

# HABITAT MANAGEMENT PLAN

For Whiteknights Campus, University of Reading





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## INTRODUCTION

### **Aim of the Habitat Management Plan**

The aim of this plan is to bring together and reference the existing local management plans into a single coherent document, which describes:

- A strategy for the University's management of the site.
- How important habitat will be protected and developed

The plan aims to steer policy for the site management for the next 10–15 years and will be reviewed every 5 years, or more frequently if required.

The Habitat Management Plan has been used to develop a five year action plan for maintenance of the campus (see Appendix 2).



## PART 1 DESCRIPTION

### **Name of area:**

Whiteknights Campus

### **Period of plan:**

January 2015 – January 2020

### **Habitat areas:**

The habitat areas subject to this plan are marked on the Ecological Zones plan drawing number UR 1264 (see Appendix 3). Whiteknights campus is approximately 123 Hectares.

The approximate areas subject to this plan are as follows:

- Woodland, copse and other tree groups 20 hectares
- Lake 5.85 hectares
- Lake side/ Riparian like habitat 1.75 hectares
- Meadows, Rough grassland 9 hectares
- Wood Pasture 4 hectares

Ornamental borders are not marked on the plan but, to a greater or lesser extent, surround most buildings and are also found within the Harris Garden.

### **Legal owners:**

The University of Reading

### **Owners agent:**

Estates & Facilities

University of Reading

PO Box 235, Whiteknights, Reading, RG6 6BW

The University granted a long head lease for each of its halls of residence to UPP in 2012. UPP have contracted with the University to provide a number of services back to the halls, including grounds maintenance services.

The grounds team at the University are responsible for providing agreed services to UPP within an agreed area directly adjacent to the halls (referred to as the Grounds Maintenance area).

The service is reviewed regularly against the KPIs set out within the Service Level Agreement.

### **Planning Authorities:**

The campus crosses the administrative boundary between Wokingham Borough Council and Reading Borough Council.

### **Designations:**

There is one public foot path across the site.

There is a single tree preservation order on the site.

There are currently no felling licences or woodland grant schemes applying to the woods.

The Wilderness, lake and some of the surrounding meadows are within a non statutory designated area known as 'The Whiteknights Local Wildlife Site' (LWS).

The LWS is designated for its variety of habitats across campus.

### **External entrances:**

There are 14 vehicular and pedestrian entry points, as marked on the Whiteknights campus site plan, and a further pedestrian only entrance within the Wilderness.

### **Campus access:**

Access to Whiteknights campus by the public is 'Permissive' and may be restricted or withdrawn at any time.

### **External boundaries:**

The campus areas are generally clearly defined by fences and hedges.

### **Ownership and use of surrounding land:**

The Campus is effectively 'land locked' within the surrounding urban conurbation, with no immediate access to other important habitats in the locality

The site is bounded thus:

- North: Whiteknights Road with private housing beyond.

- East: Wilderness Road with private housing beyond.
- South: Pepper Lane with Leighton Park School beyond.
- West: Shinfield Road with private housing beyond.

### **Way-leave and other services:**

Multiple university services cross the site bringing utilities to the buildings (HV/LV, Gas, IT, Drainage, heating and water). A number of way-leaves are present on site; for services such as pressurised gas, water, IT, HV.

### **Climate of the area:**

Annual rainfall averages 634.5mm per year over this period with the higher rainfall between October and January. Temperatures are typical for the south east of England. Frosts occur mainly in the winter, but late spring frosts (April, May) do occur.

Further weather information is available from the University of Reading Meteorology web site: [www.met.reading.ac.uk/weatherdata](http://www.met.reading.ac.uk/weatherdata)

### **Topography:**

The Whiteknights campus is relatively flat rising to approximately 66m above sea level in the north east of the site. The surrounding land slopes gently to the lake system and falls generally to the west across the site.

### **Aspect and exposure:**

The relatively flat site gives little aspect changes across the campus. The site is moderately exposed overall.

### **Drainage:**

The principle drainage is from north to south west through a system of open ditches and underground pipes draining into Whiteknights lake. The site is generally free draining, however the central London clay bed has a tendency to become waterlogged during the winter months.

### **Geology and soils:**

The majority of the site is over Boyn Hill Gravel with a section of London clay to the centre of the campus (Whiteknights Lake and surrounding areas). Soil Ph. is generally in a range from 6.0–7.0 across campus, which supports a wide range of plant species; however localised extremes have been recorded. To the north of the campus the area is quite acidic and is former heath land.

### **Fauna on site:**

A list of species found at Whiteknights can be found at Whiteknights Biodiversity <http://blogs.reading.ac.uk/whiteknightsbiodiversity>. Bat and bird boxes, hibernaculas and stag beetle habitats have been built and placed around the campus. Fauna at Whiteknights is monitored by the School of Biological Science through its teaching and research activity.

### **Flora on site:**

The campus has a varied flora which has been subject to monitoring and recording through academic work for a number of decades. A list of plants found at Whiteknights is given in The Flora of Whiteknights Park this can be found at Whiteknights Biodiversity <http://blogs.reading.ac.uk/whiteknightsbiodiversity>. The meadow areas are variable in quality, but supports a wide range of species. Areas formerly described as 'Rank Grassland' have been enhanced over recent years through over seeding and plug planting. New meadows have been established around academic and residential buildings.

Woodland ground flora is varied between 'good' with Blue Bells, Wood Anemone and Primrose in a small percentage of areas, to 'poor' where the flora is dominated by weed species such as *Impatiens parviflora* in the Wilderness or dense Ivy (*Hedera helix*) growth.

The lake margins have the potential for improvement. However, until the dense tree cover at the edges of the lake is addressed, plant establishment through planting or natural regeneration will be poor.

