

PROPOSED DEVELOPMENT OF A SOLAR PARK ON LAND AT BARNHAM COURT FARM, BARNHAM, WEST SUSSEX

Extended Phase 1 Habitat Survey

for

BL Solar 7 Limited

July 2015

THE Landmark
PRACTICE

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Landmark Ref: 2768

Client: BL Solar 7 Limited

This document was produced by Landmark under contract for BL Solar 7 Limited

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	Date	17.07.2015	20.07.2015	21.07.2015	21.07.2015

The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

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EXECUTIVE SUMMARY

The Landmark Practice was commissioned by BL Solar 7 Limited in April 2015 to assess the potential ecological impacts associated with a proposed 1 MW solar park on land at Barnham Court Farm, Barnham, West Sussex.

This report identifies and assesses the value of ecological receptors within and directly adjacent to the application site, and determines potential impacts arising from the proposed development. Where necessary, impact avoidance and/or mitigation/compensation measures are recommended along with opportunities for ecological enhancements. The following table summarises the key ecological issues arising from the proposed development and any mitigation and enhancement strategies proposed.

Methods	
Has a desk study been undertaken?	Yes. Sussex Biodiversity Records Centre were consulted. Information from the Countryside (MAGIC) website was accessed for designated sites within the application site and its immediate surrounding area. The Badger Trust West Sussex was also consulted for any badger records within 1 km of the site.
What ecological surveys have been undertaken?	The site was subject to an Extended Phase 1 Habitat Survey.
Desk Study Results	
Is the application site covered by a statutory or non-statutory designation?	No.
Are there any statutory or non-statutory designated sites located within 1 km of the application site?	No.
Are there any pre-existing survey/species records relating to the application site?	No.
Are any relevant species records (dated to within the last ten years) located within 1 km of the application site (4 km with respect to bats)?	Yes: • 7 species of plants listed on the Sussex Rare Species Inventory; • 6 species of bat (and additional unidentified species records); • Records of adjacent badger setts; • 1 record of brown hare; • 14 records of water vole; • Records for common lizard, slow worm, grass snake and adder; and • 5 red listed or schedule 1 listed species of bird. • 5 species of invertebrates listed as NERC Species of Principal Importance.
Field Survey Results	
Phase 1 Habitat types present <u>within</u> the application site	Poor semi-improved grassland and swamp.

Phase 1 Habitat types located <u>adjacent</u> to the application site	Broadleaved woodland, broadleaved plantation woodland, scrub, earth banks, standing water and running water.
Species actually/potentially present <u>within</u> the application site	• Bats (foraging/commuting); • Badger (foraging habitat);and • Reptiles.
Species actually/potentially located <u>adjacent</u> to the application site (in addition to the above)	• Badger setts; • Water vole; and • Nesting birds.
Evaluation	
What is the assessment of the site's overall value?	Site value.
Legally Protected Species	
Does the site provide resting/breeding sites for European Protected Species?	No.
Does the site provide habitat for other UK protected species?	Yes. Bats (foraging and commuting), badgers (foraging and commuting) and reptiles.
Habitats/Species of Principal Importance & LBAP Habitats/Species	
Does the site contain Habitats of Principal Importance/LBAP Priority Habitats?	No.
Does the site actually or potentially support Species of Principal Importance/LBAP Priority Species?	Yes. • Bats (foraging and commuting); • Hare; • Reptiles; and • Various bird species.
Impact Assessment	
What measures have been built into the design to avoid/minimise impacts?	Retention of key surrounding habitats including stream and woodland. A buffer will be incorporated between the construction area and surrounding habitat. The security fence will not be dug into the ground to allow continued access for badger (and other small mammals) within the solar farm.
What impacts will the proposed development have upon habitats (incl. Habitats of Principal Importance/LBAP Priority Habitats)?	There will be a small loss of grassland habitat from the footprint of the solar panels and ground cover at the maintenance track access point. The grassland will be reseeded, where required, with a suitable species rich grassland mix and the incorporation of landscape mitigation planting will enhance the sites diversity. These areas will be sensitively managed as part of the landscape mitigation proposals, which will result in long-term positive impacts on these habitats.

What impacts will the proposed development upon species (incl. legally protected species/Species of Principal Importance/LBAP Priority Species)?	There will be significant impacts on badgers if the proposed access track is used for construction vehicles. There are unlikely to be any other significant impacts. The buffer will avoid/reduce impacts on wildlife associated with the adjacent boundary habitats enabling wildlife to continue to forage, commute and/or breed in these parts of the site. The landscape mitigation proposals will provide positive long-term impacts for wildlife.
Proposed Mitigation and Compensation Measures	
Is mitigation/compensation proposed?	Yes. • Offset construction activities (including construction access track) from each badger sett by a minimum of 20 m or a licence from Natural England will be sought to close the affected setts with a suitable mitigation strategy; • Any trenches created during construction should be covered overnight or, alternatively, fitted with a rough sawn plank left with inclined ends to provide a means of escape should a badger or other wildlife fall in; • Pre-development check for badger activity; • To avoid impacts on reptiles works should be undertaken and completed during the winter months or the grassland kept short to discourage reptiles from using the area; • Any artificial lighting required during construction will be positioned to avoid light spill on boundary features and kept to as low a level as possible; • Following the Environment Agency's Pollution and Prevention Guidance Note 5; and • A buffer of at least 6 m will be kept between the adjacent retained boundary features and construction activities.
Ecological Enhancements	

Are ecological enhancements provided?	Yes. • To enhance roosting habitat within the area, bat boxes could be installed on a trees or poles within the application site boundaries; • Additional landscape mitigation planting to comprise native fruiting and flowering species for benefit of wildlife; • The buffer managed to create rough semi-improved grassland to enhance foraging, nesting/egg laying, basking and commuting opportunities for a range of wildlife species; • A hibernacula should be installed in an area of retained habitat to enhance the area for reptiles and amphibians; and • A sensitive long-term management plan should be prepared and implemented for the retained and enhanced habitats including the new hedgerow and field margins.
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Subject to the implementation of mitigation and enhancement measures discussed in **Section 7.0** of this report, this assessment concludes that the proposed development is capable of being accommodated without significant negative impacts on ecologically sensitive receptors within the application site. The enhancement measures proposed are likely to result in a range of benefits to the ecology of the local area, particularly through implementation of a dedicated, sensitive and appropriate management regime of habitats and features within the application site boundary.

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1.0 INTRODUCTION

Scope of Report

- 1.1 The Landmark Practice (TLP) was commissioned by BL Solar 7 Limited in April 2015 to assess the potential ecological impacts associated with the development of a photovoltaic (PV) power generating installation (a 'Solar Park') on agricultural land at Barnham Court Farm, Barnham, West Sussex.
- 1.2 This report has been prepared to inform a planning application for the above scheme. In this Preliminary Ecological Appraisal (PEA), the value of ecological receptors within and directly adjacent to the application site is identified and assessed. For each receptor, potential impacts arising from the proposed development are identified and discussed. Where necessary, recommendations are made for further survey, mitigation & enhancement measures and future monitoring.

Site Location and Description

- 1.3 The application site lies approximately 1.1 km southwest of Barnham and 4 km north of Bognor Regis (OS Grid Reference: SU 95096 103424), **Figure 1** refers. The site is currently in agricultural use (cropped for hay or silage) and is under a Higher Level Stewardship Scheme agreement until next year. The Bognor Regis to Barnham railway line is situated on the western site boundary. A small stream and woodland block forms the northern boundary and the remnant Chichester and Arundel canal embankment forms the north eastern boundary. A small pond and plantation woodland is situated immediately to the east of the site and a large arable field, currently supporting a crop of oil seed rape, is immediately to the south.

Development Proposals

- 1.4 The proposed development comprises installation of solar photovoltaic (PV) panels for electricity generation with associated infrastructure, access and equipment (**Figure 2** refers).

2.0 LEGAL AND PLANNING CONTEXT

Legal Context

- 2.1 A range of habitats and species that may actually or potentially be relevant to the application site are afforded legal protection under national and international legislation (**Appendix I** refers).

Planning Context

National Planning Policy Framework (NPPF)

- 2.2 The NPPF advises that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principals:
- *"if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*

- *proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted unless the benefits of the development clearly outweigh both the impacts that it is likely to have on the features of the site and any broader impacts on the national network of Sites of Special Scientific Interest;*
- *development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*
- *opportunities to incorporate biodiversity in and around developments should be encouraged; and*
- *planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss."*

Local Planning Policy

The Development Plan

2.3 Section 38 (6) of the Planning and Compulsory Purchase Act 2004 (The Act) requires that planning applications are determined in accordance with the statutory development plan unless material considerations indicate otherwise.

2.4 For the purposes of this application the development plan consists of:

- The saved policies of the adopted Arun District Local Plan 2003

2.5 **Policy GEN29 Nature Conservation across the District**, seeks to protect undesignated sites from the harmful effects of development, and retain their value as a biodiversity resource.

'Development will only be permitted on sites which contain semi-natural habitats, features of nature conservation interest, or within wildlife corridors, where these can be largely retained and sympathetically incorporated into the scheme. Legal agreements may be used to offset the loss of, or impact on, any nature conservation resource present on the site prior to development.'

2.6 **Policy GEN30** supports the protection of species protected by law.

'Development will not be permitted which would adversely affect, directly or indirectly, animal and plant species protected by law. Where development is permitted, the developer will be required to take steps to secure the protection of such animals and plants.'

