

Williamson Park Woodlands

Date (from/to)	2013 - 2032
Date of last review	Not applicable
Owner/tenant	Lancaster City Council
Agent/contact	Mr. David Brackley
Signed declaration of tenure rights and agreements to public availability of the plan	Mr. Elliott Grimshaw

1 Background information

1.1 Location

Nearest town, village or feature	Lancaster, Lancashire
Grid reference	SD 489 613
Total area (Ha)	13.0 Ha

1.2 Description of the woodland(s) in the landscape

Williamson Park is located 1.5 km. east of Lancaster city centre in the Lancaster District of Lancashire (see Map 1).

The woodlands comprise a discontinuous band of plantations and areas of natural regeneration surrounding the Ashton Memorial.

Individual stands of trees are separated over short distances by roads and verges, areas of amenity grassland, formal gardens, glades of unimproved herb-rich grassland, an artificial lake and the historic buildings and structures of the park.

Woodlands occupy approximately 60% of the total site area of 21.7 Ha.

The site is oval-shaped and extends 690 m. north-south and 560 m. east-west. It comprises the 15.4 Ha original Williamson Park, established on former sandstone

Woodland Management Plan

quarries, plus a 6.3 Ha extension to the east known as Fenham Carr.

Drainage is greatly modified due to the history and use of the site as a municipal park and its location in the urban fringe, but in general radiates in all directions from the higher elevations of a north-south aligned ridge and eventually discharges to the river Lune via culverted drains and open ditches.

The woodlands lie within the 'Sub-urban' landscape character type according to the Lancashire Landscape Strategy (Lancashire County Council, 2001) and the Lancashire Woodland Vision (LCC, 2006).

The 'Landscape Management Plan' for Williamson Park (Lancaster City Council, January 2000) defined seven distinctive internal Landscape Character Areas for the site. These are used as the basis for the site's landscape management and are therefore very relevant to, and have strongly influenced, the woodland management proposals in this plan.

Access to Williamson Park is via the minor public roads which border the south, west and northern parts of the site (Wyresdale Road and Quernmore Road).

Surfaced roads and tracks permeate the site and provide good access to the woodland areas. Surfaced and unsurfaced paths provide numerous pedestrian only routes.

Although there was no existing woodland management plan for Williamson Park the Landscape Management Plan includes consideration of the woodland areas.

The Landscape Management Plan is currently being revised and this Woodland Management Plan was written concurrently and its findings and recommendations included in the over-arching landscape plan for the whole site.

Lancaster City Council has commissioned several tree health and condition reports and ecological surveys in recent years. These comprise:

1. A Survey and Evaluation of Woodland at Fenham Carr, Williamson Park (2008)
2. Tree Inspection Survey – Williamson Park (2009 – 2010)
3. Fenham Carr Tree Inspection Survey (2012)

Whilst the focus of these reports is quantified tree risk assessment or habitat survey, they contain valuable inventory data on the tree population, which has been utilised in this plan.

There was no existing woodland compartment structure, other than the allocation of wooded areas to the internal landscape character types.

For the purposes of description and woodland management proposals a new woodland

compartment and sub-compartment structure has been devised for this plan. This comprises 5 No. compartments (see Map 2 and Table 1) and a total of 15 No. sub-compartments (see Map 3).

The woodlands include mixed (broadleaved with conifer) plantations and small areas of broadleaved woodland derived from natural regeneration. Some compartments contain exotic conifer, and a few broadleaved, specimen trees.

Williamson Park's woodlands are a very prominent landscape feature as viewed from the east, where distant views are afforded by the lower altitude, open land between the park and the adjacent minor public roads, and from the M6 motorway which is only 1km distant.

A Forestry Commission (FC) 'Land Information Search' viewed on the internet on 22/04/2013 lists the following land designations located fully or partially on the site:

- Registered Parks and Gardens: Ashton Memorial Gardens and Williamson Park (English Heritage)
- NW (England) Woodland Improvement Grant (WIG) Target Area (FC)
- Woods Close to People (FC)
- Priority Places for England (FC)

1.3 History of Management

A detailed site history is documented in the Landscape Management Plan.

Photographic and map evidence shows the development of the woodland areas as part of the construction of Williamson Park dating from the 1870's following closure of the quarries. The initial tree and shrub planting occurred during the period 1870's – 1900, and the park's formal opening was in 1896.

It appears that the original widely spaced planting layout of the park was augmented by natural regeneration, particularly of sycamore, birch and holly at a later date. A process which continues today where conditions for tree regeneration allow and where management practices do not intervene.

The Fenham Carr area woodlands (added to Williamson Park in 1997) are derived from plantations associated with the former Lancaster Moor Hospital estate and reflect a different woodland management regime, which has involved more intensive management and tree removals via thinnings and fellings.

More recent woodland management interventions throughout Williamson Park have focussed on the removal or pruning of hazardous trees consistent with the site's use as an open access public park and recreational resource.

Woodland Management Plan

A *Phytophthora ramorum* outbreak in the once extensive *Rhododendron* understorey in 2011 has resulted in the necessity of clearing all the *Rhododendron ponticum* under a statutory Plant Health Notice. This was completed by May 2012 with ongoing spraying of *Rhododendron* stumps to prevent regrowth.

This event has not only produced a major change to the visual and structural characteristics of the woodlands, but has also (or will in time) allow for the recovery of a ground flora and tree and shrub regeneration where light levels permit. Some underplanting has been done already to take advantage of this opportunity.

For most of the park woodlands, timber removal has not been an objective of management and there is little evidence of silvicultural thinning or coupe felling, except over very limited areas in association with hazard tree removal.

The lack of thinning may in part be due to genuine concerns about tree stability, as well as the capacity to effectively maintain a thinning or felling programme in recreational woodland where budgets are a limiting factor.

Lancaster City Council now wishes to develop a woodland management programme in accordance with the revised Landscape Management Plan for the entire site. This programme must address silvicultural needs as well as the aspirations for the role of the woodlands in the context of the site as a major recreational facility and tourist attraction.

2 Woodland Information

2.1 Areas and features

Designated Areas	Map No.	In Woodland	Adjacent to woodland
Special areas for conservation (SACs)			
Special Protection Areas (SPAs)			
Ramsar Sites (see note on Guidance)			
National Nature Reserves (NNRs)			
Sites of Special Scientific Interest (SSSIs)			
Other designations (e.g. National Park (NP) / World Heritage Site)			
Areas of Outstanding Natural Beauty (AONBs)			
Local Nature Reserves (LNRs)			
TPO / Conservation Area (CA)		✓	✓
Details: Williamson Park Conservation Area (Lancaster City Council) covers most of the site.			

