Ecology Solutions Limited
Farncombe House
Farncombe Estate
Broadway
Worcestershire
WR12 7LJ

+44(0)1451 870767
info@ecologysolutions.co.uk
www.ecologysolutions.co.uk

LAND AT HURST FARM, TURNERS HILL ROAD, CRAWLEY DOWN

Briefing Note: Phase 1 habitat survey & protected species assessment

Introduction

1. Ecology Solutions was commissioned by Reside Development Ltd in June 2019 to undertake Ecological Assessment work of land at Hurst Farm, Turners Hill Road, Crawley Down (the site) as well as a wider study area (see Plan ECO1). Ecology Solutions was further instructed to carry out a Biodiversity Net Gain assessment of the site in June 2023.

2. Emerging proposals are for small-scale residential development alongside the provision of open space.

3. The site comprises a small farmstead (chicken farm), dominated by species-poor grassland, agricultural buildings, bare ground and hardstanding. The wider study area, adjacent to the site at its western and part of the southern edge, comprises an area of ancient, semi-natural, broad-leaved woodland known as Pescotts Wood.

4. Woodland forms much of the site's northern and western boundaries, as well as a portion of the southern boundary. Agricultural land forms the remainder of the southern boundary, with roads and built form (residential development) to the east.

5. The purpose of the Phase 1 survey was to ascertain the biodiversity value of the habitats present, to identify the potential of the site to support protected and notable faunal species and to advise on the appropriateness of development within the site.

Survey Methodology

Habitat Survey Methodology

6. Ecology Solutions undertook a habitat survey of the site in July 2019, with an update survey completed in June 2023. The survey was based around an

extended Phase 1 survey methodology[1], as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified would then be examined in more detail.

7. The habitats present within the site and wider study area were classified into areas of similar botanical community types with a representative sample of those species present at the time of the survey being described where necessary.

8. The habitat survey was undertaken within the recommended optimal survey period for Phase 1 habitat and botanical surveys. The vegetation present enabled the habitat types to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.

Faunal Surveys

9. General faunal activity observed during the course of the surveys was recorded, whether visually or by call. Specific attention was paid to the potential presence of any protected, rare, notable or priority (i.e. those included on BAPs) species. In addition, specific surveys were undertaken for Bats, Badgers *Meles meles*, Reptiles, Great Crested Newts (eDNA) and Dormouse.

10. **Badgers.** Specific survey was undertaken as part of the habitat survey in July 2019. Survey comprised two main elements. The first of these was a thorough search for evidence of Badger setts. For any setts that were encountered each sett entrance was noted and plotted even if the entrance appeared disused. The following information was recorded:

    i) The number and location of well used or very active entrances; these are clear from any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.

    ii) The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.

    iii) The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.

11. Secondly, Badger activity such as well-worn paths and run-throughs, snagged hair, footprints, latrines and foraging signs was recorded so as to build up a picture of the use of the site (if any) by Badgers.

12. **Bats.**

Roosting bats

[1] Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. JNCC, Peterborough.

13. All trees and structures within and adjacent to the site were assessed for their potential to support roosting bats in July 2019.

14. For a tree to be classed as having some potential for roosting bats it must usually have one or more of the following characteristics:

- obvious holes, e.g. rot holes and old woodpecker holes;
- dark staining on the tree below a hole;
- tiny scratch marks around a hole from bats' claws;
- cavities, splits and / or loose bark from broken or fallen branches, lightning strikes etc; and / or
- very dense covering of mature Ivy over trunk.

15. The probability of a building being used by bats as a summer roost site increases if it:

- Is largely undisturbed;
- Dates from pre-20th Century;
- Has a large roof void with unobstructed flying spaces;
- Has access points for bats (though not too draughty);
- Has wooden cladding or hanging tiles; and/or
- Is in a rural setting and close to woodland or water.

16. Conversely, the probability decreases if a building is of a modern or pre-fabricated design/construction, is in an urban setting, has small or cluttered roof voids, has few gaps at the eaves or is a heavily disturbed premises.

Foraging and commuting bats

17. Several bat activity surveys were undertaken at the site between July and October 2019. Bat activity surveys consisted of surveyors walking pre-determined transects and recording any bats seen as well as their behaviour (foraging, commuting etc). Echo Meter Touch 2 pro (EM2) bat detectors were utilised to record the data. Surveys were undertaken during suitable weather conditions.

18. SongMeter4 (SM4) and Song Meter Mini bat detectors were also deployed in strategic locations within the site and left to record for a minimum of five nights following each activity survey between July and October 2019.