Material Considerations

2.7 Arun District Council is currently preparing a new local plan the 'Arun District Local Plan 2011-2031' which will replace the saved policies of the 2003 Local Plan. This plan has been submitted for independent examination on 30th January 2015. As this plan is not adopted, the emerging plan does not form part of the Development Plan for the district, however, due

to the advanced stage of it's' preparation, relevant policies can be afforded some weight and are a material consideration.

- 2.8 The council encourages the conservation and enhancement of biodiversity and the natural environment through strategic **Policy ENV SP1 Natural environment**. The policy protects both designated and non-designated sites, and promotes the creation of new areas for habitats and species. **Policy ENV DM1** relates specifically to designated sites and requires:

'1. Proposed development likely to have an adverse effect on land within or adjoining a Site of Biodiversity or Geological Importance as listed in Tables 17.1 - 17.6 (either individually or in combination with other developments), will not normally be permitted. Exceptions will only be made where the following can be demonstrated:

- a. There is no alternative solution (which shall be adequately demonstrated by the developer) and*
- b. There are reasons of public health or public safety or*
- c. There are benefits of primary importance to the environment or*
- d. There are imperative reasons of overriding public interest.*

Notwithstanding the above however, the presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.

2. In determining any planning application affecting Sites of Biodiversity or Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to;

- a. The European, National or Local status and designation of the site;*
- b. The nature and quality of the site's features, including its rarity value;*
- c. The extent of any adverse impacts on the notified features of interest;*
- d. The need for compensatory measures in order to re-create remaining features of habitats on or off the site.*

3. Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate.

4. Developments shall also be consistent with all other Local Plan policies.'

- 2.9 **Policy ENV DM5 Development and biodiversity** also requires the following:

'Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement.

Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person.

All developments shall have regard to Natural England's standing advice for protected species.

Developments shall also be consistent with all other Local Plan policies.'

3.0 METHODS

- 3.1 The method for carrying out the PEA follows standard guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2013).

Desk Study

- 3.2 Details of designated sites and legally protected and notable species records within 1 km of the site (4 km with respect to bats) were sought from the Sussex Biodiversity Records Centre (SxBRC).
- 3.3 Details of any records of Badger (*Meles meles*) within 1 km of the site were sought from the Badger Trust West Sussex.
- 3.4 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk) was accessed in July 2015 for records of statutory designated sites of biological interest.
- 3.5 The following Biodiversity Action Plans (BAPs) were consulted to inform the identification of priority habitats and species:
- Sussex Biodiversity Action Plan Species Inventory; and
 - South East Biodiversity Strategy.

Field Survey

Extended Phase 1 Habitat survey

- 3.6 An Extended Phase 1 Habitat survey (IEA, 1995) was conducted at the application site on 16 April 2015 by an ecologist from The Landmark Practice (who is a full member of CIEEM¹). The survey area covered the application site and included a buffer zone of 15 m beyond the site boundary where accessible.
- 3.7 The Phase 1 Habitat survey method (JNCC, 2010) was developed by the former Nature Conservancy Council to provide, relatively rapidly, a record of the semi-natural vegetation and wildlife habitat over large areas of the countryside. It is a classification based principally on vegetation, augmented by reference to topographical and substrate features. Habitats

¹ Chartered Institute of Ecology and Environmental Management.

are mapped using standard colour codes, with further information provided by means of dominant species codes and descriptive target notes.

- 3.8 Extended Phase 1, as described by the Institute of Environmental Assessment (now the Institute of Environmental Management and Assessment) in their *Guidelines for Baseline Ecological Assessment* (IEA, 1995), involves the collection of further information on habitat features of particular value to different ecological groups such as plants, fungi, lichens, mosses and faunal groups. The Extended Phase 1 Habitat survey forms the first stage of the ecological assessment of a site and is used to identify whether further, more detailed species surveys are required.
- 3.9 Plant species nomenclature follows Stace (2010) and bird species nomenclature follows the British Ornithologists' Union (BOU) English vernacular names in The British List: A Checklist of Birds of Britain (8th edition, 2013). Mammal nomenclature follows Harris and Yalden (2008).

Survey constraints

- 3.10 The evidence set out in this report describes the characteristics of the site at the time at which the survey was undertaken. Many species of wildlife are highly mobile by nature and will routinely take advantage of new opportunities which arise within their home ranges. Over time this will alter the baseline conditions present at the site. Should there be delays in the delivery of the project it is possible that baseline ecology will change, for example by establishment of new badger setts or a change from arable to fallow or grassland habitat. In the event of a significant delay (>1 year) between the baseline survey and commencement of works on site, advice on the implications of potential changes at the site should be sought from a suitably experienced ecologist.
- 3.11 The survey was undertaken within the recognised survey season, although the lateness of spring in 2015 meant that many floral species were not in flower at the time of the survey. This may have resulted in some species being missed, but this does not affect the validity of this PEA.

Evaluation

- 3.12 An evaluation of the habitats and species identified within the site has been undertaken with reference to guidance given in IEEM (2006). This defines a geographical scale of value to be assigned to each ecological receptor based on a scale ranging from International value to 'Within Zone of Influence' value. For clarity within this report the 'zone of influence' value is determined to be of (and described as) 'site value'. **Appendix II** provides full details of the Ecological Evaluation process used in this PEA.

4.0 RESULTS

Desk Study

Designated Sites

- 4.1 There are no non-statutory or statutory designated sites of nature conservation interest within 1km of the site.

Species

- 4.2 Records obtained from the Sussex Biodiversity Records Centre, within 1 km of the site since 2005 are provided in **Table 1** below.

Table 1: Notable Species Records

Family	Species	Scientific name	Designation ²	No. Records
Mammal	Water vole	<i>Arvicola amphibius</i>	NERC-SPI, Sussex BAP, UKBAP, WCA	14
	Brown hare	<i>Lepus europaeus</i>	UKBAP, SPI	1
Reptile	Common lizard	<i>Zootoca vivipara</i>	NERC- SPI, Sussex BAP, UKBAP, WCA (part)	3
	Grass snake	<i>Natrix natrix</i>	NERC- SPI, Sussex BAP, UKBAP, WCA (part)	6
	Slow worm	<i>Anguis fragilis</i>	NERC- SPI, Sussex BAP, UKBAP, WCA (part)	6
	Adder	<i>Vipera berus</i>	NERC- SPI, Sussex BAP, UKBAP, WCA (part)	1
Invertebrates	Stag beetle	<i>Lucanus cervus</i>	HAD An2- non-pri, NERC- SPI, Sussex BAP, UKBAP, WCA (part)	1
	Buff Ermine	<i>Spilosoma luteum</i>	NERC- SPI, Sussex BAP, UKBAP,	1
	Rustic	<i>Hoplodrina blanda</i>	NERC- SPI, Sussex BAP, UKBAP,	1
	Rosy Rustic	<i>Hydraecia micacea</i>	NERC- SPI, Sussex BAP, UKBAP,	1
	Small Heath	<i>Coenonympha pamphilus</i>	NERC- SPI, Sussex BAP, UKBAP,	1

- 4.3 Sussex Biodiversity Records Centre will not provide desktop records for badger (*Meles meles*), otter (*Lutra lutra*) and the butterfly species Wood White (*Leptidea sinapis*) and Duke of Burgundy (*Hamearis lucina*). Records for these species are classed as confidential. However, the following records for badger were provided by the West Sussex Badger Trust:

- A large, well established, main sett is located along the southern edge of the embankment of the former Chichester to Arundel canal to the north east of the site.
- Associated annexes are located in close proximity further along the embankment to the north of the site.

- 4.4 In addition, the data-search returned botanical records for the following species, which are of relevance to the site in terms of their habitat requirements:

² HAD An2- non-pri- Habitats Directive Annex 2 - non-priority species EPS – European Protected Species, NERC – Natural Environment and Communities Act 2006 - SPI – Species of Principal Importance, BAP – Biodiversity Action Plan, WCA – Wildlife and Countryside Act 1981 (as amended).

Table 2: Notable Botanical Species Records

Family	Species	Scientific name	Designation ¹	No. Records
Flora	Spreading Hedge-parsley	<i>Torilis arvensis</i>	NERC- SPI, Sussex BAP, UKBAP, Sussex Rare Species Inventory	1
	Musk Stork's-bill	<i>Erodium moschatum</i>	Sussex Rare Species Inventory	1
	Broad-leaved Spurge	<i>Euphorbia platyphyllos</i>	Sussex Rare Species Inventory	1
	Common Meadow-rue	<i>Thalictrum flavum</i>	Sussex Rare Species Inventory	1
	Arum	<i>Arum italicum subsp. neglectum</i>	Sussex Rare Species Inventory	1
	Pale Toadflax	<i>Linaria repens</i>	Sussex Rare Species Inventory	1
	Annual Beard-grass	<i>Polypogon monspeliensis</i>	Sussex Rare Species Inventory	2

4.5 The data search returned records for 25 bird species of note in Sussex within 1 km of the site. Of these the following species are of particular note in the context of the sites:

