

**Biodiversity Duty:  
Phase 1 Habitat Survey of  
National History Museum, St Fagans**



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## Introduction

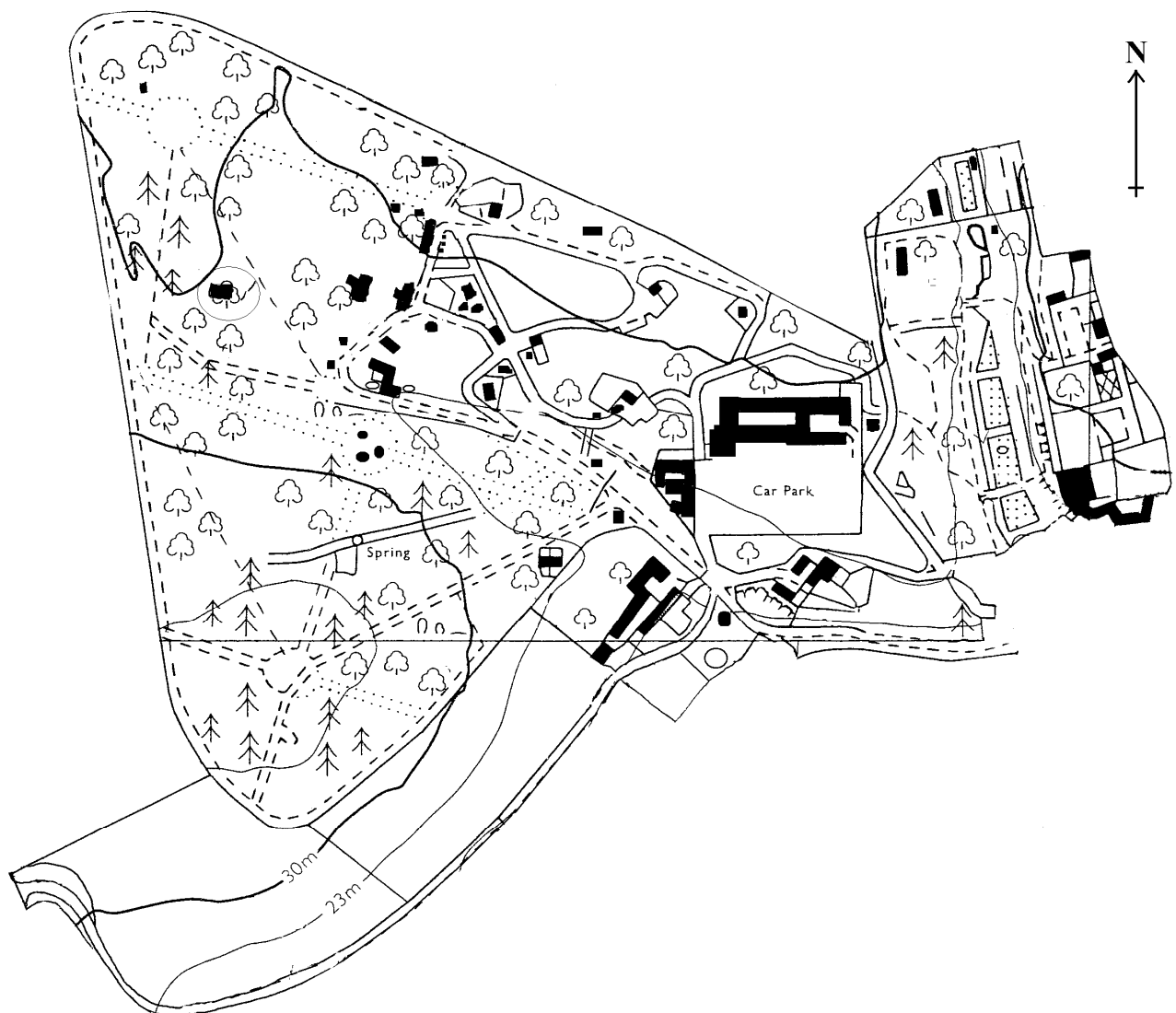
Biodiversity is a core component of sustainable development, underpinning economic development and prosperity, and has an important role to play in developing locally distinctive and sustainable communities. From 1 October 2006, all public authorities in England and Wales have a Duty to have regard to the conservation of biodiversity in exercising their functions. The Duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making. The Duty is set out in Section 40 of the Natural Environment and Rural Communities Act (NERC) 2006 which states: *"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity"*.

