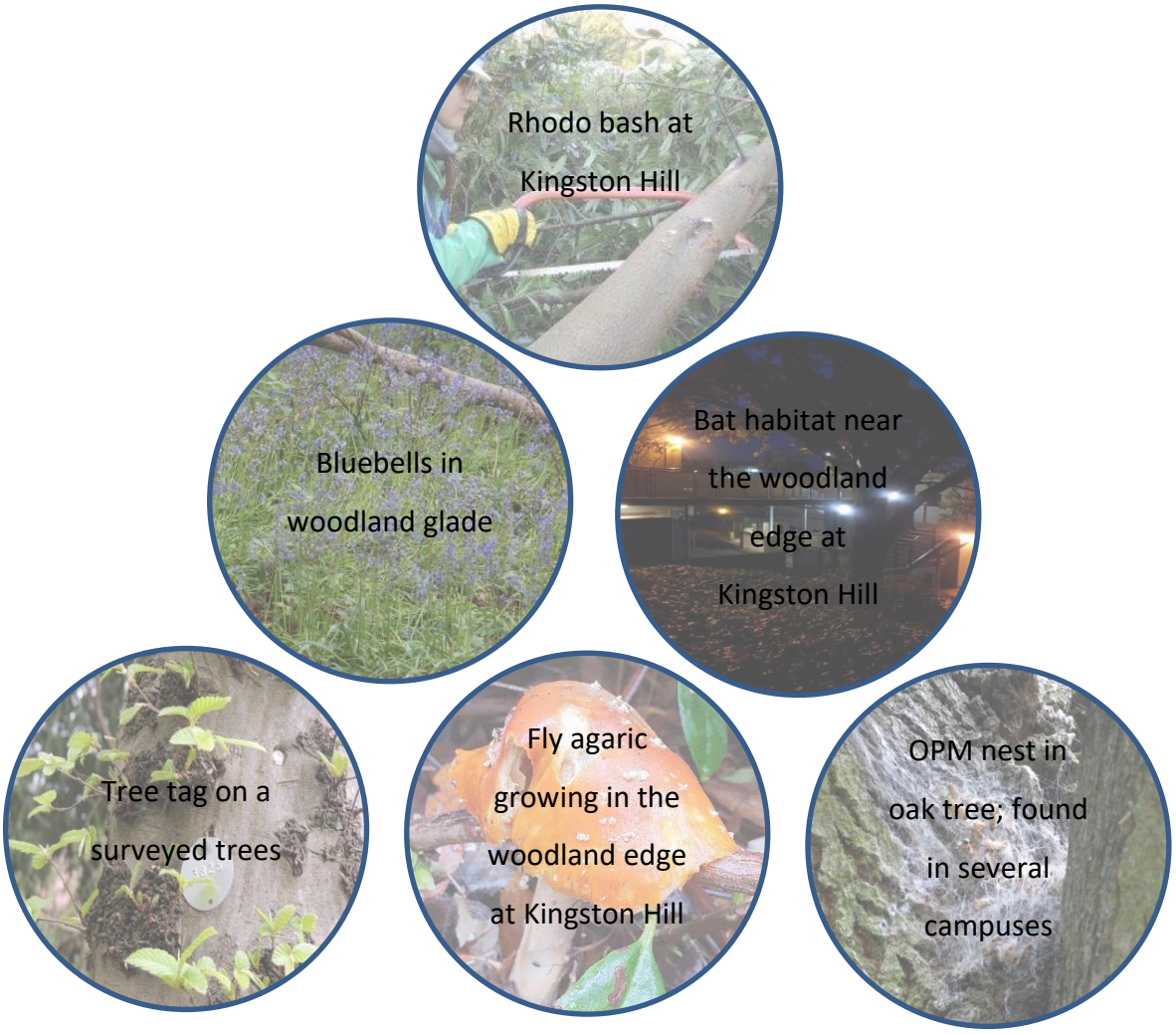
Kingston University London

Tree and Woodland Management Plan 2021-2025

www.kingstonunibiodiversity.blogspot.com

biodiversity@kingston.ac.uk

First created by:	Lyndsay Stafford (2009)
Revised by:	Sivakhami Sivanesan
Date of publication:	July 2021
Version:	3
Document location.	S:\estates\office\9_biodiversity\policy & advice\



Created by
Estates and Sustainability

Last updated
July 2021

Additional
The updated Tree and Woodland Management Plan 2021-2025; was sent to the Kingston University Estate and Campus Environment Group for notification of the document update in July 2021

Contents

1 Introduction

All sites at Kingston University (KU) contain trees. In some circumstances, sites only have a few trees; whilst other sites are have exceptional cover, such as Kingston Hill with its closed canopy semi-natural deciduous woodland. Many of the trees on KU sites are protected through legislation such as the **Town and Country Planning Act 1990**.

