

SOUTHERN MAGNESIAN LIMESTONE

CHARACTER AREA 30

A gently rolling agricultural plateau punctuated by large woodlands, nucleated villages and incised river valleys



Location of Southern Magnesian Limestone

Introduction

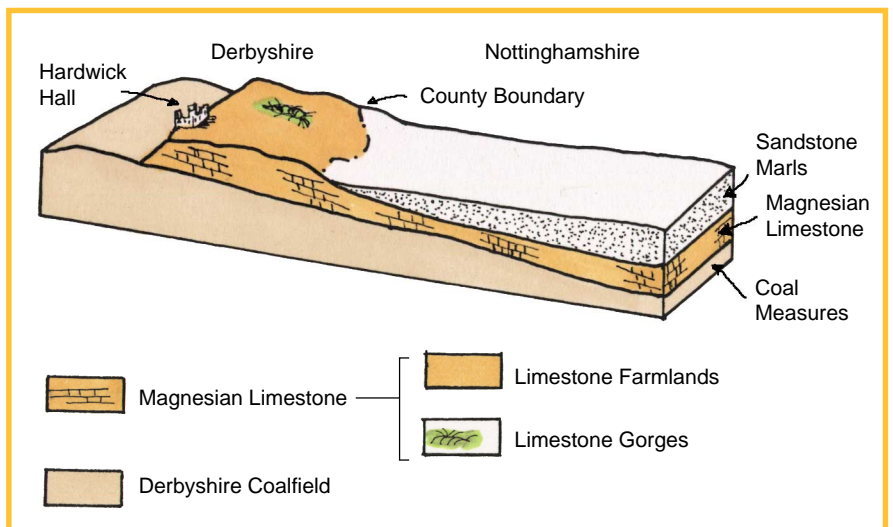
The Southern Magnesian Limestone Character Area occurs in the north east of the county as a narrow belt of elevated land, approximately 10km wide by 20km in length, which runs between Barlborough in the north to Hardwick and Pleasley in the south. This is part of the great band of magnesian limestone that outcrops just north of Nottingham and extends to Bedale in North Yorkshire. The topography of the land strongly contrasts with the industrial coalfields in the west, and the low-lying regions in Nottinghamshire to the east.

Physical Influences

The magnesian limestone is associated with other rocks of the Permian era, including marls, which were deposited in a desert sea approximately 250 million years ago. Magnesian limestone is a soft rock, made from the skeletal remains of sea creatures. Marl is limey clay that formed as dust accumulated in shallow water.

Landscape Character Types

- Limestone Farmlands
- Limestone Gorges



The magnesian limestone has formed an escarpment, which dips gently eastwards before disappearing under the overlying sandstone in Nottinghamshire. The escarpment forms a distinctive, upstanding gently rolling plateau dissected by the *Limestone Gorges*, which were cut by torrents of melt-water at the end of the last ice age.

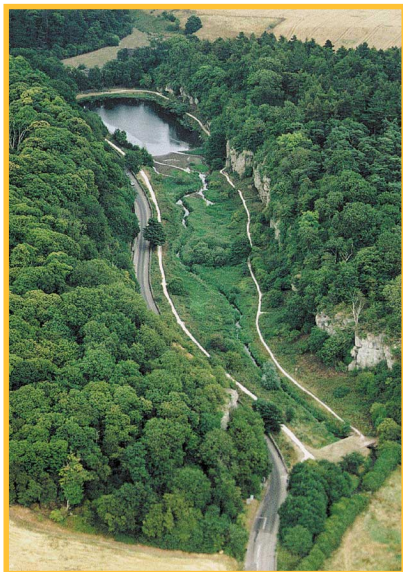
The rock weathers to form a light, very fertile, friable soil which has resulted in arable farming becoming the dominant land use of the *Limestone Farmlands*. In some lower lying areas to the east, the occurrence of mixed farming is indicative of heavier soils over clay. In the *Limestone Gorges* where waterlogged soils prevent arable cropping, grazing meadows are characteristic.

Natural Influences

The plateau was once covered by dense deciduous forest, which was progressively cleared for cultivation. Since the early 19th century the plateau has become dominated by intensive cereal cropping and as a result much of the ecological interest of the *Limestone Farmlands* has been lost. Many of the woodlands have been replanted with coniferous trees, however their size and ancient origin are important attributes for nature conservation.

