



Trees and Woodland in Worcestershire

Biodiversity and Landscape
Guidelines for their planting
and management



Contributors, acknowledgements and thanks

A broad steering group has over-seen the production of this guidance and contributed to different elements. Worcestershire County Council has taken the lead in putting the document together, but the Forestry Commission, Worcestershire Farming and Wildlife Advisory Group, Worcestershire Wildlife Trust, Timber Growers Association (now disbanded) and others have also contributed. The document has been endorsed by Worcestershire Partnership Environment Group (WPEG), the Forestry Commission and the County Council and there has also been broader consultation on its contents at various stages, the final stage being March 2010.

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Introduction

This document provides guidance on the landscape and biodiversity aspects of native woodland planting and management in Worcestershire. It is intended to complement other documents such as the Strategy for England's Trees, Woods and Forests and Delivery Plan; 'Keepers of Time' policy statement and delivery plan for England's ancient and native woodlands; 'Growing our Future' the West Midlands Regional Forestry Framework and Delivery Plan and national guidance on Managing Ancient and Native Woodland (produced during 2008).

The document is aimed at professionals working in forestry, nature conservation, agriculture and land-use planning. It will also be of value to land owners, the wider public and students, or indeed anyone who has an interest in trees, woodland and the Worcestershire landscape.

This guidance presents the 'ideal' for landscape and ecology practices, and is intended to help create new woodland or manage existing woodland in a way which compliments or improves the current woodland landscape character and ecology of the county. It does not aim to present an all-embracing guide to the creation and management of woodland and tree cover - its focus is purely landscape and biodiversity. The commercial aspects of timber growing in Worcestershire are not covered, nor are archaeological considerations.

The landscape elements of this guidance are based on the Landscape Character Assessment for Worcestershire, and the Ecological Zones are derived from work to identify Natural Areas for Worcestershire.

Further clarification of the classification of Landscape Types can be found on the county online Landscape Character Assessment at www.worcestershire.gov.uk/landscape

Structure of the document

The guidance is in the form of two maps and accompanying guidance notes. Map One shows Worcestershire Landscape Types; Map Two Worcestershire Ecological Zones. The accompanying text for each Landscape Type and Ecological Zone is found in Sections Two and Three respectively. Detailed recommendations on the pattern, size and location of woodland planting are provided along with advice on which species to choose to best reflect the natural woodland communities prevalent in the area.

In addition to the area-specific guidance described above more general information is provided in Section Four. This contains information on the range of semi-natural habitats in woodland found in Worcestershire, with recommendations on how these habitats could be accommodated within planting schemes. This information should be read in conjunction with the Forestry Commission guides on new planting.

Sections Five and Six of this document contain background information covering the following:

- Sources of information used to develop the guidance
- An overview of current woodland and tree cover in Worcestershire
- A history of the development of trees and woodland in Worcestershire

1 Introduction

Regional context

In addition to the information provided in this guidance a broader regional context to woodland creation is provided by the Regional Woodland Opportunities Map. This piece of work looks at the potential for woodland creation across the region within four theme areas - landscape, biodiversity, cultural heritage and access. For each of these themes, maps of the region are provided which divide the region into three zones for woodland creation - 'preferred', 'neutral' and 'sensitive' (where woodland creation is not targeted).

However, at the site level, there may be opportunities for woodland creation even in 'sensitive' areas. A separate map theme has been developed for ancient woodland with a particular focus on opportunities for restoration of plantations on ancient woodland sites (PAWS). The Woodland Opportunities Map is available on the Forestry Commission website (<http://www.forestry.gov.uk/forestry/infd-6n4gzu>) and it is recommended that it is considered in addition to the information provided in this document.

How to use this document

1. Using Maps One and Two identify which Landscape Type and Ecological Zone contain your location of interest.
2. Refer to the relevant Landscape Type in Section 2, and Ecological Zone in Section 3 to discover information and guidance relating to tree and woodland planting and management for that location.
3. Look also at surrounding zones/types, especially with locations near the edges of zones/types.
4. Look also at the general text in sections 4,5 and 6 to gain a wider understanding of the background to the guidance provided.

A website based on this document is also available at:
www.worcestershire.gov.uk/woodlandguidelines

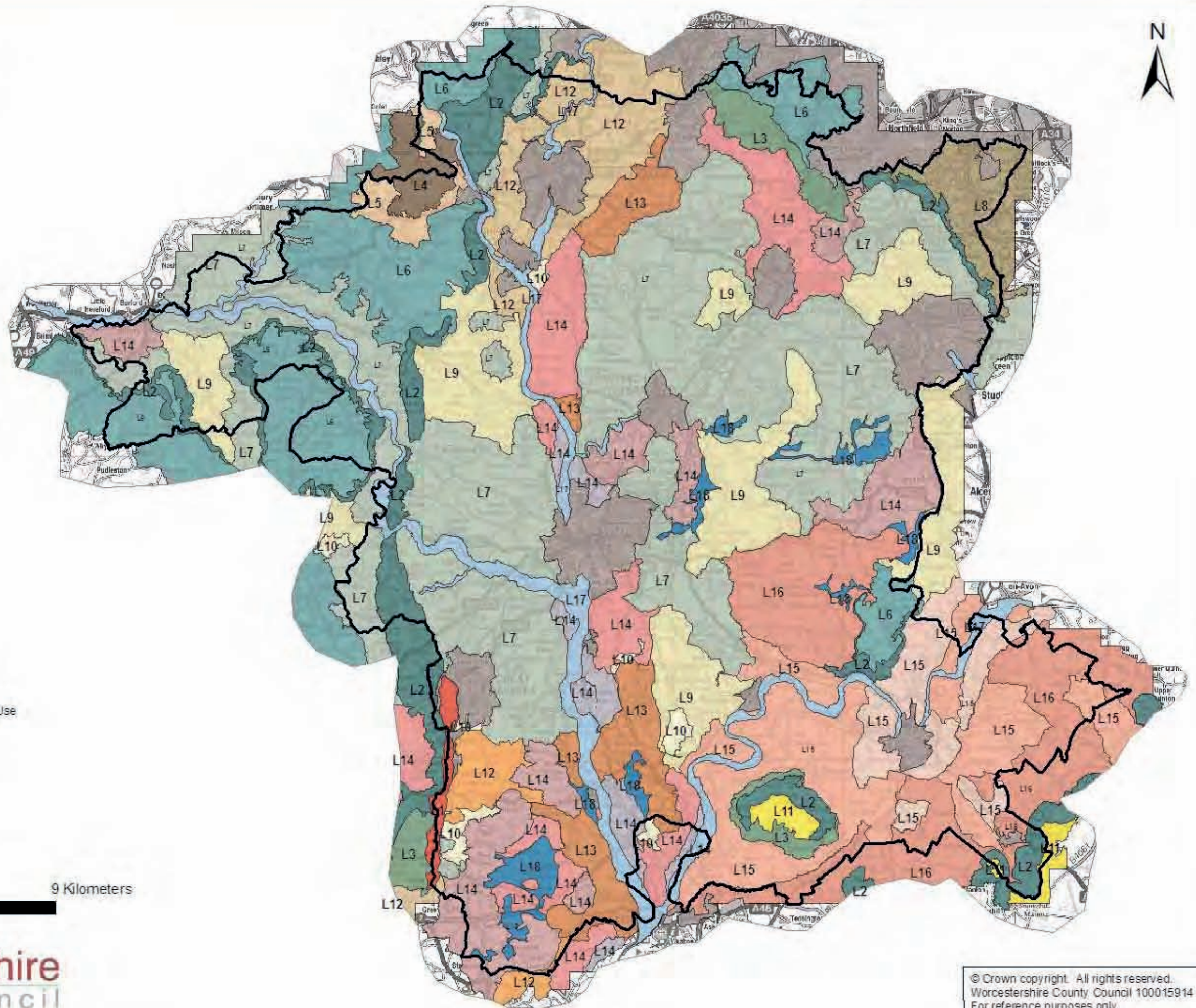
On the website there is an interactive map which presents guidance for different areas of the county, and this document can also be down-loaded.



MAP ONE Landscape Types



- L1 High Hills and Slopes
- L2 Principal Wooded Hills
- L3 Wooded Hills and Farmlands
- L4 Wooded Forest
- L5 Forest Smallholdings and Dwellings
- L6 Timbered Plateau Farmlands
- L7 Principal Timbered Farmlands
- L8 Timbered Pastures
- L9 Wooded Estatelands
- L10 Unenclosed Commons
- L11 Limestone Estatelands
- L12 Sandstone Estatelands
- L12 Enclosed Commons
- L13 Estate Farmlands
- L14 Principal Settled Farmlands
- L14 Settled Farmlands on River Terraces
- L14 Settled Farmlands with Pastoral Land Use
- L15 Principal Village Farmlands
- L15 Village Farmlands with Orchards
- L16 Village Claylands
- L17 Riverside Meadows
- L18 Wet Pasture Meadows
- Urban



9 4.5 0 9 Kilometers



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L1 Landscape Type: High Hills & Slopes

Main Geographic Areas:

THE UPPER PLATEAU AND SLOPES OF THE MALVERN HILLS

LI LANDSCAPE CONTEXT

This landscape owes its character primarily to a combination of past management and physical structure.

This particular section of the Malvern Hills has in the past been largely, if not totally, an area of unenclosed commons and rough grazing. Cleared initially perhaps for defensive purposes, as common land the area was used for sheep grazing. Stocking levels were sufficient to keep scrub encroachment at bay and so maintain its distinctive open character producing a close, botanically valuable sward. It is an area that tends to be bordered by roads rather than crossed by them. The sparse settlement that exists tends to be associated with the roads.

L1 Landscape Type: High Hills & Slopes

Main Geographic Areas:

THE UPPER PLATEAU AND SLOPES OF THE MALVERN HILLS

LI WOODLAND AND TREE COVER CHARACTER

The High Hills and Slopes are essentially unwooded landscapes. Where this Landscape Type occurs elsewhere in the country traditional management regimes of grazing are generally still in place and hence the open character is usually present.

On the Malvern Hills the recent drastic decline in stocking levels has allowed considerable areas of secondary broadleaved woodland and scrub to become established. Stands of pioneer species such as sycamore, birch and gorse have spread from the lower slopes to previously grazed areas of open common.

Some tree presence is associated with the sparse settlement. With the absence of hedgerows there are no hedgerow trees.

LI GUIDANCE ON PATTERN, SIZE AND LOCATION

There is a presumption against the creation of new woodlands in this Landscape Type because of the overriding importance of the open summits with their acidic grassland and historic features.

Removing already established woodland on the lower flanking slopes, whilst desirable from a landscape character point of view, may prove to be un-feasible. Although uncharacteristic, the existing long, linear belts of woodland provide visual continuity with the wooded nature of the hills and slopes adjacent to this area.

L2 Landscape Type: Principal Wooded Hills

Main Geographic Areas:

BREDON HILL AND THE COTSWOLDS; THE LENCHES; THE TEME VALLEY; THE ABBERLEY AND SUCKLEY HILLS; THE WYRE FOREST AREA

L2 LANDSCAPE CONTEXT

An upstanding, wooded landscape with a sloping, in places steeply undulating topography, often on the edge of higher ground. This is a landscape of large irregularly shaped ancient woodlands and wooded streamlines, typically forming an interlocking pattern with surrounding hedged fields. Woodlands are a key visual element within the landscape.

These are 'ancient' landscapes where the nature of the physiography, particularly the steepness of slope, has inhibited clearance for agricultural use in the past. These areas have, as a result, retained significant cover of ancient semi-natural woodland into which, typically, only slight clearances, usually of an assarted nature, have taken place. Land use in these areas tends to be of a pastoral nature and settlement is sparse. Bredon Hill and the Cotswolds have been subject to more extensive early clearance and now support valuable grassland and scrub.

L2 Landscape Type: Principal Wooded Hills

Main Geographic Areas:

BREDON HILL AND THE COTSWOLDS; THE LENCHES; THE TEME VALLEY; THE ABBERLEY AND SUCKLEY HILLS; THE WYRE FOREST AREA

L2 WOODLAND AND TREE COVER CHARACTER

Woodland is very much the dominant land cover, typically occurring in extensive interlocking belts.

Where clearance has taken place in the past visually dominant hedgerows and hedgerow trees help maintain the pattern of interlocking woodland.

The woodlands are of ancient character, with mixed broadleaf composition varying with the contrasting soils and geology on which these landscapes occur. Oak is typically the dominant hedgerow tree.

L2 GUIDANCE ON PATTERN, SIZE AND LOCATION

New native woodland is suitable across the majority of the type although in the Cotswolds Wooded Hills, where a greater amount of piecemeal clearance took place historically, many of the open grasslands are of high nature conservation interest. Bredon Hill in particular, hosts a nationally important scrub community which should be retained. This open character should be recognised and conserved.

Except on Bredon Hill and the Cotswolds, large irregular blocks (10 hectares and above) of semi-natural woodland cover are

encouraged, particularly in the vicinity of ancient woodland sites and where woodland cover has been lost. The planting should aim to retain and restore the interlocking pattern of woodland through the area and include the enhancement of tree cover along watercourses, dingles and in hedgerows. Historical records should be consulted to check where woodland cover has been lost. Avoid new woodland planting in areas of other ecological interest such as species rich grassland or traditional orchards.

Avoid establishing conifer blocks, especially on skylines, as these interrupt the generally broadleaved nature of the woodland in the area. Non-native species planted on ancient woodland sites should be gradually removed and replaced with appropriate native species. Conifers planted in previously broadleaved woodland should be replaced with native broadleaved species.

Maintain hedgerow trees, especially mature and veteran trees, and wooded stream-sides, as these are a vital component to the landscape. Ensure that tree populations are sustained by planting young trees.

Strengthen the wooded character of hedge-lines and streamlines through replanting or natural regeneration.

L3 Landscape Type: Wooded Hills & Farmlands

Main Geographic Areas:

BREDON HILL AND THE CLENT/WASELEY HILLS

L3 LANDSCAPE CONTEXT

The Wooded Hills and Farmlands are landscapes of topographical prominence, with large hedged fields, and substantial blocks of woodland. Farming is the dominant land use. Hedgerows and streamside trees integrate the woodland and farmland.

The pronounced slopes of these landscapes are a key element of their definition but the steepness of slope is less severe than that of the Principal Wooded Hills and therefore has been less of a constraint for agriculture. These are landscapes of large scale due to their patterns of substantial woodland blocks and large hedged fields. They contain a significant proportion of farmland, considered to be derived from former areas of open field and with which the occasional clusters of settlement are associated.

L3 Landscape Type: Wooded Hills & Farmlands

Main Geographic Areas:

BREDON HILL AND THE CLENT/WASELEY HILLS

L3 WOODLAND AND TREE COVER CHARACTER

These are areas of ancient woodland character. A key factor of this Landscape Type is the size and pattern of the woodlands - they are large, discrete, well defined individual blocks as opposed to the inter-linking, merging patterns of woodland characteristic of the Principal Wooded Hills.

Hedgerow trees contribute to the character of the Wooded Hills and Farmlands but are generally less prevalent than in the Principal Wooded Hills. Tree cover along streams and water courses is particularly important and this, together with the overall structure of hedgerows, provides an essential visual unity to these landscapes, linking the woodland blocks and integrating them with the areas of farmland.

Today, this landscape often lacks a strong sense of visual cohesion, due to the variable amount of woodland cover and the loss and neglect of hedgerows. The mixed broadleaf composition may also have become diluted by the presence of conifer planting. The strength and scale of these landscapes becomes diluted if the large woodland blocks become fragmented, if the hedgerow and streamside cover structure is broken, or if features of too small a scale are introduced.

L3 GUIDANCE ON PATTERN, SIZE AND LOCATION

There are considerable opportunities for planting new large woodland blocks in these landscapes - new large woodland blocks (4 - 20+ hectares) are encouraged, particularly if replanting areas of recent clearance.

Woodland planting of a smaller scale should aim to strengthen cover along dingles and watercourses. New woodland planting should be of 'ancient' character i.e. appropriate mixed native broadleaved species.

Because of the particular importance of the patterns of historical land clearance in this landscape, it is especially important to establish whether an area of potential new planting has archaeological significance.

Similarly the Landscape Type may support areas of permanent pasture of high biodiversity interest, particularly on higher slopes. Such areas should be avoided for new woodland creation.

L4 Landscape Type: Wooded Forest

Main Geographic Areas:

THE CENTRAL CORE OF THE WYRE FOREST

L4 LANDSCAPE CONTEXT

This is a simple landscape dominated by dense woodland allowing only truncated woodland views. The type is essentially unsettled with only occasional small open fields. The woods are primarily ancient woodland of significant nature conservation importance. Past coniferisation has altered the character of some areas of the forest.

These are areas that were probably cleared for agricultural purposes only briefly, if at all, at the height of the late 13th/early 14th centuries. Any clearance would be likely to have been only of a piecemeal nature, and woodland often re-colonised following the Black Death.

The relative lack of settlement relates to the absence of any prolonged period of agricultural activity, the inhabitants of the scattered cottages in occupations probably related to the woodland.

L4 Landscape Type: Wooded Forest

Main Geographic Areas:

THE CENTRAL CORE OF THE WYRE FOREST

L4 WOODLAND AND TREE COVER CHARACTER

The simplicity of the landscape is a stark contrast to the complexities of the woodland itself. The vast majority of the wooded forest is managed for economic forestry, nature conservation and recreation with around 50% owned by the Forestry Commission. The majority is managed as high forest, with a few areas retaining a traditional coppice with standards regime.

The ancient character of the woodland has been affected in the past by replanting with non-native species, notably conifers. Intensive management practices of the past and the effects of deer browsing have also had an effect upon the under-storey of some semi-natural areas of forest.

L4 GUIDANCE ON PATTERN, SIZE AND LOCATION

New woodland of 'ancient' character can be accommodated throughout the Wooded Forest type although the character and integrity of the few wayside dwellings and associated clearances is important and should be conserved.

Future planting and management should aim to secure the overall integrity of this important area of semi-natural forest, recognising internal variations that will arise due to physiographic differences - soils, topography etc.

Areas of non-native woodland should be progressively returned to woodland of an ancient character, i.e. with a mix of native species and varying age structures.

The pattern and size of woodlands to be restored will be dictated by rotation age, as non-native stands become available for replanting.

L5 Landscape Type: Forest Smallholdings & Dwellings

Main Geographic Areas:

RESTRICTED TO SETTLEMENT AND FARMLAND IN THE IMMEDIATE SURROUNDS OF THE WYRE FOREST

L5 LANDSCAPE CONTEXT

This intimate Landscape Type, defined by strings of wayside cottages and associated smallholdings within a pattern of small fields and narrow lanes, forms the boundary between the Wooded Forest and Plateau Farmlands. Small permanent pasture and rough grassland fields are bounded by hedgerows with a high density of standard trees.

These distinctive landscapes owe their character to the enclosure and subsequent settlement of areas of former common land. The settlement pattern has developed in a random, opportunistic manner, the corresponding density, scale and ad-hoc pattern of both dwellings and lanes being key elements today.

L5 Landscape Type: Forest Smallholdings & Dwellings

Main Geographic Areas:

RESTRICTED TO SETTLEMENT AND FARMLAND IN THE IMMEDIATE SURROUNDS OF THE WYRE FOREST

L5 WOODLAND AND TREE COVER CHARACTER

The Forest Smallholdings is a poorly wooded landscape, in contrast to the neighbouring Wooded Forest. Tree cover is mainly in the form of small scale hedged fields with scattered hedgerow trees and traditional orchards. Gorse scrub and bracken are widespread in this Landscape Type.

L5 GUIDANCE ON PATTERN, SIZE AND LOCATION

Woodland creation in this Landscape Type is generally inappropriate and should only be considered on a small scale, respecting existing field boundaries. Replacing lost hedgerows and standard trees and creating narrow linear tree-belts would be most appropriate.

Planting on areas of permanent pasture and in the vicinity of open wetland features could be damaging to existing biodiversity interests and would be inappropriate.

Hedgerows and hedgerow trees should be restored where they have been lost.

Traditional orchards should be re-planted and restored where they have been lost.

L6 Landscape Type: Timbered Plateau Farmlands

Main Geographic Areas:

CONCENTRATED IN THE NORTH AND NORTH WEST OF THE COUNTY, AROUND THE VILLAGES OF ROCK AND MAMBLE; ON THE BROMYARD PLATEAU; THE LENCHES; TO THE NORTH OF THE CLENT AND WASELEY HILLS

L6 LANDSCAPE CONTEXT

This is a mixed farming landscape of hedged fields and scattered farms, with undulating topography resulting in a contrast of open vistas on plateau tops and secluded wooded valleys. Tree cover and topography are the key elements of this Landscape Type, with hedgerows and dingles being particularly prominent.

These are landscapes that have developed from a mosaic of piecemeal clearance from woodland, with relatively localised areas of open field, and retain a strong association with their woodland origins. Woodlands provide a major structural element to the landscape. The hedgerow pattern defines the scale.

L6 WOODLAND AND TREE COVER CHARACTER

These are 'ancient' landscapes, the tree cover being essentially of ancient semi-natural character. Unlike the Timbered Farmlands, the lowland equivalent of this landscape type, the role of hedgerow trees and their influence in creating filtered views is less significant

in the Plateau Farmlands. The more undulating topography tends to bring the pattern of woodland and hedgerows into greater visual prominence.

Woodlands are of varying size. Particularly characteristic are the dingles associated with valley streams. A significant additional element of tree cover is provided by the specimen trees, often conifers, associated with the ornamental grounds and parklands of the frequent large country houses. Traditional orchards can also provide locally important elements of tree cover.

The deterioration of the overall structure of tree cover is a major issue in these landscapes, causing a loss of visual unity. Woodland cover is not always a prominent component today. The streamside tree cover can often be fragmented and hedgerow trees are generally mature or veteran. The network of hedgerows is often fragmented, severely so in places, resulting in the remaining woodlands becoming isolated from other areas of tree cover.

L6 Landscape Type: Timbered Plateau Farmlands

Main Geographic Areas:

CONCENTRATED IN THE NORTH AND NORTH WEST OF THE COUNTY, AROUND THE VILLAGES OF ROCK AND MAMBLE; ON THE BROMYARD PLATEAU; THE LENCHES; TO THE NORTH OF THE CLENT AND WASELEY HILLS

L6 GUIDANCE ON PATTERN, SIZE AND LOCATION

Ancient woodland should be conserved and restored.

