Woodland Management Plan for Lancaster University 2021-2031

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Lancaster University

Westwood Landscape

Document Control	**FINAL REPORT**
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Signed:	

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Section One **Introduction & Objectives**

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Introduction

The Lancaster University Woodland Management Plan (LUWMP) comprises a description, analysis and framework for future management of the woodland resource within the University land holding Masterplan area and sets out how this will integrate with the benefits generated by the proposals. It will protect, maintain, extend and enhance the visual interest and scenic value of the woodlands, as part of the landscape setting of the University and its grounds whilst providing amenity, recreational, screening, noise reduction, wildlife habitat, scientific research and timber production functionality.

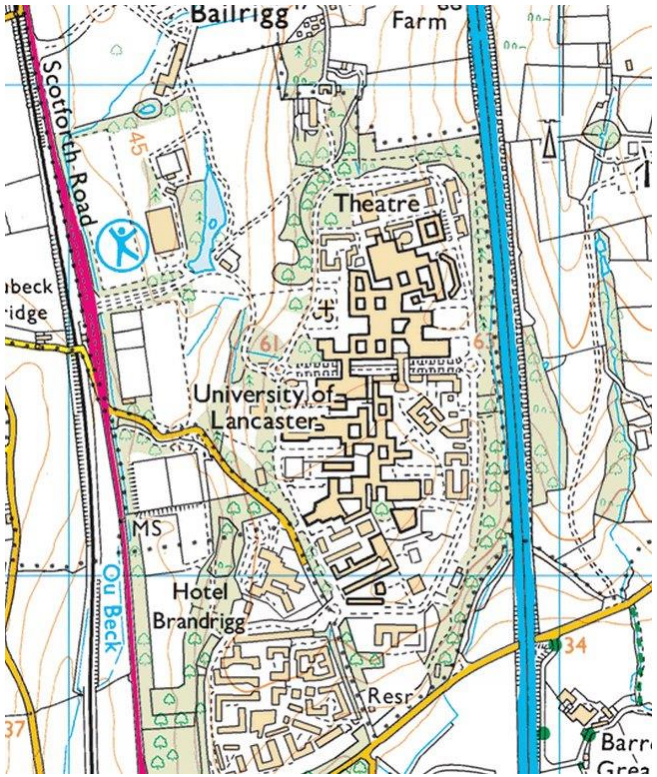
Purpose of the Woodland Management Plan

The overall purpose of the Woodland Management Plan is to provide a strategic level framework for the management of the existing and newly planted woodlands within the estate to ensure that they will integrate with development in the short, medium and long term covering 2021 - 2031.

Document Overview

The high-quality landscape setting of Lancaster University is strongly influenced by woodland and this resource must be well managed to protect the landscape character and support the future sustainable development of the university. This report aims to provide a concise plan with planned work phases. The Woodland Management Plan is an Appendix to the Masterplan.

Location: SD 48528 57448



Objectives

Specifically, the key objectives of the Woodland Management Plan are:

1. To assess the current condition of the woodland and identify the work required to improve its health and vitality for the future.

2. To inform the university personnel of woodland requirements to guide estate management decisions as the campus develops.

3. To enhance the biodiversity and ecological richness of the woodland through species, age class, structure and habitat diversity to ensure long – term sustainability of this landscape resource.

4. To sustain and enhance the recreational use of the woodland through improved access and facilities and to ensure a safe environment and to maximise health and wellbeing benefits for all visitors.

5. To incorporate landscape design opportunities and integrate with the wider masterplan proposals.

6. To improve the screening, noise barrier and shelterbelt functions of the woodland where appropriate.

7. To integrate with and support the other environmental initiatives including The Lancaster University Ecology Plan, Strategic Plan 2020, Facilities Sustainability Strategy and Carbon Management Plan.

8. To support the use of the woodland as a teaching and research resource.

9. To comply with UK Forest Standard (UKFS) and United Kingdom Woodland Assurance Standard (UKWAS) standards and other Government guidelines on woodland management and design standards.

10. To consider the potential economic gain through sustainable timber harvesting.

11. To assess the impact and threat of recent bio-security issues including phytophthora and Ash Die-back and invasive weeds such as Japanese Knotweed and Himalayan Balsam.

12. To build upon the objectives in the 2011 Woodland Management Plan (Author Roger Cartwright).

13. To achieve Forest Management Certification Small and Low Intensity Managed Forests (SLIMF) from Forest Stewardship Council (FSC) UK.

14. To support the University's drive to be carbon neutral by 2035 through efficient woodland Management and supplementary planting.

15. To use woodland management as a tool to provide biodiversity net gain when the landscape is impacted by new development, and to ensure that this is embedded within any new design criteria.

Scope

The scope of this Woodland Management Plan is the woodland cover within the Masterplan area, with “woodland” referring to groups of trees of 0.01 hectares or more in area with a woodland canopy that occupies at least 20% of the woodland area.

There are many additional individual and small groups of trees within the Masterplan Area which contribute to the overall character of the landscape, including several areas of the golf course. These complement the larger scale woodland cover (as defined above) but are less than 0.01ha in area and therefore not included within the scope of this plan and accompanying baseline descriptions.

Background & History

The current woodland management plan covers an area 41.15 hectares which equates to an area that covers 77 football pitches. The green space outside the main campus is more than 108 Ha. The main campus area is bound to the west by the A6 and to the east by the M6 motorway. The M6 splits the adjoining woodland and estate to the east. Maps of the Woodlands are shown on the next page. The history has been comprehensively covered in the 2020 woodland management plan (on page 7 in section 4.1).

Areas & Compartmentalisation

The total area of woodland cover within the Masterplan area, and pertaining to the LUWMP, is 41.15ha made up of 21 individual woodland areas comprising plantations of varying age, size and composition - see Map 1 overleaf.

These have been mapped as individual Compartments (see Map 2) for future woodland management purposes. Compartment boundaries generally follow “permanent” features, for example, tracks, fence lines, historic woodland footprints and ownership boundaries. We have also included the references provided in the Landscape Typology Plan shown in brackets eg Cpt 1 (6a).

Elevation & Topography

The majority of the University area lies between 30m and 70m above mean sea level. The high point of the area is ~90m where the newly constructed wind turbine is installed. The land is gently

undulating from the A6 in the west rising moderately to the M6 to the east.

