

Estates Operations Grounds Maintenance

Habitat Management Plan For Whiteknights Campus University of Reading

January 2024 Next Review January 2026

# Introduction

### Aim of the Habitat Management Plan

This latest version (2024) incorporates updates to the original plan developed in 2015. The plan is used to steer the habitat maintenance strategy for Whiteknights campus and runs in conjunction with the Wilderness woodland management plan. The plan will be reviewed every 2 years by Grounds Maintenance or following recommendations from the University Biodiversity Working Group or external consultants.

The plan identifies areas of campus with habitat potential and describes their current management with recommendations for enhancements where appropriate.

#### Part 1 – Description

Name of Area: University of Reading, Whiteknights campus.

#### Period of Plan: January 2024– January 2026

**Habitat Areas:** The habitat areas subject to this plan are marked on drawing number GM230706 *Whiteknights Habitat Management Plan Areas* 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
- Grassland (generally) free of trees 7 hectares
- Grassland with trees 4 hectares
- Pollinator Lawns (Former amenity grass annual cut) 3.5 hectares
- Area of successional development 2 hectares

#### Whiteknights campus land use is illustrated in drawing number GM230707 Whiteknights Habitat Management Visualisation

Ornamental borders have been shown indicatively in places on the drawing but to a greater or lesser extent surround most buildings and are also found within the Harris Garden. As ornamental plantings come to the end of their useful life they are being replaced with more simplistic planting. The value of exotic species should not be underestimated in providing habitat and nectar especially during the winter months. Grounds Maintenance have developed a preferred species list for landscape projects encouraging the use of single flowered varieties and avoiding potentially invasive species where exotic planting schemes are appropriate.

# Ownership:

**Legal owners:** The University of Reading

Owners Agent: Estates 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 Ltd in 2012. UPP have contracted with the University to provide services back to the halls, including grounds maintenance. Grounds maintenance have an agreed service level with UPP, which include habitat management, but areas within the maintenance zones are not included in this plan.

**Planning Authorities:** Whiteknights 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 one tree preservation order on the site.

There are currently no felling licences or woodland grant schemes applying to the woods but felling is regulated by the terms of the Forestry Act.

The Wilderness, lake and some of the surrounding meadows are within a non statatory designated area known as 'The Whiteknights Local Wildlife Site' (LWS). The LWS is designated for its variety of habitats.

**External entrances:** There are 17 vehicular and pedestrian entry points 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 clearly defined by fences and hedges.

**Ownership and use of surrounding land:** The campus is surrounded by public highway within a residential urban environment with no immediate access to other large habitats in the locality other than school grounds or gardens.

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.

**Services and other wayleaves:** Multiple University services cross the site bringing utilities to the buildings. Wayleaves are present on site; for services such as gas, water, telecommunications and high voltage electricity.

### Climate of the area:

Annual rainfall averages 634.5mm per year with the higher rainfall between October and January. Temperatures are typical for the south east of England. Current climate information is available from the University of Reading School of Meteorology <u>www.met.reading.ac.uk/weatherdata</u>

**Topography:** The Whiteknights campus is reasonably 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 significant aspect changes across the campus. The site is moderately exposed overall.

**Geology, soils and drainage:** The majority of the site is over Boyn Hill Gravel which is generally free draining with a section of London clay to the centre of the campus which can become water logged during the winter months. 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 and flora on site:

A current list of species found at Whiteknights, numbered over 2000, can be found at Whiteknights Biodiversity <u>http://blogs.reading.ac.uk/whiteknightsbiodiversity</u>

Bat and bird boxes, hibernacula's and stag beetle habitats have been built and placed around the campus in attempt to provide further habitat for the recorded species. Fauna at Whiteknights is monitored by the School of Biological Science through its teaching and research activity.

The campus has a varied flora which has been subject to monitoring and recording through academic work for decades. The meadow areas are variable in quality but supports a wide range of species. 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 Small Balsam (*Impatiens parviflora*) or dense Ivy growth.

**Tree cover:** Whiteknights campus has good tree cover with copses and woodland adding up to around 20 hectares. This represents approximately 16% of the total campus area, with individual trees thought to push this to around 20%. The

campus was subject to mass plantings of native trees in the late 1980's and early 1990's 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, is the result of the area being a former landscape garden started 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:** Thought to be created in the mid-17<sup>th</sup> 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. The size and length of the lake provides a degree of separation between the north and south of the campus grounds.