19. All recorded data was subsequently analysed using Kaleidoscope sound analysis software. A suitably experienced ecologist then manually analysed the results and corrected any misidentified registrations.

20. This survey method, aimed to identify the level of foraging, and the species present foraging and commuting within the site and any area of potentially high importance for foraging / commuting bats.

21. **Reptiles.** The majority of the site comprises regularly maintained grassland. As such, opportunities for reptiles within the site are limited to the boundary features (hedgerow / woodland edge) and isolated patches of ruderal vegetation. Woodland within the wider study area also provides some limited opportunities for reptiles.

22. To determine whether reptiles were present within the site, a suite of reptile surveys was undertaken in summer and autumn 2019. A total of 54 artifiical refugia, commonly referred to as “tins” (0.5m x 0.5m section of roofing felt) were placed within / adjacent to suitable habitat on 6th August 2019. These tins were left to bed in for a period of at least two weeks before reptile checks commenced.

23. All surveys were carried out in suitable weather conditions, (widely accepted as including air temperature between 10°C and 20°C). Heavy rain and windy conditions were avoided.

24. The tins provide shelter and heat up quicker than the surroundings in the morning and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask and raise their body temperature which allows them to forage earlier and later in the day.

25. **Great Crested Newts.** Two small ponds are present within the site, both of which were considered sub-optimal to support breeding amphibians on account of either an absence of aquatic vegetation or their ephemeral nature.

26. However, on a precautionary basis, these waterbodies were subject to environmental DNA (eDNA) surveys in June 2019.

27. Pond water sampling kits supplied by SureScreen Scientifics were utilised for the eDNA survey work, with the sampling methodology undertaken fully according with that recommended by the supplier. Water samples were subsequently sent to SureScreen Scientifics for laboratory analysis.

28. **Dormouse.** A Dormouse nest tube survey was undertaken within the site in 2019. Dormouse nest tubes were placed in early August 2019 with checks carried out between August and November 2019. This survey involved the placement of nest tubes within all suitable habitat (hedgerows / treeline and woodland edge) as detailed within Natural England’s Conservation Handbook[2] and standing advice.

29. The Dormouse nest tubes utilised were those provided as standard by the Mammal Society and were placed in accordance with the guidance provided by the Mammal Society and Natural England[3]. Typically, tubes are placed within hedgerows approximately every 20 metres where suitable locations can be identified. The nest tubes were attached with ties underneath suitably sturdy horizontal branches and positioned on average at approximately 1.5 metres above ground level. 100 nest tubes were placed across the site and wider study area.

30. The surveys have been scored for effort according to the method developed from the South West Dormouse Project (Chanin and Woods 2003). The system used provides an overall score that reflects the chances of Dormice being discovered if present, and thus provides an indicator of ‘thoroughness’ of a survey. This score is calculated based on the number of tubes used and the number of months the tubes were in place.

[2] Natural England . 2006. The Dormouse Conservation Handbook. Second Edition. Peterborough.
[3]Chanin P. & Woods M. 2003. Research Report 524, *‘Surveying Dormice Using Nest Tubes – Results & Experiences from the South West Dormouse Project’*. English Nature, Peterborough.

31. The months of the year are weighted according to the likelihood of recording Dormice as set out below (table 1).

Table 1: Monthly Score Weighting (Chanin & Woods 2003)

Month	Weighting
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

32. The index of effort is calculated based on the use of 50 nest tubes as a standard minimum, with less tubes used proportionately reducing the overall score and more tubes proportionately increasing the score (i.e. 25 tubes halve the score and 100 tubes double the score).

33. A score of 20 (or above,) is deemed a thorough survey, and a score of 15 to 19 may be regarded as adequate where circumstances do not permit more time or more tubes (particularly if other survey methods have also proved negative).

34. The number of tubes used was 100 and they were all checked between August and November 2022. This results in a score of 18 [(5+7+2+2) = 16. 16 x 2 = 32] for the surveys completed, which is deemed a thorough survey.

Survey Findings and Evaluation

Habitat Survey Results

35. The following main habitat / vegetation types were identified within/adjacent to the site and wider study area during the initial survey in 2019:

- Grassland;
- Buildings / Structures;
- Ruderal Vegetation;
- Hardstanding;
- Bare Ground;
- Hedgerow;
- Waterbodies;
- Woodland; and
- Trees.

36. The update survey in June 2023, found no significant change in the habitats present within the site. All habitats present are described below.