Geology & Soils

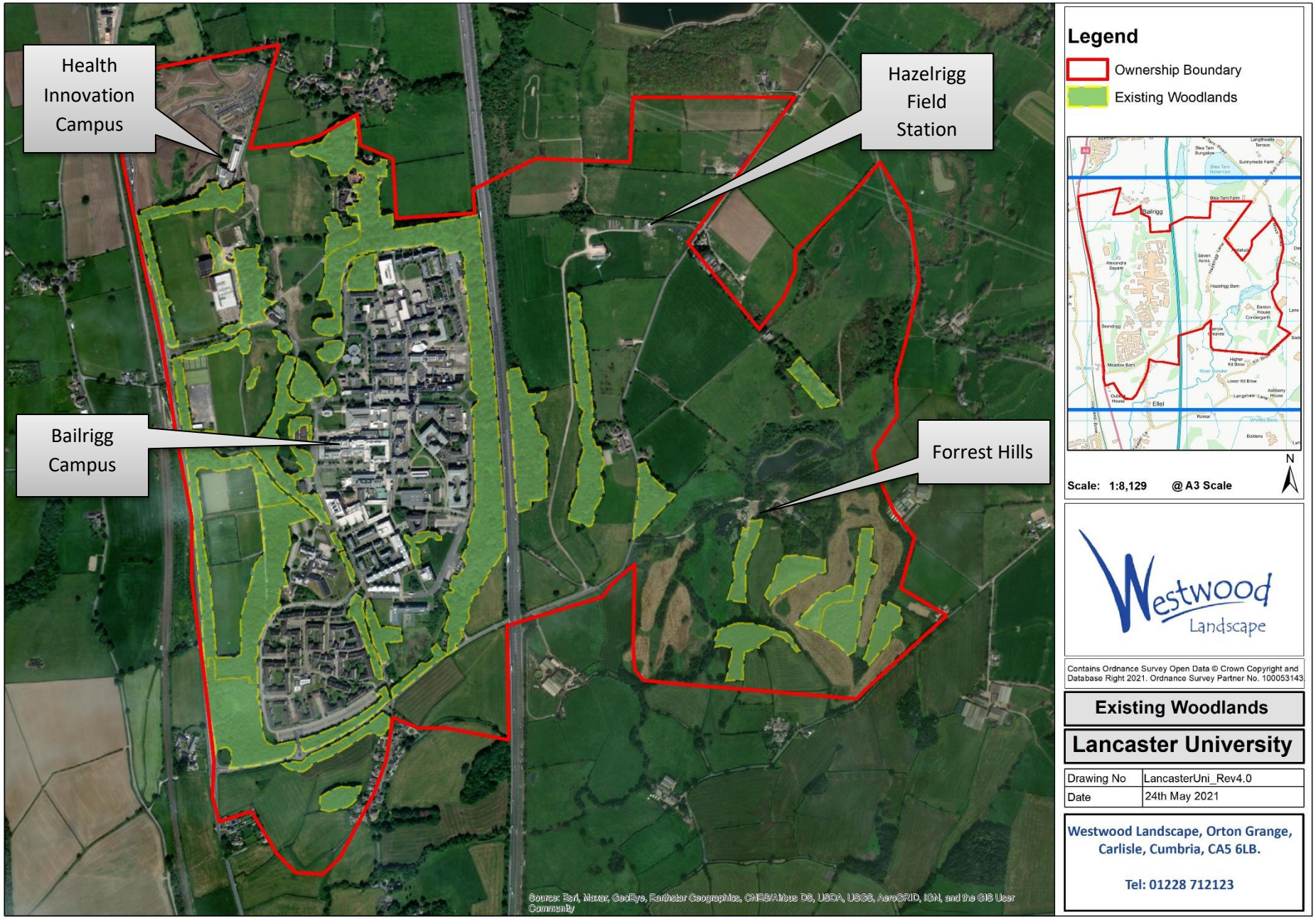
Descriptions of site features such as geology / soils, geomorphology, hydrology, lands use and key vegetation types / areas and principal habitat types are covered within the Biodiversity Action Plan 2008 by Ian White Associates, Cameron S Crook & Associates.

Windblow Risk

In the woodland block located to the north of Bailrigg House a number of trees have blown over and it is likely that these have succumbed to winter gales as they are on the higher level land.

Woodland Description & Key Features

Species composition varies between individual woodland blocks, but the woodlands are characterised predominantly by native species, planted mainly as broadleaved mixtures with an occasional conifer block.


Health Innovation Campus
Hazelrigg Field Station
Bailrigg Campus
Forrest Hills
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Legend
Ownership Boundary
Existing Woodlands
Scale: 1:8,129 @ A3 Scale
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Westwood Landscape
Contains Ordnance Survey Open Data © Crown Copyright and Database Right 2021. Ordnance Survey Partner No. 100053143
Existing Woodlands
Lancaster University
Drawing No LancasterUni_Rev4.0
Date 24th May 2021
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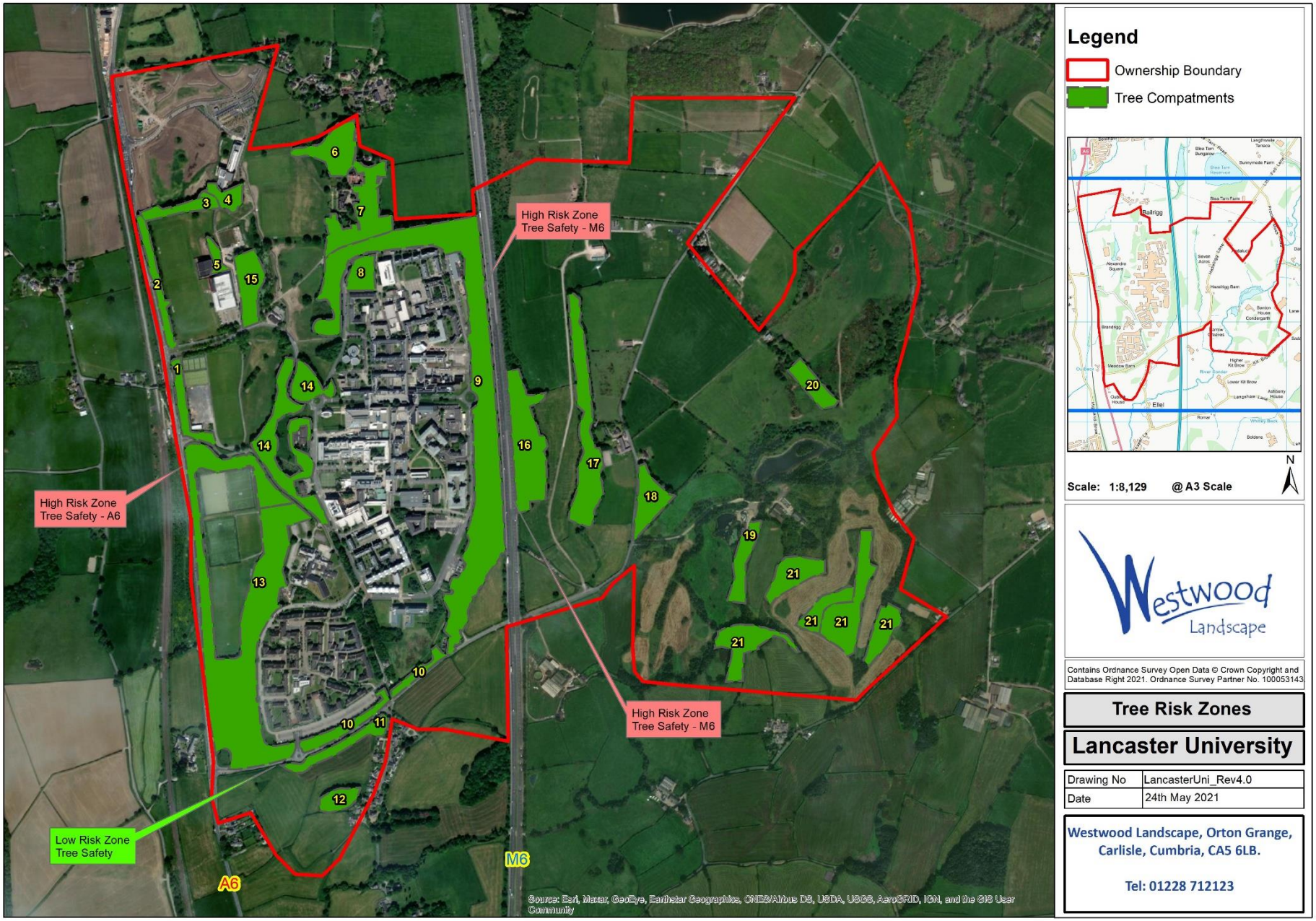
High Risk Zone
Tree Safety - M6
High Risk Zone
Tree Safety - A6
High Risk Zone
Tree Safety - M6
Low Risk Zone
Tree Safety
A6
M6
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Tree Compatments
Scale: 1:8,129 @ A3 Scale
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Tree Risk Zones
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Section Two **Review of Existing Strategic Plans**