Trees and woodlands create a pleasant environment, enabling important ecological services including:

- provide wildlife habitat to a host of other species
- photosynthesis,
- flood defence through the attenuation of rainwater in their canopies and through uptake through their roots,
- reduction of the Urban Heat Island effect (UHI),
- aids pollution absorption[(9)],
- acting as noise buffers,
- and long term carbon sequestration (but only for those that reach a level of maturity, and only for long lived species)[(8)]

KU as the owner of an extensive portfolio of trees and an important urban woodland is keen to embrace and improve their stewardship of this resource.

This tree and woodland management plan is linked to the University's wider aim of conserving and enhancing biodiversity across all of its campuses. This aim is partly motivated by the University's duty as a public body to conserve biodiversity under the **Natural Environment and Rural Communities Act 2006 (NERC)**, although the prime motivation is the University's wish to conserve high quality green spaces for the health and wellbeing of the environment, biodiversity and future generations.

For further details of Kingston University's aims and actions for biodiversity, see the Kingston University Biodiversity Policy [(12)] and the Kingston University Biodiversity Action Plan [(13)].

2 Tree management across KU sites

2.1 Kingston University Tree Management Policy

The Kingston University Tree Management Policy applies to all our sites, it is updated every 2 years. The latest version is available in an online upload here. The main aims of the policy are to provide a framework to manage trees for health and safety and biodiversity, where trees interact with set footpaths, boundaries, roads and buildings.

Many of the health and safety aspects pertaining to trees do not apply to the Kingston Hill Woodland where the wood is managed as wild woodland for the species, including protected species within the woods (bats and badgers). Exceptions to this are where the woodland interacts with planned footpaths, roads, buildings, set Outdoor Learning Environments (OLEs) or boundaries.

3 WOODLAND SITE OVERVIEW (KINGSTON HILL)

3.1 Campus plan

See Appendix 1 for the Kingston Hill Master Campus Plan which illustrates the site boundaries (in red).

3.2 Location

Address: Kingston Hill
Kingston Upon Thames
Surrey
KT2 7LB

OS grid ref: (520762, 171479)

3.3 Area

Whole site: 15.73 ha

Woodland: 9.1 ha

3.4 Land use

The current land use of the site is a university campus. This encompasses learning and teaching environments, administrative offices as well as student residential buildings. The surrounding land use is predominantly private residential such as the Coombe Park Estate to the South West. The site also borders a busy road (the A308).

3.5 Conservation status

Kingston Hill campus sits within the Royal Borough of Kingston's Conservation Area Number 23 which was designated in November 2004. Part of the reason for Kingston Hill's conservation area status is because of the high proportion of mature tree cover, and the area's 'strong relationship' to Richmond Park which sits to the West and North West of the conservation area [(2)].

The trees and woodland on Kingston Hill campus are covered by a number of Tree Preservation Orders (TPOs) which cover both individual trees and all of the trees within the woodland, designated under Section 198 of the **Town and Country Planning Act 1990**. TPOs make it an offence to cut down, uproot, prune, damage or destroy any tree without the permission of the local planning authority.

The woodland in Kingston Hill campus is designated as a Site of Importance for Nature Conservation (SINC) within this category; it is a Site of Borough Importance Grade 1. It is one of only ten Borough Grade 1 sites within the borough of Kingston upon Thames[1] .

[1] Status prior to the outcome of the 2021 SINC review consultation.

3.6 Access

The urban areas of the campus are readily accessible by foot, bicycle, intercampus bus and car. Footpaths join the 30 buildings that compose the built environment of the campus. A number of roads also run around the interior of the campus, leading to the 8 car parks on site. There are a total of 888 vehicle and motorcycle parking spaces on campus and 244 bicycle and e-bike spaces. [2] (16).

Access to the woodland at Kingston Hill is limited, with one nature trail running through part of the eastern area of the woodland. With a maintenance track for internal site maintenance only running around the periphery with neighbouring properties following historic fly tipping issues. There have been instances of trespass in the woodland both from dog walkers (resulting dog fouling issues) and other antisocial behaviour. This has resulted in some access points into the campus via the eastern boundary becoming time limited.

There is poor access throughout the rest of the Kingston Hill woodland. It is generally accepted that no further access will be encouraged for several reasons, including:

- the protection of active Badger setts
- preserving key large tree specimens for wildlife without the requirement to remove them for health and safety reasons
- Management of areas outside of access paths focused on increasing biodiversity rather than degrading habitats through increased access by people.

3.7 Public rights of way

A public footpath (Footpath 11) runs adjacent to the entire northern edge of the site (outside of the site boundary), however there is no human access to the woodland or campus along this boundary via gates (only access for wildlife). There is no public right of way on Kingston Hill campus.

