



Comharle Contae an Chláir  
Clare County Council



# County Clare Tree Design Guide for Towns and Villages

January 2017



Clare County Council

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An Chomhairle Oidhreachta  
The Heritage Council

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# Contents

# County Clare Tree Design Guide for Towns and Villages

<b>Introduction</b>	1		
<b>1. General principles</b>		<b>3. Planting opportunities</b>	
1.1 Benefits of trees	5	3.1 Typical Settlement Plan	29
1.2 Ireland's trees	7	A. Approach roads	
1.3 Hedgerows	10	B. Gateways	
1.4 Essential considerations	11	C. Streets and public spaces	
Site survey		D. Parks and open spaces	
Other key factors		E. Village greens	
Risk avoidance		F. Churchyards and graveyards	
		G. Schools	
<b>2. Designing with trees</b>		H. Car parks	
2.1 Making tree-friendly places	14	I. Housing estates (existing)	
Right tree, right place		J. Private gardens	
Tree forms		K. Sports grounds	
Colour		L. Urban woodlands	
Fruit and berries		M. Rivers and lakes	
Scale		N. Industrial/employment areas	
Spacing		O. New roads	
2.2 Planting types	21	P. Community orchards	
Shelterbelt and screen planting			
Formal trees and avenues		<b>4. Achieving results</b>	
Informal tree groups		4.1 Practical considerations	62
Specimen trees		4.2 Tree species lists	65
Tree planting for biodiversity		4.3 Size of planting	67
The edible landscape		4.4 Tree planting techniques	68
Urban woodlands		4.5 Management and maintenance	71
Woodland structure			
Hedgerows and hedges		<b>APPENDICES</b>	
		A. Acknowledgements	
		B. Site survey methods	
		C. References <sup>(1)</sup> - <sup>(23)</sup>	
		D. Glossary of terms	

# County Clare Tree Design Guide for Towns and Villages



# County Clare Tree Design Guide for Towns and Villages

## Introduction



*Mature ash tree at O'Briensbridge*

Trees and hedgerows are a vital component of the towns and villages of County Clare, adding colour, life and interest, enhancing sense of place, protecting the environment and improving quality of life.

### **This Guide aims to:**

- Raise awareness of the value of trees and hedgerows in our towns and villages.
- Highlight the importance and benefits of planting the right trees in the right place.
- Recognise the multi-faceted role trees and hedgerows need to perform in urban areas.
- Inform the use of trees in street design and urban areas by providing the planning authority and local communities with comprehensive tree and hedgerow planting guidance.

The Guide outlines the many benefits of trees and hedgerows for the environment, biodiversity, landscapes, health, communities and the economy, reminding us that trees can be beautiful but also functional.

It details important things to consider prior to selecting and planting trees, including how to avoid future problems by planting the right tree in the right place. The Guide discusses the many elements to work with in terms of designing with trees and making tree-friendly places. Tips are provided on how, where and what to plant in a wide range of scenarios or planting opportunities in towns and villages including approach roads, village greens and car parks.

# County Clare Tree Design Guide for Towns and Villages

## Introduction

The overall aim of the Guide is to:

### Promote

the importance of trees

### Inspire

people to plant more trees

### Demonstrate

where to plant trees

### Inform

on how, which species and when to plant trees

Although primarily concerned with planting trees and hedgerows in the urban environment of towns and villages, some of the recommendations in the Guide could equally apply to rural areas of County Clare.

The Guide has been prepared to complement other relevant County Council guidance, such as:

- Landscape Character Assessment of County Clare<sup>(1)</sup>, 2004
- Tree Survey of Towns and Villages in County Clare<sup>(2)</sup>, 2015
- Rural House Design Guide<sup>(3)</sup>, 2015 (second edition)
- 'Buds of the Banner' – a Guide to Growing Native Trees and Shrubs in Clare<sup>(4)</sup>, 2007
- Guidelines for Incorporation of Landscape Features into Development<sup>(5)</sup>, Clare County Council, 2006.



*Lime trees in paved area*

# 1. General principles



# General principles

## 1.1 The benefits of trees

Bringing lasting benefits to people in towns and villages. . .

**Trees are a vital part of our natural life support system: they have an essential role to play in the sustainability of our towns and villages and we need to plant more and take better care of them, both now and in the future.**

Key benefits include:

### Good for the Environment

- Trees properly placed around buildings can help reduce energy consumption by providing shelter and shade.
- They can reduce the effects of air pollution and make outdoor spaces much more comfortable.
- Trees absorb carbon dioxide and consequently mitigate climate change.
- Mature trees regulate water flow and can improve water quality.
- Tree roots can bind the soil together and reduce erosion.

### Enhanced landscape quality

- Trees and hedgerows enhance the urban landscape, adding colour, texture, life and interest to our towns and villages.
- They provide a sense of long-term stability and a living link between the past, the present and the future.
- Trees make places more comfortable for people to enjoy.



*Trees and hedgerows help integrate settlements within the landscape*

- They soften the hard-edges of urban areas, and provide essential screening.
- Trees help integrate new developments, especially on the urban fringe, and provide an environment-friendly alternative to artificial boundaries.

### Good for Health

- Spending time near trees improves physical and mental well-being.
- Large urban trees are efficient filters for pollutants and fine particulates.

### Richer and more accessible wildlife

- Trees and hedgerows provide habitat, food and protection to plants and animals, increasing urban biodiversity.



# General principles

## The benefits of trees



*Trees compliment and enhance the built environment*



*Trees can encourage physical activity and general well-being*



*Tree planting can become an important community event*

### **Improved Economy**

- Trees can enhance the appearance of developments and people's perceptions of an area.
- A well-treed environment may also encourage inward economic investment.
- Trees can provide food, such as fruits, nuts and leaves, as well as traditional products such as timber and horticultural mulch.

### **More sustainable communities**

- Trees help to create a sense of community, encouraging greater pride amongst local people.
- Community planting and after-care schemes help to build ownership and shared enjoyment of the local environment.

**Planting trees today is essential for future generations!**

# General principles

## 1.2 Ireland's trees

### Native and Introduced Species

The geographic and climatic conditions in Ireland create an ideal environment for the growth of a wide range of tree species. This comprises both native and introduced trees, each with their own individual characteristics, whether it be fast growth, ability to grow on exposed sites, autumn colour, distinctive shape or good wildlife habitat.

Most native trees are broadleaves such as oak, ash, and birch, while conifers are represented by only three species – Scots pine, yew and juniper – the latter being only a shrub.



*Veteran pedunculata oak*



*Scots pine was one of the first trees to colonise Ireland after the ice sheets had melted*

Many of the introduced species have come from across the globe. Several have since become naturalised or have proven to be particularly well adapted to Irish conditions and are now widely planted.

# General principles

## Ireland's trees

### Native Tree Species

Alder	<i>Alnus glutinosa</i>
Strawberry Tree	<i>Arbutus unedo</i>
Silver birch	<i>Betula pendula</i>
Downy birch	<i>Betula pubescens</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Spindle	<i>Euonymus europaeus</i>
Ash	<i>Fraxinus excelsior</i>
Holly	<i>Ilex aquifolium</i>
Crab apple	<i>Malus sylvestris</i>
Scots pine	<i>Pinus sylvestris</i>
Black poplar	<i>Populus nigra</i>
Aspen	<i>Populus tremula</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Sessile oak	<i>Quercus petraea</i>
Pedunculate oak	<i>Quercus robur</i>
Willow	<i>Salix spp*</i>
Elder	<i>Sambucus nigra</i>
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>
Yew	<i>Taxus baccata</i>
Wych elm	<i>Ulmus glabra</i>

\* There are several varieties of willow native to Ireland, the most widespread species being the goat willow, the rusty or grey willow, and the eared willow.

### Main Introduced Species

Sycamore	<i>Acer pseudoplatanus</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Larch	<i>Larix decidua</i>
London plane	<i>Platanus x acerifolia</i>
Spruce	<i>Picea abies</i>
Lime	<i>Tilia cordata</i>
Evergreen oak	<i>Quercus ilex</i>

### Selecting appropriate species

When planting new trees in towns and villages of County Clare there is a wide selection to choose from. Generally for rural areas it is preferable to use native species as they blend well with the natural environment and usually suit local conditions better than introduced species.

But new planting that makes limited use of introduced species, especially beech, chestnut and lime, can be suitable on the fringe of settlements or where required to retain local character. Some may endure exposed coastal locations better than natives, such as the evergreen oak (in areas not liable to severe frosts). Other introduced species are more suitable for planting in the artificial conditions of streets and public spaces.



Both native and introduced species can be suitable for urban settings

# General principles

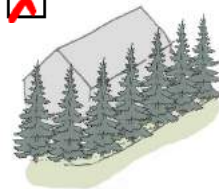
## Ireland's trees



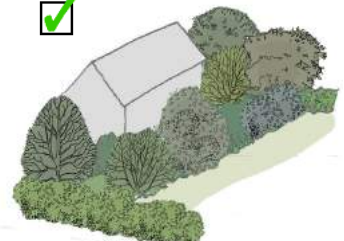
*Mature beech and sycamore on approach to Killaloe*

It is best to:

- Use a limited selection of native species within rural areas to create a more natural, informal effect and to promote biodiversity;
- Use a combination of native and introduced species typical of the locality within and on the naturalised fringes of urban areas;
- Select trees according to soil type and drainage characteristics;
- Locate trees according to their ultimate size (height and spread);
- Carefully consider species in relation to the location of existing structures (including buildings, roads and services), sight lines, street lighting and signage;
- Avoid fast-growing species (e.g. Leylandii or other non-native conifers) which can appear out of place and may cause maintenance and shading problems; and
- Where necessary obtain advice from appropriate professionals (e.g. landscape architects, arboriculturalists or the local nursery) for further guidance on plant selection and planting procedures.



AVOID - rows of fast-growing conifers, particularly around boundaries



Plant in groups of trees linked to existing landscape features wherever possible

*Planting on the urban fringe*

# General principles

## 1.3 Hedgerows

### Importance of hedgerows

Hedgerows are a distinctive feature of the Irish landscape, providing an intricate network of natural vegetation that encloses agricultural fields, providing important historical and cultural links, marking historic townland and parish boundaries, and defining the built-up areas of towns and villages. Some may date back at least a thousand years and, as they are primarily comprised of native trees, shrubs and flowers, support an abundance of wildlife from birds and bats to insects, invertebrates and mammals.

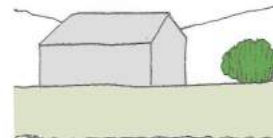
Hedgerows are of equal importance in the urban environment, providing attractive linear visual features through towns and villages. They can be invaluable in helping to assimilate urban areas into the surrounding countryside, especially on the fringe of expanding settlements, and provide important corridors for the movement of wildlife.



*Existing trees and hedgerows should always be retained to help absorb new development into the local setting*

Particular uses of urban hedgerows include:

- Screening unsightly development.
- As a buffer to major road schemes.
- As roadside features enhancing the approach to towns and villages.
- Foraging for people keen for some freely-available wild food.



New building un-related to existing landscape



Hedgerow used to integrate and soften new development, linked to existing tree groups wherever possible

### *New building on the urban fringe*



*Hedgerows are important for linking towns and villages to the surrounding countryside*

# General principles

## 1.4 Essential considerations

### Site survey

Before undertaking new tree planting, a thorough survey of all existing trees in the area should be carried out as early as possible, and clearly presented on a map of the site. This should include identification of species, approximate age and overall condition, the appearance and how well each tree is performing in relation to the surroundings.

For more complex tree planting projects, the survey should be undertaken by an arboriculturalist or other suitably qualified person (for further details see Appendix B).

### Other key factors

- Consider the long-term maintenance of the trees, particularly in relation to the public highway and any effects on adjoining private properties.
  - Obtain advice on other highway matters, such as sight lines at junctions or turnings, and planting distance from edge of roadway.
  - Assess the condition of existing trees, as they could affect the growth of the new trees through shading and competition.
- Consult with Clare County Council on any environmental, architectural or archaeological designations that may apply to the area - which may affect choice of species or whether any planting can be done at all.
  - Liase with existing residents/occupiers of adjacent properties, or others that may be affected, and inform them of the proposals and timeframe.
  - Contact all public utility companies to establish the exact location of all underground and overhead services.
  - Ensure that trees will not interfere with overhead cables, street lighting or CCTV cameras, both at time of planting and as the trees mature.



*Trees and buildings can happily co-exist, but all factors need to be carefully considered*

# General principles

## Essential considerations

### Risk avoidance

Although urban trees have many benefits, they can also present certain problems that need to be fully taken into account during the planning and implementation of a new planting scheme, particularly where adjacent to highways. These can include:

- Damage to persons or property from falling trees or debris from trees such as branches, leaves and fruit.
- Damage caused by growing roots to surrounding paving creating a hazard for pedestrians and vehicles.
- Damage caused by roots to nearby property including building foundations, drainage and other service lines.
- Obstructing sightlines, street lighting and road signs for drivers of vehicles, therefore creating a potential hazard to road users.
- Leaves collecting in gutters and on pavements.

With correct detailing of the planting area, careful choice of species and good management most of these problems can be overcome, such that the multiple benefits to be gained from trees far outweigh the potential problems.

If in any doubt, obtain the early advice of a qualified landscape architect, arboriculturalist or ecologist before undertaking a new planting scheme.