Small to moderate sized (1 - 15 hectares) linear woods and broad hedgerows that link existing woodland blocks are encouraged, in particular linking ancient woodland with other areas of woodland.

On the plateau tops larger areas of woodland can be considered, although care must be taken to ensure that they do not close down the characteristic vistas.

In valley bottoms wet woodland and larger blocks of native woodland are encouraged, particularly where these will fill gaps on the valley sides.

New tree planting to fill in gaps in tree cover along watercourses and dingles is encouraged.

Existing hedgerow oaks should be conserved and new populations of hedgerow trees planted where possible. Additionally, in certain locations, particularly the Bromyard Downs, the hedgerows are notable for their fruit trees - damsons being of particular importance. These hedgerows are often associated with the sites of old orchards, although these may have been subsequently lost to agricultural intensification.

Retention of remaining fruit tree standards, and re-instatement in areas where they have been lost is a priority for this Landscape Type. The pattern of hedgerows throughout the area should be conserved, giving priority to primary boundaries and boundaries of assart origin.

Existing parkland areas and orchards should also be conserved.

L7 Landscape Type: Principal Timbered Farmlands

Main Geographic Areas:

THE MOST WIDESPREAD LANDSCAPE TYPE IN THE COUNTY, COVERING MUCH OF CENTRAL WORCESTERSHIRE, INCLUDING THE HISTORIC ROYAL FORESTS OF MALVERN CHASE AND FECKENHAM

L7 LANDSCAPE CONTEXT

The timbered farmlands are a complex, small to medium scale agricultural landscape defined by a strong wooded character of hedgerow trees and irregularly shaped woodlands providing a sense of enclosure and intimacy. The areas are characterised by a mosaic of agricultural land cleared directly from woodland on a piecemeal basis, together with land enclosed from former localised areas of open fields, resulting in a dispersed pattern of farmsteads and wayside cottages.

L7 Landscape Type: Principal Timbered Farmlands

Main Geographic Areas:

THE MOST WIDESPREAD LANDSCAPE TYPE IN THE COUNTY, COVERING MUCH OF CENTRAL WORCESTERSHIRE, INCLUDING THE HISTORIC ROYAL FORESTS OF MALVERN CHASE AND FECKENHAM

L7 WOODLAND AND TREE COVER CHARACTER

The key element of this landscape is the strong, unifying presence of tree cover in the form of woodlands, hedgerow trees and linear tree cover associated with streams and watercourses. The combined presence of these tree cover elements provides an essential sense of scale and enclosure, and creates the filtered views that are so distinctive in this landscape.

The resulting woodland character is essentially that of mixed native broadleaved trees, with oak the dominant species. Lines of mature oak are a particular feature of the hedgerows as befits a landscape with strong links to its woodland origins.

The character of these landscapes is being diluted primarily due to the loss of scale and structure resulting from the decline and fragmentation of the elements of tree cover, most notably of the smaller scale elements such as hedgerow trees.

The distribution of woodland is uneven throughout these landscapes and the streamside cover is also fragmented in places. A gradual change from mixed to arable farming is evident with

consequent loss of function and eventual demise of the hedgerow structure. Once this happens, the scope for hedgerow trees becomes restricted and the sense of scale and enclosure is lost.

L7 GUIDANCE ON PATTERN, SIZE AND LOCATION

There is considerable potential for new woodland planting throughout the type especially adjacent to existing woodland, along roads and on the borders of the larger settlements of Worcester, Bromsgrove, Redditch, Malvern and Droitwich. New planting of semi-natural woodland which links fragmented relic ancient woods is especially encouraged. Whilst planting new woodland is encouraged, perpetuating hedgerow oaks is a priority in landscape terms.

Woodlands in these landscapes vary in size from small field corner copses to those of a size exceeding that of the surrounding fields. The shape of new woodlands should reflect the overall irregular, organic structure of the Timbered Farmlands.

Conserve and restore tree cover along water courses and streamlines, along highways and other non-farmed locations. Conserve and restore the pattern of hedgerows.

L8 Landscape Type: Timbered Pastures

Main Geographic Areas:

IN THE EXTREME NORTH EAST OF THE COUNTY, BORDERING THE SOUTHERN EDGE OF THE WEST MIDLANDS CONURBATION, WITHIN THE HISTORIC FOREST OF ARDEN. NOW INCLUDING THE SETTLEMENTS OF WYTHALL, HOLLYWOOD AND ALVECHURCH

L8 LANDSCAPE CONTEXT

A small scale, settled pastoral landscape, characterised by filtered views through densely scattered hedgerow trees. This is a complex landscape of relic commons and former wood pasture, reflected today by an intermixed pattern of irregular fields and scattered farms occurring next to areas of geometric enclosure, straight roads and strings of wayside dwellings.

This area is a matrix of former areas of common land and areas of woodland assart origins. The key feature to this landscape, providing its character and structure, is the dominant presence of dense lines of mature hedgerow oaks.

The tree cover emphasises the small scale pattern of enclosure, overriding local differences in hedgerow pattern.

The woodland pattern is regular where the fields are derived from the late enclosure of common land but irregular where associated with fields of assart origin.

L8 Landscape Type: Timbered Pastures

Main Geographic Areas:

IN THE EXTREME NORTH EAST OF THE COUNTY, BORDERING THE SOUTHERN EDGE OF THE WEST MIDLANDS CONURBATION, WITHIN THE HISTORIC FOREST OF ARDEN. NOW INCLUDING THE SETTLEMENTS OF WYTHALL, HOLLYWOOD AND ALVECHURCH

L8 WOODLAND AND TREE COVER CHARACTER

This is an 'ancient' landscape. The pattern of woodland is of small broadleaved copses and extraordinarily dense, broad, tall hedgerows with mature and veteran oak trees. Early field boundaries tend to be of mixed species composition, whilst regularly shaped thorn hedges characterise later enclosures of common land and medieval wood pasture. The resulting landscape has a high density of hedgerows and oak trees with numerous small woodland copses giving a strong impression of a well wooded landscape, despite the fact that very few woodlands are over 2 hectares in size.

L8 GUIDANCE ON PATTERN, SIZE AND LOCATION

The intimate pattern of hedgerows should be conserved and restored.

Planting of hedgerow trees in hedges where they have been lost or where the population is ageing is encouraged.

Woodland creation in this type should be on a small scale with restocking hedgerows and the creation of small copses being most appropriate. Woodland creation should respect existing field boundary patterns. Small woodland copses can be planted in open situations. Within farmland, block planting on a scale larger than the surrounding field sizes, especially of non-native species, is not appropriate.

There is potential for new woodland planting in non-farmed land such as along roadsides and on the borders of settlements, particularly on the edge of the conurbation. However it should be borne in mind that this is an area of considerable ecological significance with a complex range of habitats, notably marl pits and unimproved pasture. Areas of existing high biodiversity value should be avoided for new planting.

L9 Landscape Type: Wooded Estatelands

Main Geographic Areas:

SCATTERED THROUGHOUT CENTRAL WORCESTERSHIRE, NOTABLY TO THE SOUTH OF STOURPORT-ON-SEVERN AND TO THE EAST OF WORCESTER

L9 LANDSCAPE CONTEXT

A medium to large scale wooded agricultural landscape. Isolated brick farmsteads, open views and large, irregularly shaped ancient woodlands are key elements of its character, often with large country houses set in parkland and ornamental grounds.

This is a landscape where farmed land is the dominant land use, with woodland comprising about 30 - 40% of the land cover. The size, shape and composition of the woodlands are critical elements in defining its character. The hedgerow pattern also contributes to defining the scale.

L9 Landscape Type: Wooded Estatelands

Main Geographic Areas:

SCATTERED THROUGHOUT CENTRAL WORCESTERSHIRE, NOTABLY TO THE SOUTH OF STOURPORT-ON-SEVERN AND TO THE EAST OF WORCESTER

L9 WOODLAND AND TREE COVER CHARACTER

Woodlands in this landscape are of ancient character, forming large, well-defined, irregularly shaped blocks.

Although the woodlands tend to be discrete units the presence of a strong hedgerow pattern achieves a sense of visual cohesion. Hedgerow trees are less significant in the Wooded Estatelands compared to other ancient landscapes - the view of woodland boundaries tending to be far less obscured than in, for example, Timbered Farmlands, where hedgerow trees have a notable filtering effect.

Parkland and ornamental grounds associated with large estates can be a noticeable feature in these landscapes, many derived from former medieval deer parks and containing notable veteran tree populations.

Some dilution of ancient character has taken place, largely through coniferisation. The extent of many parklands has been severely reduced, with former parkland trees now standing amidst arable crops.

L9 GUIDANCE ON PATTERN, SIZE AND LOCATION

There is considerable potential for large new woodland planting throughout this Landscape Type.

New planting should where possible be in large blocks - field size should ideally be the minimum size for such new woodlands. Scale is crucial to this landscape, and introducing small woodlands will confuse and dilute the bold proportions. Small scale planting features within parkland and other designed landscapes are an exception to this general principle.

The hedgerow pattern should be conserved and enhanced, with particular attention given to primary hedgerows.

L10 Landscape Type: Unenclosed Commons

Main Geographic Areas:

SCATTERED THROUGHOUT THE COUNTY, INCLUDING HARTLEBURY IN THE NORTH AND MALVERN WELLS, CASTLEMORTON, KEMPSEY, BROCKERIDGE AND DEFFORD IN THE SOUTH

L10 LANDSCAPE CONTEXT

A scattered localised Landscape Type offering tremendous variety of scale and size. The overriding characteristics are the lack of enclosure and, usually, a land use of rough grazing. The smaller commons are ranked as features within other Landscape Types and only the larger examples are considered to be of sufficient extent to be classified separately.

The character of these landscapes has in the past developed as a result of the activities of those with commoners' rights over the relevant area. Different activities have resulted in different identities.

There is often a strong sense of 'wilderness' and the lack of intensive management invariably results in land of high biodiversity significance.

L10 Landscape Type: Unenclosed Commons

Main Geographic Areas:

SCATTERED THROUGHOUT THE COUNTY, INCLUDING HARTLEBURY IN THE NORTH AND MALVERN WELLS, CASTLEMORTON, KEMPSEY, BROCKERIDGE AND DEFFORD IN THE SOUTH

L10 WOODLAND AND TREE COVER CHARACTER

In general commons are unwooded and open. Exceptionally, for example Pipers Hill Common, woodland has become a dominant feature. On many commons tree regeneration, scrub and secondary woodland is evident, especially where traditional methods of management, e.g. grazing or cutting, have ceased or are reduced.

The pattern of tree cover on commons is often associated with the gardens surrounding the small wayside settlements.

L10 GUIDANCE ON PATTERN, SIZE AND LOCATION

No new woodlands are recommended in the Unenclosed Commons Landscape Type.

Management of secondary woodland and scrub that is encroaching upon unenclosed commons is encouraged.

Existing mosaics of open spaces, woodland and scrub should be managed, aiming to maintain the individuality of commons and their biodiversity interest and avoid municipal/tidy approaches to management.

L11 Landscape Type: Limestone Estatelands

Main Geographic Areas:

LIMITED EXTENT IN THE COUNTY - RESTRICTED TO THE PLATEAU TOPS OF BREDON HILL AND THE COTSWOLDS

L11 LANDSCAPE CONTEXT

A sparsely populated 'upland' landscape characterised by thin limestone soils, estate plantations and large rectilinear fields defined by drystone walls. This is an undulating plateau with large open spaces framed by woodland edges and belts of trees

The key factors that define this landscape are its topography, its large scale and open character and the estate-like influence of large regular fields, plantations and belts of trees. This landscape was formerly associated with extensive sheep walks, although much of its permanent pasture has now been lost to arable uses. The area was probably cleared of its tree cover by Roman times, and with its light and easily cultivated soils has been farmed ever since. Hence there has been little opportunity for the natural re-establishment of woodland except along the steeper valleys.

L11 Landscape Type: Limestone Estatelands

Main Geographic Areas:

LIMITED EXTENT IN THE COUNTY - RESTRICTED TO THE PLATEAU TOPS OF BREDON HILL AND THE COTSWOLDS

L11 WOODLAND AND TREE COVER CHARACTER

In this upstanding, open landscape, woodland is visually prominent, typically occurring as plantations and tree belts along the steeper valleys. Where clearance has taken place in the past visually dominant hedgerows and hedgerow trees help maintain the pattern of interlocking woodland

The woodlands are of planned character, with mixed broadleaf composition varying with the contrasting soils and geology on which these landscapes occur. Oak is typically the dominant hedgerow tree.

L11 GUIDANCE ON PATTERN, SIZE AND LOCATION

Strengthening existing belts of trees and further expanding these features is encouraged.

The plateau tops of the Limestone Estatelands command fine open views over much of the surrounding countryside.

There is potential for new medium to large scale plantations in areas which do not disrupt the open character and long distance views, and they should reflect the existing regular field pattern.

On Bredon Hill, new planting of trees to provide the veteran trees of the future is particularly encouraged.

Remaining areas of unimproved limestone grassland should be avoided because of their biodiversity value.

L12 Landscape Types: Sandstone Estatelands & Enclosed Commons

Main Geographic Areas:

THE SANDSTONE ESTATELANDS ARE CONCENTRATED ON THE KINVER PLATEAU. THE ENCLOSED COMMONS LIE TO THE EAST OF THE MALVERN HILLS, TO THE SOUTH OF GREAT MALVERN

These two Landscape Types are similar in many ways, differing primarily due to their soils and geology and in their consequent land use and ecological identities. Their tree cover character is however comparable and for the purposes of this document, the two Landscape Types can be considered together.

L12 LANDSCAPE CONTEXT

An open arable landscape with a regular pattern of large fields, defined by straight, late enclosure thorn hedges and straight-sided estate plantation woodlands. The main land use in the Sandstone Estatelands is arable farming.

Farmsteads and wayside dwellings are scattered and dispersed, and discrete settlement clusters are often in the form of small estate villages.

The strong geometric pattern of these landscapes creates a functional and ordered landscape. Large plantation woodlands provide a notable structural component to the landscape, although it is the field pattern that provides the overall unity. Relict areas of heathland in the Kinver area are often of high nature conservation importance.

L12 Landscape Types: Sandstone Estatelands & Enclosed Commons

Main Geographic Areas:

THE SANDSTONE ESTATELANDS ARE CONCENTRATED ON THE KINVER PLATEAU. THE ENCLOSED COMMONS LIE TO THE EAST OF THE MALVERN HILLS, TO THE SOUTH OF GREAT MALVERN

L12 WOODLAND AND TREE COVER CHARACTER

These are planned landscapes, with large, well-defined woodlands. Single species - especially coniferous - plantation woodlands with their regular boundaries, together with tree belts, provide a key element to the overall character. The landscape is open, with tree cover providing a framework to views, rather than producing a sense of enclosure by blocking them. Hedgerows are typically species-poor, dominated by hawthorn and noticeably lacking in hedgerow trees.

Tree cover along watercourses and drainage ditches is important, usually provided by willows and alder. Parkland features and associated ornamental planting add to the diversity of these landscapes.

The deterioration and reduced size of parklands is often evident, with parkland trees now located in areas of arable cultivation.

L12 GUIDANCE ON PATTERN, SIZE AND LOCATION

There is considerable potential for large new woodland planting throughout both these landscapes, helping to strengthen the estate

character. Planting should ideally be in large blocks (field size and above) following the existing geometric field pattern. Mixed and coniferous woodland will be most appropriate on existing plantation sites and previously un-wooded arable sites. Plantations on ancient woodland sites are an important exception, where native woodland should be restored at the end of the current rotation. Coniferous planting is not recommended within the Malvern Hills AONB.

The woodland pattern can be further enhanced by planting of linear tree-belts, and strengthening planting along watercourses.

Parkland should be restored and conserved.

The distinctive hedgerow pattern should also be restored and conserved, with priority given to primary hedgerows.

Heathlands, a rare habitat of high biodiversity importance, are distributed throughout the Sandstone Estatelands.

Woodland creation should not be considered on heathland areas and remaining areas of permanent grassland.

L13 Landscape Type: Estate Farmlands

Main Geographic Areas:

THE EASTERN EDGE OF THE KINVER PLATEAU IN THE NORTH AND AROUND UPTON UPON SEVERN IN THE SOUTH

L13 LANDSCAPE CONTEXT

An ordered agricultural landscape characterised by a sub-regular pattern of medium to large sized fields, small plantations and groups of ornamental trees associated with large country houses. The landscape is similar in many ways to the Sandstone Estatelands and the Enclosed Commons, depending on tree cover and field pattern to provide structure and scale. The scale however is generally smaller and the pattern of fields and plantations lacks the strong geometric framework of those landscapes.

These are areas of increasingly dominant arable land uses, resulting in the function of hedgerows gradually becoming redundant with consequent fragmentation of landscape structure.

L13 Landscape Type: Estate Farmlands

Main Geographic Areas:

THE EASTERN EDGE OF THE KINVER PLATEAU IN THE NORTH AND AROUND UPTON UPON SEVERN IN THE SOUTH

L13 WOODLAND AND TREE COVER CHARACTER

Plantation woodlands with a regular outline, often of coniferous or single species composition, are characteristic of the Estate Farmlands. Such plantations can vary considerably in size, but are typically small (field size and below). Some localities, such as Croome and Pirton, contain the relics of extensive parkland plantings, the remnants of which are now often located amidst arable land.

Tree belts including watercourse woodlands also make an important contribution to the tree cover character.

The floodplain of the Severn is largely un-wooded, with the exception of often majestic and significant willow pollards and black poplar trees.

L13 GUIDANCE ON PATTERN, SIZE AND LOCATION

There is considerable potential for large-scale new woodland planting in farmland throughout this type.

Planting in parkland areas should be respectful of historic woodland and tree patterns. Woodland blocks are unsuited to the floodplain of the River Severn and Avon and remnant heathland areas.

New planting in this landscape type should concentrate on blocks of new woodlands following the existing geometric field pattern. New native, mixed and coniferous woodland will all be appropriate, predominantly on arable farmland and existing woodland sites. The pattern can be further enhanced by planting linear tree-belts to strengthen hedge-lines and watercourse woodlands.

Parkland, small woodlands and ornamental planting associated with historic designed landscapes, such as Croome Park, Pirton Court and Hanley Castle, should where possible be restored.

The pattern of hedged fields should be conserved, with priority given to primary hedge-lines.

L14 Landscape Types: Principal Settled Farmlands; Settled Farmlands with Pastoral Land Use; Settled Farmlands on River Terraces

Main Geographic Areas:

WHILST DIFFERENCES IN LAND USE AND SOILS JUSTIFY SUBDIVISIONS OF THE SETTLED FARMLANDS LANDSCAPE TYPE, FOR THE PURPOSES OF THIS DOCUMENT THE THREE TYPES CAN BE GROUPED TOGETHER. THESE LANDSCAPE TYPES ARE FOUND THROUGHOUT THE COUNTY WITH CONCENTRATIONS ON THE RIVER TERRACES THAT FLANK THE SEVERN VALLEY; AROUND ITS CONFLUENCE WITH THE AVON; AROUND THE AREA OF THE FORMER LONGDON MARSH; NORTH OF BROMSGROVE; IN THE AREA OF THE HISTORIC OMBERSLEY FOREST; IN THE EAST OF THE COUNTY AROUND COOKHILL.

L14 LANDSCAPE CONTEXT

These are small to medium scale settled agricultural landscapes, with scattered farms, relic commons and clusters of wayside dwellings. These are all linked by a network of narrow winding lanes which nestle within a matrix of hedged fields.

These areas combine features which are characteristic of both ancient and planned landscapes. The landscape has developed from areas of extensive open field arising from clearance later than that of the Village Farmlands and have therefore existed for a shorter period of time. They lack the strongly defined nucleated settlement pattern of the Village Farmlands, possessing a dispersed settlement pattern of farmsteads and hamlets which was developed prior to the clearance of woodland. Such late clearance may be associated with the gradual reduction in extent of the former Royal Forests.

L14 WOODLAND AND TREE COVER CHARACTER

Woodlands are not a characteristic feature of these landscapes.

Where woods do occur they are often semi-natural dingles, streamside woodlands or small mixed woodland blocks and groups of trees around individual dwellings and small settlements.

Hedgerow trees vary in significance and density. In much of the Settled Farmlands with Pastoral Land Use, hedgerow trees can be present in such numbers as to produce an almost wooded appearance while they are less dense in other Settled Farmlands.

The composition of the hedgerow tree cover differs from that of the Timbered Farmlands in that it lacks oak dominance. The tendency towards arable land use reduces the functional role of hedgerow boundaries and limits the potential for perpetuating hedgerow tree cover. Hedgerow loss and deterioration is already in evidence locally.

Locally distinctive features include areas of hedgerows with fruit standards, such as those found at Castlemorton.

L14 Landscape Types: Principal Settled Farmlands; Settled Farmlands with Pastoral Land Use; Settled Farmlands on River Terraces

Main Geographic Areas:

WHILST DIFFERENCES IN LAND USE AND SOILS JUSTIFY SUBDIVISIONS OF THE SETTLED FARMLANDS LANDSCAPE TYPE, FOR THE PURPOSES OF THIS DOCUMENT THE THREE TYPES CAN BE GROUPED TOGETHER. THESE LANDSCAPE TYPES ARE FOUND THROUGHOUT THE COUNTY WITH CONCENTRATIONS ON THE RIVER TERRACES THAT FLANK THE SEVERN VALLEY; AROUND ITS CONFLUENCE WITH THE AVON; AROUND THE AREA OF THE FORMER LONGDON MARSH; NORTH OF BROMSGROVE; IN THE AREA OF THE HISTORIC OMBERSLEY FOREST; IN THE EAST OF THE COUNTY AROUND COOKHILL.

L14 GUIDANCE ON PATTERN, SIZE AND LOCATION

New woodland is best located in the vicinity of settlements but, with careful consideration, can be introduced elsewhere. However, bearing in mind that woodland is not a key feature, it is not appropriate for new woodland to be of a size or frequency so as to become a dominant element of the landscape.