3.8 Land tenure

The site is owned by KU and operated by Kingston University Service Company (KUSCO) which is a wholly owned subsidiary of KU.

3.9 Planning Authority

In terms of building control, Kingston Hill campus falls under the jurisdiction of the Royal Borough of Kingston upon Thames (RBK).

3.10 Key stakeholders

There are a number of stakeholders that are involved or would be interested in the management of Kingston Hill woodland. These key stakeholders include:

- KU's Faculties and Directorates/KUSCO
- KU's arboriculture and grounds contractors
- KU staff and student volunteers
- Kingston Hill Conservation Area Committee
- RBK
- Neighbouring residents

[2] Correct at November 2020 – these figures are subject to change over time. Cycle provision may exclude residential cycle provision.

4 WOODLAND ECOSYSTEM OVERVEIW

4.1 Climate

The campus has a temperate climate typical of its location in South East England. Temperatures range from the February average of 1.7°C to the July average of 23°C. Annual rainfall in the region averages around 656mm [(18)].

4.2 Soil

The site sits on London clay with overlying deposits of acidic Claygate Beds.

4.3 Hydrology

It is estimated that groundwater levels on the site are around 5m below ground. It is likely that groundwater sits within the clay component of the underlying soil, although areas of perched groundwater above the clay may exist. A number of springs are known to exist across the site [(7)].

4.4 National Vegetation Classification

Under the National Vegetation (NVC) Classification, the Kingston Hill woodland best fits into category W10: '*Quercus robur – Pteridium aquilinum – Rubus fruticosus'* woodland [(17)].

4.5 Ecology

From an ecological point of view, Kingston Hill can be divided into 5 distinct ecological zones. This zoning was conceived by Harry Pepper and Ben Holding of the AAIS (Arboricultural Advisory and Information Service) in their 2006 wildlife management plan for Kingston Hill campus [(4)]. These zones are illustrated in Appendix 3.

A number of detailed ecological surveys have been carried out on Kingston Hill campus by a number of organisations and individuals including those by the AAIS [(4)] and by Kingston University Biodiversity Officer (2007 – 2008[(19)]) and Biodiversity and Landscape Administrators and Manager (2008-2020). It is from these documents and surveys that the following ecology information was taken.

4.5.1 **Zone 1**

This zone encompasses the urban areas of the campus including buildings, car parks, roads, footpaths and tennis courts. The majority of vegetation within this zone is heavily landscaped for amenity and ornamental purposes; however areas of wildflower meadows and long grass have been incorporated into the landscaping to provide corridors and foraging habitat for pollinators.

4.5.2 **Zone 2**

The densest area of closed canopy woodland on the campus, zone 2 lies to the North of the campus. The trees in this zone are predominantly broadleaved and have an uneven age structure, ranging from mature examples to young naturally regenerated saplings and large established stands of invasive *Rhododendron ponticum.* Works are ongoing to

clear the large stands of Rhododendron in this area. Table 4.5.2 describes the dominant species in this zone. In all tables, species which are listed on the London Invasive Species Initiative (LISI) as a species of concern are marked using **LISI** and species which are on Schedule 9 of the Wildlife and Countryside Act 1981 are denoted by **Schd 9**.

Dominant cover species	Ash	*Fraxinus excelsior*
	Beech	*Fagus spp.*
	Birch	*Betula spp.*
	Oak	*Quercus spp.*
	Sweet Chestnut	*Castanea sativa*
	Sycamore	*Acer pseudoplatanus*
Dominant under storey species	Holly	*Ilex aquifolium*
	Yew	*Taxus baccata*
	Rhododendron[Schd 9]	*Rhododendron ponticum*
	False Acacia[LISI]	*Robinia pseudoacacia*
Dominant Ground flora species	Bramble	*Rubus fruiticosus*
	Ivy	*Hedera helix*

Table 4.5.2; Zone 2 dominant species

4.5.3 **Zone 3**

Zone 3 is subdivided into two areas, zone 3a to the West of the campus and zone 3b to the East of the campus. Like zone 2, the woodland here is closed canopy, predominately broadleaved and uneven in age structure. Table 4.5.3 describes the dominant species in this zone. Zone 3a has undergone significant clearance of *Rhododendron ponticum.*

Dominant cover species	Ash	*Fraxinus excelsior*
	Beech	*Fagus spp.*
	Birch	*Betula spp.*
	Horse Chestnut	*Aesculus hippocastanum*
	Oak	*Quercus spp.*
	Sweet Chestnut	*Castanea sativa*
Dominant under storey	Elder	*Sambucus nigra*
	Goat Willow	*Salix caprea*
	Holly	*Ilex aquifolium*
	Sycamore	*Acer pseudoplatanus*
	Yew	*Taxus baccata*
Dominant Ground flora	Bramble	*Rubus fruiticosus*
	Nettle	*Urtica dioica*
	Bluebell (native and hybrids)	*Hyacinthoides spp*

Table 4.5.3*; Zone 3 dominant species*

4.5.4 **Zone 4**

This zone is divided by the urban areas of the campus (zone 1) and encompasses a small area to the North of zone 1, and a larger area to the South and South West of the campus. The tree cover here is mostly broadleaved closed canopy, although some open areas do exist here. This zone contains the largest stand of invasive bamboo at Kingston Hill, as well as a dominating understory of *Rhododendron ponticum.* The trees here are of uneven age structure. Table 4.5.4 describes the dominant species in this zone.