### **Tree cover:**

Whiteknights campus has excellent tree cover with copses and woodland adding up to around 20 hectares. This represents approximately 16% of the total campus area, with individual trees pushing this to over 20% The campus was subject to mass plantings of native trees in the late 1980s and early 90s in an effort to join up habitat areas of the campus. These areas are now successfully established.

Specimen planting of native and non-native species is an important element of the campus management. It should be noted that the high prevalence of exotic specimens within the woodland areas, some of which are notable national specimens and several champion trees, is the result of the area being a former landscape garden created by the Marquis of Blandford (See History of Management).

Non-native species will continue to be used as a diversity of species is the best way of protecting the campus from pest, disease and predicted climate change.

### **Whiteknights Lake:**

Originally created in the mid-17th century by damming the natural springs which occur in the area. The lake was further enhanced by the Marquis of Blandford and is now approximately 5.85 hectares in size.

Eutrophic in nature, the lake lies towards the centre of Whiteknights; its presence has a dominant focal point within the campus landscape and is an important habitat. However the lake edges are predominantly bound by woodland strips that can cause over-shading. This, combined with the silting up of the lake floor, contributes to the low diversity of aquatic species.

The size and length of the lake provides a degree of separation between the north and south of the Campus grounds. There are four pedestrian crossing points that currently link into a footpath network around the perimeter of the lake and the core academic areas beyond.

Lake enhancement works were carried out to the top lake in the spring of 2014. The work included the removal of the fish stock, scalloping of bank edging, creation of revetments using dredged silt and the planting of reeds and other marginal plants. These areas, which are protected with fencing, have become havens for tadpoles safe from predators. Once established the new plants will provide opportunities for a wide range of insects.

### **Ornamental plantings:**

Whiteknights has a history of exotic plantings dating back to the Marquis of Blandford, with a few of his tree plantings still surviving over 200 years later.

There are also remnants of ageing Rhododendron cultivars, Bamboo and other shrub species in the Wilderness, Foxhill and lake side areas from plantings dating from the 19th and early 20th centuries.

Today the majority of exotic plantings are associated with building landscaping and are generally less than 15 years in age, as many areas have been renewed over the period 2009–14. A wide range of ornamental plantings, generally non-native have been used, including herbaceous perennials and grasses, shrubberies and meadows. Large areas of spring bulbs are established on campus, which are very popular as well as providing an early source of nectar. Moving away from the vicinity of buildings, the use of native species is given priority for landscape schemes.

### History of management:

Whiteknights has been in existence since the Norman Conquest when it was known as the Manor of Earley. It was owned by a succession of families, becoming the Whiteknights Estate during the 14th century. In 1606 it passed in to the ownership of the Englefield family where it remained for nearly two centuries. In 1798 the estate was acquired by the Marquis of Blandford who spent vast sums on library acquisitions and elaborate gardens. However by 1817 the Marquis, then the fifth duke of Marlborough, was in debt. As a result in 1819 the estate was dispersed and the original house demolished in 1840.

In 1867 the estate was divided into 6 leaseholds and a smaller house constructed in each. Finally in 1947 the freehold was purchased by the University who have been developing the academic and residential campus to this day while keeping the areas of woodland, meadow and lake largely intact

### Special features:

Remnants of the former landscape garden such as the grotto and fernery (Sarcen stones) are important historical features along with an Ice House.

The campus contains a number of exotic and native veteran trees including county and national champions. A number of bat species have been recorded on campus.

A number of bat boxes have been located around the campus.

The campus, especially the north of the site around Bridges Hall has been described as a county 'Hot Spot' for Stag Beetles (*Lucanus cervus*).

### Injurious agencies:

**Animals:** Rabbits have historically been a problem to the site, causing damage to young trees and natural regeneration although they did contribute to the meadow sward quality. However, since the mid 90s their numbers have plummeted and are no longer a nuisance.

Muntjac Deer have been observed on and around the site but not in significant numbers. A pair was observed within the meadow in May 2014

Grey squirrels have caused extensive damage to pole stage trees (natural regeneration and planted material) and some mature trees. Maple, Hornbeam, Oak and Beech are the preferred species. There is currently no control being carried out.

Canada Geese also continue to cause significant damage to the lakeside habitat.

Carp within the lake contribute to the turbid nature of the water quality and the low levels of other aquatic life.

Dogs off leads have the potential to disturb nesting birds with dog fouling having an effect on ground flora by encouraging the growth of rank weeds due to the high nutrient content.

**Pests & diseases:** A full range of decay and root killing fungi are present on site but, as many of these species are associated with veteran trees, they are seen as part of the natural eco-system.

Honey Fungus (*Armillaria sp.*) is quite prevalent on site and is responsible for the death of a number of trees each year. Evidence of Oak Decline, Bleeding Canker of Horse Chestnut and *Phytophthora* root rots are all having a significant impact on the woods and specimen trees. With uncontrolled movement throughout the site, bio-security measures would be difficult to enforce.

Chestnut Leaf miner (first seen in 2005) now has a significant, probably largely cosmetic, effect on the 200+ recorded specimens of Horse Chestnut (*Aesculus hippocastanum*) with trees virtually defoliated by late summer. Worryingly damage is spreading and has been observed on Alder, Hornbeam and Hazel.

Viburnum beetle causes significant damage to *Viburnum opulus* and other ornamental viburnum species.

**Fire:** 'Camp fires' and barbecues, although not permitted in these areas, are nonetheless a regular occurrence in the wood and areas surrounding the halls. This activity is mainly associated with student parties. The main damage is the loss of dead wood from the site. Some incidents, thought to be arson, have caused damage to veteran trees on the site. Fire is not allowed for the disposal of arisings.