As a general guide, woodland should be visually subservient to hedgerow trees.

Restoration of hedgerows and linear tree-belts is important, as is the recruitment of hedgerow trees into existing hedges.

New woodland is unlikely to be appropriate on the floodplains of the Rivers Severn and Avon, although wet woodland in the context of flood alleviation schemes may be appropriate in agreed locations. Individual willow and native black poplar trees could be accommodated.

Existing elements of tree cover along watercourses should be conserved and enhanced.

Where they occur, for example at Castlemorton, the locally distinctive hedgerows with fruit tree standards should be conserved and renewed.

L15 Landscape Types: Principal Village Farmlands & Village Farmlands with Orchards

Main Geographic Areas:

THE VALE OF EVESHAM

These two Landscape Types are differentiated by the dominance of orchard planting in the latter type. Other tree cover characteristics are similar for both, and therefore the two are described together.

L15 LANDSCAPE CONTEXT

These are open, rolling lowland landscapes with well-defined nucleated settlements. Intensive horticultural and arable land uses dominate. The expansive landscape was formerly open field and is characterised by its settlement pattern and land use, rather than tree cover, which is often restricted to watercourses and hedgerows.

These are true 'planned' landscapes, derived from vast expanses of former open field which have remained under intensive cultivation following their enclosure. Regeneration of woodland and tree cover has never re-established to any significant degree with the exception of elm, which was formerly a dominant hedgerow tree.

L15 Landscape Types: Principal Village Farmlands & Village Farmlands with Orchards

Main Geographic Areas:

THE VALE OF EVESHAM

L15 WOODLAND AND TREE COVER CHARACTER

Woodlands are not a distinctive feature of this open landscape, with the major tree cover feature, hedgerow elms, now almost completely lost due to Dutch Elm Disease.

Elm would previously have provided notable tree cover structure to the landscape, emphasising the hedgerow pattern. Today the most significant tree cover is that associated with settlements together with the linear cover along watercourses.

Distinctive specimen trees, often conifers, associated with churchyards, vicarages and manor-houses, frequently strengthen the visual prominence of villages in long distance views.

Hedgerow fruit trees, particularly damson, are locally characteristic. Domestic orchards are a notable feature throughout the principal Landscape Type and feature as a dominant land use in the landscape sub-type. The characteristic traditional orchards of standard trees are gradually disappearing in certain areas, being replaced by bush stock. This is to the detriment of landscape character.

L15 GUIDANCE ON PATTERN, SIZE AND LOCATION

The lack of woodlands in these landscapes is a primary characteristic and hence planting of new woodland blocks, particularly in open farmland situations, is not encouraged.

Opportunities for introducing new elements of tree cover should be concentrated upon smaller blocks, tree belts adjacent to existing settlements and conserving and restoring tree cover along watercourses, where species such as alder are appropriate.

Linear tree cover and hedgerow restoration should follow existing or historic boundaries. Within village envelopes distinctive trees could be planted to enhance public open spaces.

The regeneration of elm continues in the hedgerows but still eventually succumbs to disease at a certain size, thus contributing to more hedgerow gaps. After much consideration it has been decided to promote the planting of oak and ash substitutes for the original densely planted hedgerow elms.

Traditional orchards and hedgerow fruit trees should be conserved and restored.

L16 Landscape Type: Village Claylands

Main Geographic Areas:

VALE OF EVESHAM; WEST OF THE LENCHES; SOUTH OF BREDON HILL

L16 LANDSCAPE CONTEXT

An open, gently rolling agricultural landscape characterised by an ordered pattern of hedged fields and discrete rural villages. These are areas of heavy, poorly drained soils, typically associated with broad clay vales backed by steeply sloping escarpments. The hedgerow field pattern defines the scale of the landscape although the demise of the elm has had an impact upon the character of these areas.

These are landscapes derived from former extensive areas of open fields, but were less favoured for continuous arable cultivation, becoming predominantly converted to pasture at the time of enclosure. Relict ridge and furrow is particularly prominent in these landscapes as the pastoral land use has protected it from obliteration by modern agricultural machinery.

The settlement pattern reflects the organised community structure associated with the open field culture. However some villages have since declined in size or even become abandoned, reflecting the decline in status of the area for farming.

L16 Landscape Type: Village Claylands

Main Geographic Areas:

VALE OF EVESHAM; WEST OF THE LENCHES; SOUTH OF BREDON HILL

L16 WOODLAND AND TREE COVER CHARACTER

Woodland is not a characteristic of these 'planned' landscapes. They were, however, often dominated by elm but the impact of Dutch Elm Disease has left them significantly lacking in tree cover. Trees are now primarily represented by watercourse tree-lines of willow and alder and to some extent, hedgerow trees, predominantly of ash.

The problems associated with restoring the distinctively dense tree cover associated with the elm are the same as for the Village Farmlands. Originally, it was thought that rather than use an alternative species to replicate the character it would be left for a degree of natural resistance to emerge that would enable regeneration of this species to arise from the remaining hedgerow stock. However, after 40 years there is no evidence of any emergence of natural resistance. The decision has therefore been taken to attempt to replicate the originally heavily treed landscape by promoting the planting of oak and ash hedgerow trees.

L16 GUIDANCE ON PATTERN, SIZE AND LOCATION

Tree planting along hedgerows and waterways is encouraged to strengthen the structural framework of these landscapes.

Small woodland blocks are most appropriate on land adjacent to existing nucleated settlements. Within village envelopes, distinctive trees could be planted to enhance public open spaces.

Linear woodlands and hedgerow restoration should follow existing or historic boundaries.

Extensive areas of wet riparian pasture and permanent pasture should be avoided for new woodland planting.

The pattern of hedgerows and scattered trees should be strengthened and restored.

L17 Landscape Type: Riverside Meadows

Main Geographic Areas:

RIVERSIDE MEADOWS ARE CONCENTRATED ALONG THE MAIN RIVER VALLEYS OF THE SEVERN, AVON AND TEME RIVERS AND ALSO ALONG SOME OF THEIR LARGER TRIBUTARIES

L17 LANDSCAPE CONTEXT

A linear riverine landscape associated with a flat, generally well-defined alluvial floodplain, in places framed by steeply rising ground. This is a secluded pastoral landscape, characterised by meandering, tree-lined rivers and flanked by alluvial meadows with grazing animals.

Throughout these landscapes the presence of extensive areas of waterside meadows, used for seasonal grazing, has in the past provided a strong sense of visual and ecological unity. These are landscapes that accommodate a degree of seasonal annual flooding a factor which was reflected in the patterns of land use and the lack of settlement and development.

L17 Landscape Type: Riverside Meadows

Main Geographic Areas:

RIVERSIDE MEADOWS ARE CONCENTRATED ALONG THE MAIN RIVER VALLEYS OF THE SEVERN, AVON AND TEME RIVERS AND ALSO ALONG SOME OF THEIR LARGER TRIBUTARIES

L17 WOODLAND AND TREE COVER CHARACTER

Although tree cover is a notable element of these landscapes, the Riverside Meadows rarely contain areas of significant woodland, except where the valley sides become steep. There is little to indicate that woodlands have been a characteristic feature of these landscapes since their use as grazing meadows evolved.

The tree cover pattern is typically linear following the line of rivers, ditches and hedgerows. Alder, locally known as 'Arles' is the dominant species on much of the Teme, Stour and Upper Severn and also occurs as almost pure stands on the Lower Severn. Both crack and white willow are also common, with white willow more frequent to the south. Pollard willows are a common feature, particularly along larger rivers.

L17 GUIDANCE ON PATTERN, SIZE AND LOCATION

The planting of narrow linear woodlands and individual trees to restore the characteristic pattern of tree cover along river and stream banks, ditches and hedgerows will be most appropriate, concentrating on areas where they are in decline.

Extensive areas of seasonally wet permanent pasture are often of high nature conservation importance and new planting should not be carried out on these areas.

Restrictions exist on the type and size of tree planting along riverbanks, ditches and hedgerows in high risk flood plains (see Environment Agency (EA) regulations). Planting alders is subject to EA guidance regarding phytophthora disease.

Local character can be strengthened by planting individual trees of crack willow (future pollards) and black poplar.

L18 Landscape Type: Wet Pasture Meadows

Main Geographic Areas:

WET PASTURE MEADOWS ARE FOUND ON LONGDON MARSH AND IN MORE FRAGMENTED AREAS IN THE LOWER SEVERN VALLEY AND IN OTHER AREAS AROUND TIBBERTON AND FECKENHAM

L18 LANDSCAPE CONTEXT

Wet Pasture Meadows are typically flat, low-lying, largely uninhabited landscapes, associated with irregularly shaped, poorly draining basins fringed by low hills or scarps. These landscapes are of a secluded, pastoral nature, characterised by a regular pattern of hedged fields and ditches, fringed by lines of willow and alder.

These are landscapes which have in the past been buffered from change due to the difficulties of cultivating soils with such poor drainage. They have consequently been avoided as sites for settlement and roads, and have often remained of low key agricultural status. The key feature has been the widespread pastoral land use, and associated traditional methods of management, which in turn have supported wetland habitats of considerable wildlife interest. The patterns of hedged fields provide structure to the landscapes, the hedge-lines invariably associated with ditches.

L18 Landscape Type: Wet Pasture Meadows

Main Geographic Areas:

WET PASTURE MEADOWS ARE FOUND ON LONGDON MARSH AND IN MORE FRAGMENTED AREAS IN THE LOWER SEVERN VALLEY AND IN OTHER AREAS AROUND TIBBERTON AND FECKENHAM

L18 WOODLAND AND TREE COVER CHARACTER

The Wet Pasture Meadows are predominately open and un-wooded in character, with tree cover represented by hedgerow and watercourse trees and small clumps associated with ponds and un-farmed areas. Alder and willows are particularly notable, often in dense tree lines, strengthening the landscape structure provided by the hedgerow pattern. Pollarded willows are distinctive in certain areas, although this type of management is declining, resulting in the deterioration of old pollards.

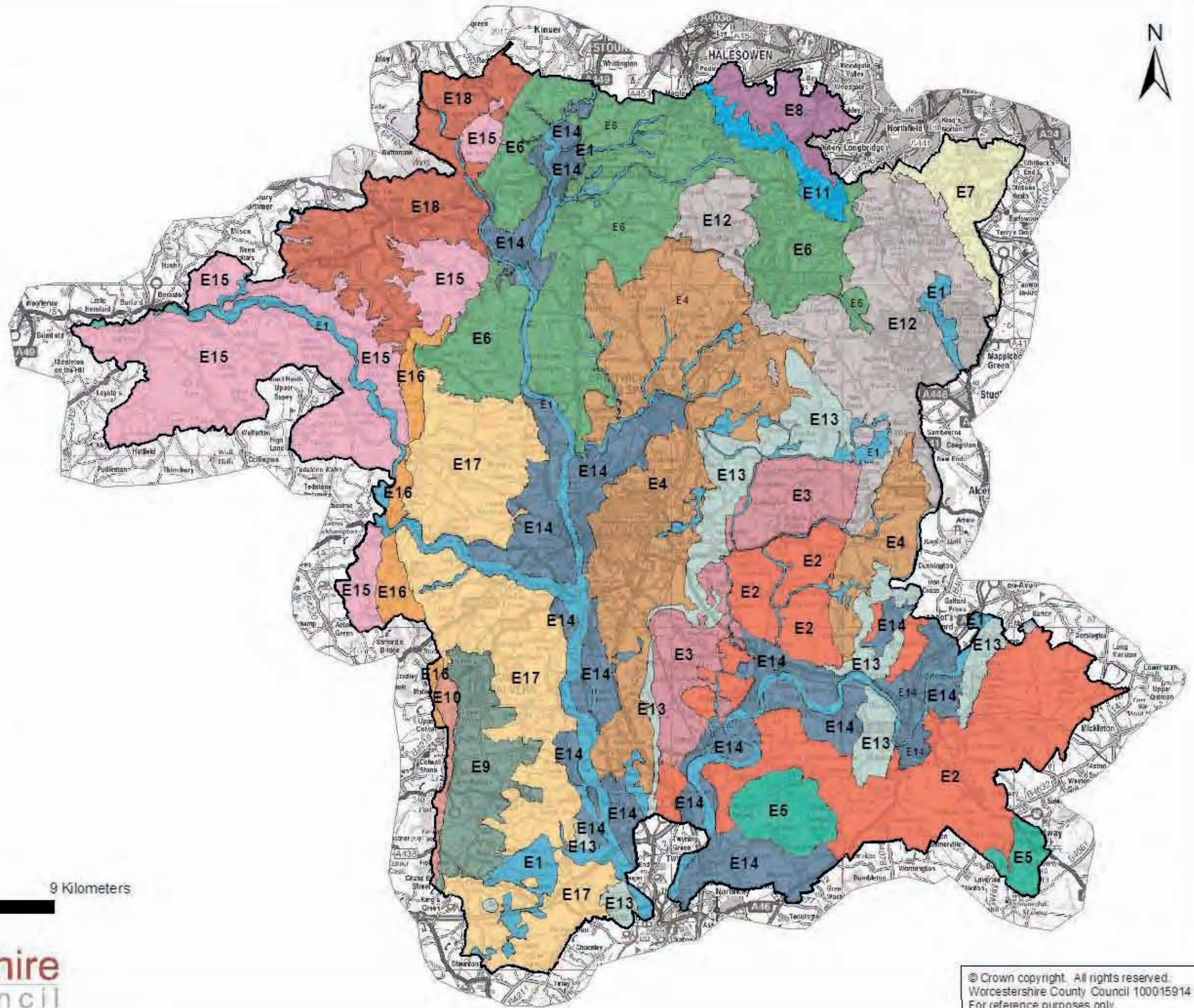
L18 GUIDANCE ON PATTERN, SIZE AND LOCATION

These are typically un-wooded landscapes, and the priority with regard to future tree planting should be to restore the lines of trees bordering watercourses, ditches and hedges.

The retention and appropriate management of existing wetland areas, together with increasing the extent of wetland habitat, should be a priority in these landscapes.



MAP TWO Ecological Zones



Ecological Zones

- E1 Alluvial Fenlands
- E2 Avon Vale Claylands
- E3 Avon Vale Forestlands
- E4 Central Mudstones
- E5 Cotswolds Hills
- E6 Forest Sandstones
- E7 Headley Heaths
- E8 Kenelm's Forestlands
- E9 Malvern Commons
- E10 Malvern Hills
- E11 North Worcestershire Hills
- E12 Northern Mudstones
- E13 Rhaetian Scarp and the Lenches
- E14 River Terraces
- E15 Teme Valley Sandstones
- E16 West Worcestershire Hills
- E17 Western Mudstones
- E18 Wyre Forestlands



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E1 Ecological Zone: Alluvial Fenlands

Main Geographic Areas:

THROUGHOUT THE COUNTY, ALONG RIVER COURSES AND SCATTERED ISOLATED AREAS

E1 ECOLOGICAL CONTEXT

Occurs on level ground in areas of poor natural drainage, either in natural basins such as Longdon Marsh, or on flood plains of the major rivers (including the Severn, Stour, Avon, Teme, Salwarpe and Arrow). Soils are mostly alluvial (derived from river deposits) but pockets of other wet mineral soils occur, and very locally fen peats can also occur.

Before extensive woodland clearance large tracts of wet woodland would have occupied these flood plains and basins, occupying around 7% of the county (15-20,000ha). The wettest ground held fen woodlands up to the 18th century but the majority of these were drained during the periods 1770-1870 and post-World War Two. The last assessment of wet woodland in the county indicated a total area of just 224 ha remaining*.

The fen woodland that is still found today occurs throughout the county, mostly confined to linear strips along watercourses.

The only substantial concentration is along the Stour valley and its eastern tributaries. Traditional management included withy beds in the Avon, Lower Severn and Stour valleys, supplying willow canes for basket weaving etc. and pollards (willows, oak, ash, black poplar) providing small pole-sized timber. Black poplars were also grown as timber trees (supplying curved beams). Ashbeds - a Teme vale feature - formerly supplied the hop trade with poles.

A distinct natural divide occurs between the northern catchments (Upper Severn/Teme) and the southern catchments (Lower Severn/Avon), with the boundary taken as the Severn/Teme confluence. The southern catchments produce both more fertile and more basic conditions.

* *Worcestershire Red Data Book, 1998*

E1 Ecological Zone: Alluvial Fenlands

Main Geographic Areas:

THROUGHOUT THE COUNTY, ALONG RIVER COURSES AND SCATTERED ISOLATED AREAS

E1 GENERAL ECOLOGICAL GUIDELINES

Fen woods are typically mosaics of high forest groves, thickets of scrub and wetland glades, and the overall aim should be to reproduce this natural pattern. Glades especially should be frequent and as large as possible, and the wettest areas should be left open. Natural regeneration is preferred (definitely within the wettest zones). Generally, planting should not be up to stream banks (wooded or not) - belt planting parallel to a watercourse creates valuable riparian glades.

In mixed plantings irregular blocks of single species are more natural. Include block planting of scrub species to create thickets.

Re-instatement and creation of withy beds is recommended, especially along river banks in the southern catchments.

Where possible existing features should be linked to create ecological corridors - a narrow linking belt is better than an isolated block.

Avoid extensive canopies of even-age plantations.

E1 NVC COMMUNITIES

Willows are predominant in the southern catchments and nutrient enriched sites elsewhere. Alder is more characteristic of northern valleys and streamsides. There is a gradation to ash wood on the drier ground, and pockets of oak can also occur. Birches and aspen are locally prevalent.

- W1** Willow scrub is widespread in small stands.
- W2** Scrub willow-birch-common reed is very rare, only occurring in tiny fragments.
- W5** Alder-tussock sedge wood occurs in a small acreage in northern valleys.
- W6** Alder-willow-nettle wood is widespread as linear belts and blocks in the Severn and Stour vales.
- W7** Alder-ash wood occurs along streamsides in northern catchments (also springs and seepages).
- W:** Undescribed alder-ash wood (affinities to W7/W8/W6) is common, especially around streams found on mudstone geology.
- W8** Ash wood is common in transition to drier ground.
- W10** Oak wood occurs in frequent pockets.

E1 Ecological Zone: Alluvial Fenlands

Main Geographic Areas:

THROUGHOUT THE COUNTY, ALONG RIVER COURSES AND SCATTERED ISOLATED AREAS

EI SUITABLE TREES AND SHRUBS

Trees: (broadly in preferential order) alder, ash, willow (crack & white), aspen, oak, birch, black poplar. In areas of high water table along watercourses in northern catchments alder is preferred, succeeding to ash on drier ground. Willows are typical of open situations and are most appropriate for peripheral and linear planting e.g. restoring tree-lined watercourses.

Willow is the preferred species in southern catchments, and can be used for block planting or as a boundary species. White willow pollards are a characteristic feature along streamsides. Aspen is highly recommended, planted as groves. Oak is suitable for drier and poorer soils, perhaps as small groups or boundary standards. Black poplar (use only locally derived stock - see the Environment Agency's map for stockists) is a characteristic species of the Severn Vale and can be planted as singles or short rows on stream banks.

Shrubs: hawthorn, blackthorn, guelder rose, grey willow, goat willow, hazel, field maple. Southern catchments only - purging buckthorn, spindle, wild privet, dogwood. Main river valleys - common osier.

EI UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Hornbeam, wild cherry, elms (*Ulmus sp.*), limes (*Tilia sp.*), rowan, sessile oak, beech, whitebeam, wild service, holly, crab apple, wayfaring tree. Also bird cherry (not county native). Avoid wetland shrubs with restricted native distributions - the shrub willows: almond, eared, purple, bay-leaved, also alder buckthorn.

EI ALIEN SPECIES

These are often invasive and are not suitable for native woodland: poplars (Canadian, hybrid, Italian, balsam, grey, white), alders (Italian, grey) and willows (weeping, violet, horticultural hybrids).

EI CAUTIONARY NOTES

Peat deposits are extremely rare and of high scientific value and should not be planted. Marshes, fens, swamps and damp meadows are also rare and should be avoided. Shade reduces plant diversity of water courses so if aquatic or swamp vegetation is present allow a canopy width from water's edge (preferably plant on north or west) or confine planting to rows, casting light shade (rows of pollarded willows are fine). Avoid planting woodland where it is contrary to landscape character.

E2 Ecological Zone: Avon Vale Claylands

Main Geographic Areas:

MOST OF THE FLATTER AREAS OF THE VALE OF EVESHAM

E2 ECOLOGICAL CONTEXT

Most of this area is underlain by soft Lias Clay rocks, and soils tend to be heavy, calcareous clays with a tendency to waterlogging, although there are pockets of freer draining gravel deposits.

Agriculturalists were attracted to the workable soils at an early stage, and woodland clearance occurred early on and was virtually total. Today there is almost no ancient woodland in the area although there is a scattering of secondary woodland, largely confined to settlements and principal water courses. Ancient woodland 'features' such as hedges and woodbanks are also very scarce. What hedges do remain are scarce and generally species-poor, dating from the enclosure period.

This area has been characterised by an unusual form of land tenure based on a small-holder economy, which perpetuated the original medieval open field system. Today the landscape is very open, but early accounts and photographs suggest that in the early part of the 20th Century the Vale had greater tree cover, predominantly hedgerow elms, set around large field systems. Dutch Elm Disease played a significant role in reducing this wooded character.

E2 Ecological Zone: Avon Vale Claylands

Main Geographic Areas:

MOST OF THE FLATTER AREAS OF THE VALE OF EVESHAM

E2 GENERAL ECOLOGICAL GUIDELINES

Owing to the extreme rarity of the surviving woodland resource its conservation is a priority. This should include all aspects of tree cover, such as all older trees (including willow pollards), old-growth scrub (*Prunus* scrub is a local feature) and traditional orchards.

Wherever possible plantings should be linear and aim to reinforce existing features. The reinstatement of a skeletal framework of wooded habitats through hedgerow and streamside trees is a priority.

Ash, field maple and hazel should form the core of any planting, with a low cover of oak. Consider scrub willows (withies) for streamside locations and scrub species elsewhere.

Where afforestation could compromise valued open landscapes, consider scrub species, possibly planted as thick linear belts but only where it does not conflict with landscape character.

Natural regeneration in field corners is encouraged.