Dominant cover species	Ash	*Fraxinus excelsior*
	Beech	*Fagus spp.*
	Birch	*Betula spp.*
	False Acacia[LISI]	*Robinia pseudoacacia*
	Cherry	*Prunus spp.*
	Cypress	*Cupressus spp.*
	Hornbeam	*Caprinus betulus*
	Oak	*Quercus spp.*
	Rowan	*Sorbus aucuparia*
	Sweet Chestnut	*Castanea sativa*
	Willow	*Salix spp/*
	Sycamore	*Acer pseudoplatanus*
Dominant under storey species	Rhododendron[Schd 9]	*Rhododendron ponticum*
Dominant Ground flora species	Bracken	*Pteridium aquilinum*
	Bramble	*Rubus fruiticosus*

Table 4.5.4*; Zone 4 dominant species*

4.5.5 **Zone 5**

This zone is predominantly made up of acid grassland remnants and wildflower meadow dominated grassland. It is currently managed through regular mowing. This zone also contains Kingston Hill's pond. This area is suffering from a lowering of the acid properties in the soil due to soil mixing during the installation of a ground source heat pump. This area has a dense outer edge of *Rhododendron ponticum which is being slowly cleared and replanted through volunteer and contractor efforts.*

4.6 Key features

There are a number of key features within the woodland which will impact upon any potential management strategies.

4.6.1 **Badger Sett**

One of the most important of the key features is the extensive Badger Sett network that exists throughout the campus.

Setts are identified, documented and regularly monitored for activity by the Biodiversity and Landscape Manager (BLM). Care must be taken when surveying in the area as well as when undertaking works. Works in this area should be restricted to outside of the breeding season. The badger breeding season runs from December to June inclusive, with January and February being particularly sensitive times [(11)]. Biodiversity Good Practice document 4 (Works near to badger setts) provides further guidance on this.

Badger sett: Legal issues

Badgers are protected by law under the **Protection of Badgers Act 1992**. This law makes it illegal to "wilfully kill, injure or take a badger; to interfere with a sett by damaging or obstructing it or by disturbing a badger when it is occupying a badger sett, with intent or recklessly" [(11)].

4.6.2 **Nesting birds**

Many different species of bird exist at Kingston Hill, many of which are likely to use the woodland as a source of food and shelter. Bird species seen and heard on Kingston Hill campus include Song Thrush (*Turdus philomelos*), Green Woodpecker (*Picus viridis*) and Goldcrest (*Regulus regulus*). It is recommended that woodland works are avoided during bird nesting season which generally runs from early March to late August. If urgent or emergency works must be undertaken during this period, a suitably qualified person must be consulted to investigate whether the planned works will disturb any nests in the vicinity. Biodiversity Good Practice document 2 (Nesting birds, the law and best practice) provides further guidance on this.

Nesting birds: Legal issues

Birds, and their eggs and nests are protected under the **Wildlife and Countryside Act 1981 (WCA)**. Among other things, this law makes it illegal to intentionally or recklessly disturb any species bird whilst it is nest building or occupying a nest containing eggs or young.

4.6.3 **Bat roosts and foraging areas**

The number of bat roosts within the woodland at Kingston Hill is unknown. The largest maternity roost for Pipistrelle bat species in RBK is situated in one of the buildings on campus.

The conditions within the woodland are suitable for a number of different species using the site for hibernation roosts. Bats have also been recorded foraging in the woodland during bat surveys and bat walks at Kingston Hill.

Given the good conditions on site, it should be assumed that bats are using trees which are of the correct age and have features that can support bat roots. Therefore, until the existence of a bat population can be proven or disproven, it is recommended that a visual tree assessment should be undertaken by suitably qualified person before tree works take place to assess bat roost potential. If deemed likely, a full survey should be undertaken by a bat ecologist who will then recommend the best course of action.

Artificial light pollution is the largest persistent negative impact on bat roosts, foraging areas and flight routes at Kingston Hill.

