

HOMME FARM, ROSS-ON-WYE, HEREFORDSHIRE, HR9 7TF ECOLOGY and NATURE CONSERVATION For :- E C DRUMMOND & Son Report No. Ref: DLA1419/Eco/Phase1/rpt.1/June'12

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Tel: 01672 515547 Fax: 01672 515811 e-mail: info@dla-ltd.co.uk HOMME FARM, ROSS-ON-WYE, HEREFORDSHIRE, HR9 7TF ECOLOGY and NATURE CONSERVATION For :- E C DRUMMOND & Son Report No. Ref: DLA1419/Eco/Phase1/rpt.1/June'12

Homme Farm Ecology and Nature Conservation



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1.0 Introduction

- 1.1 This report, prepared by DLA Ltd, presents an assessment of the impacts of the proposed scheme for permanent polytunnels on terrestrial species and habitats. It was carried out in accordance with all relevant legislation and guidelines with the approach based on the Institute of Ecology and Environmental Management (IEEM) guidance.
- 1.2 Arable land and other types of farmland comprise the main habitat types within the study area together with some smaller areas of freshwater habitat.
- 1.3 The report describes the existing ecological features of the site and its surrounding area with an evaluation of their importance. The impacts before mitigation are then predicted and ascribed a level of significance. Potential impacts will be mitigated through the application of best practice guidance together with specific measures such as the creation/enhancement of habitats through replacement /additional planting and provision of bat boxes. The likely residual effects after these measures have been employed are also considered.
- 1.4 In order to determine the likely ecological impacts of the proposals, appropriate surveys were conducted across the landholding that comprises the site (for details see methodology section) and the results, together with a desk top study, form the basis of this report. The report is supported by the following appendices which are cross referenced in the text where relevant:
 - Appendix A: Legislation, Conservation Status and Biology;
 - Appendix B: Baseline Information;
 - Appendix C: Evaluation of Ecological Receptors;
- 1.5 Ecology is defined as the scientific study of the processes that influence the distribution and abundance of organisms and the interaction between those organisms and their environment. Nature conservation is the maintenance of viable populations of fauna and flora and the habitats and communities to which they belong.
- 1.6 The objectives of nature conservation are:
 - Maintenance of diversity and landscape character, including wildlife communities and important geological and physical features; and
 - Maintenance of viable populations of native species throughout their traditional distribution range and the improvement of the status of rare or endangered species.

2.0 Aims

- 2.1 The aims of this assessment are to:
 - Identify the presence and status of habitats, flora and fauna of conservation significance within the study area through consultation, desk-based research and field surveys;
 - Evaluate the importance of ecological receptors in terms of their nature conservation value;
 - Identify anticipated potential impacts;
 - Present potential mitigation measures to ameliorate the identified impacts; and
 - Assess the residual impacts following the successful implementation of mitigation.

3.0 Methodology

Approach

- 3.1 The assessment of terrestrial ecology was undertaken in accordance with the Guidelines for Ecological Impact Assessment in the United Kingdom (IEEM, 2006). Whilst the principals and approach of IEEM have been followed as far as possible, standard impact assessment terms have been used where appropriate to provide consistency with the other assessments in this report.
- 3.2 IEEM (2006) provides a framework for identifying which ecological features or resources (receptors) within the study area are both of sufficient value to be included in the assessment and vulnerable to significant impacts arising from a project as follows:
 - identification of ecological receptors;
 - identification of key attributes of the receptor;
 - identification of the level of importance of the receptor;
 - identification of legal protection offered to the receptor;
 - identification of activities in the proposal that may impact on the receptors;
 - characterisation of the potential impacts;
 - assessing the significance of the impact to the nature conservation value of the receptor;
 - assessing the legal implications of actuating the impact;
 - outlining the proposed mitigation measures; and
 - assessing the residual impacts of the proposals.
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Ecological Surveys Undertaken

- 3.3 The initial review of the ecological receptors suggested that the key aspects of the study area are the general ecology of the area and the presence of protected species.
- 3.4 The ecological surveys undertaken therefore included:
 - Phase 1 survey of vegetation;
 - A survey for birds and badgers;
 - A nut search for dormice;
 - An appraisal of the area for reptiles, and
 - An appraisal of the waterbodies.
- 3.5 The surveys and assessments were carried out by experienced ecologists. No licence was required for the surveys undertaken.
- 3.6 Full details of the legislative context for protected habitats and species are provided in Appendix A.

Criteria Used to Evaluate Ecological Receptors

- 3.7 In undertaking the evaluation of baseline conditions, the following definitions are used:
 - An ecological receptor is the habitat, species or community within the receiving environment that might be influenced by the change; and
 - The value or sensitivity of the ecological receptor refers to its importance in terms of its nature conservation value and susceptibility to impact.
- 3.8 The value or sensitivity of an ecological receptor was determined by literature review, desk based studies, field survey information, legal protection/ conservation status and professional judgement. Reference was also made to the Radcliffe Criteria, where applicable, as used in the selection of biological Sites of Special Scientific Interest (SSSIs) (Radcliffe, 1977).
- 3.9 This approach meets IEEM guidance, which advises that the determination of ecological value should involve professional judgement informed by available guidance and information, together with advice from experts and the distribution and status of the species or features that are being considered.
- 3.10 Ecological receptors were assigned a value using the framework shown in Table 1.

Table 1: Criteria used to Evaluate Ecological Receptors

Easte die al laure atom as	Attributes of ecological Decentor
Ecological Importance	Altributes of ecological Receptor
International	 Habitats An internationally designated site or candidate site (Special Protection Area (SPA), potential SPA (pSPA), Special Area for Conservation (SAC), candidate SAC (cSAC), potential SAC (pSAC), Ramsar site, Biogenetic Reserve) or an area which the country agency has determined meets the published selection criteria for such designation, irrespective of whether or not it has yet been notified. A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat which are essential to maintain the viability of a larger whole. Species Any regularly occurring population of an internationally threatened or rare in the UK. i.e. it is a UK Red Data Book species or listed as occurring important species, which is in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK Biodiversity Action Plan (BAP)) or of uncertain conservation status or of global conservation concern in the UK BAP.
	important species.
National	 Habitats A nationally designated site (Sites of Special Scientific Interest (SSSI), Areas of Special Scientific Interest (ASSI), National Nature Reserve (NNR), Marine Nature Reserve) or a discrete area, which the country conservation agency has determined meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified. A viable area of a priority habitat identified in the UK BAP, or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. Species Any regularly occurring population of a nationally important species, which is threatened or rare in the region or county (see local BAP). Any regularly occurring, regionally or county significant population/number of any nationally important species (1% of population for Annex 1 bird species). A species identified as a priority species in the UK BAP.

Regional	Habitats
	• Sites that exceed the county-level designations but fall short of SSSI selection
	criteria.
	• Viable areas of key habitat identified in the Regional BAP or smaller areas of such
	habitat which are essential to maintain the viability of a larger whole.
	 Viable areas of key habitat identified as being of Regional value in the appropriate Natural Area profile
	Species
	Any regularly occurring locally significant population of a species listed as being
	nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional
	BAP or relevant Natural Area on account of its regional rarity or localisation.
	A regularly occurring, locally significant number of a regionally important species.
	Sites maintaining populations of internationally/nationally important species that are
	not threatened or rare in the region or county.
County/ Metropolitan	Habitats
	Sites that are recognised by local authorities e.g. Sites of Interest for Nature
	Conservation (SINC) and Special Wildlife Sites (SWS).
	Semi-natural ancient woodland greater than 0.25 na. County/Motropoliton cites and other sites which the designating outherity has
	 Country/weiropolitan sites and other sites which the designating authority has determined meet the published ecological selection criteria for designation, including
	Local Nature Reserves selected on County/metropolitan ecological criteria
	(County/Metropolitan sites will often have been identified in local plans).
	A viable area of habitat identified in County BAP.
	 A diverse and /or ecologically valuable hedgerow network.
	Species
	Any regularly occurring, locally significant population of a species which is listed in a
	County/Metropolitan "red data book" or BAP on account of its regional rarity or
	A regularly occurring locally significant number of a County/Matropolitan important
	species.
	Sites supporting populations of internationally/nationally/regionally important species
	that are not threatened or rare in the region or county, and are not integral to
	maintaining those populations. Sites/ features that are scarce within the
	countryside/district or which appreciably enrich the county/district habitat resource.
District	Habitats
	 Semi-natural ancient woodland smaller than 0.25 ha. Areas of babitat identified in a sub County (District/Borough) BAB or in the relevant.
	Natural Area profile
	District sites that the designating authority has determined meet the published
	ecological selection criteria for designation, including Local Nature Reserves
	selected on District/ Borough ecological criteria (District sites, where they exist, will
	often have been identified in local plans).
	 Sites/features that are scarce within the District/Borough or which appreciably enrich the District/Densue height the second seco
	The District/Borough habitat resource.
	Aleas of habitat considered to appreciably entitien the habitat, e.g. species-her hedgerows
	Species
	• Populations/assemblages of species that appreciably enrich the biodiversity
	resource within the local context.
	A population of a species that is listed in a District/Borough BAP because of its rarity
	in the locality or in the relevant Natural Area profile because of its regional rarity or
	IUCallsalion.
	species during a critical phase of its life cycle
Parish/neighbourhood	Habitats
Limited englastical value	· Sites that retain habitats and /or species that are of limited ecological importance
Limited ecological value	owing to their size, species composition or other factors.
	Habitat of low to medium value.

4.0 Impact Assessment

Identification of Impacts

- 4.1 Knowledge and assessment of construction methods and operational activities has been used to identify the potential impacts of the proposed development on ecological receptors. The activities that could have a potential ecological impact were reviewed and assessed for each ecological receptor individually.
- 4.2 To aid consistency a list of potential areas of concern that could impact on a receptor was developed:
 - land-take
 - direct mortality
 - water pollution
 - effects of pesticide spray and
 - disturbance.
- 4.3 This list was applied to all features through consideration of the impacts and activities listed in Table 2.

Table 2. Potential Impacts of the Proposed Scheme

Potential Impact	Activity / Cause
Direct loss	Land take, water pollution
Direct mortality	Land take, collision with traffic, water pollution
Habitat fragmentation	Land take, disturbance
Loss of diversity	Effects of pesticide spray, pollution
Disturbance	Noise/disturbance

Impact Magnitude

- 4.4 For the purposes of this assessment the term 'impact magnitude' is taken to represent the overall characterisation of positive or negative impacts in accordance with IEEM, including:
 - impact extent/scale
 - direct or indirect impact
 - reversibility of the impact
 - frequency of the impact (single event, recurring or constant)
 - duration of impact (short, medium, long term or permanent) and
 - likelihood of occurrence (certain/near certain, probable, unlikely or extremely unlikely).
- 4.5 Impact magnitude was identified as shown in Table 3 as negligible, low, medium or high, taking into account the above impact characterisation approach.

Table 3. Impact Characterisation translated into Impact Magnitude

Impact Character	Impact Magnitude
A permanent or long term effect on the distribution and /or abundance of a habitat, species assemblage/community or population. If negative this would have implications for the integrity of the receptor and its conservation status and if positive would result in an improvement to the conservation status of the receptor.	High
A permanent or long-term effect on the distribution and/or abundance of a habitat, species assemblage/community or population. If negative this would have negligible implications for the integrity of the receptor and its conservation status and if positive would not alter the conservation status of the receptor.	Medium
A short –term reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population and within normal fluctuations observed within the ecology of the receptor.	Low
A short term reversible effect on the distribution and/or abundance of a habitat, species assemblage/community or population unlikely to be detectable by monitoring.	Negligible

- 4.6 Determination of the potential impacts and the receptor values enable an assessment of those impacts that require mitigation.
- 4.7 IEEM (2006) states that 'if an ecological resource or feature is likely to experience a significant impact, the consequences in terms of development control, policy guidance and legislation will depend on the level at which it is valued. Significant impacts on features of ecological importance should be mitigated (or compensated for) in accordance with guidance derived from policies applied at the scale relevant to the value of the feature or resource. Any significant impacts remaining after mitigation (the residual impacts), together with an assessment of the likelihood of success in the mitigation, are the factors to be considered against legislation, policy and development control in determining the application.'
- 4.8 In accordance with IEEM (2006), a significant impact (negative or positive) is one on the integrity of a defined site or ecosystem and/or the conservation status of habitats and species. It is based on professional judgement and available information on the impact and receptor.

5.0 Mitigation and Residual Impacts

- 5.1 In general a hierarchical approach to mitigation has been adopted for the proposed scheme, which seeks to avoid adverse impacts in the first instance. In areas where avoidance is not possible, measures are proposed to prevent or reduce potentially significant negative impacts. Measures to compensate the negative impacts at specific sites may also be required (e.g. habitat creation to offset the local, site specific impacts associated with habitat loss)
- 5.2 Although all significant potential impacts require mitigation, most would be addressed using generic mitigation including the application of best practice guidance, and specific mitigation was therefore only developed where generic mitigation would be inappropriate, ineffective or insufficient.
- 5.3 Where there would still be a significant impact after mitigation, this is reported in Section 1 (Residual Impacts).

6.0 Baseline Conditions

Environmental Context Background Use of Polytunnels

- 6.1 The wider agricultural sector in the UK has been in decline over recent years, and only contributed 0.8% of the national gross domestic product (GDP) in 2004 (Entec, 2006). Crop production makes up a considerable part of the agricultural sector with horticulture accounting for 4% of land use. The horticultural sector has been one of the key areas of growth in recent years, and especially soft fruits where the ability to grow fruit in polytunnels has given a huge financial boost to the industry.
- 6.2 A polytunnel is a series of semi-circular hoops that are covered in plastic sheeting to form a tunnel. They can vary in terms of size, scale and use, but are primarily used for growing crops. Some polytunnels are classed as "multi-span" structures where two or more tunnels are linked together forming a much larger structure. Polythene sheeting can also be used to cover crops at ground level or as small tunnels less than 1m in height. These are not classed as permanent structures and therefore do not require planning permission. The polythene has a life of 3-10 years and is then collected and recycled.
- 6.3 An increasing proportion of strawberry, raspberry and blackberry production is being undertaken in substrate, using trickle irrigation and fertigation to provide the crop nutrient requirements. Modern systems are able to closely match the supply to the crop requirements, thereby reducing waste and excessive leaching of nutrients.
- 6.4 Adequate water supplies are an essential requirement for crops grown under temporary covers. Full details of the hydrology and irrigation measures for the site are found in the water and drainage report.

Benefits from using polytunnels include:

- An extended growing season; crops can be produced earlier than would otherwise be possible and the growing season lasts longer removing the impact of weather;
- An increase in saleable yield; due to a more controlled environment the proportion of misshaped and lower class produce is reduced;
- An increase in overall yield; due to a more controlled environment in terms of optimising temperature and humidity;
- A decrease in pesticide use, with fewer diseases affecting the crops;
- Protection from weather with production and harvesting generally unaffected by weather conditions; and
- Sustainability from a reduced reliance on imports and thus lower transport activities and associated fossil fuel usage.

Habitats and Vegetation

Designated Sites

6.5 There are no designated nature conservation sites within the study area.

Ancient Woodland Inventory

6.6 No Ancient Woodland Inventory (AWI) areas are found within the site boundaries.

Species

- 6.7 The Herefordshire Biodiversity Records Centre (HBRC) had no records of any protected or endangered species on the application site. A full list of all species reported within the site boundary and 2km around it is found in Appendix B.
- 6.8 All British bat species are European protected species under the EU Directive (92/43/EEC) on the Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490) (*The Habitats Regulations*). All other receptors noted in this report receive some degree of protection, whilst those nationally protected receptors are afforded legal protection through the Wildlife and Countryside Act 1981 (as amended) (WCA).
- 6.9 Many bird species both resident and migratory in the UK are protected nationally and internationally. Internationally they are afforded protection under the European Union (EU) Directive on the Conservation of Wild Birds (79/409/EEC).

7.0 Phase 1 Habitat and Communities

7.1 Phase 1 habitat survey results are illustrated in the appended reports and summarised below. Detailed baseline information is presented in Appendix B. Table 4 summarises the habitat types found within the site.