The narrow, steep sided *Limestone Gorges* remain as important natural features in this landscape. Their inaccessibility along with the steep rocky sides have minimised human disturbance and allowed many original habitats to survive. In these valleys, impeded drainage has restricted farming activities to

the minimum, rendering much of the land as unimproved wet grassland. Magnesian limestone can support a very species rich flora, including some species that occur nowhere else in the county.



Creswell Crags

Human Influences

The caves in Creswell Crags within the *Limestone Gorges* provide evidence of the earliest human settlement in Britain, dating from 50,000 to 12,000 years ago. The post glacial period saw the development of a forested landscape exploited by hunter gatherer groups but their impact on the landscape would have been minimal. It was not until the adoption of farming in the Neolithic period that significant clearance of the forest would have occurred. Settlement and exploitation of the area continued throughout the prehistoric period and the succeeding Romano-British period however there is very little evidence of their activity in the landscape today.

The present character of the landscape starts to take shape in the centuries before the Norman Conquest. This is an ill-documented period in history and the establishment of villages and their associated fields is difficult to date. However, on place name evidence alone, it seems that settlements like Palterton, Elmton, and Pleasley had their origins in the pre-conquest period. Most if

not all of the settlements mentioned in Domesday Book are likely to have been old by the time they were recorded.

In the Midlands at the time of the Middle Ages the majority of settlements would have been surrounded by their open fields, beyond which would have been extensive areas of wastes and commons and woodland. The enclosure of the open fields may have begun as early as the later middle ages; certainly early 17th century maps show enclosures in various areas, for example around

colour, giving these buildings a certain distinctiveness when seen in the landscape.

Wealthy landowners have had a notable influence on the area by developing estates centred on great houses set in parkland. The best surviving example is Hardwick Hall. The park at Hardwick has escaped the intensive arable farming common over much of the *Limestone Farmlands* and preserves historic landscape features absent elsewhere.



Hardwick Hall and park set within the Limestone Farmlands

Bolsover. Enclosure of the open fields continued in piecemeal fashion throughout the 17th and 18th centuries, leading to a pattern of relatively small irregular fields around the village core, with the wastes and commons being divided into larger more regular fields. This pattern was completed by parliamentary enclosure acts between the mid 18th and mid 19th centuries, which often gave rise to larger regular fields and straight roads, which are predominant in the *Limestone Farmlands*.

The magnesian limestone is a good building material. Traditional buildings are almost exclusively constructed of this stone and roofed with clay pantiles which have a brilliantly red/orange

A further layer was added to the landscape with the development of industry, particularly from the late 18th century onwards. The rivers, particularly the Maun, Meden and Poulter were utilised for first corn and then cotton mills in the late 18th century. Charcoal burning and lime burning had probably been carried out on a local scale for decades but limestone quarrying on a large scale began in the 20th century and saw the development of major quarries, particularly at Whitwell. The late 19th century saw the expansion of the coal mining industry eastwards to exploit the deeper seams of coal running beneath the magnesian limestone. The development of collieries, spoil tips and infrastructure inclusive of red brick terraced housing, radically

altered the character of many existing villages. The disappearance of the coal industry at the end of the 20th century is now leading to the removal of the buildings and spoil heaps associated with mining and their replacement with new forms of industry. These in turn are having a major impact on the appearance of the landscape. However, despite the impact of deep-coal mining and more recent urbanisation, the area still retains a rural character.

Due to the suitability of the soils for cultivation the pastoral landscape which predominated up to the late 19th century gradually gave way to arable production. This change was accentuated during the Second World War when large areas of land were ploughed up. Thereafter Government and EEC farming policies have sustained the intensive arable landscape. As a result floristic richness is confined to very small, uncultivated margins associated with rocky outcrops, the grips and crags, and derelict or reclaimed land.

Other Considerations

- Lowland Derbyshire BAP
- East Derbyshire Woodland Project
- The Creswell Limestone Area Management Action Plan
- The Creswell Limestone Strategy
- The Creswell Crags Conservation Area

LANDSCAPE TYPE: LIMESTONE FARMLANDS

A gently rolling, and in places urbanised agricultural landscape, characterised by large-scale open farmland, estate woodlands, and small limestone villages.



