

CLITHEROE HOSPITAL, CHATBURN ROAD, CLITHEROE

UPDATED ECOLOGICAL SURVEY AND ASSESSMENT

October 2012

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SUMMARY

Scope of Survey and Background

- a. ERAP Ltd (Consultant Ecologists) was commissioned by the Eric Wright Group to carry out an updated Ecological Appraisal of the land at Clitheroe Hospital, Clitheroe (hereafter referred to as 'Study Area 2', central grid reference SD 754 430) in late September 2012.
- b. This is an update of a survey carried out by ERAP Ltd in 2008. The original survey area comprised two adjacent sites (see ERAP Ltd. Report 2008_109, Ecology Survey and Assessment: Clitheroe Hospital, Chatburn Road, Clitheroe (September 2008)). This updated survey covers Study Area 2 only. Study Area 2 is a field to the north-east of the existing hospital, which is proposed as the site for a new hospital building.
- c. The assessment presents the results of a comprehensive ecological survey of Study Area 2 carried out in September 2012 and, where appropriate, relevant survey results from the 2008 report for ease of reference. The scope of survey undertaken is appropriate to enable the identification and accurate assessment of any ecological constraints on development and opportunities for biodiversity enhancement associated with the development proposals in accordance with aims stated in the National Planning Policy Framework (NPPF).

Designated Sites

- d. No statutory or non-statutory designated sites will be directly or adversely affected by the proposals.

Flora and Fauna

- e. The presence of woody vegetation at the western, southern and eastern boundaries of Study Area 2, suitable for breeding birds and foraging bats and birds (including three UK Biodiversity Action Plan (BAP) Priority Species of bird) is recognised in this report and recommendations are described at Section 5.
- f. Study Area 2 contains no rare or uncommon plant species. None of the habitats within the Study Area is UK BAP Priority Habitat.
- g. The ecological survey information has informed the preparation of the development proposals and construction phasing/timing. All efforts have been made to minimise any adverse effects on biodiversity. This report provides a detailed description of all mitigation and best practice.
- h. This report provides guidance for the conservation and enhancement of habitat features for wildlife within Study Area 2 and for other wildlife species that could be attracted to the site to increase its biodiversity. This report provides guidance with all other biodiversity considerations which must be applied throughout the design and construction of Study Area 2.

Conclusion

- i. In conclusion, the construction of the new hospital at Study Area 2 can be achieved without adverse effects on biodiversity, designated sites and protected species. Further, the development provides a realistic opportunity to achieve enhancement of biodiversity.

Footnote regarding Study Area 1 (the existing hospital site)

- j. Specific, detailed method statements for the protection of protected species and removal of invasive species relevant to the existing Clitheroe Hospital (Study Area 1) have been prepared as part of the original ecological study of the site (see ERAP Ltd. Report 2008_109, Ecology Survey and Assessment: Clitheroe Hospital, Chatburn Road, Clitheroe (September 2008)). It is recognised that the ecological surveys for protected species, namely bats, relevant to Study Area 1 within the site will require updating at such time as suitable prior to the commencement of works at Study Area 1.

1.0 INTRODUCTION

1.1 Background

- 1.1.1 ERAP Ltd (Consultant Ecologists) was commissioned by the Eric Wright Group to carry out an updated Ecological Appraisal of the land at Clitheroe Hospital, Clitheroe (hereafter the 'Study Area 2', central grid reference SD 754 430) in late September 2012.
- 1.1.2 This is an update of a survey carried out by ERAP Ltd in 2008. The original study area comprised two adjacent sites (see ERAP Ltd. Report 2008_109, *Ecology Survey and Assessment: Clitheroe Hospital, Chatburn Road, Clitheroe* (September 2008)).
- 1.1.3 This updated survey covers Study Area 2 only, a field to the north-east of the existing hospital, which is proposed as the site for a new hospital building. The boundary of Study Area 2 is annotated on **Figure 1**.
- 1.1.4 The proposed commencement of works at Study Area 1 (the existing and operational Clitheroe Hospital) is not scheduled for approximately two years from the commencement of activities at Study Area 2 and is therefore not covered in this report. An updated survey of Study Area 1 will be completed prior to the commencement of works.

1.2 Scope of Survey

1.2.1 The objectives of the survey were as follows:

- a. Extended Phase 1 Habitat Survey, assessment and preparation of a report describing the survey methodology applied and the habitats/wildlife present;
- b. An assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria (A Nature Conservation Review 1977);
- c. The survey and assessment of all habitats for statutorily protected species including Badger, bat species, Barn Owl, Great Crested Newt and Water Vole;
- d. The survey and assessment of the habitats within the site for breeding and visiting birds and invertebrates including butterflies; and,
- e. The identification of any potential development constraints and the specification of the scope of mitigation and enhancement required in accord with wildlife legislation, the National Planning Policy Framework (NPPF) and other relevant guidance

2.0 METHODOLOGY

2.1 Desktop Study

- 2.1.1 ERAP Ltd Report 2008_109, *Ecology Survey and Assessment: Clitheroe Hospital, Chatburn Road, Clitheroe* (September 2008) has been used to inform this assessment of the Study Area 2. The September 2008 report presents a comprehensive assessment of both Study Area 1 and Study Area 2 and the associated wildlife interests at the both Study Areas
- 2.1.2 The original Extended Phase 1 Habitat Survey of Study Areas 1 and 2 was carried out by Miss Victoria Allen B Sc. (Hons), M.Sc. MIEEM on the 24th July 2008. The weather was

dry, with occasional sunny spells, little or no breeze and a temperature of 18°C. The weather conditions were suitable for a survey of this type.

- 2.1.3 For ease of reference and where appropriate the results of the original (2008) ecology assessment of the site are reproduced within this report.

2.2 Vegetation and Habitats

- 2.2.1 The updated vegetation and habitat survey at the site and surrounding land was surveyed on 28th September 2012 by Mr. Brian Robinson B.Sc. (Hons) AIEEM. The prevailing weather was sunny with scattered cloud, a maximum air temperature of 13°C at midday and a gentle breeze (Beaufort Scale 3). Conditions were favourable for an ecological survey of this type.

- 2.2.2 An updated vegetation and habitat map was produced for the site and the immediate surrounding areas at a scale of approximately 1:1,000 (Figure 1). The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC 2010) with minor revisions to illustrate and examine the habitats with greater precision and to conform to current good practice.

- 2.2.3 The principal and constant plant species within the Study Area boundaries were identified with estimates of the distribution, ground cover, abundance, frequency and constancy of occurrence of individual species. The estimation of abundance was based on the DAFOR system (where D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare) this being a widely used and accepted system employed by ecological surveyors. The application of the DAFOR system was qualified with the additional terms: L=local or locally, and V=very. Species with a high constancy of occurrence were also identified because constancy of occurrence of species in vegetation is an important factor during assignment of vegetation to NVC plant communities and to the habitat evaluation of the vegetation.

