

**5788001650**  
**Llesty Hospital, Holywell, Flintshire**  
**Extended Phase 1 Survey**

Submitted to:  
**Wardell Armstrong**



Submitted by:  
**AMEC Earth & Environmental (UK) Ltd.**

**June 2008**

Wardell Armstrong  
Extended Phase 1 Survey  
Lluesty Hospital, Holywell, Flintshire  
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## **1 INTRODUCTION**

### **1.1 Terms of Reference**

1.1.1 Amec Earth & Environmental (UK) Ltd. was commissioned by Wardell Armstrong in March 2008 to undertake an extended Phase I habitat survey of land at Lluesty Hospital, Holywell, Flintshire (National Grid Reference SJ 189749), hereafter referred to as 'the Site'. This report provides baseline information on habitats and species, and outlines conclusions relating to flora and fauna. Detailed survey is focused on that part of the site proposed for development as defined by the application boundary shown on Figure 1 and referred to herein as the 'Application Site'.

### **1.2 Objectives of the Study**

1.2.1 The principal aims of the survey were to:

- provide baseline data on the extent and distribution of habitats;
- assess the ecological value of identified habitats;
- examine the potential for presence of protected or locally important species; and
- determine any requirement for further specialist surveys, if necessary.

## 2 LEGISLATION & PLANNING POLICY CONTEXT

### 2.1 National Planning Policy and Legislation

2.1.1 Guidance on nature conservation planning policy is provided in the National Assembly for Wales Planning Division Technical Advice Note 5 (TAN 5 Nature Conservation and Planning: 1996). This is concerned both with the protection of statutorily designated sites and nature conservation in the wider countryside

2.1.2 TAN 5 paragraph 28 states:

*“Statutory sites and non-statutory sites, together with features which provide wildlife corridors, links or stepping stones from one habitat to another, all contribute to the network necessary to ensure the maintenance of the current range and diversity of our flora, fauna, geological and landform features and the survival of important species. Sensitive landscaping and planting, the creation, maintenance and management of landscape features important to wildlife, and the skilled adaptation of derelict areas can provide extended habitats”.*

2.1.3 This paragraph recognises that careful planning can be used to reconcile nature conservation and development.

2.1.4 Planning Policy Wales (March 2002), to which local authorities must have regard when preparing Unitary Development Plans, sets out policies for the conservation of biodiversity. Planning Policy Wales identifies protected species as “a material consideration when a local planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat.” National legislation for the special protection of selected species is provided in the Wildlife and Countryside Act 1981, as amended. Schedule 5 provides special protection to selected animal species including great crested newts, through paragraph 9(4) of the Act, against damage to “any structure or place which any wild animal (included in the schedule) uses for shelter and protection” and against disturbance whilst in such places. A further change in the legislation took place in 2008, which extended protection to water voles and the Roman snail. A full list of protected species can be found on the Joint Nature Conservation Committee’s website ([jncc.gov.uk](http://jncc.gov.uk)).

2.1.5 Certain species are provided with additional protection through inclusion on Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended, which transpose into British law the European Community’s Habitats Directive (92/43/EEC). This legislation extends protection to animals anywhere that they occur and provides tests against which the permission for a development which may have an effect on a Schedule 2 protected species must be assessed, before permission can be given.

2.1.6 Section 40(1) of the Natural Environment and Rural Communities Act 2006 places a duty on every public authority, in exercising its functions, to “have regard, so far as is consistent with the proper exercise of those functions, to the purpose of

conserving biodiversity". Section 40 replaces and extends a similar pre-existing duty on Ministers and Government, which was set out in S74 of the Countryside and Rights of Way (CROW) Act 2000.

## **2.2 Biodiversity Action Plans**

2.2.1 Biodiversity Action Plans (BAPs) are part of the UK Government's strategy for the implementation of the 1992 Convention on Biological Diversity, to which it is a signatory. BAPs have been developed for the UK and devolved to local levels (LBAPs), to protect a number of rare species and habitats and reverse the declines of more widespread, but declining, species and habitats.