Key Characteristics

- Gently rolling limestone plateau
- Fertile soils supporting productive arable farmland
- Panoramic views across lowland to the west
- Long distance views over plateau
- Views often ending in a wooded skyline.
- Large and medium estate woodlands
- Amenity trees around small rural villages and isolated farmsteads
- Large regular fields bounded by hedgerows
- Straight roads with uniform width verges.
- Settlement concentrated in villages with historic cores of limestone buildings
- Farms and cottages with red clay pantile roofs
- Large self contained mining settlements around historic village cores

Geology and Landform

The magnesian limestone has formed massive blocks that create a compact crystalline rock, resistant to erosion. The durable nature of the limestone is accountable for the steep sided escarpment at Bolsover and justifies its extensive use as building stone. Towards the county boundary the magnesian limestone is broken up into thin crumbly layers mixed with clay. Here the rock is more easily weathered and as a result the landform is lower-lying at Shirebrook and east of Whitwell.

Soil and Land Use

Arable farming has become the dominant land-use due to the fertile, free draining qualities of the limestone soil allied with the gentle topography. The soils developed on the marl have a heavier texture, and are more prone to waterlogging. Mixed farming was probably more widespread in earlier times but due to agricultural intensification, many of these areas have been converted to arable farming.

Ecology

Due to the gentle slopes and inherently fertile soils, the limestone farmlands are dominated by intensive cereal cropping. As a result a considerable degree of ecological interest has been lost. In spite of this, large woodlands are still present and pockets of unimproved magnesium limestone grassland still survive. The major landscape features are the large woodlands, including Whitwell Wood, Scarcliffe Park and Pleasley Park. The planting of coniferous trees has obscured and suppressed their ancient origins and species rich flora. Even though many of the original species remain, they only occur as scattered individual specimens along rides or on rocky outcrops. Within Whitwell wood there are also locally rare habitats, which support many rare species. Further ecological losses have occurred with the loss of elm trees due to Dutch elm disease. The rich grassland habitats of the magnesian limestone support many locally rare species. However, these sites occur only in isolated places, particularly on

marginal land such as along road verges, on railway cuttings or in old quarries.

Tree Cover

Tree cover is chiefly represented by large woodlands such as Scarcliffe Park wood (163.6ha), Whitwell wood (168.8ha) and Pleasley Park (75.9ha). Even though these are of ancient origin they have now been largely converted to commercial conifer woodland. There are also more recent, smaller plantations, comprising a mix of deciduous and coniferous trees. There is a distinct lack of hedgerow trees, although tree groups do occur around small rural villages and the occasional farmstead. Much of the lack of hedgerow trees may be attributed to Dutch elm disease, as elm would certainly have been more prevalent as evidenced in place names like Elmton. The distinct lack of hedgerow trees allied to the gentle relief creates an open landscape allowing for middle to long distance views often ending in a wooded skyline. At Shirebrook and other lower lying places closer to the county boundary there is a greater sense of enclosure. This is mainly due to distant views being limited by higher ground to the west.

Enclosure

This is a landscape of medium to large, regular shaped fields bounded by neatly trimmed thorn hedgerows. The fields are large, due to the removal of field boundaries and regular in shape reflecting later parliamentary enclosure. The small, narrow and more irregular enclosed land is linked with historic settlements.

Here the fields are often associated with pockets of permanent pasture and are a feature around rural villages, such as Whitwell, Elmton and Rowthorne. Hedges in these areas tend to be bushier and more species-rich than those found elsewhere. Dry-stone walls, also feature in places, most

notably around the villages and along lanes.



Transport

Many of the roads are straight with uniform road verges, resulting from late parliamentary enclosure. This pattern is clearly visible at Whaley Common and Bolsover Moor, their names describing former use. In contrast to these routes, a simple network of winding lanes also connects villages. These lanes are related to the earlier enclosed land and are sometimes sunken with species rich hedgerows. The road verges are more irregular in width with occasional exposed rocky outcrops.