Woodland Management Plan

Rare and important species	Map No.	In Woodland	Adjacent to woodland
Red Data Book or BAP species		✓	
Rare, threatened, EPS or SAP species		✓	✓
Details: A colony of Noctule bats is reported to inhabit the Fenham Carr area and other bat species will be present across the entire site, utilising the woodlands for feeding and as summer roosts.			
Habitats	Map No.	In Woodland	Adjacent to woodland
Ancient semi-natural woodland (ASNW)			
Other semi-natural woodland			
Plantations on ancient woodland sites (PAWS)			
Semi-natural features in PAWS			
Woodland margins and hedges			✓
Veteran and other notable trees		✓	✓
Breeding sites		✓	
Habitats of notable species		✓	✓
Unimproved grasslands			✓
Rides and open ground			✓
Valuable wildlife communities		✓	✓
Feeding area		✓	✓
Lowland heath			
Peatlands			
Others			
Details: Notable species=Noctule bat			

Water	Map No.	In Woodland	Adjacent to woodland
Watercourses			
Lakes			✓
Ponds			✓
Wetland habitats			
Details: Lake=artificial, designed landscape feature in the centre of the Park. Pond=disused reservoir in compartment 4.			
Landscape	Map No.	In Woodland	Adjacent to woodland
Landscape designated areas			
Landscape features		✓	✓
Rock exposures		✓	✓
Historic landscapes		✓	✓
Areas of the woodland prominent from roads		✓	
Areas of the woodland prominent from settlements		✓	

Woodland Management Plan

Details: Ashton Memorial is a Grade 1 listed building. There is also the Grade 2 listed Butterfly House (formerly The Palm House) and 5 No. Grade 2 listed shelters.

Cultural features	Map No.	In Woodland	Adjacent to woodland
Public rights of way			√
Prominent viewing points		√	√
Existing permissive footpaths		√	√
Proposed permissive footpaths			
Areas managed with traditional management systems			

Details

Archaeological Features	Map No.	In Woodland	Adjacent to woodland
Scheduled monument			
Historical feature (Inc. designed landscapes, registered parks and gardens)		√	√
Other			

Details: Williamson Park is a Grade II parkland listed on the English Heritage Register of Parks and Gardens of Special Historic Interest.

2.2 Woodland resource characteristics

The woodlands are predominantly mixed (broadleaved and conifers) plantations, together with limited areas of semi-mature to mature broadleaved woodland derived from natural regeneration on areas that were originally left as open ground following the restoration of the quarries into parkland.

Small areas of new broadleaved planting and underplanting are found chiefly in the Fenham Carr area (compartment 4), although natural regeneration also occurs sporadically and is widely distributed in small patches in other compartments, particularly where felling or windthrow has created canopy gaps.

A walk over survey to assess woodland condition and composition was carried out during April and May 2013. A photographic record of the survey, indexed by the newly devised compartment structure, has been saved to DVD.

The basic characteristics of the compartments (see Map 2) are summarised in Table 1 below.

Table 1: Summary of Compartments

Compt. No.	Area (Ha)	Age Category ¹	Compostion ²
1	2.9	M and SM	SYC, CP, SBI , AH, BE Yew, HOL, Elder, Cherry Laurel.
2	2.1	M and SM	SYC, CP, BE, POK , SBI, SP, HOL, HAZ, Dogwood, Sorbus sp.
3	1.4	M	SYC , CP, AH, LI, HCh, BE, POK, HOL, Elder.
4	4.0	OM, M and Y	BE, SYC, POK , SOK, TOK, CP, SP, LI, AH, HCh, SCh, SBI, HOL, ROW, WCH, WL, ASP, Yew, SS.
5	2.6	M	SYC, SBI, SOK, CP, SP , BE, LI, POK, HOL, WL, HL, EL, LC, Yew, AH, WCH, HCh, Cherry Laurel, Portugal Laurel.
Totals	13.0		

Notes: 1) OM = Over-mature; M = Mature; SM = Semi-mature; Y = Young

2) Major component tree species in Bold type, minor component species in normal type.

Key to species: AH=Ash, ASP=Aspen, BE=Beech, CP=Corsican Pine (including Austrian Pine), EL=European Larch, HAZ=Hazel, HCh=Horse Chestnut, HL=Hybrid Larch, HOL=Holly, LC=Lawson's Cypress (including other Cypress species and cultivars), LI=Lime, POK=Pedunculate Oak, ROW=Rowan, SBI=Silver Birch, SCh=Sweet Chestnut, SP=Scots Pine, SYC=Sycamore, SS=Sitka Spruce, TOK=Turkey Oak, WCH=Wild Cherry, WL=Willow.

The woodlands are predominantly single storey high forest, although in limited areas holly forms a second, lower canopy layer. There are infrequent patches of natural regeneration at some compartment edges and where windthrow or felling has created canopy gaps.

Recent planting, together with natural regeneration, has occurred on former open, grassy areas in compartment 4. This usually takes the form of woodland edge extension although a small number of isolated specimens occur further away from the woodland blocks.

A few compartments (particularly 2 and 4) have patches of underplanting, including shrub species such as hazel, where tree or Rhododendron removal has created an open canopy and an opportunity for restocking.

There are no accurate planting dates recorded for the compartments; however the oldest trees are known to have been established in the period 1870 – 1900, when the quarry reclamation and construction of the park was underway.

A maximum age of approximately 140 years is consistent with tree sizes and condition in the main park area. However the oldest trees in the Fenham Carr extension area (compartment 4) are likely to be older than this considering the advanced stage of senescence exhibited by a small number of veteran beech and sweet chestnut trees.

Later cohorts of trees, in particular the stands resulting from natural regeneration (and possibly planting) on the former open, reclaimed quarry areas, are impossible to age accurately without felling to undertake a ring count.

The wide variation in growing conditions due to differences in soil depth, fertility and exposure means that tree sizes are a poor indicator of age. For example, trees growing in rock fissure are likely to be far older than their size suggests due to a natural 'bonsai' effect.

Many individual tree sizes have been recorded by the tree inspection surveys of 2009/10 and 2012, and these reports have been used to present a snap-shot of the dimensions of the principal tree species across the site as a whole, only differentiating between the original park area and the Fenham Carr extension (see Tables 2 and 3 below).

Due to the unlikelihood of large scale timber removals through the management of stands for commercial timber production, a more detailed woodland inventory to determine yield classes and standing volumes was not undertaken.