E2 NVC COMMUNITIES

Woodlands remaining today suggest an original woodland cover similar to the Avon Vale Forestlands, i.e. largely ash-field maple type (W8), but with small pockets of oak-bramble wood (W10), perhaps including small-leaved lime on gravel soils.

The most noteworthy extant woodland aspect is the frequent occurrence of Midland hawthorn and purging buckthorn.

Orchards are a characteristic habitat but most of those remaining are intensively managed and biodiversity therefore is low.

Fruit trees (from at least the sixteenth century) are a local feature of hedgerows and scrub. Watercourses were traditionally lined with willow pollards, especially the white willow (*Salix alba*). Alder is scarce. Willow scrub (in the form of withy beds), were represented along watercourses.

E2 Ecological Zone: Avon Vale Claylands

Main Geographic Areas:

MOST OF THE FLATTER AREAS OF THE VALE OF EVESHAM

E2 SUITABLE TREES & SHRUBS

Principal component species: ash, field maple, hazel, hawthorn, blackthorn, oak.

Other species: dogwood, wild privet, spindle, Midland hawthorn, purging buckthorn, wayfaring tree.

Minor component species: holly, silver birch, crab apple, wild cherry.

Damp sites: white willow (characteristic species) and crack willow; scrub willows are characteristic, osier, almond willow, purple willow (*Salix viminalis*, *S.triandra*, *S.purpurea*) are the most appropriate species; aspen and alder (very sparingly); black poplar (very sparingly as singles or small groups - on streambanks); guelder rose (sparingly).

E2 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, alder buckthorn, bay-leaved willow, bird cherry, downy birch, broom, gorse, rowan, small-leaved lime, sessile oak, wild service tree, hornbeam, large-leaved lime.

E2 CAUTIONARY NOTES

Grassland: permanent species-rich grassland is a scarce resource in this area and should not be afforested.

Veteran trees: there are very few old trees; these mostly associated with towns. All mature specimens should be conserved, including all older fruit trees.

Scrub: Blackthorn thickets and calcareous scrub are a local feature, important for invertebrates. Old growth scrub should not be over-planted.

Orchards: these are a character habitat for the zone.

Traditional orchards should not be afforested, but should be restored where possible.

Generally, the character of the landscape is unwooded and this should be respected.

E3 Ecological Zone: Avon Vale Forestlands

Main Geographic Areas:

TO THE NORTH AND WEST OF THE VALE OF EVESHAM

E3 ECOLOGICAL CONTEXT

This area forms the northern and western parts of the Lias Clay, the remainder of which falls into the Avon Vale Claylands. It is however substantially more wooded than the Avon Vale, due to a combination of heavier, poorer clay soils and a differing trend in landscape evolution.

Much of the zone lies within the Royal Forests of Horewell and Feckenham. Wood pasture was a feature here, centring originally on medieval deer parks such as Hanbury and Wadborough, and latterly around extensive orchard areas, often associated with farmsteads. Hedgerows are a mixture of both ancient and less species-rich enclosure age.

The zone holds a substantial ancient woodland resource - most of the woods are ancient - and much of it is in a relatively good and un-disturbed condition. Woods tend to occur as discreet blocks on the heaviest soils and are clearly marked by woodbanks. Traditional woodland management was coppice or coppice-with-standards, providing woodland products for Worcester and Droitwich.

E3 Ecological Zone: Avon Vale Forestlands

Main Geographic Areas:

TO THE NORTH AND WEST OF THE VALE OF EVESHAM

E3 GENERAL ECOLOGICAL GUIDELINES

Conservation of the existing woodland resource including veterans, old-growth scrub and surviving old orchards is a priority.

The re-instatement of scrub growth, including coppice regimes is encouraged.

The ecological potential of new plantings can be increased if they are connected to existing woods. Linkage belts are preferable to isolated blocks - fragmentation has become an issue as field sizes became larger and arable cropping increased.

Natural regeneration is the preferred option for stocking where it is silviculturally sound and is generally good for a wide range of species, including ash and oak.

Scrub communities are important in the zone and climax scrub (e.g. for nightingales) should be considered within all new planting.

Blackthorn is locally characteristic.

Ash, field maple and hazel should form the core of any planting, with oak at lower density. Glades should be substantial to encourage the locally rich floristic and invertebrate communities. Consider scrub for small and corner plantings.

E3 NVC COMMUNITIES

The concentration of woodlands in this area represents a significant ecological resource providing a fine example of the English-Midland calcareous clay forest-lands. The majority of the woods are of the ash-field maple type (W8) with pockets of oak-bramble wood (W10) occurring on less basic soils. Midland hawthorn and blackthorn thickets (W22) are common. Woodland edge and grassland communities are species rich but threatened due to loss of habitat and the lack of coppice management. Damp woodland is confined mostly to stream-banks, willows (crack and white) (W6b) predominate but alder is scarce.

E3 Ecological Zone: Avon Vale Forestlands

Main Geographic Areas:

TO THE NORTH AND WEST OF THE VALE OF EVESHAM

E3 SUITABLE TREES & SHRUBS

Principal component species: ash, field maple, hazel, hawthorn, blackthorn, oak.

Other species: guelder rose, dogwood, wild privet, honeysuckle, spindle, Midland hawthorn.

Minor component species: holly, silver birch, crab apple, wild cherry, wayfaring tree, purging buckthorn.

Damp sites: white willow (characteristic species), aspen, crack willow, alder (sparingly - minor component only), black poplar (sparingly as singles or small groups - streamsides).

E3 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, alder buckthorn, bay-leaved willow, bird cherry, downy birch, broom, gorse, rowan, small-leaved lime, sessile oak, wild service tree, hornbeam, large-leaved lime.

E3 CAUTIONARY NOTES

Grasslands: there is a nationally important grassland resource here.

Veteran trees: there is a good resource, notably of veteran boundary and streamside pollards, old fruit trees (declining rapidly) and ancient coppiced stools.

Scrub: Blackthorn thickets are a local feature, important for invertebrates and locally nightingales.

Orchards: these were a distinctive local feature, supporting high biodiversity.

E4 Ecological Zone: Central Mudstones

Main Geographic Areas:

A BROAD SWATHE RUNNING NORTH SOUTH DOWN THE CENTRE OF THE COUNTY

E4 ECOLOGICAL CONTEXT

This area is the central part of a large expanse of soft rocks (primarily Keuper Marl) that comprises the mid-Worcestershire plain. Soils here are mostly moist, neutral clays of moderate fertility. The best agricultural land is on the freer draining plateaux and ridges, as water-logging can occur at the base of slopes, and these areas were cleared fairly early on for agricultural purposes.

Population pressures and the timber demands of Worcester and Droitwich resulted in the destruction of most of the ancient woodland except for a few estates such as Croome, Westwood, Spetchley and Hanbury.

Any ancient semi-natural woodland still remaining tends to occur as small blocks on the most intractable and infertile soils. These are often defined by woodbanks and are traditionally managed as coppice. The area also contains an extensive network of landscape features that can support woodland flora and fauna. These include wooded watercourses, dells, hedgerows, banks and holloways. Veteran trees are also still frequent, usually occurring as pollards.

E4 Ecological Zone: Central Mudstones

Main Geographic Areas:

A BROAD SWATHE RUNNING NORTH SOUTH DOWN THE CENTRE OF THE COUNTY

E4 GENERAL ECOLOGICAL GUIDELINES

Conservation of the fragmented ancient woodland resource is a priority. Afforestation would have the greatest beneficial impact if aligned to complement or restore this network. Small blocks and belts are characteristic, but more extensive woodland blocks would be beneficial. Microfeatures such as open banks and veterans should be respected and not overplanted.

Oak should form the heart of any planting scheme with a lower incidence of ash. Hazel and hawthorn should provide the core understorey element with a lower incidence of field maple.

Natural regeneration is good for oak, ash and birch and is the preferred option where it is silviculturally sound. Sycamore can be locally invasive and may need to be controlled.

E4 NVC COMMUNITIES

The main forest types were typically that of the English Midland Clays. Wild service tree and Midland hawthorn characterise the woodland heritage of this zone.

The dominant woodland type is oak-bramble wood, W10, although this grades into ash-field maple wood, W8 on the more basic soils. Small-leaved lime was probably a major component of the original wildwood although it is eliminated now from most areas. Pockets of hornbeam probably occurred on leached ridges and hillsides.

Watercourses hold an important woodland resource as most are wooded (Types W7, W6, W1, W8 are all represented). Black poplars are a feature of streamsides, of widespread but local occurrence, usually as individuals.

E4 Ecological Zone: Central Mudstones

Main Geographic Areas:

A BROAD SWATHE RUNNING NORTH SOUTH DOWN THE CENTRE OF THE COUNTY

E4 SUITABLE TREES & SHRUBS

Principal component species: oak, ash, field maple, hazel, hawthorn, blackthorn.

Other suitable species: holly, silver birch, crab apple, dogwood, Midland hawthorn, wild privet, spindle.

Sparingly: purging buckthorn, broom, gorse, rowan.

Damp sites: aspen, alder, guelder rose, white willow, crack willow, black poplar (throughout but sparingly as singles or small groups on streamsides).

Scarce local species: small-leaved lime, wild service tree, (locally sourced stock preferred, specialist advice should be taken on the suitability of sites).

E4 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, bird cherry, hornbeam, large-leaved lime, bay-leaved willow, wild cherry, alder buckthorn, sessile oak, wayfaring tree, downy birch.

E4 CAUTIONARY NOTES

Marshland: streamsides still hold a valued wetland resource, mainly in very small units. Afforestation should be avoided on wetland and marshy sites.

Grasslands: there is a scatter of nationally important mesotrophic grassland.

Veteran trees: there is a good resource, including many pollards associated with former forest landscapes and medieval parkland.

Scrub: areas with old growth scrub are few but occur occasionally on steep banks.

Orchards: were formerly frequent with most farmsteads supporting a home orchard but are now in decline.

E5 Ecological Zone: Cotswold Hills

Main Geographic Areas:

EDGE OF THE COTSWOLD PLATEAU AND BREDON HILL IN THE SOUTH EAST OF THE COUNTY

E5 ECOLOGICAL CONTEXT

This area includes the small part of the dramatic edge of the Cotswold plateau which falls within Worcestershire, and the imposing sweep of Bredon Hill. The Cotswolds and the top of Bredon Hill are united by the fact that they are underlain by free-draining base-rich limestone rock, in stark contrast to the heavy, poorly draining clays of most of the Avon Vale. Soils here are generally alkaline, not very fertile (especially on the steep slopes) and freely-draining. The lower slopes of Bredon Hill, however, are typically on Lower Lias Strata. In addition the climate on the edge of the Cotswolds plateau can be very harsh, with cold winds blowing down off the plateau.

Despite the inhospitable conditions initial wildwood clearance was early, but the steepness of the slopes made clearance impossible in many areas. This is one of the most densely wooded areas of the county - about a fifth of the area is wooded of which a little under half is classed as ancient woodland.

A very fine medieval parkland survives on Bredon Hill. The concentrations of veteran species on the scarp slopes, including scrub species, is a special feature of European significance, as indicated by its designation as a Special Area of Conservation.

E5 Ecological Zone: Cotswold Hills

Main Geographic Areas:

EDGE OF THE COTSWOLD PLATEAU AND BREDON HILL IN THE SOUTH EAST OF THE COUNTY

E5 GENERAL ECOLOGICAL GUIDELINES

Care should be taken to take existing wildlife habitats into account when planning any new afforestation. For instance, veterans should be incorporated within large glades or left as marginal specimens.

The Bredon scrub communities are of national importance for their invertebrate populations. Significant coupes of scrub, within and around new plantations, are encouraged. Large glades are also important.

Wood pasture is traditional and good for wildlife, so establishing individual trees or small groves on grasslands is encouraged except in those areas of floristically rich limestone grassland.

E5 NVC COMMUNITIES

W8 ash wood is the predominant natural type. Various sub-communities of this woodland type are present, relating to soil moisture and fertility variations. The beech wood communities W12

beech-dogs mercury wood and W14 beech-bramble wood are both present. The latter tends to occur towards the top of the escarpment, particularly at Broadway. These are of value as they are the only areas of probable native beech wood in the county.

Restricted areas of W10 oak-bramble wood occur locally - mainly on the marlstone, for example at Elmley Castle Park - and sometimes in association with conifer plantations. W21 hawthorn scrub is extensive on the Bredon scarp. Small areas of W23 gorse scrub are present, where the soil horizons are leached.

The provenance of the Worcestershire beech is unknown for certain. However, there appears to be no substantive reason not to consider the Broadway beech woods to be of native Cotswold stock. Beech is however probably a re-introduction on Bredon Hill.

E5 Ecological Zone: Cotswold Hills

Main Geographic Areas:

EDGE OF THE COTSWOLD PLATEAU AND BREDON HILL IN THE SOUTH EAST OF THE COUNTY

E5 SUITABLE TREES & SHRUBS

Trees: ash should form the core of any planting. Pedunculate oak, birch, yew, beech are also all suitable. On the highest escarpments beech should be considered as the dominant species. Whitebeams occur locally but only *Sorbus aria*, of British origin, is suitable (specialist advice is advised before inclusion).

Shrubs: field maple and hawthorn are characteristic Bredon specialities so native planting should include high proportions of these of local provenance.

Other suitable species include blackthorn, goat willow, hazel, purging buckthorn, spindle, wild privet, dogwood and wayfaring tree. Holly and gorse are valuable but plant only if they occur in the immediate vicinity. Crab apple and alder occur very locally.

E5 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Hornbeam, limes (*Tilia sp.*), rowan, sessile oak, common osier, alder buckthorn, wild service tree, aspen, black poplar.

E5 CAUTIONARY NOTES

Damp ground: any damp ground around the escarpments is likely to have ecological interest, and these areas should be avoided for new planting. In damp areas without existing ecological value ash is the most appropriate tree to plant. Crack and white willows, purging buckthorn and guelder rose are also suitable.

Grasslands: a very significant proportion of the grassland of the Bredon and Broadway escarpments is of ecological interest. Woodland creation here would not be supported.

Veteran scrub: communities on Bredon Hill are of national significance and all individuals and groups should be respected and retained.

Where veteran scrub or trees occur plans should allow for their retention within a large glade or peripheral setting. Extensive areas of open ancient scrub are best treated as established wood pasture and should not be replaced with new afforestations. Peripheral new planting is however welcome in such situations.

E6 Ecological Zone: Forest Sandstones

Main Geographic Areas:

KIDDERMINSTER AND ITS SURROUNDING AREA IN THE NORTH WEST OF THE COUNTY; TO THE NORTH OF BROMSGROVE

E6 ECOLOGICAL CONTEXT

This area is unified by light freely draining soils occurring over New Red Sandstone geology. Fertility is generally low and soils acidic, especially around Kidderminster. The light soils were attractive to early agriculturalists, but the low fertility probably meant cultivation on a shifting pattern. By the Medieval period much of the landscape had been abandoned to heath and rough grazing. As a result of this early clearance most of the area is today devoid of natural and ancient woodland sites - ancient woodland has only survived on the most inaccessible sites and the poorest, skeletal soils.

Woodland cover was however enhanced by plantation planting, which occurred from the 17th century onwards on the most barren soils to bring them into production. Early plantations were generally of sweet chestnut, but conifers became favoured later on. Some of the sweet chestnut woods and hedgerows today hold an important veteran tree resource. The hedgerow pattern away from the byeway network is species poor, in a degraded condition, and dates mainly from the enclosures of the 17th and 18th centuries. Holly is a locally distinctive feature.

The evolution of the landscape in the sandstone country west of the River Severn was different to the rest of the area. Relief is more varied, with a series of incised valleys. This is an ancient countryside with older hedgerows and a significant ancient woodland resource, including the nationally important lime woods centred on Shrawley.

Overall, woodland cover is low to moderate, although there are concentrations of woodland in the Severn valley and west of the river.

Around Bromsgrove there are large areas under a mature woodland canopy, for example Bromsgrove Lickey. Veteran trees where present are generally associated with residential areas and parks and gardens, and these can be important for biodiversity.

E6 Ecological Zone: Forest Sandstones

Main Geographic Areas:

KIDDERMINSTER AND ITS SURROUNDING AREA IN THE NORTH WEST OF THE COUNTY; TO THE NORTH OF BROMSGROVE

E6 GENERAL ECOLOGICAL GUIDELINES

Although restoration of lime woodland is an ecological priority only small-leaved lime from Severn valley stock is appropriate. In the absence of locally derived lime stock, oak and silver birch should form the core of any planting. Ash and wild cherry should only be a minor component. Characteristic scrub communities (gorse and broom) should be considered for peripheral belts.

Open woodland-heath is characteristic. Low density planting and a large glade component should be included. Restoration of open woodland, acidic scrub and heath is appropriate. Natural regeneration is the preferred option where it is silviculturally sound. Birch and oak regenerate quite well.

Sycamore may need controlling. Sweet chestnut is a distinctive feature of the landscape, and small scale inclusion, especially as a replacement for veteran trees, may be considered. Belt planting to link existing features would be beneficial on agricultural land.

E6 NVC COMMUNITIES

The principal natural woodland type is W10 oak-bramble wood but the overall climax woodland was dominated by lime.

Pockets of acidic oak-birch wood (W16) occur on the poorest soils. The valleys support alder woodlands (W5,W6,W7). Birch woods are characteristic of secondary colonisation. Broom and gorse scrub communities, now scarce, are a distinctive feature of the zone.

E6 Ecological Zone: Forest Sandstones

Main Geographic Areas:

KIDDERMINSTER AND ITS SURROUNDING AREA IN THE NORTH WEST OF THE COUNTY; TO THE NORTH OF BROMSGROVE

E6 SUITABLE TREES & SHRUBS

Dry sites: silver birch, ash, crab apple, oak, wild cherry, rowan, small-leaved lime, hazel, hawthorn, holly, broom, gorse, blackthorn.

Damp sites: aspen, crack willow, downy birch, alder, guelder rose.

Field maple, large-leaved lime, wild service, dogwood, sessile oak are native in the area but confined to specific soil types, specialist advice should be sought before planting.

E6 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Hornbeam, spindle, beech, alder buckthorn, wayfaring tree, wild privet, purging buckthorn, bay-leaved willow, bird cherry, Midland hawthorn, black poplar.

E6 CAUTIONARY NOTES

Grasslands: Lowland acid grassland is a local feature which can be easily overlooked.

Veteran trees: Sparse, but a notable concentration in the Severn corridor and around residential areas. Veteran sweet chestnuts are scattered throughout.

Heathland: this is a characteristic habitat of unimproved ground in the zone. Most has been lost and rehabilitation to wooded heath should be considered.

E7 Ecological Zone: Headley Heaths (Upper Trent)

Main Geographic Areas:

**AN INDIVIDUAL BLOCK ON THE NORTH EASTERN BORDER OF THE COUNTY,
CENTRED AROUND WYTHALL**

E7 ECOLOGICAL CONTEXT

This area is a gently rolling plateau at between 150-200m altitude, with Mercia Mudstones overlain by glacial clays and localised drifts of gravels creating wet acid soils of generally low fertility. The western boundary marks the watershed between the Severn and Trent catchments and drainage is via a series of small brooks that are tributaries of the Rivers Cole, Tame and Blythe.

Ecologically this area is very interesting, as although today this is one of the least wooded areas in Worcestershire, it is clearly forest country. Woodland clearance occurred relatively late on and an abundance of woodland associated features remain, such as hedges banks and dells. Throughout the whole area plants normally associated with woodland can be found. Ancient woodland is however very scarce, with the vast majority of woodland being secondary in nature. The wet wood communities are of particular interest and value, including bay-leaved willow scrub in the Cole Valley, and alder fen.

There is an ecological boundary between this and the Mercia Mudstone country to the south and east (Northern Mudstones) which is strongly defined by the presence of wild service tree (on clay soils) and small-leaved lime (on better drained soils).

E7 Ecological Zone: Headley Heaths (Upper Trent)

Main Geographic Areas:

AN INDIVIDUAL BLOCK ON THE NORTH EASTERN BORDER OF THE COUNTY,
CENTRED AROUND WYTHALL

E7 GENERAL ECOLOGICAL GUIDELINES

This district would benefit ecologically from the restoration of woodland cover. Natural regeneration is generally good in the area, with many localised seed sources, and wherever possible this should be given priority.

The skeletal framework of the wildwood is still well represented and the primary aim should be the conservation, management and enhancement of this network. The large number of ancient wooded minor landscape features could form the nucleus of new woodland blocks. These are well situated to aid the rapid colonisation of new woodland.

E7 NVC COMMUNITIES

The main woodland types are various sub-communities of W10 oak-bramble wood forming the larger woods, and W6 alder-nettle wood and W6b crack willow-nettle wood along streams, marl pits and also on brownfield sites.

E7 Ecological Zone: Headley Heaths (Upper Trent)

Main Geographic Areas:

AN INDIVIDUAL BLOCK ON THE NORTH EASTERN BORDER OF THE COUNTY, CENTRED AROUND WYTHALL.

E7 SUITABLE TREES & SHRUBS

Alder (in all but very dry areas) and pedunculate oak are the most appropriate tree cover species. The creation or expansion of damp woodland using alder or an alder/oak mix is encouraged. Ash is also suitable but should generally form a minor component of any planting scheme. Wild cherry, holly, hazel, rowan, aspen, crab apple, hawthorn are all suitable for much of the area. The birches regenerate well in the district but additional planting may be appropriate in some locations.

Veteran and over mature trees are scarce, so retaining existing or potential mature specimens is encouraged.

E7 CAUTIONARY NOTES

The area supports a regionally important unimproved grassland resource. Most stream valleys currently hold wetlands (fens, damp grasslands, woodland communities) of county significance. Care should be taken to avoid new plantations on these.

E8 Ecological Zone: Kenelm's Forestlands

Main Geographic Areas:

A SMALL AREA IN THE NORTH OF THE COUNTY, TO THE NORTH OF ROMSLEY, HAGLEY AND THE CLENT HILLS

E8 ECOLOGICAL CONTEXT

This is a small, distinctive area, where geology and soils are similar to that of the Wyre Forest i.e. coal measures under moist clays of moderate fertility, with occasional impeded drainage. This is the start of the Birmingham Plateau - most land is above 150m - so the climate is cooler and wetter than the Severn Vale. Topography is varied - a series of streams drain the Clent Hills from the south in deeply incised valleys. Basic flushes occur in the valleys, in contrast to the mostly neutral or acid soils elsewhere.