Built Environment

The traditional pattern of settlement is strongly nucleated

and characterised by small villages such as Scarcliffe, Elmton and Whaley. The older buildings are constructed from the local pinkish-yellow limestone with red clay pantiles. These materials still play a defining role, particularly in the heart of the historic towns, villages and in outlying farmsteads. Between the villages there are sparsely scattered farmsteads and country houses.



An inheritance of building and landscape features still remain from the ducal estates developed in the 16th Century, the most notable examples being around Hardwick Hall and Bolsover Castle. Smaller examples occur as isolated features within the landscape, these include game coverts, plantation woodland and estate farms.

Summary

The Limestone Farmlands is a simple yet distinctive agricultural landscape strongly influenced by the nature of the underlying geology. The land is shaped in the form of an elevated and for the most part gently rolling plateau. Long distance views are characteristic, due to the gentle relief, lack of hedgerow trees and large arable fields. In places, near the county boundary in the east, views are limited due to rising ground, creating a stronger sense of enclosure. The soils over the magnesian limestone are free draining and fertile, inherently capable of supporting arable farming. Early farming practices and settlement have characterised the landscape today. The pattern of fields, small rural villages and large woodlands are the result of a long tradition of human activity. Recent development, coupled with a growth in intensive agriculture has produced a landscape with few remaining natural habitats. Nevertheless the large woodlands and their associated flora and fauna still remain important areas for nature conservation.

Superimposed upon this rural landscape are the impacts of modern development, deep coal mining and the urbanisation of many small villages. All the pits have now closed but the urbanised settlement pattern, derelict and reclaimed pit heaps and associated infrastructure remain as an enduring legacy of this industry. However, with the unifying influence of the magnesian limestone as a locally distinctive building material, together with strong agricultural traditions, the landscape has retained its rural character.

LANDSCAPE TYPE: LIMESTONE FARMLANDS

Planting and Management Guidelines

An open, arable landscape punctuated by the occasional very large plantation woodland, often on ancient woodland sites, with small tree groups around farmsteads and settlement.

Primary woodland character: Occasional very large plantations

Primary tree character: Localised amenity tree groups

Woodland vision: Occasional very large plantations

Tree vision: Localised amenity tree groups

Typical woodland size range: Greater than 50ha large

Woodland pattern: Regular plantations

- Large scale woodland planting
- Conserve and restore all ancient woodland sites by natural regeneration or use of locally occurring native species.
- Re-establish and enhance physical links between existing isolated woodland and hedgerows.
- Conserve and enhance the tree groups that occur within and around rural settlements and isolated farmsteads.

LANDSCAPE TYPE: LIMESTONE FARMLANDS

Woodland Species Mix

Base Rich Soils

Primary Tree Species 50%

# <i>Fraxinus excelsior</i>	Ash
# <i>Quercus robur</i>	Pedunculate Oak
Minor	
# <i>Tilia cordata</i>	Small Leaved Lime
# <i>Tilia platyphyllos</i>	Large Leaved Lime
<i>Ulmus glabra</i>	Wych Elm

Secondary Tree Species 20%

Major

<i>Acer campestre</i>	Field Maple
<i>Betula pendula</i>	Silver Birch
<i>Betula pubescens</i>	Downy Birch

Minor

<i>Ilex aquifolium</i>	Holly
<i>Malus sylvestris</i>	Crab Apple
<i>Populus tremula</i>	Aspen
<i>Prunus padus</i>	Bird Cherry
<i>Sorbus aucuparia</i>	Rowan
<i>Taxus baccata</i>	Yew

Shrubs 10-30%

Major

<i>Corylus avellana</i>	Hazel
<i>Crataegus monogyna</i>	Hawthorn
<i>Prunus spinosa</i>	Blackthorn
<i>Salix cinerea</i>	Grey Willow

Minor

<i>Cornus sanguinea</i>	Dogwood
<i>Euonymus europaeus</i>	Spindle
<i>Ligustrum vulgare</i>	Wild Privet
<i>Rhamnus cathartica</i>	Purging Buckthorn
<i>Salix caprea</i>	Goat Willow
<i>Viburnum opulus</i>	Guelder Rose

Open Space 0-20%

Amenity Trees - tree species most appropriate for planting as amenity trees associated with settlement, or other locally occurring large woodland species.