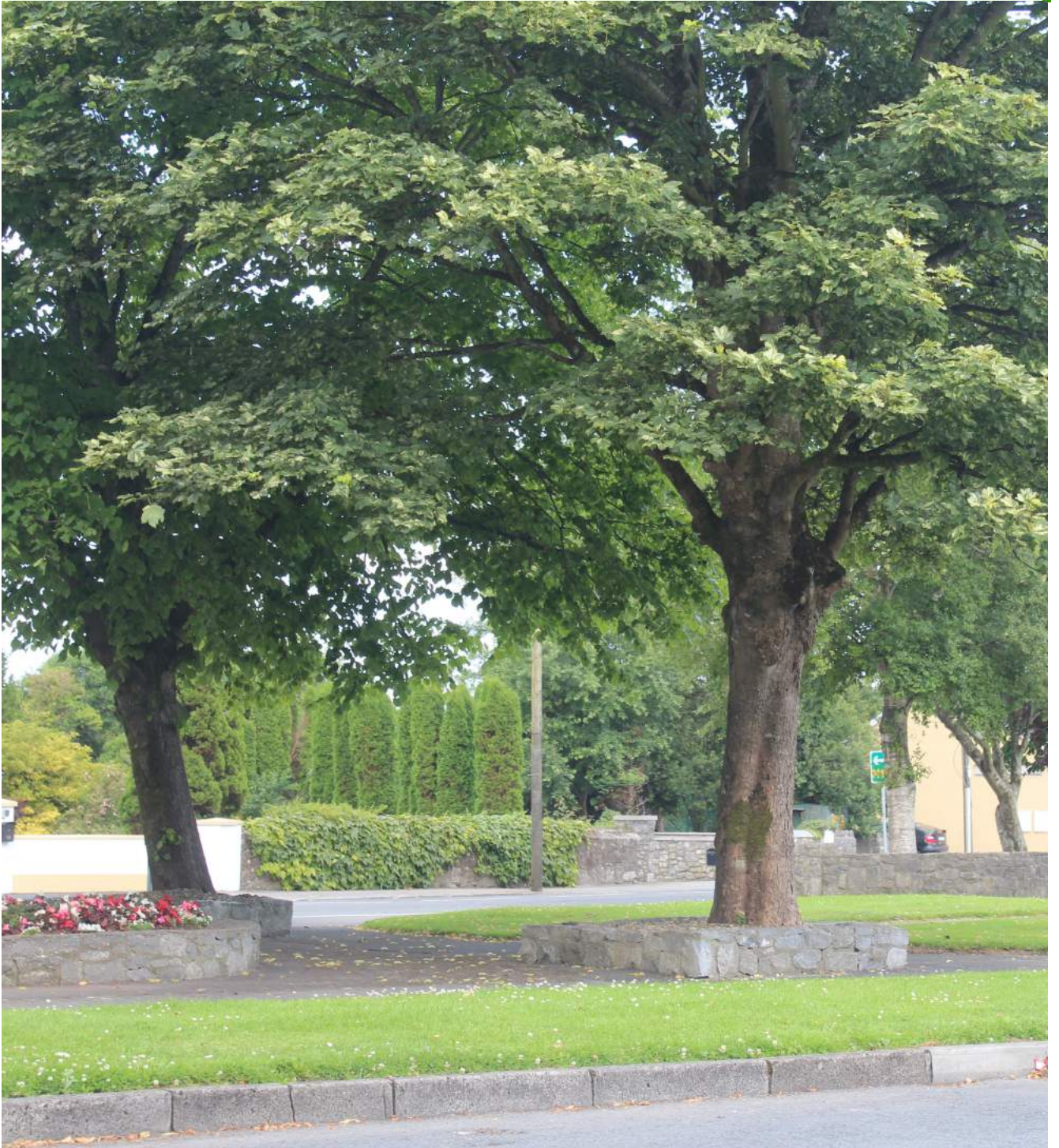


*Ensure that trees will not interfere with overhead cables*



*Use suitable planting methods to avoid risk to footpaths*

## 2. Designing with trees





# Designing with trees

## 2.1 Making tree-friendly places

### Objective

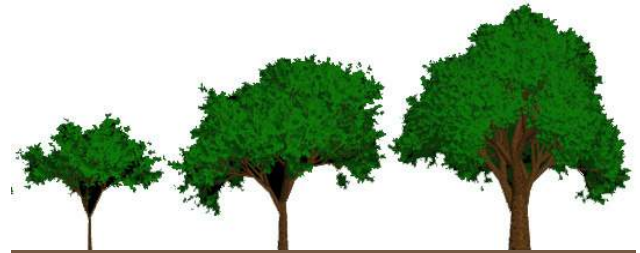
The creation of places where trees can thrive and deliver their full range of benefits without causing undue nuisance or adverse visual impact.

### Right tree, right place

Trees come in all shapes and sizes, and often change dramatically over their lifetimes. Some grow tall, some grow wide and others have extensive root systems. Before selecting a tree it is essential to be aware of its mature size (height and canopy spread) as well as the likely eventual spread and depth of its roots, in relation to existing buildings and roads, below and above ground service infrastructure, over-shadowing of adjoining properties and the soil conditions.

Trees should be selected for the effect or use desired - too wide a range of species should be avoided as the different shapes, textures and colours can result in visual confusion. The best effects are generally achieved with boldness and simplicity, as in mass planting of a single species, closely spaced, or of a few species with similar texture, form and colour.

The tree's purpose will determine the suitability of different species, whether used for screening, visual amenity, wind protection or other reasons. The form and growth rate of the tree also affects its suitability in relation to the space available.



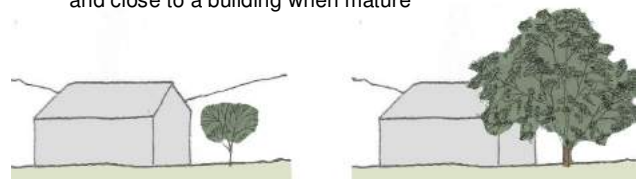
Average size at maturity

Small 5-9m	Medium 10-20m	Large 25m+
Strawberry tree	Downy birch	Alder
Hazel	Silver birch	Ash
Crab apple	Hawthorn	Black poplar
Elder	Holly	Scots pine
Purging buckthorn	Spindle	Sessile oak
Blackthorn	Aspen	Pedunculate oak
Snowy mespilus	Wild cherry	Wych elm
Ornamental cherry	Bird cherry	Sycamore
Box	Whitebeam	Horse chestnut
Grey willow	Rowan	Silver birch
Osier	Willow spp.	Hornbeam
	Yew	Beech
	Field maple	London plane
	Goat willow	Lime
		White willow
		Evergreen oak

Typical eventual sizes of commonly used trees  
(native species shown in green shade)



A small tree can soon become too large and close to a building when mature



Choose a suitable species for the size of the site

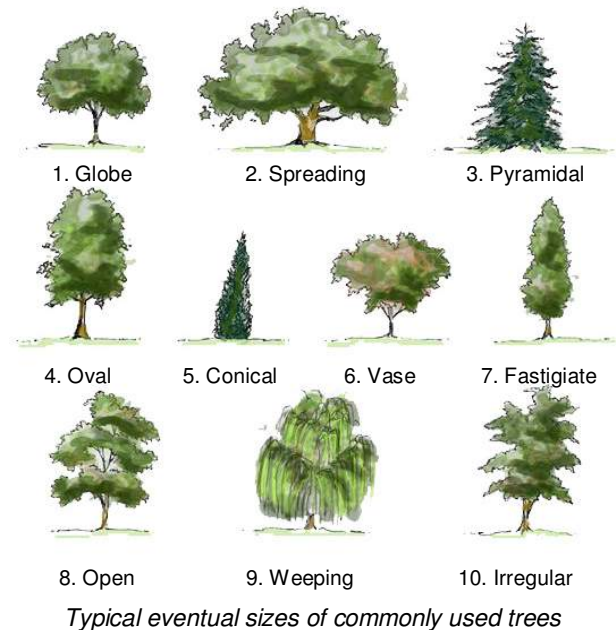
# Designing with trees

## Making tree-friendly places

### Tree forms

The overall shape of the tree can be used to reflect or contrast with the form of a building. Trees can be selected for their density of foliage and for the transparency of their branching. Dense trees are useful for screening, while an open-textured tree can be appropriate close to a building. The most common forms of trees, as shown on the adjoining diagram, are:

1. Globe - suitable for formal situations as specimens or in rows.
2. Spreading - can be massive in scale and suitable mostly for large spaces or woodlands.
3. Pyramidal - many conifers have this distinctive shape. Can be suitable as specimens or for screening with other types.
4. Oval - many varieties and often suitable for streets, open spaces and private gardens.
5. Conical - mostly evergreen with dense canopy. Suitable as specimens or in groups combined with other types.
6. Vase - especially suitable for streets and public spaces.
7. Fastigate - suitable for streets, to define boundaries, as screens and where space is limited.
8. Open - can be good in informal groups and for providing dappled shade.
9. Weeping - highly ornamental and suitable as occasional specimens in parks and private gardens.
10. Irregular - often large trees suited to natural situations and typical of hedgerows.



*Simple grouping of 'open' silver birch*



*Globular form of whitebeam*



*A conical form of oak*

# Designing with trees

## Making tree-friendly places

### Colour

Leaf colour is another important design feature that can provide added interest to a new planting scheme. Trees with distinctive coloured foliage range from varieties of blue cedar and blue spruce, red Japanese maples, purple hazel and copper beech, through to golden birch and yellow Norway maple trees.

Such trees should be used sparingly as the vibrant colours can appear over-whelming. Those with strongly coloured foliage should preferably be used singly as a focal point, contrasting with a background and not intermixed with lines or groups of other trees. Rows of trees with crimson leaves should usually be avoided as they can be oppressive and tend to dominate the urban environment. Trees with variegated foliage should also be avoided as they often appear gawdy and unnatural.



*Trees with variegated leaves (e.g. Acer 'Drummondii') can appear inappropriate in urban areas*



*Trees of strong individuality (e.g. copper beech) are best used as specimens with plenty of space around them*



*Trees with vibrant autumn colour can enliven the urban environment*

# Designing with trees

## Making tree-friendly places

Trees with attractive autumn colour can be especially important for helping to brighten-up the approach of winter and provide a welcome contrast to the surrounding gloom (good examples include field maple, snowy mespilus, birch, cherry, and mountain ash).

Once trees lose their leaves they can still be a source of colour and inspiration, especially those with attractive bark, such as white birch, Tibetan cherry and the paperbark maple.



Flowering trees (including ornamental varieties of maples, cherry and pear) can provide additional seasonal interest in urban parks and private gardens.



*The 'Chanticleer' pear has impressive spring blossom and good autumn foliage*



*Pandora cherry blossom     Red oak autumn foliage*

### **Fruit and berries**

Trees such as horse chestnut, hawthorn, mountain ash and whitebeam, all produce good displays of fruit or berries that further reinforce seasonal variation in the urban environment. Although highly suitable in parks and private gardens, trees with berries may not be suitable in streets or public spaces for safety and cleansing reasons.



*Fruiting rowan tree on residential open space*

# Designing with trees

## Making tree-friendly places

### Scale

New tree planting should be in scale with the surroundings. Where space permits, larger growing trees (such as oak, ash, horse chestnut) make more of a contribution to the urban landscape than smaller varieties. If the site is limited, the smaller flowering trees (such as bird cherry), or intricate foliage trees (such as silver birch), are best planted in informal groups to emphasise their seasonal effects.

Smaller growing species can often be suitable for quieter residential streets, preferably in grass verges where they occur. Taller species that can be high pruned to provide appropriate clearance over the carriageway should be considered for major roads with high levels of commercial traffic.

Mostly larger-sized trees at time of planting are best for urban streets and squares, as these make an immediate presence and are less likely to be vandalised. Smaller native tree 'whips' can be appropriate for informal mass planting in parks and open spaces, or in exposed locations where large standards may not establish well. (For further details on Tree Sizes see Section 4.3).

The lifespan of the trees also needs to be taken into account, as this varies considerably. Some like silver birch and flowering cherry are relatively short-lived in the urban environment, with a typical lifespan of 50 to 80 years, while others, like oak and plane, have potential life spans of two centuries or more.



*Semi-mature trees can have an immediate effect on the urban environment*



*A well-proportioned tree in relation to the urban context*

# Designing with trees

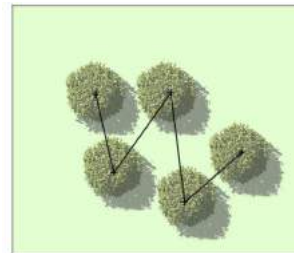
## Making tree-friendly places

### Spacing

The spacing between new trees largely depends on the purpose of the planting, the species chosen, the size of tree at time of planting, and how soon an 'established' effect is required.

Other factors to be considered include:

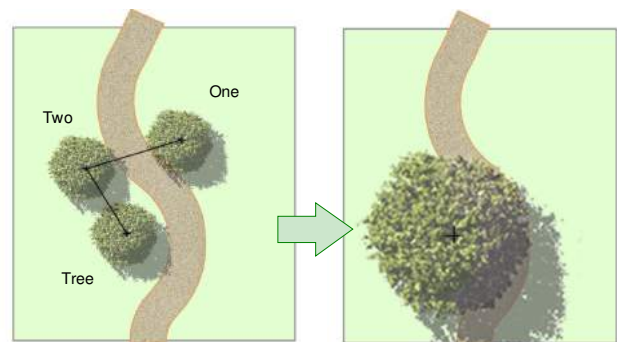
- Informal trees planted in groups of three, five or seven of the same species are often more visually effective than even numbers of plants.
- Naturalised planting of trees often require more dense or varied planting regimes as found in nature and often creates a better quality wildlife habitat.
- A mixture of tree sizes can be used to include standards and whips, thereby adding height and substance while the younger trees establish. Visually this type of planting can be more acceptable in close association with residential development or around schools and informal open spaces.
- Formal trees in public spaces can be planted either singly as specimens or to a regular grid of between 5-10m spacing where required to provide a much needed sense of scale for people in the built environment.
- Closer spacing of trees creates more shade.
- Along urban roads, larger trees should be planted a sufficient distance from the kerb (min. 2m) to ensure that their trunks (allowing for any incremental growth) and limbs do not become a liability to vehicles or pedestrians.