Grassland

37. Much of the site comprises areas of species-poor grassland which are regularly managed through mowing.

38. These areas support a typical assemblage of species, being invariably dominated by Yorkshire Fog *Holcus lanatus* and Perennial Rye-grass *Lolium*

perenne, with occasional Creeping Bent *Agrostis stolonifera*. Herbs were only sparsely recorded and included for a limited range of common species such as White Clover *Trifolium repens*, Meadow Buttercup *Ranunculus acris*, Broad-leaved Dock *Rumex obtusifolius*, Field Forget-me-not *Myosotis arvensis*, Bird's-foot Trefoil *Lotus corniculatus*, Ribwort Plantain *Plantago lanceolata*, Selfheal *Prunella vulgaris*, Mugwort *Artemisia vulgaris*, Silverweed *Argentina anserina* and Scarlet Pimpernel *Anagallis arvensis*.

39. An area of amenity grassland was recorded in the east of the site and comprised an area of species-poor, regularly mown lawn with a minimal herb assemblage.

Buildings and Structures

40. The site supports several agricultural buildings, these are labelled B1-B6 on Plan ECO1.

41. **B1** and **B4** are metal framed buildings with metal roofs and walls and are open at one aspect. **B2** and **B3** are breezeblock buildings with wood panel walls and corrugated sheet roofs. They are utilised as chicken pens. **B5** and **B6** are wooden sheds with corrugated sheet roofs.

42. The remaining structures on site comprise small wooden sheds.

Ruderal Vegetation

43. Several pockets of ruderal vegetation are present within the site. These areas support a small assemblage of species typical of disturbed ground and enriched soil conditions, including Greater Willowherb *Epilobium hirsutum* , Common Nettle *Urtica dioica*, Redshank *Persicaria maculosa*, Cleavers *Galium aparine*, Creeping Thistle *Cirsium arvense*, Hogweed *Heracleum sphondylium*, Spear Thistle *Cirsium vulgare*, Bristly Ox-tongue *Helminthotheca echioides*, Hawkbit *Leontodon* sp., Silverweed, Germander Speedwell *Veronica chamaedrys*, Pendulous Sedge *Carex pendula*, Scentless Mayweed *Tripleurospermum inodorum,* Tufted Vetch *Vicia cracca*, Knotgrass *Polygonum aviculare*, Purple Toadflax *Linaria purpurea* and Fleabane *Pulicaria dysenterica*.

44. Scattered scrub is occasionally recorded in these areas and is dominated by Bramble. Occasional tree saplings, including Birch *Betula* sp, and Oak *Quercus robur*, were also recorded.

Hardstanding

45. An area of hardstanding is present within the site in the form of a farm access track. This habitat supports little floristic diversity and is of negligible ecological interest.

Bare Ground

46. Areas of bare ground are present around several of the buildings on site. These areas are again of negligible ecological value.

Hedgerow

47. A small stretch of hedge (**H1**) is present within the site. **H1** forms part of the site's southern boundary at its eastern extent and supports a limited range of native

and amenity species including Dog Rose *Rosa canina*, Apple *Malus* sp., Ash *Fraxinus excelsior*, Pedunculate Oak *Quercus robur*, Goat Willow *Salix caprea*, Travellers Joy *Clematis vitalba* and Sweet Pea *Lathyrus odoratus*.

Waterbodies

48. Two waterbodies are present within the site. **P1** is a pond present in the north of the site. The pond measures approx. 5m by 4m and is over-shaded, with no aquatic vegetation present. **P2** held a shallow depth of water in June 2019 however was dry during surveys undertaken in July 2019. It is located in the south-east of the site. No aquatic vegetation was present, with this area supporting Willows *Salix* sp. and Hard Rush *Juncus inflexus*.

Woodland / Tree Belts

49. An area of broad-leaved woodland is present to the west of the site (**W1**) and comprises the entirety of the wider study area. Additional woodland is present outside of the site boundary along the southern (**W2)** and northern site boundaries (**W3)**.

50. Woodland **W1**, known as Pescotts Wood, is an area of mature broad-leaved woodland which is identified on the ancient woodland register. The woodland includes several mature Pedunculate Oak, with Silver Birch *Betula pendula* and Sweet Chestnut *Castanea sativa* also present. Beech *Fagus sylvatica* is present at the western boundary of the woodland. Shrub species associated with the woodland were largely limited to the eastern frontage, species present include Rowan *Sorbus aucuparia*, Holly *Ilex aquifolium* Goat Willow, Bramble, Elder *Sambuccus nigra* and Hazel *Corylus avellana*. Rhododendron was also abundantly recorded. Hybrid Bluebell *Hyacinthoides non-scripta x hispanica* was occasional throughout the woodland.