2.2.2 The UK government produced a revised list of priority species and habitats in August 2007. The UK Biodiversity Action Plan now includes 1,149 species and 65 habitats. A full list of priority species and habitats can be found on the UK Biodiversity Action Plan website ([www.bap.org.uk](http://www.bap.org.uk)).

2.2.3 In addition to the UK BAP, Flintshire has a Local BAP, which was published as 'Creating Space for Wildlife'. This LBAP is the means by which national biodiversity targets will be met locally. The document also includes locally important species and habitats that are characteristic to Flintshire but not covered by the national targets. Action Plans have been prepared for 7 species, including barn owls, lesser horseshoe bats and badgers and 11 habitats.

### **3 CONSULTATION AND DATA COLLATION**

#### **3.1 Consultees**

- 3.1.1 Relevant organisations have been consulted for any ecological records they might hold regarding the proposed development. A list of the consultees can be found at Appendix C. Not all consultee responses had been received at the time of finalising this report.
- 3.1.2 Reference has been made to the historic maps provided in the Lluesty Hospital Development and Conservation Brief (Flintshire County Council).

#### **3.2 Statutory Designated Nature Conservation Sites**

- 3.2.1 Information on statutory sites was obtained from the government website, (magic.gov.uk) and the websites of the statutory agencies the Countryside Council for Wales (ccw.gov.uk) and the Joint Nature Conservation Committee (jncc.gov.uk). Direct contact was also made with CCW by telephone and email over the designation status of nearby sites.
- 3.2.2 The Site is located a short distance from the Halkyn Mountain Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI).
- 3.2.3 A small outlying part of the SAC (also SSSI) is situated immediately adjacent to the Site which, according to CCW is an area of common land / open access land at Brynford Hall/Pen y Bryn. It should be noted that this is not contiguous with or adjacent to the Application Site. A small part of the common falls within the SSSI and SAC as it supports calaminarian grassland, a feature for which the SAC and SSSI have been notified. A further SSSI, Herward Smithy, which was also scheduled for its calaminarian grasslands, is located approximately 1km to the south-east of Lluesty Hospital at SJ196740.

#### **3.3 Other Designated Areas**

- 3.3.1 The Site lies outside the Holywell Common and Halkyn Mountain Historic Landscape. The boundary of the Historic Landscape lies on the opposite side of the B5121.

#### **3.4 Protected and Notable Species**

- 3.4.1 Existing ecological information was obtained from the National Biodiversity Network (NBN) website and the *Preliminary Biodiversity Audit of Flintshire* to identify any protected species records in the vicinity of Lluesty Hospital.

##### Bats

- 3.4.2 Both Natterer's *Myotis nattereri* and pipistrelle bats *Pipistrellus pipistrellus* have been recorded in the vicinity of the hospital. The former within 3km of the Site and the latter within 1km of it. Long-eared bats *Plecotus* sp. have been recorded at Carmel, which is 2km to the west of the Site.



- 3.4.3 Flintshire County Council has advised that they consider that the buildings at Lluesty Hospital have potential for bats.

<b>Date</b>	<b>Species</b>	<b>Location</b>
1987	<i>Plecotus auritus?</i>	Carmel
1997	<i>Pipistrellus pipistrellus</i>	Holywell
1996	<i>Myotis nattereri</i>	Carmel

#### **Bat records from the vicinity of Lluesty Hospital**

##### Badgers

- 3.4.4 Badgers and their setts are protected under the Protection of Badgers Act (1992) and the Wildlife and Countryside Act (1981, as amended). The Nature Conservation Act 2004 co-ordinated these two Acts, strengthening the protection of badgers in the UK. The Flintshire LBAP includes a Species Action Plan for badgers. The NBN Gateway contains few records for badgers in the immediate vicinity of Holywell (the closest record is approximately 5km north-west of the Site), however this may be the result of inadequate recording, rather than the absence of the species.
- 3.4.5 Pat Hartley, from the Clwyd Badger Group, has confirmed that there are no records of badger setts from the Site.

##### Birds

- 3.4.6 Ornithological records are sparse for this area with only black-headed gulls *Larus ridibundus* being recorded on the NBN Gateway website. Neither this, nor the adjacent 10km grid square shows any records for barn owls *Tyto alba*.
- 3.4.7 The Royal Society for the Protection of Birds (RSPB) has advised Flintshire County Council that swifts *Apus apus* are nesting at Lluesty Hospital.