Hedgerow Species Mix

Suitable hedgerow plants

Primary 70-75%

<i>Crataegus monogyna</i>	Hawthorn
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Secondary 25-30%

<i>Acer campestre</i>	Field Maple
<i>Corylus avellana</i>	Hazel
<i>Ilex aquifolium</i>	Holly
<i>Prunus spinosa</i>	Blackthorn
<i>Ulmus glabra</i>	Wych Elm

Occasional 0-5%

<i>Cornus sanguinea</i>	Dogwood
<i>Euonymus europaeus</i>	Spindle
<i>Ligustrum vulgare</i>	Wild Privet
<i>Rhamnus cathartica</i>	Purging Buckthorn
<i>Taxus baccata</i>	Yew
<i>Viburnum opulus</i>	Guelder Rose

Suitable hedgerow trees

Primary 70-75%

<i>Fraxinus excelsior</i>	Ash
<i>Quercus robur</i>	Pedunculate Oak

Secondary 25-30%

<i>Acer campestre</i>	Field Maple
<i>Tilia cordata</i>	Small Leaved Lime
<i>Tilia platyphyllos</i>	Large Leaved Lime

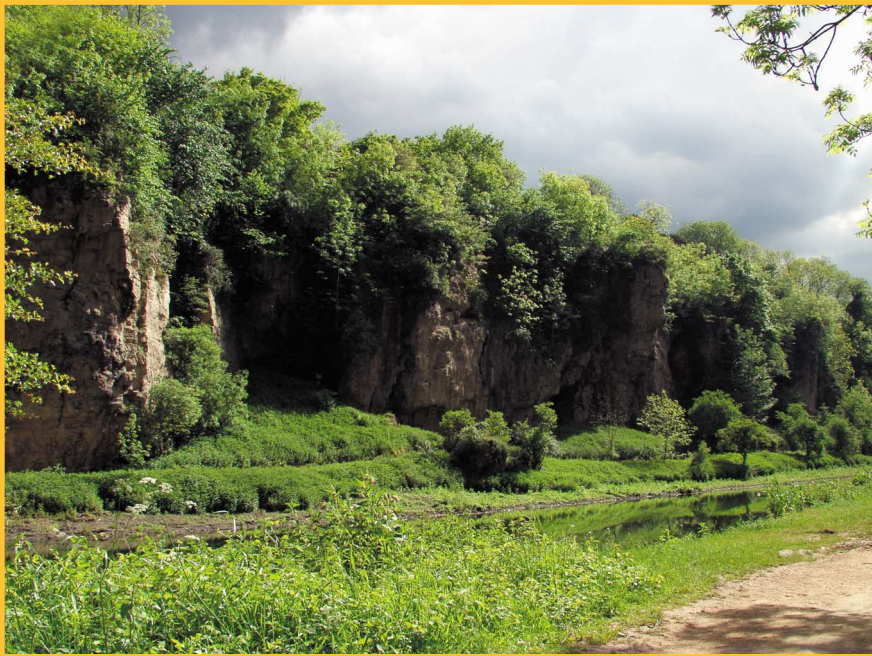
Occasional 0-5%*

<i>Malus sylvestris</i>	Crab Apple
<i>Populus tremula</i>	Aspen
<i>Prunus padus</i>	Bird Cherry
<i>Sorbus aucuparia</i>	Rowan
<i>Ulmus glabra</i>	Wych Elm

* only to be used if occurring locally within the landscape character type

LANDSCAPE TYPE: LIMESTONE GORGES

Incised river corridors, characterised by steep rocky cliffs, overhanging woodland and grazed meadows



Key Characteristics

- Narrow gorges with steep, rocky cliffs and flat bases
- Wet meadows with permanent pasture
- Thin belts of woodland at base of rock faces, with scattered trees associated with streamline
- Medium sized regular fields bounded by hedgerows and some dry-stone walls
- Settlement is absent or sparse.
- Textile mills and relict industrial buildings made from the local limestone
- Restricted transport routes due to inaccessibility
- Strong sense of visual containment

Geology and Landform

The gorges were formed during the last Ice age when torrents of melt-water cut through the magnesium limestone. Due to the nature of the rock, the river valley was quickly eroded to form a distinct 'U' shape. The exposed buff coloured rock is clearly visible on the cliffs, which associated with the narrow river valley, creates a strong sense of visual containment.