A part of the museum's response to the legislation, biodiversity audits are being carried out at its sites. In this report, a Phase 1 habitat survey of the National History Museum, St Fagans is presented. The Phase 1 habitat survey technique is the standard system for classifying and mapping wildlife habitats (including urban areas) in Britain (Nature Conservancy Council 1989; Wyatt 1991). The aim of the survey is to provide information about the nature, location and extent of semi-natural habitats to direct decision making and conservation effort effectively. Sites are mapped reasonably rapidly by visiting each parcel of land and mapping the vegetation, usually at the scale of 1:10,000, according to about ninety specific habitat types using standard colour codes. More detailed notes ("target notes") are made on areas of interest. The surveys can then be used to determine areas for more detailed survey, to indicate areas of value for nature conservation, and to provide a simple baseline for monitoring change in the future.

## Methods

The museum grounds were mapped in October 2008 in good weather following the survey manual (Nature Conservancy Council 1989). The area surveyed is shown in Figure 1; the scale is larger than normal for Phase 1 due to the small size of the site.

Figure 1. Area surveyed.

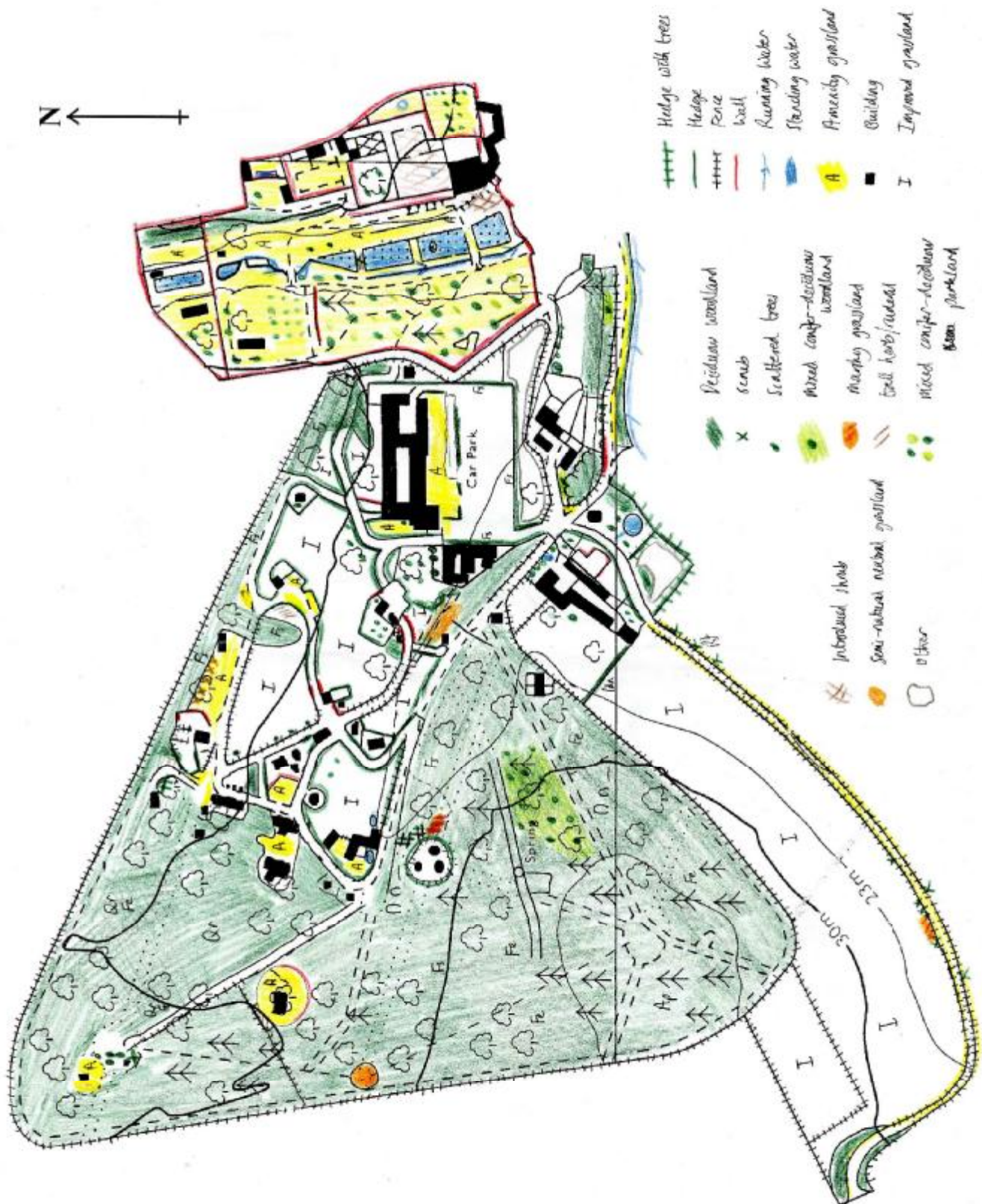




## Results

The Phase 1 habitat map is shown in Figure 2, and for clarity the location of the target notes is shown in Figure 3.

Figure 2. Phase 1 habitat map. Dominant species abbreviations are as follows: Fe, *Fraxinus excelsior*. Fs, *Fagus sylvatica*. Pdn, *Prunus domestica*. Ap, *Acer pseudoplatanus*. Qr, *Quercus robur*. Rf, *Rubus fruticosus*.