- 2.2.4 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* and indicators of important and uncommon plant communities. All higher plant nomenclature follows Stace (1991).

- 2.2.5 Searches were carried out for the presence of invasive species, including those listed in the revised (April 2010) Schedule 9 Section 14(2) of the *Wildlife and Countryside Act 1981*, including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*)

2.3 Animal Life

Terrestrial Fauna

Badger

- 2.3.1 A search for Badger activity was carried out within Study Area 2 and in adjacent habitats up to 30 metres from the boundary of Study Area 2, where access was possible.

- 2.3.2 Evidence of Badger activity can comprise:-

- a 'D' shaped sett entrances at least 0.25 metre wide and wider than they are high with large spoil mounds;
- b Discarded bedding at sett entrances (this includes grass and leaves);

- c. Scratching posts on shrubs and trees close to a sett entrance;
- d. Presence of Badger hairs which are coarse, up to 0.1 metre long with a long black section and a white tip;
- e. Dung pit latrines and footprints; and/or
- f. Trampled pathways through vegetation and beneath fences.

Bat Species

2.3.3 There are no buildings present within Study Area 2. Trees and shrubs line the site boundaries.

Inspection of Trees

2.3.4 All trees were accessible and were examined from the ground for features such as cracks, holes, splits and lifted bark which may be suitable for use by roosting bats. The value of any feature was assessed in accordance with the protocol described in *Bat Surveys: Good Practice Guidelines, 2nd Edition* (Hundt, L. 2012), refer to Table 2.1.

Table 2.1: Tree Category Definitions

Tree Category	Description
Known or confirmed roost	Tree has a known roost or a roost is determined by further survey
Category 1*	Trees with multiple, highly suitable features capable of support larger roosts
Category 1	Trees with low numbers of features suitable for supporting roosting bats; or, with multiple features suitable for low numbers of bats
Category 2	Trees with no obvious features suitable for roosting bats, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or, Tree supports a low number of features suitable for low numbers of roosting bats.
Category 3	Trees with no features suitable for roosting bats

2.3.5 The assessment was carried out by Mr. Brian Robinson, a Natural England licensed bat surveyor (licence number 20122294, valid until 9th July 2013).

2.3.6 The surveyor's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats* prepared by the IEEM (August 2011).

Habitat Assessment

2.3.7 An updated appraisal of habitat value for foraging and commuting bats was conducted during the walkover survey.

Birds

2.3.8 A breeding bird survey of Study Areas 1 and 2 was conducted by Mr Chris Swindells B.Sc. (Hons), an experienced ecologist, on the 16th July 2008. The conditions were favourable for the survey, being overcast with a light breeze (3-5 mph) and a temperature of 17°C. All birds encountered either by sight or by call and song identification were recorded and all habitats were assessed for their value to support breeding birds.

- 2.3.9 All visible and audible birds were recorded during the survey following the standard recording methodology and codes of the *British Trust for Ornithology (BTO) Common Birds Census* (Marchant, 1983).
- 2.3.10 Habitats throughout Study Area 2 and its immediate surrounding area were assessed during the walkover survey on the 28th September 2012 to determine whether any significant change had occurred at the site and whether the 2008 assessment of the site in respect of breeding birds remains valid.

Great Crested Newt

- 2.3.11 No ponds are present within Study Area 2. A single pond (Pond 1) is located within 500 metres of Study Area 2's boundary (refer to **Figure 1**) and was assessed using the Habitat Suitability Index (HSI) method, (Oldham *et al* (2000) which was carried out by the experienced newt surveyor Mr. Brian Robinson.
- 2.3.12 The ten HSI criteria are: S11:Geographical location; S12:Pond area; S13:Pond drying; S14:Water quality (indicated by aquatic plant and invertebrate diversity); S15:Shade, S16:Waterfowl, S17:Fish; S18:Abundance of other ponds within 1km radius; S19:Quality of terrestrial habitat; and S110 Macrophyte cover (i.e. aquatic and emergent plants).
- 2.3.13 The HSI scores were interpreted in accordance with the categorical scale given at **Table 2.2**.

Table 2.2: Great Crested Newt Habitat Suitability Index scoring

HSI score	Pond suitability for Great Crested Newt
<0.5	Poor
0.5 - 0.59	Below average
0.6 - 0.69	Average
0.7 - 0.79	Good
>0.8	Excellent

- 2.3.14 Terrestrial habitats within Study Area 2 were assessed for their suitability for use by sheltering Great Crested Newt and other amphibians, and the connectivity between Pond 1 and the site was assessed in order to determine any requirement for further surveys at Study Area 2.
- 2.3.15 A full Great Crested Newt survey of Pond 1 was carried out between the 21st May and 16th June 2008. Although this survey period is late in the typical Great Crested Newt survey season (owing to the date the surveys were commissioned) it is considered that the survey results are valid for the following reasons: -
- In 2008 there was a delay to the start of the survey season owing to the cold weather conditions in late March and early April (Great Crested Newt surveys should only be carried out when night-time temperatures are greater than 5°C), this affected the survey programme of all ponds in the north-west and surveys were commenced at a later date.
 - For comparison, other pond surveys in the North-west area (Standish in Wigan), where Great Crested Newts were recorded, continued to detect newts in the ponds into June 2008.
 - All surveys were completed before mid-June 2008 which is recognised to be the end of the Great Crested Newt survey season.

2.3.16 The surveys were carried out in accordance with the methodologies specified in the *Great Crested Newt Mitigation Guidelines* (English Nature 2001) and included the application of the following methods: -

Torchlight searches - This involved shining a powerful torch (1,000,000 candle power) into the pond margins at night during suitable weather conditions (above 5°C), identifying the amphibian species and counting the number of each species of amphibian.

Egg Search - All submerged, emergent and water-margin vegetation, including the leaves of terrestrial plants that had fallen into the water, was checked in daylight for the presence of newt eggs and Great Crested Newt eggs. In addition the dead and decaying leaves of aquatic and reed species were examined. The egg searches were used to determine presence or absence only; eggs were not counted because opening the leaves enclosing the eggs can expose the eggs and developing newt larvae to predators and to other threats. Care was taken at all times to ensure that the eggs were not left exposed or damaged.

Bottle Trap Surveys - Bottle traps constructed from 2-litre plastic bottles were set around the ponds at a spacing of one trap every 2 metres. An air bubble was always provided to ensure that newts and other amphibians did not drown. The traps were set and left overnight during suitable weather (above 5°C). The traps were emptied the following morning and all captured amphibians were recorded and returned to the pond.

Terrestrial Searches - In addition to the surveys of the aquatic habitats suitable debris throughout the site and the surrounding area (particularly in close proximity to the pond) was lifted and searched for the presence of amphibians.