##### Water voles and otters

- 3.4.8 There is a single, old, record of a water vole *Arvicola terrestris* near Afon-Wen (SJ1271) dating from 1971. Otters *Lutra lutra* have been recorded along the River Wheeler on three occasions, once from the area to the North East of Ddol (SJ1471) and twice from Caivdy Mill (SJ108717). All of the records are over 5km from the Site, but there is suitable habitat for both species a short distance to the south of the Site. There are however no watercourses on the Site itself.

### Amphibians

3.4.9 Flintshire is an important stronghold for the great crested newt *Triturus cristatus* and there are a large number of records for the area, particularly near Pentre Halkyn. However, most of these are south of the A55. Palmate newts *Triturus helveticus* have been recorded within 2km of the Site, near Pen-y-Ball Top.

### Reptiles

3.4.10 Reptiles are poorly recorded in Flintshire. The common lizard *Zootoca vivipara* has been found at Carmel and adders *Vipera berus* have been recorded on three occasions at Holywell.

## **4 METHODOLOGY**

### **4.1 Extended Phase 1 Habitat Survey**

- 4.1.1 An extended Phase 1 habitat survey of the wider Site area (which includes the Application Site) was carried out by a suitably experienced ecologist on 9<sup>th</sup> April 2008 following the approach recommended in the current guidelines for baseline ecological assessment<sup>1</sup>. This level of survey includes the documentation of habitats to a recognised standard<sup>2</sup>, but also includes the recording of signs indicating the presence or potential presence of species that could constitute a material consideration in planning terms. This method does not constitute a full botanical or protected species survey but allows a professional judgement to be made on whether or not further specialist surveys will be required.
- 4.1.2 Habitats are classified according to the descriptions as laid out in the Handbook for Phase 1 Habitat Survey, referred to above. A Phase 1 Habitat plan is produced which uses pre-set colour codes to map the different habitats present on site. This allows a rapid visual assessment of the extent and distribution of the different habitats types.
- 4.1.3 Descriptive 'target notes' (Appendix A), are made for characteristic habitats, features of ecological interest or any other features which are of note to aid ecologically sensitive design or mitigation. Plant species nomenclature follows that outlined in the *New Flora of the British Isles* (Stace, 1997).
- 4.1.4 Searches were made for signs of the presence of protected species, including badgers and reptiles. The potential habitat suitability of the Site for protected species was also assessed. Specific surveys for bats were carried out at the Site, the findings of which are presented in a separate Report (AMEC 1650/R2Bats/Final 2008).

### **4.2 Limitations**

- 4.2.1 An extended Phase 1 habitat survey cannot provide conclusive evidence of the absence of any particular protected species. However, based on the habitats recorded and on the data gathered from consultations, it is possible to predict with some level of confidence, the protected species that may potentially be present.
- 4.2.2 The survey was carried out in April, before many species of plant had started to flower. However, the limitations in terms of total number of identifiable species will not have affected the overall Phase 1 mapping and classification of habitat types.

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<sup>1</sup> Institute of Environmental Assessment (1995) "Guidelines for Baseline Assessment"

<sup>2</sup> Nature Conservancy Council (1993) "Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit"

## 5 BASELINE CONDITIONS

### 5.1 Habitats Summary

- 5.1.1 Lluesty Hospital lies on the boundary of the Carboniferous limestone and the coal measures. The limestone forms the northern end of the Clwydian Range and rises to an altitude of 258m at Pen-y-Ball Top, approximately 1.5km to the west of the hospital. The limestone has been extensively mined for lead and zinc since Roman times and there are numerous mine workings and quarries on the hills behind Lluesty Hospital. The oldest, Georgian part of the hospital is built from dressed blocks of carboniferous limestone and there is a short stretch of dry-stone wall behind the modern hospital block. Several of the species present on the site are characteristic of a lime-rich soil.
- 5.1.2 The north and east parts of the Site consist largely of the buildings and hardstanding areas which make up Lluesty Hospital complex. Open green space is mainly found to the south and west.
- 5.1.3 There is evidence of the remains of what appear to be lead mines at the south-west end of the Site but these lie outwith the Application Area. The age and depth of these is uncertain, but the small amount of spoil suggests that they are test pits at the extreme edge of the lead-bearing veins. Some of the surrounding growth is characteristic of calamarian grassland, a particular type of vegetation associated with former lead and zinc mines.
- 5.1.4 The Application Site supports the following habitats, ordered according to abundance:
- amenity grassland;
  - agricultural grassland;
  - woodland;
  - ornamental trees;
  - scrub;
  - ruderal vegetation; and
  - walls.