However it would be useful to collect woodland inventory data on a compartment or sub-compartment basis, when and where appropriate, to inform future management decisions and as a record of tree and woodland condition over time and to monitor changes.

Table 2: Tree Sizes for Selected Species in the Original Park Compartments

Species	Average dbh (cm)	Range of dbh (cm)	Maximum Height (m)	Sample size
SYCAMORE	60	32 - 100	20	46
SILVER BIRCH	39	30 - 64	18	14
PEDUNCULATE OAK and SESSILE OAK	60	40 - 102	22	11
ASH	52	39 - 89	21	8
CORSICAN PINE and SCOTS PINE	53	29 - 79	22	19

Table 3: Tree Sizes for Selected Species in Fenham Carr (Compartment 4)

Species	Average dbh (cm)	Range of dbh (cm)	Maximum Height (m)	Sample size
SYCAMORE	55	20 - 115	26	60
BEECH	73	15 - 140	25	40
PEDUNCULATE OAK	62	15 - 120	24	65
SILVER BIRCH	35	15 - 55	21	21
SCOTS PINE	42	20 - 110	26	29

Bearing in mind previous comments regarding the highly variable nature of the site, the Ecological Site Classification suggests that the following tree species are currently either very suitable or suitable for the site (the number in brackets refers to the maximum anticipated yield class in m³/Ha/year).

Very Suitable: Beech (10), Downy Birch (12), Grey Alder (12), Lime (8), Rowan (8), Scots Pine (14), Sitka Spruce (22), Japanese Larch (14).

Suitable: Common Alder (8), Norway Spruce (12), Grand Fir (20), Noble Fir (16), Western Hemlock (18).

The list above is not intended to signify the choice of species recommended by this plan, but is useful to indicate general yield classes. The relatively sheltered parts of compartment 4, with deeper and more fertile soils will allow for a greater range of tree species to thrive.

The 'Survey and Evaluation of Woodland at Fenham Carr' (2008) considers the Fenham Carr woodlands to be NVC classification W10 (Mixed Broadleaved). However this is based on floristics alone and the default ESC classification is for Wet Woodland on the lower parts of the slope. Considering the whole site, Williamson Park's woodlands are more likely to be a spectrum of NVC woodland types, from W6 (alder-nettle) in the low-lying poorly drained areas, through W10 (oak-bracken-bramble) on the middle slopes, to W11 (sessile oak-downy birch) on the more acidic, freely draining rocky areas near the summit ridge and on the old quarry spoil.

2.3 Site description

Geology and Soils

The site is underlain by bedrock of sandstone (Pendle Grit Member) and there is no appreciable superficial deposit.

The soils are acidic, freely draining and skeletal in the higher elevations of the site and where rock has been exposed by former quarrying activities. The Fenham Carr area has never been quarried and has deeper soils, which are slowly permeable, seasonally wet and loamy.

Altitude and Topography

The range of altitude is from 64 m. above sea level in the south-east corner of the site to 107 m. at the ridge summit to the east of the Ashton Memorial.

The topography is very variable, and as expected from the history of quarrying, includes mounding and steep, including some precipitous, slopes. However the woodland compartments also include areas of moderate to gentle slope and small areas of level ground.

Due to the position of the site on a north-south aligned ridge and the impact of quarrying, the aspect encompasses all directions, but is predominantly either west or east facing.

The gentle eastward facing slope of the Fenham Carr area is distinctive and the west-facing side of the ridge is exposed to the frequently strong prevailing winds, with the nearest coastline being at a distance of only 8 km.

Climate

The average annual rainfall is approximately 1044 mm (483 mm in the summer half year and 561 mm in the winter half year). The number of rain-days (rainfall \geq 1mm.) is approximately 160 days per year.

The annual accumulated temperature (day-degrees above 5 degrees Celsius) is 1521 and the mean annual average temperature (1971 – 2000) is approximately 10.0 degrees Celsius.

There are approximately 20 days of air frost and 90 days of ground frost on average per year, although the actual durations experienced within the woodland compartments is greatly affected by microclimate.

Windiness as measured by DAMS (detailed aspect method of scoring) falls within the range of 7.6 to 14.2 across the site as a whole, i.e. sheltered to moderately-exposed.

The DAMS of most woodland compartments in the original park area falls within the

range 13.0 – 14.0, i.e. in the lower (less severe) half of the moderately-exposed category, as DAMS scores of less than 12 are considered to be sheltered and more than 16 are exposed. The lower slope of the Fenham Carr area (compartment 4) is more sheltered relative to the west of the site and has a DAMS score averaging 10.0

Land Use

The woodland compartments are a large and integral part of the landscape of Williamson Park.

They act as a backdrop or screen to the natural and built structures within the site; frame or obscure views; and provide visual linkage or the enclosure of open ground elements in the internal landscape of the park.

The woodlands also provide habitat and resources for the park's biodiversity and its recreational capacity and potential.

The park attracts up to 500,000 visitors per year and hosts events such as school visits, weddings, green gym classes, guided walks and outdoor theatre productions.

Adjacent land use is predominantly residential housing and roads. However Williamson Park is also part of a network of green space that includes two grass covered reservoirs, the grounds of Lancaster Royal Grammar School and the cemetery on Quernmore Road.

2.4 Significant hazards, constraints and threats

Public perceptions may be a constraint to tree felling operations, particularly if larger scale operations are planned than visitors are used to seeing. This can be mitigated by the provision of information explaining and justifying tree harvesting, and also giving adequate on-site notice before work starts.

Steep, including some precipitous, slopes are both a constraint and a hazard to forestry work in the affected compartments (1, 2 and 5).

Grey squirrels are present but damage is limited by the age of the trees and variety of tree species present. As the proportion of younger age classes increases the extent of damage is likely to be more significant and control measures may need to be introduced.

Fire risk is very low due to the woodland characteristics, but the large number of visitors contributes to an increased risk of starting fires either by accident or deliberately.

The recent removal of all the Rhododendron and proposed thinning and felling works will increase the amount of potentially flammable material on the woodland floor in the

affected areas. This will be particularly relevant during prolonged periods of dry spring weather and in areas most frequented by the public, until canopy closure subsequently reduces the quantity of woodland floor biomass.

Vandalism and anti-social behaviour is a threat but Williamson Park has experienced very few incidents to date and the full time presence of staff on site ensures that this continues to be the case.

3 Long term vision, management objectives and strategy

3.1 Long term vision

To develop the woodlands in order to satisfy visitor needs and enhance Williamson Park as a major attraction for local communities and as a national tourism destination.

The woodlands will be managed for both recreation and biodiversity, whilst always having regard to the historic and cultural values of the site.