Soil and Land Use

The valley floor is underlain by material carried down by the

torrents of meltwater and debris fallen from the gorge sides. This mixture of rock and soil has impeded drainage, forming the waterlogged soils characteristic of the gorges. Unimproved pasture is the dominant land-use in this landscape.

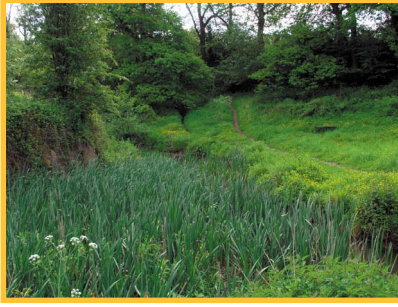
Ecology

In a region dominated by intensive cereal cropping, the limestone gorges provide a striking contrast in scenery. The major landscape features are the gorges themselves. Their inaccessibility has minimised

human disturbance and allowed the woodland, species rich grassland and natural river valleys to continue as valuable ecological habitats.

The woods of the crags are remnants of ancient woodland that has survived since 1600AD. They consist of a rich mixture of broad-leaved trees, some of which are protected for their rarity. Unimproved magnesian limestone grassland is nationally scarce. In the Limestone Gorges this type of grassland occurs extensively on the steep slopes, supporting many rare species.

Water, though present within the Limestone Gorges, is not a major ecological feature. The waterlogged soils on the other hand play a key role in forming some important grassland habitats within the gorges. Hollinhill & Markland Grips and Pleasley Vale have both been designated as Sites of Special Scientific Interest (SSSI) for these reasons. The caves in the gorges also have significant ecological importance supporting rare and unusual fauna.



Wetland habitat at Pleasley Vale

Tree Cover

Linear remnants of broad-leaved ancient woodland dominate the steep gorge sides. Scrub is apparent throughout the landscape, colonising poorly maintained fields and steeper slopes.

Enclosure

Enclosure pattern is not an important characteristic within this landscape type. Fields are generally of medium size, regular to semi-regular in shape and

enclosed by hedgerows with the occasional dry stone wall. At one time the river valleys would have been unenclosed grazing meadow.

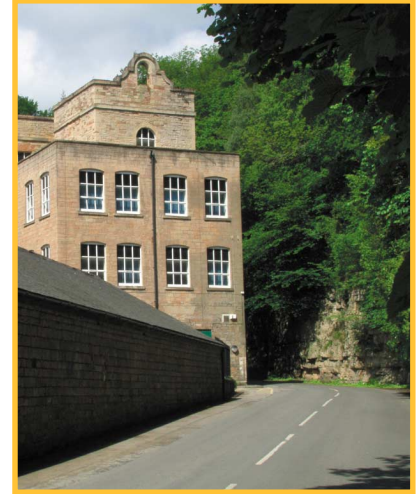
Transport

The inaccessibility of the limestone gorges is a characteristic feature. Some of the gorges, locally known as grips, have no vehicle access. Other grips like Creswell and Pleasley have single-track roads. These roads were probably recent additions associated with their industrial development.

Built Environment

Pre-historic man occupied caves at Creswell Crags and the archaeological evidence of this occupation is of international importance. Modern man harnessed the area's watercourses for industry and at

Pleasley Vale has constructed large textile mills using the local limestone. These survive today as industrial relics, largely disused and are imposing features within this narrow gorge. Many are now undergoing redevelopment for alternative uses.



Pleasley Vale mills

Summary

The Limestone Gorges were formed as torrents of water during the Ice Age, eroded the limestone to form deeply incised, 'U' shaped river corridors. The gorges are characterised by steep, rocky cliffs and narrow inaccessible river valleys. Many of the original habitats, such as the ancient woodland and species rich grassland, have remained in excellent condition and support species of national importance. The accumulation of debris in the floodplain has given rise to waterlogged soils. As a result pastoral farming is characteristic with wet grassland being a key feature in the river valleys. The steep cliffs coupled with narrow river valleys impart a strong sense of enclosure and visual containment creating a peaceful, secluded riverside environment. Of international significance are the caves at Creswell Crags where prehistoric man first settled. Large mills, relics of the textile industry, are still imposing features within some gorges.