*Informal tree groups of same species appear more natural when planted in odd numbers (3-7 per group), and with an average spacing of 5.0-7.5m between trees*



*Trees such as silver birch can look most effective when planted in informal groups at closer spacing (e.g. 2.0-3.0m centres)*



*Trees planted at average 5.0m centres will need to be thinned after about 15 years to leave the best specimen to develop into maturity*

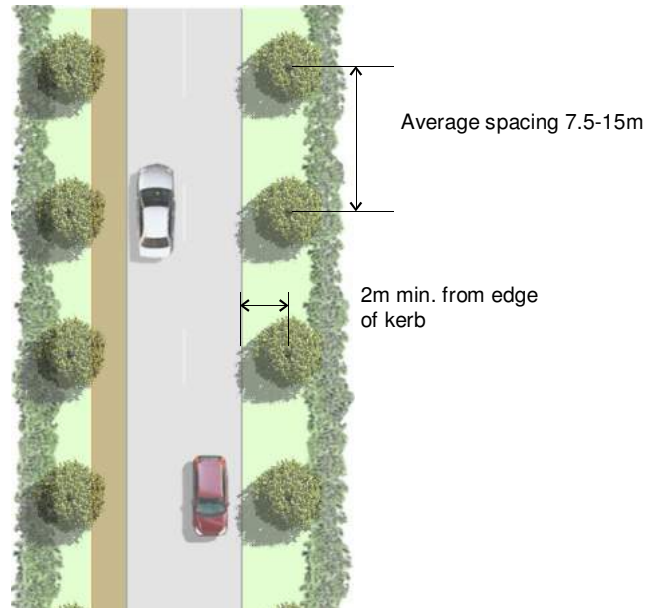


*Silver birch planted as informal group at close spacing*

# Designing with trees

## Making tree-friendly places

- With urban roads it is also necessary to ensure that there is sufficient pavement width for those pushing prams and for the mobility impaired.
- Tree spacing along urban roads, and on the approach to towns and villages, should generally be between 7.5-15m, depending on species and the intended effects.
- Avenue trees can be planted at wider spacing where the scale of the environment is suitable, for example through parks and historic demesnes.



*Typical tree spacing along urban approach road*



*Well-spaced trees across a village green*

# Designing with trees

## 2.2 Planting types

There are numerous opportunities for making tree-friendly places in the towns and villages of County Clare (see Section 3 for typical examples). The starting point is to consider the purpose of the proposed planting scheme, e.g.:

- For improvement of general amenity.
- For screening or shelter.
- For environmental reasons, such as biodiversity, air quality, or general well-being.
- For educational reasons.
- For integrating major infrastructure.
- For commemorating a special event.

Once the purpose has been established, and possible planting locations identified, the most suitable Planting Types need to be considered.

### Shelterbelt and screen planting

Shelterbelts can help protect areas from the effects of wind or erosion, including housing estates, historic parklands or private gardens. They typically comprise a linear barrier of trees and shrubs, using a combination of native and introduced species such as beech, holly, Scots pine, whitebeam, hornbeam and field maple, inter-mixed with an under-storey of hawthorn, hazel and Guelder rose.

Shelterbelts can also be equally effective in screening unsightly additions to the urban fringe such as roads and other major infrastructure.

### Shelterbelts can be used to:



Form a buffer between incompatible uses

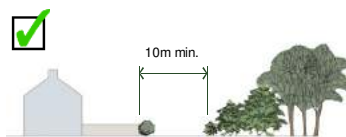


Screen or separate larger buildings from the surroundings

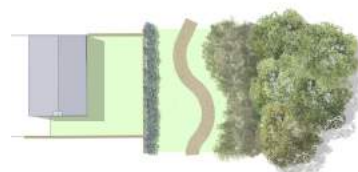
Screen planting should not be used to hide what is an inherently unacceptable site or form of development, or as new planting to replace the loss of significant existing landscape features or trees.



Trees too close to back gardens - shading, falling branches



Tree planting with native shrub edge, set back 10m min. from development



Tree planting with native shrubs and groups of feathered trees to soften edge

*Shelterbelts or new woodland planting should be located a sufficient distance from the edge of development*



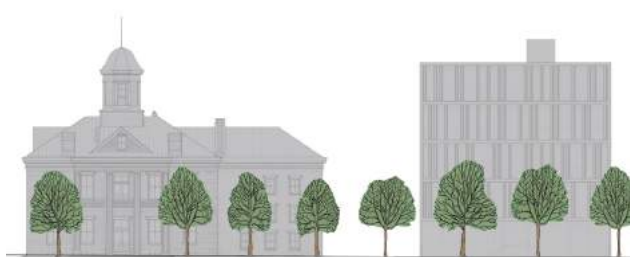
# Designing with trees

## Planting types

### Formal trees and avenues

Formal street trees are important elements for stitching together different elements of the townscape while providing substantial environmental and amenity benefits.

#### Street trees can be used to:



Integrate and soften unrelated building forms



Complement or contrast with buildings



Define roads and public spaces



*Typical urban and suburban street trees*

Street trees should be planted wherever possible along the main roads of towns and villages in continuous rows, in grass verges each side of the road where space permits, and in shorter or intermittent rows along minor access roads.

The species and the shape of the trees chosen should seek to improve the visual quality of the roads while complementing the buildings and not obscuring key visual features.

Trees should not be planted where they may obscure traffic signs or sight lines, or where they may obstruct the free movement of vehicles.

Street trees can be complemented by formal avenues of trees defining the main pedestrian routes through a settlement, connecting different uses to each other, or for lining the driveways through historic parklands.

# Designing with trees

## Planting types



*Formal avenue trees through parkland*



*Informal tree groups and specimen trees enhance the amenity of open spaces*



*Smaller tree groups in proximity to housing areas*

### Informal tree groups

Groups of mixed tree species are suitable for a wide range of situations in towns and villages, including:

- Informally located as part of linear open space systems;
- Along wider road corridors;
- In smaller clusters around amenity areas; and
- To enclose large, predominantly open sites (e.g. for schools and playing fields).

The groups should vary in size from 15-25 trees in larger open spaces to around 3-5 trees in smaller spaces. The trees should be associated with other vegetation types, such as wildflower grasslands, hedgerows and shrub planting, to ensure a range of visual effects and increased opportunities for wildlife.

Single specimen or signature trees of similar species can also be located in association with the informal tree groups within amenity and open space areas.

A wide selection of native and introduced tree species can be considered as appropriate to the location. Both deciduous and coniferous types can also be combined within the informal groups to achieve a range of visual effects throughout the seasons.

# Designing with trees

## Planting types

### Specimen trees

Individual specimen (or signature) trees are an important part of what gives a place its unique character. They are special trees that can be planted to commemorate an important occasion within the community, or to signify a special place in the town or village (such as at the gateways or on the village green). It is suggested that at least one signature tree is planted as a central focal feature of all housing estates in the County.

Specimen trees can include both native and introduced species, with a range of different forms and sizes. Particularly suitable types include oak, Scots pine, beech, yew and horse chestnut.

### Specimen trees can be used to:



Frame views and emphasise special features



Become a landmark or a meeting place



*Specimen plane tree in grounds of Nenagh courthouse*

### Tree Planting for Biodiversity

When planting trees, whether in the public realm, private gardens or school grounds, preference should be given to native trees in order to increase the wildlife value of the scheme. In order to achieve a wildlife-friendly green space, species should be chosen that produce flowers, berries and/or nuts and will attract birds and insects.

Where space allows, a range of trees that flower at different times should be used, thereby providing a food-source for pollinators that lasts for much of the growing season.

Wherever possible, plant groups of native trees and shrubs in a naturalistic style that will encourage the cover and shelter needed to attract wildlife, as well as a source of food.



# Designing with trees

## Planting types

### The 'edible' landscape

The 'edible landscape' is concerned with simply growing plants that are tasty as well as attractive, with benefits for community participation, local amenity and wildlife. whether in private gardens, public spaces, school grounds, along approach roads and within housing estates.

Fruit trees produce attractive blossoms in spring, followed by fruit in autumn. Hazel, a native nut-producing tree, grows abundantly in the wild in much of Clare, particularly the Burren and on limey soils elsewhere. Other non-native nut-producing trees which grow well include sweet chestnut and walnut, particularly in sheltered, sunny positions. Common fruit species include apples, pears, plums, cherries, damsons, blackcurrants, raspberries, and gooseberries, often inter-planted between the orchard trees.

Orchards can form a significant feature of the edible landscape, and many communities in Ireland are now planting 'community orchards' as means of producing fruit for people in the locality but also as an educational resource and a wildlife habitat.

In County Clare, the Garden of Eden Projects Ireland<sup>(6)</sup> supports local groups who are interested in planting a community orchard. The Project aims to increase environmental sustainability and raise awareness of the potential for local food production.

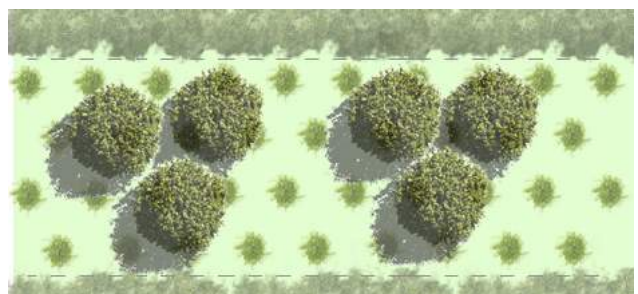


*The Garden of Eden Projects Ireland supports local community groups to plant orchards*

Further advice on the supply of organic vegetable seeds, grains and native fruit trees can also be obtained from the Irish Seed Savers Association<sup>(7)</sup> in Scariff, Co. Clare.

Community orchards can be successfully combined with:

- Hedgerow foraging trails for nuts and fruit;
- Vegetable plots and fruit growing;
- Beehives for honey;
- Horticultural training facilities;
- Secure sheds and polytunnels;
- Wormeries, green waste and composting; and
- Dedicated herb gardens.



Orchards can be planted together with standard trees and hedges to provide a range of visual effects and habitats

# Designing with trees

## Planting types

### Urban Woodlands

Urban woodland consists of all the woodland within the boundary of a town or village, ranging from larger tree groups down to individual street trees. In addition to enhancing the surroundings, urban woodlands provide a diverse and healthy recreational environment. Although they may not all be dominated by native species, urban woodlands can be important in creating links between scattered areas of habitat in the wider landscape, thereby increasing connectivity and biodiversity.

As importantly, urban woodland habitats give people the opportunity to interact with wildlife in a natural setting, both in an informal way, and for more formal activities such as environmental education. It can also be used to encourage community involvement in the local area, from consultation through to active engagement in habitat and species management.



*Urban woodlands with native groundcover and shrub edges can provide a unique environment in towns and villages*



*Urban woodland in Shannon Town*

Urban woodlands need to be properly managed to maximise their wide range of social and environmental benefits, often requiring a wide range of professional inputs. Further advice can be obtained from organisations such as the Native Woodland Trust<sup>(8)</sup>, Tree Council of Ireland<sup>(9)</sup>, and Crann (Trees for Ireland)<sup>(10)</sup>.

### Woodland Structure

Woodlands are composed of a variety of plants of differing heights, giving a distinct vertical structure. These layers beneath the dominant trees may include an under-storey, or native shrub layer, of smaller trees (such as hawthorn, hazel and holly); a field layer of ferns, grasses and herbs; and a ground layer of mosses, ivy and lichens. The number of layers growing in woodlands is variable and depend on several factors, including local climate and conditions, the dominant tree species and the amount of light reaching the ground. Each layer is of special importance for wildlife and provides a wide range of habitats for different species.

# Designing with trees

## Planting types

### Hedgerows and hedges

Hedgerows were originally manmade structures planted to provide stock-proof barriers and field boundaries. Hawthorn and blackthorn were commonly used, as the prickly branches form a good deterrent to livestock, which provided the basis for other species to arrive such as elder, Guelder rose, dog rose, wild cherry, crab apple, holly and hazel.

Semi-natural hedgerows are now often planted to form living boundaries for housing and other developments, to provide privacy and shelter, and as part of public space landscape schemes. They can also be used for screening, supplementing tree planting along approach roads and for providing green corridors to link wildlife habitats.

A wider range of introduced species is available for hedge planting in towns and villages, including beech, hornbeam, box, privet, laurel and yew, as well as the common griselinia, olearia and escallonia.

Some hedges, especially in a formal setting, look best when composed of a single species, for example a clipped box or yew hedge. Species such as beech and hornbeam are good for holding their old leaves over winter. Coniferous hedgerows (especially Leylandii) should usually be avoided due to possible future problems with maintenance and excessive shading.



*Species rich hedgerows are a haven for wildlife*



*Single species urban hedges of hornbeam and laurel*



*Pleached hedge providing high level screening*



*Avoid fast-growing conifers as a hedge*

### 3. Planting opportunities



# Planting opportunities

## 3.1 Typical settlement plan



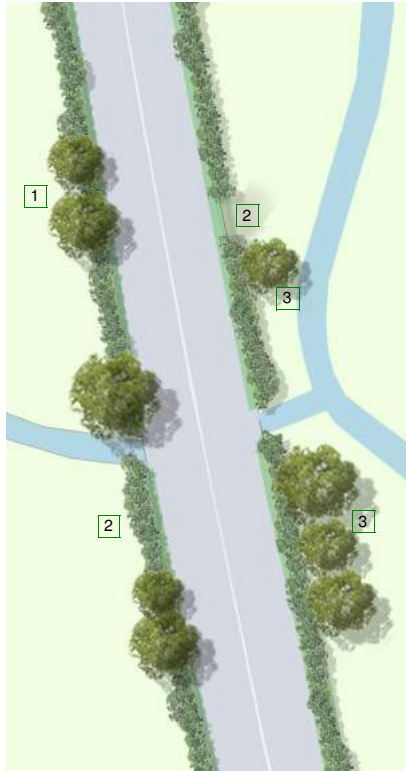
The opportunities for new tree planting in towns and villages is extensive and can include consideration of:

- |    |                            |    |                             |
|----|----------------------------|----|-----------------------------|
| A. | Approach roads             | I. | Housing estates (existing)  |
| B. | Gateways                   | J. | Private gardens             |
| C. | Streets and public spaces  | K. | Sports grounds              |
| D. | Parks and open spaces      | L. | Urban woodlands             |
| E. | Village greens             | M. | Rivers and lakes            |
| F. | Churchyards and graveyards | N. | Industrial/employment areas |
| G. | Schools                    | O. | New roads                   |
| H. | Car parks                  | P. | Community Orchards          |

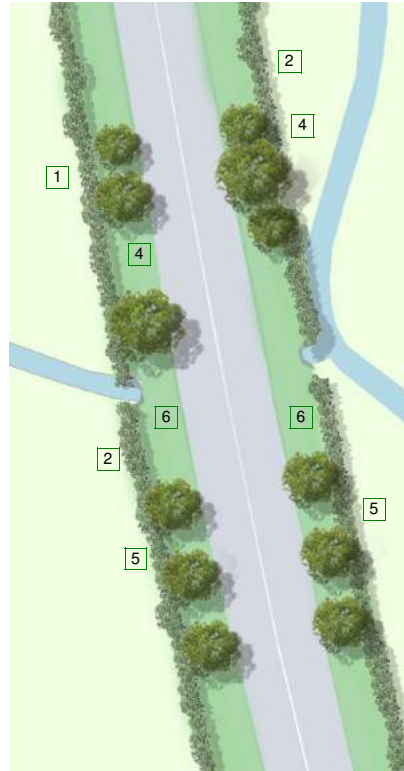


# Planting opportunities

## A. Approach roads



*Narrow road corridor - no verges*



*Wide road corridor - verges both sides*

### Objective

**To enhance the arrival experience at towns and villages**

#### KEY

1. Existing hedgerow trees retained, and crown lifted where necessary
2. Existing hedgerow managed and supplemented as required with native species
3. New native roadside trees within adjoining field boundary (subject to landowners permission)
4. New informal native roadside trees within verge where space allows
5. New formal specimen streets where required for gateway (see next page)
6. Grass verge managed to favour native wildflowers

### Context

The character and quality of a settlement can be greatly improved with well-located and regularly maintained planting on the main approaches. A simple combination of trees, hedgerows and verges is usually the most effective.