**Human damage:** There are minor incidents of vandalism throughout the woods and campus each year, the most serious involving the bark stripping from trees within the wilderness. Camp building and cycle track construction contribute to the accumulation of long term rubbish across the site and causes minor damage to trees and undergrowth.

'Tagging' (spray paint graffiti) of trees, the Ice House and the Sarcen stone circle remains a low level problem.



## **PART 2** **MANAGEMENT** **PRESCRIPTIONS**

### **Objectives of management:**

To perpetuate the varied campus environments and enhance their educational, recreational, historical and ecological values, consistent with the University's business and environmental policies as budgets allow.

To meet these objectives the main strategies will (subject to funding) be as follows:

### **Meadow/grassland areas:**

- Annual cut and removal of arisings (as hay) from as large an area as practicable.
- Annual cut of remaining grass land September/October to allow seeding.
- Co-ordinate cutting with the School of Biological Science, so that areas can be used as a teaching resource.
- Carry out enhancements as appropriate.

### **Woodland/copse areas**

#### **(See also Wilderness Management Plan):**

- Manage the risks that trees sometimes pose.
- Preserve woodland cover but maintain and enhance rides and glades.
- Create a range of woodland types and ages with a normal age distribution.
- Keep the area under tree species suited to the local flora and fauna but retain historical trees and, where appropriate, remnants of other historic planting.
- Remove trees, shrubs and undergrowth that have low ecological value where appropriate.
- Provide opportunities for restocking and improvement to the ground flora where appropriate.

- Retain standing and stacked dead wood and carry out other enhancements where appropriate.
- Provide wildlife corridors through planting or other means in order to join isolated areas.

## Riparian environments including Swales

### (See also Lakeside Management Action Plans):

- Annual maintenance of swale areas to ensure free flow of water.
- Rotational cutting of bank undergrowth.
- Removal of Rhododendron and Cherry Laurel as appropriate.
- Bring Alder into coppice cycle where appropriate.
- Carry out thinning and removal of lakeside trees to reduce shading.
- Carry out localised silt removal to create marginal planting.

## Ornamental plantings:

- Ensure species selection considers its ability to increase or sustain biodiversity.

## Division of the site:

The site has been divided into 43 areas as shown on the associated site plan (Appendix ?). The operations to achieve the objectives are described by individual area plans. However works will follow common principles across the site.

### Common works:

A more detailed prescription of works on an area basis is described in the area plans, however, the common works will include:

- **Site safety:** All footpaths will undergo periodic assessment to ensure that undergrowth or low canopies do not interfere with street lighting, CCTV coverage or sight lines. Requests from Security to remove undergrowth from path edges will be dealt with in a timely and appropriate manner.
- **Tree safety:** On-going periodic safety survey and prescription of remedial works as appropriate. (See grounds guidance note on Tree Safety).
- **Veteran trees:** Identification of veteran and historic trees. Where appropriate, prescription of remedial works to retain veteran trees for perpetuity, including management of the surrounding trees, vegetation or path network.

- **Ride management:** To annually mow 2m from the edge of main paths with a further 2m on 5–10 year rotational cutting regime.
- **Meadow establishment and enhancement:** Areas of rank grassland that are of little teaching and biodiversity value at present will be enhanced through the establishment of appropriate species, either through seeding or planting, and brought into the meadow management cycle.
- **Species manipulation:** To target inappropriate species, which have low ecological value, for removal over species more appropriate for the area.
- **Management of shrub layer within woodland areas:** The removal of all *Rhododendron ponticum*, but retention of a proportion of the Cherry and Portuguese Laurel as appropriate, at least in the short term of this plan. To substantially reduce thickets of Holly as appropriate by first removing all trees less than 100mm diameter at 1.3m and then selection to produce a mixed distribution over the site. Cut stumps will be treated with an appropriate herbicide.
- **Ornamental plantings:** Use a wide range of species, especially winter flowering, pollen rich and single flowers, to encourage a wide range of insect activity.
- **Disposal of arisings:** Where appropriate all woody waste will be retained on site in the form of standing dead wood (monoliths), fallen trunks, timber and chip stacks or brash piles. Where material has a lower ecological value, e.g. Laurel or Rhododendron, then chipping and removal from site will be considered if practical. Fires will not be used as a method of disposal. Herbaceous waste will be left on site, stacked into composting heaps on site, removed as hay or removed as compostable green waste for processing by Grounds Maintenance.
- **Control of pernicious weeds:** Re-growth from stumps and Japanese knot weed will be treated using a Glyphosate based herbicide. Himalayan Balsam and *Impatiens parviflora* will be controlled by hand pulling and chemical means as resources allow.
- **Removal of long term litter:** Periodic removal of 'dens' and other litter to appropriate recycling bins.
- **Timing of works:** Clearance and remedial works (unless emergency) will be timed between September and March to avoid disturbance of wildlife. Planting will, ideally, be undertaken between November and January.

