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Woodland Management Strategy

University of Kent

Prepared by LUC
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Planning & EIA
Design
Landscape Planning
Landscape Management
Ecology
Mapping & Visualisation

LUC LONDON
43 Chalton Street
London NW1 1JD
T 020 7383 5784
F 020 7383 4798
london@landuse.co.uk

Offices also in:
Bristol
Glasgow
Edinburgh

FS 566056
EMS 566057

Land Use Consultants Ltd
Registered in England
Registered number: 2549296
Registered Office:
43 Chalton Street
London NW1 1JD
LUC uses 100% recycled paper

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1 Introduction

1.1 In June 2015 LUC were appointed by the University of Kent to prepare a Woodland Management strategy for the Canterbury Campus, within a study area defined by the university. This built on work undertaken by LUC in 2014 to produce a Woodland Mitigation and Enhancement document to support a planning application for the development of Kent Business School and School of Mathematics, Statistics and Actuarial Science on Park Wood Road[1]. The study area was expanded to include Bluebell Wood and other areas of ancient woodland habitat within the campus (See **Appendix 1, Figure 1**). This would allow the creation of a Woodland Management Strategy for the entire Canterbury Campus. In order to achieve this LUC proposing replicating the level of survey effort expanded in the creation of the Woodland Mitigation and Enhancement document.

1.2 The Kent Business School and School of Mathematics, Statistics and Actuarial Science proposals also included the planting of a new area of native woodland c.2.8ha in size approximately 900m north west of the Site. The approach to be adopted for the creation and management of this woodland is outlined in the separate Woodland Creation Method Statement[2] (LUC 2014).

Site description

1.3 The University campus is located to the north of Canterbury, Kent (TR150597). The Park Wood and Brotherhood Wood are situated to the north west of the campus in an areas dominated by woodland with a small number of buildings associated with the Kent Business School. The Bluebell Wood is further south, to the south of the University Road, surrounded by open grassland and parkland habitats to the east and west, with the developed Campus to the north. Giles Lane Wood runs to the west of the main entrance into the campus, and is now largely restricted to a belt of trees separating university buildings from the road.

[1] LUC (2014) Methodology for Mitigation and Enhancement: School of Mathematics, Statistics, Actuarial Science and Business School for University of Kent

[2] LUC (2014) Woodland Creation Method Statement: School of Mathematics, Statistics, Actuarial Science and Business School for University of Kent

2 Method

2.1 The approach in 2014 involved completing a National Vegetation Classification (NVC) Survey of Park Wood and Brotherhood Wood to inform the development of management recommendations. These surveys were not repeated in 2015, but the same method was employed by an experienced LUC Ecologist to assess additional woods within the campus, notable Bluebell Wood. Only those woodlands of a more semi-natural character were subject to NVC survey.

2.2 The NVC is a method for classifying British vegetation types into communities and sub-communities according to their floristic composition. The data collected in this survey allows the categorisation of the woodland compartments as per the woodland type and identify appropriate management actions, including coppicing regimes.

2.3 In addition, the woods were inspected by an experienced Landscape Manager to identify appropriate management recommendations and identify any key landscape features, particularly notable trees.

2.4 This also aimed to identify other features of note and to be considered in any management recommendations:

- Other ecological issues to be considered, for example the presence of great crested newt (GCN, an European Protected Species)
- Identify species and broad condition of individual trees close to the Nature Trail through the wood (note that this did not comprise a full Arboricultural Survey)
- Identification of other habitats which require a specific management regime, ponds for example, areas of grassland
- Path maintenance and the provision and maintenance of interpretation material for the nature trail.

2.5 The areas of woodland considered in this report comprise:

- Two woodlands to the North of the Campus: surveyed in 2014 and referred to as West Triangle Wood and Long Thin Wood)
- Brotherhood Wood (surveyed in 2014 with extension in 2015)
- Park Wood (surveyed in 2014 with extension in 2015)
- Bluebell wood (surveyed in 2015)
- Giles Lane Wood (surveyed in 2015)

3 Discussion and Recommendations

3.1 In 2014 it was concluded that the wildlife value of native woodlands had generally been in decline, with one of the causes seeming to be that woods that were once structurally complex were becoming simpler due the lack of woodland management. By bringing areas of ancient woodland in particular into active management it is considered that these proposals gain deliver ecological enhancements to the wider University of Kent Estate.

Woodlands North of the Campus

3.2 The two smaller woodland compartments to the North of the Campus (West Triangle Wood and Long Thin Wood) currently provide a high quality ecological resource. Therefore in 2014 it was recommended that the existing management approach adopted for these woodlands continue.

Park Wood and Brotherhood Wood

3.3 The 2014 NVC survey revealed that although the species composition varies slightly Park Wood and Brotherhood Wood are both similar woodlands to the development Site. All these woods were classified as W10a *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland communities. They all appear to have been managed via coppicing in the past but have not been managed recently. Reinstating some form of rotational coppice management regime within these woodlands will increase both their structural and compositional diversity and provide a wider variety of habitat niches.