## **Phase 1 Habitats present at St Fagans**

### **A.1.1.1 Broad-leaved semi-natural woodland.**

Broad-leaved semi-natural woodland is widespread at St Fagans, especially in the west of the site. In practice none of the woodland appears to be Ancient Woodland (i.e. continuous woodland cover since 1600) and there are clear signs that much has been planted. It is here treated as semi-natural woodland rather than as plantation as the structure is somewhat heterogeneous, and it is in a relatively unmanaged state.

This is the main habitat type across the site, and the canopy varies locally from beech, to ash, to sycamore or to oak with some more mixed areas.

### **A.1.3.1 Mixed semi-natural woodland**

The Ordnance Survey map indicates some areas have mixed deciduous and conifer woodland, but most of the conifer component has been taken out and very few mixed areas remain. The areas of under-planting in tree guards may originate from this time.

The main area remaining is in the western woodland where Wych Elm and Pine dominate the canopy. A few small areas occur east of the control lodge.

### **A.2.1 Dense Scrub**

A few small areas of Buddleja scrub or willow scrub occur on the edges of woodland.

### **A.2.2 Scattered Scrub**

There are a few small patches of bramble scrub (e.g. by Celtic village) or young hawthorn trees.

### **A.3.1 Broad-leaved parkland/scattered trees**

The extensive gardens at St Fagans have many areas with planted broad-leaved trees. Included in this category are the few apple orchards in the grounds.

### **A.3.3 Mixed parkland/scattered trees**

The 'arboretum' area on the west side of St Fagans Castle grounds has a mixture of broad-leaved and conifer trees.

### **B.2.1 Unimproved neutral grassland**

The small area of grassland at the wooden hedge dominated by false wood-brome is included in this category, although it could also be treated as part of the woodland.

Along the drive, the very narrow strip of un-mown grass under the fence could also be treated as unimproved neutral grassland and has some similarities to hay meadows.

### **B.4 Improved grassland**

All meadows and pastures within the site are generally heavily improved.