LANDSCAPE TYPE: LIMESTONE GORGES

Planting and Management Guidelines

Limestone gorges with dense overhanging semi-natural woodland, some of ancient origin, with scattered watercourse trees.

Primary woodland character: Widespread small woodlands

Primary tree character: Scattered watercourse trees

Woodland vision: Widespread small woodlands

Tree vision: Scattered watercourse trees

Typical woodland size range: 0.5 - 5 ha small

Woodland pattern: Organic / linear

- Conserve and restore all ancient woodland sites by natural regeneration or use of locally occurring native species.
- Ensure the use of indigenous tree and shrub species, including a proportion of large, long lived species.
- Ensure a balance is maintained between new woodland creation and areas of nature conservation value.
- Enhance the visual and ecological continuity of river corridors by management, natural regeneration and planting of riparian trees.
- Ensure new woodland does not conflict with features (e.g. ridge and furrow) that help to define landscape character.

LANDSCAPE TYPE: LIMESTONE GORGES

Woodland Species Mix

Neutral/Base Rich Soils

Primary Tree Species 50%

Fraxinus excelsior Ash
Quercus robur Pedunculate Oak

Minor

Tilia cordata Small Leaved Lime
Tilia platyphyllos Large Leaved Lime
Ulmus glabra Wych Elm

Secondary Tree Species 20%

Major

Acer campestre Field Maple
Betula pendula Silver Birch
Betula pubescens Downy Birch

Minor

Ilex aquifolium Holly
Malus sylvestris Crab Apple
Populus tremula Aspen
Prunus padus Bird Cherry
Sorbus aucuparia Rowan
Taxus baccata Yew

Shrubs 10-30%

Major

Corylus avellana Hazel
Crataegus monogyna Hawthorn
Prunus spinosa Blackthorn
Salix cinerea Grey Willow

Minor

Cornus sanguinea Dogwood
Euonymus europaeus Spindle
Ligustrum vulgare Wild Privet
Rhamnus cathartica Purging Buckthorn
Salix caprea Goat Willow
Viburnum opulus Guelder Rose

Open space 0-20%

Waterlogged Conditions on all soil types

Primary Tree Species 50%

Alnus glutinosa Alder
Betula pubescens Downy Birch
Fraxinus excelsior Ash
+ *Salix fragilis* Crack Willow

Secondary Tree Species 20%

Major

Salix caprea Goat Willow
Salix cinerea Grey Willow

Minor

Corylus avellana Hazel
Sorbus aucuparia Rowan

Shrubs 10-30%

Major

Salix purpurea Purple Willow
Salix viminalis Osier

Minor

Crataegus monogyna Hawthorn
Prunus spinosa Blackthorn
Viburnum opulus Guelder Rose

Open space 0-20%

+ **Watercourse Trees** - tree species most appropriate for planting as watercourse trees.

Hedgerow Species Mix

Suitable hedgerow plants

Primary 70-75%

Crataegus monogyna Hawthorn

Secondary 25-30%

Acer campestre Field Maple
Corylus avellana Hazel
Ilex aquifolium Holly
Prunus spinosa Blackthorn
Ulmus glabra Wych Elm

Occasional 0-5%

Cornus sanguinea Dogwood
Euonymus europaeus Spindle
Ligustrum vulgare Wild Privet
Rhamnus cathartica Purging Buckthorn
Taxus baccata Yew
Viburnum opulus Guelder Rose

Suitable hedgerow trees

Primary 70-75%

Fraxinus excelsior Ash
Quercus robur Pedunculate Oak

Secondary 25-30%

Acer campestre Field Maple
Tilia cordata Small Leaved Lime
Tilia platyphyllos Large Leaved Lime

Occasional 0-5%*

Malus sylvestris Crab Apple
Prunus padus Bird cherry
Sorbus aucuparia Rowan
Ulmus glabra Wych elm

* only to be used if occurring locally within the landscape character type