrologist should be consulted to address this problem.



Figure 6. Scouring down a trackway



Figure 7. Scouring across asparagus ridges

Polytunnel coverings are re-cycled when they are no longer fit for use.

In this respect; it is believed that no adverse impact is likely to occur and through habitat management it is possible for positive enhancements to take place. An impact summary is provided in Table 5.

A more detailed description of the advised mitigation and habitat management is presented in Section 6.0.

Table 5. Summary of impacts

Attribute	Impact	Positive	Adverse
Vegetation	None, no change from current use		
Hedges	None, no change from current use		
Water bodies	None, no change from current use	A reduced level of sedimentation through enhanced erosion soil control	
Bats	None		
Great Crested Newts	None		
Birds		Through hedge management, enhanced habitat	
Badgers	None		

6.0 MITIGATION

6.1 *Introduction*

The term 'mitigation' is frequently used to refer to all works required to comply with the legislation when developing land is occupied by protected species. In reality, there are two elements to this process:

Mitigation - which, strictly speaking, refers to practices which reduce or remove damage (e.g. by changing the layout of a scheme, or by translocation)

Compensation – which refers to works which offset any damage caused by the development (e.g. the creation of new habitat).

Both of these elements need to be considered, with the overall aim being to ensure that there will be no detriment to the conservation status of any protected species. In practice, this means maintaining, preferably enhancing, any population affected by development. The following points should be considered when planning mitigation:

The level of mitigation required depends on the size and type of impact, and the importance of the population affected.

Mitigation should aim to address the characteristics picked up by the site assessment, as follows:

Quantitative characteristics: There should be no net loss of habitat, and in fact where significant impacts are predicted, there will be an expectation that compensation will provide an enhanced habitat (in terms of quality or area) compared with that to be lost.

Qualitative characteristics: The plans should aim to retain or replace unusual habitats. This means that the habitat creation should mirror the type of habitat being lost.

Functional characteristics: Compensation should remedy any loss of connectivity brought about through development.

Contextual (range) characteristics: Mitigation should take into account local significance of protected species.

Three areas were identified where mitigation could be carried out, namely; hedgerows, drainage and badgers.

6.2 *Hedges*

As the survey has identified that the hedgerows across the farm are ancient,

although “not important” according to the Hedgerow Regulations, it is recommended that they are managed in order to enhance their usefulness as a food resource for wildlife, particularly a wide range of farmland bird and small mammal species. Therefore increasing the abundance and availability of berries and fruit in hedges is a desirable conservation target. Larger wintering birds will feed on a range of berry types in hedges, but some specialisation amongst different bird species also exists.

Most woody hedge species, such as hawthorn, produce berries on second year growth. Thus hedges that are left uncut for one year or more can produce many more berries than hedges that are trimmed annually. Hedge cutting in September will remove formed berries directly, whereas cutting annually in late winter will reduce flowering and thus largely prevent autumn fruit-set in this respect hedges cut on a biennial cycle must be cut at the same time each year. In general, the longer a hedge is left uncut, the more berries will be produced. However, if a hedge is cut after having been left unmanaged for three years or more, then berry production in the following year particularly low. Coppicing, and to a significantly lesser extent laying, will reduce hawthorn berry production in the immediate following years. However, these are long-term management techniques and berry numbers would be expected to increase with time.

Bramble and other deciduous climbing plants are less affected by cutting frequency, and there is evidence that regular management (including annual trimming) is beneficial for fruit production. Obviously a September cut would significantly reduce the availability of berries in the autumn, thus management practice would need to reflect such responses where bramble is dominant, and/or where the conservation of a particular bird species that feeds on these types of fruit is targeted.

There are further implications in timing the hedge cut for insectivorous birds. Cutting in February reduces the numbers of insect larvae found in early summer compared to September trimming; notably the larvae of *Lepidoptera* (moths and butterflies) and to some extent *Diptera* (true flies). Late winter cutting is likely to entail the removal of insect eggs laid during the autumn (after a September cut), and will have important consequences for nesting birds that preferentially forage for such insect larvae in hedges at this time of year.

However, there is contrasting evidence that annual cutting can increase the abundance of some invertebrate types, notably herbivores closely associated with the hedge vegetation, such as *Coleoptera* (beetles), *Heteroptera* (plant bugs) and *Collembola* (springtails). This may be a response to the stimulated new hedge growth following cutting, which could provide a more suitable habitat and food source for such invertebrate species groups.

Hedge laying is particularly beneficial for invertebrate communities, maintaining high taxonomic diversity as well as high total invertebrate abundance. This hedgerow rejuvenation technique may represent a combination of stimulated new shrub growth and good physical structure. In contrast, coppicing, with a drastic reduction in vegetation, appears to be detrimental to hedgerow invertebrates, at least initially.