### **B.5 Marshy grassland**

One very small area of marshy grassland dominated by hard rush with hemp agrimony occurs along the lower edge of the western meadow associated with the old spring. Another area occurs by the Celtic Village, though this is more of clearing in the woods.

### **C.3.1 Tall ruderal**

A few patches of nettles or Himalayan Balsam are included here.

### **G.1 Standing Water**

There are 11 areas of open water within the site, including five ornamental ponds and a former swimming pool.

### **G.2 Running Water**

The main area of running water is the stream associated with the ornamental ponds in St Fagans Castle grounds.

### **J.1.2 Amenity grassland**

Most of the open areas of grassland and lawns within the museum are amenity grassland, sometimes with scattered trees.

### **J.1.4 Introduced shrub**

A few patches of garden shrubs are planted around the site, and much of the formal gardens could be treated in this category.

#### J.2.1.1 Intact species-poor hedge

Most of the hedges within the site were planted on creation of the museum 50 years ago, and none are species-rich.

#### J.2.3.2 Hedges with trees

Some hedges have taller trees as part of their component.

#### J.2.4 Fence

Wooden or wire fences are frequent.

#### J.2.5 Wall

There are many walls within the site, those around the Castle grounds sometimes supporting vascular plants and/or mosses and lichens.

#### J.3.6 Buildings

Widespread in the site; some are known to support bats.

#### J.5 Other habitats

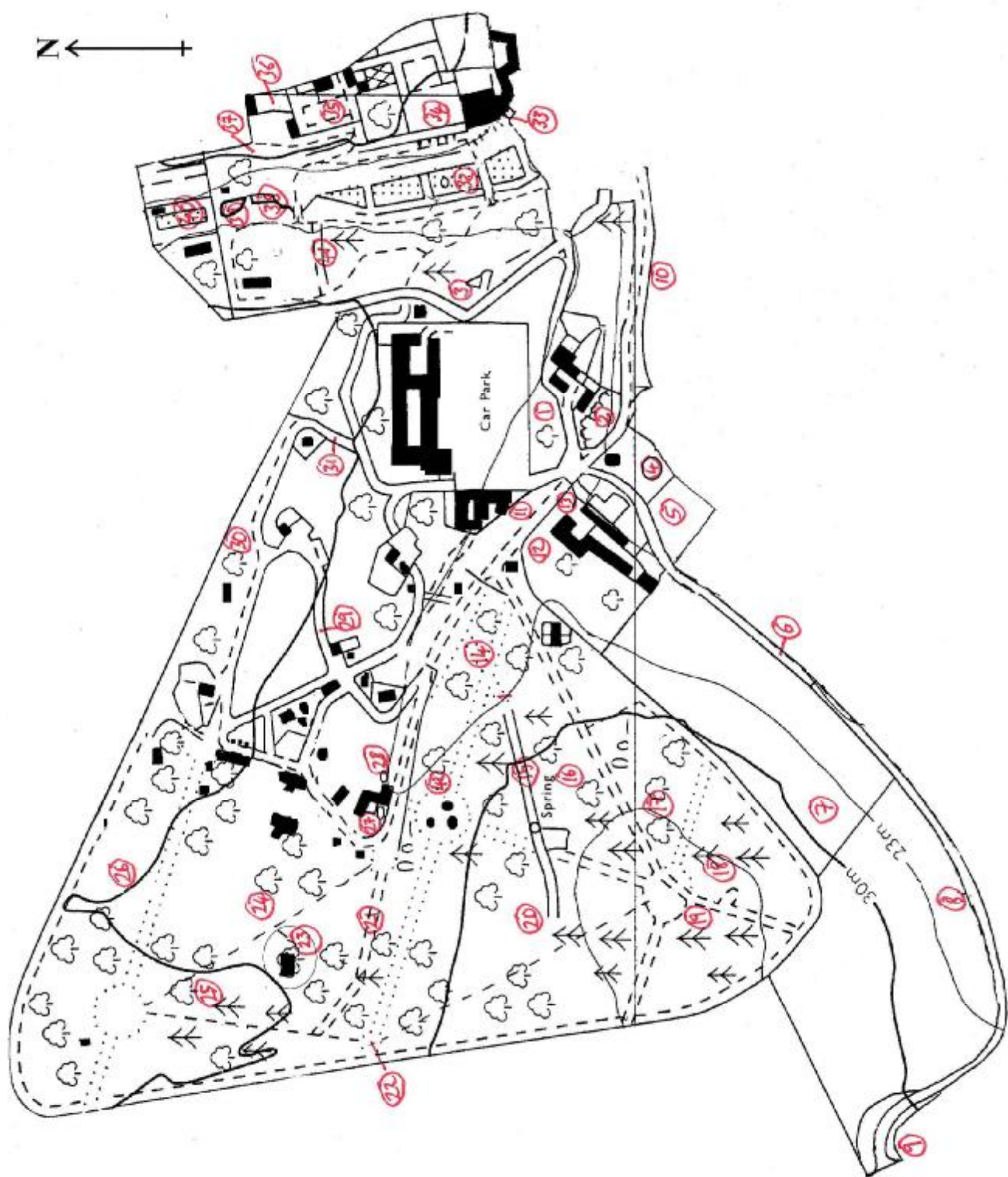
There are two areas used for parking vehicles with a concrete 'mesh' base with soil and grass between.