51. **W2** is also known as Pescotts and has a comparable composition to **W1**, with Silver Birch abundant and Oak, Hazel, Holly, Beech and Sweet Chestnut all present. Goat Willow and Rowan were recorded in the understorey, as was Bramble. Ground flora of the woodland includes Bracken, Common Nettle and Foxglove *Digitalis purpurea*. This area of woodland is again recorded on the ancient woodland register.

52. **W3** is located beyond the northern boundary of the site and supports a belt of trees along its frontage. Species recorded include Silver Birch, Beech, Ash, Oak, Rowan, Grey Willow *Salix cinerea* and Goat Willow recorded. Three belts of trees (**T1** - **T3**) which adjoin **W3**, are located within the site and are described below.

53. **T1** comprises a belt of semi-mature trees with Oak, Sycamore *Acer pseudoplatanus*, Ash and Beech.

54. **T2** runs along part of the site's northern boundary (adjacent to **W2**) before turning into the site. It is a scrubby belt comprising Hazel, Oak, Goat Willow, Grey Willow, Beech, Silver Birch and Holly. Bramble is also occasionally present, with Common Nettle and Bracken comprising the ground flora.

55. **T3** is located within an amenity garden. Species present include Ornamental Willow *Salix* sp., Oak, Cherry *Prunus* sp., *Rhododendron* sp., Copper Beech, *Magnolia* sp., Ash, Holly and Bramble.

56. It is understood that as part of the emerging proposals woodland habitats will be retained in their entirety and moreover enhanced, not least through the establishment of a landscaped buffer adjacent to areas of ancient woodland.

Trees

57. In addition to the area of woodland and tree belts, a number of scattered trees are present within the study area. The species composition of these individual trees is comparable to that recorded within the tree belts, albeit with a number of amenity species also present.

Fauna

58. General observations were made during the surveys of any faunal use of the site with specific attention paid to the potential presence of any protected, rare, notable or priority species. In addition, specific surveys were undertaken for Bats, Badgers *Meles meles*, Reptiles, Great Crested Newts (eDNA) and Dormouse.

Bats

59. All buildings / structures within the site are considered completely unsuitable to support roosting bats, being built of prefabricated materials which heat and cool rapidly and with an absence of any voids. No evidence of bats was recorded during the internal and external survey work undertaken by Ecology Solutions.

60. A single tree within the site was considered to be of some (low) potential to support roosting bats during assessment undertaken in 2019 on account of its maturity and the presence of dense Ivy, however no distinct roosting features, such as holes or cracks, were noted. The location of this tree is shown on Plan ECO1. In addition, a small number of trees with bat potential were also recorded within **W1** in the wider study area. Initial inspections of these trees found no evidence of roosting bats.

61. Impacts are not expected to arise on any trees within **W1** on account of the emerging proposals. However, all potential impacts both within the site and the wider study area will be reassessed prior to any planning submission.

Bat activity surveys

62. The habitats within the site are predominantly considered to be of low value to foraging and commuting bats, being dominated by buildings, hardstanding and managed species-poor grassland. On this basis, foraging and commuting opportunities are considered to be largely restricted to the boundary woodland habitats, including that within the wider study area.

63. The bat activity surveys undertaken in 2019 found the site to be utilised by a range of common and widespread species. Relatively low number of registrations were recorded during each of the surveys indicating that the site is not of any significant value for bats.

64. Noting the above and given the small size of the site, it is considered that the retention of areas of woodland and boundary vegetation as part of an appropriately designed landscape strategy and the adoption of a sensitive lighting strategy would ensure that the value of the site for bats is retained as part of any emerging development proposals. Indeed, opportunities for

enhancement exist through the establishment of diverse woodland edge habitat as buffers adjacent to existing areas of ancient woodland.

Badgers

65. Specific surveys for Badgers were undertaken in July 2019. No evidence of current or past use by Badgers was recorded within the site. As such, whilst the site may provide an occasional resource for Badgers present in the local area, the site is not of significance to this faunal group.

66. Whilst no mitigation would be required for this faunal group based on current findings, further survey work would be completed prior to any planning application.