### 5.2 Habitat Descriptions

- 5.2.1 Figure 1 shows the distribution of habitats and the location of numbered target notes. Appendix A provides full target notes, and Appendix B a list of plant species recorded during the survey. Site photographs are provided at Appendix D.

#### Amenity grassland

- 5.2.2 The soft areas immediately around the hospital buildings are covered with short, frequently mown brown bent *Agrostis capillaris* and red fescue *Festuca rubra* grassland (target note 3). This has negligible botanical or biodiversity value, but

bee orchids can occasionally appear in this type of habitat. Land in front of the infirmary is shown as being a ploughed field in the 1946 plan of Lluesty Hospital.

#### Agricultural grassland

- 5.2.3 Most of the rising ground behind the former workhouse is covered with improved agricultural grassland (MG6 *Lolium perenne*-*Cynosurus cristatus* grassland in the National Vegetation Classification). This has been heavily grazed in the past and the sward is now maintained by rabbits (target notes 4, 7, 17 and 18). Brown bent *Agrostis capillaris* and red fescue *Festuca rubra* are prominent, with large patches of common mouse-ear *Cerastium fontanum* where rabbit activity is greatest. Evidence of heavy grazing can be seen in the high incidence of ragwort *Senecio* sp., spear thistle *Cirsium vulgare* and broad-leaved dock *Rumex obtusifolius*. The weak growth of the higher plants has enabled mosses such as *Rhytidiadelphus squarrosus* and *Brachythecium rutabulum* to become widespread in this area.
- 5.2.4 Other species within this habitat mainly occur in small quantities. These include lesser celandine *Ranunculus ficaria*, white clover *Trifolium repens*, germander speedwell *Veronica chamaedrys*, yarrow *Achillea millefolium* and self-heal *Prunella vulgaris*. Grasses include crested dog's tail *Cynosurus cristatus*, smooth meadow grass *Poa pratensis* and ryegrass *Lolium perenne*.
- 5.2.5 Some of the less intensively grazed parts of the site are covered by tussocky, false-oat grass *Arrhenatherum elatius* grassland (target note 12). The pattern of vegetation in this field, with areas of short and long grass, suggests that it was formerly grazed by horses.

#### Woodland

- 5.2.6 There are several small areas of deciduous woodland on the Site, with a ground flora typical of calcareous soils. The older established areas have an interesting ground flora with dog's mercury *Mercurialis perennis*, bluebells *Hyacinthoides non-scripta*, green alkanet *Pentaglottis sempervirens*, red campion *Silene dioica* and lord-and-ladies *Arum maculatum*. Ash trees *Fraxinus excelsior* predominate, as would be expected on calcareous soil, with an under-storey of hawthorn *Crataegus monogyna*, wild cherry *Prunus avium* and sycamore *Acer pseudoplatanus* (target notes 8 and 9).

#### Ornamental trees

- 5.2.7 Several ornamental trees have been planted in the vicinity of the hospital. These include copper beech *Fagus sylvatica*, yew *Taxus baccata* and cherries *Prunus* sp. Horse chestnut *Aesculus hippocastanum* and Leyland cypress x *Cupressocyparis leylandii* are also present. There are also several ornamental shrubs, including *Escallonia* sp. and *Berberis darwinii*. *Escallonia* is a useful source of nectar for bees (target notes 4, 5, 13, 14 and 15).