3.4 In 2015, additional areas of these woods (the western most area of Brotherhood Wood, adjacent to the east of sports facilities; and the southern part of Park Wood east of Farthings Court) were also inspected and management recommendations developed. These areas were of a similar character to the areas surveyed in 2014, and therefore similar management recommendations apply.

3.5 In summary it was concluded that the ecological value of Parkwood and Brotherhood Wood could be increased through the adoption of historic management regimes patterns, restoring and conserving the woodland structure of coppice with standards. The cyclical coppicing of hazel, hornbeam and sweet chestnut would lead to the creation of an uneven age structure therefore providing a diverse habitat for fauna and flora.

3.6 Further detail regarding management activities is provided below, with recommended annual management operations for Parkwood and Brotherhood Wood provided in **Table 3.1**.

Giles Lane Wood

3.7 Giles Lane Wood is now restricted to groups of trees set back from the Sports Centre and the Ingram building and separated from the road by amenity grass. As such they serve as a useful screen between the built elements of the University and the management should be to retain those trees in a healthy and safe state, inspecting regularly to monitor the structural and physiological conditions of the trees. Any replacement planting should use native woodland species such as oak and sweet chestnut as tree species with native shrubs such as hawthorn, hazel and blackthorn.

Bluebell Wood

3.8 Bluebell Wood showed a great deal of variety with a range of plantation style woodlands based on different tree species, remnants of coppicing, birch woodland reminiscent of a heathland wood, remnants of boundary hedges and ditches, ponds and a stream. In addition the central pond is habitat for GCN, which have also been recorded in a pond in the north. Any management actions therefore need to consider the potential for impacts on this protected species (see below), whilst providing the opportunity to improve the woodland terrestrial habitat for this species.

3.9 In terms of NVC classification the woodland includes compartments classified as W10a *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland communities. Details of the habitats found and of selected trees in the woodlands can be found in **Appendix 2**.

3.10 The same principles for management as identified for Brotherhood and Park Wood apply to Bluebell Wood in terms of reinstating historic woodland management patterns. However given the greater variation through the wood, the management recommendations for each compartment vary to a degree and this has therefore been summarised in **Table 3.2**.

3.11 It is also suggested that as the woodland is so varied, and is open to public access, that greater emphasis is placed on interpretation and education as well as improving its amenity value through continued maintenance of paths and route signs.

Approach to managing coppice woodlands

3.12 A 7-20 year coppice rotation will be adopted for the management of Parkwood and Brotherhood Wood with both woodlands being divided in coupes with one coupe being cut every other year. The length of the coppice cycle is dependent on the species, with hazel tending to be coppiced between 6 – 10 years and sweet chestnut between 8 – 16 years depending on the use being made of the coppiced poles and on growing conditions. **Figure 2** shows the location of the thirteen 0.4 hectare coupes within Parkwood and the ten 0.4 hectare coupes with Brotherhood Wood. The location and size of these coupes should be considered as a guide only and when the coppicing is undertaken the conditions on the ground will be reflected in the boundaries of the coupes. For example where ancient boundary ditches are present these will be used as the divide between coupes. The same principles can also be applied to a number of coupes in Bluebell Wood as shown in **Table 3.2**, with coupes shown on **Figure 1.**

3.13 As the coppice hornbeam and sweet chestnut grow they become more prone to collapse as their structure becomes unbalanced. Management of these features will therefore need to consider how best to conserve and enhance such an important resource. Opportunities will be sought to reduce competition through haloing, selective tree surgery, mulching and protection from compaction. Consideration will also be given to experimental pollarding or re-coppicing.

3.14 The remaining trees such as the oak standards will be managed to conserve the ancient woodland character promoting the ecological value. Ongoing presence of oak in the woodlands will be conserved through recruitment of existing natural regeneration and planting stock of local provenance where regeneration is not available.

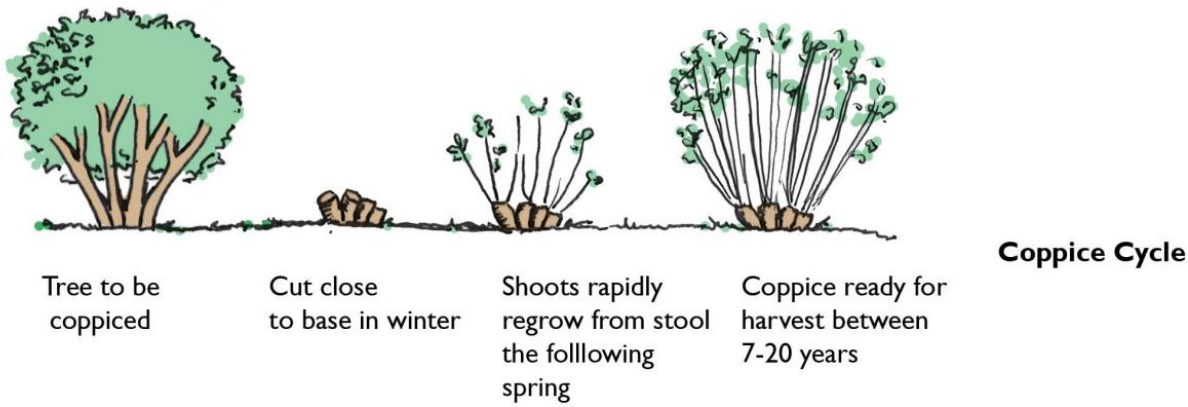
Timing

3.15 Areas to be coppiced should be examined in late summer with stems to be cut marked. Approximately 12 standards per hectare should be retained and should be of a variety of sizes and ages. Where possible, one mature tree should be present in each coppice coupe.