2.3.17 All Great Crested Newt surveys were conducted during suitable weather conditions.

2.3.18 Great Crested Newt surveys were completed by Ms. Liz Greenwood, Ms. Tanya Flower and Ms. Jane Davis, all accredited agents under Miss Victoria Allen's Great Crested Newt survey licence (licence Number 20081217). All surveyors have extensive experience of the appropriate survey methodology, the identification of all species of amphibian and the specifications in the *Great Crested Newt Mitigation Guidelines* (2001).

2.3.19 Best practice was applied throughout and all survey equipment was treated with Virkon to ensure the potential risk of the spread of the Chytrid fungus was minimised (as advised by the Herpetological Conservation Trust). The survey equipment (bottle traps) used at Pond 1 was used at this pond only; the equipment was not used to survey any other ponds.

2.3.20 Great Crested Newts were not detected at Pond 1 (refer to Table 8.3, appended). The potential for subsequent colonisation of Pond 1 by Great Crested Newts and the requirement for additional surveys at Pond 1 is investigated in this report.

Water Vole

2.3.21 The margins of Pond 1 were searched for evidence of Water Voles. Water Vole surveys were completed following the methods described in *Water Vole Conservation Handbook* (Strachan 1998). This involves the close examination of the banks for burrows, footprints, droppings and chewed vegetation. September is within the appropriate time period for the detection of Water Vole activity.

2.4 Survey Limitations

- 2.4.1 The walkover survey was conducted at a time when many plant species have begun to die back making reliable identification difficult. The 2008 survey of the site carried out on 24th July 2008 provides a reliable framework of the site to base species identification on, and Mr. Brian Robinson is an experienced ecologist able to reliably identify plant species from their vegetative characteristics
- 2.4.2 Late September is outside the period when most invertebrate species will be active. The data collected by the 2008 survey (conducted on the 24th July) and the assessment of habitat present within Study Area 2 are sufficient that a reliable assessment of the habitat value in respect of invertebrates can be made.
- 2.4.3 The whole site was accessible and there were no visibility constraints
- 2.4.4 No significant survey limitations were experienced.

2.5 Evaluation Methodology

- 2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard and accepted nature conservation criteria as described by Ratcliffe (1977) and the Nature Conservancy Council (1989). These are; size (extent), diversity, naturalness, rarity, fragility, typicalness, recorded history, position in an ecological or geographical Unit, potential value and intrinsic appeal.
- 2.5.2 Government advice on the conservation of biodiversity and enhancement of the natural and local environment, as set out in the *National Planning Policy Framework* (NPPF) has been followed. The UK Biodiversity Action Plan (UK BAP) and the Lancashire Biodiversity Action Plan (L BAP) have been taken into account in the evaluation of the Study Area 2.

3.0 SURVEY RESULTS

3.1 Desktop Study

Designated Sites

- 3.1.1 The site has no statutory designation. There are three Biological Heritage Sites (BHSs), two of which are also Sites of Special Scientific Interest (SSSIs) within one kilometre of the centre of the site.
- 3.1.2 The Salthill and Bellman Park Quarry SSSI is located approximately 190 metres to the south of the site. This site is also a Lancashire Wildlife Trust Nature Reserve (Salthill Quarry only). The site is designated for the presence of Carboniferous Limestone which supports open calcareous grassland and quarry ledges with plant species such as Quaking-grass, Crested Hair-grass, Lady's Bedstraw, Small Scabious, Burnet Saxifrage, Wild Thyme, Carlina Thistle and Betony reported.
- 3.1.3 A second SSSI and BHS (Coplou Quarry) is located on the north site of Chatburn Road and the railway line (approximately 180 metres from the site). This disused limestone quarry is designated for the presence of limestone sedimentology and faunas.
- 3.1.4 Bellman Marsh Farm BHS is located 110 metres to the north-east of the site. The BHS is a wetland site with scrub which attracts wintering waterfowl and waders and summer visitors including warblers

Protected Species

- 3.1.5 A vast amount of information for the 500 metre radius area of search was received from the Lancashire County Council Biological Records Officer. None of the records are reported for Study Area 2 but records for the local area include: -
- a. Bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981 include Peregrine and Kingfisher.
 - b. Bluebell (listed on Schedule 8 of the *Wildlife and Countryside Act 1981*) is reported in the local area.
 - c. Priority Species of bird recorded in the local area include Song Thrush, Dunnock, Bullfinch, Linnet, Starling, House Sparrow, Spotted Flycatcher and Reed Bunting.
 - d. Records of Badgers, Common Frog and a newt species (*Triturus* sp.) are reported for Bellman Marsh Farm (over 500 metres to the east on the opposite site of the A671 and Chatburn Road).
 - e. Records of Common Pipistrelle (not reported to be a roost) are reported for the 1 kilometre grid square (SD7543) Study Area 2 falls within.
- 3.1.6 The South Lancashire Bat Group does not hold any records within 2 kilometres of Study Area 2's boundary.
- 3.1.7 Study Area 2 has been assessed in terms of suitability for these species and recommendations have been made, where appropriate, in **Section 5**.

3.2 Vegetation and Habitats

Site Description: Study Area 2

- 3.2.1 The site is located on the north fringes of Clitheroe. Study Area 2 consists of unmanaged semi-improved grassland with marginal hedgerows and stone walls. All photographs are appended at **Table 8.4**.
- 3.2.2 Study Area 2 remains as described by the 2008 survey and report with the following two exceptions:
- a. A mature Pedunculate Oak, previously at the centre of Study Area 2 is no longer present; and,
 - b. A water stand pipe is present at the south-eastern corner of Study Area 2 (see **photo 2**).

- 3.2.3 The vegetation within and adjacent to Study Area 2 is described below.

Study Area 2: Grassland vegetation

- 3.2.4 Study Area 2 is located to the east of the existing hospital and comprises an unmanaged field of semi-improved grassland (**Photo 1**). The field slopes to a central depression. No open water or ditch is present but the plant species composition in the lower lying areas (described later) is indicative of soil conditions with a high water table.
- 3.2.5 The absence of any management of the grassland has permitted the colonisation of dense stands of Creeping Thistle, Common Nettle and Great Willowherb (*Epilobium hirsutum*) to form the OV25 and OV26 communities of the NVC (refer to **Figure 1**).
- 3.2.6 The remainder of the grassland supports a mixture of grass species indicative of semi-improved grassland including Yorkshire-fog (*Holcus lanatus*), Timothy (*Phleum*

pratense), Common Bent (*Agrostis capillaris*), Smooth Meadow-grass (*Poa pratensis*) and Rough Meadow-grass (*Poa trivialis*) with a high abundance of tall, coarse grasses including False Oat-grass (*Arrhenatherum elatius*), Cock's-foot (*Dactylis glomerata*) and Common Couch (*Elytrigia repens*).