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This section outlines our review of existing information. The information is collated from research, site visits and details our findings and observations.

Site Survey

Bruce Walker and James England undertook a thorough site inspection in May 2021 and following these visits a review of the existing documentation on the site was undertaken.

Existing Information

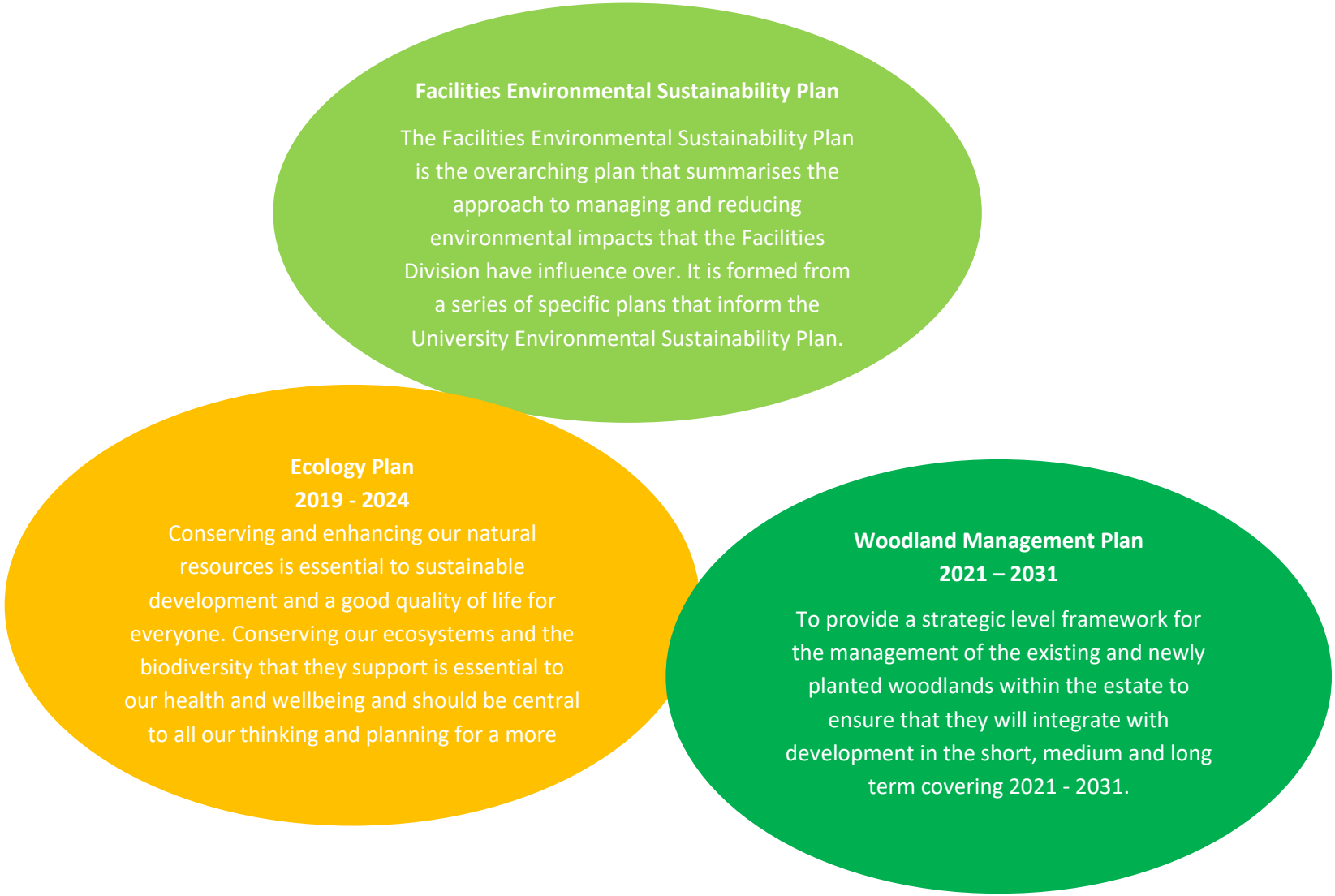
- Landscape Master Plan 2005
- Biodiversity Action Plan 2008
- Woodland Management Plan 2011
- University Master Plan 2017-2027
- Ecology Plan 2019 - 2024
- Forest of Bowland Management Plan 2019-2024
- Tree and Woodland Safety. There is a tree and woodland safety inspection regime in place. Inspections are undertaken both by a third party consultancy practice and by in-house staff. Tree surveys are undertaken using a risk zone schedule which is based on location and impact of failure. Facilities Management Arrangements and Procedures Tree & Woodland Safety Management (FMAP) outlines the full procedure that are in place.

Current Management Plan

We consider that a concise summary and improved presentation is required to assist the University in managing the woodlands. To summarise the WMP is:

This document aims to provide this concise summary to assist the University Estate Management team to interpret the requirements and manage the woodland contract work.