The use of artificial light in and around the woodland and any light spillage onto the woodland must be minimised to avoid impacting these species. Any future developments at Kingston Hill will have to be assed for the impact of any lighting schemes associated with the development, on the outdoor environment. Any increase in lighting will have to be managed and mitigated in areas where the woodland, and existing foraging and flight routes exist. Documentation adapted and or created specifically for Kingston University including “Landscaping and Urban Design for Bats and biodiversity: August 2016” [(10)] and “Kingston University Desktop Lighting Guidance” [(11)] provides further guidance on this.

Bat roosts: Legal issues

Bats, their roosts and foraging areas are protected under the **WCA 1981**, the **Countryside Rights of Way Act 2000 (CROW act)**, the **EC Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora 1992 (EC Habitats Directive)** and **Conservation of Habitats and Species Regulations 2010 (England and Wales**).

The **WCA** makes it unlawful to undertake any works which may harm or disturb bats or their roosts without first consulting with the appropriate SNCO (Statutory Nature Conservation Organisation).

The **CROW act** makes it an offence to intentionally or recklessly disturb or destroy a bat roost whether it is occupied or not.

The **EC Habitats Directive** names all species of bat under Annex IV (species in need of strict protection). It is an offence under the directive to deliberately disturb, injure or kill a bat, and to damage or destroy a breeding site.

If bats or their roosts are likely to be disturbed during tree works, an application must be made to Natural England for a licence [6].

The Conservation of Habitats and Species Regulations 2010 (England and Wales) section 41-part b, makes it an offence to disturb certain species, where that disturbance is likely to:

(a) to impair their ability—
  (i) to survive, to breed or reproduce, or to rear or nurture their young, or
  (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
(b) to affect significantly the local distribution or abundance of the species to which they belong.

4.6.4 **Waterlogged areas**

Some areas of the Kingston Hill woodland (particularly in zone 3) are affected by natural springs. These wet areas contain a number of dead trees and provide an ecological niches not seen elsewhere on the site Where possible these trees should be retained as standing dead wood, though they may be sectioned to 7m high to aid stability if required. Works that need to be undertaken in this area may need additional health and safety considerations as the ground and trees may be unstable. Where planting is needed in these areas, using one or two specimen trees of either native alders or willow are recommended.

4.6.5 **Veteran trees**

Zones 2, 3 and 4 contain numerous veteran oak trees. Such trees provide a wealth of decaying material and deadwood essential for roosting bats, hole-nesting bird species, insects, fungi and lichen.

It is important to manage these trees to prolong their life for as long as possible without the trees near areas of site use (paths, roads, boundaries and buildings) becoming hazardous to people as, such:

- No new pathways will be added to the site near veteran trees.
- Light touch work to maximise the lift of the tree, but to ensure that its not overly sanitised to retain the value for biodiversity.

4.6.6 **Mycorrhizal Fungi**

We have found different types of fungi throughout, but for trees, an important group of fungi are the mycorrhizal fungi. These form beneficial associations with the roots of trees and other wild plants, effectively extending the root area of the plant in exchange for food. It can take many years for a complex fungi community to develop in areas of woodland. Fungi help [(21)]:

- Transfer essential minerals from decaying organic matter to the host plant.
- Extend the plants roots surface area to increase the area from which nutrients and water uptake.
- mitigate impacts of droughts and
- protect host plants from predators and pathogens so enable the host plant to better deal with environmental stresses.

Mycorrhizal fungi were found in surveys of the woodland in 2020, in zones 2 and 4 of the Kingston Hill Campus [(15)], reiterating the long-standing nature of the woodland on the site. They also indicate the levels of site disturbance are relatively low, outside of the long-term negative impacts of rhododendron colonisation, as the fungi species found, would disappear without their host species being present.

Fungi and the species reliant on them, can suffer from high human activity including foraging, clearance, soil compaction though high foot fall/site works, and excessive nitrogen deposits (from sources including fertiliser application and atmospheric pollution).

Because fungi are the hidden part of a web vital to the health of our trees and woodland, on sites where we find mycorrhizal fungi, we must work to encourage them to flourish to maximise the positive benefits to trees and other biodiversity.

As an organisation we should not encourage the following activities to help preserve the health of the fungi and so the trees and other fauna species which rely on them:

- fungi foraging and the removal of fruiting bodies
- high footfall in areas with these species to avoid impacts of soil compaction
- fertiliser use in areas of the woodland or areas with recorded mycorrhizal fungi

5 AIMS AND OBJECTIVES OF TREE AND WOODLAND MANAGEMENT

The aims listed below are to provide a good level of tree and woodland management and are in addition to any legal compliance for biodiversity as listed on the Biodiversity Legislation Register held within the Estates and Sustainability Directorate.

5.1 To conserve and enhance the wildlife habitat potential of Kingston Hill campus' woodland

5.1.1 Favour predominantly high grade species of tree (e.g. Beech (*Fagus spp*.), Hornbeam (*Caprinus betulus*) and Pedunculate Oak (*Quercus robur*)) rather than low grade (e.g. Silver Birch (*Betula pendula*)) when afforesting in the areas of closed canopy woodland.