Birds

67. The scattered scrub, hedgerows and trees within the site offer a degree of suitable foraging and nesting habitats for bird species, albeit it is noted that significantly improved opportunities area present within the wider study area and indeed in the local area (where mature woodland is frequent).

68. A range of common and widespread bird species were noted on site during the habitat survey including Robin *Erithacus rubecula*, Wren *Troglodytes troglodytes*, Greenfinch *Chloris chloris*, Blackbird *Turdus merula*, Starling *Sturnus vulgaris*, Green Woodpecker *Picus viridis*, Pied Wagtail *Motacilla alba*, Great Tit *Parus major* and Collared Dove *Streptopelia decaocto*.

69. The retention and buffering of boundary woodland, including that within the wider study area, would be sufficient to ensure that opportunities for nesting birds are retained and enhanced as part of any emerging proposals.

70. Specific mitigation for protecting nesting birds will be implemented to ensure that no impacts occur. Any clearance of suitable habitat will be undertaken outside of the main nesting season (April – end of July) or will be subject to checks by a suitably experienced ecologist prior to clearance.

Reptiles

71. Parts of the site are considered to provide potential opportunities for common reptile species, albeit these are limited to smaller pockets of taller ruderal vegetation within the site. The grass sward is suppressed to such an extent that this it offers little value reptiles.

72. Notwithstanding the limited extent of suitable habitat, a suite of reptile surveys was completed in summer / autumn 2019. These surveys resulted in a peak count of 1 Grass Snake *Natrix helvetica* being recorded on two separate occasions. Given the low numbers of reptiles recorded it is considered that this species group can be appropriately safeguarded within retained habitats at the site (i.e. landscaped woodland buffers / grassland), with a staged directional cut implemented to encourage reptiles from the developable area into suitable retained habitat.

73. The amount of suitable habitat has not significantly changed since the survey undertaken in 2019. However, habitats will be reassessed prior to any planning application with additional surveys undertaken as necessary.

Amphibians

74. There are two 'ponds' located within the site, albeit one of these (**P2**) appears to hold water on an ephemeral basis. The only other pond identified within a 250m radius of the site (when accounting for barrier to dispersal) was located approximately 150m to the north of the site at its closest point. The majority of the site provides sub-optimal terrestrial opportunities for amphibian species, comprising extensive areas of built form, short managed grassland and bare ground.

75. Notwithstanding the limited suitability of the on-site ponds to support breeding amphibians, an eDNA survey was undertaken in June 2019. Access to the offsite pond, located approximately 150m to the north of the site was requested but access was refused by the landowner.

76. The eDNA survey confirmed the absence of GCN from the site (negative return for both ponds). The technical report produced by SureScreen is provided at Appendix 1. While no further eDNA survey was carried out during 2023, no significant changes were recorded from either pond. Their condition is still considered to be sub-optimal for supporting GCN.

77. Great Crested Newts (GCN) are known to travel up to 500 metres – without barriers that inhibit dispersal – to a breeding pond, however it is widely accepted that they most commonly utilise suitable terrestrial habitat within a much closer distance, and activity is usually concentrated within 100 metres of breeding ponds with key habitat being located within 50 metres[4]. Indeed, Research Report 576 produced by English Nature (now Natural England) concludes that "Captures on fences (and by other methods) at distances between 100m and 200-250m from breeding ponds tended to be so low as to raise serious doubts about the efficacy of this as an approach".

78. Indeed, current guidance by Natural England takes this a step further, stating that '*impacts beyond the core area often have little or no tangible impact on the viability of populations*'[5].

79. The habitats present in close proximity to the pond to the north of the site offers more suitable foraging and refuge opportunities for GCN in the form of woodland, scrub and grassland than is present within the site and it is not considered likely that GCN (if present within this pond) would commute to the site from this location.

80. In light of the above, given the sub-optimal nature of the terrestrial and aquatic habitats present within the site, along with previous survey results it is not considered that GCN would be present within the site, nor that the site offers any significant opportunities for this species.

81. An appropriate landscaping regime for the proposals would have scope to provide improved foraging opportunities for common amphibians which may be present in the local area in the form of rough/meadow grassland.

[4] English Nature (2001) *Great Crested Newt Mitigation Guidelines*. Version: August 2001
[5] Natural England. Great Crested Newt Method Statement for EPS Licence Application.

Dormouse

82. The hedgerow and tree belts within the site offer some (limited) potential habitat for Dormouse, with significantly improved opportunities offered by the woodland habitats which form the wider study area and elements of the site boundary.