Document Framework



Section Three **Woodland Survey Results**

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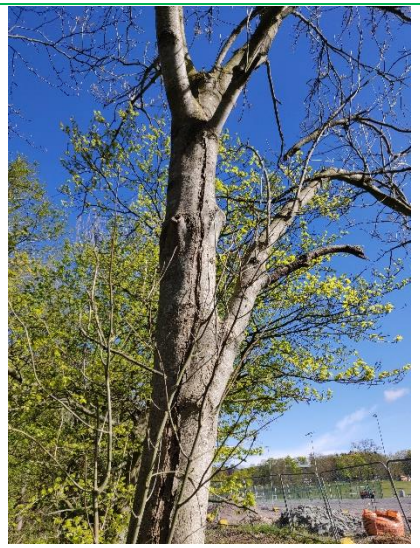
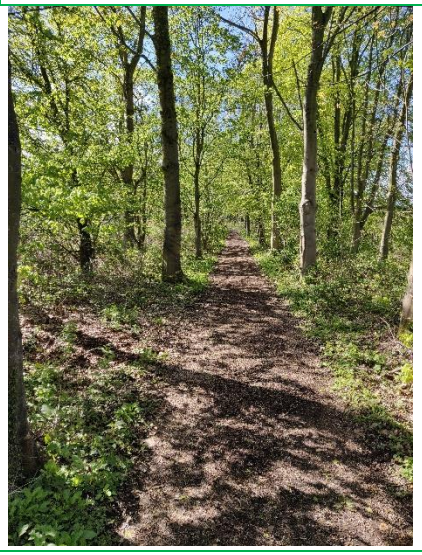
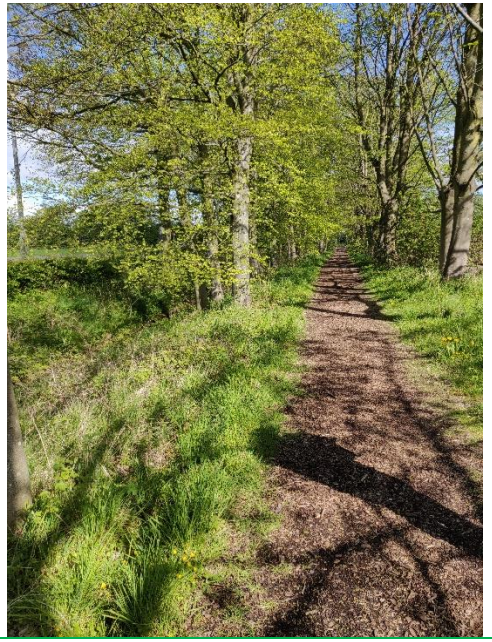
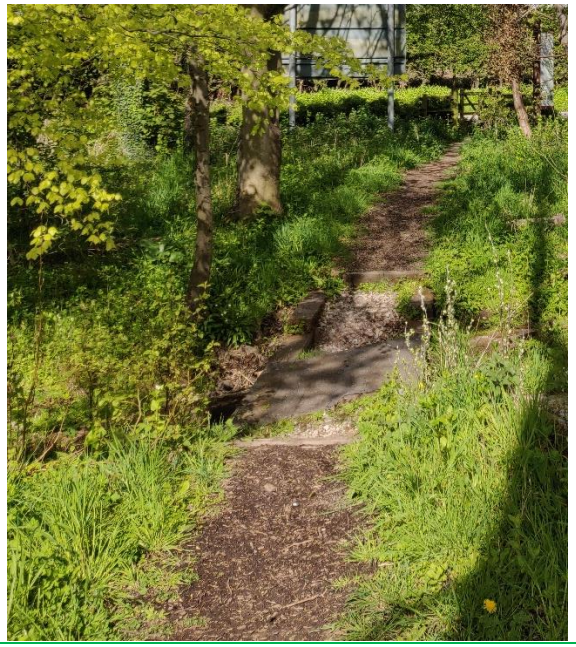
CPT	SPECIES	DESCRIPTION	RECEMMENDED WORK
1 (6d)	Beech 50% Sycamore 20%, Crab apple, Norway Spruce, Ash, Alder, Field Maple, Silver Birch, Willow, Field Maple **Approx. trees: 360/Ha**	Compartment is a long linear strip alongside the A6, just north of the main entrance and has a well-used footpath running through it. There are currently some minor construction works being completed but none that impact on trees. Compartment has a dense bramble understorey in places. Some Ash trees noted by the road. Ash dieback noted on several trees. Recent pruning works related to the developments could be improved with some better pruning cuts that are flush with the branch collar ridge. Sycamore if left can become invasive.	• **Annual roadside & footpath tree survey (High tree risk zone)** • **Monitor ash trees for dieback** • **Prune snapped branches along both sides and above the footpath** • **Clear brambles to develop ground flora**



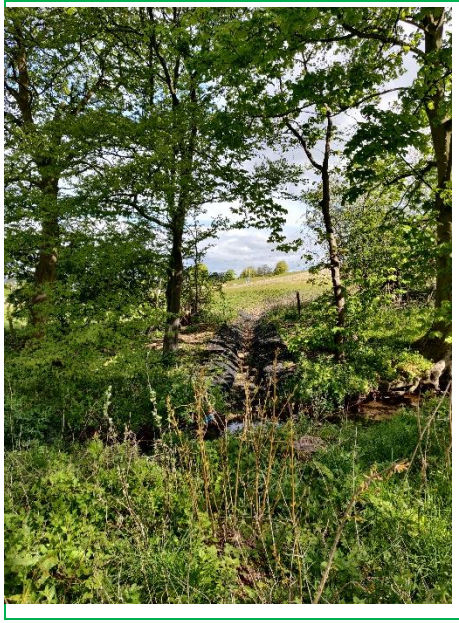


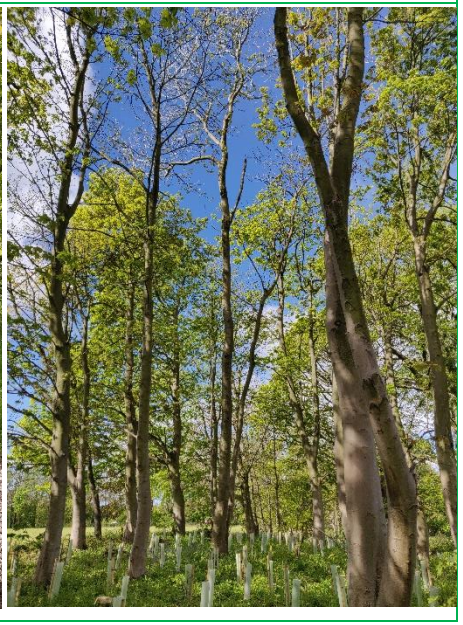
CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
2 (5e)	Beech, Sycamore, Alder, Norway Spruce, Elder, Scots Pine, Grey Poplar **Approx. trees: 560/Ha**	Roadside compartment with well used footpath through the middle. Dead Alder by the gate to fell. Some trees paint spotted presumably for felling which shows good active management. Some trees are starting to get covered in ivy and removal would aid future tree safety surveys. Some of the Sycamores were noted to have weak stem unions. Roadside ash trees noted (middle photograph) and are recommended for phased removal. To the northern end of the compartment is a bridge over the stream and the bridge deck should be repaired or replaced to prevent slips and trips as its currently problematic.	• **Annual roadside & footpath tree survey (High tree risk zone)** • **Fell dead alder and other trees that are dead within cpt.** • **Phased removal of roadside ash nearest the A6.** • **Remove ivy with hand tools.** • **Replace bridge see compartment map for the location (photo below).**