A traffic calming effect can also be achieved, where trees are planted in continuous rows and their canopies overhang, at least in part, the vehicular roadway.



*Mixed deciduous trees on approach to Tuamgraney*

# Planting opportunities

## Approach roads

### Potential Planting Situations

- Along verges of main approach roads where space allows and safety is not compromised.
- Existing hedgerows retained and supplemented where required with native tree species.
- New trees within the boundaries of adjoining private properties where space is restricted.

### Tree Types

- Preference to be given to large trees, to provide an immediate visual presence and suitable scale in relation to road width.
- In exposed locations such as along the coast or in uplands, the use of smaller planting stock is advisable.
- Native species are more suitable to the context, combined with native hedgerows (either existing or new).
- Where natural stone walls define the road boundaries, these should be retained and repaired as necessary.
- Ensure sufficient verge width is available for new planting - trees should be located 2.50m min. from the road edge.
- Columnar tree types are preferable so that canopies do not intrude too far into the road space (although an element of 'natural pruning' of roadside trees by high-sided vehicles can be expected).
- Underground services within the verge may restrict tree planting locations, as well as overhead cables that need to be fully taken into account in relation to the eventual tree height.

- Associated grass verges should have a clear function and appropriate to their locality (e.g. informal in rural areas, becoming more formal in suburban areas) and, where possible, of value to wildlife through the use of native wildflower and grass mixes or management of existing grassy verges to favour wildflowers.



*Mature sycamore on approach to Bridgetown*

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

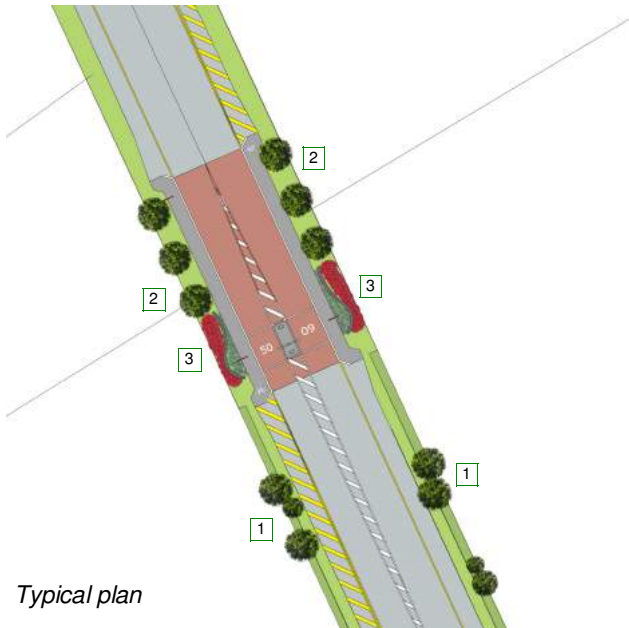
Sycamore	<i>Acer pseudoplatanus</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Scots pine	<i>Pinus sylvestris</i>

#### Medium Trees between 10-20m at maturity

Field maple	<i>Acer campestre</i>
Bird cherry	<i>Prunus padus</i>
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>
Lime	<i>Tilia cordata</i>

# Planting opportunities

## B. Gateways



Typical plan

### Context

Gateways are an accepted measure for calming traffic on the approach to towns and villages. On national roads, traffic calming schemes are funded by Transport Infrastructure Ireland (TII)<sup>(11)</sup>. Speed reductions are achieved by altering the appearance of the road through use of 'gateways' and further traffic management measures within the settlement itself.

The effectiveness of the gateway in reducing speeds and raising drivers awareness can be reinforced through suitable tree and shrub planting where space allows and, on national routes, with the agreement of the TII.

### Objective

To calm traffic and announce the arrival at towns and villages

#### KEY

1. Informal trees and hedgerows along outer approaches
2. Formal specimen trees
3. Native or suitable ornamental shrubs



Possible gateway components

### Potential Planting Situations

- Formal trees to reinforce gateway function, within verge where possible or in adjacent fields.

### Tree Types

- Rows of single species, specimen trees of compact or columnar habit.

### Suitable Specimen Species

(for further descriptions see Section 4)

#### Medium Trees between 10-20m at maturity

Field maple	<i>Acer campestre</i> 'Elsrijk'
Birch	<i>Betula pendula</i> 'Fastigiata'
Hornbeam	<i>Carpinus betulus</i> 'Fastigiata'
Bird cherry	<i>Prunus avium</i> 'Plena'
Whitebeam	<i>Sorbus aria</i>

# Planting opportunities

## C. Streets and public spaces



Typical Plan

### Objective

To enhance the sense of place

#### KEY

1. Public space defined by new street trees
2. Specimen tree as focal point
3. Any views of historic features to be retained and enhanced
4. Seating opportunity between new trees
5. Approach to public space enhanced with new trees on footpath build-outs

### Context

Trees in streets and public spaces are an integral part of the townscape as they contribute to amenity, act as a buffer to traffic noise/pollution and reinforce the urban character.

### Potential Planting Situations

- Pedestrian areas and civic squares
- Wide footpaths (with or without verges)
- Pavement build-outs between on-street parking



Semi-mature Norway maples, The Square, Sixmilebridge

# Planting opportunities

## Streets and public spaces

### Planting Types

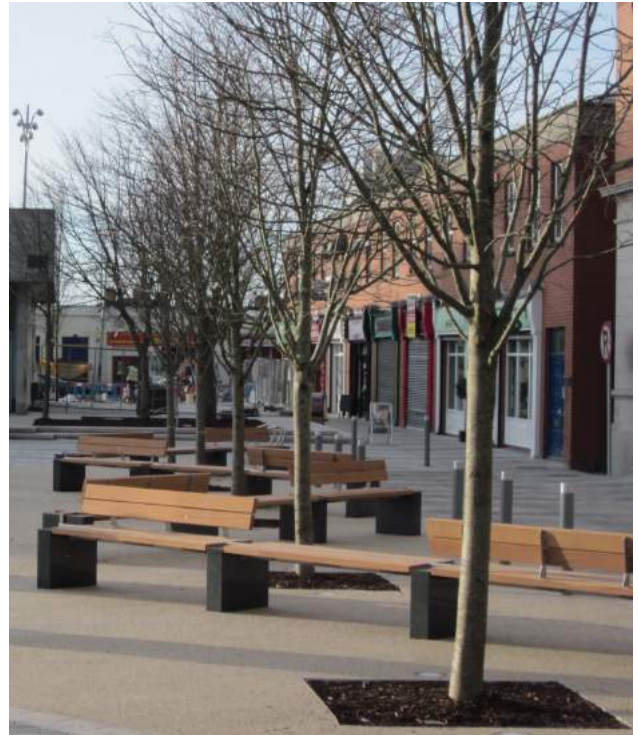
- Large trees are usually best as they provide an immediate visual presence, reduce the risk of vandalism, and are more suitable to the scale of adjacent buildings.
- Preference can be given to native trees, although introduced species may be more suited to the artificial conditions.
- Trees can be planted in hard paving, requiring special planting techniques, or in soft strips of grass or groundcover.



*New street trees effectively planted in centre reserve*



*Plane trees along an urban street*



*Tree forms are equally important in the winter months*

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

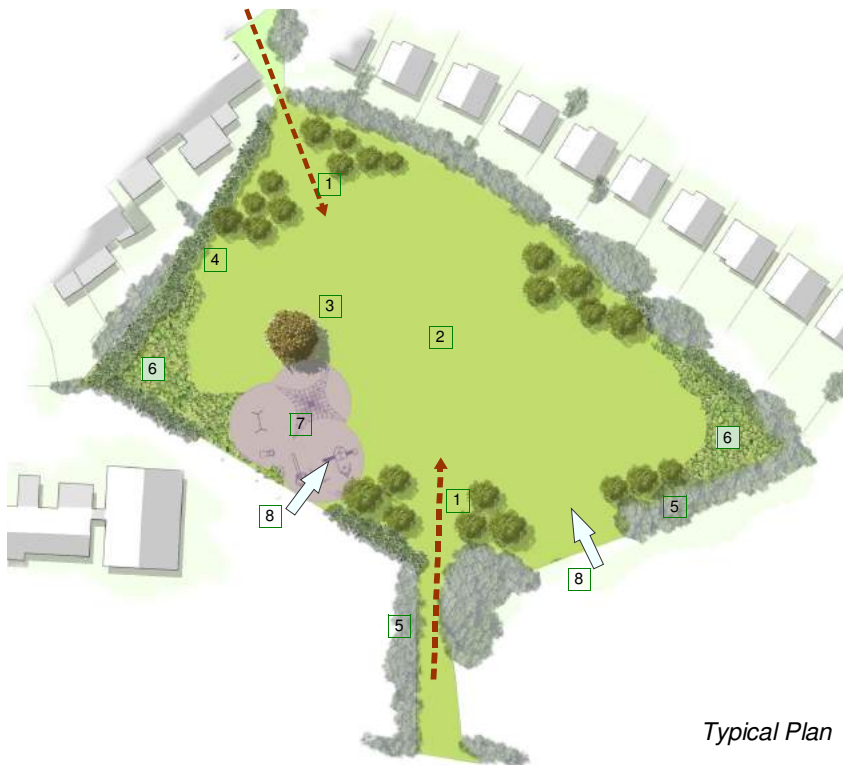
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i> 'Fastigiata'
Beech	<i>Fagus sylvatica</i> 'Dawyck'
London plane	<i>Platanus x hispanica</i>
Lime	<i>Tilia cordata</i> 'Green Spire'

#### Medium Trees between 10-20m at maturity

Field maple	<i>Acer campestre</i> 'Elsrijk'
Ash	<i>Fraxinus</i> 'Westhof's Glorie'
Bird cherry	<i>Prunus padus</i>
Oak	<i>Quercus robur</i> 'Fastigiata Koster'
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>

# Planting opportunities

## D. Parks and open spaces



Typical Plan

### Objective To enhance visual amenity and biodiversity

#### KEY

1. Informal tree groups to frame main entrances
2. Central area kept free for informal games and passive recreation
3. Single specimen tree as focal point and meeting place
4. New hedgerow to define boundary and screen adjoining uses
5. Existing hedgerow retained for connectivity, supplemented as required with native tree and hedge species
6. Native shrub planting to corners for enhanced biodiversity
7. Play area contained by tree groups and whip planting
8. Gaps retained or created for natural surveillance

### Context

Most of the towns and villages in County Clare contain a wide selection of parks and open spaces, providing an important amenity for local communities to access and enjoy the outdoor environment.

Parks are usually easily identifiable as managed public spaces, often combined with other recreational facilities, while open spaces can include the use of land for playgrounds, housing estate open space and incidental landscaped areas.



Mature sycamore forming focal point of public park

# Planting opportunities

## Parks and open spaces

### Potential Planting Situations

Parks and public open spaces offer considerable opportunity for enhancing general amenity and for increasing the variety of habitat through the introduction of a wider range of plant species. A variety of tree planting effects can be considered. In all situations, views into the areas should be retained, and enhanced where possible, in order to encourage natural surveillance in the interests of public safety.

The overall potential of some parks and open spaces can also be increased through the concept of 'edible landscapes' in the form of community growing areas ('food for free') and as an educational resource (see Community Orchards).

### Planting Types

- Both native and introduced species are suitable and a wide range can be considered according to the intended effects.
- Wherever possible, new tree planting should be undertaken in conjunction with other habitat improvements, such as native hedgerows and wildflower grassland management.



New tree planting with wildflower grassland

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

Sycamore	<i>Acer pseudoplatanus</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Alder	<i>Alnus glutinosa</i>
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Ash	<i>Fraxinus excelsior</i>
Scots pine	<i>Pinus sylvestris</i>
Sessile oak	<i>Quercus petraea</i>
Pedunculate oak	<i>Quercus robur</i>
Red oak	<i>Quercus rubra</i>
Small-leaved lime	<i>Tilia cordata</i>

#### Medium Trees between 10-20m at maturity

Field maple	<i>Acer campestre</i>
Downy birch	<i>Betula pubescens</i>
Hawthorn	<i>Crataegus monogyna</i>
Holly	<i>Ilex aquifolium</i>
Aspen	<i>Populus tremula</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Goat willow	<i>Salix caprea</i>
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>
Service tree	<i>Sorbus domestica</i>
Yew	<i>Taxus baccata</i>

#### Small Trees between 5-9m at maturity

Strawberry tree	<i>Arbutus unedo</i>
Hazel	<i>Corylus avellana</i>
Crab apple	<i>Malus sylvestris</i>
Blackthorn	<i>Prunus spinosa</i>
Elder	<i>Sambucus nigra</i>
Snowy mespilus	<i>Amelanchier lamarckii</i>

# Planting opportunities

## E. Village greens



### Objective To enhance amenity and reinforce community pride

#### KEY

1. General open character should be retained.
2. Specimen tree as focal point of the space.
3. Small scale ornamental trees should be avoided, and removed where necessary.
4. Approaches to the space can be defined by formal street trees.
5. New hedgerows enclosing the space and to form screening for privacy.
6. Existing boundary vegetation retained for connectivity, reinforced with native tree and hedgerow species where necessary.