The multiple objectives of public recreation; conservation of a historic landscape and features; and wildlife habitats are recognised as being valid in shaping woodland management policy and practice.

3.2 Management Objectives

1. Provide an attractive, stimulating, educational and safe environment for the visiting public and staff.
2. Maintain woodland cover in sympathy with the built structures and other features of Williamson Park.
3. Maintain woodland cover as a feature in the wider landscape.
4. Increase woodland biodiversity without compromising other valuable habitats.
5. Explore opportunities to engage with local communities so that people become more involved with woodland management activities.

3.3 Strategy

Williamson Park's woodlands will be managed predominantly as high forest and utilise low impact silvicultural systems that allow for continuous forest cover.

The existing tree cover is approximately 60% of the site and no increase in woodland area is envisaged during the plan period.

Small areas of coppice management will be considered for the woodland edge expansion which is occurring in compartment 4. This will create new habitat and be more sympathetic to the management of the grasslands in the open glades, which are a very important component of the habitat mosaic in the Fenham Carr area. It is anticipated that this coppicing will commence after the recently planted trees have become sufficiently well established and then coppiced on a cycle of approximately 8 years, depending on growth rates.

Trees and woodlands near historic buildings and landscape features will be managed in accordance with the Landscape Management Plan recommendations. This will involve the selective thinning of stands to enhance internal and external views, and the re-creation of historic views lost over time due to tree growth. The latter may require the selective felling of groups of trees.

Selective thinning will also be used to favour the development of healthy, wind-firm trees and permit the growth of a more diverse ground flora, as well as to ensure the continuation of the park's mixed species stands in the long term, where only a small number of shade tolerant species would prevail without thinning intervention.

The design and layout of the woodlands and specimen trees are historic features in their own right. Woodland management will be sympathetic to this Victorian planting legacy, whilst recognising that some interventions will be necessary to ensure the continuity and enhancement of selected original features, and to respond to the different needs and aspirations of current and future visitors and stakeholders.

The enjoyment and safety of the visiting public is of paramount importance, therefore tree and woodland management will always aim to take into account the needs and perceptions of visitors and minimise impacts which may detract from their experience of the site.

Woodland management will be compliant with the UK Forestry Standard and guided by the requirements of the UK Woodland Assurance Standard (UKWAS). Individual tree care and maintenance will be carried out in accordance with BS 3998:2010 Tree Work Recommendations.

3.4 Woodfuel Initiative

Would you be interested in receiving information on funding opportunities for the purchase of harvesting machinery or wood fuel boilers, or for grants that support timber production from your woodlands?

Yes / **No**

4 Management prescriptions/operations

4.1 Silvicultural systems

4.1.1 Harvesting

Small scale group felling will be used to enlarge existing canopy gaps, or create new ones of sufficient size, to allow the development or initiation of natural regeneration.

Low impact systems will be used in recognition of the small scale of operations and public perceptions of tree felling and timber harvesting.

Motor manual (chainsaw and hand tool) felling will be the norm and timber extracted (where appropriate) by using small tractors, quad bikes or horses.

It is anticipated that most timber will be utilised or processed on site, but where extraction is destined to be for off-site markets, a bespoke harvesting plan will be implemented to ensure compatibility with other site usage and to minimise disruption and impact.

Selective thinning is proposed over the plan period (2013 – 32) as detailed in section 7 below. The long term thinning programme is indicative only and should be reviewed during plan revisions at 5-year intervals to take into account changing circumstances.

Williamson Park is categorised as public open space and is therefore technically exempt from Felling Licences. However the preferred method for approval will be to apply to the FC for tree felling permission using the approved Woodland Planning Grant protocol, by which the thinnings and fellings set out in Table B section 9.2 (see page 27 below) are confirmed as the tree felling for which permission is granted by the FC.

Much of the woodland is within a Conservation Area and section 211 notification will be required for the proposed thinnings and fellings. In the case of Williamson Park this will be achieved by the review of felling proposals by the Lancaster City Council Tree Protection Officer and signing off by the council's Regeneration and Planning Department. This removes the need to submit an 'Application for Tree Work' for each item of tree works.

4.1.2 Phased felling and restructuring of plantations

Group felling and restocking is proposed as detailed in section 7 below.

The aim is to initiate the long term restructuring of selected compartments to increase age diversity, respond to existing areas of advance natural regeneration and to create or enlarge canopy gaps. This will ensure the successful regeneration of new cohorts of trees and shrubs.

The wide tree age profile and the diversity of growth rates due to differences in site quality means that group felling interventions can be initiated without undue urgency, on a relatively small scale and phased over a long period of time.

4.1.3 Establishment, restocking and regeneration

Planting will be used to augment natural regeneration where necessary to ensure adequate stocking, and to introduce species that are desirable but which are incapable of being introduced or sustained by natural regeneration methods.

A combination of planting and natural regeneration will be used in restock areas to ensure that the appropriate range of tree species is available.

Weeding will be carried out where necessary in restock areas using manual methods by preference (e.g. hand-weeding and mulches), although chemical weeding will remain an available option.

Protection against rabbits will be provided by the use of individual tree shelters or guards where required in restock areas.

4.2 New planting

No areas of new planting are proposed within the plan period.

4.3 Other operations

No large scale road, track or path construction works proposed within the woodland areas. However track and path maintenance will be required, particularly in association with any proposed timber harvesting operations.

4.4 Protection and maintenance

4.4.1 Pest and disease management

Grey squirrels are present but damage to the existing tree stock is limited by the mature age of the trees and mitigated by the variety of tree species present.

In the future as the proportion of younger age classes increases the extent of squirrel damage is likely to be more significant and control measures may need to be introduced.

The recent *Phytophthora ramorum* outbreak in *Rhododendron ponticum* has been dealt with and there is ongoing chemical spraying of Rhododendron regrowth from cut stumps.

Vigilance will be required to ensure that possible future outbreaks of *Phytophthora* on susceptible tree species (e.g. larch and beech) are seen and acted upon at the earliest opportunity.

Routine inspections of trees are carried out by the park's staff at three-month intervals for health and safety reasons and this provides an ideal opportunity to identify and report any tree health issues that may arise.

Ash is present but not amongst the most common tree species in the park, however there is currently a risk that the national outbreak of *Chalara fraxinea* (Ash die-back disease) could spread to the site, particularly as visitor numbers are high and people (and their dogs) can act as vectors for the spores.

This may be more relevant in future years when ash, which is already present as natural regeneration, becomes commoner in restock areas. Unfortunately there is no practical countermeasure currently available and, as with *Phytophthora*, only vigilance and the early removal of infected plants (which is a statutory requirement anyway) is the recommended course of action.