### Scrub

- 5.2.8 There are several patches of scrub on the Site. The largest is located beside the wall alongside Erw Groes and is composed of hawthorn, wild cherry, brambles *Rubus fruticosus* and horse chestnut tree *Aesculus hippocastanum*.

### Walls

- 5.2.9 The limestone walls of the former workhouse are effectively devoid of vegetation, but there are large amounts of ivy-leaved toadflax *Cymbalaria muralis* on the wall facing the Old Chester Road.
- 5.2.10 A short stretch of dry-stone wall is situated behind the modern hospital buildings. The wall is partially buried by spoil and rubbish from the construction of the modern hospital buildings. The exposed parts of the wall have been colonised by shining cranes-bill *Geranium lucidum*, herb-Robert *G. robertianum* and male-fern *Dryopteris filix-mas* (target note 6).

## **5.3 Protected Species**

### Bats

- 5.3.1 The hospital grounds contain several mature deciduous trees, which may be suitable for crevice-dwelling bats. Bat roosts may occur in the following features; woodpecker holes, rot-holes (cavities), frost cracks, hollow sections, beneath loose bark, within ivy and in dense epicormic growth (growth that occurs after damage). Veteran trees typically exhibit many of these features or defects and should usually be regarded as sites with clear potential, but any tree, which possesses such a feature or defect, may host bats.
- 5.3.2 The possible presence of bat roosts on the Site is discussed more fully in the accompanying bat survey report (AMEC 1650/R2Bats/Final).

### Badgers

- 5.3.3 The survey for badgers entailed a walkover of the entire Site, methodically searching areas of scrub, hedgerow, fence lines and open grassland for evidence of badger activity. The survey included searches for all accepted badger field signs (Bang and Dahlstrom, 2001). No sign of badgers were detected and most soil disturbance seemed to be caused by rabbits. Rabbits were very common around the Site and their burrows could be found under brambles and amongst scrub. The boundary of the site was inspected, but there was no indication of badger tracks, hairs on fences, snuffle marks or latrines etc. which would indicate that badgers used the Site for foraging.

### Birds

- 5.3.4 The mature trees and areas of scrub within the Site are likely to support a range of common breeding bird species. Although a full ornithological survey was not carried out, the following species were noted during the Phase 1 Habitat Survey:
- magpie – *Pica pica*
  - blackbird – *Turdus merula*
  - carrion crow – *Corvus corone corone*
  - woodpecker - (species not confirmed)

### Great Crested Newts

- 5.3.5 There are no water bodies on the Site which could provide breeding opportunities for great crested newts *Triturus cristatus*. The scrub and grassland areas within the Site may provide foraging areas during their terrestrial phase if this species is present on nearby land. Parts of the Site could be potentially suitable for temporary refuges or for hibernation in the winter months.
- 5.3.6 There are two ponds (unconfirmed, as on private land and could not be viewed during the survey) within 500m of Lluesty Hospital. An artificial, rectangular pond near Stamford Farm (SJ195746) may provide a habitat for great-crested newts. Another possible pond is situated in a field at SJ185747, at the top of Brynford Hill.

### Water voles and otters

- 5.3.7 No evidence of either of these species was found during the Extended Phase 1 survey. There are no watercourses on the Site and as both species tend to range along riparian corridors, their presence within the Lluesty Hospital grounds is considered unlikely.

### Reptiles

- 5.3.8 Areas of scrub and grassland on the Site could potentially provide foraging opportunities for some reptile species, if they are present. No reptiles were seen during the survey, but the mined area in particular presents suitable habitat for lizards and snakes.

## **5.4 Evaluation**

- 5.4.1 The Site is not part of a protected or designated area, but lies adjacent to an outlier part of the Halkyn Mountain SAC. The Application Site is not adjacent to or contiguous with this area. It does not include areas of habitat considered to be of significance in a regional or local context. There is, however, a small area some distance beyond the application boundary that could potentially be calaminarian grassland, which is a UK BAP Priority Habitat.
- 5.4.2 The Site is assessed as being of low nature conservation value in terms of the habitats it contains, which largely comprise species-poor grassland and scattered

areas of scrub and trees. These areas are likely to support invertebrates, small mammals and birds but the conditions they provide commonly occur in the area.