Table 4. Habitat types found

Habitat/ species	
Designated sites	None
Ancient woodland	None
Arable fields	>100
Semi-natural habitat	Woodland only
Hedges with standard	Yes
Ditches	Yes
Watercourse	Abuts the River Wye

- 7.2 Terrestrial habitats are represented by farmland composed of arable land and fields of improved grassland with some areas of woodland, none of which are included within the AWI. No areas of semi-improved or unimproved grassland are found within the study boundaries.
- 7.3 All of the fields have been cultivated, so there is little natural vegetation within them other than along the headlands. Some of the headlands had been spot sprayed where the more pernicious weeds such as dock and cleavers had become dominant. There is a range of grasses dominated by false oat grass with some cock's foot, meadow brome, rye grass, creeping bent, Yorkshire Fog, and common couch grass. Widespread forbs include broadleaved dock, nettle, bramble, cleavers, creeping thistle, field bindweed, hogweed and cow parsley. More localised species include red and white clover, scentless mayweed, ribwort plantain, scarlet pimpernel, field speedwell, dove's foot geranium, hoary plantain, common vetch, hop trefoil, daisy, common cat's-ear and creeping buttercup. These are detailed in Appendix B.
- 7.4 Most of the fields are bordered by hedges. Many of which, particularly those on the road boundaries, are marked on the Ordnance Survey map of 1872 with most being over 100m long. Although the majority are not classed as "important" under the Hedgerow Regulations 1997, they have a good structure and are valuable habitat. The hedges are made up of abundant hawthorn, occasional elder, hazel, field maple, blackthorn, dogwood, holly, oak and field rose. Veteran pedunculate oak and ash feature as standard in some of the hedges giving an indication of their age.
- 7.5 Overall, the hedgerow bases are developing a more diverse flora with cow parsley and other dicotyledons becoming more frequent.
- 7.6 A full description of the hedges and their valuation under the hedgerow regulations is found in the separate survey report in Appendix B.
- 7.7 There are some veteran and ancient trees across the site. Veteran trees are an integral and valuable part of the lowland landscape. Britain retains 80% of

all veteran trees in Europe. Some of the trees have dead limbs offering ideal habitat for invertebrates, bats and birds.

Badger (Meles meles)

- 7.8 A summary of baseline badger data is provided in this report, no detailed baseline information is provided in Appendix B due to its confidential nature.
- 7.9 The habitat throughout the area contains a mosaic of sub-optimal and optimal habitat opportunities. The most suitable habitat occurs south of Homme Farm in the grounds of Hill Court. There are further wooded areas situated on hillocks and slopes linked with a network of dense hedgerows. The combination of woodland, hedges, varying topography and relatively light soils provide excellent digging conditions and thus ideal habitat for digging setts.
- 7.10 Grassland is abundant across the site giving excellent foraging opportunities which is supplemented by the arable fields and fruit growing areas.

Bats

- 7.11 A full bat survey has not been undertaken. However, consultations identified the presence of nine species of bat in the 5km grid square that includes the study area, these being: Brown Long-Eared Bat (*Plecotus auritus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Daubenton's Bat (*Myotis daubentonii*), Greater Horseshoe (*Rhinolophus ferrumequinum*), Lesser Horseshoe (*Rhinolophus hipposideros*), Natterer's bat (*Myotis nattereri*), Noctule (*Nyctalus noctule*), Serotine (*Eptesicus serotinus*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*).
- 7.12 No definite signs of bats were found. However, the habitat throughout the area contains a mosaic of habitat that appears to be highly suitable for foraging bats with a network of hedge lines linked to wooded clumps and the River Wye. This combination provides excellent conditions for invertebrates and thus ideal habitat for feeding bats.
- 7.13 Across the site and along the boundaries there are a few ivy clad veteran trees with cracks and rot holes in their bark and limbs. These give excellent roosting opportunities which are supplemented by the large numbers of older houses and outbuildings that are in the neighborhood.

Dormice (Muscardinus avellanarius)

- 7.14 No definite signs of dormice were found. Overall, there are relatively few honeysuckle plants, but frequent hazel was found in the hedges together with considerable bramble that would be used both as a nectar and fruit source. The hedges also form links with various blocks of woodland, giving suitable arboreal corridors for the dormice to commute.
- 7.15 The habitat does appear extremely suitable for them and the Herefordshire Biological Records Centre has records of dormice at Coughton Marsh, directly adjacent to the farm boundary, but none on the site.

Birds

- 7.16 The Joint Nature Conservation Committee (JNCC) Red and Amber lists have been compiled by government and non-government conservation organizations based on review of the population status of birds regularly found in the UK. The Red List includes species that show historical population decline, rapid decline in breeding population/ranges or are globally threatened. The Amber List includes, but is not limited to, species that show historical decline but are recovering or with moderate decline in breeding population or ranges. Green listed species have no identified threat to their population status.
- 7.17 The bird survey recorded thirty four species of which five species were JNCC Red List: House sparrow *Passer domesticus*, Skylark *Alauda arvensis*, Song thrush *Turdus philomelos*, Starling *Strunus vulgaris* and Yellowhammer *Emberiza citronella;* and five were JNCC Amber List: Dunnock *Prunella modularis*, Green woodpecker *Picus viridis*, Kestrel *Falco tinnunculus*, Mistle thrush *Turdus miscivorus*, and Swallow *Hirundo rustica*,
- 7.18 Five were UK Biodiversity Action Plan species: Starling, House sparrow, Song thrush, Skylark and Yellowhammer.
- 7.19 The site and surrounding area provide good habitat for a number of breeding bird species, particularly the hedgerows and woodland edges.
- 7.20 Further detailed information on the conservation status of recorded bird species is presented in Appendix A.

Amphibians

- 7.21 Information from the NBN did not provide any great crested newt (*Triturus cristatus*) records within the study area.
- 7.22 No signs of Great crested newts *Triturus cristatus*, smooth newts *Lissotriton vulgaris* or palmate newts *Lissotriton helveticus* were found.

Reptiles

- 7.23 Information from the NBN did not provide any records of reptiles within the study area.
- 7.24 Following a desk top study and during the walk over survey the site was recognised as being suitable for reptiles, particularly on the hedgerow banks.

8.0 Evaluation of Baseline Conditions

- 8.1 This section provides the evaluation of the baseline habitats and species populations within the study area.
- 8.2 The ecological value of the baseline conditions has been determined in accordance with the methods described in paragraphs 3.7 3.10 *Criteria used to evaluate ecological receptors* and criteria set out in Table 1.
- 8.3 A summary evaluation of habitats and species is provided in Table 5, detailed evaluation is provided in Appendix C

Table 5 Summary Evaluation of Habitats and Species

Area/Habitat name	Features of Interest	Evaluation
Habitats		
Arable land	This habitat type comprises the majority of the study area. It is characterised by low species diversity both in the headlands and in the pasture.	Parish
Veteran trees	There are several veteran standard trees in the hedgerows. These provide shelter and foraging for invertebrates, birds and bats.	County
Hedgerows	The hedgerows on the site form networks that link with clumps of woodland across the landscape forming important ecological corridors.	
Open water	The ditches are steep sided and currently have limited ecological interest. Parish	
Running water	The River Wye borders the western edge of the farm and is a SAC	International
Badger		
	Badgers are widespread across the county	Parish
Bats		
Foraging area	The hedgerows and the field headlands form valuable foraging lines.	District
Roosting	The veteran trees have the potential to provide roosts for bats, as well as the older farm buildings	District
Dormice		
	No direct evidence of dormice but the habitat is suitable	
Birds		
Agricultural	Partridge, pheasant, skylark, magpie, carrion crow, rook, jackdaw	District
Hedgerow	Wren, dunnock, robin, blackbird, mistle thrush, great tit, blue tit, yellowhammer, chaffinch, greenfinch.	District
Trees	Green woodpecker, buzzard, kestrel, woodpigeon,	District
Open water	Mute swan, mallard	Parish
Other species	House sparrow	District
(urban and other		
habitats)		
Amphibians		
	Believed to be present	Parish
Reptiles		
	Believed to be present	District

9.0 Construction Phase

Construction means erection and dismantling of polytunnels.

Impacts on Designated Sites

Statutory Sites

- 9.1 There are no statutory designated nature conservation sites, such as Special Protected Areas, Special Conservation Areas, Sites of Special Scientific Interest or Local Nature Reserves, within any of the farm boundaries. The River Wye forms a boundary to the west of the farm, but no polytunnels will be erected adjacent to it. A series of floodplain meadows form a buffer between the proposed polytunnel construction and the river.
- 9.2 Therefore there are no impacts on the resource and the magnitude is **None**.

Non – Statutory Sites

- 9.3 There is a single non-statutory designated nature conservation site, SO52/17, within the farm boundary. The site is an old disused railway line with an embankment along the majority of its length. The embankment forms a buffer between the proposed polytunnel construction and the railway line.
- 9.4 Therefore there are no impacts on the resource and the magnitude is **None**.

Impacts on Habitats

Field Headlands

- 9.5 The headlands across the site are not botanically diverse and are of negligible ecological value, comprising common and widespread species and being easy to recreate in the short-term.
- 9.6 There will be no loss of headlands during the construction phase of the polytunnels. The magnitude is **Negligible**.

Hedgerows and Trees

- 9.7 The established hedgerows within the site are largely species-poor. As such, the ecological value of the hedgerows is considered to be low. No loss of hedgerows will occur as part of the proposals. No trees within the development site are to be removed.
- 9.8 Some standard trees will require periodic maintenance for routine arboricultural and safety reasons. The magnitude is **Negligible**, the temporal effect is short term and spatial scale is local.

Ditches

- 9.9 The ditches are steep sided with limited channel vegetation and as such have limited ecological interest. The polytunnels in place are sufficiently distant from the ditches for there to be no construction impacts that could cause damage to any vegetative structures or affect the quality of the water and thus influence the ecosystem function.
- 9.10 Therefore there are no impacts on the resource during construction and the magnitude is **Negligible**.

Impacts on Fauna

Badgers

9.11 No setts were found on site, but badgers are known to forage across it. Disturbance caused by construction activities could result in reduced foraging opportunity. This impact would, however, not be permanent as it will only occur for the duration of the construction and therefore the impact is a short term reversible effect of **Negligible** magnitude.

Bats

- 9.12 In the absence of mitigation, potential impacts during construction resulting from noise could occur. As construction is purely a diurnal activity it is unlikely to cause bats to be excluded from roost sites or displace them from foraging habitats. Furthermore, this potential impact is not permanent as it would only occur during the construction phase; it is therefore of **Low** magnitude.
- 9.13 The legal protection of bat commuting and foraging habitat is unclear, and appears to be limited. The Local Planning Authority has a duty to consider impacts of the proposals on biodiversity, protected species and Biodiversity Action Plan species. However there will be no loss of habitat and thus no fragmentation of habitat; therefore there are no impacts on the resource during construction and the magnitude is **Negligible**.

Dormice

9.14 Dormice were not recorded within the study area and therefore there are no identified impacts. Habitat does appear to be suitable for dormice but this is restricted to the hedgerows and blocks of woodland which will not be affected by the construction phase. Thus the impact will be of **Negligible** magnitude.

Birds

9.15 During the construction phase there will be no net loss of habitat and no habitat fragmentation; therefore there are no identified impacts. It is possible that there could be some disturbance due to noise generated through a short-term increase in use of farm machinery or the presence of personnel. However, these impacts would be limited to the duration of the construction phase and would be temporary and of **Negligible** magnitude.

Amphibians

9.16 Toads, newts and frogs are believed to be present within the study area. During the construction phase there will be no net loss of habitat and no habitat fragmentation, therefore there are no identified impacts. Thus the impact will be of **Negligible** magnitude.

Reptiles

9.17 Reptiles are believed to be present within the study area. Habitat does appear to be suitable for reptiles but this is restricted to the hedgerow banks and wet meadow, neither of which will be affected by the construction phase. Thus the impact will be of **Negligible** magnitude.

Overall Ecological Impact during construction

9.18 Overall, it is considered that during the construction phase there will be a possible limited impact on badgers and birds through disturbance due to noise from greater use of farm machinery and the presence of personnel; otherwise it is believed that the proposed development will not result in any direct impact on habitats or species of significance and that there will be no net loss of features of ecological importance. Overall the impact is of **Negligible** magnitude.

10.0 Operation

Impacts on Designated Sites

Statutory Sites

10.1 There are no operational impacts on the resource, due to the buffer provided by the floodplain meadows, and the magnitude is **None**.

Non – Statutory Sites

10.2 There are no operational impacts on the resource and the magnitude is **None**.

Impacts on Habitats

Field Headlands

- 10.3 There is a possibility that drift from pesticide and herbicide sprays could be deposited upon the headlands and cause an adverse effect. However, the use of polythene tunnels has facilitated a reduction in both drift and the quantity of sprays applied, particularly for disease control. Pesticides are only used when a particular threshold is reached. Furthermore, an increasing number of sprays used are derived from natural products with very low toxicity levels and minimal residual effects. Thus the magnitude is **Low**.
- 10.4 During operation, in the absence of mitigation, there is potential that the headlands will be used for temporary placement of equipment; thus there is a possible short term reversible effect and the magnitude is **Low**.

Hedgerows and Trees

10.5 As noted above, there is the possibility that herbicide and pesticide sprays could have an effect upon hedgerows and veteran trees. However, the use of polythene tunnels restricts the amount of spray drift when and if it is applied, and thus the magnitude is **Low**.

Water bodies

10.6 As noted in 6.3, modern polytunnel growing systems are able to closely match the supply of fertiliser to the crop requirements, thereby reducing waste and excessive leaching of nutrients. Thus there will be no operational impacts on the resource and the magnitude is **None**.

Impacts on Fauna

Badgers

10.7 During operation, badgers that use the area for foraging have the potential for easier ground to forage over, and increased food supply as the damp earth will have a continual supply of earthworms and, furthermore, berries when in

season. A further additional benefit is the increased availability of straw for bedding. Thus, there will be **Beneficial** operational impacts on the resource and the magnitude is **Medium**.

Bats

10.8 During operation, there is a potential for increased food supply as the moist warm still atmosphere of the polytunnels will provide excellent conditions for certain types of insect to breed. Bats find foraging routes with increased food supplies very quickly, particularly if weather conditions become inclement (Strange, RAF Upwood 2008). Thus, there is the potential for **Beneficial** operational impacts on the resource and the magnitude is **Medium**.

Dormice

10.9 Dormice were not recorded within the study area and therefore there are no identified impacts. Habitat does appear to be suitable for dormice but this is restricted to the hedgerows and the woodland neither of which will be affected by the construction phase or during operation. Thus the impact will be **None**.

Birds

10.10 During operation, there is a potential for increased food supply as the moist warm atmosphere of the polytunnels will provide excellent conditions for certain types of insects to breed. Insectivorous birds find foraging areas with increased food supplies very quickly, particularly if weather conditions become inclement. During the survey it was noticeable that there were many birds foraging in and around polytunnels. Thus, there is the potential for **Beneficial** operational impacts on the resource and the magnitude is **Medium**.

Amphibians

10.11 It is believed that amphibians are present within the study area. During operation, there is a potential for increased food supply as the moist warm atmosphere of the polytunnels will provide excellent conditions for insects to breed and also increased shelter under the straw. Thus, there is the potential for **Beneficial** operational impacts on the resource and the magnitude is **Medium**.

Reptiles

- 10.12 Reptiles are believed to be within the study area. Habitat does appear to be suitable for them but this is restricted to the hedgerow banks and the wet meadows which will not be affected by the construction phase or during operation. Thus the impact will be **None**.
- 10.13 Overall, it is considered that after the construction phase and during operation there will not be any impact on habitats or species of significance and that there will be no net loss of features of ecological importance. Without mitigation the magnitude of impact is **Medium Beneficial**.

11.0 Mitigation Measures

- 11.1 This section outlines mitigation measures to avoid, reduce or offset the adverse effects of the proposed scheme in accordance with best practice guidance, UK, and local government environmental impact, planning and sustainability policies.
- 11.2 The proposed mitigation will follow an hierarchical approach, that should be adopted, where possible, in the following order (IEEM, 2006):
 - avoid adverse impacts in the first instance;
 - where avoidance is not possible, reduce the adverse impacts with the aim of avoiding or reducing impacts; and
 - where significant adverse residual impacts remain, measures to offset the adverse impacts at a site-specific level may be required.
- 11.3 Mitigation includes best practice methods and principles applied to the proposed scheme as a whole (generic measures) and site-specific mitigation measures applied to individual locations (specific measures).

12.0 Mitigation during the Construction Phase

Specific Mitigation

Flora

12.1 Buffer zones will be placed around any mature and veteran trees in order to avoid any impact from heavy machinery on their canopies or root plates during polytunnel construction.

Badgers

12.2 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

Bats

12.3 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

Dormice

12.4 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

Birds

12.5 Any tree or hedge works such as trimming or lopping will not be carried out during the nesting season (March to August inclusive) unless prior checks of potential nesting areas ensure no nesting birds are present. Should nests be present, they will be protected until it can be confirmed that fledglings have left the nest.

Amphibians

12.6 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

Reptiles

12.7 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

13.0 Mitigation during Operation

Mitigation for Habitats

Flora

- 13.1 Although no mitigation is actually required, given the nature of the application site, the scope for biodiversity enhancements in terms of habitats is high and could result in significant net ecological gains over the existing situation. The headlands across the farm are not botanically diverse and of negligible ecological value, comprising common and widespread species and being easy to recreate in the short-term. It is proposed to increase their value by reseeding to create a more floristically diverse area. As the majority of the headlands form an intrinsic part of the hedgerow system, they will be sown with plants that would be most typically found in hedgerows. Full details are found in Appendix B.
- 13.2 During operation, storage of equipment will be restricted to prescribed areas so as to retain the existing semi-natural habitat and wildlife habitat corridors.