Details of *Chalara fraxinea*, recommended biosecurity measures and suggestions for managing the disease are available at: <http://www.forestry.gov.uk/forestry/infd-8udm6s>

4.4.2 Fire plan

The fire risk is low due to the predominantly broadleaved composition of the compartments and age of the stands.

However the relatively small areas beneath pure Corsican pine canopy have a moderate risk of surface and ground fires in periods of exceptionally dry weather.

The woodlands are included within the overall fire plan for the site, which includes emergency reporting procedures to the fire service.

4.4.3 Waste disposal and pollution

Re-use and recycling are encouraged where possible. This includes the utilisation of arisings from tree felling and pruning operations, where disease free branch wood is chipped to produce mulch or for composting. A dedicated space for this recycling is provided in compartment 3.

The disposal of non-biodegradable packaging and articles (e.g. plastic tree shelters) will be done to minimise negative environmental impacts.

Williamson Park operates a litter and dog-waste bin service.

Chemical and oil spill risks are identified in operational risk assessments and controls put in place e.g. emergency procedures and spillage kits.

Reference is made to the Forest Water Guidelines to ensure best practice.

4.4.4 Protection from unauthorised activities

The park operates an effective patrolling system to detect and deter vandalism, fly-tipping and other anti-social behaviour.

4.4.5 Protection of other identified services and values

Not applicable.

4.5 Game management

Not applicable.

4.6 Protecting and enhancing landscape, biodiversity and special features

4.6.1 Management of designated areas

This woodland management plan is in accordance with the Williamson Park Landscape Management Plan (Lancaster City Council, revised 2013).

The woodland management prescriptions are aligned with the landscape management objectives as defined for each of the seven distinct landscape character areas.

Conversely, the woodland management plan has informed the over-arching landscape management plan and contributes to the woodland section of that document.

4.6.2 Measures to enhance biodiversity and other special features

Deadwood habitats

Historically low levels of intervention have endowed most of the woodland areas with quantities of standing and fallen deadwood, as well as branch snags and stem cavities.

The original park area, with a denser network of footpaths and a longer history of open public access, has experienced greater standing deadwood removal in the interest of safety compared to the Fenham Carr area.

However, as evidenced by current practice, there are ample opportunities for the continued provision of fallen deadwood throughout the park and standing deadwood where safety has been taken into account.

Arboricultural techniques such as 'coronet pruning' will be used where appropriate, to increase the amount and variety of standing deadwood habitat. A proportion of the stem and branch wood arising from future thinning operations will be left in situ as habitat piles.

Long term retentions

The strategy implies that trees will be left to their biological rotation except where earlier felling is required for woodland regeneration purposes or for safety reasons.

Therefore the entire site could largely be viewed as a long term retention.

Non-woodland habitats

The unimproved and semi-improved grasslands that constitute the glade areas in compartment 4 form important components of the rich habitat mosaic in the Fenham Carr area.

The lake surrounded by compartment 2 and the disused reservoir in the east of compartment 4 provide aquatic habitats and also feeding areas for bats.

Biodiversity Action Plans and Species Protection

Although the most of the woodlands are plantations, the proposed management follows an ecological approach and is supportive of the development of 'Mixed Broadleaved Woodland', which is a UK BAP Priority Habitat.

Broadleaved and Mixed Woodlands are also a Lancashire Biodiversity Action Plan Habitat. Information on the Lancashire Broadleaved and Mixed Woodland Habitat Action Plan can be viewed and downloaded at:

http://www.lancspartners.org/lbap/plans/Broadleaved_and_Mixed_Woodland_Final_2001.pdf

Within the woodlands European Protected Species are represented by bats, including a breeding colony of Noctule bats being reported for compartment 4. More information is available at: http://www.lancspartners.org/lbap/plans/Bats_Final_2001.pdf

Ecological surveys of the vegetation and woodlands in the Fenham Carr area were undertaken in 2004 and 2008 respectively and the report is held by Lancaster City Council (Skelcher, 2008. 'A Survey and Evaluation of Woodland at Fenham Carr, Williamson Park, Lancaster').

A woodland bird survey was undertaken by the RSPB for the Fenham Carr area in the Spring of 2011 and the report is held by Lancaster City Council (Gouldstone, 2011. 'Woodland Birds in Fenham Carr, Williamson Park, Lancaster'). Notable bird species found in the survey or inferred from older records include: Garden Warbler, Willow Warbler and Spotted Flycatcher.

Bird and bat boxes will continue to be provided and maintained at selected locations. Tree works and hedge-trimming will be scheduled outside the bird nesting period.

The Fenham Carr grasslands were surveyed in June 2011 and the report is held by Lancaster City Council (Stevens, 2011. 'Fenham Carr Grasslands, Williamson Park, Lancaster'). Notable species recorded, indicating low fertility, herb-rich grassland include: Common Spotted-Orchid, Yellow-Rattle, Lesser Stitchwort, Common Cat's-ear, Common Bird's-Foot-Trefoil, Greater Bird's-Foot-Trefoil, Common Knapweed and Meadow Crane's-Bill.

Due consideration will be given to European Protected Species (and others) in the planning and execution of the woodland management work recommended in this plan.

Veteran Trees

A survey of potential veteran trees is included in the survey by Skelcher (2008) referred to above. This is a useful guide, but should be augmented by a more detailed survey of individual trees to bring the study up to date and to cover the entire site.

A veteran tree project could potentially be included under the auspices of the Friends of Williamson Park group, involving capacity building, survey and mapping, veteran tree management prescriptions and monitoring.

Notable specimen trees and potential future veteran trees could also be included in the project.

Veteran tree management will be guided by 'Veteran Trees: A guide to good management' (Natural England, 2000), which is available to download at: <http://publications.naturalengland.org.uk/publication/75035>

4.6.3 Special measures for ancient semi-natural woodland (ASNW) and semi-natural woodland (SNW)

Not applicable.

4.6.4 Special measures for plantation on ancient woodland site (PAWS)

Not applicable.

4.6.5 Measures to mitigate impacts on landscape and neighbouring land

The low impact silvicultural systems and techniques recommended in this plan will ensure minimal effect on neighbouring land and to the overall landscape features of the site.

4.7 Management of social and cultural values

4.7.1 Archaeology and sites of cultural interest

There are no Scheduled Monuments within the plan area.

However there are Grade 1 and Grade 2 Listed buildings as detailed in section 2.1 above, and Williamson Park is a Grade II parkland listed on the English Heritage Register of Parks and Gardens of Special Historic Interest.