Table 3: Notable Ornithological Records

Species	Latin Name	Designation	No. Records
Swift	<i>Apus apus</i>	Bird Population Status - amber	1
Kingfisher	<i>Alcedo atthis</i>	Bern Convention Appendix 2; Bird Population Status - amber; Birds Directive Annex 1; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)	4
Hobby	<i>Falco subbuteo</i>	Bern Convention Appendix 2; Convention on Migratory Species; Appendix 2; EC CITES Annex A; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)	9
Grey Partridge	<i>Perdix perdix</i>	Bird Population Status - red; Birds Directive Annex 2.1; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species	13
Corn Bunting	<i>Emberiza calandra</i>	Bird Population Status - red; Nerc Act 2006; UK Biodiversity Action Plan priority species	5
House Martin	<i>Delichon urbicum</i>	Bern Convention Appendix 2; Bird Population Status - amber	2
Swallow	<i>Hirundo rustica</i>	Bern Convention Appendix 2; Bird Population Status - amber	5
Barn owl	<i>Tyto alba</i>	Bern Convention Appendix 2; Bird Population Status - amber; EC	21

		CITES Annex A; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)	
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4.6 Bat records within 4 km in the last 10 years are shown in Table 4:

Table 4: Bat records

Species	Latin	No. Records	Distance from site
Unidentified Bat sp.	<i>Chiroptera</i>	5 (2 roost records, 1 maternity roost record)	The closest roost is located at Decoy Farm House.
Western Barbastelle	<i>Barbastella barbastellus</i>	7 (4 maternity tree roost records)	Records associated with Slindon Wood and Common.
Serotine	<i>Eptesicus serotinus</i>	2 (1 roost records)	The closest roost record is from a house located within the village of Barnham.
Natterer's Bat	<i>Myotis nattereri</i>	1 record	Foraging over farmland within 4km of the site.
Noctule	<i>Nyctalus noctula</i>	3 records	Foraging over farmland within 4km of the site.
Pipistrelle sp.	<i>Pipistrellus</i>	6 (2 roosts)	Closest roost record is from Shripney (>1km to the south west of the site).
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	7 (2 roosts, 1 feeding remains)	Closest roost record is from Shripney (>1km to the south west of the site).
Long Eared sp.	<i>Plecotus</i>	2 records (both roosts)	Closest record is from the centre of the village of Barnham to the east of the site.
Brown Long Eared	<i>Plecotus auritus</i>	10 records (3 roost records, 4 maternity tree roost records)	Tree roost records are all associated with Slindon Wood and Common. Three further roosts are located in houses in the villages of Westergate, Shripney and Walberton.

Field Survey

Habitats

Application Site

- 4.7 At the time of survey, the site comprised a small poor semi-improved grassland field dominated by meadow foxtail (*Alopecurus pratensis*), Yorkshire fog (*Holcus lanatus*) and creeping bent (*Agrostis stolonifera*). Other commonly occurring species included cocks-foot (*Dactylis glomerata*), perennial rye-grass (*Lolium perenne*) and creeping buttercup (*Ranunculus repens*) with occasional dandelion (*Taraxacum* sp.), yarrow (*Achillea millefolium*), common field speedwell (*Veronica persica*), spear thistle (*Cirsium vulgare*) and broad-leaved dock (*Rumex obtusifolius*). Species such as groundsel (*Senecio vulgaris*), wild cabbage (*Brassica oleracea* var. *oleracea*), ground ivy (*Glechoma hederacea*) and common cleavers (*Galium aparine*) were found along the boundary with the adjacent arable field to the south.

4.8 A large area of swamp vegetation was located along the western edge of the site adjacent to the railway embankment. This area was dominated by common reed (*Phragmites australis*) and greater pond-sedge (*Carex riparia*).

4.9 The site is currently under Entry Level Stewardship (ELS) and Higher Level Stewardship (HLS) schemes and appears to be regularly cut/mown.

Surrounding Habitats

4.10 A small chalk stream is situated immediately to the north of the site. It is slow flowing (to the west) with aquatic and marginal species including water starwort (*Callitriche sp.*), common reed and meadowsweet (*Filipendula ulmaria*). A small bank was associated with the stream which was dominated by species such as common nettle (*Urtica dioica*) and lesser celandine (*Ranunculus ficaria*).

4.11 The remnant Chichester to Arundel canal forms a large earth bank to the north of the site which is dominated by scattered scrub. An area of plantation woodland comprising blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), oak (*Quercus robur*), larch (*Larix decidua*) and cherry (*Prunus avium*) forms the eastern boundary of the site. The understory and ground flora was fairly sparse in the plantation woodland with species comprising bramble (*Rubus fruticosus* agg.), common nettle, common cleavers, lords-and-ladies (*Arum maculatum*), ground ivy, wood dock (*Rumex sanguineus*), ivy (*Hedera helix*), traveller's joy (*Clematis vitalba*), field rose (*Rosa arvensis*), lesser celandine and red campion (*Silene dioica*).

4.12 A small pond surrounded by dense hawthorn, willow (*Salix sp.*) and bramble scrub is situated to the east of the site (target note 2 refers). The pond had a large amount of dumped farm material (scrap metal) in it.

4.13 An arable field planted with oil seed rape was situated immediately to the south of the site. The railway embankment immediately to the west of the site comprised scattered blackthorn scrub, with common nettle, creeping thistle (*Cirsium arvense*) white dead-nettle (*Lamium album*) and wood dock.

Species

Bats

4.14 The site does not offer roosting opportunities for species of bat but could provide some limited foraging opportunities. Habitats immediately adjacent to the site, such as the woodland and stream habitats would however, offer more valuable foraging/commuting habitats for these species.

Dormice

4.15 The application site does not support any suitable dormouse habitat. The surrounding woodland areas could provide suitable dormouse habitat, however, they are limited in extent and connectivity to the surrounding landscape and other suitable areas of dormouse habitat. It is therefore not considered likely that dormice are present within or immediately adjacent to the site.

Badger

- 4.16 A large badger sett was noted along the former line of the Arundel to Chichester canal embankment to the east of the site (target note 1 refers). The sett comprised at least 10 holes of varying levels of use with signs of recent digging, well used paths and badger hair found. This site is well established and has been known to the local badger group for many years. The site itself did not support any badger setts but is likely to provide foraging habitat for the badger social group occupying the adjacent sett.

Water vole

- 4.17 Water vole field signs (including several fresh latrines) were noted within the chalk stream situated immediately to the north of the site. Several records of water vole have been recorded within 1 km of the site in the last 10 years, including a record from within Barnham Court Farm itself.

Other mammals

- 4.18 Other mammal species noted during the survey were fox scats (target note 3 refers) and mole hills along the boundary with the arable field to the south. The site is likely to be used by a number of other small mammals such as brown hare and field voles.

Birds

- 4.19 The site itself offers limited foraging habitat for common bird species in the area. Birds noted using adjacent habitats during the survey included wood pigeon (*Columba palumbus*), white throat (*Sylvia communis*), chiffchaff (*Phylloscopus collybita*), coal tit (*Periparus ater*), chaffinch (*Fringilla coelebs*), goldfinch (*Carduelis carduelis*), blackbird (*Turdus merula*), great tit (*Parus major*), greenfinch (*Carduelis chloris*), wren (*Troglodytes troglodytes*) and green woodpecker (*Picus viridis*).

Reptiles

- 4.20 No reptiles were noted during the survey, although, the site could provide some limited habitat for reptiles, particularly grass snake although due to it occupying a low lying position would not provide potential for hibernation sites. However, adjacent habitats do provide optimal conditions (both in terms of foraging and hibernation) for reptile species such as south facing scrub bank of the former Arundel to Chichester canal and south facing embankment of the railway.

Amphibians

- 4.21 The pond within the application site supports sub-optimal habitat for breeding great crested newts (please refer to target note 2 for full HSI assessment of this feature). The pond is very heavily shaded, lacks macrophytes and supports water fowl, factors known to limit potential use by great crested newt during breeding. This pond could, however, offer habitat for other amphibian species, such as smooth newt and common frog, which are more generalist in their habitat requirements.
- 4.22 In terms of terrestrial habitat for amphibian species, the grassland field which comprises the application site has some potential to support amphibian species but this is limited due to routine disturbance through farming practices and as it lacks structural diversity required to offer cover from predators. The railway and canal embankments, river bank and woodland edge habitats that surround the site could, however, support a diversity of invertebrate 'prey' species and so may offer more optimal terrestrial conditions for this species group.

- 4.23 From a review of the OS maps which cover the site, there appears to be two water bodies within 500 m to the west of the site. One at 280 m and the other at 180 m. These were not taken forward for further assessment during this preliminary ecological appraisal. There is an absence of historical evidence (ie no biological records) to suggest that great crested newts are breeding within these or any other nearby pond. In addition, there is a lack of habitat connectivity between the site and these ponds. In addition, the ponds were fragmented from the site by the large embankments associated with Bognor Regis to Barnham railway line, which are devoid of vegetation and other forms of cover, and so at the very least are likely to act as a partial barrier to dispersal. In addition, within 250m of these ponds there were areas of more optimal (than the footprint of the site) terrestrial habitat for this species. As such, if great crested newt were breeding in these ponds they would be highly unlikely to be present on the site.

Invertebrates

- 4.24 A peacock butterfly (*Aglais io*) was noted during the survey. The site provides a limited diversity of commonly occurring botanical species. As such, it is likely to support a correspondingly limited assemblage of common invertebrate species. In addition, the grassland habitat is frequently cut and lacked structure further limiting its potential to support notable or rare invertebrate species.