Eutrophic in nature, the lake lies towards the centre of Whiteknights; it is a dominant landscape feature and is an important habitat. The lake edges were dense with trees and scrub, but where Laurel and Rhododendron have been removed or trees lost improvement in colonisation and variety of marginal plants have been observed. Yellow Flag Iris and Common Reed are establishing successfully. Due to safety concerns and to provide more opportunities for "wilding" a new strategy of minimal intervention has been implemented since 2020 but it is hoped that more active management will return.

There are four pedestrian crossing points that link into a footpath network around the perimeter of the lake and the core academic areas beyond.

Enhancement works were carried out to the top and middle lakes in the spring of 2014. The work included the translocation of the fish stock, scalloping of bank edging, creation of revetments using dredged silt and the planting of reeds and other marginal plants. The common reed now dominates the planting and has out competed most other species.

**Ornamental plantings:** Whiteknights has a history of exotic plantings dating back to the Marquis of Blandford with 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 historic garden plantings.

Today the majority of ornamental plantings are associated with new building landscaping. A wide range of older ornamental plantings are present using herbaceous perennials, grasses and shrubs. Landscaping is constantly assessed for suitability and functionality with an on-going programme of simplification and improvements.

**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 (Sarsen stones) are interesting historical features along with an ice house.

The campus contains exotic and native veteran trees including county and national champions as a result of their size or height, see the tree register <u>https://www.treeregister.org/</u>

# **Injurious Agencies**

**Animals:** Rabbits had historically been a problem to the site causing damage to young trees and natural regeneration but grazing did contribute to the meadow sward quality. Since the mid 90's rabbit numbers plummeted and are now missing from the campus environment.

Muntjac deer have been observed on and around the site as sightings are now becoming more common and it is likely that numbers are increasing.

Grey squirrels are a problem species on campus and inflict extensive damage to trees above pole stage. Maple, Hornbeam, Oak and Beech are the preferred species.

Canada geese cause grazing and fouling damage to the lakeside habitat.

Carp contribute to the turbid nature of the lake water quality and the low levels of other aquatic life. All fish had been relocated to the main lake in order to improve the quality of the water and levels of zooplankton however fish have been observed possibly due to restocking or missed young fish in the initial clearance. Dogs off leads have the potential to disturb nesting birds and water fowl.

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

Honey Fungus (*Armillaria* sp.) is prevalent on site and is responsible for the death of trees each year. Bleeding Canker of Horse Chestnut *Phytophthora* root rots and Spindle Shank (*Collybia fusipes*) on Oak, are all having a significant impact on the woods and specimen trees. With uncontrolled movement throughout the site biosecurity measures would be difficult to enforce in the event of more serious disease occurrences.

Chestnut Leaf miner (first seen in 2005) now has a significant, effect on the 200+ recorded specimens of Horse Chestnut with trees virtually defoliated by late summer in years of heavy in.

Ash die back in now impacting on the campus with badly infected trees having to be removed. Ash species make up approximately 3% of the recorded species.

Alder leaf beetle have defoliated lake side Alders in 2022 and 2023 but their long term impact is unclear.

Potential pest and disease threats and the predicted impacts on UK woodland due to climate changes could have a profound impact on the campus environment.

**Fire:** 'Camp fires' and barbecues, although not permitted, can damage the ground flora and lead to the loss of dead wood. Fire is not used for the disposal of green waste.

**Human Damage:** Camp building, infrequent acts of vandalism and cycle track construction contribute to the accumulation of long term rubbish in remote areas and causes minor damage to trees and undergrowth. Pedestrian movement across habitat areas can cause local erosion and soil compaction in periods of poor weather tracks can evolve to avoid flooded or muddy areas.

The problem of feeding of wild fowl with bread and other unsuitable foods has resulted in cases of Angel wing and the proliferation of rats at times.

# Part 2 Management Prescriptions

**Objectives of Management:** To maintain the campus areas as illustrated in drawing number GM211022 *Whiteknights Habitat Management Plan Areas.* by making best use of the available resource and where appropriate enhancing their habitat value.