3.16 Cutting should be carried out between October and March to minimise disturbance to wildlife with any cut timber removed between March and April when the ground is dry, and a proportion retained on site as brash/log piles.

3.17 The typical approach to coppicing is illustrated below.

Fig 3.2: Typical coppice cycle

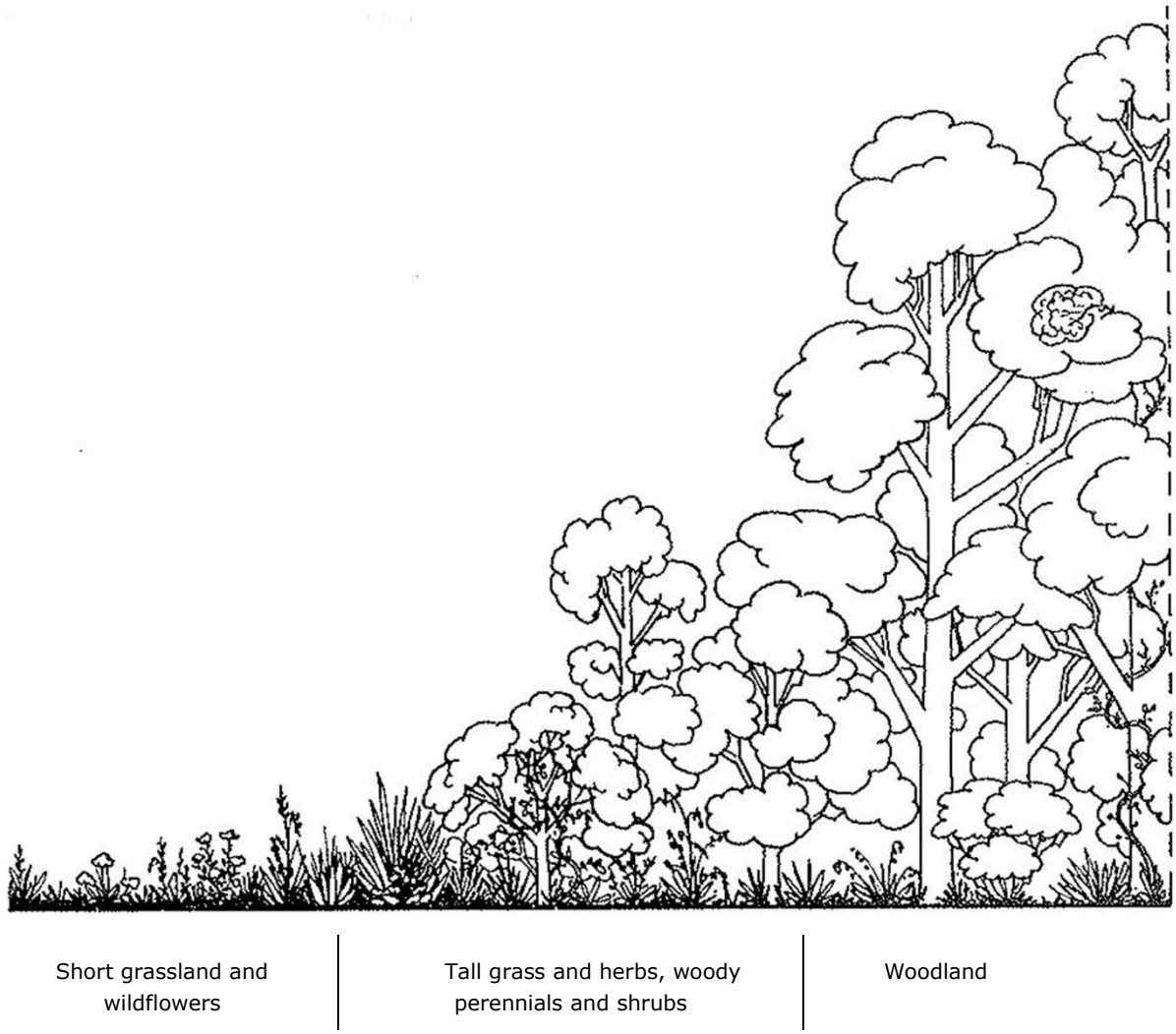


3.18 An Annual Management Schedule for Parkwood and Brotherhood wood has been produced and is shown in **Table 3.1** while a similar plan is shown in **Table 3.2** for Bluebell Wood

Glades, rides and woodland edge

3.19 Management will seek to identify opportunities to further increase the structural diversity of all three woods through increasing species diversity along woodland edges together with the creation of glades and rides. The ideal structure of woodland edges, rides and glades is illustrated below.