Evaluation

Habitats

- 4.25 The application site is likely to provide limited foraging and sheltering opportunities for species of birds, bats (foraging and commuting only), small mammal, common reptiles and invertebrates. This in turn may provide a foraging resource for a range of farmland birds such as kestrel (*Falco tinnunculus*) and potentially barn owl (*Tyto alba*). The application site, however, comprises relatively limited structural diversity and limited botanical and ecological value as a foraging resource or a source of shelter for wildlife.
- 4.26 The habitats within the application site are considered to be of **site** value.
- 4.27 Offsite habitats, directly adjacent to the site, such as the chalk stream and embankments of the former Arundel to Chichester canal, offer greater potential in terms of the species they support and a greater variance in terms of habitat structure, and are considered to be of greater significance in terms of ecological value.

Species

- 4.28 The interior of the grassland field is unlikely to be used extensively by foraging bats as, apart from a few species which cross open habitat (such as noctule), activity has been shown to significantly decrease away from linear features (Downs & Racey, 2006). The application site does not provide any features suitable for roosting bats and is considered to be of **site value** for bat species.
- 4.29 The presence of badger setts adjacent to the site indicates that the application site is likely to comprise part of the nearby badger social groups foraging territory. Given that the wider landscape contains similar habitat in abundance, these habitats are considered to be of **site value** with respect to badger.

- 4.30 The site could support low numbers of common reptile species such as grass snake especially given the occurrence of nearby, and on-site, records. The application site does however lack hibernation potential. Overall, the application site is considered to be of **site value** to reptiles.
- 4.31 It is considered unlikely that great crested newt would be using the habitat within the site. There are no records of great crested newts within 1 km of the site and the site supports a limited amount of habitat suitable for great crested newt in its terrestrial phase. This, combined with the low HSI score of the pond adjacent to the site, and a lack of connectivity to other ponds reduces likelihood of presence.
- 4.32 In terms of common species of amphibian, the application site offers limited potential and therefore the site is considered to be of **site value** to amphibians.
- 4.33 The quality of the grassland was not considered to be sufficiently species rich or structurally diverse to support a diverse or rare assemblage of invertebrate species. Therefore the site is considered to be of **site value** to invertebrate species.
- 4.34 The adjacent chalk stream may have offered suitable habitat for the native white clawed crayfish in the past, however, there is no evidence to suggest that they are present in the stream and there are no records for this species nearby.
- 4.35 In terms of other notable species of biodiversity interest identified from the data search, such as brown hare, corn bunting and grey partridge, the site is small in extent and routinely disturbed through agricultural practices reducing its suitability to support significant assemblages of these species. Nonetheless it does offer some potential and is considered of **site value** in this respect.

5.0 LEGAL AND BIODIVERSITY CONSIDERATIONS

Designated Sites

- 5.1 The site is not afforded any statutory or non-statutory designations.

Legally Protected Species

- 5.2 The following legally protected species have been identified as occurring, or potentially occurring, within or directly adjacent to the site:
- Bats (foraging and commuting);
 - Water vole;
 - Badger (foraging and adjacent setts);
 - Breeding birds; and
 - Reptiles.
- 5.3 These species are afforded protection under either European and/or domestic legislation, including the Conservation of Habitats and Species Regulations 2010 (as amended) and/or the Wildlife and Countryside Act, 1981 (as amended) (**Appendix I** refers).

Biodiversity Considerations

- 5.4 The following table (Table 5) details the habitats and species relevant or potentially relevant to the application site that are listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act (HMSO, 2006) as being of principal importance in England and/or listed as priority habitats/species under local/regional BAPs. Local/regional BAP habitats/species are a material planning consideration, covered under Policy GEN30 of the adopted Local Plan 2003.
- 5.5 Under the NERC Act (2006) the Government has a duty to take reasonably practicable steps to further the conservation of the living organisms and habitats that are included in lists published under Section 41. It is also the responsibility of the Local Planning Authority to regard Section 41 species as a material consideration in planning proposals.

5.6 **Table 5: Section 41 Habitats and Species**

Habitats/Species	Section 41	Sussex BAP
Chalk stream	✓	✓
Spreading hedge-parsley	✓	✓
Water vole	✓	✓
Brown hare	✓	
Bats	✓	✓
Grey partridge	✓	
Corn bunting	✓	
Reptiles	✓	✓
Invertebrates (5 species)	✓	✓

6.0 POTENTIAL IMPACTS

- 6.1 Assessment of the likely impacts (both beneficial and adverse) of the proposed development on habitats and wildlife species (ecological receptors) is informed by reference to the proposed layout and landscape masterplan (**Figures 2 and 4** refer). Measures are recommended in **Section 7.0** below, in accordance with national and local planning policy and wildlife legislation, to avoid and (where necessary) mitigate or compensate for negative impacts.

Designated Sites

- 6.2 The proposed development is unlikely to affect any nearby locally designated sites.

Habitats

- 6.3 A 6 m buffer between the site works and infrastructure and boundary features (adjacent stream and woodland areas) has been incorporated into the proposed development (Figure 2 refers). Existing field entrances will also be utilised meaning that there will be negligible impacts on boundary features.

- 6.4 Any disturbed areas of ground will be reinstated with an appropriate grassland mix, which will retain botanical species diversity and cover to this part of the site. In addition, the creation of new native planting areas (primarily to reduce landscape impacts) will also provide ecological benefit, in terms of species diversity and connectivity, at the site.
- 6.5 The risk of accidental pollution or sediment run off into the adjacent stream will be reduced by implementing a pollution prevention plan.

Species

Mammals

- 6.6 The habitats of greatest value to foraging bat species (i.e. the chalk stream and woodland blocks) are outside the site boundary and will be retained undisturbed. In addition, these habitats will also be protected from accidental disturbance during construction by a buffer of at least 6 m. The overall impact of bats using the site is considered to be **negligible** as the majority of the foraging and commuting habitat will be retained.
- 6.7 As badger are likely to utilise the application site for foraging, the security fencing should be sufficiently permeable to allow continued access to the solar farm for this species (i.e. not dug into the ground). The impacts on foraging badgers are therefore considered to be **negligible** in the long term (ie as habitat disturbance to install the panels will be temporary in nature).
- 6.8 A badger sett is situated adjacent to the site on the embankment of the former Arundel to Chichester canal. It is likely, from the direction of the excavation entrances, that the holes extent north beneath the track located on top of the embankment. It is proposed that this track is used for access to the proposed solar park. It is understood that this track is currently used by agricultural machinery to access the farms network of fields, which the badgers appears to readily tolerate. As such, disturbance by the use of the track by small maintenance vehicles during the operation of the solar farm is considered to be **negligible**.
- 6.9 However, construction traffic is likely to comprise larger, heavier vehicles with more frequent vehicle movement in a short space of time. This could result in tunnel collapse, through vibrations from the moving vehicles, causing severe disturbance, and possible risk of killing/injury, to badger. The impact from construction vehicles using the track along the embankment, for site access, on the badger sett (without mitigation) is therefore considered to be **significant**.
- 6.10 All potential water vole habitat will be retained and protected from construction activities by establishment of a buffer of at least 6 m from the adjacent stream (Figure 2 refers). A pollution prevention plan will also reduce the risk of impacts on water voles in the adjacent stream. The impacts on water vole are therefore considered to be **negligible**.
- 6.11 There could be a minor impact on mammal species during the construction period from artificial lighting (if required). The solar park will not, however, require external lighting once operational.

Birds

- 6.12 The proposed development will result in a small loss of foraging habitat, ie the area beneath the panels, however seeding the disturbed areas around the panels to create a more diverse

grassland will increase the range of foraging resource available to farmland bird species. The proposed landscape mitigation planting of a new species rich hedgerow will also increase the nesting opportunities for birds within the site. The impact on birds is considered to be **negligible**.

Reptiles

- 6.13 The habitats of greatest value to reptiles and common species of amphibian (such as the adjacent embankments) are outside of the site boundary and will be retained and protected during construction by the creation of a 6 m buffer. The grassland will be reinstated (by seeding) and so impacts on this habitat will be temporary in nature and provided that the works on-site are carried out to a method designed to avoid any harm to reptiles (see recommendations section below) then the proposed development will have a **negligible** impact on reptiles.

Invertebrates

- 6.14 Reinstating the grassland habitat around the panels to create a more diverse grassland, will increase the range of foraging resource available to invertebrate species. The proposed landscape mitigation planting of a new species rich hedgerow will also increase the foraging and sheltering opportunities for invertebrates within the site. Impacts on invertebrates are therefore considered to be **negligible**.

7.0 RECOMMENDATIONS

Further Survey

- 7.1 This report has been prepared via reference to the Site Layout and landscape masterplan provided at Figure 2 and 4 and, in accordance with this plan assumes that adjacent more sensitive ecological features (chalk stream, pond, embankments and woodland blocks) will be retained, undisturbed, and protected during construction and operation of the solar park, therefore, negating the need for further species surveys as avoiding significant impacts through scheme design. Nonetheless, the potential remains for the proposed scheme to result in minor impacts which will need to be addressed through the following mitigation measures.

Mitigation Measures

- 7.2 The following recommendations for ecological mitigation measures are provided in accordance with guidance set out in the NPPF, which sets out the policies on the protection of biodiversity through the planning system. This requires that, in determining planning applications, a Local Planning Authority should secure measures to firstly avoid, then mitigate against and finally compensate for ecological harm.

Habitats

- 7.3 The ecologically more interesting areas of the site (associated with the boundaries) will be retained, undisturbed, in the final layout for the development and protected during construction through the creation of a 6 m wildlife buffer zone between the solar park and

adjacent boundary features. This will also provide a tree root protection zone for adjacent trees during the construction phase.