# APPENDIX 1: COMPARTMENT MANAGEMENT PLANS

| Compartment                   | Notable species                                                                     | Brief description of area                                                                                                                                                                                                                                         | Special features                                                                                                                                                             | Recommended/standard works                                                                                                                                        | Desirable works (as budgets allow) |
|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 001<br>Elmhurst Road boundary | Common Oak,<br>Small & Large leaved Lime                                            | Recently planted but well established mixed native planting at thicket stage among a number of semi mature trees.                                                                                                                                                 | Little ground flora but large numbers of fungal fruiting bodies due to green waste compost used as mulch.                                                                    | Bring Ulmus 'Princeton' into pollard regime because of poor structural stability Thin trees to achieve final 3m spacing remove/coppice understory as appropriate. | Remove remaining fencing.          |
| 002<br>Sports field           | Horse Chestnut<br>Common Lime                                                       | Some trees are in decline but provide nesting and roosting potential some established over planting. Rank grass/ Cow Parsley <i>Anthriscus sylvestris</i> below.                                                                                                  |                                                                                                                                                                              | Carry out safety tree works as required.                                                                                                                          |                                    |
| 003<br>Sports field           | Horse Chestnut<br>Common Lime,<br>Common Oak                                        | Mature trees, some in decline, are providing nesting and roosting potential within the numerous cavities. Some established over planting Rank grass/ Cow Parsley <i>Anthriscus sylvestris</i> below.                                                              | Significant Landscape feature<br>Standing Ivy covered Oak<br>Monolith.                                                                                                       | Carry out safety tree works as required.                                                                                                                          |                                    |
| 004<br>Sports field           | Horse Chestnut<br>Common Lime,<br>Common Oak                                        | Some trees are in decline but are providing nesting and roosting potential within the numerous cavities. Well established over planting following storm damage (1990) Predominantly Rank grass below but some areas of Cow Parsley <i>Anthriscus sylvestris</i> . | Large mature Oak (1000mm diameter +) and Veteran trees to the east (One of the most important veteran trees on the site) Area of permanently wet ground (Drainage out fall). | Continue to manage the Ivy on The veteran tree.<br><br>Cut understorey every 2-3 years. Pollard Willows south.                                                    |                                    |
| 005<br>Sports field           | Horse Chestnut<br>Common Lime                                                       | Number of Lime stools have developed from cut stumps.                                                                                                                                                                                                             |                                                                                                                                                                              | Select trees for retention, bring Lime into coppice cycle, remove evergreen material, remove purple leaved Plum from Oak and formative prune.                     |                                    |
| 006<br>Sports field           | Horse Chestnut<br>Common Lime,<br>Common Oak,<br>Sweet Chestnut<br><br>Japanese Elm | Group within sports field area. Some trees are providing nesting and roosting potential within the numerous cavities.                                                                                                                                             | Significant landscape feature.                                                                                                                                               | None.                                                                                                                                                             |                                    |
| 007<br>Pepper Lane            | Common Oak, Ash<br>Common Lime,<br>Grey Poplar, Field Maple                         | The boundary planting running along Pepper Lane varying from young trees (Rear of Soil Science) to mature trees notably Common Lime and Oak with dense understorey of Bramble Holly and False Acacia.                                                             |                                                                                                                                                                              | Thin planting south of Soil Science to 2–3m spacing's through removal and coppicing.<br><br>Reduce a number of internal boundary trees to hedge height.           |                                    |

| Compartment                                                                  | Notable species                                                    | Brief description of area                                                                                                                                                                             | Special features                                                                                                      | Recommended/standard works                                                                                                                                     | Desirable works (as budgets allow)                                                               |
|------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 008<br>Pepper Lane<br>(rear of CPU)                                          | Horse Chestnut,<br>Sycamore,<br>Scots Pine,<br>Common Oak          | A mix of mature Horse Chestnut and semi-mature Pine, Beech and Maple, with dense stands of Holly and Yew below the north of the site has a well-established stand of young broadleaved trees.         | Stag beetle habitat.                                                                                                  | Reduce density of evergreen understory.<br>Keep new planting thinned and control weeds as necessary until thicket stage. Reduce numbers of regenerating Maple. |                                                                                                  |
| 009<br>Pepper Lane<br>(Southern boundary of Trials Ground and Harris Garden) | Scots Pine,<br>Common Lime<br>Hornbeam, Beech                      | Mainly a dense stand of Scots Pine which on the whole is past thinning. The southern boundary has a number of outstanding broadleaved specimens of Hornbeam and Common Lime.                          | Pond with newts.<br>Wild life enhancements - bird boxes and feeders through student project.                          | Carry out any works picked up by on-going tree survey.                                                                                                         |                                                                                                  |
| 010<br>Wilderness Road<br>(Eastern boundary of Harris Garden)                | Horse Chestnut,<br>Sycamore,<br>Common and Holm Oak<br>Common Lime | Mature specimen trees with dense undergrowth mainly Holly and Bramble below large area of Willow Herb.                                                                                                | Constructed amphibian Hibernacula, Dry hedge, Standing dead wood.                                                     | Continue to manage the undergrowth especially around recent planting. Continue to add to log piles.                                                            | Re-cut coppice at intervals of 5-7 years.                                                        |
| 011<br>Harris Garden                                                         | Wild Cherry, Ash,<br>Common Oak, Pine                              | 3x Mixed native species copses planted in the mid 1980's Well-established but requires final thinning to ensure good spread of species.                                                               |                                                                                                                       | Thin marked trees.                                                                                                                                             |                                                                                                  |
| 012<br>Wilderness                                                            | See Wilderness management plan                                     | Former Landscape Garden now semi-natural broadleaf woodland.                                                                                                                                          |                                                                                                                       |                                                                                                                                                                |                                                                                                  |
| 013<br>Wilderness                                                            | See Wilderness management plan                                     | 'Wood Pasture' area of diverse sward under semi mature trees of varying species.                                                                                                                      | High levels of insect activity.                                                                                       |                                                                                                                                                                |                                                                                                  |
| 014<br>Earley Gate                                                           | Common & Turkey Oak, Beech Holly and Common Lime                   | Evidence of former garden – specimen trees and over grown hedge lines. Area now dominated by Laurel undergrowth with little ground flora.                                                             | A Number of Veteran trees.<br>Former Beech Hedge now formed a tree group. Standing dead wood.<br>Ditches across site. | Remove Laurel and manage boundary trees as captured on Arbortrack.<br>Remove long term rubbish.                                                                | Manage aggressive weeds to east of site.<br>Replant with Small leaved Lime, Wild Cherry and Oak. |
| 015<br>Bridges Hall                                                          | Common Lime<br>Red Chestnut                                        | Mixture of scrub and rank grassland with specimen trees. Suckering groups of Aspen and Small leaved Elm make up the shrub layer.                                                                      | Mature Lime in decline but providing nesting and roosting opportunities.                                              | Fell dead Elm where they represent a hazard.                                                                                                                   |                                                                                                  |
| 016<br>Bridges Hall,<br>Whiteknights Road boundary                           | Black Pine, Holly,<br>Holm Oak Common Lime                         | Row of Black Pine assumed to be planted as a shelter belt some of which was lost in 1990 storm. Dense scrub Holly, Laurel and small leaved Elm some established young trees from post storm planting. | Mature Specimens of Holm Oak and Common Lime. Bat Boxes.                                                              | Manage undergrowth but ensure evergreen screen is retained (Planning issue with local residents).                                                              |                                                                                                  |