Fig 3.3 Typical woodland edge treatment[3]



[3] Emery, M. (1986) "*Promoting nature in cities and towns: A practical guide.*" Ecological Parks Trust

3.20 The successful creation of glades and rides will be dependent on the characteristics of the woodland with such features favouring sunny, sheltered and humid positions. Rides and glades should also be connected to provide greatest chances for plants and animals to colonise. This edge structure can also be replicated through scrub planting adjacent to woodland.

3.21 Different management regimes will be adopted for these features with the grassland areas to be cut once per year in October and March. The tall herb/ shrub margin will be cut back every two – three years with sections being cut each year on rotation to avoid destroying the habitat. Surrounding woodland trees will be managed to ensure adequate light reaches the glades and rides. Glades will be at least 0.1ha - 0.2ha in size with a 10-15 m margin of shrubs and trees.

Invasive species

3.22 Invasive species, such as sycamore, will be controlled to allow other species to establish and flourish.

Deadwood

3.23 All deadwood should be retained where it falls to provide valuable habitats for invertebrates. If possible standing deadwood will be retained as long as in doing so safety in accessible areas is not compromised. Where trees close to paths reach the stage where branch dropping is likely, surgery will be carried out to reduce that risk, but still leave as much of the tree standing as a monolith as possible.

3.24 In appropriate locations piles of dead wood and loggeries within and around the woodland will be created. These provide valuable habitats for a range of invertebrates, amphibians, reptiles and small mammals. They can also be designed to form landforms to provide features of interest for site users, for example by the creation of sinuous 'log walls'. In particular these should be created in Bluebell Wood to support GCN associated with the pond.

3.25 Ivy can be left in canopies of trees to provide food and nesting sites but may need control in some cases to avoid shading out of the crown and will be controlled to avoid complete encasing of the trunk.

Ponds and streams

3.26 Ponds and streams should be managed to increase habitat diversity and be kept clear of litter and invasive species. Cyclical management of bankside and marginal vegetation will be carried out to maintain openness and create a valuable structure.

Management and monitoring

3.27 Regular surveys could be carried out to record fauna and flora species as well as to review ongoing conservation work. This should include monitoring for the presence of pests and diseases and an appropriate strategy developed accordingly. A suggested monitoring form is provided in **Appendix 3**.

3.28 In order to monitor the changes to the vegetation following the reinstatement of coppice management annual Extended Phase 1 Habitat surveys following best practice methods[4] should be undertaken. The survey will be 'extended' by considering the suitability of the Site to support notable or protected flora or fauna. This survey should be undertaken in May or June. In order to fully monitor any floristic changes on the site the Phase 1 Habitat survey should be supported by quadrate surveys. A minimum of two quadrates, each measuring 2m x 2m should be surveyed in each woodland Block. Quadrat surveys will not be undertaken in woodland blocks that are yet to undergo any management.

3.29 The monitoring should also include fixed point photography, so that visual records of any changes to the Site are kept. This fixed point photography should start before any management work occurs.

3.30 Trees surrounding paths and other publicly accessible areas should also be inspected regularly for storm damage and general health and safety issues. Damaged branches in such locations will be removed promptly to minimise damage to the tree and danger to the public.

[4] Joint Nature Conservation Committee (1990). Handbook for Phase 1 Habitat Survey. NCC, Peterborough

3.31 Given the location of the proposed woodland within the vicinity of the University of Kent Campus it is also recommended that full consideration is given to the use of students to undertake some of the survey work. In this way this woodland creation work could provide a useful teaching resource for the University of Kent.

Access

3.32 In particular, with its variety of tree species, woodland management types and habitats combined with its location on the Campus Trail and a publically accessible footpath, Bluebell Wood could be used as source for information and interpretation on woodland management techniques, ecology and tree species.

3.33 The current informal paths through the wood appear to be desire lines trodden into the ground through the woodland. This means that they are not particularly visible in all areas and are liable to be wet and muddy in winter. If access is to be increased, then thought could be given to creating more structured paths perhaps with wooden edging, a gravel base topped with a self-binding gravel such as Coxwell gravel, particularly through the centre of the wood along the Campus Trail. Such a path would be more hardwearing, could be constructed to be raised above damp patches, but still have the appearance of a natural path. Less heavily used paths could be surfaced regularly with chippings from woodland management tasks.

3.34 Where routes come close to the ponds, particularly the larger pond towards the southern thought could also be given to providing a wooden platform to provide a firm access point to the edge of the pond to allow visitors to look into the water without trampling marginal vegetation

3.35 There are marker posts in the wood which it is assumed mark the route of the Campus Trail. It is suggested that the positioning and information shown on the posts is reviewed to make it clearer that they do mark the Trail, and where that trail is in the woods.

Figure 3.4: Access

	
Informal path	Waymarker post

3.36 It is suggested that the University's Conservation Group could be involved in providing low key interpretation on the different species of tree found in the wood, on the management regimes being practiced to maintain the woodland itself and on the associated water and grassland regimes. Particular trees and features of interest identified during the 2015 survey are identified on **Figure 2** and described in **Appendix 2**.