- 7.4 The ELS/HLS grassland, which will be disturbed through the installation of the solar park, will be reinstated using an appropriate grassland seed mix. This should include a diversity of native grass and herb species suitable to grassland which is subject to periodic flooding. This should be sensitively managed by sheep grazing or, if this is not possible, by mowing (as undertaken currently) to ensure that it provides a continued foraging resource for wildlife.
- 7.5 Adherence to best practice with regards to pollution prevention measures, such as those set out in the Environment Agency's Pollution and Prevention Guidance Note 5, should be maintained at all times to ensure that there are no impacts to sensitive adjacent water features (or fauna which may be associated with them such as water vole) such as the chalk stream to the north or the pond to the south. This includes the positioning of construction compound and welfare units as far away from these features as the scheme layout allows for.

Badger

- 7.6 To mitigate potential impacts to the badger setts along the former embankment of the Chichester to Arundel Canal, the solar park, and all activities (including those for access³) associated with its construction, should be offset from each sett by a minimum of 20 m. Where this is not possible, and where the likelihood of significant disturbance cannot be avoided, a licence to close the affected sett may need to be sought from Natural England. This would need to be informed by a suitable mitigation strategy which might include the creation of replacement setts.
- 7.7 In terms of general measures during the construction phase, any trenches created within the application site should be covered overnight or, alternatively, fitted with a rough sawn plank left with inclined ends to provide a means of escape should a badger or other wildlife fall in.
- 7.8 During the construction and operation of the solar park, the lower edge of the security fence will not be dug into the ground to allow continued access for foraging badger or other large mammals to the site.

Birds

- 7.9 To avoid disturbance to birds breeding within the site's boundary features, the 6 m buffer will be maintained throughout the construction phase and no heavy machinery will operate within it.

Lighting

- 7.10 If artificial lighting is required during construction, this must be positioned to avoid light spill on boundary features. Lighting must be kept to as low a level as possible, whilst still maintaining compliance with legislation relating to lighting in the workplace, and directional to the task to avoid unnecessary light spill. The solar farm, once in operation, will not require external lighting.

³ Including vehicle access to facilitate construction but excluding routine, and infrequent, access required during the operation of the solar park by small 4x4 units for maintenance.

Reptiles

- 7.11 As the footprint of the solar park (comprising low lying, regularly cut grassland habitat) does not support opportunities for hibernating reptiles, to mitigate impacts from construction, these works should be undertaken and completed during the winter months.
- 7.12 Where it is not possible to achieve this, the site should continue to be regularly mown until the point of construction. This will prevent a change in baseline conditions and site becoming more favourable to reptile species. To facilitate installation of the solar park, a programme of habitat manipulation, comprising further mowing and removal of arising to remove all remaining cover, should be implemented. This will encourage natural displacement of reptiles into suitable, undisturbed, adjacent boundary habitats. On completion of construction of the solar park, the site will be reinstated to grassland and reptiles encouraged to recolonise it.

Ecological Enhancements

- 7.13 Paragraph 109 of the NPPF states that:

“The planning system should contribute to and enhance the natural and local environment by... minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures”

- 7.14 The following options would provide ecological enhancements to the site:

- The nature of the proposed development means that the best habitats associated with the site, i.e. those offsite but located along the boundary, will not be affected by the proposed development. The biodiversity value of the grassland habitat will be retained by seeding beneath the panels. This can be further enhanced through the inclusion of a greater diversity of native grass and herb species and managed with the principles of nature conservation in mind. This would enhance the ecological value of this habitat as a foraging resource for reptile, bird, invertebrates and badger;
- All new habitat planting proposed for any landscape mitigation will comprise native species, and include a variety of fruiting and flowering species to increase floristic diversity and provide additional nectar and fruit resource for local wildlife;
- The buffer could be managed to create rough semi-improved grassland habitat improving the structural diversity of the site and supporting a greater diversity of grass and herb species. This would enhance foraging, nesting/egg laying, basking and commuting opportunities for a range of wildlife species;
- To provide new habitat opportunities for reptile species, a hibernacula should be installed in an area of retained habitat;
- To enhance roosting habitat within the area, bat boxes (such as Schwegler 2FN or 1FF) could be installed on trees or poles within the application site boundary; and
- A sensitive long-term management plan should be prepared and implemented for the retained and enhanced habitats including the new hedgerow and field margins.

8.0 CONCLUSION

- 8.1 Subject to implementation of the mitigation measures in Section 7 above, no significant residual negative impacts on ecologically sensitive receptors within the application site are anticipated. The proposed enhancement measures set out above will, if implemented, result in benefits to the ecology of the local area.

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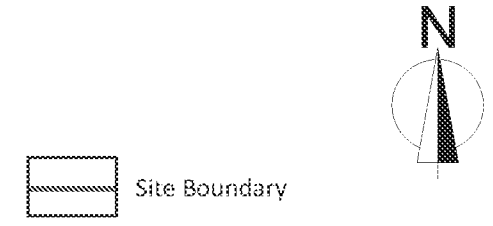
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FIGURES

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BARNHAM COURT

FIGURE 1
Site Location Plan

Landmark
PRACTICE

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United Kingdom

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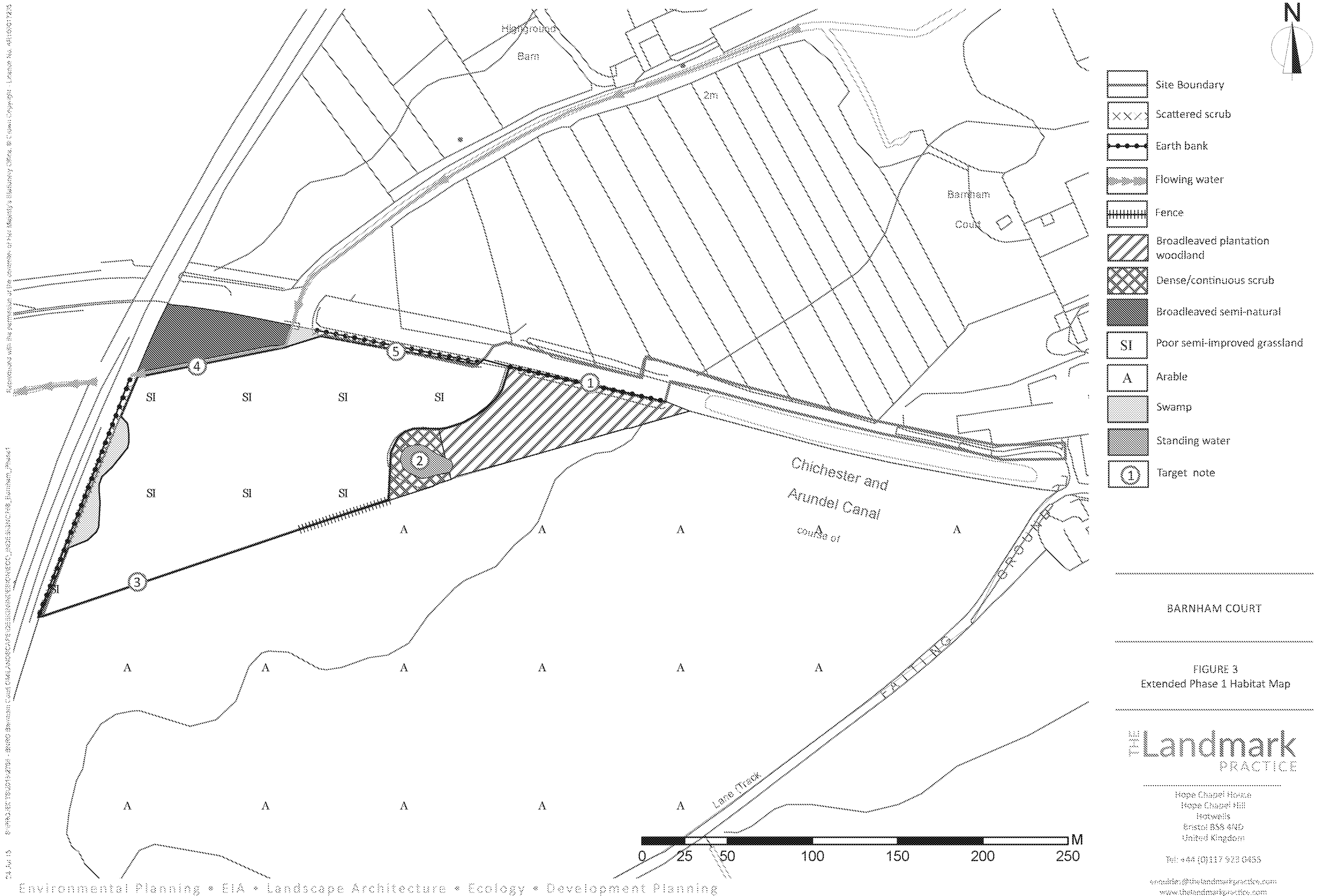