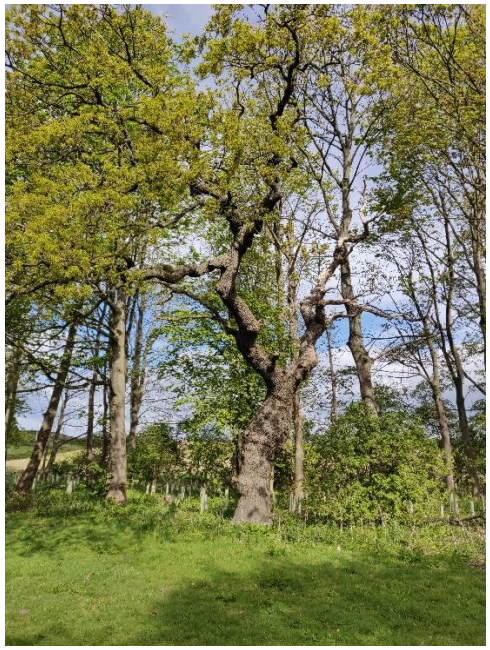


CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
3 (5e)	Sycamore 70%, Ash, Japanese larch, Beech, Hazel, Oak, Holly, Willow, Sea buckthorn **Approx. trees: 560/Ha**	Generally middle-aged trees. Several dead branches over the footpath noted on larger trees. Cpt has a recently constructed swale area that appears to have cut through the tree root protection areas which could cause future tree decline. Larch trees were noted and sadly due to a widespread disease these will likely die in the coming years and a phased removal should be adopted. Areas of new planting in tree shelter appears to be growing well. A number of Ash trees have been either been coppiced or are self-set and they have been protected with tree shelters. Whilst this is a good idea, given the threat posed by ash dieback it would be better to replant a different species.	• **Prune dead branches over path and fell dead ash trees. Care needed as they are within the newly planted areas.** • **Annual footpath tree safety survey (Medium Tree Risk Zone).** • **Monitor trees around the swale development for decline.** • **Phased removal of the larch trees.** • **Use native species for new woodland planting areas.** • **Retain standing deadwood away from path area.**



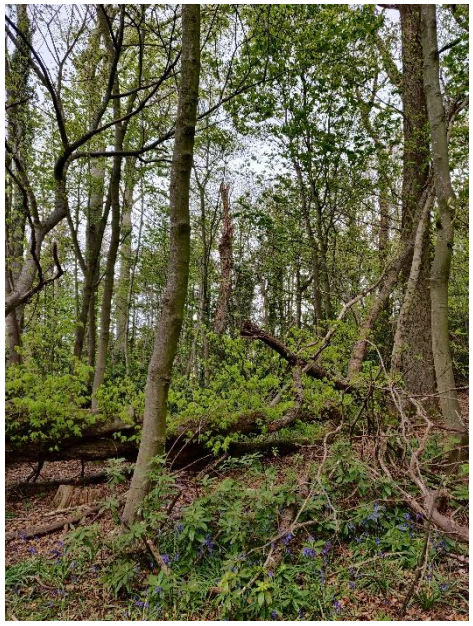


CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
4 (5e)	Beech, Sycamore, Oak, Ash **Approx. trees: 600/Ha**	Area of mature trees mainly Beech with some new planting. Good to see over -mature Oak trees being retained. Recent tree work observed near the Health and innovation. The new planting to the north of the building hasn't allowed the space for the trees to mature and are planted very close together, with a few planted under the canopies of existing trees. Trees would have been expensive and smaller trees that were spread out would have been more appealing.	• **Annual woodland survey nearest the Health and Innovation buildings (High tree risk zone)** • **A number of marked trees presumably to fell, prune dead branches over footpath.** • **Consider reviewing any new planting proposals.**

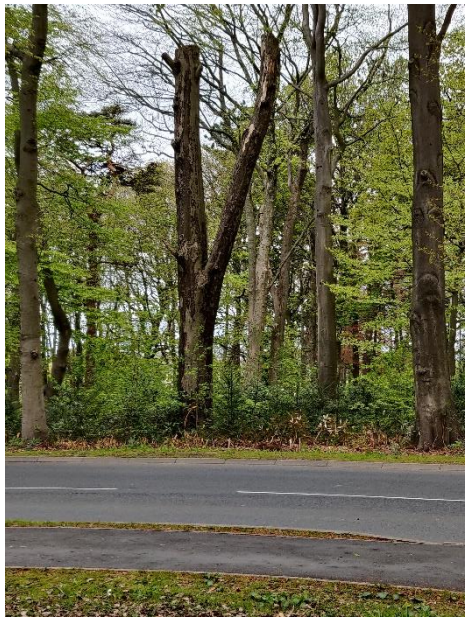


CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
5 (no ref)	Norway Spruce **Approx. trees: 700/Ha**	Poor formed plantation that are exposed due to margin trees being felled. Some dead trees within the block. Consider clear felling due to potential crop instability and replanting. Could be thinned by 20%. Some new planting in front and behind the block has been planted which is very useful for the future and it is establishing well.	• **Clearfell Norway spruce trees in two phases.** • **Plant some further trees to wrap around the plantation and join new planting areas together.** • **Trees are close to the new buildings and will need an annual survey (Medium tree risk zone).**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
6 (5f)	Beech, Sycamore, Oak, Horse Chestnut, Ash, Lime, Elder, Willow, Shallon (evergreen shrub) **Approx. trees: 1200/Ha**	Some squirrel damage noted on Sycamore within younger plantation to the west. Mainly mature trees on higher ground. Several fallen/leaning trees, area is susceptible to windblow. Dense Rhododendron understorey in places. Public access to the cpt appears to be fairly low with the majority of pedestrians using the main path network. Dead Yew tree noted. Trees left for standing deadwood are probably being left too high and could be reduced. There was a couple of mature Beech trees with *Ganoderma spp.* noted which causes decay however these were away from the paths but will need to be assessed further in terms of tree safety. A waterfall and pond were noted near Bailrigg House and this would be an interesting project to reinstate. The evergreen shrub Shallon was noted here.	• **Carry out walk over tree survey especially mature beech trees.** • **Make safe leaning / fallen / dead trees.** • **Remove rhododendron with periodical clearances and replant in small areas.** • **Improve age classes with new planting in small areas (coupes).** • **Re-stablish pond / waterfall feature.** • **Thin 10% in young plantation.**