Badgers

13.3 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

Bats

13.4 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required. However, as bats in general are declining, installation of bat boxes on the outside of certain buildings would provide increased roosting places across the site and a net ecological gain.

Dormice

13.5 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

Birds

13.6 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required. However, installation of owl boxes on certain suitable trees would provide increased roosting places across the site and a net ecological gain.

Amphibians

13.7 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

Reptiles

13.8 There will be no adverse constructional or operational impacts on the resource and, as such, mitigation measures are not required.

14.0 Residual Impacts

14.1 This section provides a summary description of key residual impacts after the implementation of mitigation measures outlined above. Residual impacts for each receptor are shown below.

Terrestrial and wetland habitats

14.2 A significant positive residual impact of medium magnitude would remain across the site due to reseeding the field headlands and hedgerow flora, which will provide a significantly greater diversity than that currently present. There are no other predicted significant residual impacts during construction and operation of the proposed scheme.

Badger, bats, birds

14.3 There is a potential for increased food supply during operation, as the moist warm atmosphere of the polytunnels will provide excellent conditions for insects to breed. Bats and insectivorous birds find foraging areas with increased food supplies very quickly, particularly if weather conditions become inclement. Badgers using the area for foraging have the potential for easier ground to forage over, and an increased food supply as the damp earth will encourage the supply of earthworms, in addition to berries when in season. A further additional benefit is the increased availability of straw for bedding. Thus, there will be beneficial operational impacts of medium magnitude on the resource.

Dormice

14.4 There are no predicted significant residual impacts

Amphibians

14.5 There is a potential for increased food supply during operation, as the moist warm atmosphere of the polytunnels will provide excellent conditions for insects to breed. A further additional benefit is the availability of straw for shelter. Thus, there will be beneficial operational impacts of medium magnitude on the resource.

Reptiles

14.6 There are no predicted significant residual impacts

15.0 Cumulative Effects

15.1 The guidelines produced by IEEM for ecological impact assessments (EIAs) (IEEM, 2006) note that 'in-combination' assessments that are carried out as part of 'appropriate assessments' are not required as part of other EcIAs, including EIAs. Thus an assessment of the cumulative effects of this development in combination with any other local schemes cannot be carried out as each proposal site will have very different attributes and levels of significance. Consequently the effect of this development in combination with any other local schemes is not required and is not discussed any further.

16.0 Monitoring Programme

16.1 Monitoring will need to be carried out post-development to ensure that any mitigation work such as planting has taken place and is in good condition (IEEM Guidelines 2006). In this respect the following measures are suggested.

Grassland

16.2 Regular monitoring will be required to examine the changes in the biodiversity of the headlands and hedgerow understorey. Data will be collected before development and for the following five years on an annual basis in order to ascertain the variation in floristic diversity. Floristic diversity and variation will be measured by estimating percentage abundance (see Table 6) of the plants within set quadrats and also by point quadrats where any plant touched by the "point" is noted. This method will give an accurate estimate of absolute cover of each species in multi-stratose vegetation.

Domin score	Abundance
1	<4% few individuals
2	<4% several individuals
3	<4% many individuals
4	4-10%
5	11-25%
6	26-33%
7	34-50%
8	51-75%
9	76-90%
10	91-100%

Table 6 The Domin scale for estimating percentage abundance

Bats

16.3 After hibernation, bats are active between May and September. October signifies a reduction in activity generally due to the colder temperatures. Thus it is recommended that four to five dawn/dusk visits are made during June and July to check on roost and foraging activity.

Birds

16.4 A transect should be walked around the application site in order to monitor breeding bird populations. This should be carried out on multiple occasions between April and June when the season is at its height and the birds are making their territories known and should follow British Trust for Ornithology (BTO) guidelines.

17.0 Summary and Conclusions

17.1 In order to build up an accurate picture of the habitats and faunal use of the application site, the ecological information contained within this report has been drawn from several ecology reports.

Statutory Sites

17.2 There are no statutory designated nature conservation sites, such as Special Protected Areas, Special Conservation Areas, Sites of Special Scientific Interest or Local Nature Reserves, within the development site. However the River Wye forms the western boundary to the farm.

Non- Statutory Sites

17.3 There is a single non-statutory designated nature conservation site (SO52/17) within the application site.

Habitats

17.4 The application site is comprised of an arable farm with field headlands bordered by hedgerows with some blocks of woodland. The habitats and features present within the development site are of limited Nature Conservation value.

Protected Species

- 17.5 The development site provides habitat for a range of widespread and familiar species with surveys providing evidence for the presence of badgers and use by common bird species.
- 17.6 The habitats do not present, and the records from the surrounding area do not provide, any evidence for the presence of protected species other than noted within the report.

Key impacts

17.11 Overall, it is considered that after the construction phase and during operation there will be no impact on habitats or species of significance and that there will be no net loss of features of ecological importance. Without mitigation the magnitude of impact is **Medium Beneficial** as the tunnels will improve foraging areas for badgers, bats, birds and amphibians.

Key Mitigation Measures

17.12 The key mitigation measures are enhancement of the headlands and hedgerow bases to form a floristically diverse sward, enhancement of the hedgerows that will provide habitat for breeding birds and foraging lines for bats. Installation of bat and owl boxes will also provide further roosting places. Following mitigation and enhancements, the overall impacts are considered to be of long term, minor/moderate beneficial significance and positive at the local - regional level. These measures will ensure no net loss in terms of biodiversity.

Further Work

- 17.13 A bat survey is required to ascertain the foraging lines used by bats and also which bat species are using the area.
- 17.14 A breeding bird survey to BTO guidelines is required to develop a baseline for the monitoring measures.
- 17.15 Monitoring of mitigation measures will be undertaken for approximately five years into the operational phase.

Conclusions

- 17.16 In conclusion, on the evidence of the ecological surveys undertaken to date, the proposals are considered to conform with planning policy guidance at all levels. With the use of precautionary safeguards and the implementation of the mitigation measures set out in this report, there is no evidence to suggest that there are any overriding ecological constraints to the development of the site. Further, with the implementation of the mitigation measures outlined in this report, it is considered that the Proposed Development would result in a net gain for nature conservation.
- 17.18 The application site supports habitats and features of limited Nature Conservation value. The proposed development utilises a site with no merit in ecological terms. The development proposal seeks to retain and enhance all existing semi-natural habitats, wildlife corridors and protected species, which should lead to an overall increase in Biodiversity terms. As such, the proposals are fully compliant with National, County and Local Plan Policy in terms of Nature Conservation.

Homme Farm Table Tops Appendix A DLA1419/ECO/June'12

Appendix A

Policies and Nature Conservation Designations

Hedgerow Regulations 1997

Legislation, Conservation Status and Biology

This appendix presents detailed information pertinent to the legislation and conservation status of the habitats and species outlined in the main report. Specific information of the biology of a receptor is provided where applicable.

1.0 Legislative and Policy Framework

1.1 International Conventions and Directives

The Convention on Biological Diversity (CBD)

1.2 The Convention on Biological Diversity (CBD) was adopted at the Earth Summit in Rio de Janeiro, Brazil in June 1992, and came into force in December 1993. It was the first treaty to provide a legal framework for biodiversity conservation, with three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from the use of genetic resources. Contracting Parties are required to create and enforce national strategies and action plans to conserve, protect and enhance biological diversity. The UK Government ratified the Convention and published the UK Biodiversity Action Plan (UKBAP) in 1994

The Bern Convention

1.3 The requirements of the Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) came into force in 1982. The Convention imposes legal obligations on Member States to ensure conservation and protection of wild plant species and more than a thousand wild animal species. These requirements are implemented in UK law through the Wildlife and Countryside Act 1981 (as amended).

Birds Directive (79/409/EEC)

- 1.4 The European Union (EU) Directive on the Conservation of Wild Birds (79/409/EEC) was adopted in 1979. The Birds Directive is a primary tool for delivering EU obligations under the CBD, and the Bonn Convention. The Birds and Habitats Directive requires EU Member States to take special measures/actions in order to protect all bird species, their sites and their habitats, and these included: measures to conserve and maintain all naturally occurring bird species across the EU through the designation of Special Protection Areas (SPAs) to conserve populations of two groups of birds:
 - those vulnerable species listed in Annex 1 of the Directive
 - species of migratory waterfowl whose population is greater than 1% of the flyway population

European Union Directive (92/43/EEC) (Habitats Directive1992)

1.5 The EU Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive 1992) is the means by which Member States meet obligations made as a signatory of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). The Directive introduces a range of measures including the protection and surveillance of habitats and species. The main aim of the Directive is to promote the maintenance of biodiversity by

requiring Member States to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, including robust protection for those habitats and species of European importance.

- 1.6 It requires Member States to protect Natural Habitat types of Community Interest by the designation of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated under the Birds Directive. This is known as the 'Natura 2000 Network'. This network aims to maintain and enhance the quality and extent of rare and unusual habitat types, and to ensure the long term survival and population increase of rare species.
- **1.7** The Habitats of Community Interest are listed in Annex 1 of the Directive and include vegetation types based on the 'Corine' Habitats Classification. Corine is an environmental database covering a wide range of subjects including nature, landuse, air, water and socio-economic data. For Annex I of the Habitats Directive, the most important section of Corine is the Biotopes Classification, which catalogues the recognisable communities formed in response to the abiotic environment and to each other's influence. This Classification has also been used as the basis of the habitats listed for protection in Annex I of the Directive.
- **1.8** Each Member State has to compile a list of areas containing the habitat types and species listed in the Directive which, once agreed by the Commission as candidate SACs, are then designated as SACs within six years. Once designated they become 'European Sites' (part of the Natura 2000 Network) and are considered areas that make a significant contribution to the conservation of identified habitats and species.
- **1.9** It is UK government policy that European Sites are designated based on existing Sites of Special Scientific Interest (SSSI) due to the scientific criteria already fulfilled for that designation.

Environmental Protection Act 1990

1.10 This Act aims to provide protection and conservation of the natural environment. A number of provisions are set out within this Act, one pertinent to this development being to make provision for the improved control of pollution arising from certain industrial and other processes.
2.0 National Policy

Wildlife and Countryside Act 1981 (WCA) (as amended) Countryside and Rights of Way Act (CROW Act, 2000)

- 2.1 The Wildlife and Countryside Act (WCA) 1981 (as amended) is the principal mechanism for wildlife protection in the UK, originally aimed at consolidating and amending previous legislation to implement the requirements of the Bern Convention and the Birds Directive. The statutory designation of SSSI is the main site protection measure in the UK established under WCA.
- **2.2** The legislation has been updated by the Countryside and Rights of Way Act (CROW Act, 2000), which includes design measures to prevent reckless disturbance.

The Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490)

- 2.3 The Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490) ('The Habitats Regulations'), transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (EC Habitats Directive) into national law. The Regulations came into force on 30 October 1994 and were amended in 1997 and 2010. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European sites.
- 2.4 The Regulations also make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2 of the Regulations, or pick, collect, cut, uproot, destroy or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of reasons (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there is no satisfactory alternatives and that such actions will have no detrimental effect on the wild population of the species concerned.

The Badgers Act (1991) and Protection of Badgers Act (1992)

- 2.5 Under these Acts, extra protection is afforded to badgers and their setts, so that they are legally protected from intentional cruelty (such as badger baiting) and from the results of lawful human activities (such as housing development). The Protection of Badgers Act (PBA) consolidates all previous legislation including the Badgers Act 1973 (as amended) and the Badgers (Further Protection) Act 1991.
- **2.6** Badgers are also given protection from killing or taking by certain means under Schedule 6 of the WCA 1981 (as amended). Under the legislation, badgers are protected against killing and injury, and their setts against destruction and disturbance. The PBA defines a badger sett as 'any structure or place which displays signs indicating current use by a badger'.

Hedgerow Regulations 1997

- 2.7 The Hedgerow Regulations 1997 prohibit the removal of most countryside hedges without permission from the local planning authority. Under these Regulations, hedges are assessed under a series of criteria to ascertain their level of 'importance'. Local planning authorities are able to order the retention of 'important' hedgerows. See Appendix I for details.
- **2.8** As a 'cross compliance' condition of payment of subsidy under the Single payment Scheme, farmers must comply with the requirements of the Hedgerows Regulations and must not trim or cut their hedgerows between 1 March and 31 July.

3.0 Planning Policy

Biodiversity Action Plans

3.1 Biodiversity Action Plans (BAPs) stem from the 1992 Convention on Biological Diversity, also known as the 'Earth Summit', which called for the creation and enforcement of national strategies and action plans to "conserve, protect and enhance biological diversity". The BAP system in the UK comprises both Habitat Action Plans (HAPs) and Species Action Plans (SAPs). Species and habitats are chosen according to a number of criteria, including threatened status, decline in range/area and endemism. Biodiversity action planning has been applied at both a national and local (LBAP) level. That a BAP has been prepared simply reflects that the habitat or species concerned is in a sub-optimal state (and hence that action is required). It does not, and was never intended to imply any specific level of importance to the habitat.

National Planning Policy Framework (2012)

- **3.2** Guidance on Planning Policy is provided by the National Planning Policy Framework (NPPF), published in March 2012. NPPF replaces all of the previous Planning Policy Statements with a single document, the aim of which is to achieve sustainable development within three dimensions. These dimensions are economic, social and environmental and set the Government's approach to nature conservation, including statutory obligations under domestic and international law.
- **3.3** NPPF requires local authorities to consider in full, the effect of planning decisions on biodiversity and geological conservation, and ensure that appropriate weight is attached to statutory nature conservation designations, protected species, biodiversity and geological interests within the wider environment.
- **3.4** It also considers the potential biodiversity and geological conservation gains which can be secured within developments, including the use of planning obligations.
- **3.5** National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, with appropriate measures, be obtained.
- **3.6** One of the key principles within NPPF states that the aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Planning decisions should, therefore, aim to maintain, enhance, restore or add to biodiversity.
- **3.7** NPPF states that when considering proposals, local planning authorities should encourage opportunities to incorporate biodiversity in and around developments and should plan for biodiversity at a landscape scale across local authority boundaries.
- **3.8** In addition to legal protection, NPPF requires that planning policies should promote the protection and recovery of priority species populations.

4.0 Regional Policy

Regional Spatial Strategy: West Midlands (2008)

- **4.1** The Regional Spatial Strategy (RSS) aims to provide a consistent regional framework to inform the preparation of Local Development Documents. These documents include protection of agricultural land and biodiversity and nature conservation resources amongst others.
- **4.2** The RSS was due to be reviewed in two stages. However following the election in 2010, the RSS will not be reviewed; instead the development of policies for regional and sub-regional matters will be delegated to County Councils and Unitary Councils, including Herefordshire. A Habitats Regulations Assessment will also ensure that policies do not adversely affect European habitat sites within the West Midlands.

5.0 Local Policy

Herefordshire Unitary Development Plan (adopted 2007)

- **5.1** The proposal area lies wholly within the county of Herefordshire. Guidance on policy for nature conservation at the county level is administrated by the Herefordshire Unitary Development Plan (adopted 2007). The policies P5 P7 and P10 are guiding principles which direct the Plan to protect, restore and enhance sites and features of nature conservation interest and species of biodiversity interest
- **5.2** Guiding principal P7 highlights the need to protect, restore and enhance environmental assets and gives special protection to irreplaceable resources such as biodiversity and features of geological interest within Herefordshire.

6.0 Non-statutory Designations

6.1 Alongside the main legislation there is a range of non-statutory guidance material including:

Sites of Importance for Nature Conservation (SINC), Special Wildlife Sites (SWS)

- **6.2** The term Site of Importance for Nature Conservation (SINC), and other similar acronyms such as Special Wildlife Sites (SWS), are widely used for sites designated by Local Authorities as being of local or regional importance to nature conservation in order to conserve habitat continuity and character. They are referred to in NPPF and Local Planning Authorities are advised by the guidance to adopt planning policies that reflect the relative nature conservation importance of local sites in addition to policies relating to national and international sites. Hence SINCs should have a substantive nature conservation value but Local Authorities should take care to avoid unnecessary constraints on development in relation to them.
- **6.3** In different areas SINCs may or may not have been identified on the basis of detailed survey and assessment in relation to a county's nature conservation resources. Some counties are more selective than others in their criteria. Most ancient woodlands on the County Inventory of Ancient Woodlands prepared by Natural England would automatically be rated as SINCs in some counties. Elsewhere SINCs are only designated after survey and comparative evaluation.

Ancient Woodland Sites

6.4 These are woodlands that have existed since at least the 17th Century, and are of biodiversity importance due to their longevity, often giving rise to high species diversity. Ancient woodland is not a statutory designation but, increasingly, national, regional and local planning policies mention protection of ancient woodland in planning documents.

Red Data Book Species

6.5 The Red Data Book (RDB) system applies standard criteria to define the national conservation status of animal and plant species according to the following categories: Extinct (EX), critically endangered (CR), endangered (EN), vulnerable (VU), near-threatened (NT) and lower concern (LC).