Table 3.1 Recommended annual management operations for Brotherhood, Park Wood and Gill Lane Wood

Maintenance component and operation	Period of year	Frequency per annum	Management responsibility
Coppice woodland			
Assess Parkwood and Brotherhood Wood and mark out coupes	October	First year only	University of Kent
Parkwood to be coppiced in 13 coupes (each of approximately 0.4ha is size)	October - March	Cut 1nr coupe every other year over a 26 year period.	University of Kent
Brotherhood Wood to be coppiced in 10 coupes (each of approximately 0.4ha in size)	October - March	Cut 1nr coupe every other year over a 20 year period.	University of Kent
Removal of cut timber in Parkwood and Brotherhood Wood	March-April	1	University of Kent
Inspect stools for regrowth	May	1	University of Kent
Replace failed stools with new planting	November to March	1	University of Kent
Inspect ancient hornbeam coppice and oak standards.	October – March	1	University of Kent
Carry out haloing, selective tree surgery and mulching around former hornbeam coppice and oak standards if identified during inspection.	Spring, Autumn	1	University of Kent
Maintain ongoing presence of oak standards through recruitment of natural regeneration and planting of stock of local provenance where regeneration not available.	November – March	1	University of Kent
Control invasive species such as sycamore	January - March	1	University of Kent

Maintenance component and operation	Period of year	Frequency per annum	Management responsibility
Woodland edge and scrub buffer around coppice woodland			
Undertake 3 yearly cyclical pruning of scrub	January - March	1/3	University of Kent
Maintain free of litter	Year round	As required	University of Kent
Prune foliage from paths to a distance of 1m and to a height of 2m	Year round	As required	University of Kent
Regularly inspect standards for safety, carrying out any work needed to maintain suitable safety, but still allow for decay and dead wood to provide habitats.	Spring, Autumn	2 per year and after major storms	University of Kent
Replace fallen trees with oak or ash, or manage self-seeded trees to produce mixed age woodland.	As required	As required	University of Kent
Streams and ponds			
Keep overhanging growth clear from stream to allow light to reach the stream and its edges			University of Kent
Keep saplings and overhanging branches clear from pond to allow light to reach water surface and water edge	March, midsummer and October	3	University of Kent
Maintain inlets and outlets clear of debris and in sound condition.	As required	As required	University of Kent
Maintain free of litter	As required	As required	University of Kent
Other			
Survey woodlands and review management approach	May - June	1	University of Kent

[a] 1/3 means once every three years or one third each year.

Table 3.2 Recommended annual management operations for Bluebell Wood

Maintenance Component and operation	Period of year	Frequency of operation	Section									
			1	2	3	4	5	6	7	8	9	10
Woodland												
Retain and protect standard trees (e.g. along former field boundaries).	Year round		✓	✓	✓	✓	✓	✓		✓	✓	✓
Re-instate hedgerow cutting of understorey shrubs at woodland boundaries.	Spring, Autumn	Once every two years		✓								
Re-introduce rotational coppicing on a 7-20 year cycle to maintain open glades and areas with a dense shrub layer. Coppicing should be undertaken above 50cm to minimise the potential for rabbit damage.	October - March	Cut each coupe 1 time every 7 to 20 years depending on growth			✓	✓					✓	
Re-coppice historic coppice stools where current leggy growth compromises long term viability	October - March	As required initially, and then once every 7 to 20 years depending on growth	✓	✓	✓	✓	✓	✓			✓	✓
Selective thinning within the hornbeam and Norway maple woodland to encourage the establishment of woodland ground flora.	October - March	As required					✓		✓			
Stream and ponds												
Reduce shading and scrub encroachment of stream channel to encourage the establishment of wetland plants and provide sunny areas for invertebrates and reptiles.	Spring, Autumn	Annual	✓		✓	✓	✓				✓	
Opening up the woodland around the GCN pond to create glades to encourage increased ground flora away	October - March	Initially, then once every 3 years depending on growth					✓			✓		

Maintenance Component and operation	Period of year	Frequency of operation	Section									
from the immediate vicinity of the pond. This could be implemented in parallel with an opportunity to increase controlled human access to the pond edge												
De-silting 50% of pond every 5 years to prevent siltation build up and maintain the diversity of aquatic plants.	October - March	Once every 5 years								✓		
Selective thinning of the woodland canopy along the southern edge of the northern pond to encourage the establishment of aquatic plants and provide habitat the ecological value of the pond, including for invertebrates, great crested newt and other herpetofauna.	October - March	Initially, then once every 3 years depending on growth	✓									
Amenity and interpretation												
Provision of educational interpretation signage (linked to footpath upgrades/provision).	As required	Once every 5 years	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Upgrading of footpaths and access features to minimise trampling and erosion of ground flora (linked to interpretation signage).	Initial	Regrade paths every 5 years, if necessary to retain a sound surface. Inspect and repair wooden viewing platforms when damaged or unsound.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Overall												
In all areas of work, use considerate working methods to avoid disturbance to GCN i.e. avoidance of ground disturbance.	Year round		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Survey woodland and ponds and review management approach	May -June	Annual										