83. Dormouse surveys undertaken monthly between August and November 2019 found no evidence of dormouse being present.

84. Habitats within the site have not changed significantly since the surveys were undertaken in 2019, as such it is considered that dormice are not likely to have colonised the site since previous surveys. However, habitats will be reassessed prior to any planning application with additional surveys undertaken as necessary.

Other Species

85. The site is considered to provide a degree of opportunities for a range of small mammal species and common and widespread invertebrates. However, given the small size of the site as well as the habitats present, there is nothing to suggest that the site would be of significance to these faunal groups, nor any other protected or notable species.

Other Considerations

Ancient Woodland

86. The two areas of woodland identified as Pescotts Wood are identified on the ancient woodland inventory. Noting these designations, emerging development proposals will seek to safeguard and enhance these areas of woodland, as desired through both national and local planning policy.

87. At this stage it is considered that all areas of ancient woodland will be buffered from built form by a landscaped buffer. This buffer will comprise native planting of an appropriate species composition to complement the existing woodland. It is envisaged that these buffers will be managed as woodland edge habitat, with a gradation of structure from mature trees to shrub and subsequently ruderal vegetation, rough grassland and meadow grassland.

Biodiversity Net Gain

88. The information obtained from the initial walkover survey and during the update site visit was used to categorise habitats and assess their condition. This information was then input into the latest version of the DEFRA metric (version 4.0). Table 1 is a summary of the habitats on-site and their associated habitat unit values.

89. A BNG assessment was subsequently run to determine the level of net gain possible for any emerging proposals. The BNG assessment (see below) indicates that a net gain of at least 10% is achievable.

90. To complete the BNG assessment a post-development situation has been chosen based on emerging proposals that includes creation of species-rich wildflower meadow at the boundaries of the site as well as SuDS being sown with a suitable species-rich seed mix. Additional amenity grassland would also be created throughout the site to be used as open space. Emerging proposals also propose a large number of standalone trees, which would provide further improvements to biodiversity within the site. Table 2 shows a summary of post-development habitats. The assessment has been undertaken with a precautious approach. For instance, it is considered likely that many individual trees (within areas of open space) would be likely to reach moderate condition, however poor condition has been selected on this occasion.

Habitat Type	Area (ha)	Condition	Habitat Units
Modified Grassland	0.077	Poor	0.15
Developed Land	0.548	N/A	0.00
Bare Ground	0.051	Poor	0.10
Other Neutral Grassland	1.052	Poor	4.21
Ponds (non-priority)	0.008	Poor	0.03
Ruderal / Ephemeral	0.246	Poor	0.49
Individual Trees	0.057	Poor	0.23
Totals (areas excl trees)	**1.98**		**5.22**

Table 1: Baseline Habitats and Habitat Units.

Habitat Type	Area (ha)	Condition	Habitat Units
Modified Grassland	0.351	Poor	0.68
Developed Land	0.692	N/A	0.00
Other Neutral Grassland	0.399	Good	3.35
Mixed Scrub	0.112	Moderate	0.75
Vegetated Gardens	0.413	N/A	0.80
Other Neutral Grassland (SUDs)	0.01	Moderate	0.07
Individual Trees	0.2931	Poor	0.82
Totals (areas exc trees)	**1.98**		**6.47**

Table 2: Post Development Habitats

91. The scenario presented in tables 1 and 2 results in a net gain score of +27.5% above the baseline. It should be noted that this scenario simply demonstrates that a score of at least 10% is achievable. A final BNG score for the development proposals would be provided as part of any future planning application.

92. In addition to the habitats shown and described above, there is scope to enhance the existing woodland to the west of the site, within the wider study area. Currently, it is considered to be in 'poor' condition. Enhancing it to moderate or good condition through management measures such as (amongst other measures) control of non-native Rhododendron, would create additional habitat units.

Summary

93. The site is dominated areas of built form, hardstanding, bare ground and intensively managed grassland, all of which are of limited to no intrinsic ecological interest and which provide very limited opportunities to faunal species. Whilst the tree belts, individual trees and hedge within the site provide a degree of botanical interest, the primary interest is offered through the presence of mature woodland, with this comprising the wider study area, as well as part of the site boundary.

94. This woodland / edge habitat provides modest opportunities for bats and birds in terms of foraging and roosting/nesting opportunities. In contrast, the habitats within the site provide only very limited opportunities for these faunal groups, albeit some areas of ruderal vegetation offer a degree of potential opportunities for common reptiles with surveys undertaken in 2019 recording a low population of grass snake.