- 3.2.7 In addition to the stands of tall-herbs listed above the herbs present throughout the grassland include Hogweed (*Heracleum sphondylium*), Meadowsweet (*Filipendula ulmaria*) (particularly along the central depressed area) Common Sorrel (*Rumex acetosa*), Common Ragwort (*Senecio jacobaea*), Yarrow (*Achillea millefolium*) and Ribwort Plantain (*Plantago lanceolata*).
- 3.2.8 Local areas of the grassland have greater species diversity and support a low cover of plants such as Carnation Sedge (*Carex panicea*), Tufted Vetch (*Vicia cracca*), Great Burnet (*Sanguisorba officinalis*) and Common Knapweed (*Centaurea nigra*).
- 3.2.9 Overall the grassland has affinities with the MG1 community of the NVC. The small, local areas of greater species diversity which support plant species such as Meadowsweet and Common Knapweed have affinities with the MG1c community of the NVC, this is typically a more species diverse sub-community. A full species list for the grassland is presented at Table 8.1.

Study Area 2: Boundary features

- 3.2.10 The northern boundary of the grassland along Chatburn Road is marked by a partially dilapidated stone wall. The stone wall supports local rupestral (wall-growing) plants of Ivy-leaved Toadflax (*Cymbalaria mularis*) to form the OV42 community of the NVC.
- 3.2.11 The eastern site boundary along Pimlico Link Road is bordered by a planted belt of trees and shrubs composed from abundant Ash (*Fraxinus excelsior*) and Hawthorn (*Crataegus monogyna*) with local Horse Chestnut (*Aesculus hippocastanum*), Alder (*Alnus glutinosa*), Elder (*Sambucus nigra*) and Hazel (*Corylus avellana*). The understorey supports abundant Bramble (*Rubus fruticosus* agg.) with Ivy (*Hedera helix*). The adjacent roadside verge is composed from grasses such as False Oat-grass, Red Fescue (*Festuca rubra*), Common Couch and herbs including Broad-leaved Dock (*Rumex obtusifolius*), Dandelion (*Taraxacum officinalis*) and Hogweed (*Heracleum sphondylium*) (refer to the shrub belt on Table 8.2).
- 3.2.12 The southern boundary consists of a row of Hawthorn and Elder shrubs with local Alder trees (refer to Figure 1). The boundary has been disturbed by the earthwork operations at the industrial estate to the south.

Habitats Outside the Site Boundary

- 3.2.13 The site is located within a corner created by Chatburn Road and Pimlico Link Road to the north and east. West of the site is a field of improved grassland mown for hay. To the south is Pond 1 and an industrial estate (under construction).

Pond 1

- 3.2.14 Pond 1 is a large (0.3 hectares), roughly rectangular shaped pond. The presence of inflow pipes and the soft substrate suggests the pond has been created as a balancing pond, possibly as part of road improvement works or for the industrial estate.
- 3.2.15 The pond is deep (>1 metre) and has steeply sloping banks. In September 2012 the pond was colonised by Bulrush (*Typha latifolia*) over approximately 40% of the total surface area. No other aquatic or emergent vegetation was recorded. The pond is

shaded over approximately 5% of its area. The water during the survey was discoloured with a luminous green colour (see Photos 3 and 4).

- 3.2.16 The pond margins support Soft-rush (*Juncus effusus*) and the higher banks are planted with young trees and shrubs including Alder, Ash and Hawthorn.

Invasive species

- 3.2.17 No invasive species were detected within Study Area 2. Stands of Wall Cotoneaster (*Cotoneaster horizontalis*), Montbretia (*Crocasmia* sp) and Rhododendron (*Rhododendron ponticum*) are present within Study Area 1, adjacent to Study Area 2. These three species are listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), making it illegal to cause their spread in the wild.

- 3.2.18 The stands of Japanese Knotweed (*Fallopia japonica*) at the south-eastern corner of Study Area 1 in 2008 have been eradicated. The stand of Japanese Knotweed located towards the north-western corner of Study Area 1 is still present.

3.3 Animal Life

Terrestrial Fauna

Badger

- 3.3.1 No signs of Badger activity such as the presence of setts, bedding, runs, latrines or hairs were detected within Study Area 2 or in the surrounding area.

Bat Species

Roosting bats: Trees

- 3.3.2 All trees within and adjacent to Study Area 2 are assessed as 'Category 3' and contain no features suitable for use by roosting bats.

Foraging/commuting

- 3.3.3 The tree and shrubs lines at the western, southern and eastern boundaries of Study Area 2 are suitable for low numbers of edge feeding species such as Common Pipistrelle (*Pipistrelle pipistrellus*). There are no areas of woodland or water features within the Study Area which would significantly improve habitats for foraging bats.

Bird Species

- 3.3.4 The habitats within Study Area 2 are the same as reported by the 2008 survey with the exception of the removal of the Pedunculate Oak; the findings of the 2008 survey remain valid and are presented below.

- 3.3.5 Most birds were associated with the tree and scrub habitats at the front of the main hospital building along Chatburn Road. Few birds were associated with the field to the east of the hospital (the proposed new hospital site), the recorded birds were limited to a single Robin on the Pedunculate Oak tree in the centre of Study Area 2 (since removed) and Goldfinch on Study Area 2's margins; the grassland habitats are not suitable for ground nesting birds and no Skylark, Meadow Pipit or Lapwing were present.

- 3.3.6 Robin, Wren and Dunnock (a UK BAP Priority Species) were detected at the tree line along the western boundary of Study Area 2 in September 2012.

Great Crested Newt and other Amphibians

3.3.7 Pond 1 is connected terrestrially to Study Area 2 via a line of shrubs at the southern boundary of the Study Area. The HSI assessment of the pond is presented at Table 3.1, below.

Table 3.1: Habitat Suitability Index Assessment for Pond 1

Criteria	Description	Pond 1	Score ¹
SI ₁	Location	Optimal	1.0
SI ₂	Pond Area	3,000m ²	N/A
SI ₃	Permanence	Never dries	0.9
SI ₄	Water Quality	Poor	0.33
SI ₅	Shade	20%	1.0
SI ₆	Waterfowl	Minor impact	0.67
SI ₇	Fish	Absent	1.0
SI ₈	Pond count ²	None	0.1
SI ₉	Terrestrial habitat	Good	1.0
SI ₁₀	Macrophyte cover	40%	0.7
HSI Assessment Result:		Average	0.62

¹Calculated by $(SI_1 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$
Pond size is 3,000 metres square and is therefore omitted from the calculation.

3.3.8 The HSI assessment of Pond 1 'average'. The score for the pond is most affected by the absence of other ponds within an unobstructed 1 kilometre.

3.3.9 The 2008 presence/absence surveys did not detect Great Crested Newt at Pond 1. The full 2008 survey results are appended at Table 8.3.

3.3.10 Due to the absence of ponds within an unobstructed 500 metres of the pond it is reasonably unlikely that Great Crested Newt will have colonised the pond since this survey was conducted. Common Frog were detected at the pond. It is concluded that the results of the 2008 Great Crested Newt survey at Pond 1 remain valid and no updated survey is necessary.