- 5.4.3 No protected species were recorded during this survey, however the presence of bats in at least one of the hospital buildings was confirmed during the separate bat survey and the buildings and mature trees on site are considered to have the potential to support bat roosts.
- 5.4.4 The habitats on site are considered suitable for great crested newts (terrestrial habitat only) and also potentially for reptiles. There are no waterbodies suitable for breeding great crested newts but ponds do exist on private land within 500m of the site boundary and there is a possibility that great crested newts could access the site to make use of terrestrial habitat within it.

## **6 CONCLUSIONS**

### **6.1 General**

- 6.1.1 This report presents the findings of an extended Phase 1 habitat survey of Lluesty Hospital and grounds carried out on 9<sup>th</sup> April 2008. A separate Report (AMEC 1650/R2Bats/Final) provides information on bats. At present the full details of the proposed development are not known, precluding a detailed consideration of potential impacts and mitigation. However, it is possible to identify the key ecological sensitivities of the Site and to respond to them appropriately in the development process.

### **6.2 Habitat significance**

- 6.2.1 None of the habitats recorded are of more than low ecological value. No rare or protected plants were found within the Application Site boundary during the survey.
- 6.2.2 The dominant habitats are relatively inconsequential agricultural grassland and amenity grassland, with patches of scrub on the perimeter. There are small areas of deciduous woodland along the boundary with the B5121.
- 6.2.3 Part of the surveyed Site beyond the Application Site boundary contains disused mine shafts including an area of possible calaminarian grassland, which is relatively rare in the British Isles.
- 6.2.4 Known ponds within 500m of the hospital site may support breeding great crested newts. The Site itself offers foraging opportunities and potential refugia for both great crested newts and reptiles.
- 6.2.5 The majority of the trees in the vicinity of the hospital are ornamental species with little ecological value apart from potential bat roosts and for breeding birds.
- 6.2.6 Existing limestone walls along parts of the Application Site boundary offer potentially valuable substrate for plants and potential refuges for invertebrates,



amphibians, reptiles and small mammals. They would be retained wherever possible.

- 6.2.7 Best practice site management during construction would be implemented to control excessive litter, dust, noise etc and problems such as fuel and other chemical spills which would otherwise have the potential to affect adjacent habitats.

### **6.3 Protected species**

- 6.3.1 No signs of badger were recorded, nor is it considered likely that the Site supports otter or water vole since no watercourse is present.

- 6.3.2 The separate bat survey confirms that bats are using at least one of the hospital buildings and that mitigation measures along with a European Protected Species licence will be necessary before any works likely to disturb bats can take place. Further survey would be carried out as described in the accompanying Bat Report (AMEC 1650/R2Bats/Final) to determine more precisely the nature and extent of bat activity and to refine the detail of appropriate mitigation measures and working methods to comply with legislation.

- 6.3.3 The possible presence of great crested newts or reptiles on the Site cannot be determined without further survey, but both have been recorded in the surrounding area. A precautionary approach would therefore be taken to both of these species, including consultation with CCW and Flintshire Council, to ensure that if present they are suitably protected and/or excluded during the works.

- 6.3.4 Permission would be sought to undertake great crested newt surveys in the nearby ponds, at the appropriate season. Should this species be confirmed to be present in the ponds, detailed mitigation measures and a method statement would be drawn up and no work likely to disturb great crested newts would be carried out unless under a European Protected Species Licence granted by CCW / Welsh Assembly Government.

- 6.3.5 Further survey work would also be undertaken to confirm whether or not slow worms or other reptile species are present on the Site. If reptiles are present, detailed mitigation measures would be set in place, including Reasonable Avoidance Measures during the construction works. Mitigation may include localised habitat enhancement and/or creation of artificial hibernacula outside the development area.

- 6.3.6 The nests, eggs and young of even common species of wild bird are protected from deliberate damage whilst birds are engaged in breeding activity. A number of potential breeding bird species were observed on site and swifts are reported to nest on the older hospital buildings. Disturbance of vegetation or buildings likely to be used by breeding birds would therefore only be undertaken outside the breeding season. Alternatively, an experienced ecologist would search vegetation or building elevations immediately prior to proposed clearance or alteration, so that any breeding sites could be identified and work delayed until young birds had fledged.