| Compartment                                                   | Notable species                                                           | Brief description of area                                                                                                                                                                                                                                                                                                                                                                                      | Special features                                                                                                                | Recommended/standard works                                                                                                                                                 | Desirable works (as budgets allow)                                                                                  |
|---------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 017<br>Wessex gate House,<br>Whiteknights Road<br>boundary    | Common Lime<br>Common Oak, Ash                                            | Dense laurel hedge on boundary with Whiteknights road well established planting of Oak Hazel and Lime following the removal of dead Pine.                                                                                                                                                                                                                                                                      | Veteran Common Oak, Good quantities of stacked and standing dead wood.                                                          | Thin/Formative prune new planting remove long term litter.                                                                                                                 | Remove Laurel on SE boundary to create planting stations for Hazel and Bird Cherry Control scrub under veteran Oak. |
| 018<br>Ice House/<br>Millennium Copse                         | Common Oak,<br>Holm Oak<br>Common Lime                                    | Majority of area pole stage trees from a late 1980's planting, an eclectic mix of species but well established. Ground flora improves dramatically towards the lake and under the veteran trees with Wood Anemone and Blue bells.                                                                                                                                                                              | Historic ice house. A number of veteran and mature trees providing nesting and roosting opportunities.                          | Continue to thin planting and remove competition from veteran trees manage encroachment onto Wessex Lawn. Retain Bramble growth around standing dead or declining trees.   |                                                                                                                     |
| 019<br>Fox Hill/Lakeside                                      | Common Oak ,<br>Common Lime,<br>Turkey Oak                                | Remnants of the former garden are evident but now dense scrub under a canopy of mature trees. The area has huge potential for enhancement.                                                                                                                                                                                                                                                                     | Wild Service Tree ( <i>Sorbus torminalis</i> ) group a County Champion Tree Numerous mature Oaks, Hornbeams and Horse Chestnut. | Phased removal of Laurel, Holly and other dense undergrowth. Remove competition surrounding Service tree to allow the group to develop.                                    |                                                                                                                     |
| 020<br>Fox Hill Drive<br>(boundary with<br>Whiteknights road) | Horse Chestnut,<br>Common Oak<br>Common Lime<br>Hornbeam<br>Yew           | A mature boundary planting with dense stands of Hornbeam regeneration to the west but dominated by Laurel and Ivy to the east of the site Yew trees line the drive.                                                                                                                                                                                                                                            | <i>Daphne laureola</i> present.<br>A number of mature trees providing nesting and roosting opportunities.                       | Remove the Laurel understorey but retain the boundary cover at least in the short term. Strategic thinning and scalloping of the copse edges to allow light to penetrate . | Remove Leyland Cypress on eastern boundary and replant with Hazel, Wild Cherry and Small leaved Lime.               |
| 021<br>Upper Redlands<br>Road Copse                           | Horse Chestnut,<br>Common Oak<br>Common Lime<br>Hornbeam<br>Yew, Sycamore | A large area of mature and semi-mature wood connected by a thin corridor. To the north 30m mature Hornbeam Horse Chestnut and Oak within an area of dense undergrowth. The connecting corridor and area to the south are mainly semi-mature trees age range 20–40 years, some are badly squirrel damaged. Mature and Veteran trees run along the boundary ditch. Large groups of Wild Garlic and Wood anemone. | Veteran Sweet Chestnut and Oak Boundary ditch.<br>Likely Bat roost.<br>Good quantities of fallen and standing dead wood.        | Continue to manage remaining areas of Japanese knot weed.<br>Thin planting to achieve 3–4m spacing.<br>Carry out work captured on Arbortrack.                              |                                                                                                                     |
| 022 Mackinder Hall,<br>Upper Redlands<br>Road                 | Black Pine , Yew,<br>Common Ash,<br>Wild Cherry and<br>Sycamore           | Mixed boundary of trees with exotic shrubs below. Enhancement boundary planting carried out post construction of new hall. A number of mature trees have recently been removed due to Honey Fungus.                                                                                                                                                                                                            |                                                                                                                                 | Control weeds around new planting.                                                                                                                                         |                                                                                                                     |