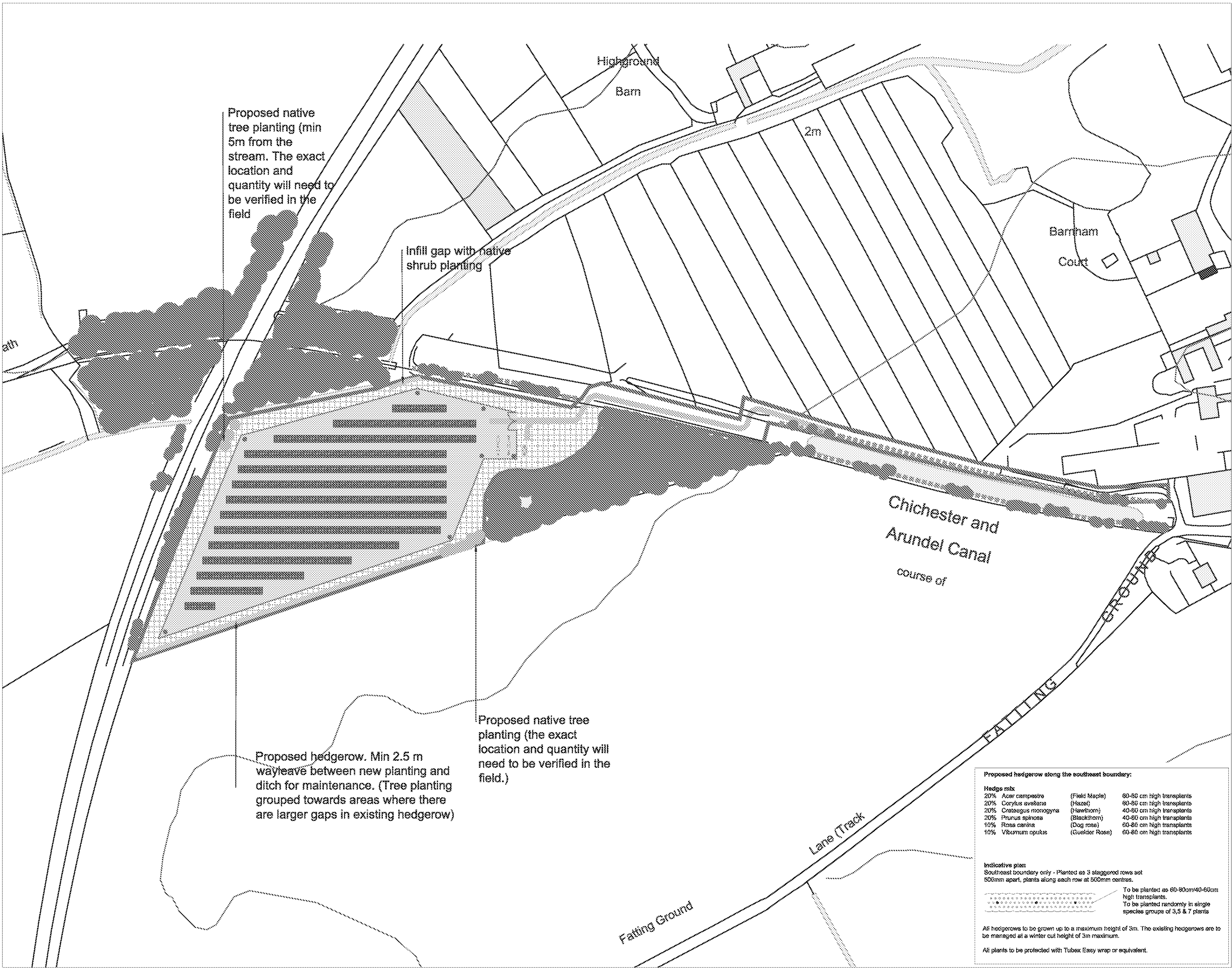
FIGURE 3
Extended Phase 1 Habitat Map

Landmark
PRACTICE

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- GENERAL NOTES:
1. ALL DIMENSIONS AND LEVELS SHALL BE CHECKED ON SITE PRIOR TO CONSTRUCTION WORK COMMENCING.
 2. ALL LANDSCAPE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND SPECIFICATIONS.
 3. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE LANDSCAPE SPECIFICATION.
 4. ANY DISCREPANCY CONCERNING THE DRAWINGS SHOULD BE REFERRED TO THE CA IMMEDIATELY.
 5. ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE.
 6. ALL LEVELS IN METERS.
 7. DO NOT SCALE OFF THIS DRAWING.
 8. EXISTING SERVICE ALIGNMENTS SHALL BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION WORK COMMENCING.

- Legend
- Site boundary
 - Existing vegetation, consisting of poorly maintained hedgerows and trees and scrub
 - Proposed hedgerow (locally indigenous species) managed to a winter cut height of 3m
 - Proposed hedgerow with randomly spaced trees
 - Proposed area to be seeded with species rich grassland mix
 - Wildlife Protection Zone (WPZ) Min 6m wide. To be left to revegetate naturally

Notes:

- Drawing to be printed in colour

FIGURE 4
Landscape mitigation plan



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CLIENT
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PROJECT
BARNHAM COURT

TITLE
LANDSCAPE MITIGATION PLAN

Status: FOR PLANNING	Drawn: JL	Checked: MR
Scale: 1:2500@A3	Date: 21/07/15	Approved: NR
Drawing Number: 2768 200 MITIGATION PLAN		Rev: A

Proposed hedgerow along the southeast boundary:

Hedge mix	Field Maple	60-80 cm high transplants
20% Acer campestre	(Hazel)	60-80 cm high transplants
20% Corylus avellana	(Hawthorn)	40-60 cm high transplants
20% Crataegus monogyna	(Blackthorn)	40-60 cm high transplants
20% Prunus spinosa	(Dog rose)	60-80 cm high transplants
10% Rosa canina	(Guelder Rose)	60-80 cm high transplants
10% Vitium opulus		

Indicative plan:
Southeast boundary only - Planted as 3 staggered rows set 500mm apart, plants along each row at 500mm centres.

To be planted as 60-80cm/40-60cm high transplants.
To be planted randomly in single species groups of 3, 5 & 7 plants

All hedgerows to be grown up to a maximum height of 3m. The existing hedgerows are to be managed at a winter cut height of 3m maximum.

All plants to be protected with Tubex Easy wrap or equivalent.

APPENDIX I
LEGAL CONTEXT

APPENDIX I: LEGAL FRAMEWORK

1.0 PROTECTED SITES (EUROPEAN)

1.1 *Special Areas of Conservation (SACs)*

SACs are designated under **The Conservation of Habitats and Species Regulations 2010** ('2010 Regulations') (as amended) which implements **The European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 92/43/EEC** (the 'Habitats Directive', EEC, 1992). Lists of candidate SACs (cSACs) have been submitted to the European Commission for approval. Both possible SACs (pSACs) and cSACs are treated by the planning system as if fully designated.

The Habitats Directive also refers to the need for nature conservation outside protected areas (Article 10) and measures to implement this article are incorporated in British legislation through the Habitats Regulations (HMSO, 1994) and ODPM Circular 06/2005 that accompanies PPS9. Article 10 of The EU Habitats Directive 1992 states that:

'Member States shall endeavour, where they consider it necessary, in their land use planning and development policies and, in particular, with a view to improving the ecological coherence of the Natura 2000 network, to encourage the management of features of the landscape which are of major importance for wild flora and fauna.'

Article 10 of The EU Habitats Directive 1992 (and Regulation 39(3) of the Conservation (Natural Habitats, & c. Regulations) 2010 goes on to state:

"The features of the landscape referred to in paragraphs (1) and (2) are those which, by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems of marking field boundaries) or their function as "stepping stones" (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species." 39(3)

1.2 *Special Protection Areas (SPAs)*

SPAs are classified in accordance with the **European Community Directive on the Conservation of Wild Birds (79/409/EEC)** (the 'Birds Directive', EEC, 1979). Under this Directive, the UK Government must also take special measures to conserve the habitat of species listed in Annex I of the Directive and all migratory species. The provisions of the Birds Directive are implemented in England through the Wildlife and Countryside Act 1981 (as amended) and the Habitats Regulations (2010).

1.3 *Ramsar sites*

The Ramsar Convention (UNESCO, 1987) requires signatory states to protect wetlands that are of international importance, particularly as waterfowl habitats.

2.0 PROTECTED SITES (NATIONAL)

2.1 *Sites of Special Scientific Interest (SSSIs)*

The **Wildlife and Countryside Act 1981** (as amended 1991 and varied 1998) (HMSO, 1981, 1991, 1998) requires Natural England, the Government body with authority for nature conservation in England, to designate areas which make a significant contribution to a national network of sites of nature conservation value as SSSIs.

The **Countryside and Rights of Way Act 2000** (HMSO, 2000) came into force in full on 30 January 2001. The Act is in five parts. Part III relates to Nature Conservation and amends existing legislation (i.e. the Wildlife and Countryside Act 1981) through improved protection and management of SSSIs, improved legal protection for threatened species and the provision of a statutory basis for biodiversity conservation.

2.2 *Local Nature Reserves*

Local Nature Reserves are designated under Section 21 of **The National Parks and Access to the Countryside Act 1949** (HMSO, 1949) by principal local authorities. The declaring local authority must have a legal interest in the land concerned. Local Nature reserves are designated for people and wildlife. They are places with wildlife or geological features of special interest locally and that give people special opportunities to study and learn about them or simply enjoy them and have contact with nature.

3.0 NON-STATUTORY SITES

The majority of Local Authorities have a system of 'second tier' sites which do not wholly fulfil SSSI designation criteria, but which are, nonetheless, of local or regional value. The policies, encouraged by Government advice, recognise that protection should be extended beyond the statutory sites to include the best examples of wildlife habitats, populations of rare species and geological features remaining in the area and are particularly valuable in supplementing and supporting the national framework for SSSIs.