To meet these objectives the main strategies will be:

#### Meadow/grassland areas:

- Annual cut with removal of arisings as hay crop
- Annual cut without collection in inaccessible areas
- "Pollinator lawns" annual cut without collection in inaccessible areas
- Area of meadow cut later in the season November/ December
- Areas of meadow left uncut to be allowed to develop into scrub
- Create an annual "Game Margin" to provide winter bird feed and cover

#### Woodland/copse areas (See also Wilderness Management Plan):

- Manage the risks that trees sometimes pose
- Carry out an annual programme of tree planting
- Remove trees, shrubs and undergrowth that have low ecological value
- Carry out works such as coppicing to encourage ground flora improvement
- Retain standing and stacked dead wood and carry out other enhancements

#### Scrub and hedgerows:

- Areas of former meadow left to rewild via natural succession
- Management of existing hedge rows
- Management of bramble and scrub encroachment by cyclical cutting
- Programme of replanting or establishment of new hedge rows

**Division of the site:** The plan highlights 25 areas which have good habitat potential due to their size and current management and are shown on drawing number GM230706 *Whiteknights Habitat Management Plan Areas*. The operations to achieve the objectives are described by individual area plans. However works will follow common principles across the site.

#### Common works:

- Site Safety: All footpaths undergo periodic assessment and prescribed works 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 where necessary (See grounds guidance note on Tree Safety).

- Veteran Trees: Identification of those veteran and historic trees that require specific plans to ensure their perpetuity including management of the surrounding trees, vegetation or path network.
- **Management of shrub layer within woodland areas:** The removal of all *Rhododendron ponticum* but the objective management of Cherry and Portuguese Laurel and Holly where they provide shelter or manage pedestrian movement or contribute to lake safety.
- **Disposal of arisings:** Where appropriate all woody waste will be retained on site in the form of standing dead wood (monoliths), fallen trunks, timber stacks or brash stacks. Mobile chippers will be used to reduce the volume of cut branches with the chippings used to mulch new trees or left to compost. Herbaceous waste will be left on site, stacked into composting heaps, removed as hay or removed as compostable green waste for processing by Grounds Maintenance.
- **Timing of Works:** Clearance and remedial works (unless emergency) will be timed between September and March to avoid disturbance of wildlife.

# Brief description of habitat areas at Whiteknights Campus

(See also GM230707 Whiteknights Habitat visualisation)

**Riparian:** Areas in close proximity to Whiteknights lake

Lake: The area of Whiteknights lake system

Woodland: Areas which have significant tree cover and includes areas of young woodland

**Tree Meadow (usually referred to as Wood Pasture):** Areas of grassland but with a significant number of trees. Cut annually with arisings generally left **Succession Areas:** Areas of former meadow now unmanaged left to observe the local succession

**Meadow:** Areas of grass land with low tree density. Annually cut and arisings removed as hay where possible

**Turfgrass:** Short mown amenity grass

**Sports Turfgrass**: Short mown high input grass used for sport

**Pollinator Lawns:** Former turfgrass now annually cut to allow flowering **Scrub:** Areas of Bramble, shrub or tree regeneration especially Elm and Poplar **Amenity/ornamental planting:** Generally plantings of exotic amenity shrubs **Impermeable surface:** Hard standing such as roads and car parks

Compartment	Notable tree species	Brief description of Area	Special features	Recommended/ Standard works	Desirable works (As Budgets Allow)
01 Sports field	Horse Chestnut Common Lime, Common Oak.	Mature and declining trees providing nesting and roosting potential within the cavities. Well established over planting following storm damage (1990).	Large mature Oak (1000mm diameter +) and Veteran trees to the east. Area of permanently wet ground around the former cricket pitch drainage out fall.	Continue to manage the Ivy on veteran trees. Exploit planting opportunities.	Remove surface from former basket ball court and establish wild flower meadow.
02 Pepper Lane (South of Art building)	Horse Chestnut, Sycamore, Scots Pine, Beech.	Semi-mature Pine, Beech and Maple, with dense stands of Holly and Yew below, established stand of young broadleaved trees to the north. East area was replanted with mixed native broad leaved species 21/22 following unexplained tree decline and their subsequent removal.	Good quantities of standing and stacked dead wood.	Continue to manage growth around establishing trees over plant if necessary.	
03 Pepper Lane (Southern Boundary of	Scots Pine, Beech, Common	A dense stand of trees including Scots Pine which are past thinning and are in	Pond with Newts. Good quantities of dead wood.	Carry out safety tree works as required.	Within Harris Garden identify planting stations for replacement