Water Vole

3.3.11 No evidence of the presence of Water Vole was recorded around the margins of Pond 1. No other habitats within or adjacent to Study Area 2 are suitable for the support of Water Vole.

Invertebrates

3.3.12 The grassland within Study Area 2 is suitable for nectaring insects such as common species of Butterfly and bee species. The suitability of the grassland of Study Area 2 for invertebrates is considered at Section 4.2 of this report. Recommendations for the provision of suitable habitats for foraging and sheltering insects as part of the proposed development of Study Area 2 are made at Section 5.7 of this report.

4.0 EVALUATION AND ASSESSMENT

4.1 Designated Sites

4.1.1 Based on the distance between Study Area 2 and the designated sites in the local area and the nature of the proposals, no adverse impacts on any designated site or the features of ecological interest they supported are expected.

4.2 Vegetation and Habitats

- 4.2.1 None of the habitats within Study Area 2 is species-rich or of significant value in terms of its plant species composition. The limited assemblages of species-poor NVC communities present are of widespread occurrence and are characteristic of the habitats present.
- 4.2.2 Although not of substantive value in terms of species diversity the grassland at the proposed hospital site (Study Area 2) is of some ecological interest owing to the small, local areas which support a diversity of herb species suitable for feeding and breeding invertebrates (such as Greater Bird's-foot-trefoil (*Lotus pedunculatus*), Common Knapweed and Creeping Thistle (*Cirsium arvense*). Based on the species composition and the high percentage cover of thistles and nettle it is considered that the grassland does not represent Species-rich Neutral Grassland as described in the Lancashire BAP.
- 4.2.3 The habitats within Study Area 2 are not comparable with the calcareous and species-rich grasslands in the designated sites in the local area. Study Area 2 does not support any specific species which are characteristic of the calcareous grasslands at the quarries in the local area. None of the habitats at Study Area 2 meet the criteria for designation as a Biological Heritage Site
- 4.2.4 There is no UK BAP Priority Habitat within or adjacent to Study Area 2.
- 4.2.5 There are no invasive species present within Study Area 2. A single stand of Japanese Knotweed and stands of Wall Cotoneaster, Montbretia and Rhododendron were noted in Study Area 1; the locations of these species are presented at **Figure 1** for reference.

4.3 Protected Species and Other Wildlife

- 4.3.1 Appropriate survey has been carried out to discount reasonably any significant effects on protected species and their habitats. The shrub belts and tree lines at the western, southern and eastern boundaries are suitable for foraging by bat species and for nesting birds.
- 4.3.2 Dunnock, a UK BAP Priority Species was detected in 2012 at the western boundary of Study Area 2.
- 4.3.3 Consideration of birds and recommended enhancements for UK BAP Priority Species associated with the Study Area are presented at **Section 5.5** of this report.

5.0 RECOMMENDATIONS

5.1 Introduction

- 5.1.1 The ecological survey carried out at Study Area 2 has provided a reliable account of the ecological considerations to be made in connection with the proposed development of the new hospital.
- 5.1.2 The recommendations in the following paragraphs seek to ensure that development is implemented in accordance with all wildlife legislation, Natural England guidance, the

ecological objectives and guidance in the *National Planning Policy Framework (NPPF)*, local planning policy and best practice.

- 5.1.3 As described, an adverse effect can often be prevented by avoiding an ecological feature or by careful timing of development works. Where possible, opportunities to enhance the ecological interest of Study Area 2 and seek biodiversity gains through appropriate landscape planting and habitat creation have been identified and recommended.

5.2 Existing Vegetation and Habitats and Use of Demarcation Fencing

Protection of existing trees and shrubs

- 5.2.1 Where possible, existing trees and shrubs at Study Area 2 should be retained. Any tree removal should be compensated for by the planting of native species during landscape planting, as recommended in **Section 5.7**.
- 5.2.2 During the construction phase, temporary protective demarcation fencing should be used to protect the roots and canopies of any retained trees on the margins of Study Area 2. The fencing must remain in position until all construction works have been completed to ensure protection is provided throughout the construction phase.
- 5.2.3 The fencing should be in accordance with BS5837: 2005 *Trees in Relation to Construction*.

5.3 Invasive Weed Species

- 5.3.1 No invasive species are present in Study Area 2 (the proposed new hospital site).
- 5.3.2 Montbretia, Wall Cotoneaster, Rhododendron and Japanese Knotweed are present within Study Area 1, adjacent to Study Area 2. These species are listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended). It is illegal to cause their spread in the wild. Removal and appropriate disposal of these species during development Study Area 1 will be necessary; however this recommendation is included in this report as reference, and will not affect the proposed development of the new hospital at Study Area 2.
- 5.3.3 The remaining stand of Japanese Knotweed will be treated and eradicated in accordance with the appropriate method approved by the Environment Agency. The guidance provided in *Managing Japanese Knotweed on development sites; the knotweed code of practice* prepared by the Environment Agency will be followed.
- 5.3.4 It is recommended that a specialist company is commissioned to prepare a suitable plan for the control of Japanese Knotweed.
- 5.3.5 At this site it would be appropriate to apply a combined treatment involving the continued application of a persistent herbicide such as Picloram combined with the breaking up of the soil to encourage re-growth which can then be treated with herbicide. It will be necessary to monitor the stand for re-growth. Once no further re-growth in the growing season is confirmed then the excavation of the crown and rhizomes to their extremity can be carried out. As the knotweed stands are small and localised, all excavated material can then be deposited in a holding area on site, monitored for re-growth and treated accordingly.

5.3.6 Again, the removal of the remaining stand of Japanese Knotweed at Study Area 1 will not affect the development of Study Area 2, but is included as reference.

5.4 Foraging bats

5.4.1 The retention of the shrub belts at the western, southern and eastern boundaries of the Study Area will retain the habitats suitable for use by foraging bats. The recommendations made for landscape planting at Section 5.7 will enhance habitats within Study area 2 for foraging bats.

5.5 Breeding Birds

5.5.1 All wild birds are protected under the *Wildlife and Countryside Act 1981* while they are breeding. It is mandatory that any Bramble scrub, trees, shrubs or other suitable breeding bird habitat which are to be removed as part of the proposals must only be removed outside the bird breeding season, unless it can be adequately demonstrated by an ecologist that no breeding birds, nests, eggs or fledglings are present in the area to be cleared. The bird breeding season typically extends between March to August inclusive.

5.5.2 The recommendations made at Section 5.2 regarding the protection of existing woody vegetation and at Section 5.7 regarding landscape planting seek to maintain and enhance habitat within Study Area 2 for foraging and nesting birds.

5.6 Lighting

5.6.1 Any lighting to be used at Study Area 2 during the construction and operation phases should be directional and screened where possible.

5.6.2 No excessive lighting must shine over the margins of Study Area 2 or over Pond 1 as lighting overspill may deter wildlife such as foraging bats.