95. Specific survey work undertaken with regards to Badgers, GCN and Dormouse in 2019, found no evidence of any of these being present within the site or the wider study area. Suitable habitats for GCN and dormouse has not changed significantly since the previous surveys and as such it is considered that the site is not utilised by either species.

96. In terms of biodiversity net gain (BNG) it is considered that given the habitats present currently, a net gain in biodiversity units of at least 10% above the baseline will be achievable.

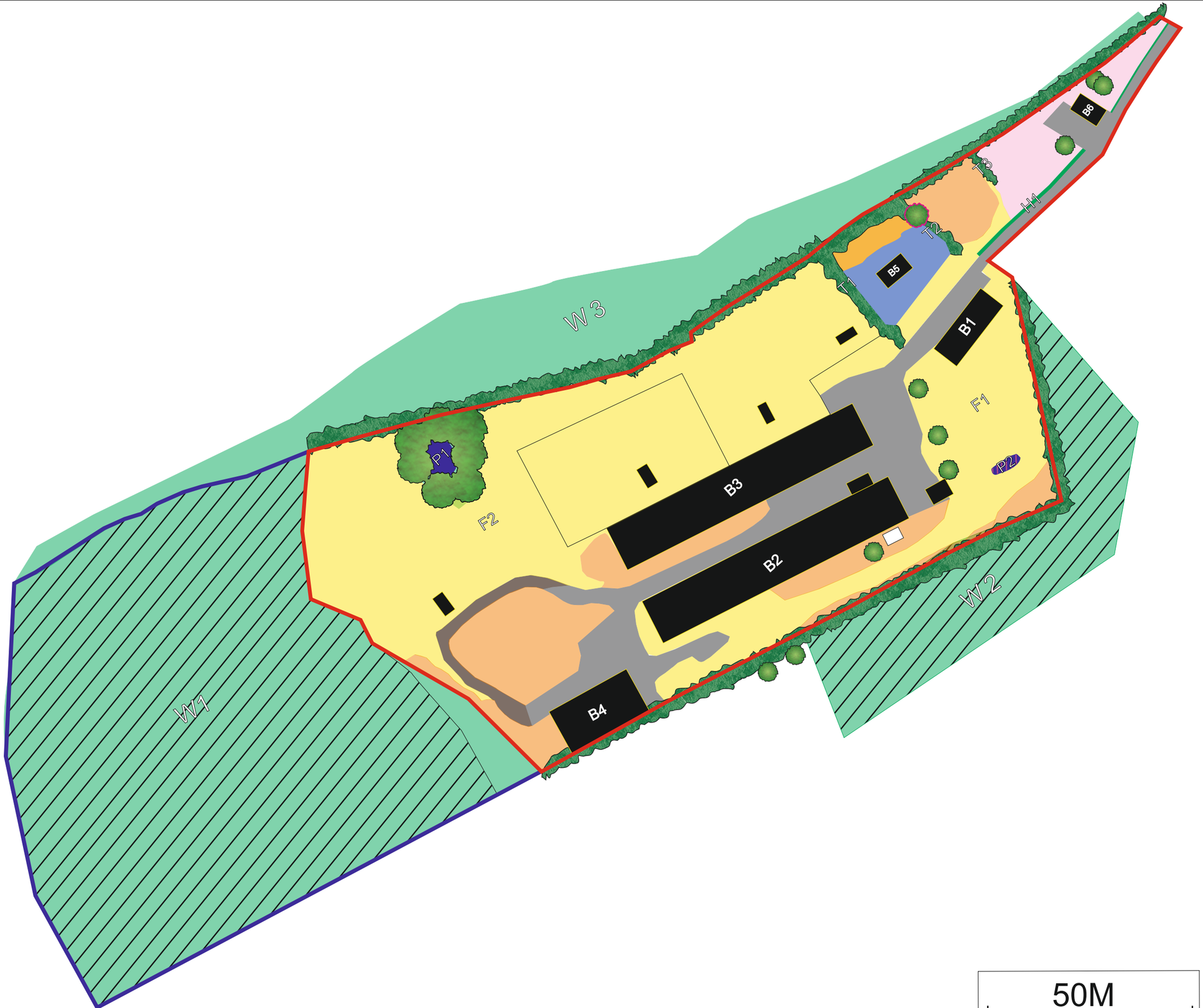
97. Overall, it is considered that a development scheme could come forward which includes an appropriate level of mitigation and enhancement measures, such that not only are adverse effects mitigated, but net benefits for biodiversity are realised.