Trials Ground and Harris Garden)	Lime, Hornbeam.	decline. The southern boundary has good specimens of Hornbeam and Common Lime. As the area enters the Harris Garden the planting is more ornamental in nature but has value as a connecting corridor through dense planting.		Remove dead conifer hedge on boundary. SBS to remove all stored materials at the rear of the sheds.	boundary trees and exploit other planting opportunities during boundary fence replacement.
04 Wilderness Rd (Eastern Boundary of Harris Garden)	Horse Chestnut, Sycamore, Common and Holm Oak Common Lime.	Mature specimen trees with dense undergrowth dominated by Holly and Bramble below large area of Willow Herb.	Constructed amphibian Hibernacula, Dry hedge, Standing dead wood.	Manage the undergrowth around establishing planting. Continue to add to log piles. Re- cut coppice at intervals of 5-7 years and replenish dry hedge with cut material.	Exploit opportunities for the removal of Cherry Laurel in preparation for the boundary fence replacement.
05 Wilderness	See Wilderness management plan.	Former Landscape Garden now semi- natural broadleaf woodland.			
06 Wilderness (Glade area)	See Wilderness management plan.	Tree meadow area of diverse sward under semi mature trees of exotic and native species.	A sheltered but open area of grassland resulting in high	Annual cut as late as possible depending on ground conditions. Manage	Targeted removal or monolith pruning of Squirrel damaged Turkey Oak

			levels of insect activity.	encroachment of Bramble.	
07 Earley Gate	Common & Turkey Oak, Beech Holly and Common Lime.	Evidence of former garden. Internal area cleared of Cherry Laurel and over planted 23/24 with hedge established on former fence line. Ditch cleared and sown with woodland wild flower mix.	Veteran Yew and Holly trees. Former Beech Hedge now formed a tree group. Standing dead wood Water filled ditch.	Carry out weed control around new planting and over planting, as necessary.	Once 2024 planting established remove Cherry Laurel on boundary and extend planting and wildflower sowing.
08 Ice House / Millennium Copse	Common Oak, Holm Oak 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 under the veteran trees with Wood Anemone and Blue bells present.	Historic ice house with roost potential. Veteran Oak and Lime and other mature trees providing nesting and roosting opportunities.	Continue to thin planting and remove, Ash, Laurel and competition to veteran trees. Manage encroachment onto Wessex Hall lawn.	Exploit gaps in canopy for replanting
09 "Arboretum" and copse area south of the Ice House	Cedar of Lebanon Common Oak Common Lime.	Meadow area spotted with native and a diverse mix of exotic memorial trees. Common Oak on site developing a wide spreading parkland	Mature and veteran trees with good habitat potential. Standing dead wood.	Annual mow as late as ground conditions allow. Retain Bramble growth but manage encroachment by cyclical cutting.	