5.7 Ecological Enhancement and Landscape Planting

5.7.1 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'*

5.7.2 The development proposals provide an opportunity to enhance the ecological and biodiversity value of Study Area 2 through appropriate landscape planting.

5.7.3 All recommendations detailed below are complementary to the type and style of development, the geographical area and the habitats in the local area. Their main function is to contribute to and enhance the nature conservation and biodiversity value of Study Area 2.

Enhancement of Habitats and Habitat Connectivity within Study Area 2

5.7.4 Native trees, shrubs and hedgerows should be incorporated in the landscape planting to improve habitat connectivity within and around Study Area 2 and to provide additional habitats for use by nesting and feeding birds, such as Dunnock and House Sparrow, Starling and Song Thrush.

Landscape Planting

Woody species

5.7.5 It is strongly recommended that any new planting within Study Area 2 should include native species of local provenance. It is advised that trees which support blossom and fruit which will attract insects are incorporated into the landscape planting this will aim to encourage foraging bats and birds.

5.7.6 A suitable planting schedule which is complementary to the habitats in the local area is outlined in **Table 5.1**, below and plants should be selected from this list and incorporated into a landscape schedule (all species have been selected for their potential benefits to local wildlife and their suitability in close proximity to roads and buildings).

Table 5.1: Woody Species Recommended for Inclusion into Landscape Planting Design

Scientific Name	Common Name
Trees	
<i>Betula pendula</i>	Silver Birch
<i>Fraxinus excelsior</i>	Ash
<i>Prunus avium</i>	Wild Cherry
<i>Quercus robur</i>	Pedunculate Oak
<i>Sorbus aucuparia</i>	Rowan
<i>Ulmus glabra</i>	Wych Elm
Shrubs	
<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Ilex aquifolium</i>	Holly
<i>Prunus spinosa</i>	Blackthorn
<i>Sambucus nigra</i>	Elder

5.7.7 Where possible, the trees should be planted in a linear arrangement to increase the connectivity across and into Study Area 2 for use by mobile wildlife. The creation of linear areas of habitat composed from native species along Study Area 2 will create a continuity of habitats between the gardens habitats and habitats in the wider area.

Grassland species

5.7.8 The new hospital site will incorporate some areas of open grassland. In addition to the creation of attractive environment for visitors to Study Area 2 it is advised that an appropriate wildflower mix is used over the areas of grassland.

5.7.9 For example, areas of short mown amenity grassland should be bordered by 2-3 metre wide margins of wildflower grassland which is not managed as regularly. The taller margins should ideally border the retained shrub belts (to ensure some shelter and create habitats for breeding butterflies). This will contribute towards compensation for the loss of the tall-herb and grassland species suitable for use by invertebrates.

5.7.10 A suitable wildflower and grass species mix is the WFG4 Neutral Soils mix supplied by British Seed Houses. This mix contains species such as Common Bird's-foot-trefoil, Common Knapweed and Ox-eye Daisy which are present in the local area and are suitable plants for the attraction of invertebrates.

5.7.11 As described below, it is important that the marginal areas seeded with a wildflower mix are only mown annually (in September) and all arisings should be removed. This management will ensure the maintenance of a diverse assemblage, the maximum flowering time and the provision of habitats favourable for use by breeding and feeding butterflies to contribute to the aesthetic qualities of the area.

5.8 Management, Maintenance and Enhancement of Habitats

5.8.1 A management plan can be prepared for the long-term maintenance of Study Area 2. The plan will describe all management and maintenance operations and will incorporate all ecological principles, landscape, habitat creation and other objectives at Study Area 2.

5.8.2 The landscape schedule and management plan can be created at a later point in the scheme. The plan will include the following: -

- a. The specification of the schedule of operations to ensure no breeding birds are disturbed and the main flowering time of the shrubs is avoided during any maintenance works.
- b. Maintenance operations such as the replacement of any dead or diseased trees in the landscaping scheme.
- c. The continued management and enhancement of the retained trees
- d. The management of the grassland habitats to ensure areas of wildflower planting are not included within an intensive mowing regime.

5.9 BREEAM scheme

5.9.1 This Ecological Survey and Assessment is suitable for use in the assessment of credits available under criterion LE02 to LE05 of the BREEAM scheme, if required.

5.9.2 Implementation of the ecological recommendations described at Section 5.2 to 5.8 will be necessary to achieve credits under criterion LE03 and LE04.

5.9.3 The preparation and implementation of a Management Plan, as described in Section 5.8 will be necessary to meet the requirements specified to achieve credits under criterion LE05.

6.0 CONCLUSION

6.1 This comprehensive ecological survey and assessment of Study Area 2 at the Clitheroe Hospital site has shown that development would have no adverse effect on statutory or local wildlife sites, or on important biodiversity such as that associated with ancient woodland and other important natural habitats including networks of natural habitats

6.2 The development of Study Area 2 for a new hospital would enable biodiversity to be enhanced by the incorporation of beneficial biodiversity within the design of development, as part of landscaping.

-
- 6.3 Where possible, all landscape proposals are composed from native species and wildflower grassland and aim to create compensatory habitats for use by breeding passerine bird, foraging bats and invertebrates.
 - 6.4 Development of Study Area 2 at the Clitheroe Hospital site can be achieved in good accordance with the principles of the NPPF
 - 6.5 In conclusion, the re-development of the new hospital at Study Area 2 can be achieved without adverse effects on biodiversity, designated sites and protected species. Further, the development provides a realistic opportunity to achieve enhancement of biodiversity

7.0 REFERENCES

- Amphibian and Reptile Groups of the United Kingdom (May 2010) *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index* ARG UK
- Anon *Guidelines for the Selection of Biological Heritage Sites*, Lancashire County Council, <http://www.lancashire.gov.uk/environment/ecology/bhs/contents.asp>
- Anon. (2007) *The Population Status of Birds in the UK: Birds of conservation concern: 2002-2007*. Department for Communities and Local Government (2012) *National Planning Policy Framework* H.M.S.O. London
- ERAP Ltd. (2008) *2008_109 Clitheroe Hospital, Chatburn Road, Clitheroe: Ecological Survey and Assessment*
- Hundt, L. (2012) *Bat Surveys: Good Practice Guidelines 2nd Edition*. BCT
- Joint Nature Conservancy Council (2010). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*. JNCC, Peterborough.
- Land, K. (2004). *What features should be included in new urban residential developments to maximise the opportunity for a diversity of breeding birds?* Ecology and Environmental Management - In Practice No. 43.
- Marchant, J.H. (1983) *Common Birds Census instructions*. BTO, Tring.
- Natural England (2007) *Plants for Wildlife-friendly gardens*. Natural England Peterborough
- Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10 (4), 143-155.
- Rodwell, J. S. (ed.) (1991) *British Plant Communities. Volume 1. Woodlands and Scrub*. Cambridge University Press.
- Rodwell, J. S. (ed.) (1992) *British Plant Communities Volume 3 Grasslands and Montane Communities*. Cambridge University Press.
- Rodwell, J. S. (ed.) (2000) *British Plant Communities. Volume 5. Maritime communities and vegetation of open habitats*. Cambridge University Press
- Rose, F & O'Reilly, C (2006) *The Wild Flower Key* Warne
- Stace, C. A. (1991). *New Flora of the British Isles*. Cambridge University Press, Cambridge
- Strachan, R. (1998) *The Water Vole Conservation Handbook*. English Nature, the Environment Agency and the Wildlife Conservation Research Unit. Oxford.
- The UK Biodiversity Steering Group Report. Volume 2. Action Plans* H.M.S.O. (1995), London.
- Town and Country Planning Association (September 2004). *Biodiversity by Design: A guide for sustainable communities*. TCPA Manchester.
- Wildlife and Countryside Act* (1981). H.M.S.O., London