Birds of Conservation Concern

6.6 The BTO (2002) lists Birds of Conservation Concern (BoCC), which fall into three categories: red list (species of high concern), amber list (species of medium concern) and green list (species of lower concern). Species are placed on these lists based, among other criteria, on the percentage decline of breeding or wintering populations in the recent past. In this assessment those species of lower concern are not considered in detail. These lists do not imply rarity for the species concerned.

7.0 Terrestrial Habitats

Biology

7.1 Terrestrial habitats are plant communities that have a recognised ecological function and boundary. They normally have specific plant species associated with their species assemblage. Often named after the dominant plant species in the community e.g. birch woodland, they make readily definable ecological units for ecological assessment and study.

Legal and Conservation Status

- **7.2** Semi-natural habitats are conferred protection by the following international and national statutes and guidance which recognise the ecological value of the habitats and provide protection or promote policies that guide their conservation:
 - The Conservation (Natural Habitats, &c) Regulations 1994 (as amended);
 - Habitats Directive 1992;
 - WCA 1981 (as amended)
 - NPPF;
 - UKBAP.
- **7.3** Within Herefordshire there are fourteen individual SAPs and sixteen HAPs. The SAPs and HAPs include targets and objectives that incorporate habitat management actions. Species targeted in this way include Dormouse (*Muscardinus avellanarius*) and Pearl bordered fritillary (*Boloria euphrosyne*).
- **7.4** Local HAPs provide national and local targets and objectives for UK and regional priority habitats. They also incorporate action for associated priority species. In Herefordshire, HAPs that are relevant to the current study have been developed for: Cereal Field Margins, Orchards, Floodplain Grazing Marsh and Hedgerows.

Unimproved Grasslands

7.5 These are permanent grasslands that have either never been subject to agricultural improvement, or that improvement was insignificant and the effects have now disappeared. They are usually managed with either no fertilizer or low inputs of natural fertilizers such as farmyard manure. Cover of Rye- grasses and White Clover is less than 10% and the sward is generally species rich with more than 15 species per square metre. Cover of wildflowers and sedges is generally over 30% excluding White Clover, Creeping Buttercup and injurious weeds. Typically there will be a diverse range of grass species which may include Blue Moor- grass, Crested Hairgrass, Heath-grass, Meadow Oat-grass, Sheep's Fescue, Tor grass, Upright Brome, Quaking-grass and Yellow Oat-grass as well as the more common grasses of semi improved grassland below.

Semi-improved Grassland

7.6 These are generally permanent grasslands and as the name suggests have been subject to some form of agricultural improvement, making them more agriculturally

productive but less valuable in terms of biodiversity. Agricultural improvement can include fertilizer application, use of herbicide and other biocides, overgrazing/ poaching, drainage and excessive harrowing. The term covers a very broad range of grassland habitats from almost unimproved species-rich grassland that can recover to unimproved status with minimal intervention, to species-poor semi-improved grassland that is just slightly more species-rich than improved grassland and would require significant resources to restore it. Natural England defines semi-improved grassland as "containing less than 30% cover of Rye- grasses and White Clover and contains between 8 and 15 species per square metre. Cover of wildflowers and sedges is generally over 10% excluding White Clover, Creeping Buttercup and injurious weeds. Typical grass species include Cock's- foot, Common Bent, Crested Dog's- tail, False Oat- grass, Meadow Fescue, Meadow Foxtail, Red Fescue, Sweet Vernal- grass, Timothy and Tufted Hair- grass.

Badger

Biology

- **7.7** Badgers (*Meles meles*) are widespread in the UK although their distribution is concentrated in the south west of the country. The population has been estimated at approximately 250,000 adults who produce approximately 172,000 cubs per year (Harris *et al.*, 1995). Since that survey there is evidence to suggest that the population has increased steadily across the UK as a whole (Battersby, 2005).
- **7.8** Badgers live in social groups and the members of each group jointly defend a territory. Other badgers are more or less excluded from this land, which will encompass sufficient foraging areas to support the group throughout the year. They live in complexes of underground tunnels and chambers called setts, which are excavated in suitable locations such as hedge banks and woodlands with well drained and soil that is easy to dig.
- **7.9** Badgers are nocturnal and their diet is principally made up of earthworms that are found on pasture or in woodland particularly on wet nights. As badgers require a steady food supply throughout the year, when conditions are unsuitable for catching earthworms other food such as fruit, cereals, root crops, insects, rabbits, amphibians and small mammals are also taken.
- **7.10** Badgers' territories are based around a main sett but there may also be several auxillary setts within the territory. Territory sizes vary from between 15ha to over 300ha (Kruuk, 1989). In general, territory size is dependent upon the availability of suitable foraging habitat and the proximity of other neighbouring badger social groups. Larger territories are found where social groups are less dense and this is often simultaneous with wide spread or sub-optimal foraging patches. Territorial boundaries are marked by dung pits. These boundaries are regularly patrolled and actively defended from other badgers from other social groups.
- 7.11 The peak mating period is during the spring but can take place throughout the year, and normally only the dominant female in that social group breeds each year. Litters of two to three cubs are born in February or March. The independence of the time of cub birth from time of mating is on account of delayed implantation, which is a process whereby the fertilised eggs can remain in a state of suspended development until triggered to continue development by environmental cues. This ensures that cubs are born at the most appropriate time of year for their survival. Cubs are able to forage independently after approximately 15 weeks.

Habitat Requirements

- **7.12** To form a social group or population, badgers require habitat where they can excavate their main sett and successfully forage. The quality of foraging habitat will determine the number of badgers within a social group. The density of social groups/populations is governed by a combination of suitable sett-making habitat and suitable foraging habitat within the landscape as a whole. Good sett making and good foraging habitat results in densely distributed social groups with small territories and a high overall badger population.
- **7.13** The quality of foraging habitat is likely to be governed by the density of areas of short grassland and the richness of the grassland in terms of earthworm abundance and the availability of alternative food resources when conditions for earthworm are unsuitable.

Legal and Conservation Status

- 7.14 Badgers are protected under the following legislation/guidance
 - Badger Act 1992
 - NPPF
 - WCA 1981 (as amended)

Bats

Biology

- **7.15** There are sixteen species of bat known to be resident in the British Isles. Of these nine have been recorded in the 5km grid square that includes the study area, these being:
 - Brown Long-Eared Bat (Plecotus auritus),
 - Common Pipistrelle (Pipistrellus pipistrellus),
 - Daubenton's Bat (Myotis daubentonii),
 - Greater Horseshoe (Rhinolophus ferrumequinum),
 - Lesser Horseshoe (Rhinolophus hipposideros),
 - Natterer's bat (Myotis nattereri),
 - Noctule (Nyctalus noctule),
 - Serotine (*Eptesicus serotinus*),
 - Soprano Pipistrelle (Pipistrellus pygmaeus).
- **7.16** The habitat requirements for bats vary widely on both an individual and species level although certain features such as woodland edge and freshwater pools are the focal points for foraging as the highest densities of bats will be found where insects are plentiful (Walsh *et al.*, 1996a and 1996b). Of the bats recorded around the study area, brown long-eared bats mainly forage in woodland environments whilst Daubenton's forage chiefly in areas associated with water. Pipistrelle bats are generalist in their feeding strategies and forage around waterbodies, woodlands, hedgerows and pasture (Altringham, 2003).

- **7.17** Linear habitat features such as rivers, hedgerows, roads and woodland edges are important to bats as they use these as landmarks in order to commute from one location to another (Schofield & Mitchell-Jones, 2003). Distances that bats travel between roosts and foraging areas are variable both within and between species. For example, brown long-eared bats spend most of their time foraging within 0.5km of the roost, whilst pipistrelles may forage up to 5.1km from the roost and other species may travel further (Entwistle *et al.*, 1996).
- **7.18** Bats utilise different roosts at different times of the year and between late October and March they hibernate. This requires an unexposed roost with a stable temperature, typically a cave, cellar or tunnel. Around March, the bats emerge and move to their summer roosts, typically within manmade structures or suitable crevices in trees. Some of these roosts are used for substantial periods of time, whereas others serve as transitional roosts and are used for only one or two days. Mating takes place between late August and early December, either at the winter hibernating site or at autumn mating sites. Births occur the following summer. The numbers of bats utilising roosts can vary from single bats to hundreds of bats in a maternity roost or hibernation site (Altringham, 2003).

Legal and Conservation Status

- **7.19** All British bat species and their roosts are protected under the following legislation and guidance:
 - Bern Convention (except the common pipistrelle) 1979 (Appendix II);
 - Bonn Convention 1979;
 - The Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490) (*The Habitats Regulations*);
 - Habitats Directive 1992 (Annex IV)
 - WCA 1981 (as amended)
- **7.20** Bat populations have declined considerably during the last century with Britain's native species having been exposed to significant changes in their preferred habitats. Drainage of wetlands, woodland clearances and use of pesticides have led to loss of roosting sites and reduction in insect abundance and diversity.
- 7.21 All bats have a SAP in Herefordshire.

Dormouse

Biology

7.22 Over the last 100 years, the hazel dormouse has declined in both numbers and distribution. Recent surveys suggest that it has become extinct in about half its former distributional range. Although it is still uncommon, the dormouse appears to be relatively widespread in southern English counties but, because of its specialised habitat requirements, it is never as numerous as woodland rodents such as the wood mouse *Apodemus sylvaticus* and bank vole *Clethrionomys glareolus*. Even in counties where it is widespread, the dormouse has a very patchy distribution. It is particularly associated with deciduous woodland, but also occurs widely in species-rich hedgerows and scrub and sometimes in other woody habitats. The total adult

population is now thought to number about 45,000 (Battersby, 2005), distributed among a variety of widely fragmented sites.

7.23 Hazel dormice are sensitive to weather and climate, both directly and indirectly, through their specialised feeding requirements. They are particularly affected by habitat deterioration and fragmentation and also by inappropriate habitat management. For these reasons, they are highly vulnerable to local extinction. They are consequently good bio-indicators of animal and plant diversity: where dormice are present, so are many other less sensitive species. The successful maintenance of viable dormouse populations is a significant indicator of an integrated and well-managed countryside. Their continued presence is therefore highly desirable. The National Biodiversity Network indicates that there are dormice in this area of Herefordshire as a live specimen was found at Coughton Marsh.

Legal and Conservation Status

- 7.24 Dormice are protected under the following legislation and guidance:
 - The Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490) (*The Habitats Regulations*);
 - WCA 1981 (as amended) (Section 9 (5)).
- 7.25 The dormouse has a SAP in Herefordshire.

Terrestrial Breeding Birds

Biology

7.26 Birds are a highly adaptable group of vertebrates and have colonised almost every ecosystem present on earth from deserts to the Antarctic. There are approximately 10,000 species of bird worldwide with over 200 species occurring in the UK (depending on the season and weather conditions). Bird assemblages are grouped according to whether they are resident or migratory.

Legal and Conservation Status

- 7.27 Resident and migratory birds within the UK are protected by the following legislation:
 - Birds Directive 1979
 - The Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490) (*The Habitats Regulations*);
 - Habitats Directive 1992
 - Natura 2000
 - WCA 1981 (as amended)

Amphibians

Biology

7.28 There are six species of amphibian native to mainland Britain (three species of newt, two species of toad and one species of frog).

- **7.29** Amphibians require areas of permanent or semi-permanent bodies of water for breeding, egg laying and larval development. Eggs are either deposited in open water (frogs), entwined around vegetation (toads) or between folded leaves (newts). The eggs mature into embryos which in turn develop into larvae (tadpoles in the case of frogs and toads). The larvae then metamorphose into adults after several weeks.
- **7.30** Breeding takes place between February and May, followed by dispersion of adults. Frog and toad leave their breeding waterbodies in March and April respectively and newts in late summer. Adults of all species do not return to the waterbody until the following year after over wintering at hibernation sites. Hibernation sites are typically less than 500m from the waterbody (for frogs and newts) and up to 1km for toads (Beebee & Griffiths, 2000). In this respect, terrestrial habitat is equally important to amphibians as aquatic habitat. Larvae remain in the waterbody until they develop into juveniles. The juveniles leave the waterbody dispersing into the surrounding habitat, normally between July and September the same year. Some of these individuals will not return to the natal pond, instead dispersing to other waterbodies. Adult common frog (*Rana temporaria*) and palmate newt (*Lissotriton helveticus*) larvae can over winter in the waterbody.
- **7.31** Ideal feeding areas include woodland, scrub, rough grassland and gardens with a diversity of habitats. Hibernacula are sought in terrestrial features such as dead wood found along hedgerows, in woodland and as accumulated matter beside streams or on floodplains. Root systems of scrub and trees, including dead roots, are also used, as are crevices and gaps in the earth, under rocks and in stone walls.
- **7.32** Amphibian species resident in one isolated waterbody are recognised as comprising a population. However, where amphibian species are associated with two or more waterbodies within 300m of each other, the ponds are considered to support a metapopulation of the species concerned. These metapopulations are also considered to be connected and combined together and are considered to belong to the same deme, as there will be interchange of individuals between waterbodies and gene mixing within the population utilising the waterbodies. The distribution of ponds and the importance of metapopulations are often key to the survival of amphibian species within geographical areas. Habitat loss, such as destruction of ponds, can result in sink and source populations becoming isolated and more vulnerable to localised extinction.

Legal and Conservation Status

- **7.33** All species of amphibian native to the British Isles receive some legal protection, although the degree and type of protection varies between species, these include:
 - The Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490) (*The Habitats Regulations*);
 - WCA 1981 (as amended) (Section 9 (5)).

Reptiles

Biology

- **7.34** There are six species of reptile native to the UK, comprising three species of lizard and three species of snake. These are the common lizard (Zootoca vivipara), sand lizard (Lacerta agilis) and slow-worm (Anguis fragilis), and the smooth snake (Coronella austriaca), grass snake (Natrix natrix) and adder (Vipera berus). In addition introduced species may be encountered occasionally, arising from escapes or illegal releases (English Nature, 2004). The sand lizard and the smooth snake are particular to heathland and are found on a limited number of sites in southern England.
- **7.35** Reptiles have a variable body temperature, which depends on the surrounding temperature and their behaviour. They move to open areas in order to bask in the sun and once a favourable temperature is reached they move off to forage. Depending on the species' dietary needs, the habitats required may include areas of coarse grassland, scrub, woodland, or wetland. Generally, lizards feed on invertebrates such as insects and snakes feed on vertebrates, such as amphibians and small mammals. Reptiles also require refuges and hibernacula, such as well-vegetated areas, piles of rubble and logs.

Legal and Conservation Status

- **7.36** Common lizard, slow-worm and adder are common and widespread in Britain and receive limited protection under:
 - WCA 1981 (as amended).
- 7.37 The sand lizard and the smooth snake receive a greater protection under:

The Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490) (*The Habitats Regulations*);

7.38 The adder has a SAP in Herefordshire.

Homme Farm Table Tops Appendix A DLA1419/ECO/June'12

> Appendix I Hedgerow Regulations 1997

An abbreviated description of the Hedgerow Regulations.

The hedgerow must be more than 30 years old and satisfy at least 1 of the criteria listed in Part II of Schedule 1.

• The hedgerow marks the boundary of a historic parish or township existing before 1850.

• The hedgerow contains or is within an archaeological feature which is on the Sites and Monuments Record, or a pre-1600 manor or estate.

• The hedgerow is a part of or associated with a field system predating the Inclosure Acts.

• The hedgerow contains species in part I of **Schedule 1**; **Schedule 5**; or **Schedule 8** of the **Wildlife and Countryside Act 1981**; or various other defined species including certain Red Data Book species.

• The hedgerow is adjacent to a **public right of way** (not counting an adopted highway) and at least 4 woody species as defined in Schedule 3 of the regulations plus at least two Associated Features.

• The hedgerow includes one or more of the following:

- At least 7 woody species;

- At least 6 woody species plus at least three Associated Features (see below);

- At least 6 woody species including a black poplar; large-leaved lime, small-leaved lime or wild service tree;

- At least 5 woody species and at least 4 Associated Features.

Note that: Where a hedgerow is situated wholly or partly in the county (as constituted on the first of April 1997) of the City of Kingston Upon Hull, Cumbria, Darlington, Durham, East Riding of Yorkshire, Hartlepool, Lancashire, Middlesbrough, North East Lincolnshire, Northumberland, North Yorkshire, Redcar and Cleveland, Stockton-on-Tees, Tyne and Wear, West Yorkshire or York the number of woody species mention is to be treated as reduced by one"

(a) where the length of the hedgerow does not exceed 30 metres, count the number of woody species present in the hedgerow;

(b) where the length of the hedgerow exceeds 30 metres, but does not exceed 100 metres, count the number of woody species present in the central stretch of 30 metres;

(c) where the length of the hedgerow exceeds 100 metres, but does not exceed 200 metres, count the number of woody species present in the central stretch of 30 metres within each half of the hedgerow and divide the aggregate by two;

(d) where the length of the hedgerow exceeds 200 metres, count the number of woody species present in the central stretch of 30 metres within each third of the hedgerow and divide the aggregate by three.