Appendix 1: Figures

Figure 1: Woodland Management Plan

Figure 2: Bluebell Wood – Trees and Features of Interest

University of Kent Woodland Management Plan

Figure 1: Woodland Management Plan

10 Ancient woodland block

Ancient woodland

Water body

Campus trail (Indicative route provided by the University of Kent)

NVC Community

W8 Fraxinus excelsior – Acer campestre–Mercurialis perennis woodland

W8b Anemone nemorosa sub-community

W10 Quercus robur – Pteridium aquilinum – Rubus fruticosus woodland

W10a Typical sub-community

NVC Community

W10b Anemone nemorosa sub-community

Map Scale @ A3: 1:5,000

LUC

CB:VG EB:Goosen_V LUCLON 6523-01_001_Fig1_Wood_Mgmt_Plan 06/01/2016

Source: Natural England, University of Kent

University of Kent Woodland Management Plan

Figure 2: Woodland Management Plan - Bluebell Wood

10 Ancient woodland block (Refer to Bluebell Wood habitat description in Appendix 2)

10 Approx. location of individual trees and features of interest (See Schedule in Appendix 2 Tree Survey)

Ancient woodland

Water body

Campus trail (Indicative route provided by the University of Kent)

Informal paths in woodland

NVC Community

W10 Quercus robur – Pteridium aquilinum – Rubus fruticosus woodland

W10a Typical sub-community

Map Scale @ A3: 1:2,000

LUC

CB:VG EB:Goosen_V LUCLON 6523-01_003_Fig2_Wood_Mgmt_Plan_BluebellW 18/09/2015

Source: Natural England, LUC

Appendix 2: Woodland and tree survey for Bluebell Wood

University of Kent – 'Bluebell Wood' habitat descriptions

Section	NVC type	Description	Photos
1	W10a	Woodland dominated by silver birch which allows high light levels to reach the understorey and ground layer. Oak is locally abundant, particularly along the eastern edge of this section. Frequent trees include field maple, wild cherry and hornbeam, while holly occurs occasional. Much of the section is lacking a shrub understorey, possibly as a result of historic management to enhance the aesthetic appeal of the bluebells which form a dense carpet throughout much of this Section. Of particular note is the absence of hazel, a species typically associated with this type of woodland, and it's rarity in this section may be associated with historic management. The ground flora is indeed, invariably dominated by bluebell, often being co-dominant with lesser stitchwort. Bracken and bramble form locally dominant patches scattered throughout this section and their extent and abundance is likely to be increasing. Other characteristic species include abundant red campion, cleavers , wood avens, and cow parsley. Large areas in the west of this section include the presence of abundant grasses within the ground flora, interwoven amongst the bluebells and stitchwort, including cock's-foot, rough meadow grass and Yorkshire fog. These areas probably represent a gradual shift towards the W10b Holcus lanatus sub-community but are classified as W10a (typical sub-community) on account of the abundance of bluebell. A small ephemeral stream flows through the centre of this section.	  

		It begins as an overflow from the pond at the northern edge of this section and flows southward towards the great crested newt pond in the south of the site in sections 5 and 8. Dense scrub growth dominated by bramble and goat willow occurs along the stream and without management intervention is likely to reduce the ecological value of the watercourse, for example by reducing the diversity of plants due to encroachment and overshading. Bryophytes were relatively scarce with the exception of frequent Kindbergia praelongum and Mnium hornum. This was typical of the wider woodland as a whole and consistent with the typical description of the NVC typology for W10 woodlands.	
2	W10a	Section 2 has developed from an historic field boundary and is likely to be the result of an unmanaged hedgerow. The section is dominated by pedunculate oak including several mature specimens. Other mature trees include frequent wild cherry and sycamore. A dense shrub layer comprises abundant hawthorn, holly, field maple and cherry, locally abundant bramble and rare butcher's broom. Ground flora in Section 2 is dominated by bluebell and lesser stitchwort with abundant wood dock, cleavers, red campion and wood avens. Ivy and honeysuckle were abundant throughout. Periwinkle was locally abundant and this invasive mat forming non-native has potential to degrade the woodland by outcompeting native plants.	 

3	W10a	Section 4 is characterised by a closely planted and heavily shaded historic hornbeam plantation. Occasional mature oaks occur throughout in addition to occasional sycamore and cherry. The dense planting has resulted in the majority of trees being tall and slim. The understorey is relatively sparse, probably as a result of shading but species which persist with the shrub layer include occasional hawthorn, holly and yew. Despite the shading, a carpet of bluebells occurs throughout this section, albeit with less luxuriance and cover than is typical of this woodland as a whole.	 
4	W10a	Section 4 comprises a relatively varied structure as a result of selective thinning and is dominated by an open canopy of silver birch with occasional mature oak, ash and cherry. Shrub species include regenerating ash and sycamore whilst the ground flora was dominated by bluebell. A glade situated in the north of this section supported a luxuriant field layer of ruderal herbs and grasses including abundant ragwort, creeping thistle, Yorkshire fog, wood dock, broadleaved dock, teasel and honeysuckle. This species assemblage may contribute to locally increased habitat diversity and is likely to be of benefit to invertebrates and reptiles. Nevertheless, the species present are common and widespread and indicative of disturbed ground. Their presence is likely to be a result of forestry management works, and their presence may be at the long term expense of more	 