5.1.2 Favour native species of local provenance when afforesting.

5.1.3 Use a mixture of trees when afforesting to create mixed height structures.

5.1.4 Ensure that a diverse range of tree age is maintained throughout the woodland to ensure the existence of veteran trees into the future.

5.1.5 Introduce a programme of halo thinning around existing and potential future veteran trees in the woodland to reduce competition

5.1.6 Diversify habitat and light levels in the woodland by implementing a coppice cycle to those trees which are suitable and would benefit.

- Continue the 2012 hazel coppicing in zone 3b on a 7-year rotation
- Identify other suitable species and appropriately located stands in the woodland which may benefit from coppicing and begin additional rotations.

5.1.7 Enhance the diversity and cover of undergrowth in the woodland through partial clearance of Bramble (*Rubus fruiticosus*) in some areas, while still maintaining this vital scrub resource (food and shelter) for species such as birds and mammals.

5.1.8 Retain dead wood (both standing and log piles) where it is safe to do so. Where chipping may be needed, it needs to be concentrated in areas away from existing tree root protection areas. Ideally, chipped into a localised area under and partially on top of log piles to help provide a diverse habitat that can benefit reptiles, amphibians, small mammals and a variety of invertebrates. Chipping can't be spread out too much over the ground as it will exclude ground feeding birds.

5.1.9 If there are no negative impacts on biodiversity, aim to support use of the woodland as an educational resource.

5.1.10 Engage with volunteers and conservation organisations to implement woodland management tasks where safe and feasible to do so.

5.1.11 Avoid tree works next to badger setts from December to August (inclusive), and during bird nesting season in order to comply with wildlife legislation. If urgent works are required, the advice of a suitably qualified person should be sought.

5.1.12 Where bat roosts are known to exist, the advice of a suitably qualified person should be sought before undertaking any tree works at any time of year.

5.1.13 Continue species surveys in the woodland to ensure that records of protected and important species are kept up to date to allow for appropriate management

5.2 To monitor and, where feasible, eradicate invasive species of flora and fauna in the woodland and on other tree stock

5.2.1 Remove Japanese Knotweed (*Fallopia japonica*) from the woodland with annual herbicide application, in line with obligations set out by the WCA 1981.

5.2.2 Damage to trees and impact on bird nests from the invasive Grey Squirrels (*Sciurus carolinensus*) has been noted both through site surveys and during bird census surveys on site. Continue to undertake passive monitoring of the extent of tree damage caused by Grey Squirrels in the woodland. Contact teams undertaking research on oral contraception as a humane non-kill method to investigate reducing the burden of Grey Squirrels on the woodland without impacting other species via non-target species being impacted by baits and traps.

5.2.3 Undertake bird surveys to establish the extent of the impact of ring necked parakeets (*Psittacula krameri*) on native bird populations. If an impact is established, identify if habitat provision through habitat management or provision of different nest box types will aid the return of species such as breeding starlings to Kingston Hill.

5.2.4 Remove invasive Balsam species from the wooded areas manually between May and July.

5.2.5 Identify new locations and continue with phased removal of variegated yellow archangel (*Lamiastrum galeobdolon subsp. argentatum*) from the woodland.

5.2.6 Identify locations and start phased removal of virginia creeper (*Parthenocissus quinquefolia*) from 2016 onwards.

5.2.7 Identify locations and start phased removal of invasive cotoneasters from the woodland from 2017 onwards.

5.2.8 Identify locations of Spanish bluebell (*Hyacinthoides hispanica*) and investigate the feasibility of removal – deemed unfeasible, as hybrids are very hard to identify by volunteers and may cause removal of native stock.

5.2.9 Remove all *rhododendron ponticum* from the woodland where feasible to do so, locations overriding badger setts will be left to protect this protected species.

5.2.10 Favour natural regeneration to occur in areas where removal of invasive species has taken place. Planting should only be considered where:

- significant amounts of vegetation are removed,
- it is required for health and safety,
- it is needed for habitat replacement,
- it safeguards the structural integrity of landscape features including soil stability,
- it increases competition with invasive species re-growth,
- it greatly impacts on aesthetics.

5.3 To minimise biosecurity risks and manage outbreaks effectively

5.3.1 Check trees with history of Oak Processionary Moth (OPM) (*Thaumetopoea processionea*), infestation and observe more widely other trees on campus for signs of OPM.

5.3.2 Map all cases identified.

5.3.3 Full eradication of OPM at Kingston Hill is unlikely, given its local in the core infected zone. Therefore, KU will undertake selected manual removal at Kingston Hill in areas which override footpaths, are next to buildings and where neighbours report it on our trees over their gardens. Removal will only be undertaken by trained individuals who can demonstrate competence and be suitably equipped. Sample risk assessments for removal work are provided to KUSCO for records. Where removal is not possible, educate site users about the hazards presented, and what steps they should take keep them safe. The combination of selected removal and education balances duties of care under health and safety legislation, without negatively impacting on native Lepidoptera species.