8.0 APPENDIX 1: TABLES AND FIGURES

Table 8.1: Plant Species, Composition and Abundance of the Grassland, Study Area 2

Scientific Name	Common Name	DAFOR	Cover
Woody Species			
<i>Alnus glutinosa</i>	Alder sapling	VL	<1%
<i>Crataegus monogyna</i>	Hawthorn	R	<1%
<i>Fraxinus excelsior</i>	Ash saplings	R	<1%
Herb species			
<i>Achillea millefolium</i>	Yarrow	LA/F*	2%
<i>Agrostis capillaris</i>	Common Bent	F/LA*	5%
<i>Agrostis stolonifera</i>	Creeping Bent	LF	2%
<i>Alchemilla</i> sp.	Lady's Mantle (garden)	VLF	<1%
<i>Alopecurus geniculatus</i>	Marsh Foxtail	LF	2%
<i>Alopecurus pratensis</i>	Meadow Foxtail	F	2%
<i>Anthoxanthum odoratum</i>	Sweet Vernal grass	F*	5%
<i>Arrhenatherum elatius</i>	False Oat-grass	LA/F*	5%
<i>Cardamine pratensis</i>	Cuckooflower	O	<1%
<i>Carex panicea</i>	Carnation Sedge	VLF	<1%
<i>Centaurea nigra</i>	Common Knapweed	LA	5%
<i>Cerastium fontanum</i>	Common Mouse Ear	VLF	<1%
<i>Cirsium arvense</i>	Creeping Thistle	LVA/A*	15%
<i>Cirsium vulgare</i>	Spear Thistle	O	<1%
<i>Dactylis glomerata</i>	Cocksfoot	F/LA*	5%
<i>Elytrigia repens</i>	Common Couch	F*	5%
<i>Epilobium hirsutum</i>	Great Willowherb	LVA*	2%
<i>Epilobium montanum</i>	Broad-leaved Willowherb	VLF	<1%
<i>Equisetum arvense</i>	Field Horsetail	VLF	<1%
<i>Equisetum</i> sp.	Horsetail species	VLF	<1%
<i>Festuca rubra</i>	Creeping Fescue	A*	10%
<i>Filipendula ulmaria</i>	Meadowsweet	LVA	5%
<i>Gaium aparine</i>	Cleavers	VLF	<1%
<i>Geum rivale</i>	Water Avens	VL	<1%
<i>Hedera helix</i>	Ivy	LA	2%
<i>Heracleum sphondylium</i>	Hogweed	O*	<1%
<i>Holcus lanatus</i>	Yorkshire Fog	A*	10%
<i>Juncus effusus</i>	Soft Rush	O	<1%
<i>Juncus conglomeratus</i>	Compact Rush	R	<1%
<i>Lathyrus pratensis</i>	Meadow Vetchling	VLA	1%
<i>Lolium perenne</i>	Perennial Rye grass	F	2%
<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil	VLA	1%
<i>Mercurialis perenne</i>	Dog's Mercury	VLA	<1%
<i>Phleum pratense</i>	Timothy	LF	1%
<i>Plantago lanceolata</i>	Ribwort Plantain	F/LA*	2%
<i>Poa pratensis</i>	Smooth Meadow grass	F*	5%
<i>Poa trivialis</i>	Rough Meadow grass	F*	5%
<i>Potentilla anserina</i>	Silverweed	LA	1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	O*	<1%
<i>Prunella vulgaris</i>	Self-heal	VLA	<1%
<i>Ranunculus acris</i>	Meadow Buttercup	O	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	F/LA	2%
<i>Rhinanthus minor</i>	Yellow Rattle	R	<1%
<i>Rubus fruticosus</i>	Bramble	LA	2%
<i>Rumex acetosa</i>	Common Sorrel	F*	2%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Sanguisorba officinalis</i>	Great Burnet	LF	1%
<i>Continued overleaf</i>			

Scientific Name	Common Name	DAFOR	Cover
Table 8.1 Continued			
<i>Senecio jacobaea</i>	Common Ragwort	O*	<1%
<i>Stachys sylvatica</i>	Hedge Woundwort	VLF	<1%
<i>Stellaria media</i>	Common Chickweed	R	<1%
<i>Taraxacum officinale</i>	Dandelion	O	<1%
<i>Trifolium repens</i>	White Clover	LF	1%
<i>Tussilago farfara</i>	Coltsfoot	VLA	<1%
<i>Urtica dioica</i>	Common Nettle	VLA*	2%
<i>Veronica chamaedrys</i>	Germander Speedwell	R	<1%
<i>Vicia cracca</i>	Tufted Vetch	VLF	<1%
Key to DAFOR: D=Dominant, COD=Co-dominant, A=Abundant, F=Frequent, O=Occasional, V=Very, L=Local or locally, R=Rare and *= a constant species.			

Table 8.2: Plant Species Composition and Abundance of the shrub belt, Study Area 2