Associated Features are as follows:

- A bank or wall for at least half the length.
- A ditch for at least half the length.
- Gaps over no more than 10% of the length.
- At least one standard tree per 50m.

• At least 3 ground flora woodland species as defined in Schedule 2 of the Regulations within 1m of the hedgerow.

• Connections scoring 4 or more points, where connection a hedgerow counts as one, a broad-leaved woodland or pond counts as two*.

• A parallel hedge within 15m*.

*These features do not count if a public right of way is being included in the criterion.

SCHEDULE 2

Regulation 2(3) and Schedule 1, Part I

WOODLAND SPECIES

Barren strawberry (Potentilla sterilis) Bluebell (Hyacinthoides non-scriptus) Broad buckler fern (Dryopteris dilatata) Broad-leaved helleborine (Epipactis helleborine) Bugle (Ajuga reptans) Common cow-wheat (Melampyrum pratense) Common dog violet (Viola riviniana) Common polypody (Polypodium vulgare) Dog's mercury (Mercurialis perennis) Early dog violet (Viola reichenbachiana) Early purple orchid (Orchis mascula) Enchanter's nightshade (Circaea lutetiana) Giant fescue (Festuca gigantea) Goldilocks buttercup (Ranunculus auricomus) Great bell-flower (Campanula latifolia) Greater wood-rush (Luzula sylvatica) Hairy brome (Bromus ramosus) Hairy woodrush (Luzula pilosa) Hard fern (Blechnum spicant) Hard shield fern (Polystichum aculeatum) Hart's tongue (Asplenium scolopendrium) Heath bedstraw (Galium saxatile) Herb paris (Paris quadrifolia) Herb-robert (Geranium robertianum) Lady fern (Athyrium filix-femina) Lords-and-ladies (Arum maculatum) Male fern (Dryopteris filix-mas)

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Moschatel (Adoxa moschatellina) Narrow buckler-fern (Dryopteris carthusiana) Nettle-leaved bell-flower (Campanula trachelium) Oxlip (Primula elatior) Pignut (Conopodium majus) Primrose (Primula vulgaris) Ramsons (Allium ursinum) Sanicle (Sanicula europaea) Scaly male-fern (Dryopteris affinis) Small cow-wheat (Melampyrum sylvaticum) Soft shield fern (Polystichum setiferum) Sweet violet (Viola odorata) Toothwort (Lathraea squamaria) Tormentil (Potentilla erecta) Wild strawberry (Fragaria vesca) Wood anemone (Anemone nemorosa) Wood avens/Herb bennet (Geum urbanum) Wood false-brome (Brachypodium sylvaticum) Wood horsetail (Equisetum sylvaticum) Wood meadow-grass (Poa nemoralis) Wood melick (Melica uniflora) Wood millet (Millium effusum) Wood sage (Teucrium scorodonia) Wood sedge (Carex sylvatica) Wood sorrel (Oxalis acetosella) Wood speedwell (Veronica montana) Wood spurge (Euphorbia amygdaloides) Woodruff (Galium odoratum) Yellow archangel (Lamiastrum galeobdolon) Yellow pimpernel (Lysimachia nemorum)

SCHEDULE 3

Regulation 2(3) and Schedule 1, Part I WOODY SPECIES

Alder (Alnus glutinosa) Apple, crab (Malus sylvestris) Ash (Fraxinus excelsior) Aspen (Populus tremula) Beech (Fagus sylvatica) Birch, downy (Betula pubescens) Birch, silver (Betula pendula) Black-poplar (Populus nigra sub-species betulifolia) Blackthorn (Prunus spinosa) Box (Buxus sempervirens) Broom (Cytisus scoparius) Buckthorn (Rhamnus cathartica) Buckthorn, alder (Frangula alnus) Butcher's-broom (Ruscus aculeatus) Cherry, bird (Prunus padus) Cherry, wild (Prunus avium)

Homme Farm Table Tops Appendix A DLA1419/ECO/June'12

Cotoneaster, wild (Cotoneaster integerrimus) Currant, downy (Ribes spicatum) Currant, mountain (Ribes alpinum) Dogwood (Cornus sanguinea) Elder (Sambucus nigra) Elm (Ulmus species) Gooseberry (Ribes uva-crispa) Gorse (Ulex europaeus) Gorse, dwarf (Ulex minor) Gorse, western (Ulex gallii) Guelder rose (Viburnum opulus) Hawthorn (Crataegus monogyna) Hawthorn, midland (Crataegus laevigata) Hazel (Corylus avellana) Holly (Ilex aquilfolium) Hornbeam (Carpinus betulus) Juniper, common (Juniperus communis) Lime, large-leaved (Tilia platyphyllos) Lime, small-leaved (Tilia cordata) Maple, field (Acer campestre) Mezereon (Daphne mezereum) Oak, pedunculate (Quercus robur) Oak, sessile (Quercus petraea) Osier (Salix viminalis) Pear, Plymouth (Pyrus cordata) Pear, wild (Pyrus pyraster) Poplar, grey (Populus x canescens) Poplar, white (Populus alba) Privet, wild (Ligustrum vulgare) Rose (Rosa species) Rowan (Sorbus aucuparia) Sea-buckthorn (Hippophae rhamnnoides) Service-tree, wild (Sorbus torminalis) Spindle (Euonymus europaeus) Spurge-laurel (Daphne laureola) Walnut (Juglans regia) Wayfaring-tree (Viburnum lantana) Whitebeam (Sorbus species) Willow (Salix species) Yew (Taxus baccata)

Appendix B

Homme Farm – Updated Ecological Survey

HOMME FARM UPDATED ECOLOGICAL SURVEY

Dr. Alison Strange MIEEM, MSB, CBiol Dr Fergus Mould May 2012

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- Map 1. Site Location
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1.0 INTRODUCTION

1.1 Background

Homme Farm is situated at Hom Green in the Wye Valley just south of Rosson-Wye in Herefordshire (NGR SO 5785 2235), see Site Location Map 1. The main production of the farm is soft fruit and arable. The soft fruit is predominantly strawberries with some raspberries and blackberries. These require the use of polytunnels for easier picking and to ensure that the crop is not damaged by adverse weather. It is proposed to use the polytunnels for table top production. This makes the fruit easier to pick and also reduces the level of pest damage and fungal attack. As the erection of polytunnels now requires planning permission, a survey was needed to identify any potential impacts to the area. The extent of the survey area is shown in Map 2.

Map 1. Site Location



www.ordnancesurvey.co.uk/getamap Image produced from Ordnance Survey's Get-a-map service. Image reproduced with permission of Ordnance Survey and Ordnance Survey of Northern Ireland.





1.2 Nature Conservation Background

A desk top study was carried out to identify any sites with nature conservation designations within the site boundary and within a 2km radius of the site. Searches were carried out using *MAGIC*, the Defra information site (www.magic.gov.uk – a multiple agency web-based interactive mapping site which details key environmental schemes and designations) and *Nature on the Map*, the Natural England information site.

Sites identified would include:

• Special Areas of Conservation (SAC)

These areas are sites designated by EC Member States under the Habitats Directive. The aim is to establish a European network of important high quality conservation sites that will make a significant contribution to the preservation of habitats and species considered to be most in need of conservation at an international level.

• Sites of Special Scientific Interest (SSSI)

The sites are identified by Natural England as representative examples of semi-natural habitats forming a nationally important network of sites for wildlife and earth science conservation.

• Areas of Outstanding Natural Beauty (AONB)

The primary purpose of the AONB designation is to conserve and enhance the natural beauty of the landscape. AONBs are not wilderness areas or even, paradoxically, areas whose beauty derives from purely natural processes, but a group of distinct and recognisable areas arising from a long history of human occupation and sustainable exploitation of their natural resources.

Ancient Woodland Sites

These are woodlands that have existed since at least the 17th Century, and are of biodiversity importance due to their longevity, often giving rise to high species diversity. Ancient woodland is not a statutory designation but increasingly national, regional and local planning policies mention protection of ancient woodland in planning documents.

Searches were also carried out to ascertain the presence of any protected species on site through the National Biodiversity Network (NBN) and a data request was made to Herefordshire Biological Records Centre.

1.3 Historic Landscape Evaluation

There is a strong link between the age of origin and historical continuity of landscape features, especially those involving long established vegetation, such as ancient woods, meadows or heaths, and nature conservation value.

The 1817 Ordnance Survey 1" map

A particularly useful source of information is the first edition Ordnance Survey 1" map. Most woodlands shown on this map have their origin in medieval or earlier times and are therefore classed as 'ancient' i.e. originating before 1600AD.

The 1890 Ordnance Survey 6 " map

The first edition of the 6 " to the mile Ordnance Survey maps were surveyed in great detail around 1890 and give an extremely accurate impression of land use, administrative boundaries and other attributes of parishes.

1.4 Brief

Drs Alison Strange and Fergus Mould were commissioned by DLA Ltd on behalf of E.C. Drummond Ltd to update two previous ecological surveys (June 2007 and June 2008). This report combines the previous survey results with the updated material; it sets out the results of survey work undertaken and assesses the importance of the resource and is used to support the planning application for polytunnels incorporating the Table Top system .

2.0 NATURE CONSERVATION LEGISLATION

2.1 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 of Habitats and Species Regulations 2010(SI no. 2010/490) (*'The Habitats Regulations'*). A more in-depth discussion of Nature Conservation legislation is found in Appendix A.

2.2 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. Further details of badger background are found in Appendix A.

2.3 Birds

In the UK, all wild birds, their nests and their eggs are fully protected via:

• The Wildlife & Countryside Act, 1981 (as amended) (through inclusion on Schedule 5); and

• The Birds Directive 1979, which implements the EC Directive 79/409. Further details of the legislative protection given to birds are provided at Appendix A.

2.4 Reptiles

There are six species of reptile native to the UK, comprising three species of lizard and three species of snake. These are the common lizard (*Zootoca vivipara*), sand lizard (*Lacerta agilis*) and slow-worm (*Anguis fragilis*), and the smooth snake (*Coronella austriaca*), grass snake (*Natrix natrix*) and adder (*Vipera berus*). The sand lizard and the smooth snake are particular to heathland and are found on a limited number of sites in southern England and are protected under the Conservation of Habitats and Species Regulations 2010 (SI no. 2010/490) (The Habitats Regulations).

The slow worm, viviparous lizard, grass snake and adder are all listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). They are protected under sections 9.1 and 9.5 of that Act against intentional killing or injury, and against sale. The Act also states that reasonable efforts must be taken to avoid the unintentional killing of Schedule 5 animals, including slow worms, viviparous lizards, grass snakes and adders. Details of the legislative protection given to reptiles are provided in Appendix A.

2.5 Bats and Dormice

Whilst it is recognised that bats and dormice are protected species and are known to be in the area, no surveys were carried out for them.

2.6 Biodiversity Action Plans

The Countryside & Rights of Way (CRoW) Act, 2000 requires that Government departments have regard to the purpose of conserving biological diversity in accordance with the Biodiversity Convention 1992 and to promote the action required to further the conservation of species published on Biodiversity Action Plans (BAPs). Further, The Natural Environment and Rural Communities (NERC) Act (2006) places a duty upon public bodies in England and Wales (including Local Planning Authorities) to have regard to the purposes of conserving biodiversity in exercising their functions.

3.0 METHODOLOGY

3.1 Vegetation

A walkover Phase I Habitat Survey was carried out by Alison Strange on 17 May 2012, following the procedure of Joint Nature Conservation Committee (JNCC). The fields were assigned numbers for ease of reporting and systematically mapped as shown in Map 3. 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 different times of year that some plants are apparent.

Table 1. The DAFOR cover abundance scale

D	Dominant
A	Abundant
F	Frequent
0	Occasional
R	Rare

Map 3. Field numbers



3.2 Nomenclature

Nomenclature follows that of Stace (1997 2nd ed) for vascular plants.

3.3 Badgers

Within the survey area all fence lines and scrub habitats were systematically surveyed for evidence of badgers in the form of:

- 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, if present, 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 is required for reoccupation.

3.4 Birds

A visual survey for birds was carried out, with particular attention paid to the hedgerows and the open areas of farmland.

3.5 Reptiles

An evaluation of the habitat was carried out to ascertain its suitability for reptiles, paying particular attention to vegetation and any forms of refugia. Although reptiles (slow worm, grass snake, adder and common lizard) are occasionally seen basking they are more likely to be observed when "refugia" are inadvertently disturbed. In general, these "refugia" tend to be under stones and fallen trees, holes in embankments and in rock fissures; however items such as wooden planks, pallets, plastic and metal sheeting and externally stored equipment all offer potential refuge sites. Where found any such articles were carefully lifted and the ground underneath examined for reptiles. Many amphibians (e.g. common toad, frogs and newts) may also be discovered using this technique.

4.0 SURVEY RESULTS

4.1 Desk top study

Statutory sites

There are two statutory sites within 1km of the farm, these are:

- The River Wye SAC;
- Coughton Marsh SSSI.

The full citations are found in Appendix II. The farm is within the Wye Valley AONB.

Non statutory sites

Herefordshire Biodiversity Records Centre (HBRC) have produced a map that shows the local wildlife sites within 2km of the farm, see Map 4. The annotation is as follows:

- A, Coughton Marsh Herefordshire Nature Trust Reserve,
- B, Parish Field Herefordshire Nature Trust Reserve,
- C, Purland Chase Herefordshire Nature Trust Reserve

SO52/17 Disused railway line, Ross to Kerne Bridge SWS The register states: "A disused railway line which has become overgrown with grassland, scrub and woodland. Oak, ash, field maple, blackthorn and orchids are amongst the flora species. The site forms an excellent habitat for the smaller nesting birds; common and lesser whitethroat having been recorded." Date 1990

SO52/19 Northern end of Coughton Marsh SWS The register states: "A marshy area with a rich flora, including ragged robin, bog stitchwort and orchid." Date 1990

SO52/20 Coughton Wood and Marsh SWS Citation in Appendix II

SO53/06 River Wye SWS Citation in Appendix II

SO62/02 Chase and Merrivale Woods SWS

The register states: "An ancient wood, with a lot of planted beech, sweet chestnut and conifer. Oak, cherry and a number of yew trees are present" Date 1990



Map 4. Local Wildlife Sites and Hereford Nature Trust Sites

Protected species

Records from the HBRC indicate that the Common dormouse has a stronghold to the south of the farm and is undoubtedly using the hedgerows to forage along and to breed. No great Crested Newts or bat roosts are known to be on the farm but a variety of birds have been observed e.g. Blue Tit, Coal Tit, Dunnock, Goldcrest, Goldfinch, Great Tit, Green Woodpecker, Greenfinch, House Martin, Kestrel, Lesser Spotted Woodpecker, Meadow Pipit, Pied Wagtail, Robin, Swallow, Wren and Yellowhammer.

4.2 Farm Description

The farm consists of a series of large fields that are down to soft fruit, wheat and turf production. It is situated below the edge of an escarpment, on land that slopes gently down to the River Wye floodplain. There is a high proportion of hedges often with standards, and usually with banks. The farm is in two sections as it is bisected by a lane. The eastern section of the farm is on higher land that slopes down towards the lane; this western section then rises gently and descends to the floodplain forming a cup around the estate of Hill Court. The Ordnance Survey map of 1891 show that there has been little change in the field boundaries, although many of them were ditches rather than hedges. There was a small block of orchard on the northern boundary of the farm but this had gone by 1928, and another small block immediately in front of the farm which was still there in 1953 although it appeared to have been thinned considerably.

The soil is a light, free-draining, red, sandy clay-loam that is typical of the Old Red Sandstone found in the Wye Valley, although around Ross-on-Wye the geology does change to St Maughans formation.

4.3 Vegetation

All of the fields have been ploughed and cultivated, so there is little natural vegetation within them other than along the headlands. There is a good range of grasses including cock's foot, false oat grass, annual and rough meadow grass, common and creeping bent, timothy, rye grass, red fescue, meadow foxtail, and common couch grass with no one species dominating. Widespread forbs include creeping buttercup, red and white clover, ribwort plantain, field bindweed, cleavers, scentless mayweed, hedge parsley, creeping thistle, hogweed, common stork's-bill and common cat's-ear. More localised species include scarlet pimpernel, knapweed, field speedwell, dove's foot geranium, hoary plantain, common vetch, hop trefoil, daisy and bramble. Many of the fields had margins sown with maize in order to give a game cover strip.

The hedges are varied and are mainly composed of hawthorn with oak or ash as standard. Widespread shrubs include hazel, blackthorn, dogwood, field rose, elder and English elm. More localised species include Field maple, Guelder rose, sycamore and, along the edge of fields 10 and 11, a row of standard flowering cherry.