Early woodland clearance centred on the Halesowen Abbey lands, but clearance was never completed on the higher ground and today the area contains a superb concentration of ancient woodland sites and is generally well-wooded. Most of the dingle woodlands are semi-natural and of county importance, but a high proportion of ancient woodland sites in the more accessible areas has been subjected to recent afforestation with alien species.

This is a fine example of an ancient countryside, with a high density of features such as species-rich hedges, banks, veteran trees and water courses.

E8 Ecological Zone: Kenelm's Forestlands

Main Geographic Areas:

A SMALL AREA IN THE NORTH OF THE COUNTY, TO THE NORTH OF ROMSLEY, HAGLEY AND THE CLENT HILLS

E8 GENERAL ECOLOGICAL GUIDELINES

Conservation and rehabilitation of the fine ancient woodland resource is a priority. There is an extensive geographic network of woodland habitat and afforestation would have the greatest beneficial impact if aligned to complement or restore this network.

Linear woods are characteristic.

Oak should form the heart of any planting scheme with a low incidence of ash. This should be adjusted on valley sides and more base-rich sites to include a higher proportion of ash.

Natural regeneration is good for oak, ash and birch and is the preferred option. Sycamore is locally invasive and may need to be controlled.

E8 NVC COMMUNITIES

Biogeographically, there are affinities with the Carboniferous landscapes of northern England. The woodland communities or types are similarly aligned to those further north. The assemblage of woodland plants here is distinctive and unique within Worcestershire, although species such as spindle, Midland hawthorn, wild service tree and dogwood are absent or scarce.

The dominant woodland type is oak-bramble wood, W10. This grades to acidic oak-birch wood, W16 on poorer soils. Sessile oak occurs.

Damp areas support alder woods. Most of these are of the alder-ash type, W7 and the area includes the county's best example of this type of woodland. The incised valleys support mixed woodlands. These are of interest, being examples of the more northerly sub-communities of W8 ash wood.

E8 Ecological Zone: Kenelm's Forestlands

Main Geographic Areas:

A SMALL AREA IN THE NORTH OF THE COUNTY, TO THE NORTH OF ROMSLEY, HAGLEY AND THE CLENT HILLS

E8 SUITABLE TREES & SHRUBS

Principal component species: oak, hazel, hawthorn.

Other suitable species: ash, field maple, broom, gorse, rowan, holly, silver birch, downy birch, crab apple, blackthorn.

Damp sites: aspen, alder, guelder rose, crack willow (sparingly), black poplar (sparingly as singles or small groups - streamsides).

E8 SCARCE LOCAL SPECIES

Alder buckthorn, small-leaved lime, sessile oak, wild cherry (locally sourced stock preferred, specialist advice should be taken on the suitability of sites).

E8 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, bird cherry, wild service tree, hornbeam, large-leaved lime, dogwood, spindle, Midland hawthorn, wayfaring tree, purging buckthorn, wild privet, white willow, bay-leaved willow.

E8 CAUTIONARY NOTES

Trees and Shrubs: the assemblage is unique. Many otherwise widespread county species do not occur naturally and are unsuitable here (see list).

Grasslands: there is a nationally important grassland resource locally.

Veteran trees: there is a fairly good resource, including pollards and ancient coppiced stools.

Scrub: there are areas with old growth scrub.

Bay-leaved willow: should not be planted; there is a small local population, requiring a specific conservation program.

Bird cherry: is not locally native but was introduced into the Clent Hills and is proving invasive in the area. To be avoided.

E9 Ecological Zone: Malvern Commons

Main Geographic Areas:

THE FLATTER LANDS AT THE EASTERN FOOT OF THE MALVERN RIDGE

E9 ECOLOGICAL CONTEXT

Soils in this area are much more varied than on the neighbouring Malvern Ridge, being derived from deposits from the Hills set in a matrix of Mercia Mudstone. Soils are generally heavy, of low fertility and with a tendency to waterlogging and acidity.

Woodland cover is low, and the primary tree cover interest away from the hills are the mature trees and remaining fragments of wood pasture.

This area once formed the core of Malvern Chase. It has been managed as wood pasture for over 1000 years, from hunting forest to common-grazing, but more recently there has been a gradual erosion of the Chase as old enclosures are gradually being lost to housing.

Despite the deprecations this is still one of the most outstanding ancient landscapes of England. A significant area of unenclosed common-land remains, including many veteran trees within the urban zone as well as outside. Black poplar pollards are a special feature on the boundaries, with concentrations of national significance.

E9 Ecological Zone: Malvern Commons

Main Geographic Areas:

THE FLATTER LANDS AT THE EASTERN FOOT OF THE MALVERN RIDGE

E9 GENERAL ECOLOGICAL GUIDELINES

The Malvern Hills Conservators manage the hills and commons. The guiding principal within the unimproved landscapes is the retention of irreplaceable habitats, communities and species, including the rock habitats, lowland acidic grassland, grass heath, flushes, veteran trees and shrubs and rare calcareous grassland.

The Chase is a wood pasture landscape and large block plantings are out of character. Clumps, groves and specimen plantings can be appropriate if designed in relation to the Landscape Type and the historical nature of the Chase. Veteran trees urgently need restocking both in urban and rural settings. The majority of the ancient forest trees are oaks, with some English elms and black poplars. Oak is the preferred option for new planting.

E9 NVC COMMUNITIES

The commons area is principally a climax oak-bramble type W10, with alder on the wetter soils.

E9 Ecological Zone: Malvern Commons

Main Geographic Areas:

THE FLATTER LANDS AT THE EASTERN FOOT OF THE MALVERN RIDGE

E9 SUITABLE TREES & SHRUBS

Trees: oak and on damp ground black poplar (locally sourced), silver birch, ash, crab apple, black poplar, rowan, hazel, hawthorn, holly, blackthorn, aspen, crack willow, downy birch, alder, field maple, wild service, wild cherry.

Shrubs: broom, gorse, guelder rose, dogwood.

E9 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Hornbeam, large-leaved lime, small-leaved lime, spindle, beech, alder buckthorn, wayfaring tree, sessile oak, wild privet, purging buckthorn, bay-leaved willow, bird cherry, Midland hawthorn.

E9 CAUTIONARY NOTES

Grasslands: remnant unimproved, mesotrophic grassland and sedge rich fen still exist.

Ponds: are a feature locally. As a general principle margins should not be planted.

Veteran trees: retention of veterans is a priority.

Generally the character of the landscape is unwooded and this should be respected.

E10 Ecological Zone: Malvern Hills

Main Geographic Areas:

THE RIDGE OF THE MALVERN HILLS

E10 ECOLOGICAL CONTEXT

The rocks of the Malvern Hills ridge are some of the oldest in the country with an estimated age of 620 million years.

The soils overlying these hard, ancient rocks are skeletal, of low fertility and general acidic, although there are pockets of more calcareous substrate. The hills are in a highly exposed position and receive above average rainfall.

The extent of the woodland on the hills has fluctuated over the course of human occupation. This is due primarily to variations in grazing pressure, although fire may have played a significant role. At the close of the 18th century the main ridge of the hills was recorded as virtually treeless, with only occasional rowan and birch trees present, although western gorse scrub was abundant. Coupes of alder wood were frequent lower down the hills. Trees were fairly frequent around the foothills, but there were only a few woods, mainly towards the southern end of the range. Only two areas of open ancient scrub communities existed - hawthorn above the Wells and holly on Hollybush.

The latter half of the 20th century saw the loss of grazing from most of the hills. Natural regeneration of both native and non-indigenous trees and shrubs has occurred, such as the *Buddleia* scrub on old quarry faces. Much of the lower slopes are now wooded.

E10 Ecological Zone: Malvern Hills

Main Geographic Areas:

THE RIDGE OF THE MALVERN HILLS

E10 GENERAL ECOLOGICAL GUIDELINES

The Malvern Hills Conservators manage the hills and commons. The guiding principal within the unimproved landscapes is the retention of irreplaceable habitats, communities and species, including the rock habitats, lowland acidic grassland, grass heath, flushes, veteran trees and shrubs, and rare calcareous grassland.

E10 NVC COMMUNITIES

The climax woodland of the hills is likely to have been a mosaic of acidic oak wood W12 and oak-bramble wood W10, with pockets of alder wood W7 in flushes. Upland W9 ash wood may have occurred.

W10 types are currently invading the hillsides. Hawthorn scrub (W21) and under-shrub communities (W23, W24, W25) are a feature. Western gorse scrub communities are locally dominant

E10 Ecological Zone: Malvern Hills

Main Geographic Areas:

THE RIDGE OF THE MALVERN HILLS

E10 SUITABLE TREES & SHRUBS

Trees: oak, silver birch, ash, crab apple, black poplar, rowan, hazel, hawthorn, holly, blackthorn, aspen, crack willow, downy birch, alder, field maple, wild service, wild cherry.

Shrubs: broom, gorse, guelder rose, dogwood.

E10 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Hornbeam, large-leaved lime, small-leaved lime, spindle, beech, alder buckthorn, wayfaring tree, sessile oak, wild privet, purging buckthorn, bay-leaved willow, bird cherry, midland hawthorn.

E10 CAUTIONARY NOTES

Grasslands: remnant unimproved, mesotrophic grassland and sedge rich fen still exist.

Ponds: a feature locally. As a general principle, margins should not be planted.

Veteran trees: retention of veterans is a priority.

This is a landscape of unwooded character. Tree planting is not appropriate to the Landscape Type.

E11 Ecological Zone: North Worcestershire Hills

Main Geographic Areas:

A NARROW STRIP TO THE NORTH EAST OF THE COUNTY INCLUDING THE CLENT AND LICKEY HILLS

E11 ECOLOGICAL CONTEXT

The hard granite-like rocks of the Malvern Hills reappear here, and soils are generally of low fertility, thin and acidic. Woodland clearance was early, and ancient woodland today is scarce and confined to the steeper and more inaccessible slopes.

After clearance the resultant land cover was largely low value acidic pasture and heathland, scattered with trees and significant areas of bog. During the late 18th century the "wastes" and heaths were enclosed and bogs drained, so much of the field boundary network is of enclosure age. Holly, a former winter fodder resource for local farms, is a local feature.

In the 19th and 20th centuries the focus of management shifted from agriculture to recreation and amenity - much of the high ground is today public open space. The 20th century in particular was notable for the return of woodland to the hills.

This was due to amenity planting and natural regeneration resulting from reduced grazing pressures, so whilst woodland cover today is quite high this is generally species poor secondary wood containing mostly non-indigenous species. Some of the older plantations do however have a good old growth structure e.g. parts of the Lickey Woods approach a native type Scots pine wood.

E11 Ecological Zone: North Worcestershire Hills

Main Geographic Areas:

A NARROW STRIP TO THE NORTH EAST OF THE COUNTY INCLUDING THE CLENT AND LICKEY HILLS

E11 GENERAL ECOLOGICAL GUIDELINES

Consideration should be given to the restoration of habitat, particularly of heath, and microhabitats such as rock exposures and flushes.

Open woodland and wood pasture are traditional here and provision should be made for an extensive glade component in the majority of new schemes.

Natural regeneration is recommended as the preferred option in virtually all cases as long as it is silviculturally sound, with oak and birch regenerating well.

Maintenance is necessary to restrict the regeneration of non-indigenous species.

There is scope for the restoration of indigenous woodland as non-native plantations reach maturity.

E11 NVC COMMUNITIES

Areas of old scrub and heath communities (gorse, hawthorn, oak, bilberry) are notable on hill slopes. These may represent the natural condition of the hilltops and the poorest soils and were probably interspersed with acidic oak wood (W16) with mixed oak-bramble wood (W10) on the downward slopes. Small pockets of upland ash wood (W9) were probably present with alder wood (W7) on damp ground. All existing oak woods (main type-W10) are of high conservation value.

E11 Ecological Zone: North Worcestershire Hills

Main Geographic Areas:

A NARROW STRIP TO THE NORTH EAST OF THE COUNTY INCLUDING THE CLENT AND LICKEY HILLS

E11 SUITABLE TREES & SHRUBS

Dry ground: silver birch, crab apple, oak, rowan, hazel, hawthorn, holly, broom, gorse, blackthorn, sessile oak (of local provenance), ash (sparingly).

Damp ground: alder, aspen, downy birch.

E11 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Hornbeam, spindle, beech, alder buckthorn, wayfaring tree, wild privet, purging buckthorn, bay-leaved willow, bird cherry, Midland hawthorn, field maple, large-leaved lime, wild service, dogwood, guelder rose, wild cherry, small-leaved lime, wych elm, black poplar.

E11 CAUTIONARY NOTES

Flushes and rills: mesotrophic wetland communities are close to extinction in Worcestershire. Tiny fragments remain on the higher ground threatened by drainage and shade.

Grassland: a considerable portion of the county's lowland acidic grassland is concentrated here.

Heath: this is a characteristic community of the region, only fragments remain.

Veteran trees / shrubs scrub: gorse and broom scrub (W21) is a characteristic but declining feature. Ancient hawthorn scrub (W23) also occurs, often in very open hillsides.

Rock exposures: a valued but scarce ecological and geological resource in the county. Open faces should be retained.

E12 Ecological Zone: Northern Mudstones

Main Geographic Areas:

AROUND REDDITCH, ALVECHURCH AND DODFORD

E12 ECOLOGICAL CONTEXT

The northern mudstones are higher, wetter, cooler and less fertile than their counterparts to the south and west (Central and Western Mudstones Ecological Zones). On high ground and hills the soils are mostly gravels of glacial origin, but both these and the clay soils on the lower ground are generally infertile, acidic and prone to waterlogging.

Woodland clearance was late in this area, and never completed on the poorest soils. Agricultural clearance centred on the church lands at Alvechurch and Bordesley. Away from these favoured locations most of the land was incorporated within the Forest of Feckenham.

Woodland cover is today still high and evenly spread over the area, although parts of the Arrow basin have suffered intensification and severe fragmentation and now have a low level of woodland cover. There are some notable blocks of extensive woodland cover, e.g. Chaddesley Wood and the Redditch hills. Most woodland is on ancient sites and in a semi-natural condition. Woods are derived mainly from coppices and are often defined by woodbanks.

Many oak pollards, a legacy of wood pasture, survive. Hedgerows are either ancient or of an early enclosure date, and therefore tend to be species-rich. Holloways and headwater dingles are a special feature of the areas, but other woodland related features are common, such as dells, wood banks and veteran trees.

The 20th century had a major impact with the development of Redditch New Town, but much of the woodland resource was incorporated into the town design so most of the woodland resource survived. This has been substantially increased by new planting, often including exotics.

E12 Ecological Zone: Northern Mudstones

Main Geographic Areas:

AROUND REDDITCH, ALVECHURCH AND DODFORD

E12 GENERAL ECOLOGICAL GUIDELINES

Conservation of this ancient landscape and its high density of ancient woodland features is a priority. The fragmented networks, especially in the Arrow basin, would benefit from restoration. The abundant microfeatures should be respected and new planting should aim to build out from this valuable network.

The woodland resource of Redditch needs careful consideration, given the urban pressures. Restocking where possible with native species is encouraged.

Oak should form the heart of any planting scheme with a low incidence of ash. Hazel and hawthorn should provide the core understorey element. Natural regeneration is good for oak, ash, hawthorn and birch and is the preferred option where it is silviculturally sound. Sycamore and rhododendron can be locally invasive and may need to be controlled.

E12 NVC COMMUNITIES

The dominant woodland type is oak-bramble wood W10 on both the mudstones and the gravels. Pockets of acid oak-birch wood W16 occur on gravel soils, usually hill tops and ridges. Marl-rich soils hold ash-field maple wood W8. Small-leaved lime was a major component of the original wildwood and it survives in most ancient woods. Large-leaved lime occurs in the Redditch woods. Isolated pockets of hornbeam occur associated with gravel soils in ancient woodlands. Wild service tree is frequent.

Watercourses are important as most are wooded (Types W7, W6, W8 are present). Black poplar is an uncommon but a characteristic species of streamsides, usually as individual trees.

E12 Ecological Zone: Northern Mudstones

Main Geographic Areas:

AROUND REDDITCH, ALVECHURCH AND DODFORD

E12 SUITABLE TREES & SHRUBS

Principal component species: oak, hazel, hawthorn.

Other suitable species: holly, silver birch, crab apple, blackthorn, dogwood, Midland hawthorn, wild privet, ash, field maple.

Sparingly: purging buckthorn, broom, gorse, rowan, spindle, wild cherry,

Damp sites: aspen, alder, guelder rose, white willow, crack willow, black poplar (throughout but sparingly as singles or small groups - streamsides).

E12 SCARCE LOCAL SPECIES

Hornbeam, large-leaved lime, sessile oak, downy birch small-leaved lime, wild service tree, (locally sourced stock recommended, specialist advice should be taken on suitability of site)

E12 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, bird cherry, bay-leaved willow, alder buckthorn, wayfaring tree.

E12 CAUTIONARY NOTES

High density of microfeatures (hedges, highways/byeways, holloways, streams, dells, banks/scarps, veterans) - all should be treated as ancient.

Marshland: streamsides still hold a valued wetland resource, mainly in very small units.

Grasslands: there is an important mesotrophic grassland resource.

Veteran trees: the resource is good, mainly of oak pollards.

Orchards: are few and restricted to favourable microclimates, as at Dodford.

Marl Pits: are a significant landscape feature. Most are already wooded. To conserve scarce open water, habitat sites which remain open should not be planted.

E13 Ecological Zone: Rhaetian Scarp and the Lenches

Main Geographic Areas:

THE RHAETIAN SCARP IS A PROMINENT RIDGE IN CENTRAL WORCESTERSHIRE WHICH SEPARATES THE MERCIA MUDSTONES TO THE WEST (CENTRAL MUSTONES AREA) FROM THE LIAS CLAY TO THE EAST (AVON VALE FORESTLANDS/CLAYLANDS). SOME AREAS EITHER SIDE OF THE RIVER AVON NEAR EVESHAM ALSO HAVE SIMILAR PHYSICAL AND ECOLOGICAL CHARACTERISTICS TO THIS RIDGE

E13 ECOLOGICAL CONTEXT

There is a calcareous influence to the geology of these areas - on scarp slopes soils are generally thin, infertile and calcareous, whilst the dip slopes support calcareous clay loams. The thinner soils are free-draining, and can suffer water loss in the summer. The clay soils are not so free draining, and in fact waterlogging can occur in pockets of heavier clay.

The flatter parts of this zone are dominated by arable cropping, and hedges are generally of enclosure age and therefore relatively species poor. On the steeper slopes pasturage or woodland is the main landuse and a considerable extent of wood survives, often as linear belts.

Most sites are semi-natural, although a significant proportion are old secondary woods.

Historically woodland was either managed as coppice (mainly for ash poles) or woodpasture. Orchards are characteristic but are now scattered and declining. Old growth scrub is a particular feature. The ancient hawthorns of these areas indicate previous periods of relaxed grazing following the Black Death and the disruptions caused by the Civil War.

Veteran trees are often ash stools.

E13 Ecological Zone: Rhaetian Scarp and the Lenches

Main Geographic Areas:

THE RHAETIAN SCARP IS A PROMINENT RIDGE IN CENTRAL WORCESTERSHIRE WHICH SEPARATES THE MERCIA MUDSTONES TO THE WEST (CENTRAL MUSTONES AREA) FROM THE LIAS CLAY TO THE EAST (AVON VALE FORESTLANDS/CLAYLANDS). SOME AREAS EITHER SIDE OF THE RIVER AVON NEAR EVESHAM ALSO HAVE SIMILAR PHYSICAL AND ECOLOGICAL CHARACTERISTICS TO THIS RIDGE

E13 GENERAL ECOLOGICAL GUIDELINES

Conservation of the existing semi-natural habitats (grassland, scrub, woodland) is a priority. Old growth scrub is a special feature which should not be afforested.

Ash should form the core of any planting scheme wherever the relief is steep. On more level sites oak can be used.

Species-rich calcareous shrub communities are characteristic. Consider layouts which include areas zoned for scrub.

Glades should be as extensive as possible. Consider leaving broad peripheral strips unplanted.

Where it is silviculturally sound, natural regeneration is good, especially for ash and hawthorn. This is the preferred option for stocking.

E13 NVC COMMUNITIES

On the steepest slopes, the current climax woodland is dry, basic ash wood, W8. Scrub communities are frequent.

Old growth hawthorn scrub, W21 is characteristic and W22 blackthorn scrub also occurs.

E13 Ecological Zone: Rhaetian Scarp and the Lenches

Main Geographic Areas:

THE RHAETIAN SCARP IS A PROMINENT RIDGE IN CENTRAL WORCESTERSHIRE WHICH SEPARATES THE MERCIA MUDSTONES TO THE WEST (CENTRAL MUSTONES AREA) FROM THE LIAS CLAY TO THE EAST (AVON VALE FORESTLANDS/CLAYLANDS). SOME AREAS EITHER SIDE OF THE RIVER AVON NEAR EVESHAM ALSO HAVE SIMILAR PHYSICAL AND ECOLOGICAL CHARACTERISTICS TO THIS RIDGE

E13 SUITABLE TREES & SHRUBS

Principal component species: ash.

Other suitable species: field maple, blackthorn, oak, hazel, hawthorn, dogwood, spindle, Midland hawthorn, wild privet, honeysuckle, wild clematis.

Sparingly: wayfaring tree, guelder rose, purging buckthorn, wild cherry.

Damp sites: white willow, crack willow

E13 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, bird cherry, downy birch, wild service tree, hornbeam, large-leaved lime, bay-leaved willow, black poplar, alder buckthorn, small-leaved lime, sessile oak, broom, gorse, rowan, holly, silver birch, crab apple, aspen, alder.

E13 CAUTIONARY NOTES

Scrub: old growth scrub is characteristic and widespread, although sometimes reduced to occasional bushes.

Grasslands: there is a calcareous grassland resource of county importance, concentrated on steep slopes.