## **7 REFERENCES**

1869 1:1750 Scale Ordnance Survey Map supplied by Flintshire County Council.

1899 1:1750 Scale Ordnance Survey Map supplied by Flintshire County Council.

1912 1:1750 Scale Ordnance Survey Map supplied by Flintshire County Council.

Bang, P. & Dahlstrom, P.,2001. Animal Tracks and Signs, Oxford University Press.

Stace . 1997. New Flora of the British Isles

**Figure 1**

**Phase 1 Habitat Map**

## APPENDIX A Target Notes

Target note	Description
1	Laurels at front of the hospital.
2	Privet hedge.
3	Amenity/improved grassland surrounding car park at front of hospital. Closely mown, brown bent <i>Agrostis capillaris</i> and red fescue <i>Festuca rubra</i> , with some ribwort plantain <i>Plantago lanceolata</i> . Other scattered areas of amenity grassland occur around the hospital complex including south west of infirmary and north east of workhouse.
4	Mat of <i>Rhytidiadelphus squarrosus</i> with brown bent, daisies <i>Bellis perennis</i> and creeping buttercup <i>Ranunculus repens</i> . Little grass to be seen, mainly covered by mosses. Mature bushes of <i>Berberis darwinii</i> and <i>Escallonia</i> sp.
5	Mature yew tree <i>Taxus baccata</i> at SJ18906/74942. Scruffy area of <i>Urtica dioica</i> and <i>Rubus fruticosus</i> . Plenty of rabbit activity, but no sign of badgers.
6	Short stretch of dry limestone wall. <i>Crataegus monogyna</i> with lord and ladies <i>Arum maculatum</i> below. Herb Robert <i>Geranium robertianum</i> and shining cranes-bill <i>G. lucidum</i> . <i>Dryopteris felix-mas</i> , <i>Hedera helix</i> and <i>Polypodium interjectum</i> .
7	Rather uneven, rabbit-grazed field. Closely cropped by rabbits, with mats of <i>Rhytidiadelphus squarrosus</i> . Patches of <i>Cerastium fontanum</i> and ragwort <i>Senecio</i> sp. Semi-improved grassland with brown bent, red fescue and small amount of <i>Trifolium repens</i> .
8	Hedgerow with mature sycamore trees <i>Acer pseudoplatanus</i> and hawthorn <i>Crataegus monogyna</i> . Ground flora consists of dog's mercury <i>Mercurialis perennis</i> , red campion <i>Silene dioica</i> , ivy <i>Hedera helix</i> , lord and ladies <i>Arum maculatum</i> and green alkanet <i>Pentaglottis sempervirens</i> . Some <i>Prunus</i> sp. (probably <i>P. avium</i> ) and dog rose <i>Rosa canina</i> .
9	Group of mature ash trees <i>Fraxinus excelsior</i> at SJ18856/74875. Eutrophicated, highly fertile soil, with patches of brambles and nettles, but large amounts of red campion <i>Silene dioica</i> , lord and ladies <i>Arum maculatum</i> and dog's mercury <i>Mercurialis perennis</i> .