### Target Notes

# indicates photograph on project drive ("TN 24 St Fagans" refers to target note 24).

1. ST/1166.7709, Overflow Car Park  
Base of concrete mesh with trimmed beech hedge on north side and fence on south side. Grassy with perennial rye grass and weeds. Low interest.
2. ST/1169.7700, Woodland  
Deciduous woodland with a few conifers along top edge with Beech Ash, Sycamore, Pine and Spruce to 30m. Secondary woodland. Shrub layer is sparse elder. Ground flora nettles, brambles, ivy. Quarry edges shown on map, largely in-filled.
3. ST/118.772, St Fagans garden, trees on west side.  
Mixed pine/deciduous trees to 25m tall, part of garden.
4. ST/1164.7700, Pond by Control Room #  
Small pond in hollow with inflow stream on north side, full of Cornus with alder and crack willows around edge. Margins with nettles and Himalayan Palm, bramble and rank grass. Pond with water-starwort, yellow flag, water mint and meadowsweet. Not surveyed during Cardiff Pond Survey.
5. ST/1161.7697, Hard standing west of control room. #  
Small car park area with concrete mesh bare and grassy cover with abundant broad-leaved plantain. Margins with rank grass and nettles. Hedges hawthorn with willows and ash to 15m, ivy underneath.
6. ST/1146.7684, Main Drive #  
Drive fenced either side with occasional bramble clumps, young hawthorn and main verges. Some 'hay meadow' grass developing under fences with meadow vetchling, upright hedge-parsley, bird's-foot trefoil and false oat-grass.
7. ST/1135.7677, Field  
Improved field on slope, used as overflow car park. Main species (as judged from edge) crested dog's-tail, creeping buttercup, white clover, bent and rye grass. Mown and cattle-grazed. Spring shown on map gone (see Target note 8). Some patches in grassland look a little richer.
8. ST/1127.7670, Spring #  
The spring marked on the OS map is no longer present (culverted, drains by fence) but an area of damp grassland remains, especially on road bank. Relatively species-poor. Unmown but grazed. Marshland plants include hard rush, hoary willowherb, creeping bent, hemp agrimony, water figwort, hairy sedge.

Figure 3. Location of target notes.