Veteran trees: are occasional

Orchards: these were a distinctive feature

E14 Ecological Zone: River Terraces

Main Geographic Areas:

OCCURS THROUGHOUT THE COUNTY ALONG THE RIVER COURSES

E14 ECOLOGICAL CONTEXT

This zone lies on gravels deposited by the great glaciers of the past. For the most part the gravels are of local origin, including substantial proportions of Triassic materials from the north of the county (the New Red Sandstone of the Forest Sandstones). There are however significant quantities of material from further afield such as the Lake District, Scotland and Northern Ireland.

Soils tend to be freely draining, light and workable, but also easily depleted of their original fertility. Proximity to the river networks has meant that these areas were settled at an early stage, and most of the county's urban area can be found in this zone (including Worcester, Stourport-on-Severn, Kidderminster, Droitwich, Pershore, Evesham and Upton upon Severn). Hedges tend to be of enclosure age, and hence species poor. Orchards and fruit production were formerly very important land uses. Today agriculture is mostly intensive arable cultivation.

There is now very little woodland and ancient semi-natural woodland is extremely rare. However in the urban areas planting of many exotics has helped to increase the tree cover and provide a source of veteran trees.

E14 Ecological Zone: River Terraces

Main Geographic Areas:

OCCURS THROUGHOUT THE COUNTY ALONG THE RIVER COURSES

E14 GENERAL ECOLOGICAL GUIDELINES

Woodland planting - even small scale plantings - is to be encouraged where it is not contrary to landscape character. Retention of veteran trees is a priority.

Due to its almost total destruction, the restoration of suitable land to oak-hornbeam-lime woodland would be a significant step and is an ecological priority.

Natural regeneration should be encouraged but cannot be relied upon within this zone.

E14 NVC COMMUNITIES

The existing evidence suggests that original woodland cover was referable to W10 oak wood type. However, soils and the pollen record indicates that the dominant species was small-leaved lime. Hornbeam, here towards its native British limit, was probably a frequent component as were silver birch and both species of oak. There are today only minor fragments remaining of the oak-hornbeam-lime wood that was once probably quite extensive in the county.

In areas of varied relief watercourses cut down to the underlying geology form valleys which may hold fragments of ancient woodland.

These are typically composed of species associated with the underlying formation - W8, ash-field maple wood or W6, willow wood, on the lias. W7 alder-ash wood or W8, ash-field maple wood on the mudstones.

E14 Ecological Zone: River Terraces

Main Geographic Areas:

OCCURS THROUGHOUT THE COUNTY ALONG THE RIVER COURSES

E14 SUITABLE TREES & SHRUBS

Pedunculate oak should be the main tree species unless small-leaved lime, hornbeam and sessile oak of local provenance is available.

In this case, small-leaved lime and hornbeam should take precedence. Silver birch, ash, wild cherry, rowan may be used as a minor component. Hawthorn, hazel, holly, crab apple, blackthorn, honeysuckle, goat willow, grey sallow are the most suitable shrub species.

Marginal brakes of gorse are recommended; gorse and broom scrub is native on these soils (a scarce county habitat).

Damp areas: alder, aspen, goat willow, grey sallow and guelder rose are suitable.

The provenance of the pear in Worcestershire remains unclear. It is most likely a native and certainly behaves as such on the terraces, where it is a frequent component of hedgerows. Any existing pears should be encouraged. To avoid genetic pollution planting of commercial stock should be avoided but individuals derived from local hedges would be suitable.

There is a long tradition of introducing beech and sweet chestnut to these soils. They are not recommended as part of native woodland mixes but could be considered in more formal or amenity settings.

E14 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Spindle, wild privet, wayfaring tree, dogwood, whitebeam, wild service tree, purging buckthorn, alder buckthorn, crack willow, white willow, black poplar.

E14 CAUTIONARY NOTES

Towards their limits the terrace gravels frequently occur as mosaics within the underlying geological formations. Boundaries are not precise. In these transitional areas choice of species may vary.

Where sites adjoin the Mercian Mudstones (Severn and Salwarpe terraces): field maple, wild service tree, Midland hawthorn, dogwood are also suitable but avoid hornbeam and sessile oak. Where sites adjoin Lias deposits (Avon terraces): field maple, Midland hawthorn, dogwood, spindle, wild privet are also suitable. There should be a greater proportion of ash. Avoid small-leaved lime, hornbeam, rowan, holly and sessile oak.

In some areas (Landscape Type Riverside Meadows) the landscape character is defined by tree lined watercourses and hedges and woodland is not characteristic. Similarly, woodland planting is not appropriate within the Village Landscape Types. Avoid woodland planting in these areas.

E15 Ecological Zone: Teme Valley Sandstones

Main Geographic Areas:

THE TEME VALLEY AND SURROUNDING AREAS, TO THE FAR WEST OF THE COUNTY

E15 ECOLOGICAL CONTEXT

This area is united by its underlying geology - a broad expanse of Old Red Sandstone which includes the Teme Valley and extends south and east into Herefordshire. Within the area variations in topography and geology give rise to three distinct zones - plateau areas, valley bottoms, and the often dramatic dividing slopes, or 'scarps'. Woodland cover is different within each of these zones.

The plateau areas have neutral, well-drained soils. Their ease of cultivation meant that these areas were cleared for agricultural use relatively early on. As a result woodland today is sparse and often confined to belts along water courses and other linear features. What woodland remains however tends to be old and species-rich, and hence extremely valuable.

The 'scarps', or valley sides contain bands of limestone interspersed among more acid sandstone rocks, and as a result soils can vary within a short distance. The limestone areas support moist, moderately fertile calcareous soils, whilst especially on ridges and hill tops, more acidic rocks give rise to dry, infertile soils.

The steep slopes hindered clearance for early agricultural use, and today are still heavily wooded.

The steepest dingle woodlands are very likely primary woodland and are often designated as Sites of Special Scientific Interest. These woodlands are of enormous wildlife value.

The poorest soils on the slopes were retained as woodland, either as coppice or wood pasture. Orchards, particularly cherry, are a distinctive feature and the Teme Valley became renowned as one of Britain's foremost fruit producing areas.

The third and final zone is the valley floors, where soils tend to be wet but fertile. Land-use here is varied, with traditionally mixed farming, including hop cultivation. The area is still studded with ancient semi-natural woodlands, hedges tend to be ancient and species-rich, and there are numerous veteran trees.

E15 Ecological Zone: Teme Valley Sandstones

Main Geographic Areas:

THE TEME VALLEY AND SURROUNDING AREAS, TO THE FAR WEST OF THE COUNTY

E15 GENERAL ECOLOGICAL GUIDELINES

Conservation of the existing semi-natural habitats (woodland, grassland, scrub) is a priority. Old growth orchards and undershrub communities are special features - these are threatened habitats and should not, in general, be afforested.

Afforestation on all plateau areas is encouraged where landscape character permits - belts would have the greatest positive impact.

Oak should form the core of any planting scheme on the plateaux and on more level ground. Ash is a more suitable core species on scarp slopes and incised valleys. Alder and ash are appropriate for spring lines, streamsides and flushed slopes.

Broom and gorse shrub communities were a distinctive local habitat which has been largely lost, and designs which include areas zoned for scrub are encouraged.

Glades should be as extensive as possible. On slopes, south and east facing aspects present the best ecological potential. Consider leaving broad peripheral strips unplanted. Natural regeneration is good, especially for oak, birch, ash and hawthorn.

E15 NVC COMMUNITIES

Undershrub communities of bracken, W25; bramble (local endemics occur), W24; and gorse/broom, W23 are characteristic.

W10 oak-bramble wood is the core type in the vales and plateaux, although the wildwood may well have been dominated by small-leaved lime over large areas.

Hill tops, ridges and other areas of leached or infertile soils support W16 acid oak-birch wood. Ash-field maple wood, W8, is present in the vales.

Higher slopes are oak dominated (W10 or W16). This grades into W8 ash-wych elm and W7 alder wood, downslope.

E15 Ecological Zone: Teme Valley Sandstones

Main Geographic Areas:

THE TEME VALLEY AND SURROUNDING AREAS, TO THE FAR WEST OF THE COUNTY

E15 SUITABLE TREES & SHRUBS

Principal component species: oak, ash, silver birch, hazel, hawthorn.

Other suitable species: field maple, blackthorn, dogwood, wild cherry (scarps), broom, gorse, rowan, holly, silver birch, crab apple.

Damp sites: alder, aspen, guelder rose, white willow, crack willow.

The following, though native, have restricted natural distributions; specialist advice is recommended before inclusion: wild service tree, large-leaved lime, small-leaved lime, sessile oak, spindle, downy birch.

E15 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, bird cherry, hornbeam, bay-leaved willow, black poplar, alder buckthorn, Midland hawthorn, wayfaring tree, purging buckthorn, wild privet

E15 CAUTIONARY NOTES

Variation within the scarp area is intense. For instance, acid oak wood can be contiguous with basic ash wood. A specialist appraisal of ground conditions is recommended before designing planting schemes.

Springs and tufa deposits are a special feature of the scarp zone. These are a rare and fragile habitat of national significance and should be avoided.

The following features are of especial concern in this area:
Scrubland: old growth scrub is scattered and occasional. It should not be overplanted.

Grasslands: the scarp slopes may support species rich grassland.

Veteran trees: the area is rich in veterans especially on wood borders and within the vale and scarp zones; ancient coppice stools and pollards are a feature.

Orchards: these were a feature of national renown, supporting high biodiversity.

E16 Ecological Zone: West Worcestershire Hills

Main Geographic Areas:

THE PROMINENT RIDGE OF HILLS TO THE NORTH OF THE MALVERN HILLS,
INCLUDING, SUCKLEY AND ABBERLEY HILLS

E16 ECOLOGICAL CONTEXT

The geology of this area is a diverse mix of shales, limestones, sandstones and conglomerates. Soils vary within small areas but tend to be dry and basic with low fertility. Neutral and acid soils are also common.

The steepness of the slopes and generally poor soils has meant limited woodland clearance, and today the area contains a superb native woodland resource with a wide range of types present. Traditional woodland management included the production of ash poles for the local hop industry, and orchards - especially cherry on the warmer slopes. The field pattern is mainly ancient, and hedgerows and other boundary features are generally species rich. Woodland cover increased after World War Two due to afforestation and a reduction in grazing pressure.

E16 Ecological Zone: West Worcestershire Hills

Main Geographic Areas:

THE PROMINENT RIDGE OF HILLS TO THE NORTH OF THE MALVERN HILLS, INCLUDING, SUCKLEY AND ABBERLEY HILLS

E16 GENERAL ECOLOGICAL GUIDELINES

The variation in soils and natural woodland type is intense in this area. The usual woodland is species-rich ash wood, but this is inappropriate in many locations. Natural regeneration is recommended but a mix of predominately ash with some oak, without minor species, is generally appropriate.

The ecological potential of new planting can be increased by strategic alignment with existing woodland sites and linkage belts are preferable to isolated blocks. Significant open edge habitats and glades should form a major component. Natural regeneration is the preferred option and can be used for a wide range of species. sycamore can be a problem, especially in the Abberley area.

Conservation of the existing resource, including all the veterans and special features is the priority. Restoration of inappropriately afforested areas should be a long-term aim.

E16 NVC COMMUNITIES

A wide range of native woodland types are represented. Basic ash wood, W8 is the prevalent form, but oak-bramble, W10 is frequent on neutral to acid soils. Variation is high with at least eight sub-communities represented. Site variation is often intense, for instance, the county's only yew wood, W13, occurs here, and there are also small pockets of acidic oak wood, W16.

The woodland edge and scrub communities are superb, biodiversity is high, and includes endemic species. Ground floras are often rich.

There is a high density of veterans including pollards and ancient coppiced stools (also in hedgerows). The range of species is high - yew, wych elm, small-leaved lime, oak, ash, field maple, hornbeam, wild cherry. Ancient pollards of the rare large-leaved lime are a special feature.

E16 Ecological Zone: West Worcestershire Hills

Main Geographic Areas:

THE PROMINENT RIDGE OF HILLS TO THE NORTH OF THE MALVERN HILLS RIDGE, INCLUDING, SUCKLEY AND ABBERLEY HILLS

E16 SUITABLE TREES & SHRUBS

Principal component species:

oak, ash, crab apple, hazel, hawthorn, holly, silver birch, broom, gorse, blackthorn, guelder rose, field maple, dogwood, wild cherry, wild privet, honeysuckle, spindle.

Damp sites: aspen, alder. Acid sites only - rowan.

Locally sourced stock only: wild service, hornbeam, large-leaved lime, small-leaved lime, sessile oak.

E16 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, alder buckthorn, wayfaring tree, black poplar, purging buckthorn, bay-leaved willow, bird cherry, Midland hawthorn, downy birch, crack willow.

E16 CAUTIONARY NOTES

Grasslands: there is an important grassland resource with acidic, neutral and calcareous types all represented (often on a single site).

Veteran trees: there is a fine resource, notably of veteran pollards and ancient coppiced stools.

Scrub: species-rich, calcareous and old-growth scrub communities are a special feature.

Orchards: these are a very distinctive local feature, supporting high biodiversity.

Protected Species: in new plantations consider a planting regime for the significant concentration of Dormice.

Adders are a threatened species and are present in open sites, all suitable habitat should be protected.

Geological and Geomorphological features of high scientific interest are a local feature. Specialist advice should be sought, for instance rock exposures should not be afforested.

E17 Ecological Zone: Western Mudstones

Main Geographic Areas:

A BROAD SWATHE RUNNING NORTH SOUTH ON THE WEST SIDE OF THE COUNTY, RUNNING FROM LITTLE WITLEY IN THE NORTH TO THE BOUNDARY WITH GLOUCESTERSHIRE IN THE SOUTH

E17 ECOLOGICAL CONTEXT

The underlying geology in this zone is the Keuper Marl that occupies much of the central plain of Worcestershire. Soils are generally moist heavy clays of moderate fertility, with a tendency to waterlogging, although drained plateaux and ridges support lighter soils.

The soils of this area are generally not ideal for agricultural use resulting in the development of a mainly mixed farming system with a considerable area of pasturage, including orchards. The poorest soils were left wooded, mainly managed as coppice.

There is today a good number of ancient wooded sites, most still in a semi-natural condition. Many woods are small or very small. Veterans, frequently as old pollards, are abundant.

E17 Ecological Zone: Western Mudstones

Main Geographic Areas:

A BROAD SWATHE RUNNING NORTH SOUTH ON THE WEST SIDE OF THE COUNTY, RUNNING FROM LITTLE WITLEY IN THE NORTH TO THE BOUNDARY WITH GLOUCESTERSHIRE IN THE SOUTH

E17 GENERAL ECOLOGICAL GUIDELINES

Conservation and rehabilitation of the very fine ancient woodland resource is a priority. There is an extensive geographic network of woodland habitat and afforestation would have the greatest beneficial impact if aligned to complement or restore this network.

Pedunculate and sessile oak should form the heart of any planting scheme. Natural regeneration, which works particularly well for oak and birch, is the best option. The species composition should be adjusted on valley sides and more base-rich sites to include ash (and other species on specialist advice). Alder, aspen and downy birch are the appropriate canopy trees for damp sites.

The greatest loss of habitat within the resource has been amongst open woodlands - wood-heath, wood pasture, orchards, coppice and veterans - and the re-creation of the Wyre Forest wood-heaths is encouraged. Natural regeneration and a subsequent low stocking density is appropriate. Ericaceous undershrubs should be encouraged, including stocking with locally sourced Ling and Bilberry. Glades should be frequent and large. Sycamore and Rhododendron are locally invasive and may need to be controlled.

E17 NVC COMMUNITIES

Woods are typical of the less base-rich clays of the English Midlands. Wild service tree, small-leaved lime and Midland hawthorn characterise the wildwood heritage of this zone. Wild service tree is frequent and occurs at one of the highest densities in Britain. The dominant woodland type is oak-bramble wood, W10, although this grades into ash-field maple wood, W8, on the more basic soils. Small-leaved lime was a major component of the original wildwood, and a good stock still remains in ancient woodlands and hedges. Isolated pockets of hornbeam, associated with ancient features, still occur on leached ridges and hillsides. Superb dingle woods and ancient rivercliff woods add diversity to the woodland resource. Woodbanks are frequent, and wood-edge floras are exceptionally rich and unique in Britain.

Watercourses are important, most are wooded (Types W7, W6, W1, W8 are all represented).

Black poplar is a characteristic streamside species of widespread occurrence, as individuals or in small groups.

E17 Ecological Zone: Western Mudstones

Main Geographic Areas:

A BROAD SWATHE RUNNING NORTH SOUTH ON THE WEST SIDE OF THE COUNTY, RUNNING FROM LITTLE WITLEY IN THE NORTH TO THE BOUNDARY WITH GLOUCESTERSHIRE IN THE SOUTH

E17 SUITABLE TREES & SHRUBS

Principal component species: oak, ash, field maple, hazel, hawthorn, blackthorn.

Other suitable species: holly, silver birch, crab apple, dogwood, Midland hawthorn, wild privet, spindle, small-leaved lime, wild service tree, (locally sourced stock preferred, specialist advice should be taken on the suitability of sites).

Sparingly: purging buckthorn, broom, gorse, rowan.

Damp sites: aspen, alder, guelder rose, white willow, crack willow, black poplar (throughout but sparingly as singles or small groups on stream-sides).

E17 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, bird cherry, hornbeam, large-leaved lime, bay-leaved willow, wild cherry, alder buckthorn, sessile oak, wayfaring tree, downy birch.

E17 CAUTIONARY NOTES

The density of ancient microfeatures is very high, for example hedges, highways/ byeways, holloways, dells, banks/scarps, forest species, and old specimens. A cautionary approach is appropriate - all should be treated as ancient and not afforested or planted over.

Marshland: stream-sides still hold a valued wetland resource, mainly in very small units.

Grasslands: there is a nationally important mesotrophic grassland resource here. Many sites are small or within larger, improved fields. Areas of permanent grassland on slopes should be examined especially carefully for existing floristic value.

Veteran trees: there is an excellent resource, mainly pollards - oak, lime, ash, field maple.

Scrub: areas with old growth scrub are few but occur occasionally on steep banks.

Orchards: were formerly frequent, with most farmsteads supporting a home orchard.

E18 Ecological Zone: Wyre Forestlands

Main Geographic Areas:

THE WYRE FOREST AND SURROUNDING AREAS, IN THE NORTH WEST OF THE COUNTY

E18 ECOLOGICAL CONTEXT

Lying over coal measures laid down in the Carboniferous period, soils in this area derive mainly from clays and shales and are generally infertile, heavy and predominately acid. Drainage is frequently poor. Soils do however tend to be neutral in river gorges, with pockets of base-rich flushing.

Where rock outcrops occur they produce particularly infertile acid conditions.

Most of the area is on a relatively high plateau (over 125m), cut through with river and stream valleys.

The soils in this area are not ideal for agricultural use and a large proportion of the area is still wooded, mostly on ancient woodland sites. Woodland survived in particular in enclosed coppices, on the poorest and wettest soils and steepest slopes.

Most of the dingle woodlands are semi-natural and are of county wildlife importance.

The enclosed woodlands of the Wyre Forest have by and large survived. Traditionally these were managed as oak coppices, but in the twentieth century the broad-leaved character was altered by afforestation with conifers.

Most of the land outside the main Forest area supports mixed farming with a high proportion of pasture land. Small orchards are a feature and veteran trees, sometimes within mature parkland, are also common.

E18 Ecological Zone: Wyre Forestlands

Main Geographic Areas:

THE WYRE FOREST AND SURROUNDING AREAS, IN THE NORTH WEST OF THE COUNTY

E18 GENERAL ECOLOGICAL GUIDELINES

Conservation and rehabilitation of the very fine ancient woodland resource is a priority. There is an extensive geographic network of woodland habitat and afforestation would have the greatest beneficial impact if aligned to complement or restore this network.

Pedunculate and sessile oak should form the heart of any planting scheme. Natural regeneration, which works particularly well for oak and birch, is the best option. The species composition should be adjusted on valley sides and more base-rich sites to include ash (and other species on specialist advice). Alder, aspen and downy birch are the appropriate canopy trees for damp sites.

The greatest loss of habitat within the resource has been amongst open woodlands - wood-heath, wood pasture, orchards, coppice and veterans - and the re-creation of the Wyre Forest wood-heaths is encouraged. Natural regeneration and a subsequent low stocking density is appropriate. Ericaceous undershrubs should be encouraged, including stocking with locally sourced ling and bilberry. Glades should be frequent and large. Sycamore and rhododendron are locally invasive and may need to be controlled.

E18 NVC COMMUNITIES

There are similarities between the woodlands in this area and those found in the Carboniferous landscapes of northern England. The assemblage of woodland plants here is distinctive and unique within Worcestershire and national rarities occur.

The dominant woodland type of the main forest zone is acid sessile oak-birch wood. Stands include W16 and the more northern W11 and W17. Assemblages are transitional between these northern and southern types, although coniferisation has disrupted the pattern of natural variation. Oak-bramble wood, W10 is frequent. The gorge and dingle woods are more varied. Limes (small and large-leaved) and wild service tree occur here and there are significant areas of ash-wych elm wood, W8. Birch wood heath, a characteristic and formerly widespread community is now very scarce. Damp areas support alder woods, W7 in which alder buckthorn is well represented.

E18 Ecological Zone: Wyre Forestlands

Main Geographic Areas:

THE WYRE FOREST AND SURROUNDING AREAS, IN THE NORTH WEST OF THE COUNTY

E18 SUITABLE TREES & SHRUBS

Principal component species: sessile oak, pedunculate oak, hazel, silver birch, hawthorn.

Other suitable species: broom, gorse, rowan, holly, crab apple, blackthorn, honeysuckle, guelder rose. Sparingly and outside of plateau Forest area: dogwood, spindle, ash, field maple, crack willow.

Damp sites: aspen, alder, downy birch, alder buckthorn (Forest area). Scarce local species associated with the Severn Gorge and tributary valleys - wild service tree, large-leaved lime, small-leaved lime, wild cherry (locally sourced stock preferred, specialist advice should be taken on the suitability of sites).

E18 UNSUITABLE NATIVE SPECIES

Due to natural distribution, soil conditions, exposure and cultural impact. Beech, bird cherry, hornbeam, Midland hawthorn, wayfaring tree, purging buckthorn, wild privet, white willow, bay-leaved willow, black poplar.