Target note	Description
10	Area of hawthorn scrub beside road. Composed of dog rose <i>Rosa canina</i> , <i>Rubus fruticosus</i> , <i>Prunus avium</i> and <i>Aesculus hippocastanum</i> . Bottom part planted with a screen of hawthorn and a couple of beech <i>Fagus sylvatica</i> .
11	Small seepage area. May mark the position of a broken drain or natural spring. Large amount of creeping buttercup <i>Ranunculus repens</i> in this area.
12	Small area of false oat-grass <i>Arrhenatherum elatioris</i> grassland. Mainly <i>Arrhenatherum</i> , cock's foot <i>Dactylis glomerata</i> and Yorkshire fog <i>Holcus lanatus</i> .
13	Screen of small beech trees <i>Fagus sylvatica</i> .
14	Mature yew tree.
15	Discontinuous Leyland cypress x <i>Cupressocyparis leylandii</i> screen. Horse chestnut, wild cherry <i>Prunus avium</i> , elder <i>Sambucus nigra</i> , yew <i>Taxus baccata</i> , hawthorn <i>Crataegus monogyna</i> , sycamore <i>Acer pseudoplatanus</i> .
16	Exterior of brick building. Ivy-leaved toadflax <i>Cymbalaria muralis</i> , hart's tongue fern <i>Phyllitis scolopendrium</i> and wall-rue <i>Asplenium ruta-muraria</i> .
17	Lower part of field, directly behind the hospital. Very short, rabbit-grazed turf with mats of <i>Rhytidiadelphus squarrosus</i> . This whole area has probably been covered with soil from the hospital extension. Small plants of <i>Centaurea nigra</i> . Tussocky area <i>Silene dioica</i> , <i>Cirsium vulgare</i> , <i>Arctium minus</i> and <i>Alliaria petiolata</i> . Woodpecker.
18	Small triangular area behind the 'patient's garden'. Short rabbit-grazed turf covered by mat of <i>Rhytidiadelphus squarrosus</i> and <i>Caliergon cuspidatum</i> . Large number of <i>Senecio</i> seedlings, some spear thistle <i>Cirsium vulgare</i> . Blackbirds, magpies and crows.
19	Short turf with large amount of <i>Caliergon cuspidatum</i> , <i>Rhytidiadelphus squarrosus</i> and <i>Brachythecium rutabulum</i> . Higher plants: <i>Ranunculus repens</i> , <i>Trifolium repens</i> , <i>Veronica chamaedrys</i> , <i>Ranunculus ficaria</i> , <i>Cerastium fontanum</i> , <i>Festuca rubra</i> , <i>Cynosurus cristatus</i> , <i>Rumex obtusifolius</i> , <i>Prunella vulgaris</i> , <i>Bellis perennis</i> , <i>Centaurea nigra</i> and <i>Achillea millefolium</i> .

## APPENDIX B

### Botanical Species List

*Acer pseudoplatanus*  
*Achillea millefolium*  
*Aesculus castaneum*  
*Agrostis capillaris*  
*Alliaria petiolata*  
*Arctium minus*  
*Arrhenatherum elatius*  
*Arum maculatum*  
*Asplenium ruta-muraria*  
*Bellis perennis*  
*Berberis darwinii*  
*Brachythecium rutabulum*  
*Caliergon cuspidatum*  
*Centaurea nigra*  
*Cerastium fontanum*  
*Chelidonium majus*  
*Cirsium vulgare*  
*Cladonia rangiformis*  
*Cymbalaria muralis*  
*Cynosurus cristatus*  
*Dactylis glomerata*  
*Dryopteris dilatata*  
*Dryopteris felix-mas*  
*Fagus sylvatica*  
*Festuca rubra*  
*Fraxinus excelsior*  
*Galium aparine*  
*Galium cruciata*  
*Geranium lucidum*  
*Geranium robertianum*  
*Hedera helix*  
*Helleborus foetidus*  
*Heracleum sphondylium*  
*Holcus lanatus*  
*Hyacinthoides non-scripta*  
*Lophocolea bidentata*  
*Mercurialis perennis*  
*Peltigera hymenina*  
*Pentaglottis sempervirens*  
*Phyllitis scolopendrium*  
*Plagiomnium undulatum*  
*Plantago lanceolata*  
*Polypodium interjectum?*  
*Prunella vulgaris*  
*Prunus avium*  
*Prunus laurocerasus*  
*Ranunculus ficaria*  
*Ranunculus repens*  
*Rhytidiadelphus squarrosus*  
*Rosa arvensis*  
*Rosa canina*  
*Rubus fruticosus*  
*Rumex obtusifolius*  
*Sambucus nigra*  
*Senecio sp.*  
*Silene dioica*  
*Taxus baccata*  
*Thuidium tamariscinum.*  
*Trifolium repens*  
*Urtica dioica*  
*Veronica chamaedrys*  
*X Cupressocyparis leylandii*

## APPENDIX C

### Consultees for Lluesty Hospital

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## **APPENDIX D**

### **Site Photographs**