5.3.4 On other sites, undertake spraying with insecticide at the right time of year where OPM is found in:

- the national control zone,
- or on major transport routes out of the core and control zone into un-infected sites.

5.3.5 To keep abreast of and implement current recommended actions related to Ash dieback and other tree pests and diseases

5.3.6 Dispose of arisings from invasive plant species clearance responsibly to prevent contamination

5.3.7 Source UK-grown specimen from disease-free stock when planting in the woodland

5.4 To ensure that no risk is posed to people or buildings by the trees or woodland areas on campus

5.4.1 Have all trees in the accessible (where practicable) areas of the woodland inspected by an independent arboriculture consultancy for health and safety issues as per the KU Tree Management Policy using the Quantified Tree Risk Assessment (QTRA) methodology

5.4.3 Ensure that neighbours boundary fences are accessible via our Maintenance Track for continued monitoring of fly tipping, through regular clearance of bramble and other vigorous undergrowth. Maintenance of the Maintenance Track around the periphery of Kingston hill has been incorporated into the ground's maintenance contract

5.4.4 Boundary Patrols have been incorporated into the 2015 Grounds Maintenance Specification document

5.5 Outside of the woodland aspects of tree management, to manage our tree stock at Kingston University in accordance with the Kingston Tree Management Policy

5.5.1 Ensure that KUSCO are conducting cyclical tree safety checks as outlined in the policy

5.5.2 Ensure that KUSCO are maintaining all trees subject to the policy

6 REFERENCES

1. AAIS (2003) *Trees at Kingston University – Safety Survey and Woodland Management*. Surrey: AAIS

2. AAIS (2004) *Kingston Hill Campus Trees and Woodland Management Plan 2004 – 2008*. Surrey: AAIS

3. AAIS (2006) *Trees at Kingston University – Tree Safety Survey*. *Resurvey 2006.* Surrey: AAIS

4. AAIS (2006) *Kingston University Wildlife Survey and Wildlife Management Plan: Kingston Hill Campus*. Surrey: AAIS

5. AAIS (2009) *Trees at Kingston University Kingston Hill Campus - Tree Safety Survey*. *Resurvey 2009.* Surrey: AAIS

6. Bat Conservation Trust (2007) *Bats and Trees in England.* London: BCT

7. Beirfrund, Olaf (2008) *New Rennie Building: Drainage Statement.* Solihull: Scott Wilson

8. Büntgen, U., Krusic, P.J., Piermattei, A., Coomes, D.A., Esper, J., Myglan, V.S., Kirdyanov, A.V., Camarero, J.J., Crivellaro, A. & Körner, C. (2019) *Limited capacity of tree growth to mitigate the global greenhouse effect under predicted warming*. Nature Communications. DOI: 10.1038/s41467-019-10174-4 [accessed online] https://www.nature.com/articles/s41467-019-10174-4

9. Dwyer, J.F., McPherson, E.G., Schroeder, H.W. and Rowntree R.A (1992) *Assessing the benefits and costs of the urban forest*. Journal of Arboriculture 18(5) Pp227-234.

10. Estates and Sustainability (2016) Landscaping and Urban Design for Bats and biodiversity: August 2016.

11. Estates and Sustainability (2019) 191218 Kingston University Desktop Lighting Guidance v1.5

12. Estates and Sustainability (2020) *KU Biodiversity Policy*. London: Kingston University

13. Estates and Sustainability (2020) *KUBAP 2020-2024*. London: Kingston University

14. Forestry Commission (1995) *Forestry Practice Guide 9: Forest Operations and Badger Setts*. Edinburgh: The Forestry Commission