### Context

Village greens are an important element of the traditional character of towns and villages and often represent the central meeting place for the local community. Apart from their visual qualities, village greens are practical spaces that were historically used for fairs and markets, and more recently for family fun-days and local events.

In many cases, the village pump was located on or adjoining the green, providing the only water supply to local communities and becoming the focal point of rural life.



*A simple combination of feature trees, mown grass and heritage buildings is often the best approach*



# Planting opportunities

## Village greens

### Potential Planting Situations

- New planting of village greens should generally be restrained in order to safeguard their open character and original function.
- A simple combination of edges defined by buildings or hedgerows, and mown grass with occasional feature trees, is usually sufficient.

### Tree Types

- New trees should preferably be of a large size and located as focal points and in small groups that define the entrances to the space.
- Either native or the more established introduced species can be suitable.
- Many village greens form an integral part of Architectural Conservation Areas where particular planting requirements may apply.

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

Horse chestnut	<i>Aesculus hippocastanum</i>
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus 'Fastigiata'</i>
Beech	<i>Fagus sylvatica 'Dawyck'</i>
London plane	<i>Platanus x hispanica</i>
Sessile oak	<i>Quercus petraea</i>
Pedunculate oak	<i>Quercus robur</i>
Lime	<i>Tilia cordata</i>

#### Medium Trees between 10-20m at maturity

Field maple	<i>Acer campestre 'Elsrijk'</i>
Snowy mespilus	<i>Amelanchier lamarckii</i>
Bird cherry	<i>Prunus padus</i>
Oak	<i>Quercus 'Fastigiata Koster'</i>
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>



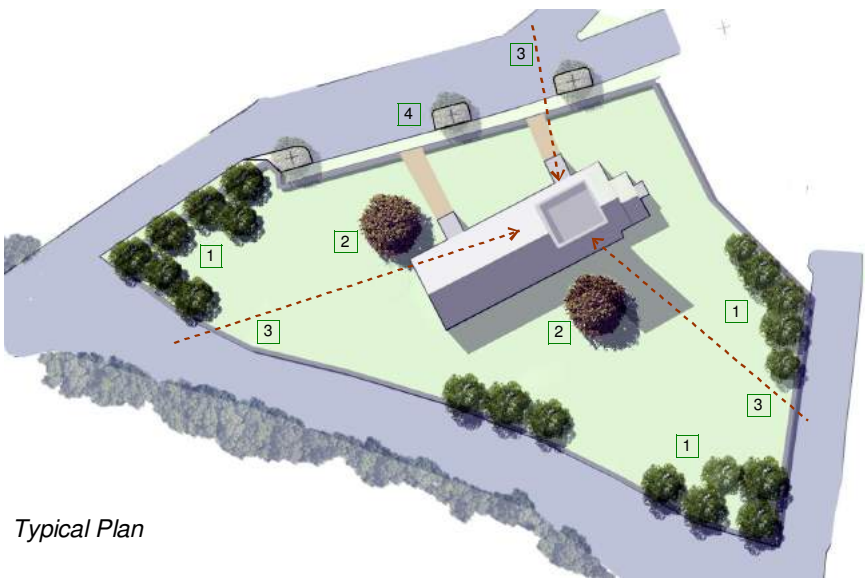
Mature hornbeam on village green at O'Briensbridge



Restrained elements of the village green at Inistioge, Co. Kilkenny

# Planting opportunities

## F. Churchyards and graveyards



Typical Plan

### Objective

To reinforce the contemplative and spiritual atmosphere of the place

#### KEY

1. Informal tree groups to edges where space allows
2. Carefully sited specimen trees to replace those at the end of their lives
3. Views of heritage features retained, and framed where possible
4. Street parking sub-divided by trees on footpath build-outs where suitable

### Context

Churchyards can represent an important location for trees at the heart of towns and villages. The enclosed and historic settings provide homes for veteran trees that are important biologically, culturally and aesthetically, because of their age, often forming the finest specimens in the locality. Some, particularly yews, have special significance as traditional churchyard features.

Churchyards also provide important habitats for a wide range of species. They may form the remaining fragments of old, unimproved wildlife-rich grassland. Existing mature trees offer a food source and nesting sites for birds, as well as a refuge for bats, mammals and insects, while lichens can be an important feature of ancient headstones.



Mature plane tree framing view to Church

# Planting opportunities

## Churchyards and graveyards

### Potential Planting Situations

- Planting in old churchyards should usually only be considered when veteran trees are at the end of their life and new ones are required to replace them.
- As many churchyards are of archaeological and architectural interest, it is essential to consult with the County Council and the National Monuments Service before undertaking any planting works.
- Occasionally there may be opportunities for planting informal tree groups around the edges or in corners of churchyards, provided that this does not obscure views of heritage features.
- The root growth of trees planted in poorly chosen positions can cause damage to foundations and walls, tombstones and other heritage features, or result in lifting and cracking of walkways.
- In new churchyards and cemeteries a far wider range of planting situations will be available, including structure planting, informal tree groups and specimen trees.

### Planting Types

Large scale mostly native trees can be considered where replacement or new planting opportunities occur.

Although yews are commonly found in churchyards, the leaves, bark, wood and seeds are highly poisonous, to livestock and children, so need to be planted with care.



*Impressive veteran sycamore at Killaloe Cathedral*

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity (specimens)

Sycamore	<i>Acer pseudoplatanus</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Sessile oak	<i>Quercus petraea</i>
Pedunculate oak	<i>Quercus robur</i>

#### Medium Trees between 10-20m at maturity (edges)

Downy birch	<i>Betula pubescens</i>
Hawthorn	<i>Crataegus monogyna</i>
Holly	<i>Ilex aquifolium</i>
Bird cherry	<i>Prunus padus</i>
Whitebeam	<i>Sorbus aria</i>
Yew	<i>Taxus baccata</i>

# Planting opportunities

## G. Schools



Typical Plan

### Objective

To enhance the visual appeal and educational potential of school grounds

#### KEY

1. Specimen trees to accentuate main entrance and as focal features within the grounds
2. Formal trees to define pathways and outdoor spaces
3. Formal clumps to enhance main frontage
4. Informal tree groups around perimeter for visual interest and biodiversity
5. Native shrub planting to under-used corners for biodiversity and education
6. New or supplemented boundary hedgerows to define the site and screen adjacent uses

### Context

Schools are at the heart of the community, and they can make the best of their grounds by planting trees that will help improve the appearance of buildings, create varied habitats, provide shade in the summer months and an important educational resource. Tree planting schemes enable children to plant, grow, learn about and identify native trees, giving the opportunity to connect with nature and make their school grounds cleaner and greener. Combined with other planting effects, trees can provide outdoor classrooms or environmental areas that increase curriculum use for nature studies and science for children of all ages. Perimeter planting can give safe and secure boundaries, while providing an effective buffer to adjacent uses.



Planting schemes in schools can allow children to get involved with all aspects of trees

# Planting opportunities

## Schools

### Potential Planting Situations

School grounds offer a wide range of opportunities for planting that includes:

- Formal trees to enhance the public frontage.
- Specimen trees to highlight entrances and as focal points or for commemorating a special event.
- Informal tree groups to enclose outdoor classrooms and provide seasonal interest.
- Native shrub planting for wildlife.
- Hedgerows for privacy, security, connectivity and foraging.

### Planting Types

Although native trees are preferable for educational purposes, the use of naturalised species can also be considered for achieving a wider range of colour, flower and fruit effects. Trees providing a structure to the school grounds should usually be planted at medium to large sizes. Giving pupils the opportunity to plant other trees will require using small stock which is easy to handle and more economical.



Mixed deciduous frontage trees at Bridgetown School

### Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

Horse chestnut	<i>Aesculus hippocastanum</i>
Alder	<i>Alnus glutinosa</i>
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Ash	<i>Fraxinus excelsior</i>
Scots pine	<i>Pinus sylvestris</i>
London plane	<i>Platanus x acerifolia</i>
Pedunculate oak	<i>Quercus robur</i>
White willow	<i>Salix alba</i>
Small-leaved lime	<i>Tilia cordata</i>

#### Medium Trees between 10-20m at maturity

Field maple	<i>Acer campestre</i>
Downy birch	<i>Betula pubescens</i>
Hawthorn	<i>Crataegus monogyna</i>
Holly	<i>Ilex aquifolium</i>
Aspen	<i>Populus tremula</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Goat willow	<i>Salix caprea</i>
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>

#### Small Trees between 5-9m at maturity

Strawberry tree	<i>Arbutus unedo</i>
Hazel	<i>Corylus avellana</i>
Crab apple	<i>Malus sylvestris</i>
Blackthorn	<i>Prunus spinosa</i>
Osier	<i>Salix viminalis</i>
Elder	<i>Sambucus nigra</i>

#### Scrub Trees and Shrubs between 2-9m

Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Spindle	<i>Eonymus europea</i>
Elder	<i>Sambucus nigra</i>

# Planting opportunities

## H. Car parks



Typical Plan

### Objective

To integrate parking needs with the surroundings

#### KEY

1. Formal trees in islands between parking rows
2. Formal frontage trees to help screen parked cars while allowing views through for security
3. Informal tree groups where space allows to soften edges and improve visual appearance
4. Perimeter hedgerows to define boundaries and help assimilate the parking area with the surroundings

### Context

Car parks tend to be unsightly in their basic form, but can provide useful spaces within towns and villages in which to plant trees and hedgerows. Planting is usually essential to help integrate car parks into the surrounding environment, and suitably planted trees can greatly improve their visual appearance as well as providing shade.

Tree planting should preferably be incorporated at the initial design stage, as an integral part of the car park layout, as retro-fitting individual trees or groups in large areas of hard surface can be difficult to achieve satisfactorily. New trees may also be damaged by vehicles manoeuvring within the car park.



Suitable tree planting can be highly effective in reducing the visual impact of car parks in urban environments

# Planting opportunities

## Car parks

### Potential Planting Situations

Planting opportunities can include:

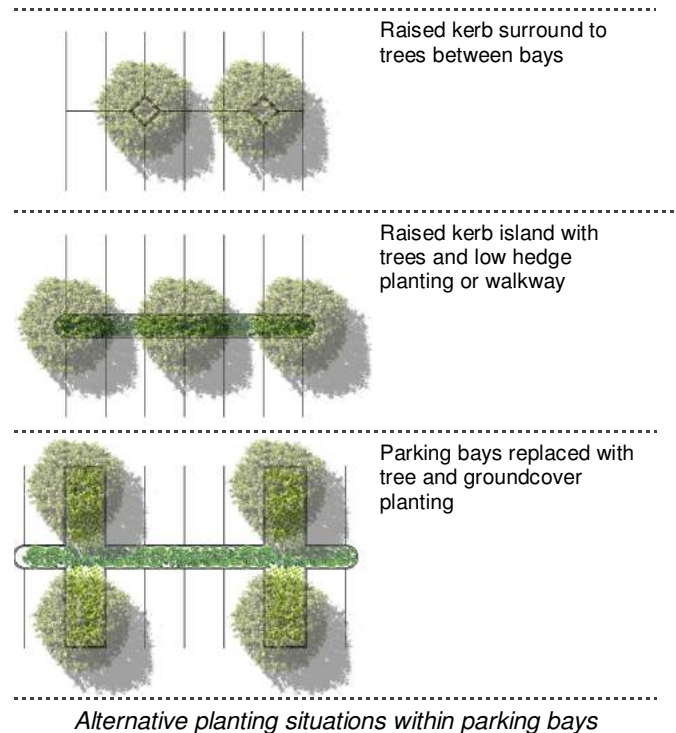
- Trees within parking bay islands, either between raised kerbs and preferably combined with low hedge planting, or at surface level in 'diamonds' (with trees protected by bollards).
- Where suitable, bays can also be replaced by raised beds for trees and hedges.
- Formal trees planted along the frontage, with informal tree groups and perimeter hedgerows to visually contain the car park.

### Planting Types

Species should not have extensive or high root systems. Prolific flowering or fruiting species, and trees that attract aphids (such as limes and cherries), should also be avoided. Trees in car park islands should be clear-stemmed and compact or columnar varieties, while a wider range of species can be included within the peripheral areas. Boundary hedgerows should preferably be native species, while internal hedges can include robust evergreen types.



Existing and new trees defining an urban car park edge



### Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

Horse chestnut	<i>Aesculus hippocastanum</i>
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
London plane	<i>Platanus x hispanica</i>

#### Medium Trees between 10-20m at maturity

Hornbeam	<i>Carpinus betulus</i> 'Fastigiata'
Claret Ash	<i>Fraxinus angustifolia</i> 'Raywood'
Pillar crab	<i>Malus tschonoskii</i>
Wild cherry	<i>Prunus avium</i>
Callery pear	<i>Pyrus calleryana</i> 'Chanticleer'
Whitebeam	<i>Sorbus aria</i> 'Majestica'

#### Small Trees between 5-9m at maturity

Maple	<i>Acer campestre</i> 'Elsrijk'
Norway Maple	<i>Acer platanoides</i> 'Globosum'

# Planting opportunities

## I. Housing estates (existing)



*Typical Plan (small estate)*

### Objective To enhance amenity and biodiversity

#### KEY

1. Informal groups and specimen tree to signify entrance to the estate
2. Informal groups to enhance amenity of access roads and communal spaces
3. Specimen trees to reinforce sense of place
4. Formal trees to define important pedestrian links
5. Trees in front gardens that contribute to overall green environment
6. Existing trees and hedgerows retained

### Context

New housing estates require a landscape plan to be submitted as part of the planning application. For existing estates with few trees or an unfinished landscape structure, new tree planting can provide an integrating framework that visually enhances the estate and provides improved settings for play and recreation, as well as increased biodiversity.