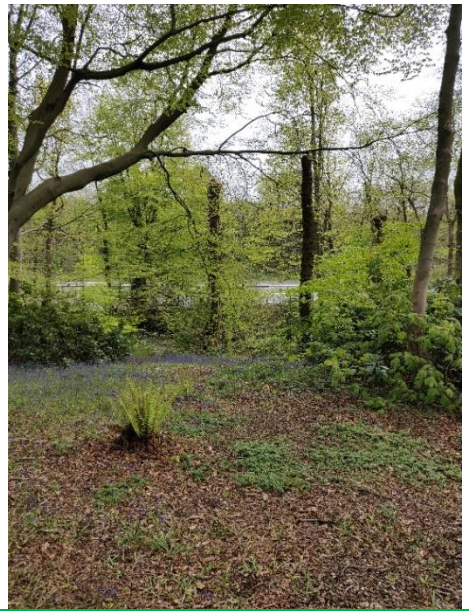


CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
7 (no ref)	Beech, Oak, Sycamore, Mountain Ash. **Approx. trees: 1000/Ha**	Area of mature trees of similar age class with a few occasional younger trees. Dense brambles and Rhododendron are impacting on some of the <10 year old tree plantings and would benefit from clearing around the trees. Standing deadwood whilst providing a useful habitat should be concentrated away from the roads and public paths for tree safety as the failures will be foreseeable in the future.	• **Clear dense brambles / Rhododendron and replant areas.** • **Remove standing deadwood near roads and paths.**



CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
8 (7a)	Beech, Oak, Sycamore **Approx. trees: 250/Ha**	Mature dense woodland with occasional clearings, area has the pods in. Poor age class diversity and little natural regeneration. Minimal shrub layer herb layer other than Rhododendron. Provides an opportunity to plant some new trees to break up the age classes.	• **Clear Rhododendron in phases.** • **Remove leaning trees.**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
9 (4a, 4b, 5a)	Beech, Sycamore Ash, Silver Birch occasional Norway spruce & Corsican Pine **Approx. trees: 600/Ha**	Mature dense woodland with occasional clearings. Poor age class diversity and little natural regeneration. Minimal shrub layer herb layer limited to margins. Cpt borders the M6 which has some large mature trees next to the motorway fence. The area bordering the motorway needs an annual survey and also surveys following high winds due to the close proximity of the M6. To mitigate the risks it would be advised to have a phased removal of the larger trees that are in falling distance of the motorway fence. Dense Rhododendron in places would benefit from some clearance but retaining some areas as it provides screening and noise attenuation from the motorway. Sycamore dominates several areas and some removal would be beneficial. Dead Norway Spruce noted and several leaning trees. Reduce height of standing deadwood. Would benefit from a selective thinning.	• **Annual roadside & footpath tree survey (High tree risk zone)** • **Phased removal of larger trees in falling distance on the motorway fence.** • **Remove dead and leaning trees.** • **Clear areas of rhododendron to maintain control.** • **Thin 10% to create glades for replanting target sycamore.**



CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
10 (2b, 4c)	Willow, Alder, Elm, Ash, Silver Birch **Approx. trees: 800/Ha**	Middle aged dense wet woodland with occasional attractive clearings. Poor age class diversity and little natural regeneration. Minimal shrub layer herb layer limited to margins' Block to the west where it borders Hazelrigg Lane has a pond within it and given the ground conditions is probably best left as minimum intervention area. Both blocks provide good screening and shelter.	• **Thin Alder and Willow plantation by 10% in block to the east. Target any ash for removal.** • **Annual roadside (Hazelrigg Lane), car park & footpath tree survey (Low tree risk zone)**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
11 (3c)	Ash, Oak, Willow, Alder, Field Maple **Approx. trees: 900/Ha**	Roadside shelterbelt plantation, providing a valuable screen. Poor age class diversity and little natural regeneration. Limited shrub layer and no herb layer.	• **Annual roadside (Hazelrigg Lane), car park & footpath tree survey (Low tree risk zone)** • **No other work required**

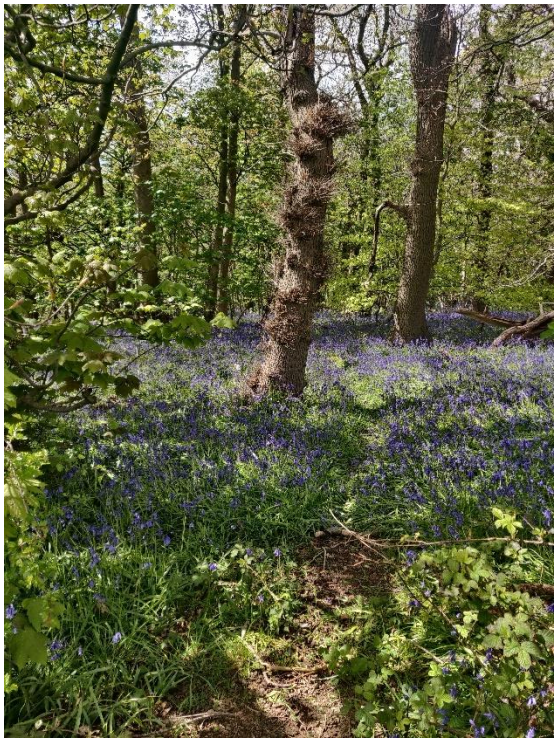
CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
12 (no ref)	Ash, Sycamore, Cherry **Approx. trees: 600/Ha**	Small mature woodland plantation just off Chapel Lane with occasional clearings. Poor age class diversity and little natural regeneration. Minimal shrub layer with herb layer limited to margins.	• **No work required.**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
13 (1f, 2a, 2b 3a, 3f)	Ash, Oak, Sycamore, Sweet Chestnut, Alder, Cherry, Horse Chestnut, Hawthorn, Blackthorn, some occasional Elm. **Approx. trees: 800/Ha**	Given high proportion of Ash a phased removal should be adopted focussing on those that are dead or dying. Within the area is a pen for chickens and bee hives with fencing that should be inspected periodically. There are a number of attractive, large Oak trees within this compartment that would benefit from some thinning around them to give more space to develop. Along the A6 there are several dead trees and collapsed ones that would benefit from removal and clearing up.	• **Annual roadside & footpath tree survey (High tree risk zone)** • **Monitor for Ash dieback, phased removal.** • **Thin around large Oak trees.**