| Compartment                                      | Notable species                                                                          | Brief description of area                                                                                                                                                                                                                                                                                                                               | Special features                                                              | Recommended/standard works                                                                                                        | Desirable works (as budgets allow)        |
|--------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 023<br>Mackinder                                 | Common Oak<br>Hornbeam<br>Yew, Sycamore<br>Coast Red wood,<br>Cedar of Lebanon,<br>Holly | Mainly made up with exotic species some of the declining trees are providing nesting and roosting opportunities with Lesser Spotted wood peckers nesting within a Sweet Chestnut. Ground flora generally poor and Ivy dominated but some Blue Bells.                                                                                                    | Veteran Sweet Chestnuts one with Bat boxes. Mature Yews and Cedar of Lebanon. | Scallop edge and remove Holly scrub on eastern boundary to allow light to penetrate.                                              |                                           |
| 024<br>North of Mackinder                        | Yew, Picea smithiana                                                                     | New sown Meadow area as part of halls redevelopment.                                                                                                                                                                                                                                                                                                    |                                                                               | Annual cut and collection of arisings.                                                                                            |                                           |
| 025<br>South of Mackinder                        | Prunus avium 'Plena'                                                                     | New sown Meadow area as part of halls redevelopment.                                                                                                                                                                                                                                                                                                    |                                                                               | Annual cut and collection of arisings.                                                                                            |                                           |
| 026<br>Windsor Hall Park<br>Eat                  | Hornbeam<br>Yew, Sycamore<br>Common Lime                                                 | Small group of mature tree cover with dense patches of Holly successful establishment of new planting                                                                                                                                                                                                                                                   |                                                                               | Thin new planting to achieve spacing of 3–4m reduce density of evergreen element.                                                 |                                           |
| 027<br>Stenton Hall Hedge<br>line                | Hawthorn,<br>Common Oak                                                                  | Former Hawthorn hedge line which is now mature, Ivy covered and in state of collapse but provides habitat opportunities Enhancement planting to widen and join the hedge rows carried out in the early 1990's which is well established but has been subject to severe Squirrel damage (Birch & Hornbeam, some Oak) Compost heaps from meadow arisings. | Veteran Oak with Bat boxes.                                                   | Thin planting to achieve final spacing of 3–4m and scallop edging. Continue to coppice maiden Hazel and remove Laurel nurse crop. |                                           |
| 028<br>South of Stenton<br>Hall                  |                                                                                          | Sown Meadow area as part of halls redevelopment.                                                                                                                                                                                                                                                                                                        |                                                                               | Annual cut and collection of arisings.                                                                                            |                                           |
| 029<br>North of Car park 3                       | Common Oak                                                                               | Young Hawthorn hedge around car park. Meadow areas have been re-sown with some success. Drainage Swale has good mix of native wetland species.                                                                                                                                                                                                          | Drainage Swale.                                                               | Lay Hedge.<br>Annual cut and collection of arisings.                                                                              |                                           |
| 030<br>Hedge line planting<br>and lakeside copse | Common and<br>Turkey Oak<br>Common Lime<br>Wild Cherry<br>Alder, Plane                   | Former Hawthorn hedge line running into larger lake side plot Replanting to widen and join the areas carried out in the early 1990's which is now well established.                                                                                                                                                                                     | Lime coppice within lake side section.                                        | Continue thinning to achieve 3–4m spacing and cut maiden Hazel. Scallop edges of lake side plot north and west.                   | Remove Monterey Pine from centre of plot. |