Scientific Name	Common Name	DAFOR	Cover
Woody Species			
<i>Acer pseudoplatanus</i>	Sycamore	VL	5%
<i>Aesculus hippocastanum</i>	Horse Chestnut saplings	VL	<1%
<i>Aesculus hippocastanum</i>	Horse Chestnut	LF	5%
<i>Alnus glutinosa</i>	Alder	VLF	5%
<i>Corylus avellana</i>	Hazel	VLF	2%
<i>Crataegus monogyna</i>	Hawthorn	A*	60%
<i>Fagus sylvatica</i>	Beech	VL	2%
<i>Fraxinus excelsior</i>	Ash	F*	10%
<i>Rosa arvensis</i>	Field Rose	VLF	<1%
<i>Salix caprea</i>	Goat Willow	LF	5%
<i>Sambucus nigra</i>	Elder	VL	2%
Herb species			
<i>Agrostis capillaris</i>	Common Bent	F	2%
<i>Alopecurus pratensis</i>	Meadow Foxtail	LA	2%
<i>Anthriscus sylvestris</i>	Cow Parsley	LF	2%
<i>Arrhenatherum elatius</i>	False Oat-grass	A*	5%
<i>Cirsium arvense</i>	Creeping Thistle	LA	5%
<i>Cirsium vulgare</i>	Spear Thistle	VL	<1%
<i>Dactylis glomerata</i>	Cocksfoot	LA	5%
<i>Elytrigia repens</i>	Common Couch	LF	5%
<i>Epilobium hirsutum</i>	Great Willowherb	VLA	<1%
<i>Equisetum arvense</i>	Field Horsetail	VLA	2%
<i>Festuca rubra</i>	Creeping Fescue	A*	5%
<i>Galium aparine</i>	Cleavers	VLF	<1%
<i>Geranium robertianum</i>	Herb Robert	O	<1%
<i>Hedera helix</i>	Ivy	A*	75%
<i>Heracleum sphondylium</i>	Hogweed	O	<1%
<i>Holcus lanatus</i>	Yorkshire Fog	LA/F	5%
<i>Holcus mollis</i>	Creeping Soft-grass	LF/VLA	2%
<i>Hypericum androsaemum</i>	Tutsan	VL	<1%
<i>Juncus inflexus</i>	Hard Rush	VL	<1%
<i>Lathyrus pratensis</i>	Meadow Vetchling	VLA	2%
<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil	VLF	<1%
<i>Phleum pratense</i>	Timothy	F	1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	LF	<1%
<i>Prunella vulgaris</i>	Self-heal	VLA	<1%
<i>Rubus fruticosus</i>	Bramble	LA*	20%
<i>Rumex conglomeratus</i>	Clustered Dock	O	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Continued overleaf</i>			

Scientific Name	Common Name	DAFOR	Cover
<i>Table 8 2 Continued</i>			
<i>Senecio jacobaea</i>	Common Ragwort	VLF	<1%
<i>Taraxacum officinale</i>	Dandelion	O	<1%
<i>Urtica dioica</i>	Common Nettle	VLA	<1%
<i>Vicia sepium</i>	Bush Vetch	O	<1%
Key to DAFOR: D=Dominant, COD=Co-dominant, A=Abundant, F=Frequent, O=Occasional, V=Very, L=Local or locally, R=Rare and *= a constant species.			

Table 8.3: Great Crested Newt Survey Results 2008

Survey Method	Date Set	No. Traps	Temp (°C)	Date Read	GCN	SN	PN	CF	CFT	CT	CTT	Fish
Net	21.05.08	0	9	21.05.08	-	-	-	-	-	-	-	-
Bottle/Net	22.05.08	15	10	23.05.08	-	-	-	-	-	-	-	-
Bottle/Net	01.06.08	40	11	02.06.08	-	-	-	-	2	-	-	-
Bottle/Net	17.06.08	40	11	18.06.08	-	-	-	-	1	-	-	-
Torchlight			9	21.05.08	-	-	-	1	-	-	-	-
Torchlight			10	22.05.08	-	-	-	3	-	-	-	-
Torchlight			11	01.06.08	-	-	-	-	>30	-	-	-
Torchlight			11	17.06.08	-	-	-	-	-	-	-	-
Egg search				21.05.08	No							
Egg search				22.05.08	No							
Egg search				01.06.08	No							
Egg search				17.06.08	No							

Surveyors: Liz Greenwood and Tanya Flower/ Jane Davies

Key: GCN = Great Crested Newt, SN = Smooth Newt, PN = Palmate Newt, CF = Common Frog, CFT = Common Frog tadpole, CT = Common Toad, CTT = Common Toad tadpole, m = male, f = female

Note: The trap number was increased as the pond water levels increased to ensure traps were placed at intervals of 2 metres around all accessible pond margins. Bottle traps were not placed along the northern pond margin as access was not possible for health and safety reasons, this margin was netted

Table 8.4: Photographs of Habitats Present at Study Area 2 and of Pond 1


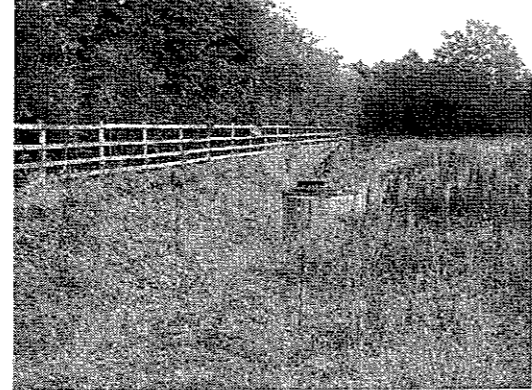
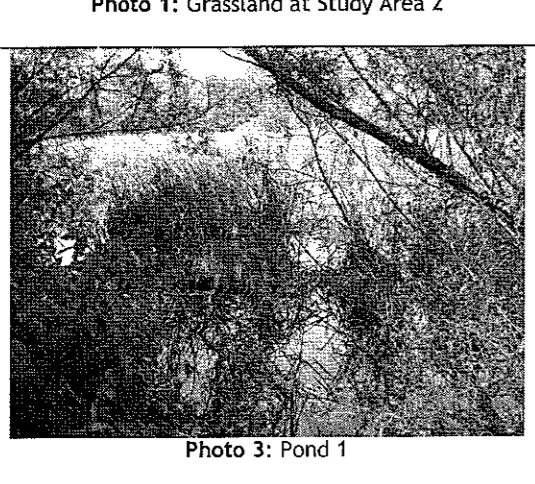
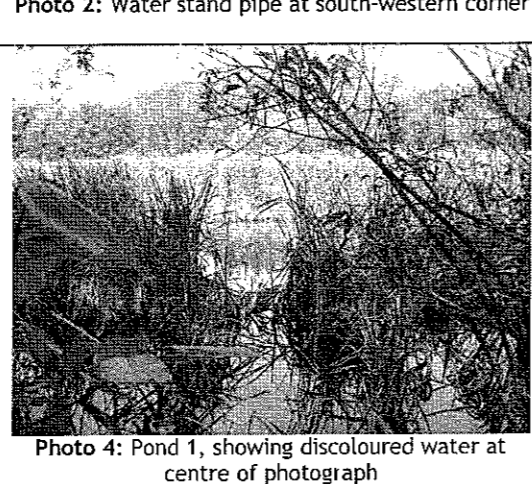
 A black and white photograph showing a wide, flat grassland area under a cloudy sky. The grass appears dense and uniform across the field.	 A black and white photograph of a grassy field with a wooden fence in the background. A small, dark structure, likely a water stand pipe, is visible in the middle ground.
 A black and white photograph of a pond surrounded by dense, tall grasses and reeds. The water surface is visible through the vegetation.	 A black and white photograph of a pond, similar to Photo 3, but with a distinct area of discoloured, brownish water in the center of the pond.

FIGURE 1: VEGETATION AND HABITAT PLAN FOR THE STUDY AREA AT CLITHEROE HOSPITAL, CLITHEROE