E18 CAUTIONARY NOTES

Trees and Shrubs: the current assemblage of species in this area is unique, and many otherwise widespread county species are rare or do not occur naturally here (see unsuitable native species list).

Grasslands: Semi-improved neutral grasslands of national importance occur in this area and such sites must be avoided for tree planting.

Veteran trees: there is a fairly good resource, including pollards and ancient coppiced stools.

Scrub and Heath: there are areas with old growth scrub and heath communities.

Woodland Variation: between plateau and valleys species variation is considerable, and specialist advice is recommended for individual sites.

Orchards: these are a locally distinctive feature, supporting high biodiversity.

General principles for semi-natural habitat **4**



General principles for semi-natural habitat **4**

General

General guidance on semi-natural habitats and new woodland creation is available in The UK Forestry Standard (1998) (available from www.forestry.gov.uk). This section provides supplementary information relating specifically to Worcestershire.

Planting of trees is appropriate in many cases, for example on some improved grassland or previous arable land, or as part of landscaping schemes for new developments. Existing areas of nature conservation value should not however be destroyed by the creation of new woodland or the planting of trees. Features of interest can sometimes be accommodated within planting schemes, for example glades can be left around ponds or veteran trees. However on some habitats, such as species-rich grassland and heathland, planting should not occur due the biodiversity value of such areas. The following sections provide more information on semi-natural habitats where care should taken with regard to new tree planting. For fuller accounts of these habitats including their location and

extent, legislative status and the action required for their conservation refer to the relevant plans from the Biodiversity Action Plan for Worcestershire (www.worcestershire.gov.uk/biodiversity) Where there is any doubt as to the existing nature conservation value of sites where planting is planned it is recommended that advice from an ecologist is sought. The Institute of Ecology and Environmental Management website provides a directory of ecologists (<http://www.ieem.org.uk>), or contact the ecologist at Worcestershire County Council tel: 01905 763763 or email ecology@worcestershire.gov.uk

Grasslands of nature conservation value

Semi-natural grasslands in Worcestershire are an extremely valuable resource and should not be destroyed through planting with trees. Lowland neutral meadows are found throughout the county but there are important concentrations in the following areas:

(see table below)

Area	Ecological Zone in which it occurs
Malvern Chase	Malvern Common
Teme Valley	Teme Valley Sandstones
southern Wyre Forest	Wyre Forestlands
parts of the Clent Hills	North Worcestershire Hills
Dodford area	Northern Mudstones
historic Forest of Feckenham (<i>encompassing most of central and northern Wychavon</i>)	covers parts of Northern Mudstones, Central Mudstones, Rhaetian Scarp and the Lenches, Avon Vale Forestlands and Avon Vale Claylands.
the Liassic clays between Pershore and Inkberrow	mostly Avon Vale Claylands
the Lenches	Rhaetian Scarp and the Lenches
the fringes of Worcester City	Central Mudstones

4 General principles for semi-natural habitat

The majority of acid grassland found in Worcestershire occurs on the Malvern Hills (Ecological Zone Malvern Hills), although it also occurs as part of heathy mosaics on the sandstones in the north of the county (Ecological Zone Forest Sandstones).

Calcareous grassland can be found predominantly on Bredon Hill and the Cotswold escarpment (Ecological Zone Cotswolds Hills), and along the limestone ridges that run north from the Malvern Hills via Ankerdine Hill to Abberley Hill, and along the Teme valley (Ecological Zone West Worcestershire Hills).

Traditional Orchards (standard fruit trees growing on permanent grassland) are a feature of Worcestershire's countryside. Many of these are now in decline, and often there may be only one or two trees remaining. It is not desirable that traditional orchards are replaced with woodland - a preferable objective is to restore the orchard with the introduction of suitable fruit trees and appropriate management regimes. They are particularly important in the following areas of the county: (*see table below*)

Area	Ecological Zone in which it occurs
Teme Valley	Teme Valley Sandstones
Wyre Forest	Wyre Forestlands
Severn Vale	parts of the Central Mudstones
Vale of Evesham	various, including Rhaetian Scarp and the Lenches, and Avon Vale claylands

Veteran Trees

Veteran or 'ancient' trees may occur singly, often with some historical significance such as marking a boundary, or as part of a remnant wood pasture landscape. Ancient trees are extremely valuable wildlife features, and should be accommodated within a planting scheme, including unplanted space around them.

Wood pasture and parkland

Wood pasture (scattered standard trees occurring in permanent grassland) and parkland (a similar structure to wood pasture but often including non-native

species) are also characteristic features of Worcestershire, particularly in certain areas for example Bredon Hill and Croome Park.

Where a number of scattered veteran trees occur in an area of grassland, or if there is historic evidence of wood pasture or parkland, consideration should be given to retaining the wood pasture/ parkland character. In such areas it is possible that the grassland may also be of high nature conservation value and should also be taken into account.

Scrub

Scrub is a frequently over-looked wildlife resource as it is often regarded as waste ground to be cleared. In areas of old growth scrub or where it is especially species-rich the wildlife value can be significant. Where possible existing areas of scrub should be incorporated into the planting scheme, or new areas created.

Heathland

Areas where ericaceous species such as heather (*Calluna vulgaris*) or ling (*Erica cinerea*) are present, or acid grassland (indicated by grasses such as wavy hair grass (*Deschampsia flexuosa*) and fescues, and flowering plants such as bedstraws) are a highly threatened and valuable habitat in Worcestershire. Small areas only remain, found on the sandstones to the north of the county (Ecological Zone Forest Sandstones). It may be possible to accommodate isolated patches of such habitat within glades and rides in a planting scheme, but it would be more appropriate to manage the whole area as heathland rather than woodland with heathy glades.

Ponds

Ponds are a frequent feature throughout the Worcestershire countryside but are particularly common in areas of clay (for example around Redditch in Ecological Zone Northern Mudstones) where marl pits have become filled with water. Where ponds occur the planting scheme should incorporate an un-planted zone around the water body to prevent shading of the water later on when the trees have grown.

Wetlands - marshland, flushes and rills

Areas where the lack of drainage or presence of a spring line means that ground is kept generally wet can occur throughout the country (apart from the highest land) and are a highly valued resource in Worcestershire where so much wet ground once occurred but has now been lost to agriculture and development. Wetland areas, in particular where there is a semi-natural ground flora, should not be planted.

Geological and geomorphological features

Where these occur advice from the Worcestershire Local Geological Site group should be sought contact the Herefordshire and Worcestershire Earth Heritage Trust
tel: 01905 855184. *email: eht@worcs.ac.uk*
web: www.earthheritagetrust.org but in general the advice is to avoid planting that will either obscure or damage these features.

Ancient microfeatures

These include features such as green lanes, hedgebanks, hollows and dells. These can often be a guide to the history of an area, for example indicating previous boundaries of woodland. Where possible these should be accommodated within any new planting scheme.

Landscape Character

Some landscape types are not characterised by woodland and in these areas new woodland planting should be avoided. Elsewhere, the pattern of new woodland creation should respect the inherent landscape character.



This section contains information on the sources of information used in compiling this guidance. It covers the Landscape Character Assessment for Worcestershire, Worcestershire Natural Areas and the Biodiversity Action Plan for Worcestershire.

The Landscape Character Assessment for Worcestershire

In the mid 1990's the then Countryside Agency, working in close association with English Nature and English Heritage, undertook an analysis of the landscape character of the whole of England. The resultant map, published as 'The Character of England', divided the country into 159 Regional Character Areas based on the broad interaction between the natural and cultural aspects of the landscape. These Character Areas represent broad brush divisions, defined at a national scale.

Local Authorities were encouraged to progress this work by undertaking more detailed assessments, enabling a finer level of definition to be developed. Counties in the West Midlands have been particularly proactive in this field and most now have complete landscape character assessments in place. The Worcestershire Landscape Character Assessment covers the whole of the rural landscape and it is hoped to extend the methodology to assess urban landscape character in the near future.

The methodology used for the assessment is compatible with, and closely follows, the principles outlined in Guidance produced in April 2002 by the then Countryside Agency and Scottish Natural Heritage on the production of Landscape Character Assessments.

The process of landscape characterisation involves the gathering and assimilation of information relating to the six elements that define landscape

character. Three of these - geology, topography and soils - relate to the physiographic character of the landscape, the other three - tree cover, settlement pattern and land use - relate to the cultural evolution of the landscape.

The analysis of this information can inform our understanding of the landscape at a range of scales, in particular enabling the definition of Landscape Types. Landscape Types provide a strongly unifying currency for Landscape Character Assessment - Landscape Types can occur anywhere where the same combinations of physical factors and cultural evolution have taken place. The Limestone Estatelands, for example, a Landscape Type that occurs in Worcestershire on the edge of the Cotswolds, also occurs in Yorkshire and in other parts of the country.

The Landscape Types in Worcestershire are shown on Map 1. These types and how they are derived are covered in more detail in another publication *A new look at the Landscapes of Worcestershire* - which is available from the County Council Environmental Policy team or can be downloaded from the internet at <http://worcestershire.whub.org.uk/home/wcc-lca-downloads>. A more detailed version of the Landscape Character Assessment for Worcestershire - *Shaping the new Worcestershire* - contains larger maps and will be useful for people involved in decision-making processes.

5 Sources of information

The need to respect and understand the distinctiveness and diversity of the landscape was recognised at the national level in the Government White Paper 'Our Countryside: The Future', launched in November 2000. Since then the European Landscape Convention, created by the Council of Europe, became binding in the U.K. in 2007. It emphasises not only the importance of all landscapes - whether designated or not - but also our shared responsibility in guiding future landscape change.

Regionally, landscape character and its incorporation into decision-making processes featured in both the West Midlands Regional Spatial Strategy

(now revoked) and the Regional Forestry Framework for the West Midlands. The regional Woodland Opportunities Map provides a spatial aspect to guiding woodland planting. At the local level, policies relating to landscape character appear in the Worcestershire County Structure Plan.

Woodland and tree cover make an immense contribution to the landscape character of Worcestershire. A commitment to ensuring that new woodland planting is informed by and respects the local character is critically important if we are going to retain the contrasts of landscapes that make Worcestershire special.

Ecological Zones and Natural Areas of Worcestershire

The ecological detail provided in this document largely stems from a piece of work undertaken by the County Botanical Recorder (John Day) which aimed to apply the concept of 'Natural Areas' at the county level.

A Natural Area can be defined as a naturally occurring bio-geographical area within which, for reasons often of geology and climate but also cultural history, the 'ecology' has similarities. Whilst there may well be a large degree of variation within these areas and boundaries will to a certain extent be arbitrary, there should be more to unite the area than divide it.

English Nature divided the whole of England into very broad Natural Areas, of which there are six covering Worcestershire. At the county level however a finer resolution is needed to be able to understand in more detail the

ecological character of a particular area - hence the Worcestershire Ecological Zones.

The process of identifying the different areas primarily used geological formations and soils but also took into account altitude, relief and climate. These were then overlain with flora distribution maps. Whilst these 'natural' factors were the fundamental drivers for determining the various areas, the impact of land use on the native flora was also taken into account. This approach has obvious parallels with that taken in the development of the Landscape Character Assessment.

More information on the Worcestershire Natural areas is provided in Issue 10 (pg22) of the Worcestershire Record (available from www.wbrc.org.uk)

Biodiversity Action Planning

A further source for this guidance is the understanding gained from the Biodiversity Action Plan for Worcestershire, first published in 1999 and reviewed in 2007. The Worcestershire BAP has its roots in international and national policies and strategies stretching from the Convention on Biological Diversity signed at the Earth Summit in 1992, to the England Biodiversity Strategy produced in 2002 and revised in 2009.

The purpose of a Biodiversity Action Plan is to set out priority habitats and species, with achievable and realistic targets for their creation and restoration, and an action plan for achieving these.

The Worcestershire Biodiversity Action Plan was revised during 2007/08 and includes several action plans relating to tree cover such as Veteran Trees (with lowland wood pasture and parkland) and Scrub, as well as one for Woodland. Copies are available from the Biodiversity Coordinator Environmental Policy Team at the County Council
tel 01905 766852 or email
biodiversity@worcestershire.gov.uk or
download from
www.worcestershire.gov.uk/biodiversity

Tree and Woodland cover in Worcestershire 6



The following section describes the broad patterns of tree cover and woodland types found in Worcestershire today. This is followed by a summary of some of the historical factors which have influenced the development of tree and woodland cover in the county.

Amount, distribution and pattern of tree cover in Worcestershire today

Worcestershire today contains around 13,445 ha of woodland - about 7.6% of its area. This is slightly higher compared to some surrounding counties - for example Warwickshire has around 4.7% woodland cover, and Shropshire 5.8% - but is below the U.K. average of 12%.

The Forestry Commission's National Inventory of Woodland and Trees identifies seven types of woodland based on management or broad species composition. The 1997 inventory recorded that 11.6% of woodland in Worcestershire over 2 ha in size was conifer woodland, 63.4% broadleaved, and 17.4% mixed woodland.

A relatively high proportion of the current woodland cover of the county is of ancient origin (i.e. continuously wooded since at least 1600 A.D.). This is categorised as Ancient Semi-natural Woodland, (ASNW) composing 2.5% of land area, and Plantation on Ancient Woodland Site, (PAWS) contributing another 1%. Both of these combined amounts to coverage that is more than twice the national average.

The size distribution of woodlands also reflects the national pattern in that almost half of Worcestershire's ASNW woodlands are less than 5 hectares in area, with 50 above 25 hectares and just five greater than 100 hectares, with certain areas of the county more heavily wooded than others.

Ancient woodland is particularly valuable from a wildlife point of view because the long period of time that the area has been wooded allows a large variety of species to develop, especially in the groundflora.

The extent of planting on ancient woodland sites (AWS) has varied with area and size of woodland. Generally larger woodlands have borne the brunt of plantation establishment with some 50% of woodlands over 100 hectares having been planted as opposed to 17% of woods 2-5 hectares in size.

This has meant that nearly half the surviving ASNW consists of stands of less than 20 hectares. This has left remaining ASNW both small in size and considerably fragmented.

There is particular value in targeting PAWS that are large and adjacent or near to other ASNW to provide habitat networks for threatened species. Other priorities would be the restoration of plantations with large remnant populations of ASNW ground flora in rides and roadsides, as these will be able to provide the means for re-colonisation.

The distribution of woodland across Worcestershire is not uniform, and the presence or absence of woodland can be of primary significance in the definition of the character of particular landscapes. The distribution of Ancient Semi-natural Woodland is particularly relevant, being notably absent from the so-called 'planned' landscapes of the south east of the county, but a significant component of the 'ancient landscapes' of particularly the north-west of Worcestershire. The distribution of this type of woodland partly reflects geographical contrasts but is primarily due to differences in the cultural evolution of the landscape.

6 Tree and Woodland cover in Worcestershire

It is primarily the shape, species composition and age structure of Ancient Semi-natural Woodlands which can influence the landscape character of an area. They typically have a mixed age structure and comprise mixed native broadleaves, and are very often irregular in outline. This reflects the way in which woodland was originally cleared and the land subsequently enclosed in these landscapes. Whilst Ancient Semi-natural Woodlands cannot be created in the ecological sense, woodlands of ancient character, in landscape terms, can be created if appropriate species composition, age structure and boundary patterns are used.

Whilst woodland is not a characteristic of the planned landscapes of the south-east of Worcestershire the planned landscapes elsewhere in the county, such as the Sandstone Estatelands, the Estate Farmlands and the Limestone Estatelands, do have notable tree cover. The outline of these woodlands reflects the enclosure patterns of the landscapes, most frequently being regular or semi-regular in shape. The woodlands invariably have a much more limited species range, sometimes as few as one or two species, and a similarly limited age structure. Conifers, and non-native broadleaved species can often be notable components of these plantation woodlands.

The scale or size of woodland blocks and the patterns they create also contribute to the definition of landscape character. Large, clearly defined, discrete blocks of woodland tend to be found in the estate landscapes. In other Landscape Types, particularly those with notable hedgerow tree populations and woodland cover (for example the Timbered Farmlands) the shape and size of woodlands can often be obscured or filtered by the presence of

other trees. In these landscapes woodlands of all sizes can occur, small copses often being a notable feature. In areas of dense numbers of trees along hedgerows or watercourses, these alone can often give the impression of a wooded landscape.

In landscapes with notably steeply sloping topography, such as the Principal Wooded Hills agricultural clearance was often restricted by the nature of the land and woodland remains the dominant land cover, expressed as broad interlocking belts 'clothing' the hillsides.

A number of Landscape Types lack woodland as a characteristic but still have a notable tree presence provided by orchard trees, linear patterns of tree cover associated with watercourses and hedgerows, or ornamental plantings associated with parklands and settlement. Elm was formerly a notable component of many landscapes including parts of the Vale of Evesham and would have created strong linear patterns in such areas.

A few landscapes lack woodland and tree cover - these are restricted to the very high ground of the High Hills and Slopes of the Malvern Hills. These areas were cleared very early for defensive purposes and, largely as a result of continued grazing, have remained un-wooded. With recent reductions in grazing pressure the encroachment of scrub and secondary tree cover on many of the lower slopes is now evident despite the poor soils and exposure. Many Unenclosed Commons have also tended to lack woodland and tree cover for similar reasons, but changes in the traditional management regimes of these areas have led to tree and scrub cover on certain sites becoming evident.

Species composition of woodland

The species composition of a woodland is to a large extent a reflection of its origins. Recently planted woodland will contain species which were planted when the woodland was created. As time progresses this initial species mix may be altered through invasion of other species and subsequent management, although the dominant tree species are less likely to change unless species unsuitable for the soil conditions were planted and subsequently failed.

In contrast, the species composition of woodland of ancient origins will be a reflection of what was there initially (the 'wildwood' that once covered most of Worcestershire), plus the effect of subsequent management over hundreds of years. It is on these more 'natural' woodlands that the following description of species composition is based. A national standard for categorising woodland species composition is used - the National Vegetation Classification (or NVC). The NVC primarily uses dominant tree types to define groupings, although shrub and ground layer vegetation is also taken into account.

There are four main species groupings found in ancient woodlands in Worcestershire:

Calcareous soils: Ash-field maple woodland (corresponding to NVC W8)

Neutral soils: Pedunculate oak woodland (corresponding to NVC W10)

Acid soils: Oak-birch woodland (corresponding to NVC W11, W16 and W17)

Wet soils: Alder-willow woodland (corresponding to NVC W5, W6 & W7)

These four groupings are described in more detail below followed by sections on broad-leaved woodland not of ancient origin in Worcestershire, mixed woodland and conifer woodland.

Ash-field maple woodland

NVC W8 - *Fraxinus excelsior* - *Acer campestre* - *Mercurialis perennis* woodland

This is the predominant woodland type on the more base rich and calcareous soils in Worcestershire. It occurs throughout the county but is more common in the south and west.

This type of woodland is extremely variable in terms of species composition although it is usually characterised by ash, maple, hazel, pedunculate oak and wych elm. Small-leaved lime, wild service and hornbeam are uncommon components, mainly in western sites. The ground flora is often rich in herbs such as bluebell, dog's mercury, wood anemone, primrose and violet species.

Historically, ash-field maple woodland was frequently managed as coppice although high forest stands became more common during the twentieth century. Replanting and the selection of particular species through management, for example hazel in coppice systems, has also been common practice within this woodland type in the past. Ancient semi-natural stands of ash-field maple woodland often support a rich diversity of flora, invertebrates, birds and mammals.

In the west of the county around the Abberley Hills and Wyre Forest area small stands of an upland variant of this community which is a priority biodiversity habitat (Upland Mixed Ashwoods) can be found. These upland limestone woodland communities are also considered as *Tilio-Acerion* ravine forests, and therefore constitute a priority habitat for protection under the EU Habitats Directive 1992.

6 Tree and Woodland cover in Worcestershire

Pedunculate oak woodland

NVC W10 - *Quercus robur* - *Pteridium aquilinum* - *Rubus fruticosus* woodland

Pedunculate oak woodland is the predominant type of semi-natural woodland on neutral and moderately acidic brown earths. It occurs throughout the county and is the dominant type in the Severn Vale.

Both species of oak and their hybrids occur in this woodland type. Pedunculate oak is dominant in most woods with sessile oak becoming more common to the north and west of the county. Silver and downy birch, sycamore, small-leaved lime and chestnut are also commonly associated species. This woodland type also includes most of the county's small-leaved lime woods, such as the nationally important Shrawley Wood.

Ground flora is typically species poor, characterised by bluebell, bracken and bramble. Pedunculate oak woodland forms the majority of the ancient semi natural woodland within the county, although it is often modified by management as high forest or, less commonly, coppice. Many mature oak and other broadleaf plantations on brown earth soils can be affiliated with this woodland type, such as sweet chestnut woodlands.

Oak - birch woodland

NVC W11 *Quercus petraea* - *Betula pubescens* - *Oxalis acetosella* woodland;

W16 *Quercus spp.* - *Betula Spp.* - *Deschampsia flexuosa* woodland;

W17 *Quercus petraea* - *Betula pubescens* - *Dicranum majus* woodland.

Oak-birch woods are common on acidic and sandy soils within the county and are particularly frequent in the north and west, in the Wyre Forest, the Teme Valley and around Kidderminster.

This woodland type is characterised by a canopy dominated by either downy or silver birch, with pedunculate or sessile oak. Other canopy species are uncommon although holly, rowan and hazel occur. The ground flora is typically species poor, dominated by grasses, bracken and other ferns, and mosses.

Oak and birch woodlands located in the west of the county, including the Wyre Forest, are similar to the oak-birch woodlands of the uplands (W11, W17) which are a Priority UK Biodiversity Habitat.

Wet woodland

NVC W5 *Alnus glutinosa* - *Carex paniculata* woodland;

W6 *Alnus glutinosa* - *Urtica dioica* woodland;

W7 *Alnus glutinosa* - *Fraxinus excelsior* - *Lysimachia nemorum* woodland;

The term wet woodland refers to willow and alder woodland on waterlogged soils. The type is only of very limited occurrence in Worcestershire. The wet woodland that does occur is found on the enriched alluvial soils within the floodplains of the major rivers (Teme, Severn and Avon) and smaller water-courses. It also occurs very occasionally in association with Wet Pasture Meadows.