Although the range of hedgerow shrubs is wide, no hedge had sufficient diversity within the required 30m stretch to be classed as "important" under the hedgerow regulations, where the "average number of woody species" per hedgerow is calculated as follows:

- (a) where the length of the hedgerow does not exceed 30m, count the number of woody species present in the hedgerow;
- (b) where the length of the hedgerow exceeds 30m, but does not exceed 100m, count the number of woody species present in the central stretch of 30m;
- (c) where the length of the hedgerow exceeds 100m, but does not exceed 200m, count the number of woody species present in the central stretch of 30m within each half of the hedgerow and divide the aggregate by two;
- (d) where the length of the hedgerow exceeds 200m, count the number of woody species present in the central stretch of 30m within each third of the hedgerow and divide the aggregate by three.

See Appendix A for full details.

Two small strips of woodland are found on the western side of the farm. The first abuts Field 13 and is relatively recently planted. It is made up of sweet chestnut, larch, hawthorn ash and occasional holly, with an understorey dominated by hogweed and bramble. There are also approximately 6-7 beehives on the edge of the wood, each with a colony.

The second strip of woodland known as Callow Covert is a small scrubby copse that has been double fenced with the second fence at deer height. The undergrowth is dense particularly with nettle and bramble whilst the canopy is composed of ash, hazel, dogwood, hawthorn and larch. This covert was first apparent on the Ordnance Survey map of 1905.

4.4 Watercourses and Great Crested Newts

The ditches are shown on Map 5. Only two ditches, 1 and 2 were found within the survey site boundary.

Ditch 1 runs along the edge of Field 13 and Ayles Marsh. It has standing water of between 2-5 centimetres deep. The banks are shallow with a heavy growth of nettle on the southern bank and hedgerow on the northern bank.

The channel is very shaded with no aquatic vegetation.

Ditch 2 runs along the boundary between Homme Farm and Ball's Farm before running alongside the base of the disused railway before a culvert takes it underneath and it flows into the new wetland. At the time of survey, the ditch was running although the banks are shallow with a heavy growth of nettle and the channel is very shaded with no aquatic vegetation.

Ditch 3 runs from Cubberley towards the River Wye. The water is static and is between 0-5cm deep. There is no channel vegetation although there is some growth of duckweed. The banks are shallow and are heavily shaded by the thick boundary hedge. Some alder have fallen across the ditch forming bridges rather than dams. This links with Ditch 3 via an underground culvert or field drain.

Ditch 4 collects water from across the fields below Cubberley and has a slow to moderate flow, eventually voiding into the River Wye. It is a narrow ditch with deeply incised banks approximately 1.5m deep, thickly covered with nettles with no channel vegetation.

Ditch 5 runs parallel to the south-western edge of Field 13 to Callow Covert. It is a dry ditch with shallow banks and is heavily overgrown with nettles.

Ditch 6 collects water from Coughton Marsh and has a slow to moderate flow. Resembling Ditch 4, it has very steep, deep banks between 1.5 and 2m deep which are thickly covered in nettles with no channel vegetation. There is a small bridge across it for farm traffic which is made from a concrete culvert pipe set deep into the channel.

The new pond immediately in front of Homme Farmhouse has been planted with yellow flag, reed mace, gipsywort, hard rush, spearwort, sedges and fool's watercress. The plants are beginning to spread and it appears to be developing into a useful wetland habitat.

There is a large pond at Callow Farm immediately in front of the farmhouse in the garden. This is an established pond that has been there for many years and has yellow flag, sedges and a variety of flowering plants along its margins. However, there was no access to survey as it is outside the farm boundary.



Map 5. The Ditches

Great crested newts

On checking on the National Biodiversity Network (NBN) there are known records for two Great Crested Newt sites, one at Walford and the other at Ross on Wye. Both of these sites are more than 1km from any watercourse noted above with no known watercourses or areas of static water in-between. HBRC have no records for Great Crested Newts within the area.

4.5 Badgers

One annex badger sett was seen, which is just inside the boundary of Hill
Court, thus outside the farm boundary, see Map 5. This is comprised of three partially used holes situated immediately above the polytunnels in Field 13 in an area of banked woodland with some light scrubby undercover with many fallen branches and twigs. As the sett entrances are on private property outside the farm boundary, an accurate inspection was not possible and thus there could well be a greater number of entrances than quoted above. No latrines were seen, but some snuffle holes were seen along part of the headlands. However, no setts were found on the farm itself.

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 that would typically be seen on farmland, along hedgerows and woodland edges. The Table 3 details each species recorded during all of the surveys. See Appendix A for conservation concern definitions.

Species	Latin name	Activity	Concern
Blackbird	Turdus merula	A common breeding and	
		resident species across the site.	
Blackcap	Sylvia atricapilla	A common resident of the	
		hedgerows.	
Blue tit	Parus caeruleus	A common breeding and	
		resident species across the site.	
Buzzard	Buteo buteo	Hunting over site.	
Carrion Crow	Corvus corone	Seen feeding on site	
Chaffinch	Fringula	A resident breeding bird across	
	coelebs	the site	
Coal tit	Parus ater	A resident breeding bird across	
		the site.	
Dunnock	Prunella	Frequently seen in the	BoCCA
	modularis	hedgerows.	
Goldfinch	Carduelis	A resident breeding bird across	
	carduelis	the site	
Great tit	Parus major	A common breeding and	
		resident species across the site.	
Green	Picus viridis	Seen feeding on the site	SPEC2,
Woodpecker			BoCCA
Greenfinch	Carduelis	Seen frequently across the site	
	chloris		
House sparrow	Passer	Occasionally seen feeding on	SPEC3,
	domesticus	site	BoCCR
Jay	Garrulus	Seen feeding on site	
100	glandarius		
Kestrel	Falco	Recorded hunting over the site.	SPEC3,
	tinnunculus		BoCCA

Table 3. Bird species

Magpie	Pica pica	A resident breeding bird across the site	
Mallard	Anus platyrhynchos	On pond in front of farmhouse	
Mistle thrush	Turdus viscivorus	Seen feeding on site	SPEC3, BoCCA
Mute swan	Cygnus olor	60+ seen feeding on the fields adjacent to the river	
Partridge	Alectoris rufa	Feeding in cut grass	
Pheasant	Phasianus colchicus	Commonly seen feeding on the site.	
Pied wagtail	Motacilla alba	Seen on farmyard margin	
Robin	Erithacus rubecula	A common breeding and resident species across the site.	
Rook	Corvus frugilegus	Rookery on the periphery of the site	
Skylark	Alauda arvensis	Territories on cereal and grass areas	SPEC3, UKBAP BoCCR
Song thrush	Turdus philomelos	Seen feeding on site	BoCCR
Sparrowhawk	Accipiter nisus	Hunting over site	
Starling	Strunus vulgaris	A resident breeding bird across the site	BoCCR
Swallow	Hirundo rustica	Frequently seen foraging across the site	SPEC3 BoCCA
Swift	Apus apus	Frequently seen foraging across the site	
Whitethroat	Sylvia communis	A common resident of the hedgerows.	
Woodpigeon	Columba palumbus	Commonly seen feeding on the site.	
Wren	Troglodytes troglodytes	A common resident of the hedgerows.	
Yellowhammer	Emberiza citrinella	Seen feeding on site	BoCCR

5.0 IMPACT ASSESSMENT

This section examines any possible environmental impacts (temporary and permanent) that are likely to occur as a result of the use of polytunnels with the Table Tops system at Homme Farm.

Overall, there will be no change in land management and crop rotation will continue to be practiced. The new pond in front of Homme Farm increases the wetland habitats on the farm and provides a useful stepping stone for any wetland birds using Coughton Marsh. Trickle irrigation systems are in place rather than sprayers to make best use of water. Polytunnel coverings are recycled 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 4.

Attribute	Impact	Positive	Adverse
Vegetation	None, no change from current use	A greater diversity due to field margin enhancement	
Hedges	None, no change from current use	Through management, enhanced habitat	
Water bodies & GCN	None, no change from current use	Through management, enhanced habitat	
Badgers	None		
Birds	None	Through hedge management, enhanced habitat	
Reptiles	None	Through management, enhanced habitat	

Table 4. Summary of impacts

6.0 MITIGATION

The objective of this section is to advise suitable mitigatory procedures for nature conservation without interfering with the running of the farm as a business enterprise.

Thus the main issues are to develop management techniques to improve the wildlife values of the hedgerows and wetter areas of the site and proposals to restore former ancient field boundaries and hedgerows.

It is proposed that the existing hedgerows are managed to return them to a suitable condition. The majority of the hedges are made up of hawthorn and berries are an important winter food supply for a wide range of farmland bird and small mammal species. Hawthorn produce berries on second year growth. Thus hedges that are left uncut for one year or more produce many more berries than annually-trimmed hedges. Most hawthorn berries are generally removed by early December. In this case hedge cutting in February will enable berries to be eaten, but will reduce flowering for that year. Thus trimming on a biennial basis will keep hedges bushy and productive; however they must be cut at the same time each year. It is recommended that the hedges are cut on a patchwork basis, i.e. half cut one year and the rest the next.

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. September cutting significantly reduces availability of these berries in the autumn. Management practice may 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. In some cases, annually cutting in February also appears to be particularly beneficial for invertebrates.

In places where hedgerow has recently been lost, it is proposed that the habitat is replanted. Replanting has been carried out along lines of former hedgerow in Fields 4 and 5, and has taken well. The two field boundaries that have been re-instated in Field 3 have also taken well and will soon attain their required height.

It is also proposed that a proportion of non-cropped land should be left as natural areas and managed, not only for wildlife but also to protect the crop from pest and disease outbreaks. Natural vegetation provides a reservoir of beneficial species for pest control. It also acts as buffer zones along ecologically sensitive areas, such as watercourses, preventing nutrient loss and soil erosion. In addition, it provides a refuge for wildlife during agricultural operations and can prevent weed invasion along field margins. This noncropped land can be made up of field margins, hedgerows, grass or herbaceous strips, ideally arranged to connect with one another and break up large blocks of crop that tend to be most vulnerable to disease and pest outbreaks.

A dense ground cover of grasses and perennials is required for many ground nesting birds such as partridge and pheasant. The best way to provide this is to develop a broad base to hedgerows of about 1 - 2m and against it a conservation headland made up of tall plants that give cover to chicks from weather and predators. Using a wild bird seed mixture against the nesting cover is ideal.

A further recommendation would be to erect owl boxes in some of the larger hedgerow trees, particularly around Field 13. Although no signs of owls were seen, the habitat is suitable for them and there are plenty of areas for them to forage in.

7.0 CONCLUSIONS

The farm consists of a matrix of hedgerows with valuable open farmland between. The hedgerows form valuable route-ways for movement between woodland patches and provide shelter from predation for small mammals and invertebrates. Comparison with the results of the previous surveys indicates that the farm has maintained a level of biodiversity. Through sympathetic management, the hedgerows and the habitats across the farm such as the ditches and headlands are beginning to show an increase in biodiversity with forbs such as Herb Robert, foxglove and red deadnettle becoming more apparent. Originally, most of the hedges had a relatively poor ground flora, and now many of the re-sown headlands have a good variety of meadow flowers. As this type of headland management is being continued across the farm, it will provide an extremely valuable resource for birds and invertebrates, as well as small mammals. An Ecological Management Plan has been developed to continue the habitat enhancement.

The survey has also identified that there is reasonable habitat available for birds, badgers and reptiles.

In respect of the badger population, on consultation with Natural England a licence for Agricultural operations will not be required, although it is recommended that a suitable buffer zone is applied by the sett entrances. Whilst there are no hard and fast rules as to the size of 'buffer zones' around retained setts, 30m is generally recognised as 'best practice' and is recommended by Harris *et al.*, 1994 in an RSPCA publication. This is frequently referred to by the licensing section at Natural England.

Overall, the farm is an important resource specifically for farmland and hedgerow animals and birds.

Homme Farm Table Tops Appendix B - Ecology Phase 1 Habitat Survey DLA 1419/ECO/Phase.1/rpt.1/June'12

> Appendix I Floral Species List

Floral species list by field

English name	Latin name	1	2	3	4	5	6	7	8	9	10	11	12	13
Alder	Alnus glutinosa								0					
Annual Meadow-														
grass	Poa annua	F	F	F	F	F	F	F	F	F	F	F	F	F
Annual														
Pearlwort	Sagina apetala	0	0	0	0	0	0	0	0	0	0	0	0	0
	Fraxinus													
Ash	excelsior	0	0	F	F	F	F	F	F	F	F	F	F	F
Aspen	Populus tremula							0		0	0		-	
	Anisantha													
Barren Brome	sterilis	0	0	0	0	0	0	0	0	0	0	0	0	0
Beech	Fagus sylvatica				0	0	0	0	0	0	0	0	0	0
	Stachys													
Betony	officinalis	R	R	R	R	R	R	R	R	R	R	R	R	R
	Medicago													
Black Medick	lupulina	R	R	R	R	R	R	R	R	R	R	R	R	R
Blackthorn	Prunus spinosa	F	F	F	F	F	F	F	F	F	F	F	F	F
	Rubus													
Bramble	fruticosus				0	0	0	0	0	0	0	0	0	0
Bristly Oxtongue	Picris echioides	R	R	R	R	R	R	R	R	R	R	R	R	R
Broad-leaved	Rumex													
Dock	obtusifolius	F	0	0	0	0	0	0	0	0	0	0	0	0
	Hypochaeris													
Cat's-ear	radicata	R	R	R	R	R	R	R	R	R	R	R	R	R
Charlock	Sinapis arvensis	R	R	R	R	R	R	R	R	R	R	R	R	R
Cherry	Prunus avium		R		R	R	R	R	R					
		_		_	_	_	_	_		_	_	_		_
Cleavers	Galium aparine	F	F	F	F	F	F	F	F	F	F	F	F	F
Cook's foot	Dactylis	E	F	F	E	E	E	E	E	E	E	E	F	-
COCK S-1001	Agrostis	F	Г	Г	Г	Г	Г	Г	Г	Г	Г	Г	Г	г
Common Bent	capillaris	F	F	F	F	F	F	F	F	F	F	F	F	F
Common Bird's	Lotuo													
foot-trefoil	corniculatus	R	R	R	R	R	R	R	R	R	R	R	R	R
	sonnouldus		IX.	IX.							IX.	IX.	IX .	
Common	Stolloria modia			Б	В	В	Б	Р	Б	Б	Б	В		
Chickweed		R	R	ĸ	R	ĸ	R	ĸ	ĸ	ĸ	ĸ	ĸ	ĸ	ĸ
Common	Symphytum	_							_					
Comfrey	officinale	R				-			R					

Common Couch	Elytrigia repens	0	0	0	0	0	0	0	0	0	0	0	0	0
Common														
Cudweed	Filago vulgaris	R	R	R	R	R	R	R	R	R	R	R	R	R
Common Dog-														
violet	Viola riviniana	R												
Common Field-	Veronica													
speedwell	persica	R	R	R	R	R	R	R	R	R	R	R	R	R
Common	Fumaria													
Fumitory	officinalis						А							
Common Ivy	Hedera helix	0			0	0	0	0	0	0	0	0	0	0
Common														
Knapweed	Centaurea nigra		0						F	F				
Common Mallow	Malva sylvestris	0	0	0	0	0	0	0	0	0	0	0	0	0
Common	Cerastium													
Mouse-ear	fontanum	R	R	R	R	R	R	R	R	R	R	R	R	R
Common Nottle	Urtico dicico	0	0	0	0	0	0	0	0	0	0	0	0	
Common Nettie	Unica dioica	0	0	0	0	0	0	0	0	0	0	0	0	0
Common Poppy	Papaver rhoeas	0	0	0	0	0	0	0	0	0	0	0	0	0
Common	Erodium													
Stork's-bill	cicutarium	0	0	0	0	0	0	0	0	0	0	0	0	0
Common Vetch	Vicia sativa	0	0	0	0	0	0	0	0	0	0	0	0	0
	Anthriscus													
Cow Parsley	sylvestris			0		0		0		0		0		
Crack-willow	Salix fraqilis	R							R					
	Aarostis													
Creeping Bent	stolonifera	ο	0	0	0	0	0	0	0	0	0	0	0	0
Creeping	Ranunculus													
Buttercup	repens	0	0	0	0	0	0	0	0	0	0	0	0	0
Creeping Thistle	Cirsium arvense	0	0	0	0	0	0	0	0	0	0	0	0	0
Curled Dock	Rumex crispus	0	0	0	0	0	0	0	0	0	0	0	0	0
Cut-leaved	Geranium													
Crane's-bill	dissectum	0	0	0	0	0	0	0	0	0	0	0	0	0
Daisy	Bellis perennis	0	0	0	0	0	0	0	0	0	0	0	0	0
Dandelion	Taraxacum agg.	0	0	0	0	0	0	0	0	0	0	0	0	0
Dove's-foot														
Crane's-bill	Geranium molle	0	0	0	0	0	0	0	0	0	0	0	0	0
Elder	Sambucus nigra	F	F	F	F	F	F	F	F	F	F	F	F	F
Faslish Fly	1.11	_	_	_	-	-	_	-	-	_	-	-	-	_
English Elm	Olmus procera	F	F	F	F	F	F	F	F	F	F	F	F	F