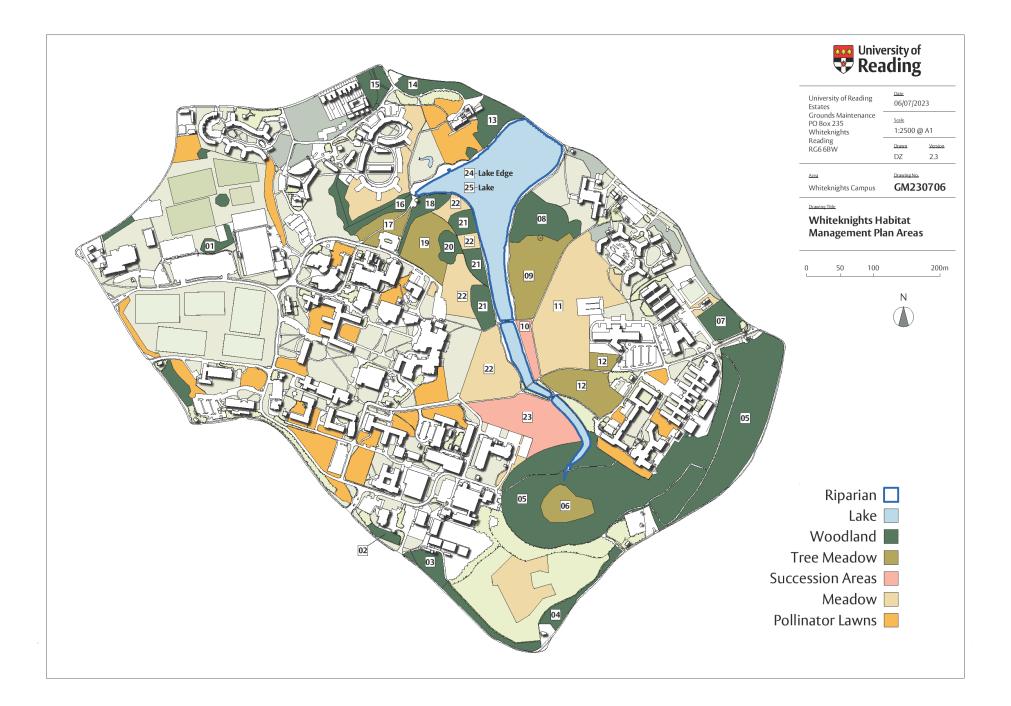
10 Damp meadow	Alder, Goat and Weeping	form. Large areas of woody undergrowth surround dead or trees in terminal decline. Damp meadow beyond tree lined lake edge	Young Black Poplar.	No future maintenance to	
between Friends and Black Bridge	Willow.	with Common Reed	ropiar.	allow area to develop natural succession.	
11 Meadow area running from Bridges Hall to main foot paths	Common Oak, Cedar of Lebanon.	Meadow area spotted with native and exotic trees. Former heathland having a good range of species. Common Oak on site developing a wide spreading parkland form with bramble scrub below.	Veteran Oak tree.	Manage Holm Oak where accessible. Continue with hay cut in accessible areas with annual cut elsewhere manage bramble encroachment.	
12 Tree Meadow area running from the copse surrounding car park 26 to Meteorology Building	Common Oak, Caucasian Lime, Grand Fir.	Meadow area spotted with native and exotic trees with wide Parkland form. Broad leaved groups planted early 1990's. Squirrel damage extensive especially on the Field Maple which were cut severely in 2018 and are developing into pollard like structures.		Manage Holm Oak where accessible. Continue with annual cut of grass land and manage Bramble encroachment.	

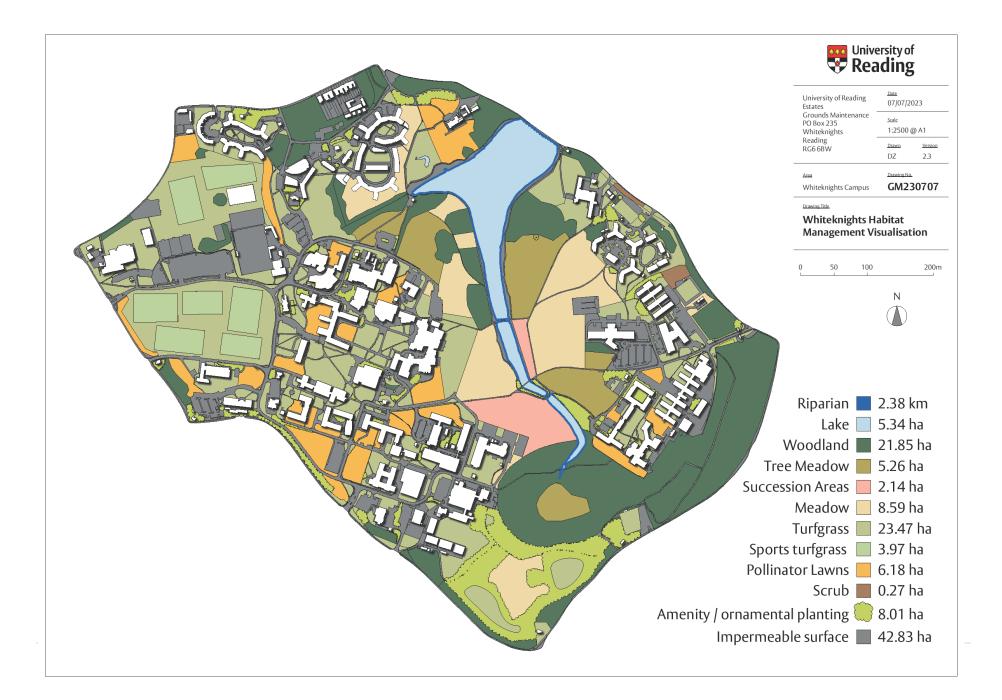
13 Fox Hill / Lakeside	Common Oak, Common Lime, Turkey Oak.	Remnants of the former gardens are evident but now dense scrub under a canopy of mature trees. The area has huge potential for enhancement	Wild Service Tree (Sorbus torminalis) group- a County Champion Tree. Mature Oaks, Hornbeams and Horse Chestnut. Good quantities of stacked dead wood.	Phased removal of Laurel, Holly, <i>Robinia</i> and other dense undergrowth. Remove competition surrounding Service tree to allow the group to develop.	
14 Fox Hill Drive (Boundary with Whiteknights road)	Horse Chestnut, Common Oak Common Lime Hornbeam 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. The north boundary was cleared in 2018 to allow the installation of a new boundary fence and further drive side clearance carried out in 2022	Veteran and mature trees providing nesting and roosting opportunities.	Remove the Laurel understorey. Strategic thinning and scalloping of the copse edges to allow light to penetrate.	Remove Leyland Cypress on eastern boundary and replant with thicket type planting.
15 Upper Redlands Road Copse	Horse Chestnut, Common Oak Common Lime Hornbeam	An area of mature woodland with large 30m mature Hornbeam, Horse Chestnut and Oak	Veteran Oak Boundary ditch Good quantities of fallen and standing dead wood.	Carry out work captured on Arbortrack.	Remove excessive evergreen undergrowth to provide opportunities for natural