15. Fure. A (2020) Mycorrhizzal fungi report, Kingston University, Kingston Hill. Surrey: Furesfen.

16. Hooper K (2021) Estates observations. Kingston University.

17. JNCC (2004) *National Vegetation Classification: Field Guide to Woodland*. Peterborough: JNCC

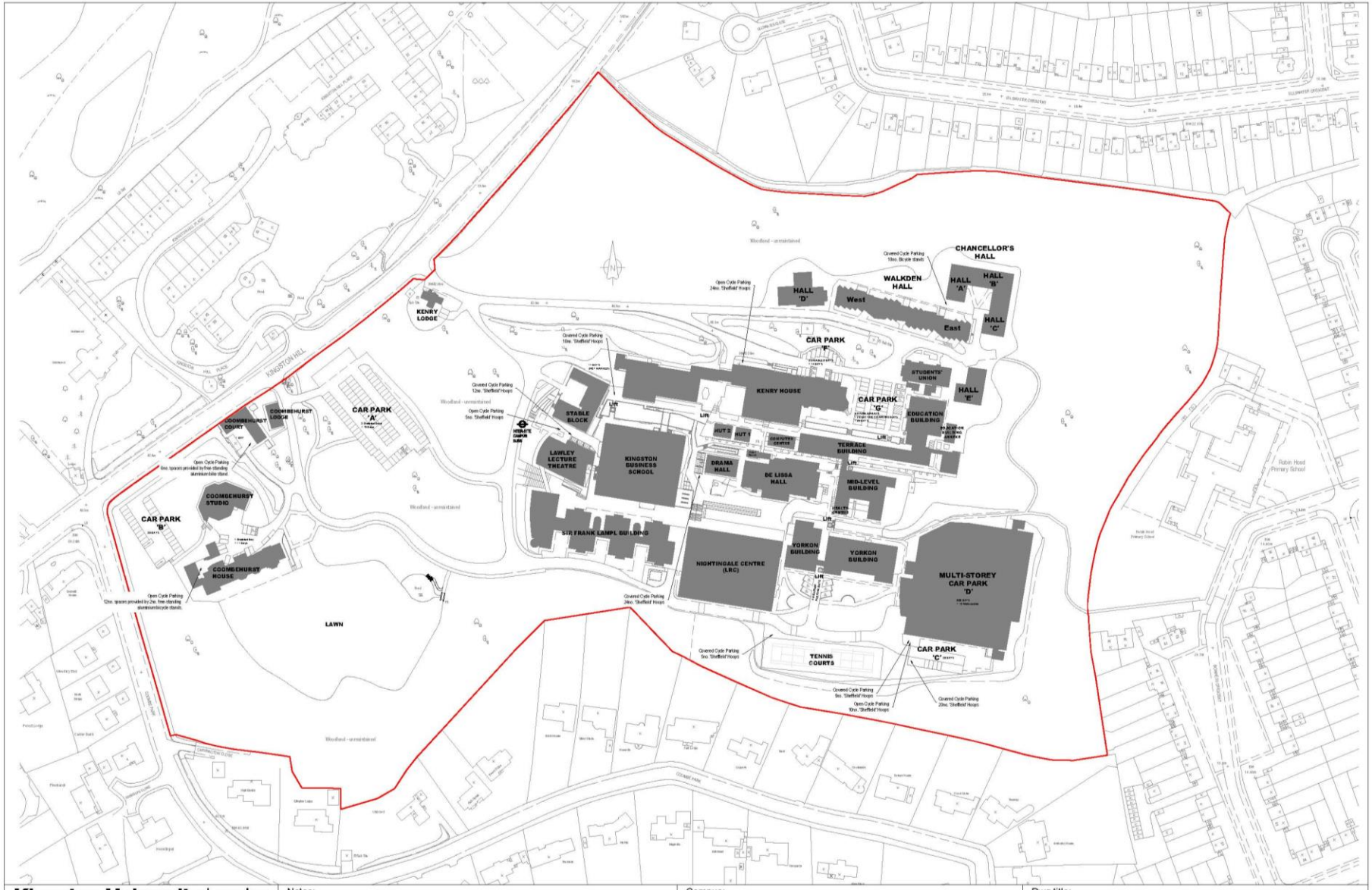
18. Met Office (2014) *Wisley 1981 – 2010 averages.* [Online] < http://www.metoffice.gov.uk/climate/uk/averages/19812010/sites/wisley.html l>

19. Mullett M (2008) *Opportunities and Recommendations for Enhancement*. London: Kingston University

20. RBK (2005) *Conservation Area 23: Kingston Hill. Planning Information and Summary Character Appraisal*. London: RBK Directorate of Environmental Services

21. Trees for life (2021) Mycorrhizas [Accessed online] https://treesforlife.org.uk/into-the-forest/habitats-and-ecology/ecology/mycorrhizas/

APPENDIX 1 –Kingston Hill Master Campus Plan



Kingston University London
Estates

River House
53-57 High Street
Kingston upon Thames
Surrey KT1 1LQ

T: 020 8417 3129
F: 020 8417 3144
E: estates@kingston.ac.uk

Notes:
Do not scale from this drawing. Only use CAD generated dimensions. All dimensions read from this plan shall be checked and verified on site prior to design or construction works being carried out.

Rev.	Description:	Drwn:	Date:
	Pond Dipping Platform Added/ Carpark E removed	JSB	8/4/14

Campus: Kingston Hill
Building:
Level:
Drawn by: JFM

Dwg title: Master campus plan
Dwg no: KH_MCP
Rev:
Scale: 1:2000 @ A3
Date: 8/4/14

APPENDIX 2 – Kingston Hill Ecological Zones