Crack willow and alder (W6) are typically the dominant canopy species. Other willow species and downy birch are also often important associated species. The ground layer is typically species poor and often dominated by stinging nettle, sedges and grass.

Wet woodlands may also occur on the poorer gleyed soils of hillside seepages and flushes where they are likely to be dominated by ash and alder, often with a rich ground flora characterised by yellow pimpernel, meadowsweet and rushes (W7). These are most likely to be found in the north and west of the county.

All wet woodland is a Priority UK Biodiversity Habitat.

Other broadleaved woodland

This covers all broadleaved woodlands that are not ancient semi-natural woodland. It includes broadleaved plantations on ancient woodland sites, other established broadleaved plantations that support similar species to ancient semi-natural woodlands, and woodland where 50% of the canopy is composed of locally native species.

There are two major sub-types: beech and yew woodland; and other broadleaved plantations. Both are described below.

Beech and yew woodland

Beech is probably not native to Worcestershire although long established plantations of high biodiversity value are found on the edge of the Cotswolds in the south east of the county. Bredon Hill has a large number of beech plantations of considerable age and is recognised as an internationally important site for invertebrates of high individual nature conservation value that are intimately associated with these woodlands.

Beech is often planted either amongst existing woodland, usually of the ash-field maple type, or as new plantations. The dense shade created by a beech canopy creates a characteristically bare ground flora although dog's mercury and bramble are often frequent. There are a number of variants of beech woodland in the country, but the most important type in Worcestershire is NVC W12 *Fagus sylvatica* - *Mercurialis perennis* woodland. Worcestershire has a single example of yew wood (W13 *Taxus baccata* woodland) on the Abberley Hills.

Lowland beech and yew woodland is a Priority UK Biodiversity Habitat.

6 Tree and Woodland cover in Worcestershire

Other broadleaved plantations

Over time, a number of broadleaved plantation woodlands in the county have been planted for a variety of purposes and small plantations of them are scattered throughout the county. For example there are significant old plantations of sweet chestnut in the sandstone country around Kidderminster and in the west of the county frequent small ash beds can be found - a remnant of the hop growing industry from the 18th to the 20th centuries. In the post war period there was also a fashion for planting poplar on wet ground and whilst this would not now be recommended because of the risk of destroying existing areas of valuable habitat, some of these plantations have developed an interesting flora due to the fact that poplar casts only a very light shade.

A notable group of plantations are the woods collectively known as the 'Harris Brush Company Woods'. These are all sited on large ancient woodland sites in the centre and south of the county within easy reach of the company's factory at Stoke Prior. These woodlands were often originally planted with exotic species for specific wood products, such as grey alder or sycamore, to produce white wood poles for turnery. Other woodlands were planted with sweet chestnut for fencing.

Plantations on new sites can be difficult to classify using NVC but the Harris Woods and others on ancient woodland sites can be classified using surviving ancient woodland species.

The shrub layer and ground flora of plantation woodlands is often less diverse than ancient sites growing on similar soil types. However these woodlands are often important for particular species of birds, plants and invertebrates with high

individual nature conservation value. Such woodlands, including Trench Wood and Monk Wood, raise the national conservation value of plantation woodlands.

Mixed woodland

Woodlands composed of both broadleaved and coniferous species are usually the product of planting previously un-wooded land or replanting existing semi-natural woodlands. Mixed woodlands are scattered throughout the county, although occurring most frequently in the west and north of the region.

Mixed woodland can include a very broad range of species such as pedunculate oak, ash, beech, sycamore, poplar, Scots pine, Corsican pine, Norway spruce, larch and Douglas fir. Shrub layers and ground floras are often less rich in these woods where coniferous trees cast heavy shade and where conifer needles (which are slow to decompose) smother ground flora.

Coniferous woodland

All coniferous woodland in the county is non-native with the majority planted in the last 100 years. Coniferous woodland occurs mainly in the west and north of the county, around Wyre Forest, Abberley Hills, and the southern scarp of the Teme Valley.

The principle coniferous species planted in Worcestershire are Scots pine, Corsican pine, Norway spruce, larch species, Douglas fir and locally, Sitka spruce. Coniferous plantations typically have a species poor ground flora, due to the dense shade produced by the maturing trees, although they can support scattered ferns and mosses.

History of the development of Trees and Woodland in Worcestershire

The retreat of the glaciers, and the development of the 'wildwood'

The story of Worcestershire's woodland starts around 12,000 years ago with the end of the last glaciation. As the temperatures rose and the glaciers retreated northwards they left behind a tundra-like surface, at first bereft of vegetation. Over time this surface became vegetated, initially by grasses and moorland plants such as heather. Eventually the grasses gave way to shrubs and trees which pollen analysis has shown to be initially birch, aspen and willow. About 8,500 BC pine and hazel began to replace the birch. Pine was followed by oak and alder, then by lime and elm, then holly, ash, beech, hornbeam and maple.

As this 'wildwood' became established it covered the vast majority of Britain. At the peak of postglacial succession it is likely that as much as 90% of what is now Worcestershire was wooded. A few exceptionally wet areas may have been bog or mire, and especially exposed ridges or hill tops may have been un-wooded but the rest of the land would have been clothed in deciduous woodland.

Palaeolithic man was present in Britain soon after the end of the last ice age, but with little in the way of tools he could not have had much influence on his environment. It wasn't until the Mesolithic (10,000 to 4,500 BC) that the impact of human activities became noticeable. During this period small areas were almost certainly burnt to provide pasture for edible wild beasts, and tools were used to clear areas of woodland.

At around 4,000 BC an event occurred which had a major impact on the woodland present at the time. Within a century or two the pollen record shows that half the elm trees disappeared from across Europe, this at a time when around one-eighth of the entire British Isles was covered in elm woodland. The most likely explanation for this catastrophic elm decline was Dutch Elm Disease, possibly hastened in its spread by the new agriculturalists pollarding elm and using it as a fodder crop.

At around 4,500 BC, just prior to the elm decline, destruction of the wildwood for cultivation began and continued throughout the Neolithic (4,500 to 2,000 BC) and Bronze Age (2,400 to 750 BC) to feed a rapidly expanding human population. The scale of the impact on the wildwood of both these early farmers and elm disease was huge. By 500 BC, when the onset of the Iron Age brought more effective tools with which to work the land, it is thought that half of England had been cleared of wildwood. In Worcestershire prehistoric settlements show this clearance was extensive, particularly on the gravel terraces of the Rivers Severn and Avon.

6 Tree and Woodland cover in Worcestershire

The Romans

The most active period of woodland clearance in lowland Britain was probably in the 700 years between the late Iron Age and Roman occupation (AD 43). By Roman times many parts of Worcestershire are thought to have had landscape patterns established similar to those we see today. The Vale of Evesham, with its easily cultivated, free-draining, light soils seems to have been cleared at a very early stage, and was a prominent corn-producing and exporting area in Roman times. Meadows by this time were an important and prominent land use along the major river valleys and smaller tributaries of the Teme, Avon and Lower Severn.

In these early days of clearance it was the underlying geology and the soils derived from this, and the topography - a legacy from the glacial period in many cases - which were the significant factors in determining which areas were cleared first. At a time when clearing woodland was an extremely labour intensive and difficult process, those undertaking the task would have been very careful about first targeting those areas which would reap the most in terms of agricultural productivity.

Flatter areas with easier to work and more productive soils are likely to have been cleared earlier than steeper slopes or areas of less productive soils. The better soils from an agricultural point of view are associated with underlying rock which is soft and quick-weathering, such as the sandstones and marls found in the south central Worcestershire plain. These areas contain soils which are relatively easy to work and of high fertility.

In contrast areas of hard, slow-weathering rocks, such as the shales of the Suckley and Abberley Hills or the pre-cambrian granites of the Malverns, formed thin soils with low fertility which offered much less reward to the early farmers. The effects of population pressure can be seen where productive soils on excessively steep slopes were occasionally cultivated, while most were passed over by the early cultivators, and are often still wooded today.

So as early as Roman times, (AD 43 to 410) the landscape of England had already been established into patterns that we would recognise now. Much of the wildwood had either been destroyed, or was organised into what we might now call woods - i.e. distinct blocks of woodland separated from each other, owned, named and above all managed by somebody - and the land in between was largely farmed or moorland.

The Romans were great users of woodland products and would have made considerable demands on the woodland resources available. Their timber-framed buildings, corn-driers, bridges and ships, using bricks, and articles of iron, lead and glass would all have required timber and woodland products of differing natures. It has been calculated that to support the Roman military ironworks known of in the Weald, 23,000 acres of coppice woodland would have been required.

Anglo-Saxon England

This activity came to a fairly abrupt end with the departure of the Romans in AD 410, and the equally fast appearance of the Germanic tribes - the Anglo-Saxons. In the period immediately following the Romans there seems to have been a contraction of the population, perhaps a combination of the invading populations and, it has been suggested, plague. A smaller population, whilst reducing the demand for timber and woodland products, did not mean the end of woodland management. The British population under the Anglo-Saxons still needed timber to build homes and small wood for cooking. They did however have to adapt their construction methods to suit British trees; crooked trunks were used to create an upright timber frame, which was then in-filled with wattle and daub panels. The value of wood at this time may be illustrated by some early surviving tariffs of compensation for criminal damage to trees. In Kent King Ine decreed in the sixth century that a smallish tree, under which thirty swine could stand, was to be valued at sixty shillings, whilst in Wales just one hazel stool was worth three and three-quarter sheep.

'Ancient' and 'Planned' landscapes

By the late Saxon period (around AD 1,000) the central belt of lowland Britain was developing into what can be termed 'planned countryside'. This was characterised by villages, often surrounded by open fields with a communal way of working, practising arable and mixed farming. Beyond this belt lay the so-called 'ancient countryside' of scattered farms and hamlets, where land was generally worked by families practising pasture and mixed farming. The dividing line between ancient and planned landscapes cuts across Worcestershire on a roughly south west - north east line, and is a significant feature with regard to landscape variation in the county.

It is not entirely clear why some parts of Britain developed the communal open field system of strip farming, whilst agriculture in other areas retained the more traditional enclosed field approach. It may have had something to do with making the best use of arable land and not having to maintain fences, and possibly also changes in the social structure of communities as people started to live in larger villages rather than hamlets and individual farmsteads. What is clear however, is that open-field systems were generally applied to land that was already being farmed, as opposed to land only recently converted from woodland, moorland or other un-cultivated land. Open field was strongest in districts with little or no woodland; one of the motives for moving to an open-field system may have been maximising land-utilisation where there were limited possibilities for expansion otherwise.

6 Tree and Woodland cover in Worcestershire

Assart - an Anglo-Saxon word meaning to clear a piece of land or wood for the purpose of agriculture

In Worcestershire the Vale of Evesham, with its lack of boundaries but general straightness when they are present, and especially its lack of woodland, is a classic example of planned countryside. In contrast the intimate mosaics of pasture and woodland, irregular boundaries, and abundant woodland of the Wyre Forest area is a good an example of ancient countryside.

For the country as a whole the extent of woodland cover was restricted by the time of the Domesday Survey (1086) with only 15% of the land being recorded as woodland or wood pasture. In Worcestershire however the picture was different, as woodland still occupied extensive tracts to the west, north and north-east, accounting for possibly as much as 40% of land cover at that time. In the 800 years following Domesday woodland cover was to decline further by quite significant amounts - Worcestershire's cover for example reducing to less than 5%.

The Royal Forests of the Normans

Following the Norman conquests (1066) a significant factor in terms of woodland in the landscape was the addition of large tracts of land to the Royal Forests. Deer parks had long been a feature of the landscape in England where the feudal system resulted in land being divided into 'manors' held either by lords, who usually achieved their dominance by affording protection, by the Crown or the Church.

Hunting was a prestigious activity, not only for leisure but also providing food and skins. The manorial lords benefited from Game Laws which protected their right to hunt and created parks - areas of enclosed land - in which to contain deer.

The early parks were typically on the edge of cultivated land well away from centres of population, and were 'un-improved' areas - land that had natural grazing together with woodland for cover. The later medieval kings created hunting forests - extensive areas of land which were made subject to severely restricting forest law. These areas were not normally covered with trees but were simply tracts of countryside, containing the typical mixture of farmland, commonland, woodland and 'waste'.

Forest law was intended to protect those animals which were intended to be hunted - fallow, red and roe deer and wildboar - and the habitats in which they lived. However, offences such as woodland clearance and poaching under Forest Law were mostly tolerated, becoming an accepted form of taxation. By the 13th century sixty-nine forests are known to have been in existence, covering about a fifth of the country. In Worcestershire six Forests are known - Wyre, Feckenham, Ombersley, Horewell and Malvern, together with Kinver and Arden which extended across the boundary from neighbouring counties. In total these forests covered the majority of the county, excluding the south east.

There were similar areas, decreasing in size, which were the sporting province of social grades less than royalty. Next in standing to the royal forest was the chase - a private forest or area of waste, granted by the medieval kings to favoured nobles. Third was the park - a part of the demesne land of the lord of the manor. This was an enclosure of wild land suitable for game or sport.

Demesne - that part of an estate worked directly for its owner

As the status of royal forests waned in the later Middle Ages encroachment and assarting took place and the woodland became eroded. The areas gradually became disforested (i.e. released from Forest law) after the late 14th century. Nevertheless, the designation of such an extensive 'zone' of Royal Forests within the county, even though some forests such as Horewell and Ombersley were relatively short lived, undoubtedly had the effect of slowing down the substantial woodland clearance that took place elsewhere during that period.

The post-medieval period - the enclosures

The post-medieval period from AD 1536 onwards saw a major change in parts of the countryside, brought about by the massive enclosure of areas previously under an open field system. Some enclosure occurred between 1720 and 1880 and was initially intended to create grazing land, particularly for sheep. Much of the early enclosure was done by way of private agreement but by far the greatest activity was undertaken by private Acts of Parliament during the 18th and 19th centuries which formalised earlier agreements.

The enclosures transformed the appearance of the 'open field' countryside, laying down the familiar pattern of hedges enclosing fields typically of a fairly regular shape.

Hawthorn was the dominant species used in such boundary planting but elm was also used. The suckering habit of elm meant that this species often became a dominant component of many hedges. If allowed to grow un-managed the resulting dense lines of elm trees eventually created a wooded effect.

The regular boundary patterns of these planned landscapes were reflected not only in hedgerows but also other features such as roads. In those landscapes where new woodlands were planted these too were characterised by straight lines and geometric shapes - a marked contrast to the irregular patterns of the old woodland remnants of the 'ancient' landscapes.

6 Tree and Woodland cover in Worcestershire

The rise of the estates

Of the 6,000,000 acres enclosed by acts of Parliament between 1702 and 1844, much of the land passed into the hands of large rural landowners. The estates created by these landed gentry were deliberately planned not only to relate to the agricultural practices of the time but also to take into account aesthetic considerations. Pleasure grounds and parks were laid out including lakes, follies, waterfalls and other man-made features. Above all they included extensive tree planting - for the first time new planting of woodland occurred at a sufficiently significant scale to have an impact on the landscape.

Beyond the parks, trees were planted for scenic effect, often pine or beech clumps on hill tops, and for financial gain. Conifers, notably pines, larch and spruce became popular nurse crops for deciduous trees and provided the added bonus of allowing two crops to be taken in sequence from the same ground. Hunting was still popular but, in addition to the traditional deer, the new estate owners were interested in smaller game - hares, pheasants and foxes - and woodlands were introduced into the landscape with such quarry in mind. Shelterbelts were designed to afford good shooting and keep game on the estate, and woods were managed for the benefit of pheasants.

So whilst new woodlands were being introduced into what had been for centuries un-wooded landscapes, in other areas of Worcestershire the focus remained on utilising existing woodland. These were by then generally highly managed and altered descendants of the wildwood. For centuries the typical form of management for most woods in Worcestershire was coppice rotation. Woods were worked as coppice alone or as 'coppice with standards', where a small number of large timber trees were grown over coppice. The density of the large trees had to be kept low otherwise their shade would suppress growth of the coppice stools. The uses of coppice material ranged from charcoal for supplying the demands of the iron industry in north Worcestershire, to making wattle and daub panels as 'infill' for timber framed buildings. In the west there was great demand for ash poles for the hop-yards. Demand for coppice products however fell dramatically in the twentieth century, particularly between 1900 and 1930, and today neglected coppice woodlands can be found all over the county, but especially around the Malvern Hills area.

Coppice - a traditional form of woodland management in which young tree stems are cut down near to ground level to encourage the growth of more poles.

In addition to the demands of hunting and the widespread use of coppice management, for centuries the provision of large timber from Britain's woodland was also a prime concern. Ship-building, for example, required large amounts of timber - it is estimated that by Nelson's time 1,000 first class oaks were needed to build a ship of the line. In matters of defence the dependence of England on timber was recognised by her enemies - it is recorded that in the reign of Elizabeth I the Spanish ambassador to London was instructed to look at the possibility of destroying the Forest of Dean by fire. Although recent research tends to suggest that the demands for timber for ship building have been exaggerated, the tradition that England needed plenty of good oak for ships remained, and estate owners continued to plant oaks up to the mid nineteenth century. By the 1870's most estate owners had achieved a successful balance of land management, including woodlands, on their land. However the introduction of cheap grain from America followed by the importation of refrigerated meat from abroad upset the agricultural balance, leading to a long agricultural depression in the late 19th and early 20th centuries. During this period many estates were lost and woodlands were sold off or became derelict.

Twentieth century losses

The latter part of the 20th century saw probably the worst period for woodland losses and decline in management since man first started to clear trees from the land. Following World War Two farmers came under enormous pressures to maximise the agricultural productivity of

their land, and it became economically worthwhile to bring into cultivation areas that had previously been un-farmed and allowed to remain wooded. This at the same time as increasing imports of foreign timber and other woodland products were dealing a serious blow to the British woodland industry. Tax incentives in the 1970s and 1980s saw large areas being put down to conifers, often to the detriment of existing semi-natural woodland or other habitat of nature conservation value. In Worcestershire the quality of the soils meant that the county avoided the worst excesses of coniferisation, although parts of the Wyre Forest were re-planted.

Thankfully the loss of woodland to agriculture has ended now. Some of the issues facing today's woodlands are losses due to development and also with finding a role. A lack of markets for woodland products has meant that the driving forces behind woodland management have massively changed. Gone is much of the demand for coppice products or large volumes of low value timber (although growing demand for woodfuel may change this). Whilst the role in providing cover for game remains in many areas a woodland today is just as likely to be managed as a nature reserve, or un-managed entirely. From a purely bio-diverse point of view an un-managed wood can be just as valuable as a managed wood in some situations. This however goes against the tradition of woodland development, and some would argue that the areas of woodland that we have left are too small and fragmented to allow the ecology of such habitats to function properly.

6 Tree and Woodland cover in Worcestershire

A worse fate for a woodland is for the boundary between pasture land and the wood to be lost so that stock have access. Whilst there is a long tradition of stock sheltering and grazing in woodland, today's stocking rates are considerably higher than in days gone by, and the result is generally the loss of the shrub layer and natural regeneration until eventually all that remains are a few mature trees, with nothing to replace them when these too die.

Similar damage is increasingly being suffered, particularly in new plantings, through the destruction caused by deer and grey squirrels. Population management has been undertaken in the county in a number of areas, but the breeding success of both species ensures their very real threat to future woodland establishment and natural regeneration.

Woodland has always waxed and waned with changes in agriculture and whilst ancient semi-natural woodland can never be replaced, woodland is still a re-creatable habitat. Protection measures should hopefully avoid any further loss of ancient semi-natural woodland, but the creation of new woodland or way in which existing woodland is managed is subject to a number of influencing factors. Climate change; changes to the way that woodland grant incentives are targeted by the Forestry Commission; developments in farming practises resulting from factors such as European agricultural grants and events such as the foot and mouth outbreak of 2001, as well as the modern taste for traditionally produced woodland products are all factors which are likely to affect the future development of woodland in Worcestershire.

Mitigating climate change

In Worcestershire, the extreme weather events associated with global warming are impacting on both human and natural systems. Climate change has already reduced the length of the traditional planting season through warm autumns and early springs. Unpredictable flooding throughout the year, coupled with high winds and summer droughts is predicted to increase. These extreme conditions can occasionally be tolerated by most woodland species but as their frequency increases, so some species will inevitably be adversely affected.

Adapting the way we manage at a landscape scale will be key. Opportunities should be sought to link up semi-natural woodlands to provide habitat networks for connected movement of species and build in adaptability of these woodlands by introducing species provenances from outside the locale. However care should be taken to ensure compatibility between the planting site and the site of seed origin and should be subject to current best practice guidance. The Forestry Commission's website publishes the latest guidance on climate change in relation to woodland. Go to

<http://www.forestry.gov.uk/fr/INFD-5ZYFEX>



Appendix One - List of Landscape Types and Ecological Zones

List of Landscape Types (see Map One)

1. High Hills and Slopes
2. Principal Wooded Hills
3. Wooded Hills and Farmlands
4. Wooded Forest
5. Forest Smallholdings and Dwellings
6. Timbered Plateau Farmlands
7. Principal Timbered Farmlands
8. Timbered Pastures
9. Wooded Estatelands
10. Unenclosed Commons
11. Limestone Estatelands
12. Sandstone Estatelands and Enclosed Commons (*treated as one type for the purposes of this document*)
13. Estate Farmlands
14. Principal Settled Farmlands, Settled Farmlands on River Terraces and Settled Farmlands with Pastoral Use (*treated as one type for the purposes of this document*)
15. Principal Village Farmlands and Village Farmlands with Orchards (*treated as one type for the purposes of this document*)
16. Village Claylands
17. Riverside Meadows
18. Wet Pasture Meadows

List of Ecological Zones (see Map Two)

1. Alluvial Fenlands
2. Avon Vale Claylands
3. Avon Vale Forestlands
4. Central Mudstones
5. Cotswold Hills
6. Forest Sandstones
7. Headley Heaths
8. Kenelm's Forestlands
9. Malvern Commons
10. Malvern Hills
11. North Worcestershire Hills
12. Northern Mudstones
13. Rhaetian Scarp and the Lenches
14. River Terraces
15. Teme Valley Sandstones
16. West Worcestershire Hills
17. Western Mudstones
18. Wyre Forestlands