9. ST/1106.7679, Entrance off A4232 ring road. #  
A landscaped entrance with plantation of ash, grey alder, hazel, guelder rose, blackthorn, oak, etc to c. 10m tall. Ground flora poor, a few ferns (harts-tongue, male fern) and mosses.
10. ST/1173.7698, Ely River bank between St Fagans entrance and river. #  
River bank dominated by sycamore, crack willow with horse chestnut, ash, alder and grey willow. Ground vegetation rank nettles, Himalayan balsam, Japanese knotweed, ivy, goutweed. Notable for small population of Monk's-Hood. verge by roadside mown, with Cuckoo flower in spring.
11. ST/1162.7708, Woodland East of Llwyn-yr-eos Farm  
Narrow strip of woodland on slope on west side of car park. Beech, ash and sycamore to 20m. Shrub layer scattered hazel, hawthorn, rhododendron along edges. Ground layer mainly ivy, brambles and ferns. Fenced west side, buildings and beech hedge east side.
12. ST/1161.7710, Pig Field, Llwyn-yr-eos Farm #  
Pig field, improved grassland, with notable frequency of Lesser Burdock.
13. ST/1163.7702, Farmyard Pond #  
Small duck pond with no vegetation.
14. ST/1146.7719, Woodland #  
Tall beech plantation to 30m tall, with ash, sycamore cherry, Wych elm, pine. Shrub layer of holly, sycamore, ash, hawthorn, hazel. Ground layer bramble, ivy, remote sedge and a few ferns.
15. ST/1143.7716, Gully  
3m deep gully in woodland with ferns and mosses on banks. Gully bottom damp in places, no sign of spring shown on OS map.
16. ST/1136.7704, Woodland  
Canopy composition shifts to Wych elm and pines, ground flora has abundant hart's-tongue, ivy and Lady fern in shady places.
17. ST/1137.7698, Woodland #  
Canopy ash to 25m, ground flora mainly brambles. Some sycamore and field maple. Rides in wood shaded and dull.
18. ST/1127.7691, Woodland  
Short (to 10m) scrubby woodland dominated by ash (locally with sycamore) with nettle and bramble in ground layer. Nearer fence canopy has willow, sycamore, birch (pines on map have gone). Locally woodland planting has taken place (old tree guards present) on made ground. Animal set on edge of made ground at ST/11290.76889.
19. ST/1123.7691, Sycamore Coppice #  
Area of sycamore coppice to 8m. Ground flora very poor, only a few mosses. Grey willow, cherry, oak, elder, and birch also present. Many old tree guards on ground.
20. ST/1122.7709, Woodland  
Mixed patchy mature woodland to 20m with ash, beech and sycamore in canopy with rarer broad-leaved lime, cherry, sweet chestnut. Some tree guards remain. Shrub layer sparse, some hawthorn and ash. Ground layer locally ivy or bramble. Locally quite a lot of fallen timber. Squirrel.
21. ST/1121.7725, Gully  
Sunken road with mossy banks and ferns. Amphibian fencing in middle of gully. Abundant shield fern.
22. ST/1114.7725, Wood Henge #  
Open glade with 'wood henge'. Grassland inside henge with ranker areas around edge with meadowsweet, wood brome, pendulous sedge, hogweed, rosebay willowherb, cocks-foot, willowherbs, and some ash saplings.