Many of the hedges had been flailed and cut back quite hard, some were also very gappy. It is recommended that the hedges with gaps are planted with young whips of hawthorn, blackthorn, English elm, elder, hazel, field maple, dogwood, holly and oak. It is also recommended that the hedges are trimmed in a biennial cycle to enable berry production to be as near constant as possible.

6.2.1 *Hedge enhancement*

The hedges in general, had a relatively poor ground flora, as such it is recommended that a suitable seed mixture is sown to re-establish a diverse perennial flora, Flora Locale has a directory of a suppliers on their website <http://www.floralocale.org>. Where pernicious weeds, such as cleavers and nettles, dominate the flora, an initial application of selective herbicides can effectively reduce their abundance.

6.3 *Badgers*

The principle aim of any scheme to mitigate the effects of development on resident badgers should be to safeguard identified setts. It is recommended that all setts are considered within a 'badger protection zone'. Although there are no hard and fast rules as to the size of such zones, a 30m buffer is normally adopted as 'best practice', as recommended by the RSPCA (Harris *et al.*, 1994). That publication is widely recognised as the standard text for badger mitigation and frequently cited by the licensing section at Natural England among others. The use of such a buffer zone will minimise disturbance of the badgers in occupied setts and ensure that no tunnels are collapsed or entrances obstructed

during works. The 'buffer zones' should be fenced (for example with a temporary fence of chestnut paling and orange Netlon netting) to exclude construction staff and prevent any accidental encroachment of machinery, but so as to allow continued free passage of badgers to and from setts. On consultation with Natural England a licence for agricultural operations will not be required.

6.4 *Drainage*

In order to reduce the level of run off from hard areas such as the road and trackways on to cultivated areas, the possibility of digging drains to run parallel with the road should be investigated. On trackways that run down hill shallow terraces could be installed with box type drains that run across the track to disperse the rate of overland flow and reduce the amount of scouring. Ideally advice should be sought from a competent hydrologist with the aim to reduce the amount of topsoil erosion across the farm and siltation of the stream.

The sections of stream that run through the farm require some sympathetic management in order to increase the available habitat for birds, invertebrates and aquatic species. Ideally a berm should be cut into the stream banks, this would reduce the occasion of bank slump, allow suitable trees to be planted and provide some flood alleviation measures. The trees would act as a shelter belt and would also help to stabilise the banks. Re-seeding streamside vegetation would need to be carried out relatively early in the season to avoid the risk of seeds being washed away by floods and thus to also help stabilise the banks during high winter flows.

7.0 CONCLUSIONS

The farm consists of a matrix of habitats including pasture, hedgerows, woodland and wetlands. In this respect, it is an important resource most specifically for hedgerow animals and birds and to a lesser extent woodland fauna as well. The hedgerows provide valuable foraging habitat and paths for movement for small mammals and invertebrates as well as shelter from predation. They also provide valuable linear foraging routes for bats. Although no signs of bats were found in the trees, undoubtedly due to the inclement weather throughout August, the habitat does seem to be suitable for them and it would be unwise to assume that none were roosting on the site. The mitigation measures proposed for the hedges should increase the available foraging habitat and shelter for small mammals and birds as well as invertebrates. Furthermore, a management regime for the hedges has been proposed and some understorey planting.

Some of the hedges at Frogmore would be classed as important under the Hedgerow regulations. The hedges at Coleraine do not have the structural and floristic diversity to qualify, but they have great potential to become valuable habitats with some care and management.

The survey has also established that there is a group of badgers occupying setts across the farm.

Some measures have been proposed to reduce the amount of erosive scouring caused through overland flow after heavy rain, but it is advised to get guidance from a specialist hydrologist.

Overall, the farm has some important resources for hedgerow animals and birds. There is also the potential to enhance the existing habitats through careful management and seed sowing.

8.0 REFERENCES

Stace, C. 1997. New Flora of the British Isles. Second edition, Cambridge University Press, UK. pp 1130.

Image produced from Ordnance Survey's Get-a-map service.
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Map 2. Field numbers