PLANS AND APPENDICES

PLANS

PLAN ECO1

Ecological Features



KEY:

- APPLICATION SITE
- WIDER SURVEY AREA
- BUILDING
- HARDSTANDING
- BROADLEAVED WOODLAND
- ANCIENT WOODLAND
- RUDERAL SCRUB
- RE-COLONISING HARDSTANDING (TRACK)
- IMPROVED GRASSLAND
- AMENITY GRASSLAND
- BARE GROUND
- POND
- DRY POND
- GREENHOUSE
- TREE
- TREE WITH LOW BAT POTENTIAL
- TREELINE
- HEDGEROW
- FENCE

N

50M

ECOLOGYSOLUTIONS
Part of the ES Group

Farncombe House
Farncombe Estate | Broadway
Worcestershire | WR12 7LJ

+44(0)1451 870767
info@ecologysolutions.co.uk
ecologysolutions.co.uk

11796: HURST FARM, CRAWLEY DOWN

PLAN ECO1: ECOLOGICAL FEATURES

Rev: A

AUG 23

APPENDICES

APPENDIX 1

eDNA Technical Report

(SureScreen)

SureScreen Scientifics

Folio No:	E5773
Report No:	1
Order No:	HL8488
Client:	ECOLOGY SOLUTIONS LTD
Contact:	Harri Lee
Contact Details:	harri.lee@ecologysolutions.co.uk
Date:	10/07/2019

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 28/06/2019
Date Reported: 10/07/2019
Matters Affecting Results: None

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
2655	Pond P1, Crawley	TQ 33535 38150	Pass	Pass	Pass	Negative	0
4310	Pond P2, Crawley	TQ 33665 38003	Pass	Pass	Pass	Negative	0

SUMMARY

When Great Crested Newts (GCN); Triturus cristatus inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has

been received back in to the laboratory, this sample number is tracked throughout the laboratory.

Site Name- Information on the pond.

O/S Reference – Location/co-ordinates of pond.

SIC- Sample Integrity Check. Refers to quality of packaging, absence of tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to results errors. Inspection upon receipt of sample at the laboratory. To check if the Sample is of adequate integrity when received. Pass or Fail.

DC- Degradation Check. Analysis of the spiked DNA marker to see if there has been degradation of the kit since made in the laboratory to sampling to analysis. Pass or Fail.

IC- Inhibition Check- PCR inhibitors can cause false results. Inhibitors are analysed to check the quality of the result. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will cause an indeterminate sample and must be sampled again.

Result- NEGATIVE means that GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as no evidence of GCN presence. POSITIVE means that GCN eDNA was found at or above the threshold level and the presence of GCN at this location at the time of sampling or in the recent past is confirmed. Positive or Negative.

Positive Replicates- To generate the results all of the tubes from each pond are combined to produce one eDNA extract. Then twelve separate analyses are undertaken. If one or more of these analyses are positive the pond is declared positive for the presence of GCN. It may be assumed that small fractions of positive analyses suggest low level presence but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive.

METHODOLOGY

The laboratory testing adheres to strict guidelines laid down in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt, Version 1.1

The analysis is conducted in two phases. The sample first goes through an extraction process where all six tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (also called q-PCR). This process amplifies select part of DNA allowing it to be detected and measured in ‘real time’ as the analytical process develops. qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal cycling. The accumulation of fluorescent signals during the exponential phase of the reaction is measured for fast and objective data analysis. The point at which amplification begins (the Ct value) is an indicator of the quality of the sample. True positive controls, negatives and blanks as well as spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared so they act as additional quality control measures.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no DNA from other species present in the water is amplified. The unique sequence appropriate for GCN analysis is quoted in DEFRA WC 1067 and means there should be no detection of closely related species. We have tested our system exhaustively to ensure this is the case in our laboratory. We can offer eDNA analysis for most other species including other newts.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. Kits are manufactured by SureScreen Scientifics to strict quality procedures in a separate building and with separate staff, adopting best practice from WC1067 and WC1067 Appendix 5. Kits contain a ‘spiked’ DNA marker used as a quality control tracer (SureScreen patent pending) to ensure

any DNA contained in the sampled water has not deteriorated in transit. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd also participate in Natural England's proficiency testing scheme and we also carry out inter-laboratory checks on accuracy of results as part of our quality procedures.

Reported by: Chris Troth **Approved by:** Sarah Evans

End Of Report