	Arrhenatherum													
False Oat-grass	elatius	0	0	0	0	0	0	0	0	0	0	0	0	0
	Chenopodium													
Fat-hen	album	R	R	R	R	R	R	R	R	R	R	R	R	R
	Convolvulus													
Field Bindweed	arvensis	0	0	0	0	0	0	0	0	0	0	0	0	0
Field Maple	Acer campestre	F	F	F	F	F	F	F	F	F	F	F	F	F
Field-rose	Rosa arvensis	F	0	0	0	0	0	0	0	0	0	0	0	0
Fool's-water-	Apium													
cress	nodiflorum	R												
	Digitalis													
Foxglove	purpurea							0						
Garlic Mustard	Alliaria petiolata	R	R	R	R	R	R	R	R	R	R	R	R	R
Goat Willow	Salix caprea				R	R	R	R						
	Tragonogon													
Goat's beard	nratensis	P	P	P	P	P	P	P	P	P	P	P	P	P
Goal S-Deald	praterisis	K	N	K	K	N	N	K	N	N	N	K	N	N
Good-King-	Chenopodium													
Henry	bonus-henricus	0	0	0	0	0	0	0	0	0	0	0	0	0
	Verbascum													
Great Mullein	thapsus											R		
Great	Epilobium													
Willowherb	hirsutum	R												
			_	_	_	_	_	_	_	_	_	_	_	_
Greater Plantain	Plantago major	R	R	ĸ	ĸ	ĸ	ĸ	R	ĸ	ĸ	ĸ	ĸ	ĸ	ĸ
Groundsel	Senecio vulgaris	R	R	R	R	R	R	R	R	R	R	R	R	R
Hairy Bitter-	Cardamine													
cress	hirsuta	0	0	0	0	0	0	0	0	0	0	0	0	0
Hawkweed	Picris													
Oxtongue	hieracioides	R	R	R	R	R	R	R	R	R	R	R	R	R
	Crataegus										- 210			
Hawthorn	monogyna	A	A	А	A	A	А	A	A	A	A	A	А	A
	Corvlus													
Hazel	avellana	Δ	Α	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
Hedge	Calvstegia						7.							
Rindweed	senium	P	P	P	P	P	P	P	P	P	P	P	Þ	P
Dingweed	Sopiali		IX	IX.							IX .			IX.
	Geranium													
Herb-Robert	robertianum											0		
Hoary Plantain	Plantago media	0	0	0	0	0	0	0	0	0	0	0	0	0
	Heracleum													
Hogweed	sphondylium	0	0	0	0	0	0	0	0	0	0	0	0	0

Holly	llex aquifolium	R								R				
	Lonicera													
Honeysuckle	periclymenum								0					
	Trifolium													
Hop Trefoil	campestre	R	R	R	R	R	R	R	R	R	R	R	R	R
Lesser Burdock	Arctium minus	R	R	R	R	R	R	R	R	R	R	R	R	R
	Alopecurus													
Meadow Foxtail	pratensis	R	R	R	R	R	R	R	R	R	R	R	R	R
	Artemisia													
Mugwort	vulgaris	0	0	0	0	0	0	0	0	0	0	0	0	0
	Louconthomum													
Ovovo Dojov	Leucanmennum		0						~					
Oxeye Daisy	Antonoo		0			-			0					
Development	Apnanes	_	_	_		_	_	_	_	_	_		_	_
	arvensis	R	ĸ	ĸ	ĸ	ĸ	R	R	ĸ	ĸ	ĸ	ĸ	R	ĸ
Pedunculate														
Oak	Quercus robur	0	0		0	0	0	0	0	0	0	0	0	0
Perennial Rye-														
grass	Lolium perenne	0	A	0	A	0	0	0	0	0	0	0	0	0
Perforate St	Hypericum													
John's-wort	perforatum	R								R	R	R	R	
	Matricaria													
Pineappleweed	discoidea						0							
Prickly Sow-														
thistle	Sonchus asper	0	0	0	0	0	0	0	0	0	0	0	0	0
Procumbent	Sagina													
Pearlwort	procumbens	R	R	R	R	R	R	R	R	R	R	R	R	R
Red Campion	Silene dioica											R	R	R
	Trifolium													
Red Clover	pratense	0	0	0	0	0	0	0	0	0	0	0	0	0
Red Fescue	Festuca rubra	0	0	0	0	0	0	0	0	0	0	0	0	0
	Persicaria													
Redshank	maculosa	0	0	0	0	0	0	0	0	0	0	0	0	0
	Plantago													
Ribwort Plantain	lanceolata	0	0	0	0	0	0	0	0	0	0	0	0	0
Devel March		-												
Rougn Meadow-		-		-	_	-	-	-	-	-		_	_	
grass	Poa trivialis	0	0	0	0	0	0	0	0	0	0	0	0	0
Scarlet	Anagallis			1.0										
Pimpernel	arvensis	0	0	0	0	0	0	0	0	0	0	0	0	0
Scentless	Tripleurospermu													
Mayweed	m inodorum	F	F	F	F	F	F	F	F	F	F	F	F	F

Silver Birch	Betula pendula			R										
Smooth Sow-	Sonchus													
thistle	oleraceus	R	R	R	R	R	R	R	R	R	R	R	R	R
Spear Thistle	Cirsium vulgare	0	0	0	0	0	0	0	0	0	0	0	0	0
Spindle	Euonymus europaeus	R												
	Euphorbia													
Sun Spurge	helioscopia	R	R	0	0	0	0	0	0	0	0	0	0	0
	Acer													
Sycamore	pseudoplatanus		0	0							0			
	Phleum													
Timothy	pratense	0	0	0	0	0	0	0	0	0	0	0	0	0
Tufted Vetch	Vicia cracca	0	0	0	0	0	0	0	0	0	0	0	0	0
Upright Hedge-														
parsley	Torilis japonica			0		0		0		0		0		
	Hordeum													
Wall Barley	murinum	R	R	R	R	R	R	R	R	R	R	R	R	R
	Viburnum													
Wayfaring-tree	lantana	0	0	0	0	0	0	0	0	0	0	0	0	0
White Bryony	Bryonia dioica	0	0	0	0	0	0	0	0	0	0	0	0	0
White Campion	Silene latifolia	0	0	0	0	0	0	0	0	0	0	0	0	0
White Clover	Trifolium repens	0	0	0	0	0	0	0	0	0	0	0	0	0
White Dead-														
nettle	Lamium album	0	0	0	0	0	0	0	0	0	0	0	0	0

Homme Farm Table Tops Appendix B - Ecology Phase 1 Habitat Survey DLA 1419/ECO/Phase.1/rpt.1/June'12

Appendix II

Citations for Statutory Sites

COUNTY: HEREFORD & WORCESTER SITE NAME: COUGHTON WOOD & MARSH

DISTRICT: SOUTH HEREFORD

SITE REF: 15WD7

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended

Local Planning Authority: HEREFORD & WORCESTER COUNTY COUNCIL, South Hereford District Council

National Grid Reference: SO 590211	Area: 1.2 (ha.) 3.0 (ac.)
Ordnance Survey Sheet 1:50,000: 162	1:10,000: SO 52 SE
Date Notified (Under 1949 Act): -	Date of Last Revision: -
Date Notified (Under 1981 Act): 1986	Date of Last Revision: -

Other Information:

Within the Wye Valley 'Area of Outstanding Natural Beauty'. Part owned and managed as a nature reserve by The Herefordshire and Radnorshire Nature Trust. New site.

Description and Reasons for Notification:

The woodlands of the lower Wye Valley form one of the most important areas for woodland conservation in Britain, comparable with the Caledonian pine-woods, the oceanic oakwoods of Western Britain, the New Forest and the mixed coppices of East Anglia. Unlike most other regions, semi-natural woodland is abundant and virtually continuous along the gorge. The woods are a mixture of many types, some of which are very localised, eg the lime-sessile oak stands on limestone, beech stands on both acid and alkaline soils in which lime *Tilia* sp., elm *Ulmus* spp., oak *Quercus* spp. and other species share dominance. Most woods are a rich mixture of stand types which are believed to be similar in composition to the original natural woods of the valley. Many rare and local species are present, including some of the rarest native tree species, eg large-leaved lime *Tilia platyphyllos*, whitebeams *Sorbus* spp. and trees close to the edge of their European range, eg hombeam. *Carpinus betulus* and beech *Fagus sylvatica*. Furthermore these woods sit in a matrix of unimproved grassland and other semi-natural habitats which, together with the woods, make the Wye Valley one of the most diverse, rich and attractive areas in southerm Britain.

Coughton Wood has been selected as the largest remaining example of alder *Almus* glutinosa woodland, which is one of the rarest types of woodland represented in the Wye Valley.

The site lies on the rich, neutral to alkaline alluvial soils of the river valley near Ross on Wye. The woodland is dominated by alder, which is traditionally coppiced. Other tree species include ash *Fraximus excelsior*, silver birch *Betula pendula*, downy birch *B. pubescens*, and grey willow *Salix cinerea*. The woodland also contains a variety of native shrubs including spindle *Euonymus europaeus*, dogwood *Cornus sanguinea* and blackcurrant *Ribes nigrum*.

Associated with the woodland is a small area of marsh which is a surviving fragment of the once extensive Coughton Marsh. Prior to its drainage and agricultural reclamation this was one of the most important marshland sites in Herefordshire. The marsh, which extends into the coppice woodland, supports a rich flora including such characteristic species as marsh marigold *Caltha palustris*, yellow iris *Iris pseudacorus*, marsh valerian *Valeriana dioica* and pendulous sedge *Carex pendula*. In the drier parts of the site devil's-bit scabious *Succisa pratensis* and early-purple orchid *Orchis mascula* occur.

COUNTY: HEREFORD AND WORCESTER/ File Ref: S055/4

GLOUCESTERSHIRE/MONMOUTHSHIRE/POWYS

SITE NAME: RIVER WYE (LOWER WYE) AFON GWY (GWY ISAF) SDdGA

STATUS: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981, as amended.

LOCAL PLANNING AUTHORITIES:

Hereford and Worcester County CouncilGloucestershire CountyCouncil Powys County CouncilMonmouthshire County Council Leominster District CouncilSouth Herefordshire District Council Forest of Dean District CouncilHereford City Council

NATIONAL GRID REFERENCES:

ST544912 - SO230429

Area:

England:	1159.6 ha	1571
Wales:	245.2 ha	157 km
Total:	1404.8 ha	

ORDNANCE SURVEY SHEETS:

1:50,000: 148,149,162

1:10,000:	SO63SW	ST59SW, NW	SO51SW, NW, SE, NE	SO43NE, NW
	SO62NW	SO53SE, NE, NW	SO50SW, NW	SO34SE, SW
	SO61NW	SO52SE, NE, NW	SO44SE, SW	SO24NE, NW, SW

DATE NOTIFIED (UNDER 1949 ACT):November 1978DATE NOTIFIED (UNDER THE 1981 ACT):November 1996Other informationNovember 1996

The River Wye is listed in 'A Nature Conservation Review' edited by D A Ratcliffe (1977), Cambridge University Press.

The site supports the following species and habitats covered by Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora :

Allis shad Alosa alosa Annex IIa, Va; Twaite shad Alosa fallax Annex IIa, Va; Sea lamprey Petromyzon marinus Annex IIa Brook lamprey Lampetra planeri Annex IIa River lamprey Lampetra fluviatilis Annex IIa, Va; Atlantic salmon Salmo salar Annex IIa, Va; Bullhead Cottus gobio Annex IIa Grayling Thymallus thymallus Annex Va; Common otter Lutra lutra Annex IIa, IVa; Atlantic stream crayfish Austropotamobius pallipes Annex IIa, Va; Freshwater pearl mussel Margaritifera margaritifera Annex IIa, IVa; Floating vegetation of Ranunculus of plane and submountainous rivers Annex I

Common otter, Atlantic stream crayfish and freshwater pearl mussel are also listed under Schedule 5 of the Wildlife and Countryside Act 1981, as amended.

The River Wye (Lower Wye) SSSI has been designated as a salmonid fishery under the EC Freshwater Fish Directive 78/659/EC. Part of the SSSI falls within the Wye Valley Area of Outstanding Natural Beauty (AONB). Within Powys the river lies within the Radnorshire Environmentally Sensitive Area (ESA).

The River Wye (Lower Wye) abuts the following SSSIs in England and Wales: the River Wye (Upper Wye); the River Lugg; Monnington Scar; the Upper Wye Gorge; Shorn Cliff and Caswell Woods; the Lower Wye Gorge; Pennsylvania Fields; Livox Wood; Pierce, Alcove and Piercefield Woods; Blackcliff-Wyndcliff and the Severn Estuary.

Description and Reasons for Notification

River Wye

Together the River Wye (Lower Wye) and the River Wye (Upper Wye) SSSIs and several of their tributaries represent a large, linear ecosystem which acts as an important wildlife corridor, an essential migration route, and a key breeding area for many nationally and internationally important species. The Wye is of special interest for its associated plant and animal communities. Its character spans a range of types from an upland base-poor stream to an estuarine, silty lowland river. The river's overall diversity is a product of its underlying geology, soil type, adjacent land use and near natural fluvio-geomorphological regime.

The River Wye forms one of the longest, near natural rivers in England and Wales. From its source to its confluence the main channel is 250kms long, drains a catchment of 4136km² and has the fourth largest flow of any river in

England and Wales. Rising at an altitude of 680m on Pumlumon Fawr in Powys the Wye meanders down through Wales, Herefordshire and Gloucestershire, finally entering the Severn Estuary at Chepstow.

River Wye (Lower Wye) (Hay on Wye to Chepstow)

The River Wye (Lower Wye) is a rare example of a near natural, large western eutrophic river which, unlike many rivers of a similar type, has not been subject to significant modification from human activities. The river is of special interest for three main aquatic plant community types - rivers on sandstone, mudstone and hard limestone, clay rivers and lowland rivers with minimal gradient, as well as for certain flowering plants and bryophytes.

The river shows a clear downstream succession in plant communities reflecting variations in geology, flow rate and land use. In particular the river exhibits a natural increase in dissolved minerals as it flows over the underlying geology of Old Red Sandstone and Carboniferous Limestone. Localised differences in water chemistry are also created where major tributaries, such as the River Lugg, enter the main channel. In its tidal reaches the river becomes increasingly saline as it nears its confluence with the Severn Estuary.

The invertebrate fauna (molluscs; beetles; mayflies; caddis flies; true flies and dragonflies) is characteristic of a large lowland river and is of special interest for species associated with riffles, river shingles and saltmarsh, river deadwood and bankside vegetation. The fish fauna includes, Atlantic salmon (*Salmo salar*), twaite shad (*Alosa fallax*), allis shad (*Alosa alosa*) and bullhead (*Cottus gobio*) as well as three species of lamprey (*Petromyzon marinus, Lampetra planeri* and *Lampetra fluviatilis*) which are all of European importance and are listed on Annex II of the EU Habitats & Species Directive. The site is also of international importance for its Atlantic stream crayfish (*Austropotamobius pallipes*), common otter (*Lutra lutra*) and beds of water crowfoot (*Ranunculus* spp.).

Whilst not a special feature of the site, there is a good range of breeding birds associated with riverine habitats.

The SSSI incorporates adjacent areas of riparian habitat including wet woodland, marshy grassland, reed beds and topographical features which directly support the special interest of the river.

Geology and Topography

The catchment of the Lower Wye is 2513km² in area and is predominately low lying, the Radnor Forest and Black Mountains being the most significant upland areas within it. The river is thus lowland in character, meandering across a flood plain up to 2km wide and falling from 72m AOD at Hay-on-Wye to sea level over a distance of 157km.

Between Hay-on-Wye and Goodrich the River Wye (Lower Wye) flows over a Lower Old Red Sandstone substrate composed of sandstones and marls with occasional limestone bands. The river bed is comprised of gravels, silt and occasional boulders. Below Goodrich it enters the Wye Valley Gorge. Here the river flows over Carboniferous Limestone outcrops, cutting near- vertical cliffs

within a restricted floodplain. Over thousands of years land level rise relative to sea level fall has caused the channel to become incised, leaving distinct shelves of land like that at Livox Quarry. The floodplain widens where major tributaries, such as the Trothy and Monnow, join the main channel before the river re-enters the Wye Valley Gorge again with its vertical limestone cliffs and more gentle sandstone and mudstone slopes.

In the lower parts of the Wye Gorge the river becomes tidal and brackish and there is a gradual transition to estuarine conditions. Bedrock and boulders commonly constitute the bank and bed material but are usually overlain with silty alluvium. At Chepstow dramatic vertical cliffs have been cut through the limestone. Between Chepstow and the Severn Estuary the river flows over Triassic Mercia mudstones which eventually give way to the alluvium of the Severn coastal plain.