The Landscape Management Plan documents the history and cultural interest of the site and contains detail of the woodland characteristics and their management in relation to the Landscape Character Areas of the Williamson Park.

The spatial relationship of the woodland compartments to the landscape character areas is illustrated in Map 4.

4.7.2 Public access and impacts on local people

Williamson Park, including all the woodlands, is public open space and receives more than 500,000 visitors per year. Visitor attractions include the Ashton Memorial, Butterfly House (formerly the Palm House), Mini-Beast Enclosure, Pavilion café and shop, formal gardens, children's play areas, a Permanent Orienteering Course, woodland walks and a bird feeding station.

The site hosts events such as school visits, weddings, green gym classes, guided walks and outdoor theatre productions.

5 Consultation

Organisation/individual	Date received	Comment	Response/action
Lancaster City Council – Senior Conservation Officer	24/07/2013	Internal, non-statutory consultation	Comments noted
Lancaster City Council – Tree Protection Officer	26/07/2013	Internal, non-statutory consultation	Comments included in final plan where applicable
English Heritage	22/08/2013	Statutory consultation	EH only require a copy for information
Friends of Williamson Park		Recommended in the interest of participatory forestry	Awaiting feedback
RSPB		Non-statutory and for the exchange of information only	Awaiting feedback
Lancashire Wildlife Trust		- ditto -	Awaiting feedback

6 Monitoring plan summary

Objective number, issue or UKWAS Requirement	Indicator	Method of assessment	Monitoring period	Responsibility	How will information be used
Maintaining Woodland Cover (Management Objectives 2 and 3)	Woodland regeneration by natural regeneration or planting	Woodland Survey	5-yearly	Owner/Agent	Feedback to Strategy and Work Programme
Increasing Woodland Biodiversity (Management Objective 4)	Diversity and extent of woodland habitat types & species	Woodland and Ecological Surveys	5-yearly	Owner/Agent	Feedback to Work Programme
Health and Safety Risks associated with trees	Hazard Trees	Routine Inspections and Quantified Tree Risk Assessments	3-months Annually	Owner	Site Management and Feedback to Work Programme

Woodland Management Plan

6.1 Outline long-term work programme (2018 - 2032)

(Use this table to outline medium to long term areas of work)

Cpt. Ref or Name	Activity	Year (<i>tick</i>)	
		6-10	11-20
1a	Monitoring for advance nat. regen.	✓	
1b	Thinning	✓	
1b	Selective Felling and Restocking		✓
1c	Monitoring for advance nat. regen.		✓
1d	Monitoring for advance nat. regen.	✓	
2a	Thinning		✓
2b	Thinning	✓	
2b	Monitoring for advance nat. regen.	✓	
2c	Monitoring for advance nat. regen.	✓	
2c	Thinning		✓
3	Monitoring for advance nat. regen.	✓	
3	Thinning	✓	
3	Selective Felling and Restocking		✓
4b	Monitoring for advance nat. regen.	✓	
4b	Thinning	✓	
4a, 4b & 4c	Coppicing glade edges	✓	✓
5a	Monitoring for advance nat. regen.	✓	
5a	Thinning	✓	
5a	Selective Felling and Restocking		✓
5b	Monitoring for advance nat. regen.	✓	
5c	Thinning	✓	
5c	Monitoring for advance nat. regen.		✓
5d	Thinning	✓	
5d	Monitoring for advance nat. regen.		✓

Woodland Management Plan

6.2 Short-term work programme (2013 - 2017)

(Use this table to collect basic inventory data for the woodland areas you propose to work during the next 5 years)

Cpt. Ref / Name	Area (ha)	Main Species	P. Year	Yield Class	Activity	Year				
						1	2	3	4	5
1a	0.5	SYC	n/a	8	Thinning (selective thinning where overstocked and to enhance views)		√			
1b	0.6	MB	n/a	-	Respacing and formative pruning in existing nat.regen. & Monitoring for advance nat. regen.	√				√
1c	1.0	CP, SYC	n/a	14/8	Thinning (selective thinning where overstocked and to enhance views)			√		
1d	0.8	CP, SBI, SYC	n/a	14/10/ 8	Thinning (selective thinning where overstocked)				√	
2a	0.4	MB	n/a	-	Monitoring for nat.regen. and ground flora recovery			√		
2c	0.1	MB	2012	-	Post-establishment maintenance of restocking and nat. regen.		√			
4a	1.8	MB	2012	-	Post-establishment maintenance of restocking & Monitoring for advance nat. regen.		√			√
4c	1.6	MB	2012	-	Post-establishment maintenance of restocking & Monitoring for advance nat. regen.		√			√
5b	0.2	CP	n/a	14	Thinning (selective thinning of conifers where overstocked)					√

NB: Area denotes area of activity. For whole compartment areas see Table 1 on page 7.

Accurate P Year dates not available for stands arising from natural regeneration. Yield class is estimated site average by species.

7 Costing Operations

Detailed costings are being prepared as part of the Landscape Management Plan and these will include the woodland work items identified in this plan.

Income to cover costs is expected to be provided by contributions from the site's dedicated maintenance budget and grant aid (including EWGS-WIG).

Opportunities for income generation from the woodlands will be explored. However the timber yield from thinnings and fellings will be relatively small and timber quality is predominantly low grade.

The potential for non-timber woodland products will also be investigated, but at this stage the ability to operate profitably is speculative until detailed consideration has been given to individual projects or enterprises, and markets tested.

8 Maps

Map no./Title	Description
Map 1	Location of Williamson Park
Map 2	Woodland Compartments
Map 3	Woodland Sub-Compartments
Map 4	Landscape Character Areas and Woodland Compartments

9 Thinning, felling and restocking proposals

The template and guidance should be carefully followed to aid production of a good management plan, and ensure that we can pay the grant.

Most of the template will need to be completed by everyone, but the following sections are not compulsory, unless you wish to apply for woodfuel grants or Category B approval.

- You must complete **Section 10, Table A** if you want to use the plan to gain Wood Fuel WIG support or seek funding through other wood fuel initiatives.
- You must complete **Section 10, Table B** if you want to gain 10 year thinning and felling approval and / or meet the requirements of Category B.

This section **should not be completed** for any other applications.