Map 3 Phase 1 survey



Appendix I
Floral Species List

English name	Latin name	Coleraine	Frogmore
Annual Meadow Grass	<i>Poa annua</i>	F	O
Betony	<i>Betonica officinalis</i>	R	R
Bramble	<i>Rubus fruticosus</i>	F	F
Broad-leaved Dock	<i>Rumex obtusifolius</i>	F	O
Burdock	<i>Arctium minus</i>	O	O
Cleavers	<i>Galium aparine</i>	F	F
Cock's-foot	<i>Dactylis glomerata</i>	O	O
Comfrey	<i>Symphytum officinale</i>	O	O
Common Bent	<i>Agrostis capillaris</i>	O	O
Common Cat's-ear	<i>Hypochoeris radicata</i>	O	O
Common Couch	<i>Elytrigia repens</i>	O	O
Common Field-speedwell	<i>Veronica persica</i>	R	R
Common Nettle	<i>Urtica dioica</i>	F	F
Common Stork's-bill	<i>Erodium cicutarium</i>	O	O
Common Vetch	<i>Vicia cracca</i>	O	O
Cow Parsley	<i>Anthriscus sylvestris</i>	R	R
Creeping Bent	<i>Agrostis stolonifera</i>	O	O
Creeping Buttercup	<i>Ranunculus repens</i>	R	R
Creeping Thistle	<i>Cirsium arvense</i>	O	O
Crested Dog's tail	<i>Cynosurus cristatus</i>	R	R
Curled Dock	<i>Rumex crispus</i>	O	O
Daisy	<i>Bellis perennis</i>	O	O
Dandelion	<i>Taraxacum agg.</i>	O	O
Dove's-foot Crane's-bill	<i>Geranium molle</i>	O	O
False Oat-grass	<i>Arrhenatherum elatius</i>	O	O
Field Bindweed	<i>Convolvulus arvensis</i>	O	O
Field Speedwell	<i>Veronica persica</i>	O	O
Germander Speedwell	<i>Veronica chamaedrys</i>	O	O

Goatsbeard	<i>Tragopogon pratensis</i>	O	O
Great Willowherb	<i>Epilobium hirsutum</i>	L/F	L/F
Groundsel	<i>Senecio vulgaris</i>	O	O
Hairy Bitter-cress	<i>Cardamine hirsuta</i>	R	R
Hard Rush	<i>Juncus inflexus</i>	R	R
Hedge Mustard	<i>Sisymbrium officinale</i>	R	R
Hoary Plantain	<i>Plantago media</i>	O	O
Hogweed	<i>Heracleum sphondylium</i>	R	R
Hop	<i>Humulus lupulus</i>	R	R
Hop Trefoil	<i>Trifolium campestre</i>	R	R
Meadow Foxtail	<i>Alopecurus pratensis</i>	O	O
Mugwort	<i>Artemisia vulgaris</i>	F	F
Oxeye Daisy	<i>Leucanthemum vulgare</i>	R	R
Red Clover	<i>Trifolium pratense</i>	R	R
Ribwort Plantain	<i>Plantago lanceolata</i>	O	O
Rough meadow grass	<i>Poa pratensis</i>	F	F
Rye-grass	<i>Lolium perenne</i>	A	A
Scarlet Pimpernel	<i>Anagalis arvensis</i>	O	O
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	A	A
Smooth meadow grass	<i>Poa trivialis</i>	F	F
Spear Thistle	<i>Cirsium vulgare</i>	O	O
White Clover	<i>Trifolium repens</i>	O	O
Yorkshire Fog	<i>Holcus lanatus</i>	F	F

Appendix II
Hedgerow species list

Composition of the hedgerows

English name	Latin name	Cloeraine	Frogmore
Annual Meadow grass	<i>Poa annua</i>	O	O
Ash	<i>Fraxinus excelsior</i>	O	O
Black Bryony	<i>Tamus communis</i>	R	R
Blackthorn	<i>Prunus spinosa</i>	O	O
Blackthorn	<i>Prunus spinosa</i>	O	O
Bluebell	<i>Hyacinthoides non-scriptus</i>	O	O
Bramble	<i>Rubus fruticosus</i>	F	F
Bramble	<i>Rubus fruticosus</i>	F	F
Broad-leaved dock	<i>Rumex obtusifolius</i>	O	O
Cleavers	<i>Galium aparine</i>	F	F
Cock's foot	<i>Dactylus glomerata</i>	F	F
Common Couch	<i>Elytrigia repens</i>	F	F
Common Fumitory	<i>Fumaria officinalis</i>	O	O
Cow parsley	<i>Anthriscus sylvestris</i>	O	O
Creeping Buttercup	<i>Ranunculus repens</i>	O	O
Creeping thistle	<i>Cirsium arvense</i>	O	O
Dandelion	<i>Taraxacum officinale</i> .agg.	O	O
Dog Rose	<i>Rosa canina</i>	O	O
Dog's Mercury	<i>Mercurialis perennis</i>	R	R
Dogwood	<i>Cornus sanguinea</i>	O	O
Dove's foot Geranium	<i>Geranium molle</i>	O	O
Elder	<i>Sambucus nigra</i>	O	O
English elm	<i>Ulmus procera</i>	O	O
Field maple	<i>Acer campestre</i>	O	O
Field Rose	<i>Rosa arvensis</i>	O	O
Germander Speedwell	<i>Veronica chamaedrys</i>	O	O
Goosegrass	<i>Galium aparine</i>	F	F
Hawthorn	<i>Crataegus monogyna</i>	A	A