		typical woodland plant communities which cannot easily be re-created. As a result, future habitat management should give appropriate consideration to the longevity and fragility of the existing ground flora, and ensure disturbance of the soil layer is kept to a minimum.	
5	W10a	Section 5 is characterised by a dense hornbeam plantation. Almost no direct sunlight penetrates the ground layer and as a result this section supports almost no ground flora. The trees canopies are low, approximately 2m from the ground and may be the result of historic pollarding. This woodland is still likely to represent W10a which incorporates hornbeam plantations within its typology, nevertheless it is distinctly separate from surrounding areas of woodland in terms of its structure and character.	
6	N/A	Mature silver birch plantation over amenity grassland. The birch forms a closed canopy but light levels are sufficient to enable the maintenance of a regularly mown lawn.	

7	N/A	Norway maple plantation with a dense canopy allowing little sunlight to penetrate to ground level. The ground layer lacks any notable flora and is primarily comprised of bare soil and leaf litter with dominant bramble, nettle and wood avens occurring at the edges.	
8	W10a	Oak dominated canopy with abundant mature ash, frequent crack willow and occasional wild cherry. This section of woodland is characterised by a dense understorey comprising abundant elder, sycamore, hawthorn, dogwood and wild privet. Cherry laurel and dog rose are occasional within the shrub layer. Ground flora is relatively sparse and comprises locally dominant nettle interspersed with areas of bare earth. Occasional species include bramble, broad-leaved dock and wood dock. Bluebell is notably scarce in this section and present only in localised patches. The prevalence of nettle, dock and elder is likely to indicate historic disturbance and nutrient enrichment. Section 8 comprises a pond which supports a medium sized breeding population of great crested newt. The nature conservation interest of this pond is at risk from succession, smothering by aquatic plants and drying. The pond surrounds are dominated by extensive beds common nettle and aquatic marginal vegetation.	 

			 
9	W10a	Section 9 supports a relatively diverse species assemblage and structure, including areas with a dense shrub understorey and a canopy formed of a several species of varying age structure. Oak forms the dominant canopy species and includes both mature, semi-mature and shrub examples. Other species contributing to the canopy in Section 9 include occasional sweet chestnut, hornbeam, sycamore, and ash. The species listed are all frequent within the shrub layer with the addition of abundant hawthorn and occasional holly. An historic field boundary occurs along the eastern edge of Section 9, comprising mature hornbeam specimens. The growth form of these trees suggests historic management including coppicing and hedge-laying. An informal 'bushcraft' area occurs in the south of Section 9, where human activities such as den building has resulted in ground	 

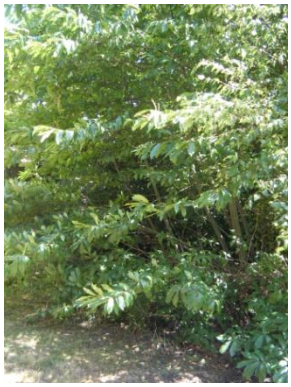
		erosion and compaction.	
10	W10a	Section 10, which forms the northern part of the wood, comprises numerous large oak trees with and a relatively open understorey. The majority of shrubs are isolated individuals comprising abundant hawthorn, and frequent holly, field maple, cherry and sycamore, and occasional hazel. Section 10 supports several areas where informal gatherings occur. This has resulted in localised erosion and trampling.	

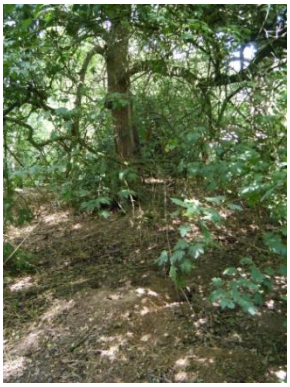
Schedule of tree and other features of interest

Note that these are selection of trees, and other features within the woodland which illustrate a variety of species and management procedures and other points of interest which can be used to provide information for people walking through the woods. It is not intended to be a thorough survey of all trees in the woodland.