4.0 PROTECTED FEATURES

4.1 *Hedgerow Regulations*

The **Hedgerow Regulations 1997** (HMSO, 1997) were introduced to protect 'important' hedgerows in the countryside by controlling their removal through a system of notification. The Regulations apply to lengths of hedgerow greater than 20m in length, not adjoining residential curtilages. 'Important' hedgerows are defined within the Regulations on a variety of historical and/or ecological criteria.

4.2 *Tree Preservation Orders (TPOs)*

TPOs are made under the Town and Country Planning (Tree Preservation) (England) Regulations 2012. They are made by local planning authorities to protect selected trees and woodlands if their removal would have a significant impact on the local environment and its enjoyment by the public. The criteria do not incorporate any specific considerations of ecological value. TPOs, however, provide legal protection to trees prohibiting the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction.

5.0 PROTECTED SPECIES (EUROPEAN)

5.1 *Plants*

Certain plant species are listed under Annex IVb of the Habitats Directive under which it is an offence to deliberately pick, collect, cut, uproot or destroy such a plant.

Under the Bern Convention 1979, Contracting Parties are required to take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild flora species specified in Appendix 1. In the UK this is implemented through various national wildlife protection policies.

5.2 *Bats*

All British bats and their roosts are fully protected under international wildlife law against adverse effects including disturbance. Under the terms of the Bonn Convention, which encompasses the Agreement of the Conservation of Bats in Europe, there is a fundamental obligation to protect from damage or disturbance, sites which are important for the conservation status of bats. Such sites include those bats use for shelter or protection and important foraging areas.

5.3 *Dormouse (*Muscardinus avellanarius*)*

The dormouse is protected under Schedule 2 of the Habitats Regulations 2010 and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Taken together, the Regulations and Act make it illegal to intentionally or deliberately kill, injure or capture dormice; deliberately disturb dormice and damage or destroy dormouse breeding sites or resting places.

5.4 *Otter (*Lutra lutra*)*

The otter is protected under Schedule 2 of the Habitats Regulations 2010 and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Taken together, the Regulations and Act make it illegal to intentionally or deliberately kill, injure or capture otters; deliberately disturb otters and damage or destroy otter breeding sites or resting places.

5.5 *Birds*

In Britain all wild birds are granted legal protection under the EC Birds Directive and the Wildlife & Countryside Act 1981 (as amended). This legislation protects the birds, their eggs and nests whilst being built or in use.

Legal protection makes it an offence to intentionally kill, injure, take or have in possession any wild bird or egg. It is also an offence to intentionally damage or destroy the nest of any wild bird whilst it is being built or in use.

Under the Bern Convention 1979, Contracting Parties are required to take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II. In the UK this is implemented through various national wildlife protection policies.

5.6 Great crested newt

The great crested newt (*Triturus cristatus*) is fully protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. The legislation protects the newts and their places of shelter or protection, which may extend 500m from the breeding pond.

5.7 Invertebrates

Under the Conservation of Habitats and Species Regulations 2010, invertebrate species listed on Schedule 2 it is an offence to deliberately capture or kill, disturb, take or destroy eggs of such a species or to damage or destroy the breeding site or resting place of such an animal.

6.0 PROTECTED SPECIES (NATIONAL)

6.1 Plants

Statutory protection in Great Britain is provided by the Wildlife and Countryside Act 1981. The plants and fungi which have special protection are listed on Schedule 8 under which it is an offence to intentionally pick, uproot or destroy any plant on Schedule 8.

Five plant species are listed on the Weeds Act 1959 as injurious: common ragwort (*Senecio jacobaea*), broad-leaved dock (*Rumex obtusifolius*), curled dock (*Rumex crispus*), creeping thistle (*Cirsium arvense*) and spear thistle (*Cirsium vulgare*). The Act requires landowners to eliminate scheduled weeds to prevent their seeds contaminating neighbouring land. The Ragwort Control Act 2003 amends the Weed Act with respect to common ragwort.

Thirty-eight species plus all species of *Elodea* (of which there are currently three species known to have been introduced) are listed on Schedule 9 of the Wildlife and Countryside Act 1981 under which it is an offence to plant or otherwise cause to grow in the wild the scheduled species. Two are marine, thirteen (plus all species of *Elodea*) aquatic and the remainder terrestrial.

6.2 Wild Mammals

Under the Wild Mammals (Protection) Act 1996 it is an offence to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

6.3 Badgers

Badgers are protected under the Protection of Badgers Act 1992. This Act makes it illegal to wilfully kill, injure or take any badger, or attempt to do so and it is an offence to intentionally or recklessly damage, destroy or obstruct access to any part of a badger sett or disturb a badger when it is occupying a sett.

6.4 Water Voles

The water vole (*Arvicola terrestris*) receives protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under the Act it is an offence to intentionally kill, injure or take water voles and intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection or obstruct access to any structure or place used by water voles for shelter or protection or to disturb water voles while they are using such a place.

6.5 **Birds**

In Britain all wild birds are granted legal protection under the Wildlife & Countryside Act 1981 (as amended) and the EC Birds Directive. This legislation protects the birds, their eggs and nests whilst being built or in use.

Legal protection makes it an offence to intentionally kill, injure, take or have in possession any wild bird or egg. It is also an offence to intentionally damage or destroy the nest of any wild bird whilst it is being built or in use. Birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are subject to special penalties and are also protected from disturbance while nesting including the disturbance of dependent young.

6.6 **Reptiles**

The slow-worm (*Anguis fragilis*), grass snake (*Natrix natrix*), adder (*Vipera berus*) and common lizard (*Lacerta vivipara*) are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) in respect of section 9(1) and 9(5) only. Under section 9(1) it is an offence to knowingly kill or injure a reptile. Section 9(5) refers to sale and trade.

6.7 **Invertebrates**

Statutory protection in Great Britain is provided by the Wildlife and Countryside Act 1981. The invertebrates which have special protection are listed on Schedule 5 under which it is an offence to intentionally kill, injure or take these invertebrates and intentionally or recklessly damage or destroy, or obstruct access to, any structure or place used for shelter or protection or disturb any such animal while occupying such a structure or place.

7.0 **BIODIVERSITY CONSERVATION**

Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006 requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The Government has a duty to take reasonably practicable steps to further the conservation of the species and habitats that are included in lists published under Section 41.

Biodiversity 2020: A strategy for England's wildlife and ecosystem services sets out the means by which the Government will comply with its duty under Section 41 of the NERC Act to take or promote the taking by others of steps to further the conservation of listed habitats and species, including through the continued implementation of Action Plans.

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European Community Directive 79/409/EEC on the Conservation of Wild Birds (The Birds Directive).

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Hedgerow Regulations 1997.

National Parks and Access to the Countryside Act 1949.

Natural Environment and Rural Communities Act 2006.

Planning and Compensation Act 1991.

Ragwort Control Act 2003.

The Protection of Badgers Act 1992.

The Conservation of Habitats and Species Regulations 2010, HMSO.

Town and Country Planning Act 1990

Town and Country Planning (Trees) Regulations 1999

UNESCO (1987), Convention on Wetlands of International Importance especially as Waterfowl Habitat as amended by the Conference of Parties 28.05.87.

Weeds Act 1959.

Wild Mammals (Protection) Act 1996.

Wildlife & Countryside Act 1981, and amendments, incl. Third Quinquennial Review of Schedules 5 & 8 to the Wildlife & Countryside Act, 1998.

APPENDIX II

EVALUATION TECHNIQUES

APPENDIX II: ECOLOGICAL EVALUATION TECHNIQUES

1.0 INTRODUCTION

A number of systems and criteria are available to assess the nature and extent of ecological interest found at any site. Guidelines for Ecological Impact Assessment have been prepared by the Institute of Ecology and Environmental Management (2006), which have been employed below. The IEEM guidelines detail a recommended approach to the valuation of ecological receptors on the following scale:

- International importance
- UK importance
- National importance (England/Northern Ireland/Scotland/Wales)
- Regional importance
- County (or Metropolitan)
- District (or Unitary Authority, City or Borough)
- Local or Parish; and/or
- Within zone of influence only

2.0 HABITATS AND FEATURES

Internationally important habitats are considered to be those listed on Annex I of the Habitats Directive. All internationally important examples, however, should have been designated within Special Areas for Conservation (SACs). Other examples should be considered to be of value at the level for which they are designated (see below). There are published guidelines for the selection of SACs (see Brown et al, 1997) and SPAs and Ramsar Sites (Stroud et al, 1990).

There are similar published criteria for the selection of nationally important Sites of Special Scientific Interest (SSSIs) (NCC, 1989) which give criteria for both habitats and species.

The majority of Local Authorities have a system of 'second tier' sites which do not wholly fulfil SSSI designation criteria, but which are, nonetheless, of local to regional value. Policies, encouraged by Government advice, recognise that protection should be extended beyond the statutory sites to include the best examples of wildlife habitats, populations of rare species and geological features remaining in the District and are particularly valuable in supplementing and supporting the national framework for SSSIs. DEFRA (2006) has published Guidance on their Identification, Selection and Management of such sites. The Hedgerow Regulations (1997) provide a useful framework for the assessment of the ecological importance of hedgerows.