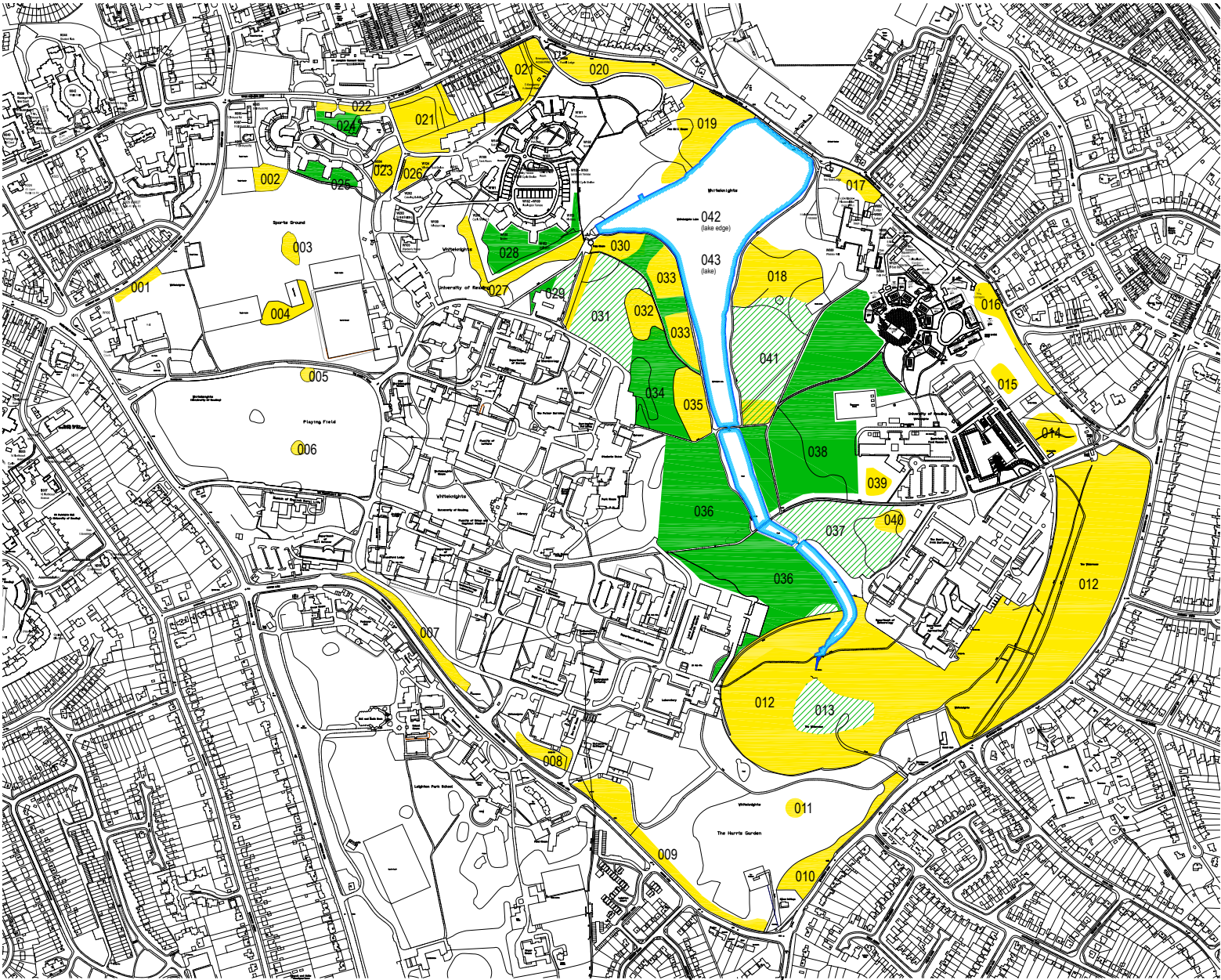
| Compartment                                                         | Notable species                                                | Brief description of area                                                                                                                                                               | Special features                                                                    | Recommended/standard works                                                                                                          | Desirable works (as budgets allow)   |
|---------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 031<br>Meadow area running from Students Union Road to lake         | Broad leaved Lime.<br>Apple                                    | Area re-sown in 2009 and is now a species diverse sward. Over planted with Broad leaved Lime area.                                                                                      | Common Spotted Orchid on edge of lake vista.                                        | Continue with cut and collect regime.                                                                                               |                                      |
| 032<br>Copse within Meadow area                                     | Common Lime,<br>Common Oak<br>London Plane                     | Victorian tree group and veteran Oak joined by natural regeneration and mid-1990's planting to form copse.                                                                              | Veteran Common Oak - one of the most remarkable trees on site despite arson damage. | Continue to thin to achieve 3-4m spacing remove remaining Laurel. Halo around Veteran Oak where necessary.                          |                                      |
| 033<br>Lake side planting                                           | Common Oak, Ash,<br>Turkey Oak Wild<br>Cherry                  | Replanting to enhance the areas carried out in the early 1990's which is now well established. two areas of copse and woodland fringe planting separated with a grass vista to the lake | Wild Cherry group but unfortunately this is in terminal decline                     | Continue to thin to achieve 3-4m spacing remove remaining Laurel                                                                    |                                      |
| 034<br>Meadow area running from car park 4 to lake                  | Common Oak<br>Caucasian Lime<br>Horse Chestnut                 | Meadow area spotted with semi-mature trees which are of low quality. Swale with over flow into the area provides wetland conditions in a small area.                                    | Veteran Oak this high quality tree is a significant landscape feature.              | Continue with cut and collect regime.                                                                                               | Look to establish replacement trees. |
| 035<br>Lake side planting                                           | Crack Willow, Canoe<br>Barked Birch,<br>Common Oak, Pin<br>Oak | A number of exotic tree groups joined through native planting to enhance the areas. Carried out in the early 1990's this is now well established.                                       |                                                                                     | Continue to thin to achieve 3-4m spacing remove remaining Laurel cut 25% per year of the dense under growth in a cyclical sequence. | Pollard Crack Willow.                |
| 036<br>Meadow area running from Black Bridge to Wilderness edge     | Grey Poplar                                                    | Meadow area spotted with trees including a large group of Grey Poplar.                                                                                                                  |                                                                                     | Clear a number of suppressed trees within Poplar group. Continue with cut and collect regime.                                       | Construct wetland scrapes.           |
| 037<br>Meadow area running from car park 26 to meteorology          | Common Oak,<br>Caucasian Lime,<br>Norway Maple                 | Meadow area spotted with native and eclectic mix of exotic trees. A number of common Oak developing a wide spreading parkland form. Copse planted 1990.                                 |                                                                                     | Clear developing scrub under Oak. Thin copse to achieve 3-4m spacing. Cut maiden Hazel. Continue with cut and collect regime.       |                                      |
| 038<br>Meadow area running from STC to New Bridges Hall development | Common Oak<br>Cedar of Lebanon                                 | Meadow area spotted with native and some exotic trees. Former heath land having a good range of species.<br><br>A number of common Oak developing a wide spreading parkland form.       | Veteran Oak tree.                                                                   | Clear developing scrub under Oak. Thin copse to achieve 3-4m spacing Continue with cut and collect regime.                          |                                      |
| 039                                                                 | Hawthorn, Lime<br>Oak and Black Pine                           | Group planted early 1990's south of STC with surrounding areas developing into wood pasture.                                                                                            |                                                                                     | Control scrub within tree group Thin copse 3-4m spacing.                                                                            |                                      |

| Compartment                                     | Notable species                                                                     | Brief description of area                                                                                                                                                                                                                              | Special features                                                                    | Recommended/standard works                                                                   | Desirable works (as budgets allow) |
|-------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------|
| 040<br>Copse surrounding Car Park 26            | Common Oak                                                                          | Copse planted early 1990's to screen car park.                                                                                                                                                                                                         |                                                                                     | Thin copse 3–4m spacing. Continue to remove/coppice trees on path edge to improve site line. |                                    |
| 041<br>Wood Pasture area south of the Ice House | Cedar of Lebanon<br>Common Oak<br>Common Lime                                       | Meadow area spotted with native and eclectic mix of exotic trees. A number of common Oak developing a wide spreading parkland form. Large areas of woody undergrowth surround a number of dead or trees in terminal decline.                           | Number of mature and veteran trees with good habitat potential. Standing dead wood. | Annual mow with foot paths and path edges cut to achieve < 200mm.                            |                                    |
| 042<br>Lake edge                                | See Lake Edge Management Area plans (available on request from Grounds Maintenance) | 10 metres from the lake edge around the circumference of the lake. The area consists of various species and habitat types including; exotic plantings, self-sown native trees, veteran trees, meadows, paths and copses.                               | Veteran trees, copses and planted margins.                                          | Clearing of vegetation in different areas on a 3-4 year cyclical basis.                      |                                    |
| 043<br>Lake                                     |                                                                                     | The lake system on Whiteknights consists of 3 lakes, one flowing into the other via a series of dams. The lake is fed by land drains running into it and spring water from the wilderness. The out flow of the lake joins the river Kennet in Reading. | The top two lakes are now fish free zones to help increase their biodiversity.      | Planting of native open water aquatic species in the top two lakes.                          | Develop new dredging plan.         |