	Yew, Sycamore.	within an area of dense undergrowth			regeneration and planting.
16 Stenton Hall Hedge line	Hawthorn, Common Oak, Italian Alder, <i>Nothofagus.</i>	Former Hawthorn hedge line, which is now over mature, Ivy covered and in state of collapse but provides nesting opportunities. Enhancement planting to widen and join the hedge rows carried out in the early 1990's has been subject to severe Squirrel damage (Birch & Hornbeam, and Oak)	Fallen veteran Oak tree providing dead wood resource.	Carry out work captured on Arbortrack.	
17 Tree meadow surrounding car park 3	Common Oak, Broad leaved Lime.	Laid Hawthorn hedge around car park. Semi- mature Oak and groups of Hazel. Meadow areas west were previously over sown.	Drainage Swale with good mix of native wetland species.		
18 Hedge line planting and lakeside copse	Common and Turkey Oak Common Lime Wild Cherry Alder, London 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 Cherry Laurel.	

19 Tree meadow area running from Students Union Road to foot path	Broad leaved Lime, Apple.	Area re-sown in 2009 and is now a species diverse sward. Over planted with Broad leaved Lime. Hedge line is sown with a bird forage mix.		Area cut late Nov-Dec as conditions allow, to provide teaching opportunities. Continue to sow bird forage crop in spread green waste compost.	
20 Copse within Meadow area	Common Lime, Common Oak 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	
21 Lake side planting	Common Oak, Ash, Turkey Oak, Crack Willow.	Replanting carried out in the early 1990's which is now well established. Three areas of copse and woodland fringe planting separated with a meadow area or foot path.		Remove remaining Cherry Laurel. Carry out safety works or other recommended tree works.	
22 Meadow area running from car park 4 to lake	Common Oak Caucasian Lime Horse Chestnut Grey Poplar, Pin Oak.	Meadow area spotted with semi-mature trees of variable quality. Large group of Grey Poplar to the SE. Swales with over flow providing wetland	Veteran Oak this high quality tree is a significant landscape feature.	Continue with annual hay cut. Area of Common Reed to be left un cut.	Phased removal of those trees failing to thrive.

		conditions to a small			
		area.			
23	Swamp	Area has previously		No future	
Meadow area	Cypress, Pin	been managed as a		maintenance to	
running from	Oak.	meadow with an		allow area to develop	
Public foot path		annual hay crop taken.		natural succession.	
to Wilderness		Grey Poplar and			
edge		Common Reed			
		establishing.			
24	Common	Marginal and aquatic	Veteran Common	No future	
Lake edge-From	Alder,	herbaceous plants	Oaks and Holm	maintenance other	
the lake edge to	Common Oak	especially Yellow Flag	Oak.	than tree safety	
the edge of the	London plane.	Iris, Bulrush, Common		works and keeping	
foot path which	_	reed and Common		the path ways open	
surrounds the		Waterlily. Common		or works associated	
lake		Alder is the dominant		with Reservoir Act	
		species with bramble		compliance.	
		or other scrub below.			





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