*Incorporating existing trees in new development can provide an immediate 'sense of place'*



# Planting opportunities

## Housing estates (existing)

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

Horse chestnut	<i>Aesculus hippocastanum</i>
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Pedunculate oak	<i>Quercus robur</i>
Small-leaved lime	<i>Tilia cordata</i>

#### Medium Trees between 10-20m at maturity

Field maple	<i>Acer campestre</i>
Downy birch	<i>Betula pubescens</i>
Holly	<i>Ilex aquifolium</i>
Aspen	<i>Populus tremula</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Callery pear	<i>Pyrus calleryana</i> 'Chanticleer'
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>

#### Small Trees between 5-9m at maturity

Hazel	<i>Corylus avellana</i>
Crab apple	<i>Malus sylvestris</i>

### Potential Planting Situations

- Trees at the main entrances that reinforce the identity of the estate.
- Formal rows of trees to give directional emphasis to a street, or sub-divide the width of an over-wide street and reduce the impact of traffic on frontage dwellings.
- Informal groups of roadside trees and within communal open spaces for amenity purposes.
- Supplementary tree and hedge planting along boundaries to visually contain the site and for biodiversity.

### Planting Types

Within internal communal areas, a mixture of native and introduced species can be used to provide a variety of forms and seasonal effects. The central open space of every estate should ideally include at least one specimen oak tree as a focal feature, planted at a relatively large size to ensure an immediate presence.



Residential street frontage with parking effectively broken-up with trees and groundcover planting on footpath build-outs

# Planting opportunities

## J. Private gardens



*Typical Plans (small and large front gardens)*

### Objective

To enhance private amenity while contributing to the public realm

#### KEY

1. Single trees within small front gardens (less than 5m long)
2. Small informal groups of trees within larger front gardens (+ 5m long)
3. Large specimen tree where space allows
4. Internal boundary hedges
5. External boundary trees and hedge where adjoining public areas

### Context

Planting trees within private gardens at the front of properties can have benefits for both the owner, through increased amenity and privacy, and for the public realm, by contributing to a green and leafy living environment. The long term maintenance is also secured through personal association with the trees. Housing plots can be visually contained by boundary hedges, as opposed to stark fence lines, that soften the buildings and further contribute to a green residential setting.

### Potential Planting Situations

- Individual trees, specimens or informal groups according to space available.
- Boundary hedges.



*Crab apple in small front garden space*

# Planting opportunities

## Private gardens

### Planting Types

For large gardens, especially on the urban fringe, mostly native species should be chosen as these will in time grow into substantial features and become an essential part of the local landscape.

For smaller gardens there are many trees widely available, in various shapes and sizes, evergreen and deciduous. Given the often limited space available, it is important that any trees chosen are suitable for their surroundings in terms of proportion as well as for their decorative value. In order to avoid visual incompatibility, a limited range of types should be selected.



Mature front garden trees



Simple layout of birch trees that complement the house



Avoid over-elaborate planting of ornamental species

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

Horse chestnut	<i>Aesculus hippocastanum</i>
Silver birch	<i>Betula pendula</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Pedunculate oak	<i>Quercus robur</i>
Small-leaved lime	<i>Tilia cordata</i>

#### Medium Trees between 10-20m at maturity

Downy birch	<i>Betula pubescens</i>
Holly	<i>Ilex aquifolium</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>

#### Small Trees between 5-9m at maturity

Paperbark maple	<i>Acer griseum</i>
Snowy mespilus	<i>Amelanchier lamarckii</i>
Crab apple	<i>Malus 'Evereste'</i>
Yellow berried mountain ash	<i>Sorbus 'Joseph Rock'</i>
Japanese flowering cherry	<i>Prunus 'Amanogawa'</i>

# Planting opportunities

## K. Sports grounds



Typical Plan

### Objective To provide screening and increased biodiversity

#### KEY

1. Frontage tree planting to signify entrance
2. Trees within parking areas to reduce impact of parked vehicles
3. Informal tree groups and scrub planting to edges and corners to enhance biodiversity
4. New native hedgerows to exposed boundaries
5. Existing hedgerows supplemented as required with native tree and shrub species

### Context

Sports pitches are often located towards the edges of most towns and villages, and can appear conspicuous in the landscape due to their large scale and lack of adequate planting. Ideally the design of the landscape and external spaces should be considered at the outset to ensure that the facility sits comfortably with the surroundings.

Where planting requires to be added later, this can be successful in providing a more attractive and inviting environment that people enjoy, as well as helping to shelter the playing pitches and enhancing habitats for wildlife.



*A simple row of trees can be very effective in reducing visual impact and providing shelter to sports facilities*

# Planting opportunities

## Sports grounds

### Potential Planting Situations

- Trees at the main entrance that reinforce the identity of the facility.
- Rows of trees along the frontage, combined with hedges, to define the boundary and improve views from the public road.
- Informal tree groups around the perimeter of the pitches, possibly combined with a circular walk or running/fitness track.
- Trees within car park areas to soften the appearance of parked vehicles.
- Shelterbelt planting to enhance micro-climate.
- Supplementary tree, hedgerow and scrub planting along existing boundaries to visually contain the site and for biodiversity.

### Planting Types

Given the location of most sports grounds adjoining the rural fringe, preference should be given to the use of native trees and hedgerows, combined with the more established introduced species.



Mixed planting providing effective screening and enhanced amenity

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

Sycamore	<i>Acer pseudoplatanus</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Hornbeam	<i>Carpinus betulus</i>
Scots pine	<i>Pinus sylvestris</i>
Sessile oak	<i>Quercus petraea</i>
Pedunculate oak	<i>Quercus robur</i>
Small-leaved lime	<i>Tilia cordata</i>

#### Medium Trees between 10-20m at maturity

Field maple	<i>Acer campestre</i>
Silver birch	<i>Betula pendula</i>
Downy birch	<i>Betula pubescens</i>
Hawthorn	<i>Crataegus monogyna</i>
Holly	<i>Ilex aquifolium</i>
Aspen	<i>Populus tremula</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>

#### Small Trees between 5-9m at maturity

Hazel	<i>Corylus avellana</i>
Crab apple	<i>Malus sylvestris</i>



Mature mixed hedgerow defining the boundary of sports ground at Scariff

# Planting opportunities

## L. Urban woodlands



Typical Plan

### Objective

To provide a valuable amenity, recreational, educational and biodiversity resource

#### KEY

1. Mixed woodland planting of native species
2. Openings within woodland and along pathways to encourage diversity through natural regeneration
3. New woodland linked to existing habitats wherever possible

### Context

New woodlands can provide a valuable resource for local communities as they are important for enhancing habitat diversity and as an open space facility for passive recreation.

The establishment of urban woodlands can become a major community initiative, supported where possible from external sources (such as private grants and sponsorship) and as an educational resource for local schools, clubs and amenity societies.

In certain circumstances the planting of woodlands may be eligible for public funding, e.g. the Forest Service of the Department of Agriculture, Food & the Marine operates a package of measures under the Forestry Programme 2014-2020<sup>(12)</sup> aimed specifically at promoting the protection and expansion of the native woodland resource.



Urban woodlands enhance the character of towns and villages while providing a range of community benefits

# Planting opportunities

## Urban woodlands

### Potential Planting Situations

- Derelict or under-utilised land.
- Former fields that may no longer be viable for agriculture.
- Corners of fields that are difficult to cultivate for agricultural purposes.
- Open space provision as part of large scale housing developments.
- Linear features around fields and along roads.

Wherever possible the site should be linked with established landscape features, such as other woodlands, mature hedgerows and river corridors, in order to encourage inter-linked habitats.

### Planting Types

Larger scale tree planting should be considered wherever opportunities arise. The main aim should be to establish a species-rich woodland of native trees and shrubs. Management should follow the guidance provided under the Native Woodland Scheme, which favours a variety of trees and shrubs of differing heights so that the eventual structure comprises a canopy layer of tall trees such as oak and sycamore, and minor fringe trees of birch, rowan, alder, whitebeam and wild cherry.

Further advice on establishing or restoring urban woodlands can be obtained from a variety of sources that include:

- Tree Council of Ireland <sup>(9)</sup>
- Crann - Trees for Ireland <sup>(10)</sup>
- 'Neighbourwood Scheme' <sup>(13)</sup> and the 'Native Woodland Conservation Scheme' <sup>(14)</sup>, Forest Service, Department of Agriculture, Food and the Marine

### Suitable Species (according to soil type and guidance under the Native Woodland Scheme)

(for further descriptions see Section 4)

Main trees:

Ash	<i>Fraxinus excelsior</i>
Sessile oak	<i>Quercus petraea</i>
Pedunculate oak	<i>Quercus robur</i>
Hazel	<i>Corylus avellana</i>
Scots pine	<i>Pinus sylvestris</i>
Silver birch	<i>Betula pendula</i>
Downy birch	<i>Betula pubescens</i>

### Other minor species (alongside edges and openings):

Hawthorn	<i>Crataegus monogyna</i>
Holly	<i>Ilex aquifolium</i>
Spindle	<i>Euonymus europaeus</i>
Elder	<i>Sambucus nigra</i>
Rowan	<i>Sorbus aucuparia</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Crab apple	<i>Malus sylvestris</i>



New urban woodlands can provide a valuable recreation, amenity and nature conservation resource for the local community

# Planting opportunities

## M. Rivers and lakes



### Objective

To reinforce the riverine landscape with planting that is appropriate for the unique ecosystems

#### KEY

1. Informal groups of native waterside species where required to supplement existing
2. Woodland planting linked to existing vegetation pattern
3. Marginal lakeside planting to reinforce existing habitats
4. Links to associated initiatives such as Urban Woodlands

### Context

Rivers, lakes and wetlands are one of our greatest natural assets, both in the countryside and as ecological corridors passing through towns and villages. They are essential for flood management purposes, in providing drinking water, for fisheries and drainage, and for supporting a wide diversity of wildlife.

Given their unique qualities, many rivers and lakes are protected by statutory designations (such as Special Areas of Conservation, Special Protection Areas, and proposed Natural Heritage Areas).

### Potential Planting Situations

New planting in the vicinity of rivers and lakes needs to be considered very carefully to ensure that their qualities are not compromised in the longer term. For new planting in floodplains, the Office of Public Works (OPW)<sup>(15)</sup> should be consulted in relation to possible effects on flood capacity.



*Existing high quality riverine landscape of the upper Fergus river*

For protected conservation areas, consultation with the National Parks and Wildlife Service (NPWS)<sup>(16)</sup> is essential.

The Environmental Protection Agency (EPA)<sup>(17)</sup> may also need to be consulted for high ecological quality river sites, and Inland Fisheries Ireland (IFI)<sup>(18)</sup> in relation to protecting the aquatic environment (e.g. from invasive species).



# Planting opportunities

## Rivers and lakes

### Planting Types

Possible planting schemes in the vicinity of rivers and lakes could include:

- Enhancing river corridor and floodplains for amenity and conservation purposes by planting with native woodland species where appropriate, and interconnecting wetland habitats along streams, field boundaries and road corridors.
- Opportunities for increasing the range of habitats within the riparian zone, such as wet meadows, and natural colonisation of emergents.
- Riparian buffer zones where they do not exist, for biodiversity and recreation purposes.
- Enhancement and management of traditional field boundaries.

Any introduced vegetation should comprise native species and reflect what occurs naturally in the locality.

Conservation designations may preclude the planting of trees in wet areas and early consultation with the County Council and other statutory bodies is essential for any amenity scheme that is being considered.

**In all cases, new planting in the vicinity of rivers and lakes should not be undertaken without the ongoing advice of an experienced Ecologist.**



*Wetland habitats are extremely valuable and vulnerable to disturbance and inappropriate planting*

### Typical Species

(for further descriptions see Section 4)

#### Streamside areas

This is the most ecologically sensitive zone and should either be left natural or, where degraded, planted with appropriate emergent aquatic vegetation, and with native trees along the bank, such as:

Alder	<i>Alnus glutinosa</i>
Silver birch	<i>Betula pendula</i>
Black poplar	<i>Populus nigra</i>
Aspen	<i>Populus tremula</i>
Willow	<i>Salix spp</i>

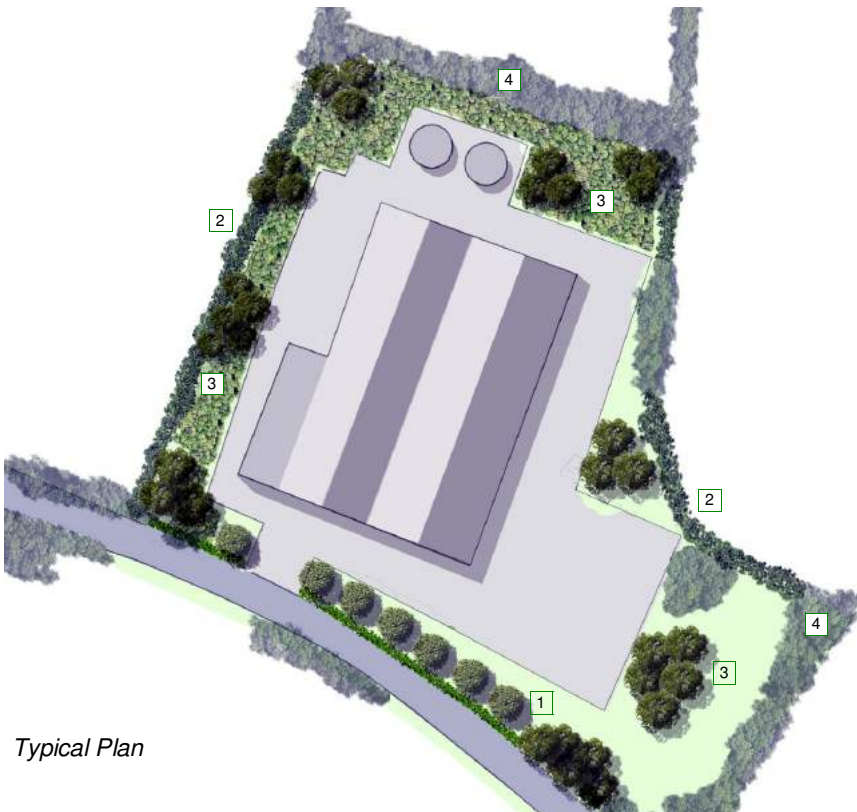
#### Middle and Outer areas

Linear woodland is often most appropriate, comprising:

Alder	<i>Alnus glutinosa</i>
Silver birch	<i>Betula pendula</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Crab apple	<i>Malus sylvestris</i>
Scots pine	<i>Pinus sylvestris</i>
Aspen	<i>Populus tremula</i>
Willow	<i>Salix spp</i>
Elder	<i>Sambucus nigra</i>
Rowan	<i>Sorbus aucuparia</i>

# Planting opportunities

## N. Industrial/employment areas



*Typical Plan*

### Objective To integrate large structures within the townscape

#### KEY

1. Formal screen trees combined with hedge to frontage
2. New hedgerows to exposed boundaries
3. Informal tree groups to edges and where space allows
4. Existing vegetation retained and supplemented as required

### Context

Many large scale industrial and employment uses can appear intrusive in towns and villages and require suitable planting to help absorb them into their surroundings.