23. ST/1120.7736, St Teilo's Church #  
Recently re-erected church surround by white-washed wall on south side with hedgebank on north side, and newly sown grassland of rye grass and clover round church. Tall weedy vegetation (willowherbs etc) north of hedgebank. Newts present under corrugated iron in churchyard.
24. ST/1125.7738, Woodland  
Tall mature woodland dominated by oak, beech and sycamore. Wych elm, Norway maple also present. Shrub layer mostly sparse, with hawthorn and holly. Locally abundant ash regeneration. Ground layer mostly brambles. Lots of fallen wood. Squirrels.
25. ST/1123.7738, Disturbed Woodland  
Area of woodland to 15m dominated by ash fenced with ground heavily disturbed by pigs. At north end by road, a small area with corrugated iron hut (ST/1116.7747) and Buddleja scrub.
26. ST/113.775, Woodland #  
Similar to woodland on west side of track, probably with more ash regeneration.
27. ST/1134.7724, Tannery Pits #  
Tannery pits with charophytes, duckweed, 1 newt and small fish.
28. ST/1137.7723, Tank south of Tannery Pits #  
Tank covered with Greater duckweed. Likely to have newts.
29. ST/1150.7729, Llainfadyr Cottage #  
Track immediately east of cottage with 10m of stone wall, then dense hazel hedge 'lane'.
30. ST/1158.7734, Trees by Abernodwydd Farmhouse #  
Tall beech trees to 30m over field and amenity grassland. Locally abundant beech regeneration.
31. ST/1168.7726, Hedges near Chapel #  
The hedges here have quite nice 0.5-1m high banks at their base with a diverse flora including Tall Fescue, Wild Strawberry, Germander Speedwell, Hart's-tongue fern and Grey Sedge.
32. ST/1193.7715, Fish ponds #  
Fish ponds surveyed in detail for Cardiff Pond Survey in 1999/2000. Ponds since de-silted. Opposite-leaved pondweed still present in lowest two ponds at least, and locally abundant. Many ducks on lowest pond.
33. ST/1197.7713, St Fagans Castle Walls  
Walls at SW corner with Red Valerian, Ivy, Ivy-leaved Toadflax and Pellitory-of-the-wall. Walls in general well-maintained. Locally maidenhair spleenwort and wall rue present.
34. ST/119.771, Formal Gardens at castle etc.  
Extensive gardens with shrubs, trees and flowers, and the odd weed or two! Walls with lichens.
35. ST/1198.7731, Gardens House #  
Offices, car park, garden preparation and semi-wild garden area.
36. ST/1199.7733, Italian Garden  
Formal Pond with sedge, water plantain and Iris sp. Water clear, many snails. No newts visible today.
37. ST/1195.7730, Woodland bank west of Italian Garden  
A narrow steep, west facing wooded bank with beech, chestnut, holly and English elm to 20m. Ground flora bramble, ivy and ferns.
38. ST/1190.7733, Stream above Fishponds  
Stream of clear water flowing down to fish ponds with abundant water starwort and common duckweed. Fool's watercress also present. Below bridge important colonies of the fern *Polypodium cambricum* on rocks (ST/11933.77310).



39. ST/1189.7736, Upper Pond  
Pond surveyed during Cardiff Pond Survey 1999-2000. Pond with clear, fast flowing water. Dominated by water starwort. Iris, sedge, watercress and meadowsweet on margins. Rare lichen reported from rocks.
40. ST/1187.7744, Swimming Pool  
Pool virtually devoid of life. In past held population of rare Hairlike-pondweed (*Potamogeton trichoides*) and newts.
41. ST/1186.7728, Wall #  
Derelict wall covered with ivy. There used to be a good population of the rare fern *Polypodium cambricum* on the wall, now only a few clumps remain by the window arch. Wall also supports Harts-tongue fern, maidenhair spleenwort.
42. ST/ 1100.7720, marsh by Celtic Village #  
Marshy grassland by Celtic Village, more like clearing in wood, disturbed. Abundant Creeping Buttercup. Worth further survey in spring.

## Discussion

On the basis of this survey and some existing knowledge, the two main areas of interest at St Fagans are:

1. The large extents of deciduous woodland. These are probably ranked on the basis of their vegetation and history as of local importance for nature conservation.
2. The ponds which support Great Crested Newts, a rare lichen and the Opposite-leaved Pondweed

Additional surveys may reveal further areas of interest, eg. the museum grounds and buildings are also known to support bats, breeding birds and a range of small mammals. There is considerable scope to enhance the site for all of these groups.

## References

- Nature Conservancy Council (1990). *Handbook for Phase 1 habitat survey - a technique for environmental audit*. England Field Unit, Nature Conservancy Council, Peterborough.
- Wyatt, G. (1991). *A review of Phase 1 habitat survey in England*. England Field Unit, Nature Conservancy Council, Peterborough.