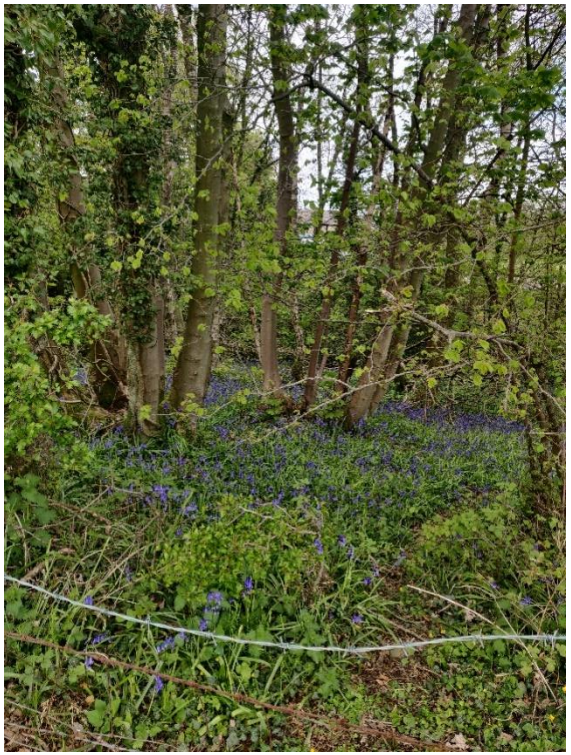
CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
14 (5c, 6a)	Ash, Cherry, Alder, Beech, Sycamore, Hawthorn, Blackthorn **Approx. trees: 1000/Ha**	Plantation with areas of open ground, central tarmac path running through it that is well used. Some new planting or self-set trees growing on slight banking. Some plant failures could be replaced. Given high percentage of Ash this should be monitored in the growing season to consider the impacts and if need be, phase the removal of ash.	• **Monitor for Ash dieback, phased removal.** • **Replace plant failures.** • **No other work required.**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
15 (5d)	Sycamore, Beech Oak, Larch, Scots Pine, Spruce **Approx. trees: 600/Ha**	Adjacent to lake carter. Some trees within the compartment have minor windblow already, so thinning will need to be light and gradual.	• **Selective thin 10%** • **Gradually remove the 1950's conifers and favour the broadleaves.**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
16 (WB block B)	Oak 70%, Ash, Sycamore, Birch, Beech, Cherry, Hawthorn, Holly **Approx. trees: 600/Ha**	Mainly mature trees and Cpt borders the M6 which has some large mature trees next to the motorway fence. Vast understorey of bluebells and a good variety of tree species. Some fallen trees and deadwood but given the very low levels of access it can be tolerated within the wood just no by the side of the M6. The area bordering the motorway needs an annual survey and surveys following high winds due to the close proximity of the M6. To mitigate the risks it would be advised to have a phased removal of the larger trees that are in falling distance of the motorway fence.	• **Annual roadside & footpath tree survey (High tree risk zone)** • **Phased removal of larger trees in falling distance on the motorway fence.** • **Replant tree removal areas with native shrubs.** • **Remove dead and leaning trees.**



CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
17 (WB block A)	Oak, Ash, Hazel, Sycamore, Birch, Beech, Cherry, Mountain Ash, Hawthorn, Holly **Approx. trees: 800/Ha**	Some areas have been coppiced particularly the Sycamore. All growing well and all that is probably required is for a walkover periodically of the boundary for any fallen or dead trees. Some split trees within the woodland noted but public access is very low so unlikely to cause a great deal of concerns. Small stream running through the woodland. Low tree risk area given that public access is unlikely other than properties on Hazelrigg Lane that border the compartment.	• **No work required.**



CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
18 (no ref)	Sycamore, Oak, Silver Birch, Ash, Cherry, Whitebeam, Holly **Approx. trees: 400/Ha**	Triangle shape wood bordered by a public road. Extensive bluebells present, large proportion of Sycamore and ash which could be selectively felled to favour the other species.	• **Annual roadside (Hazelrigg Lane), car park & footpath tree survey (Low tree risk zone)** • **Selective 5% thinning of Sycamore and Ash.**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
19 (no ref)	Silver Birch, Field Maple, Alder, Ash, Oak, Cherry, Norway Spruce **Approx. trees: 400/Ha**	**Forrest Hill Area.** Plantation of trees growing in front of the main golf course building.	• **No work required in 10 year period.**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
20 (no ref)	Ash, Oak, Cherry, Hazel, Black Pine **Approx. trees: 200/Ha**	**Forrest Hill Area.** Some fallen trees on the boundary and within the wood, no fence noted so cattle have grazed within the woodland hampering regeneration. Area to the east of the compartment has recently been planted between the gorse on the hill in tree shelters. Providing the Gorse is controlled and tree losses are replaced they should establish to extend the woodland area.	• **Reinstate fencing.**

CPT	SPECIES	DESCRIPTION	RECOMMENDED WORK
21 (no ref)	Scots Pine, Ash, Oak, Cherry, Field Maple, Lawson Cypress, Mountain Ash, Holly **Approx. trees: 550/Ha**	**Forrest Hill Area.** A good mix of age classes across the golf course. We are not sure if there is a separate plan for these areas but other than the odd dead tree all growing well. Pine trees could be further thinned to encourage the development of the crowns. Himalayan Balsam noted in several areas.	• **Periodic walk over for tree safety at least annual.** • **Light thinning on Scots Pine** • **Control Himalayan Balsam.**

Section Four **10 Year Management Plan**

Section Four **10 Year Management Plan**

The proposed works are set out for a period of 10 years. This is shown diagrammatically on plan as 4 phases for work up to 2022, 2025, 2028 and 2030 respectively.

In addition to the specific tasks listed there will be generic arboriculture tasks in all areas including thinning, pruning, replacement planting etc. The extent of this work will be identified in each annual survey.

Cpt	Work Required	Work programme by Year
1	Roadside & footpath tree survey, prune snapped off branches along path, clear brambles to develop ground flora. Shrub layer planting.	Clearance 2021 Planting 2022
2	Annual roadside tree survey, fell dead trees within Cpt, phased removal of roadside ash trees, remove ivy off trees with hand tools, replace bridge. Shrub layer planting.	Clearance 2022 Planting 2022
3	Footpath tree survey, prune dead branches over path, fell dead Ash trees, clear brambles to develop ground flora. Monitor trees around the swale development for decline. Phased removal of the Larch trees. Use native species for new woodland planting areas. Retain standing deadwood away from path area. Buffer planting.	Clearance 2025 Planting 2025
4	Annual woodland survey nearest the Health and Innovation buildings. Fell marked trees, prune dead branches over footpath.	2021
5	Clearfell Norway Spruce trees in two phases. Plant some further trees to wrap around the plantation and join new planting areas together. Survey trees around new buildings.	2025 & 2030
6	Carry out walk over tree survey especially mature Beech trees.	Phase removal of Rhododendron 2022, 2024, 2026

	Make safe leaning / fallen / dead trees, remove Rhododendron with periodical clearances and replant in small areas. Improve age classes with new planting in small areas (coupes), re-stablish pond / waterfall feature. Thin 10% in young plantation. Understorey and buffer planting.	Pond Waterfall restoration 2025 Tinning 2025 Replant coupes: 2022, 2024, 2026 Additional planting 2025
Cpt	**Work Required**	
7	Clear dense brambles / Rhododendron and replant areas. Remove standing deadwood near roads and paths. Additional planting.	Bramble Clearance 2025 Rhododendron clearance 2022 Thinning 2025 Planting 2025
8	Remove dangerous beech tree tag 0069 as high priority. Clear Rhododendron in phases. Shrub layer planting.	Rhododendron clearance in 3 phases: 2022, 2025, 2028 Planting 2025
9	Annual roadside & footpath tree survey (High tree risk zone). Phased removal of larger trees in falling distance on the motorway fence. Remove dead and leaning trees. Clear areas of Rhododendron to maintain control. Thin 10% to create glades for replanting target sycamore.	Rhododendron clearance in 3 phases: 2022, 2025, 2028 Thinning Sycamore: 2025 Replant: 2025
10	Thin Alder and Willow plantation by 10% in block to the east. Target any Ash for removal. Annual roadside (Hazelrigg Lane), car park & footpath tree survey (Low tree risk zone). Hedge infill planting.	Thinning: 2028 Planting hedge 2028
11	Annual roadside (Hazelrigg Lane), car park & footpath tree survey). Thinning.	Thinning: 2028
12	No work required in 10 year period.	
13	Annual roadside & footpath tree survey Monitor for ash dieback, phased removal. Thin around large Oak trees. Hedge infill planting. Understorey planting	Selective thinning: 2028 Hedge planting 2025 Understorey planting 2028