			Single stem	Multistem					
Tree Ref no.	Species	Height (m)	Stem diameter dbh (mm)	Basal diameter (mm)	Branch spread (m) overall	Life stage	Physiological condition	Comments	Images
1	Carpinus betula	14		350	15.0	M	Good	Multi (4) stemmed. Good specimen, coppiced in past. Smaller coppiced specimen to east.	6236, 6237
2	Castanea sativa	6		100	8.0	M	Good	Coppiced	6239
3	Betula pendula	12		400	10.0	M	Good	Minor dead wood	6240, 6241
4	Quercus robur	10	1000		20.0	M	Fair	Some dead wood in crown	6243, 6244
5	Acer campestre	12	300		9.0	M	Fair	Some dead wood in crow, overshadowed and rabbit holes in underlying ground	6251, 6252, 6253 ,6254
6	Quercus robur	17	400		20.0	M	Good	Some dead wood in crown. In open glade with signs of bluebells underneath	6257, 6259, 6260
7	Carpinus betula	12		400	20.0	OM	Good	Old boundary coppice? Approx 9 stems	6261, 6262, 6263
8	Acer platanoides	12	600		17.0	M	Fair	On the edge of a group of similar trees. Some splits on trunk. All main branches spring from one place on the main trunk.	6291, 6292,6293, 6294
9	Betula pendula	12	400		15.0	M	Good	One of a group of similar trees in short grass	6289
10	Carpinus betula	8	500		15.0	M	Good	One of a group of similar trees with very open floor and low branching	6297, 6298
11	Ligustrum vulgare, crataegus monogyna							Overgrown hedge	6299, 6300
11	Fraxinus excelsior	12	400		10.0			Standards in overgrown hedge	6301
12	Salix alba	12	200		10.0	MA		On stream line	6305
13	Salix alba (2 of)	8	600		7.0	MA		Pollarded at 6m. Weeping. Base surrounded by nettles	6302, 6306, 6307, 6312
14	Pond								
15	Mix of acer campestre, fraxinus excelsior, prunus laurocerasus, fagus sylvatica, crataegus monogyna, quercus robur	approx 8	300			M and YM	Fair	Mix of trees on bank between pond and dam	6311, 6312
16	Fraxinus excelsior	17	700		12.0	M	Good	Leans slightly. Ivy in crown	6318, 6319
17	Acer campestre	12	600		10.0	M	Fair	Ivy in crown, leans. Possibly on old woodland boundary. Fraxinus and crataegus on same line	6320, 6321
18	Lonicera periclymenum								
19	Castania sativa, fagus sylvatica, carpinus betula							Coppiced	6326, 6327
20	Prunus avium	17		200	15.0	M	Good	Multistemmed, oozing sap	6325, 6328
21	Betula, fraxinus, castanea	10	200			MA	Good	Near a meander in stream bed	6329, 6330
22	Castanea sativa								
23	More open, more ground vegetatation								6332
24	Acer pseudoplatanus	17		200	15.0	M	Good	Multistemmed, included bark in join between stems	6333, 6334, 6335
25	Fraxinus excelsior	apprx 15		500		OM	Fair	On mound, multistemmed, some stem damage. *Vinca* and *ruscus aculeatus* (Butcher's broom) at base	6336, 6337
26	Prunus avium	12	300		12.0	MA	Fair	overshadowed	6339, 6340, 6341
27	Recent planting of rosa canina, cornus, taxus, crataegus, ilex, prunus								6339
28	Bluebells							Bluebells in ground layer	6342
29	Castanea sativa							Scattered bluebells in carpinus coppice	6346. 6347
30	Castanea sativa	12		200	12.0	MA	G	Coppiced in ast, perhaps 20 years ago	6346, 6347, 6348
31	Crataegus monogyna	8		100	5.0	M	Good	Multistemmed	6350, 6351
32	Ilex aquifolium	8	100		8.0	M	Good	Branches droop over the path. On bank	6352, 6353

Images of individual trees and other features of interest.

Tree or feature number/image number	
 1/6236	 1/6237
 2/6239	 3/6240
 3/6241	 4/6243

Tree or feature number/image number	
 4/6244	 5/6251
 5/6252	 5/6253
 6/6257	 6/6259
 6/6260	 7/6261

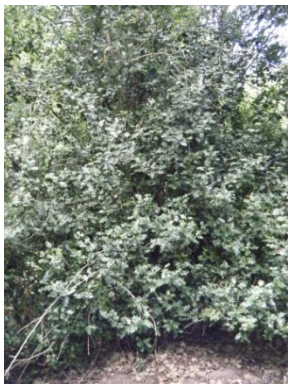
Tree or feature number/image number	
 7/6262	 7/6263
 8/6291	 8/6292
 8/6293	 8/6294
 9/6289	 10/6297

Tree or feature number/image number	
 10/6298	 11/6299
 11/6300	 11/6301
 12/6305	 13/6302
 13/6306	 13/6307

Tree or feature number/image number	
 14/6304	 15/6311
 15/6311	 16/6318
 16/6319	 17/6320
 17/6321	 19/6326

Tree or feature number/image number	
 19/6327	 20/6325
 20/6328	 21/6329
 21/6330	 23/6332
 24/6333	 24/6334

Tree or feature number/image number	
 24/6335	 25/6336
 25/6337	 26/6340
 26/6341	 27/6339
 28/6342	 29/6346

Tree or feature number/image number	
 30/6347	 30/6348
 31/6350	 31/6351
 32/6352	 32/6353

Appendix 3: Woodland Monitoring Form

Date	Surveyor	Weather conditions
Date of previous monitoring visit	**Date of next monitoring visit**	

Site description

Management operations due to be undertaken since last monitoring visit

Have the management operations listed above been undertaken	Yes		No	

Phase 1 Habitat Map

Please show quadrate locations

Habitat descriptions

Potential to support protected species

Comments and recommendations

Quadrate Data			
Quadrate 1			
Species	**Cover**	**Species**	**Cover**
Quadrate 2			
Species	**Cover**	**Species**	**Cover**
Quadrate 3[5]			
Species	**Cover**	**Species**	**Cover**

[5] Add further quadrate data as required.

Fixed point photographs