Hazel	<i>Corylus avellana</i>	O	O
Hedge Mustard	<i>Sisymbrium officinale</i>	O	O
Hogweed	<i>Heracleum sphondylium</i>	O	O
Holly	<i>Ilex aquifolium</i>	O	O
Honeysuckle	<i>Lonicera periclymenum</i>	O	O
Ivy	<i>Hedera helix</i>	O	O
Nettle	<i>Urtica dioica</i>	O	O
Pedunculate Oak	<i>Quercus robur</i>	Std	Std
Red Campion	<i>Silene dioica</i>	R	R
Red Clover	<i>Trifolium pratense</i>	O	O
Ribwort Plantain	<i>Plantago lanceolata</i>	O	O
Scarlet Pimpernel	<i>Anagalis arvensis</i>	O	O
Scentless Mayweed	<i>Tripleurospermum inodorum</i>	F	F
Spear thistle	<i>Cirsium vulgare</i>	O	O
Sterile Brome	<i>Bromus sterilis</i>	O	O
Stitchwort, Greater	<i>Stellaria holostea</i>	O	O
Travellers Joy	<i>Clematis vitalba</i>	O	O
Wood Avens	<i>Geum urbanum</i>	O	O
Yorkshire Fog	<i>Holcus lanatus</i>	O	O

Cobrey Farm
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Appendix III

Badger Background

Badgers – Background Biology

Badgers (*Meles meles*) live in social groups, with the members of each group jointly defending a territory, which will encompass sufficient foraging areas to support the group throughout the year. Badgers defecate in 'dung pits' and aggregations of which are termed 'latrines'. The largest 'latrines' tend to be found either close to setts or positioned to delineate territorial boundaries, with smaller aggregations at path intersections and within important feeding areas. Badgers routinely use a network of paths to access different parts of their territory, which often includes a number of setts varying in size and function.

There is generally only one main sett per social group of badgers. These tend to be built in specific positions with the right combination of soil type (to facilitate drainage and digging), aspect, slope and cover. Since such sites are at a premium, main setts are usually long-established, possibly in continuous use for decades or even centuries. Readily identifiable they tend to be extensive with an average of fifteen entrances, spoil and bedding heaps, scratch trees and numerous well-worn paths leading to them. It is here that the cubs are most likely to be born.

Annexe setts are found close to the main sett (usually within 150m) and are linked by clear well-used paths. They are less extensive (usually five entrances), not continuously in use and often tend to be where second cub litters are reared. Subsidiary setts are used periodically and tend to be some distance from the main sett, often over 500 m with no obvious connecting path, thus 'ownership' can often only be determined by bait-marking. Outlying setts comprising one or two holes may also be found. These have small spoil heaps indicating their limited in size, and due to their sporadic occupation are often used by foxes or rabbits.

The size, status and level of activity of each sett can be assessed by counting the number of entrance holes while the degree of use of each entrance hole is ranked as either well-, partially- or disused. Well used entrances tend to be clear of any debris or vegetation, may or may not have been excavated recently and with recent bedding deposits. Partially-used holes have a degree of debris (leaves / twigs) or plants growing in or around the entrance. They could be in regular use after a minimal amount of clearance. Disused holes have not been used for some time, are partially or completely blocked, and could only be used following a considerable amount of clearance. If the hole has been disused for an extended time, all that may be visible is a depression in the ground and the remains of the spoil heap, both of which maybe extensively overgrown. Badgers also lie up above ground in confusingly termed "day

nests" for short periods during the night. These structures are not given the legal protection as that afforded to setts.

Disturbance of Occupied Setts

Under the Protection of Badgers Act (1992) it is an offence to disturb badgers when they are occupying setts. However the Act does not define what constitutes disturbance, although English Nature have produced guidelines on the distances from setts with respect to different activities that they consider are likely to disturb badgers and which are therefore licensable.

These guidelines are summarised as follows:

- all work within 10 metres of the nearest sett entrance should be licensed.
- between 10 and 20 metres use of machinery is licensable, but hand digging is not unless tunnels are accidentally breached.
- between 20 and 30 metres only the largest machinery requires a licence.
- over 30 metres use of explosives and pile-driving are licensable to much greater distances.

Badger licences (disturbance and interference) are not generally issued by English Nature between 1 December and 30 June inclusive as there is effectively a 'close season' on activities which disturb badgers during this period because (a) the animals are markedly less active during winter and hence such actions are unlikely to be effective, and (b) pregnant/lactating females and their dependent cubs are likely to be found underground between mid January and the end of June.

Appendix IV
Target notes

Cobrey Farm
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32 potatoes
32 potatoes
32 potatoes
33 setaside and woodland planting
34 wheat
34 wheat
35 rape stubble
35 rape stubble
35 rape stubble