9.1 Table A - Not applicable

Applicants seeking funding through a woodfuel initiative for harvesting machinery or wood fuel boilers, or wishing to apply for **EWGS Woodfuel WIG** must provide basic inventory data (WPG template 7.2) and estimate the total volume that is to be thinned and felled during the period of this plan, **by completing Table A.**

(Using inventory data from table 7.2, complete a timber volume estimate)

[illegible]

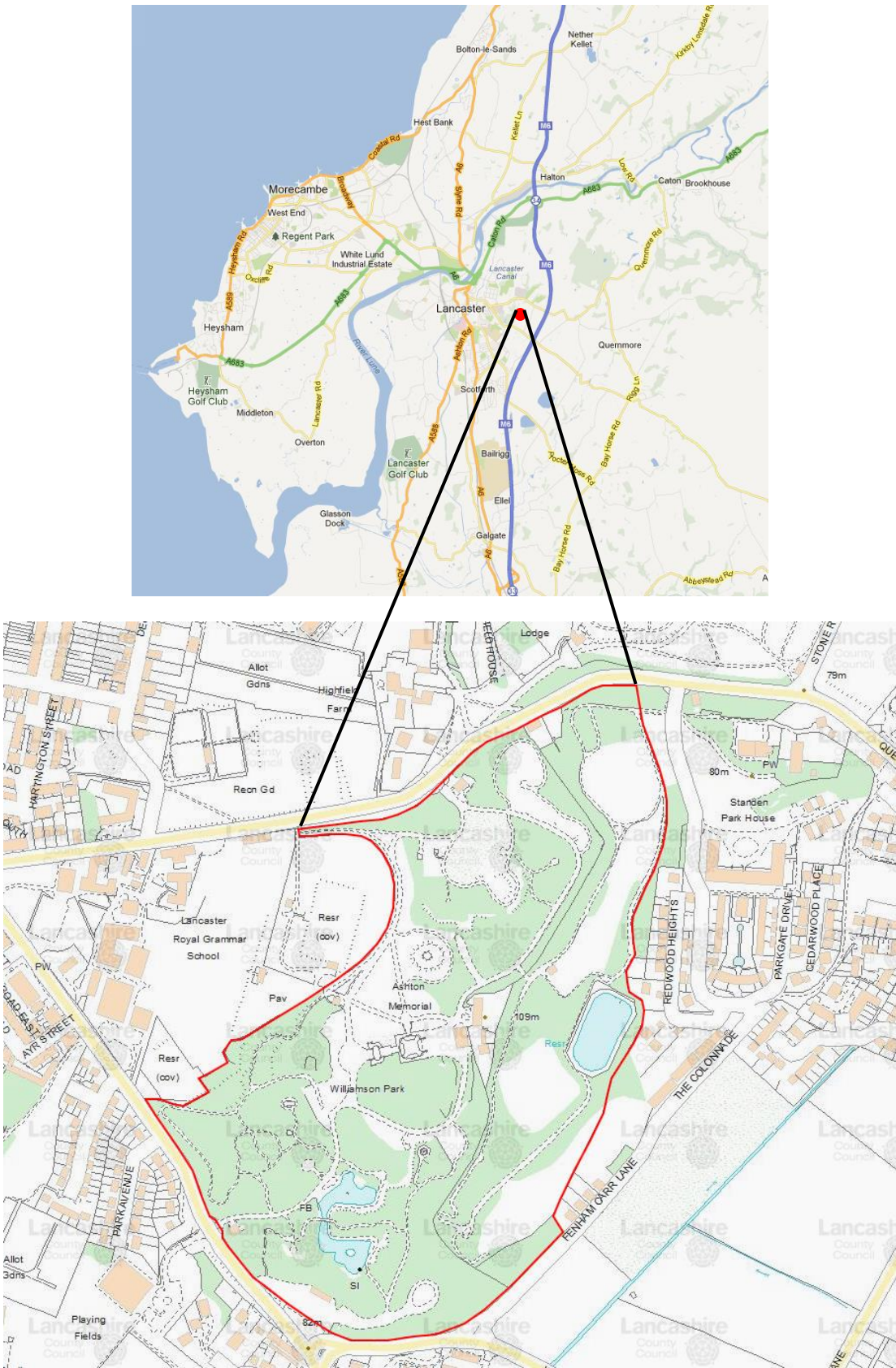
Woodland Management Plan

9.2 Table B

This section must be fully completed by the applicant if they wish to gain felling licence approval from the Forestry Commission. The work detailed below must match the proposals set out in the plan. For details on how to complete this table, please refer to **EWGS4 – Woodland Regeneration** for guidance and Tree Felling guidance.