## APPENDIX 2: FIVE-YEAR ACTION PLAN

| Area objectives                                                  | Prescription                                                                                                                                                             | Compartment                                                                          | 2015/16                           | 2016/17                           | 2017/18                           | 2018/19                           | 2019/20                           |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Thinning of established tree plantings                           | Fell to ground level, coppice or pollard young trees to achieve 3-4m spacing Formative prune and control species as recommended in compartment plans                     | 001, 005, 008, 009, 012, 018, 019, 022, 026, 027, 030, 032, 033, 035, 037, 038, 040, | 001, 005, 008, 012                | 018, 019, 027, 030                | 032, 033, 035, 037                | 009, 038, 040, 022                | 026                               |
| Veteran tree management                                          | Establish individual management plans for veteran specimens                                                                                                              | 004, 032, 034,                                                                       | 004                               | 032                               | 034                               |                                   |                                   |
| Extension of habitat areas                                       | Additional planting – trees, shrubs, plugs, or bulbs                                                                                                                     | 015, 034                                                                             |                                   |                                   |                                   | 015,                              | 034                               |
| Bring into/maintain coppice cycle                                | Coppice maiden specimens (at approximately 150mm above ground level), maintain previously cut specimens on 5-7 year rotation                                             | 011, 027, 030, 037, 040,                                                             | 040                               | 027                               | 030                               | 037                               | 011                               |
| Weed control around tree plantings                               | Annual herbicide application to maintain 1m radius around young or establishing trees. annual autumn/winter cutting of surrounding herbage                               | 001, 011, 026,                                                                       | 001, 011, 026                     | 001, 011, 026                     | 001, 011, 026                     | 001, 011, 026                     | 001, 011, 026                     |
| Maintain grassland sward                                         | Annual cut and collection of arisings (hay crop)                                                                                                                         | 034, 036, 037, 038,                                                                  | 034, 036, 037, 038                | 034, 036, 037, 038                | 034, 036, 037, 038                | 034, 036, 037, 038                | 034, 036, 037, 038                |
| Scalloping of woodland edges                                     | Create variations in density/depth through removal and coppicing                                                                                                         | 021, 023, 027, 030,                                                                  | 023, 030                          | 021                               | 021                               | 027                               |                                   |
| Maintain grassland sward                                         | Annual cut and collection of arisings                                                                                                                                    | 014, 024, 025, 028, 029, 031, 041,                                                   | 014, 024, 025, 028, 029, 031, 041 | 014, 024, 025, 028, 029, 031, 041 | 014, 024, 025, 028, 029, 031, 041 | 014, 024, 025, 028, 029, 031, 041 | 014, 024, 025, 028, 029, 031, 041 |
| Control evergreen woodland understorey                           | Clear and remove stumps of <i>Rhododendron ponticum</i> . Cut to ground level and treat stumps of <i>Prunus laurocerasus</i> . Cut to ground level Holly <100mm diameter | 013, 018, 020, 021, 033                                                              | 013, 020, 033                     | 013, 020, 021                     | 013, 020, 021                     | 013, 022                          | 013, 018, 022                     |
| Control woodland understorey                                     | Cyclical cutting/ chemical control of copse understorey to control Bramble, natural regeneration or pernicious weeds                                                     | 013, 017, 018, 019, 022, 035, 037, 038                                               | 013, 017, 019, 018, 022, 035      | 013, 022, 035, 037,               | 013, 017, 019, 018, 022, 035      | 013, 022, 035, 038,               | 013, 017, 019, 018, 022           |
| Targeted tree removal to reduce competition/improve ground flora | Fell trees to ground level, Ring bark specimens as appropriate                                                                                                           | 021, 027, 030, 036,                                                                  | 030                               |                                   | 027, 030                          |                                   | 021                               |
| Hedge laying                                                     | Lay hedge                                                                                                                                                                | 029                                                                                  |                                   | 029                               |                                   |                                   |                                   |
| Pollard trees                                                    | Pollard trees as specified on Arbortrack                                                                                                                                 | 035                                                                                  |                                   | 035                               |                                   |                                   |                                   |

# APPENDIX 3: HABITAT ZONES PLAN



KEY

- Woodland
- Meadow
- Wood Pasture
- Riparian
- Lake

A :24.03.15: Updated as per RT comments CW

**FEASIBILITY STUDY**

Do not scale from this drawing - all dimensions to be checked on site

**the aed practice**

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**University of Reading**

Estates and Facilities  
Whiteknights, PO Box 235, Reading, RG6 6BW  
Tel: 0118 378 8958 Fax: 0118 975 3499

Building: Wightknights Campus  
Project: Whiteknights Lake  
Title: Habitat Management Plan

Scale: 1:2500 Date: MAY 2014 Drawn: LW

AED Job Number: UR1264 AED Day Number: SP101

| Building No. | Code | Drawing No. | Rev. |
|--------------|------|-------------|------|
|              |      |             | A    |



## HABITAT MANAGEMENT PLAN FOR WHITEKNIGHTS CAMPUS

 For more information, please contact:

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