Using suitable plants to interrupt views can be an effective way for diverting the eye towards a specific feature, or for screening the unsightly elements.



*Effective screening with mixed trees in Ennis town centre*

# Planting opportunities

## Industrial/employment areas

### Potential Planting Situations

- Mixed screen planting to frontage that reduces visual impact from roads and footpaths.
- Boundary planting to soften appearance of the use from longer distance views, particularly if adjoining non-compatible uses or the open countryside.
- Hedge planting to screen immediate views at eye level.

### Planting Types

- Formal trees of single species.
- Informal groups of mixed species, including evergreen.
- Formal evergreen hedges and informal native hedgerows.

### Suitable Species

(for further descriptions see Section 4)

#### Large Trees 25m or over at maturity

Horse chestnut	<i>Aesculus hippocastanum</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Scots pine	<i>Pinus sylvestris</i>
Evergreen oak	<i>Quercus ilex</i>
Sessile oak	<i>Quercus petraea</i>
Pedunculate oak	<i>Quercus robur</i>
Small-leaved lime	<i>Tilia cordata</i>

#### Medium Trees between 10-20m at maturity

Silver birch	<i>Betula pendula</i>
Holly	<i>Ilex aquifolium</i>
Aspen	<i>Populus tremula</i>
Whitebeam	<i>Sorbus aria</i>
Rowan	<i>Sorbus aucuparia</i>
Yew	<i>Taxus baccata</i>

#### Formal Hedges

Berberis	<i>Berberis darwinii</i>
Hornbeam	<i>Carpinus betulus</i>
Beech	<i>Fagus sylvatica</i>
Holly	<i>Ilex aquifolium</i>
Common privet	<i>Ligustrum ovalifolium</i>



Mixed deciduous trees providing effective screening to sensitive environmental area

# Planting opportunities

## O. New roads



Typical Plan

### Objective

To fit the road to the landscape through the establishment of planting treatments that complement the ecological network.

#### KEY

1. Native hedgerows to help absorb the road into the landscape, linked where possible to existing vegetation pattern
2. Informal clumps of native trees, reinforcing existing adjacent woodland or hedgerows and spaced to allow views from the road to open countryside
3. Grass verges, managed as wildflower margins
4. Formal rows of trees on urban side of the road and to define major junctions
5. Screen hedges adjoining established uses
6. Visual links to adjoining open spaces

### Context

New roads can have a major impact on the landscape of towns and villages and need to be planned and designed from the outset to ensure suitable treatment and effective mitigation is integral to the completed scheme.

Transport Infrastructure Ireland<sup>(11)</sup> (TII - formerly the NRA) has statutory responsibility for management of the national roads programme, with implementation of individual projects in conjunction with the relevant local authority.

The landscape treatment of new national road schemes must be in accordance with 'A Guide to Landscape Treatments for National Road Schemes in Ireland', (NRA 2006)<sup>(19)</sup>. This document outlines the approach that needs to be followed in relation to the design of roadside landscapes and, in particular, the use of 'ecological landscape design' principles for national schemes, in order to 'fit' the road into the landscape.

The extent of roadside landscape presented by the design of new roads has the potential to provide for a variety of treatments which will restore landscape character and diversity, and also create new habitat for wildlife.

# Planting opportunities

## New roads

### Potential Planting Situations

The main planting effects associated with new road schemes include:

- Retaining existing vegetation - can play an essential part in maintaining landscape character and local landmarks. Making the best use of established vegetation needs to be considered both when a route's alignment is being selected and to safeguard nearby individual trees.
- Screening with vegetation - planted screens can be effective in restricting both views of the road and views from the road.
- Off-site planting - where necessary to screen property and public places at some distance from the road.
- Woodland planting - to integrate the road with the landscape, to provide visual interest and to provide wildlife benefits.
- Native shrub and tree groups - often essential to soften abrupt edges of woodland planting and for integrating the road with semi-urban landscapes.
- Natural re-colonisation - requiring specific ecological and site conditions for success.
- Hedges - can be essential for integrating the road, especially with agricultural landscapes.
- Grassland - can be of nature conservation and amenity interest.
- Formal planting on the urban fringe - where required to signify the change from rural to urban environments.

### Planting Types

The landscape treatments applicable for most new roads on the edge of towns and villages in the county, and suitable species selection, would be similar to those described in the NRA guidance document.



*Appropriate landscape treatments either side of new urban approach road*

# Planting opportunities

## P. Community Orchards



Typical Plan

### Objective

To provide a productive communal landscape of high amenity and wildlife interest

#### KEY

1. Mixed fruit trees
2. Native hedgerow boundaries supplemented as required to encourage an 'edible landscape'
3. Other communal food growing areas
4. Convenient access from the town and countryside

### Context

Traditional orchards were once common in or around many towns and villages and formed an important part of the rural economy. Orchards are also important for wildlife, supporting a variety of habitats that encourage insects and small mammals, as well as wild flowers.

Today community orchards offer opportunities for people to come together to plant and cultivate local and unusual varieties of fruit and nut trees, while enhancing the amenity and biodiversity of the landscape.

The main benefits of establishing a community orchard are:

- To make locally grown produce available, and to create a visual reminder of traditional land use and rural traditions.
- To provide a local facility where outdoor events can be held.

- To show school children the importance of healthy eating and the natural environment, and encourage them to respect it by involving them in the creation and running of orchards.
- To promote nature conservation by encouraging wildlife which thrives within orchards.
- To highlight and encourage seasonality of locally grown produce.
- To help enhance both the visual and practical environment.



The orchard should be open to the whole community

# Planting opportunities

## Community orchards

### Potential Planting Situations

Community orchards can be planted in a wide range of situations, including:

- School playing fields, along the edges of disused railway lines, the sides of GAA pitches, parks, church grounds and hospital grounds.
- Farmland, where orchards can be used as buffer strips or windbreaks on larger plots of land.
- Redundant and disused orchards can be brought back into use as community orchards.
- Private land can be used providing there is sufficient space, with the landowner's agreement and where (controlled) public access can be assured.

### Planting Types

The full range of traditional orchard fruits and nuts can be grown, including apple, pear, plum, damson, hazelnut and walnut. Rare species of fruit can be particularly worthwhile - further advice can be obtained from the Irish Seed Savers Association<sup>(7)</sup>. The orchard can also be combined with other elements of the 'edible landscape' such as vegetable allotments and hedgerows for foraging.



*Newly planted orchard*



*Orchards can be both productive and attractive*



*Community orchards can be combined with other food growing activities such as allotments*

## 4. Achieving results





# Achieving results

## 4.1 Practical considerations

### **Determining factors**

The success of new planting schemes will to a large extent be determined by the local climate, drainage and soils. Mistakes made in species selection can result in poor growth performance and eventual losses. Observation is the best guide - check the site and existing trees growing well in the locality.

### ***Climate***

Ireland's climate is relatively mild given its northern location, due mainly to the warming effects of the Gulf Stream. As a coastal county, Clare tends to be wetter than the average, particularly in the late autumn and winter. Snow is rare except on high ground, but hail often occurs in winter. The moderate temperatures, the moist conditions created by year-round rainfall and the absence of extreme weather create an ideal environment for growing a wide range of tree species.



*Windblown hawthorn*

However, the county is also prone to the full force of Atlantic storms, particularly in the west, and trees have to deal with both severe winds and salt spray. They tend not to grow to the size that would be expected within more sheltered parts of the county, and may develop a distinctive windswept shape, while many ornamental plants struggle to survive at all.

Native species found growing locally tend to be the most successful in such exposed conditions, and can provide an effective first line of defense against the elements.

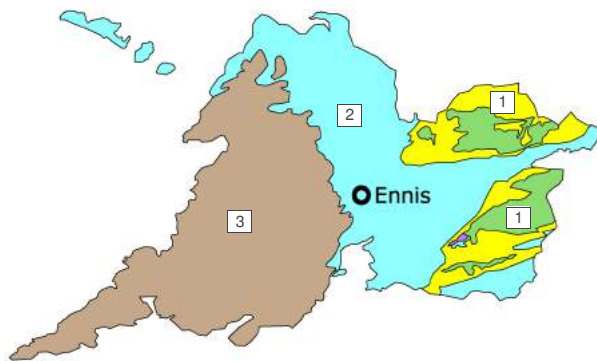
In the more sheltered parts of central and east Clare, a far wider range of native and introduced species can be considered (see 4.2 Species Lists).

### ***Geology and Soils***

The various soil types in County Clare have developed mostly from a combination of the geological parent material, climate and topography.

There is considerable contrast in the parent bedrock across the county, with large areas of exposed limestone in the Burren and the Burren lowlands in the north west; limestone with deeper overlying soils in central Clare, extending to the shore of Lough Derg in the lowlands; Old Red Sandstone uplands in east Clare; and a combination of shales and sandstones (with uplands and low-lying land) in west Clare.

## Practical considerations



1. Silurian and Devonian sandstones - east Clare
2. Carboniferous limestone - central and north-west Clare
3. Carboniferous shales and sandstones - west Clare

*Simplified geological map of County Clare*

The main influences of soil types on the selection of suitable planting species are:

- pH - acidic, neutral or limey
- Drainage - wet, waterlogged or dry
- Texture - heavy to light

### ***Burren uplands and lowlands - exposed limestone and thin limey soils***

Although the Burren is characterised by extensive areas of limestone pavement with the familiar clints and grykes, there are many areas with sufficient soil cover to support the growth of trees. As the soils tend to be very limey, certain trees may not thrive here, but those that are generally suitable include hazel, whitebeam, rowan, holly, silver birch, pedunculate oak, ash and aspen.

For exposed sites (e.g. upland areas), small planting stock should be used (<1.5m height) and tolerant species such as rowan or silver birch. A deciduous shrub that is often found growing close to watercourses and turloughs in the Burren is purging buckthorn.

### ***Central Clare - limey and neutral soils***

Much of central Clare including Ennis and environs is underlain by limestone with a deeper soil cover than the Burren. A wide range of trees will grow here. The main restriction would be on damper ground where species such as willow and alder are more likely to thrive than others. Ash and pedunculate oak can also tolerate winter flooding, but not during the growing season, and are often found around turloughs.

### ***West Clare and east Clare - acid and neutral soils***

The west Clare and east Clare uplands are underlain by different rock types, and they both produce neutral to acid soils. Again a relatively wide range of trees will grow here. There are however large areas of poorly draining land on heavy soils in the lowlands of west Clare and on peaty soils in the uplands in east and west of the county. There are a few trees that tolerate heavy soils including ash, crab apple and sycamore (also very tolerant of exposed sites). Sessile oak thrives on upland peaty but well-drained soils and it is common in east Clare, especially in the Slieve Aughty.

# Achieving results

## Practical considerations

### **Urban Areas**

In most urban areas, soils tend to be dry, shallow and of poor quality. In such cases it may be necessary for new soil to be imported from outside the site.

A high quality topsoil with an adequate supply of nutrients, a good structure and texture, and a pH that is neither too acid or alkaline, and the ability to drain well, are all essential qualities for planting in artificial conditions.

### **Drainage**

Air and water are essential for plant roots to support healthy growth. Failure to provide adequate drainage can lead to a lack of oxygen and deterioration in the surrounding soil, resulting in poor root growth or decay. In areas with poor drainage, it may be necessary to dig deeper into the ground to break up any impermeable layer, to improve the soil by incorporating bulky organic matter, or to provide a drainage layer at the bottom of the planting pit.

Trees that tolerate damp soils include willow and alder and they commonly occur around rivers and lakes. Whereas there are many other trees which can grow successfully in soils which are permanently moist, few will survive long spells of flooding or waterlogged conditions, especially in summer.



*Sessile oak is more tolerant of less fertile, acidic soils than pedunculate oak*



*Urban trees need to be tolerant of the artificial conditions*

The following tables summarise the main characteristics of the species that are especially suitable for growing in the towns and villages of County Clare.