The River Wye (Lower Wye) has a relatively natural fluvio-geomorphic regime and has remained relatively free from man-made straightening, widening and deepening schemes. The upper and middle sections are active, migrating meanders depositing shingle point bars and islands, and cutting vertical faces into the banks. The pattern of meander loops along the entire length of the river is complex, steep outer slopes contrasting with shallow slip-off slopes.

In many places, increased gradients expose extensive gravel substrates over which the river forms complex pool and riffle sections. Few examples of oxbow lakes and active back channels remain adjacent to the river.

Flora

In its upper and middle reaches the river channel is dominated by submerged flowering plants such as spiked water milfoil (*Myriophyllum spicatum*) and beds of water crowfoot (*Ranunculus fluitans*). Other common plants include rigid hornwort (*Ceratophyllum demersum*) and perfoliate pondweed (*Potamogeton perfoliatus*). Rare aquatic species include whorled water milfoil (*Myriophyllum verticillatum*). In the lower reaches of river through the Wye Gorge, the calcium and nutrient content of the water increases. Here, aquatic vegetation is mainly comprised of pondweed species such as fennel pondweed (*Potamogeton pectinatus*) and curled pondweed (*P crispus*). Aquatic macrophytes disappear below the tidal limit at Brockweir and marginal vegetation is often absent or much reduced below this point due to tidal scour. However, some species thrive along the transition zone between brackish and freshwater conditions where large areas of mud are exposed at low tide.

Marginal vegetation often consists of reed canary-grass (*Phalaris arundinacea*) and branched bur-reed (*Sparganium erectum*). Other marginal plants such as amphibious water bistort (*Polygonum amphibium*), brooklime (*Veronica beccabunga*), yellow-cress (*Rorripa* spp.) and water forget-me-not (*Myosotis scorpioides*) are widespread and frequent. (The nationally scarce horse-tail (*Equisetum x litorale*) is found growing along the margins of the river in its upper section). Below Brockweir the upper mud banks of the river are colonised by salt-marsh species such as sea aster (*Aster tripolium*), saltmarsh-grass (*Puccinellia* spp.) and sea-milkwort (*Glaux maritima*).

Characteristic bankside plants include stinging nettle (Urtica dioica), great willowherb (Epilobium hirsutum) and reed canary-grass (Phalaris arundinacea).

Locally the river bank vegetation can be diverse containing species such as common black knapweed (*Centaurea nigra*) and comfrey (*Symphytum* spp.). A number of rare and restricted species occur along the river banks, including common meadow-rue (*Thalictrum flavum*), meadow saxifrage (*Saxifraga granulata*) and chives (*Allium schoenoprasum*). The latter species grows in deep crevices in riverside outcrops and bedrock. Along wooded brackish reaches of the river, the banks become almost entirely dominated by stands of couch grass (*Elytrigia repens*).

The riverbank is frequently tree lined. Willows (*Salix* spp.) are common along the upper and middle sections whilst alder (*Alnus glutinosa*) and ash (*Fraxinius excelsior*) become more frequent in the lower reaches. Sycamore (*Acer pseudoplatanus*) is widespread along the length of the river.

The adjacent land use through the Hereford Plain is dominated by mixed farming with occasional oak (*Quercus* spp.), ash and sycamore woodland running down to the river. Below Goodrich the river enters the Wye Valley Gorge cutting through a landscape of permanent pasture and steep woodlands before flowing through the coastal grassland plain and entering the Severn Estuary.

Mammals

The common otter (*Lutra lutra*) is widespread along the length of the river where appropriate bankside cover exists. The roots of mature bankside trees are often used as otter holts. Water voles (*Arvicola terrestris*) can be found along the middle sections of the river.

The bankside tree cover provides valuable feeding and roosting habitats for several bat species including the greater horseshoe (*Rhinolophus ferrumequinum*) and Daubenton's bat (*Myotis daubentonii*).

Invertebrates

The River Wye's invertebrate community is characteristic of a large lowland river. Several invertebrate species associated with such conditions include the nationally rare mayfly (*Potamanthus luteus*) and the caddis fly (*Hydroptila lotensis*) together with the nationally scarce stonefly (*Brachyptera putata*) and the club-tailed dragonfly (*Gomphus vulgatissimus*). Through the middle reaches of the river the black-tailed skimmer (*Orthetrum cancellatum*) breeds on the north western edge of its distribution. The thick emergent fringes of vegetation on the banks provide cover and breeding habitat for the white-legged damselfly (*Platycnemis pennipes*).

The river is of high invertebrate interest for species associated with riffle, shingle and saltmarsh habitats. Of particular interest are the riffle beetles (*Normandia nitens*) and (*Oulimnius major*) and the shingle beetle (*Neobisnius proxlixus*), all of which are nationally rare. Nine other nationally scarce beetles associated with these habitats have been recorded including (*Chaetocnema sahlbergi*) and (*Pogonus littoralis*), which are both found on saltmarsh.

Several nationally rare invertebrate species are associated with river dead wood such as the beetle (*Macronychus quadrituberculatus*) and the caddis flies (*Oecetis notata*). Other nationally rare species are associated with sandy river banks such as the cranefly (*Limonia omissinervis*).

Bankside trees and tall ruderal herbs provide ideal habitat for five nationally scarce species of moth, including the waved carpet (*Hydrelia sylvata*) and the micro moth (*Mompha langiella*).

All six British species of unionid mussels occur on the river, including the scarce depressed river mussel (*Pseudanodonta complanata*). This is believed to be a unique assemblage in Britain. The nationally rare snail (*Pseudamnicola confusa*) is also present and is restricted to the saline reaches of the river.

Fish

The river has a wide range of migratory and non-migratory fish species. The most abundant coarse species include chub (*Leuciscus cephalus*), dace (*Leuciscus leuciscus*) and pike (*Esox lucius*) which together with roach (*Rutilus rutilus*) and perch (*Perca fluviatilis*) are the most widely distributed fish along the river. Species such as tench (*Tinca tinca*) and ruffe (*Gymnocephalus cernua*) are restricted to the lower reaches.

Sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*), twaite shad (*Alosa fallax*) and the very rare allis shad (*Alosa alosa*) all migrate into the river each year from the Severn Estuary and spawn at various localities along its length. Large numbers of elvers (*Anguillia anguillia*) migrate up the river with the spring high tides. The river also supports internationally important populations of brook lamprey (*Lampetra planeri*) and bullhead (*Cottus gobio*).

Several game fish species including grayling (*Thymallus thymallus*), brown trout (*Salmo trutta fario*) and sea trout (*Salmo trutta trutta*) breed and migrate along the River Wye (Lower Wye). Important numbers of Atlantic salmon (*Salmo salar*) migrate up the main channel in order to reach spawning grounds in the headwaters of the Wye.

Birds

The River Wye (Lower Wye) supports a varied assemblage of breeding birds associated with rivers. Several species including the mute swan (*Cygnus olor*) and coot (*Fulica atra*) are associated with its slow flowing reaches and breed along the length of the river. However, species associated with upland streams and rivers such as dipper (*Cinclus cinclus*) and grey wagtail (*Motacillia cinerea*) also breed along the faster flowing sections, especially where rapids occur. Sedge warbler (*Acrocephalus schoenobaenus*) and reed bunting (*Emberiza schoeniclus*) breed in riparian habitat along the river banks.

Extensive shingle shoals provide suitable breeding habitat for the little ringed plover (*Charadrius dubius*) whilst vertical banks provide nesting sites for the sand martin (*Riparia riparia*) and kingfisher (*Alcedo atthis*). Goosanders (*Mergus merganser*) are present throughout most of the year. The tidal reaches of the river support breeding shelduck (*Tadnora tadorna*) and an established heronry.

Occasional low lying, wet areas of land adjacent to the river support breeding wader species including snipe (*Gallinago gallinago*) and lapwing (*Vanellus vanellus*), whilst common sandpiper (*Actitis hypoleucos*) is widely distributed along the length of the river.

Appendix C

Evaluation of Terrestrial and Freshwater Ecological Receptors

Evaluation of Terrestrial and Freshwater Ecological Receptors

This appendix provides information pertinent to the evaluation of habitats and species as identified in the main report. The evaluation has been undertaken in accordance with IEEM (2006) guidance.

Terrestrial Habitats

Introduction

Terrestrial habitats within the study area have been evaluated based on the criteria set out in Table 1 as found in the Ecology and Nature Conservation report. The evaluation involves the consideration of:

- · Conservation status or designation of the habitat (if any),
- Local Biodiversity Action Plan (LBAP) or Local Habitat Action Plan (LHAP) status, and
- The presence of rare or LBAP species.

Evaluation of Conservation Sites and Habitat Types

Statutory Sites

There are no Statutory Sites identified in the study area but the River Wye (SAC) forms a boundary to the farm; this habitat is assessed as being of International ecological value.

Non-statutory Sites

There is a single non-statutory site within the farm boundary SO52/17. The site is an old disused railway line with an embankment along the majority of its length. This habitat is assessed as being of County level ecological value.

Ancient Woodland

There are no areas of Ancient Woodland identified in the study area.

Agricultural land

The majority of the study area is arable land, dominated by cereal and oilseed rape, turf, new orchards and soft fruit production. Due to their low species diversity with monoculture crops and swards, these habitats are assessed as being of Parish level ecological value.

Water

There are several ditches within the study site. None of them are covered by a statutory or non-statutory designation. Due to their low species diversity these habitats are assessed as being of Parish level ecological value.

Terrestrial Fauna

Badgers

Badgers are widespread within Herefordshire and the local area. The survey has established that badgers forage across the site, but that there are no setts.

To form a social group badgers require habitat where they can excavate their main sett and successfully forage. The quality of foraging habitat will determine the number of badgers within a social group. The density of social groups is governed by a combination of suitable sett-making habitat and suitable foraging habitat within the landscape as a whole. Good sett making and good foraging habitat results in densely distributed social groups with small territories and a high overall badger population.

Overall the area is assessed as being of District level ecological value.

Bats

Bats are believed to be present throughout the study area. The habitat's suitability to support bat populations has been assessed using potential activity; that is bat activity which the habitat is considered able to support. It must be borne in mind that bats are highly mobile and may travel many kilometres each night between roosts and foraging areas and even further to suitable hibernation or summer roosts. Different species and groups within species are likely to overlap geographically, thus the habitat was evaluated as a whole rather than as individual areas.

Records from the NBN indicate that there are seven species of bat that have been identified in the 5 km surrounding the study area which are Brown Long-Eared Bat (*Plecotus auritus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Daubenton's Bat (*Myotis daubentonii*), Greater Horseshoe (*Rhinolophus ferrumequinum*), Lesser Horseshoe (*Rhinolophus hipposideros*), Natterer's bat (*Myotis nattereri*), Noctule (*Nyctalus noctule*), Serotine (*Eptesicus serotinus*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*).

Thus the likely presence of these bats, some of which are UKBAP priority species i.e. Brown long-eared, Greater and Lesser Horseshoe, Noctule and Soprano pipistrelle bats, and the presence of features that are considered to support bats at vulnerable stages of their lifecycles, e.g. hibernation, have resulted in the area being assessed as being of Regional level ecological value.

Dormouse

Dormice are protected under Appendix 3 of the Bern Convention and Annex IVa of the EC Habitats Directive. They are protected under Schedule 2 of the Conservation (Natural Habitats, &.) Regulations, 1994 (Regulation 38) and Schedule 5 of the WCA 1981Section 9(5) of the Wildlife and Countryside Act 1981 (as amended). The dormouse has become extinct in up to seven counties in England (comprising half its former range) in the past 100 years. Although dormice are still widespread in southern counties (Devon to Kent), they are patchily distributed. Population densities everywhere are less than ten adults per hectare, even in good habitats.

No evidence of dormice was recorded within the study area but they are known to be outside the site boundary and as the habitat appears to be suitable for them the area is assessed as being of Regional ecological value.

Birds

The biodiversity value of breeding birds was determined through reference to their conservation/legislative status and ecology, taking into account the distribution, population trend and rarity of each species. Table 1 shows an evaluation of breeding birds.

Table 1. Evaluation of breeding birds.

Species	Conservation status	Evaluation	Context
Blackbird Turdus merula	Green	Parish	Abundant throughout the UK
Blackcap Sylvia atricapilla	Green	Parish	Abundant throughout the UK
Blue tit Parus caeruleus	Green	Parish	Abundant throughout the UK
Buzzard <i>Buteo buteo</i>	Green	Parish	Abundant throughout the UK
Carrion Crow Corvus corone	Green	Parish	Abundant throughout the UK
Chaffinch Fringula coelebs	Green	Parish	Abundant throughout the UK
Coal tit Parus ater	Green	Parish	Abundant throughout the UK
Dunnock Prunella modularis	Amber	District	Common throughout the UK but recently in decline
Goldfinch Carduelis carduelis	Green	Parish	Abundant throughout the UK
Great tit Parus major	Green	Parish	Abundant throughout the UK
Green Woodpecker <i>Picus viridis</i>	Amber	District	Common throughout the UK but recently in decline
Greenfinch Carduelis chloris	Green	Parish	Abundant throughout the UK
House sparrow Passer domesticus	Red	County	Widespread throughout the UK but suffered serious recent declines
Jay Garrulus glandarius	Green	Parish	Abundant throughout the UK
Kestrel Falco tinnunculus	Amber	District	Common throughout the UK but recently in decline
Magpie	Green	Parish	Abundant throughout the UK

Pica pica			
Mallard	Green	Parish	Abundant throughout the UK
Anus			5
platvrhvnchos			
Mistle thrush	Amber	District	Widespread throughout the UK
Turdus viscivorus			but suffered serious recent declines
Mute swan	Green	Parish	Abundant throughout the UK
Cygnus olor			5
Partridge	Green	Parish	Abundant throughout the UK
Alectoris rufa			
Pheasant	Green	Parish	Abundant throughout the UK
Phasianus			
colchicus			
Pied wagtail	Green	Parish	Abundant throughout the LIK
Motacilla alba	oreen	1 dilbit	, ibundant in oughout the ort
Robin	Green	Parish	Abundant throughout the LIK
Frithacus	Green	T di ISIT	Abundant throughout the ok
rubecula			
Rook	Green	Parish	Abundant throughout the LIK
Conuis	Green	ransn	Abundant throughout the ok
frugilegus			
Skylark	Pad	County	Widespread throughout the LIK
Alguda aruonsis	neu	County	but suffered serious recent
Aluuuu urvensis			declines
Cong thruch	Deal	Country	Wideenreed throughout the UK
Song thrush	Red	County	but suffered serieus recent
Turaus			declines
Snormerus	Creen	Devieb	Abundant through out the LW
Sparrownawk	Green	Parish	Abundant throughout the UK
Accipiter hisus	Deal	Country	Mid
Starling	Red	County	widespread throughout the UK
Strunus vulgaris			declines
Constlant	Australia	District	German
Swallow	Amper	District	throughout the LIK dealing linked
Hirundo rústica			throughout the OK decline linked
			wintering and breading grounds
C!ft	Amelian	District	Wintering and breeding grounds
SWIL	Amber	District	widespread throughout the OK
Apus apus			declines
\A/h:tathuaat	Creati	Daviah	declines
Sulvia communi-	Green	Parish	Abundant throughout the UK
Sylvia communis	Creation	David	
Columba	Green	Parish	Abundant throughout the UK
Columba			
Wrop	Groop	Dariah	Abundant through out the UK
Tragle dute	Green	Parish	Abundant throughout the UK
trogloaytes			
Vallaut	Ded	Country	Mid-server at the server start start start
Fellownammer	кеа	County	widespread throughout the UK
Emperiza			put suffered serious recent
citrinella			aeclines

Based on the context and evaluation provided in Table 1, eleven species were selected for the impact assessment (Dunnock, Green woodpecker, House sparrow, Kestrel, Mistle thrush, Skylark, Song thrush, Starling, Swallow, Swift, and Yellowhammer). The selection of species was based on an evaluation of District area level ecological value or higher. For example, Dunnock is cited as a JNCC Amber List species owing to a recorded decline and should therefore be of County level ecological value. However, the population status of the species remains common and widespread throughout the UK and the study area and on this basis is assessed as being of District level ecological value.

Amphibians

Amphibians are protected under Section 9(5) of the Wildlife and Countryside Act 1981 (as amended). In addition, great crested newts (*Triturus cristatus*) are protected under Regulation 39 of the Conservation Regulations (Natural Habitats) 1994 (as amended), Annexes II and IV of the EC Habitats Directive and Appendix II of the Bern Convention. Great crested newts are widespread in the UK although they are declining in Europe.

No amphibians were seen but it is believed that the ditches could provide habitat for them; in this respect it is classed as being of Parish level ecological value.

Reptiles

No reptiles were recorded within the survey area. However, the habitat does appear to be suitable for them and, as such, the habitat is classed as being of Parish level ecological value.