It is possible that there may be habitats that do not fall within designated sites but are considered to meet the published selection criteria. Similarly it is possible that habitats within designated sites may not fulfil the criteria for designation in their own right. This may be due to the site having deteriorated or that they have been included for other reasons such as secondary or supporting value. If a habitat is considered to be in an unfavourable condition, consideration must be given to its potential value if restored. Consideration should also be given to secondary or supporting value where a habitat or feature may have no particular interest in itself but may perform an important ecological function such as a buffer against negative impacts or an important link between habitats. The presence of a diverse range of habitats can increase the value of a site.

3.0 SPECIES

A number of resources are available to assess the rarity and vulnerability of individual species. Red Data Lists utilise standard criteria defined by the International Union for the Conservation of Nature (IUCN, 2001, now the World Conservation Union, WCU) to classify the scarcity and conservation status of species of flora and fauna. The Red Data List system can operate at an International, National or Regional level (e.g. County Red Data Lists). The IUCN maintains a list of threatened species on a global scale.

The IUCN threat categories are defined as follows: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD) and Not Evaluated (E). Species falling within the categories CR, EN and VU are considered to be threatened. These categories are defined by five criteria as follows:

- Criterion A considers the percentage decline of a taxon, regardless of current range or abundance.
- Criterion B is designed to identify threats associated with extremely restricted distribution when combined with other risk factors.
- Criterion C considers the combination of extremely small population size with similar risk factors to Criterion B.
- Criterion D identifies very small or restricted populations.
- Criterion E requires quantitative analysis to estimate the extinction probability of a taxon based on known life history, habitat requirements, threats and any specified management options.

Earlier Red Data Lists and Books (such as the British Red Data Book for Insects (Shirt 1987) and subsequent reviews: Falk, 1991 and Hyman and Parsons, 1992) classified species on the former IUCN criteria as: Extinct, Endangered (RDB1), Vulnerable (RDB2), Rare (RDB3) and insufficiently known (RDBK).

Criteria for the selection of Nationally Notable insects (now termed Nationally Scarce) species generally follow Eversham (1983). These Nationally Notable/Scarce species are further divided into Notable A (present in 16-30 squares) and Notable B (31-100 squares).

Rare birds in Britain are defined as any species for which records would have to be verified by the British Birds Rarities Committee. County rarities are taken to include all national rarities and also any species listed in County bird reports requiring a full description, which should be submitted to the relevant County Recorder. The presence of rare birds at any time of year, including locally rare species, adds significantly to the ecological value of a site. In general, however, only rare birds with a regular pattern of occurrence at a site should be included in this category.

National and County distribution atlases and species reports such as county bird reports can provide valuable additional information for evaluation. They can also provide information on species status at the level of geographic coverage of the atlas. Species at the edge of their distribution (especially in the context of global change) and notably large populations of species that are uncommon or threatened in the wider context enhances a species value. A species that is rare and declining should be assigned a higher level of importance than one that is stable. Other rarity related evaluation criteria include the need to protect populations for

which the UK holds a large / significant proportion of the international / European population. The presence of a diverse assemblage of species can enhance the value of a site.

Further guidance on the evaluation of certain protected species has been published by English Nature e.g. Great Crested Newt Mitigation Guidelines (EN, 2001) and Bat Mitigation Guidelines (Mitchell-Jones, 2004) and non-statutory organisations e.g. Froglife (1999, endorsed by English Nature).

4.0 OTHER RESOURCES

4.1 Natural Areas

English Nature (now Natural England) has divided England into 120 'Natural Areas' described as areas of the countryside identified by their unique combination of physical attributes, wildlife, land-use and culture (English Nature, 1998). Natural Areas provide a useful framework for assessing species and habitats beyond the traditional administrative boundaries. In the UK Biodiversity Action Plan they are described as:

"... biogeographical zones which reflect the geological foundation, the natural systems and processes and the wildlife in different parts of England, and provide a framework for setting objectives for nature conservation"

The Natural Area profiles provide contextual information to confirm temporal and spatial scope. They can provide information to aid evaluation of the relative importance of ecological receptors.

4.2 Biodiversity Action Plans

The **UK Biodiversity Action Plan** (UK BAP) published in 1994 (UK Biodiversity Steering Group, 1995-1999) highlighted 38 key habitat types (now termed priority habitats), which were subsequently revised to include 26 non-maritime and 19 maritime priority habitats. A review was undertaken in 2007 resulting in the publication of a new list comprising 1,149 priority species and 65 priority habitats (40 terrestrial and 25 maritime).

Under the 2007 review, priority habitats were selected according to the following criteria:

1. Habitats for which the UK has international obligations;
2. Natural and semi-natural habitats at risk, such as those with a high rate of decline in extent and/or quality, especially over the last 20 years, or which are rare;
3. Habitats important for assemblages of key species.
4. Habitats which are 'functionally critical' i.e. those 'essential for organisms inhabiting wider ecosystems', may be useful in some cases as a supporting criterion but is unlikely to be a qualifying criterion in its own right.

Priority species were selected against the following criteria:

1. International threat;
2. International responsibility (of the UK) + moderate decline in the UK;
3. Marked decline in the UK; or
4. Other important factor(s).

Following the establishment of devolved governments in Scotland, Wales and Northern Ireland in 1998, each country produced its own biodiversity strategy. In 2002, DEFRA published *Working with the Grain of Nature: a biodiversity strategy for England*. This has since been superseded by *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*

(DEFRA, 2011) which builds on the Natural Environment White Paper (TSO, 2011) and provides a comprehensive picture of how the Government is implementing its commitments under the Convention on Biological Diversity and the EU Biodiversity Strategy in England. It sets out the strategic direction for biodiversity policy for the next decade on land (including rivers and lakes) and at sea.

Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006 requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The Government has a duty to take reasonably practicable steps to further the conservation of the species and habitats that are included in lists published under Section 41. The S41 list includes all the habitats and species in England identified as requiring action under the UK BAP with the addition of hen harrier which, without continued conservation action, it is considered unlikely that its population will increase from its current very low levels in England.

Biodiversity Action plans at lower levels such as regional and county have also been produced for many areas.

Selection of habitats and species for BAPs is on the grounds that they are in a sub-optimal state and does not imply any specific level of importance of a habitat or species. The value of priority habitats and species should be determined as described above. Only where a specific habitat or species action plan states that all areas of a particular habitat or all populations of a given species should be protected should the habitat or species be valued at the appropriate level of the BAP. BAPs can assist in ecological evaluation but must be reviewed on a case by case basis.

4.3 Bird Species of Conservation Concern

Bird Species of Conservation Concern in the UK, Channel Islands and Isle of Man was first published in 1996, updated in 2002 (Gregory et. al., 2002) and again in 2009 (Eaton et. al., 2009). The list is prioritised into species of high (red) and medium (amber) conservation concern; all other species are of lower (green) concern. Red-listed species are globally threatened according to IUCN (World Conservation Union) criteria or in rapid decline (greater than 50% over the past 25 years) in the UK, currently or historically and those that have declined historically and not shown a substantial recent recovery. Amber listed species are in moderate decline (25-49% over the past 25 years), rare breeders, localised or internationally important populations, of an unfavourable conservation status in Europe or those whose population has declined historically but made a substantial recent recovery. It should be noted that despite substantial declines, many red-listed species such as skylark (*Alauda arvensis*) and song thrush (*Turdus merula*) remain relatively common in the UK countryside. As for BAPs, inclusion of species on one of the lists is not sufficient in itself for assigning a level of value to the species concerned. Each species should be evaluated according to the guidelines above with reference to the criteria for inclusion of the species.

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APPENDIX III

TARGET NOTES

APPENDIX III: TARGET NOTES

1. Large, well established badger sett with many tunnel entrances within the old canal embankment. Lots of well used holes in addition to further old entrances not currently in use, or being used by rabbits. Signs of current badger use included fresh spoil heaps, obvious, well-worn paths between entrances and badger hair found.
2. Small pond immediately adjacent to the site, surrounded by dense hawthorn, bramble, elder and willow scrub. The pond was holding a large amount of abandoned farm material (scrap metal etc). The pond was assessed as having below average suitability for supporting breeding great crested newts (see HSI table below):

Habitat Suitability Index			SI value	
SI1. Map location	A/B/C	A	1.00	
SI2. Surface area	rectangle/ellipse/irregular	ellipse		
	length (m)	20		
	width (m)	10		
	OR estimate (m ²) if irregular			
	area (m ²) =	157	0.31	
SI3. Dessication rate	never/rarely/sometimes/frequently	sometimes	0.50	
SI4. Water quality	good/moderate/poor/bad	poor	0.33	
SI5. Shade	% of margin shaded 1m from bank	90	0.40	
SI6. Waterfowl	absent/minor/major	minor	0.67	
SI7. Fish population	absent/possible/minor/major	possible	0.67	
SI8. Pond density	number of ponds within 1km	1	0.69	
SI9. Terrestrial habitat	good/moderate/poor/isolated	moderate	0.67	
SI10. Macrophyte cover	%	0	0.31	
Note:			HSI score =	0.52
<i>HSI calculation formulae adapted from Rob Oldham</i>			Pond suitability =	below average

3. Several fresh fox scats.
4. Small chalk stream immediately adjacent to the site with slow flowing water to the west. Several fresh water vole latrines were found alongside this stream, indicating the presence of water voles.
5. Large, south facing earth bank with scattered hawthorn and elder scrub with occasional ash trees. Other species comprise ivy, lords-and-ladies, white dead nettle, teasel, spear thistle, wood dock, ground ivy, red champion, lesser celandine, lesser burdock, hogweed and common cleavers. This bank has good reptile potential.