14	Monitor for Ash dieback, phased removal. Replace plant failures.	Replant trees 2022
15	Selective thin 10%, gradually remove the 1950's conifers and favour the broadleaves. Add edge mix planting.	Thinning 2025 Planting 2025
16	Annual roadside & footpath tree survey (High tree risk zone), phased removal of larger trees in falling distance on the motorway fence. Replant tree removal areas with native shrubs. Remove dead and leaning trees. Buffer planting.	Thinning 2025 Planting 2025
Cpt	**Work Required**	
17	No work required in 10 year period. Hedge and buffer planting.	Planting 2025
18	Annual roadside (Hazelrigg Lane), car park & footpath tree survey (Low tree risk zone). Selective 5% thinning of Sycamore and Ash. Understorey planting.	Selective thinning 2028 Planting 2028.
19	No work required in 10 year period.	
20	Reinstate fencing.	2021
21	Periodic walk over for tree safety at least annual. Light thinning on Scots Pine. Control Himalayan Balsam.	Light thinning 2025
	General	
	Produce policy on Tree Risk Management, identify tree risk zones and survey regime.	
	Monitor Ash trees for dieback.	
	Consider reviewing any new planting proposals and continue maintenance of existing new planting areas.	

	Future developments need to consider tree safety impacts of tree retention and more robust tree protection measures.	
	Control Japanese Knotweed if observed.	
	Produce Himalayan Balsam management plan.	

Section Five **General Recommendations**

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Developments

Trees are important assets and they need to be adequately protected during developments as set out in ***BS5837 Trees in Relation to Construction*** and roots should not be cut.

Existing Trees and New Developments

Trees need to be given opportunities for future growth and any development needs to consider the impacts but also the future impacts. The photograph below shows mature trees very close to the new building and they present a risk that could have been avoided by moving the building further away.

Plant Health & Tree Protection

As with any woodland, the areas face inherent risks from endemic levels of pests and diseases and occasionally these may become more prevalent due to a combination of site, climatic or other factors.

Key threats to plant health include attack by Phytophthora ramorum on Larch, Chalara dieback of Ash. **Ash dieback** - Implications are wide spread across the UK and dead trees become extremally brittle making them very dangerous in high target areas such as near roads. Further details on Ash dieback can be found in the Appendix.

However, as the composition of both existing woodlands and newly planted ones are of a well-mixed nature with no strong domination of single species, this in itself will provide resilience to, and mitigation of, plant health risk and climate change.

Monitoring of general tree health as part of the ongoing proactive management approach advocated by this Plan will enable any particular tree health issues to be addressed timeously.

Deer, livestock and other mammals may constitute a threat to tree health mainly to new plantings.

Grey Squirrels can cause issues on thin barked species such as Sycamore through bark stripping but little evidence was observed of this other than in the plantation referenced as cpt 6 (as shown below).

Thinning

The purpose of thinning will be to help enhance the visual amenity, landscape, biodiversity and future timber values of the woodlands by removing poorer quality and suppressed stems and allowing future growth to be concentrated on to the better-quality trees. In doing so thinning will have the complementary benefits of introducing more light into the woodlands and making them progressively more accessible for pedestrian recreation.

Thinning will be programmed and implemented in accordance with best practice guidelines for the minimisation of disturbance and/or damage to wildlife habitats such as Red Squirrel and will be carried out under the appropriate regulatory felling licence procedures.

Thinning operations help to allow the trees to develop crown space but it can be a difficult operation to pay for itself given the challenges in extracting timber to pay for the work. Sometimes firewood companies will carry out the thinning but often it can be a cost operation.

New Planting Considerations

Generally speaking, the new tree planting areas have been carried out to a very high standard and there were often very few losses. This shows that they have been well maintained with weeding, tree shelter maintenance and that any failed plants have been adequately replaced.

New Planting

Any proposed new planting should be planted with a mixture of broadleaves, primarily of native species. The main broadleaved species will reflect the existing woodland composition.

--- i.e Oak, Beech, Silver Birch; other broadleaved species will be chosen to provide diverse and attractive edges to the main woodland plantings, including Rowan, Wild and/or Bird Cherry, Wych Elm, Whitebeam, Hazel, Holly, Alder, Willow, Blackthorn and Hawthorn.

The new planting will:

- Provide further age and species diversity to the existing woodlands.
- Further enhance the amenity and landscape value of the golf course generally.
- Help integrate the new structures into their woodland surroundings.

Rhododendron

Rhododendron pontium is often known as the “Foresters pest” as it can quickly invade an area of woodland a totally dominate the understorey. Clearing dense areas is advised and looking at small tractor mounted flails can be a cost-effective way of clearing areas. However, being realistic the scale of the areas is considerable and a phased approach is needed.

Noxious Weeds - Himalayan Balsam

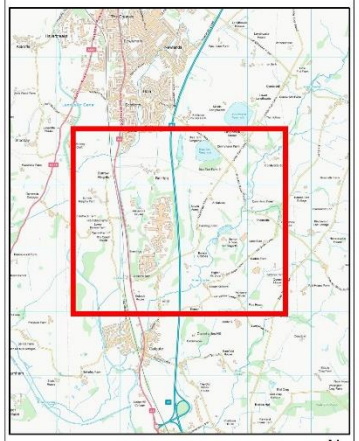
Himalayan Balsam is regarded as an invasive weed by the Environment Agency of the UK Government. It is legislated under The Wildlife and Natural Environment (Scotland) Act 2012 under section 14 of the Wildlife and Countryside Act 1981.

Himalayan Balsam grows in a dense cluster and effects the environment by suppressing the growth of native plants and starving them of sunlight and minerals. Each plant can spread 500 seeds which can lay dormant for 2 years. It is not known if there is already a treatment plan in place for the University but the linked document provides a wealth of information on management options.

Noxious Weeds - Japanese knotweed

There was no Japanese knotweed observed onsite but we note in the documents provided that some has been identified. This plant is highly invasive and is often spread through contaminated soil that is brought onto site through development works. If this is observed then it should be mapped and treated carefully as eradication can be costly if left to spread and develop.

Appendix One **MAPS & SUPPORTING DOCUMENTS**



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Scale: 1:10,147 @ A3 Scale

Westwood Landscape

Woodland Management

Lancaster University

Drawing No	LancasterUni_Rev1.0
Date	18th May 2021

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