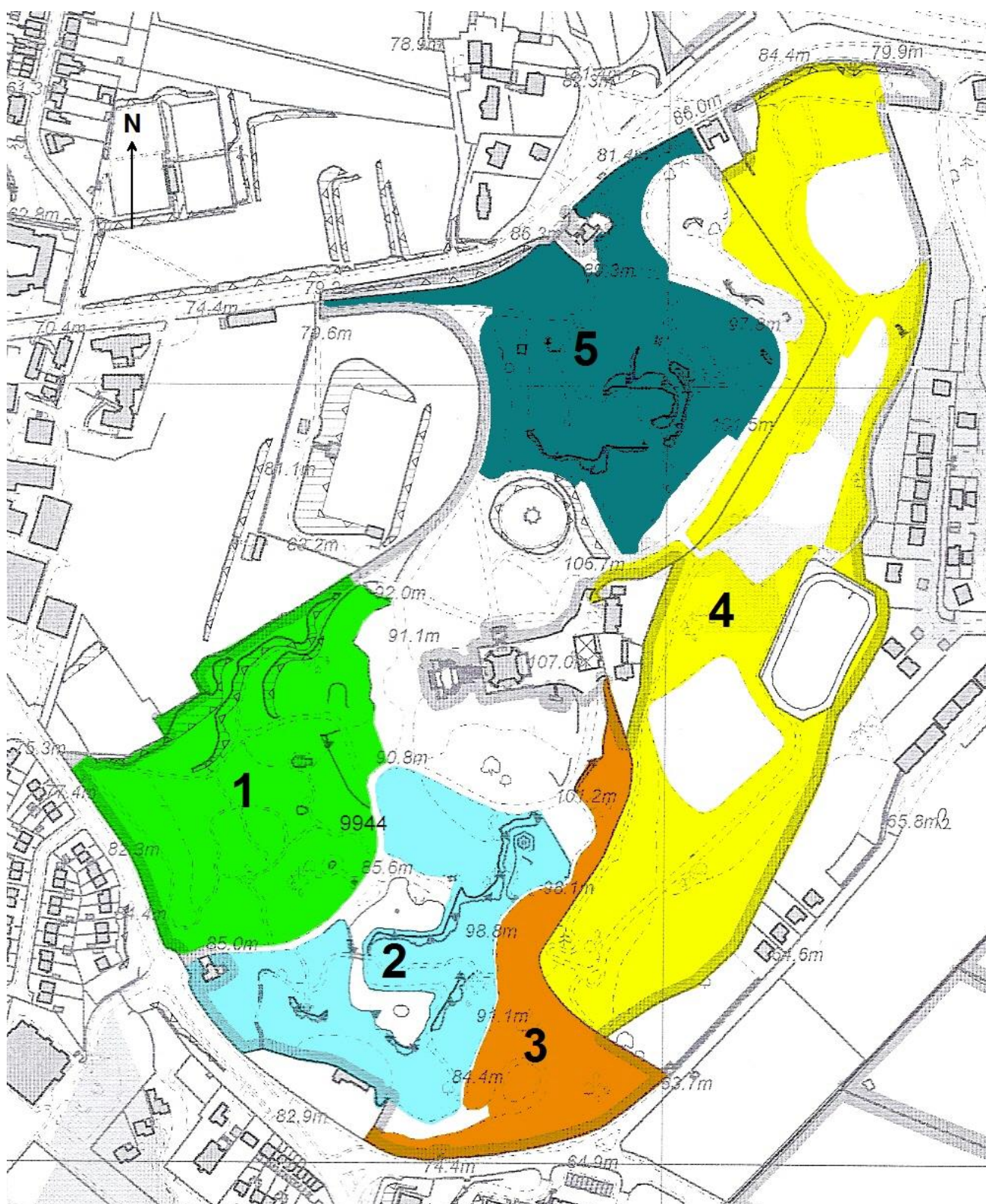
4. Cpt. / Sub Cpt.	5. Area (ha)	6. % area to be worked	7. Type of felling	8. % of felled area comprising:		9. Felling licence type	10. Change in woodland type		11. Preferred claim year	13. Restock mixture		14. % Estab. by natural regen	Standard proposals	12. Notes / Details
				BL	CON		From	To		Species	%			
1a	2.7	30%	SF	-	100	C	PAWS	Nat	11/12	POK	40%	10%	1(i)	example
1a	0.5	100%	T	100	-	U	-	-	-					
1c	1.0	100%	T	75	25	U	-	-	-					
1d	0.8	100%	T	60	40	U	-	-	-					
5b	0.8	20%	T	-	100	U	-	-	-					

MAP 1: LOCATION OF WILLIAMSON PARK



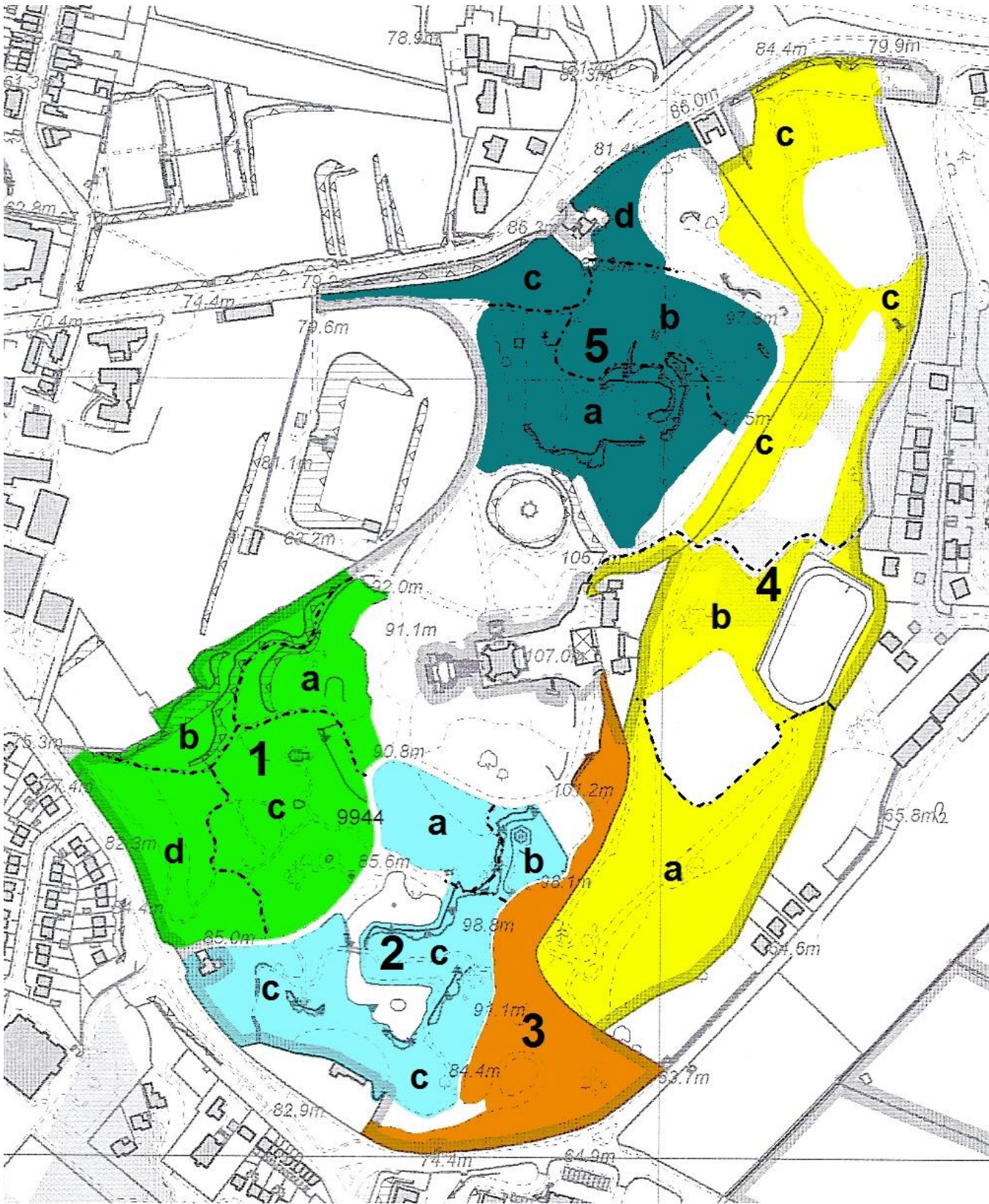
MAP 2: WOODLAND COMPARTMENTS

Based on 1:5000 scale but not to scale as shown



MAP 3: WOODLAND SUB-COMPARTMENTS

Based on 1:5000 scale but not to scale as shown



MAP 4: WOODLAND COMPARTMENTS AND LANDSCAPE CHARACTER AREAS