## 4.2 Tree species lists

		Growth		Soil preference				Site uses					Shelter			Features		
Size: L - Large, M - Medium, S - Small		Size	Growth rate	Neutral to Lime-rich	Acid to Neutral	Wet or damp	Poor or disturbed	Urban spaces	Roads	Gardens	Exposed	Coastal	Screening	Shelter belts	Hedges	Flowers	Fruit/berries/nuts	Autumn colour
Growth: F - Fast, M - Medium, S - Slow																		
Common name	Scientific name																	
<b>Native Trees</b>																		
Alder	<i>Alnus glutinosa</i>	L	F	●		●	●	●						●			●	●
Strawberry tree	<i>Arbutus unedo</i>	S	S		●	●				●						●	●	●
Silver birch	<i>Betulus pendula</i>	M	M		●		●	●	●	●				●			●	●
Downy birch	<i>Betulus pubescens</i>	M	M		●		●	●	●	●				●			●	●
Hazel	<i>Corylus avellana</i>	S	M	●				●		●			●	●	●		●	●
Hawthorn	<i>Crataegus monogyna</i>	M	M	●			●	●	●	●			●	●	●	●	●	●
Spindle	<i>Euonymus europaeus</i>	M	M	●		●								●			●	●
Ash	<i>Fraxinus excelsior</i>	L	M	●				●	●	●	●		●	●			●	●
Holly	<i>Ilex aquifolium</i>	M	S	●	●		●	●	●	●		●	●	●	●	●	●	●
Crab apple	<i>Malus sylvestris</i>	M	S	●				●		●				●	●	●	●	●
Scots pine	<i>Pinus sylvestris</i>	L	M		●		●	●	●				●	●			●	●
Aspen	<i>Populus tremula</i>	S	F	●		●		●	●		●		●	●			●	●
Wild cherry	<i>Prunus avium</i>	S	M		●			●	●	●			●	●		●	●	●
Bird cherry	<i>Prunus padus</i>	S	M		●			●	●	●			●	●		●	●	●
Sessile oak	<i>Quercus petraea</i>	L	S		●			●	●		●	●	●	●			●	●
Pedunculate oak	<i>Quercus robur</i>	L	S	●				●	●		●	●	●	●			●	●
Elder	<i>Sambucus nigra</i>	M	F	●			●	●		●			●	●		●	●	●
Whitebeam	<i>Sorbus aria</i>	M	M	●				●	●	●	●	●	●	●		●	●	●
Rowan	<i>Sorbus aucuparia</i>	M	F	●	●		●	●	●	●	●	●	●	●		●	●	●
Yew	<i>Taxus baccata</i>	M	S	●									●	●			●	●
Willow	<i>Salix spp.</i>	M	F			●							●	●			●	●
Wych elm	<i>Ulmus glabra</i>	L	M	●				●	●				●	●			●	●
<b>Main Introduced Species</b>																		
Sycamore	<i>Acer pseudoplatanus</i>	L	F	●				●	●		●	●	●	●		●	●	●
Horse chestnut	<i>Aesculus hippocastanum</i>	L	S	●				●					●	●		●	●	●
Hornbeam	<i>Carpinus betulus</i>	L	M	●				●	●	●	●		●	●	●		●	●
Spanish chestnut	<i>Castanea sativa</i>	L	M	●				●					●	●			●	●
Beech	<i>Fagus sylvatica</i>	L	M		●		●	●	●	●	●		●	●	●		●	●
Larch	<i>Larix decidua</i>	L	F	●	●		●			●							●	●
London plane	<i>Platanus x acerifolia</i>	L	M	●				●	●	●	●	●					●	●
Spruce	<i>Picea abies</i>	L	M	●		●					●						●	●
Evergreen oak	<i>Quercus ilex</i>	L	M	●	●	●		●	●		●	●	●	●			●	●
Red oak	<i>Quercus rubra</i>	L	M	●				●		●			●	●			●	●
Pin oak	<i>Quercus palustris</i>	L	M	●				●					●	●			●	●
White willow	<i>Salix alba</i>	L	F	●	●	●		●					●	●			●	●
Lime	<i>Tilia cordata</i>	L	M	●	●			●	●	●	●		●	●		●	●	●

# Achieving results

## Tree species lists

		Growth		Soil preference				Site uses					Shelter			Features				
Size: L - Large, M - Medium, S - Small		Size	Growth rate	Neutral to Lime-rich	Acid to Neutral	Wet or damp	Poor or disturbed	Urban spaces	Roads	Gardens	Exposed	Coastal	Screening	Shelter belts	Hedges	Flowers	Fruit/berries/nuts	Autumn colour		
Growth: F - Fast, M - Medium, S - Slow																				
Common name	Scientific name																			
Main Ornamental Varieties																				
Field Maple	<i>Acer campestre</i> 'Elsrijk'	M	M	●				●	●	●								●		
Var. maple	<i>Acer 'Drummondii'</i>	M	M	●						●							●	●		
Paperbark maple	<i>Acer griseum</i>	S	M	●						●								●		
Norway maple	<i>Acer platanoides</i>	L	M	●	●			●	●				●				●	●	●	
Mop head maple	<i>Acer 'Globosum'</i>	S	M	●				●		●					●			●	●	
Snowy mespilus	<i>Amelanchier lamarckii</i>	S	M	●	●			●		●						●	●	●	●	
Paper bark birch	<i>Betula papyrifera</i>	M	F	●	●			●		●	●		●					●	●	
Pyramid birch	<i>Betula 'Fastigiata'</i>	M	F	●	●		●	●	●	●	●		●					●	●	
Golden birch	<i>Betula 'Golden Beauty'</i>	M	S	●	●			●	●	●								●	●	
Box	<i>Buxus sempervirens</i>	S	S	●	●					●			●		●	●				
Hornbeam	<i>Carpinus 'Fastigiata'</i>	M	F	●	●	●		●	●	●	●			●					●	
Fastigate ash	<i>Fagus 'Dawyck'</i>	L	M	●	●			●	●	●	●		●	●				●	●	
Copper beech	<i>Fagus 'Purpurea'</i>	L	S	●	●					●	●		●		●			●	●	
Ash	<i>Fraxinus 'Westhofs Glorie'</i>	L	M	●				●	●	●	●		●					●	●	●
Claret ash	<i>Fraxinus 'Raywood'</i>	M	F	●			●	●	●	●	●		●					●	●	
Griselinia	<i>Griselinia littoralis</i>	M	F	●	●					●	●	●	●		●			●	●	
Common privet	<i>Ligustrum ovalifolium</i>	M	F	●	●	●		●		●	●	●	●		●			●	●	
Ornamental crab	<i>Malus 'Evereste'</i>	S	M	●	●			●		●	●							●	●	
Lombardy cherry	<i>Prunus 'Amanogawa'</i>	S	M	●				●	●	●								●	●	●
Laurel	<i>Prunus lusitanica</i>	M	M	●	●			●		●	●		●		●			●	●	
Pandora cherry	<i>Prunus 'Pandora'</i>	S	M	●	●			●	●	●	●							●	●	●
Tibetan cherry	<i>Prunus serrula</i>	S	M	●	●			●	●	●	●							●	●	●
Callery pear	<i>Pyrus 'Chanticleer'</i>	M	M	●	●			●	●	●								●	●	●
Cypress oak	<i>Quercus 'Fastigiata Koster'</i>	L	S	●	●			●	●	●	●		●					●	●	
Goat willow	<i>Salix caprea</i>	M	F		●	●	●			●	●		●					●	●	
Osier	<i>Salix viminalis</i>	S	F		●	●				●	●		●					●	●	
Whitebeam	<i>Sorbus aria 'Majestica'</i>	M	M	●	●			●	●	●	●		●					●	●	●
Service tree	<i>Sorbus domestica</i>	S	M	●	●			●		●	●							●	●	
Mountain ash	<i>Sorbus 'Joseph Rock'</i>	M	M		●			●	●	●	●							●	●	●
Small-leaf lime	<i>Tilia cordata 'Greenspire'</i>	M	F	●		●		●	●	●			●					●	●	●

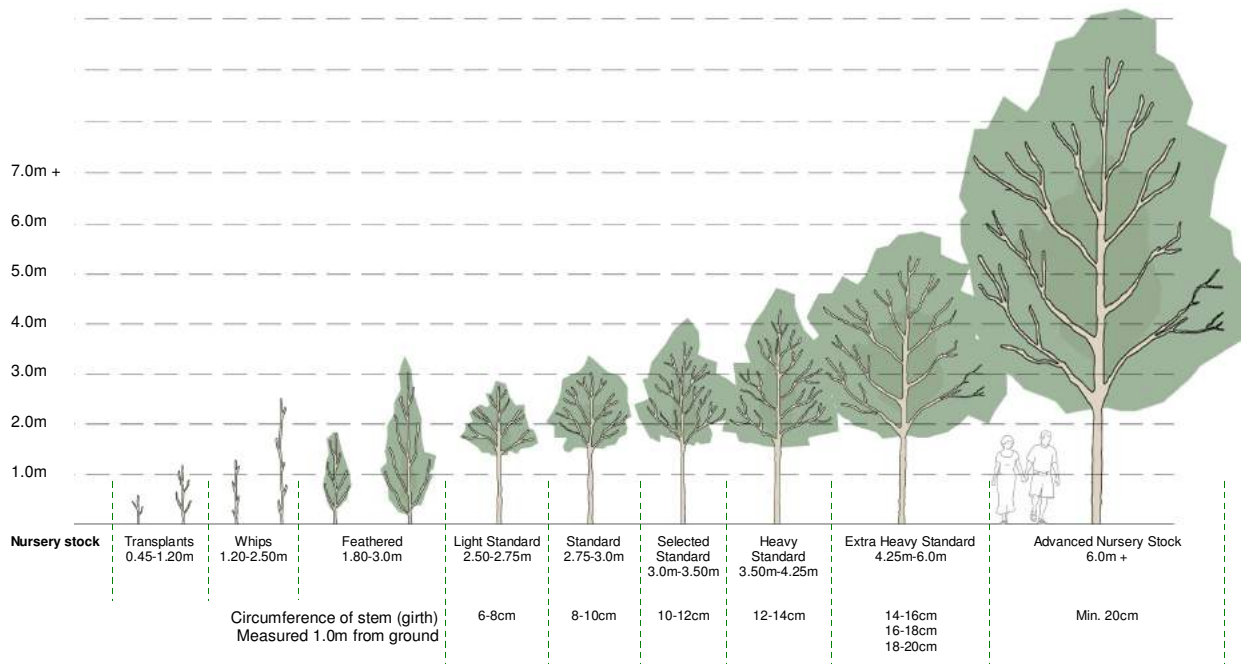
## 4.3 Size of planting

Trees can be obtained from nurseries in a wide range of sizes. The largest, category is 'advanced nursery stock', which is usually the preferred tree size for urban public planting schemes as it is the most resistant to vandalism and makes the best visual contribution in the short term. The planting height in this largest category can range from 4.5m to over 10m for semi-mature trees.

Nurseries usually measure trees according to their girth, which is the circumference of the stem measured one metre from ground level, and considered to be a better gauge of maturity than height, which can vary enormously between species. The following diagram gives an idea of the average height of a typical tree in each available girth size.

For urban situations it is recommended that newly planted trees have a minimum girth of 14cm (3.0-4.0m high). Where there is a high risk of damage then the recommended girth is min. 18cm (4.0-4.50m high).

More manageable (and economical) tree sizes for informal situations or private gardens are 'standards' and 'half standards', or 'feathered standards' if a clear stem is not required. Very young trees, 'whips' and 'transplants', can be used effectively and economically when closely planted to establish a planting structure, particularly for informal planting schemes. These can be combined with more mature trees to provide a more immediate visual presence where required.



*Range of commonly available tree planting sizes*

## 4.4 Tree planting techniques

### **The planting pit**

Before planting establish:

- Quality and type of topsoil
- Possible drainage problems
- Presence of underground services

Where the excavated topsoil from the planting pit is of a suitable quality, then it is only necessary to add a slow release fertiliser before backfilling. Provided that the soil is free draining and near-neutral pH, then most commonly specified trees will grow well.

If the soil has a poor texture, this can be improved with conditioners such as peat-free compost (or compost from a reliable source made from recycled organic materials).

Imported topsoil should be of good quality, with a light texture (conforming to British Standard BS 3882 'General Purpose Category').

### **Root Type**

Bare root trees are usually cheaper and can establish quicker than other root types, and is the preferred option for trees of 18cm girth and below. Above 18cm girth a root-balled tree is the preferred option.

Both containerised and root-balled trees can be used to extend the planting season - in theory a container tree can be planted at any time of the year but irrigation is essential.

### **Root barriers**

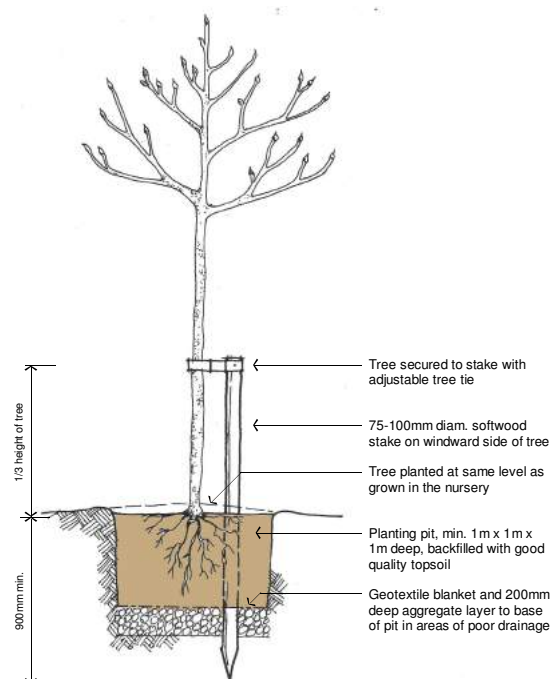
Where adjacent services are present, such as gas, water or electricity, then an impenetrable barrier should be installed to prevent future damage.

### **Drainage**

It is a prime requirement that planting pits do not hold water and become waterlogged. In new planting situations with poor drainage a minimum 200mm layer of clean aggregate (50mm nominal size) should be included in the base of the pit, topped with a geotextile blanket to reduce contamination of the drainage layer by fines.

### **Tree support, staking and guying**

Support is required for all new trees over 1.80m in height, to anchor the tree and stabilise the root-ball until new roots are sufficiently established in the surrounding soil, but is not necessary for transplants or small whips.



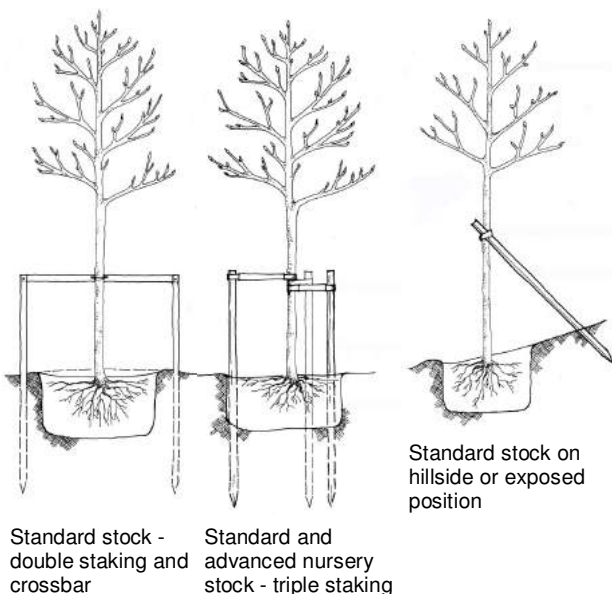
*Planting standard nursery stock - low single stake*

# Achieving results

## Tree planting techniques

Staking is usual for standard categories of nursery stock, especially for trees in soft areas (grass or other planting), and consists of one, two or three softwood timber stakes positioned on the windward side of the tree and driven at least 900 mm into the base of the pit. Either full height (to the base of the crown) or low single stakes (one-third height of the tree) can be used according to specific site requirements. A tall stake may be necessary to deter vandalism of the new tree.

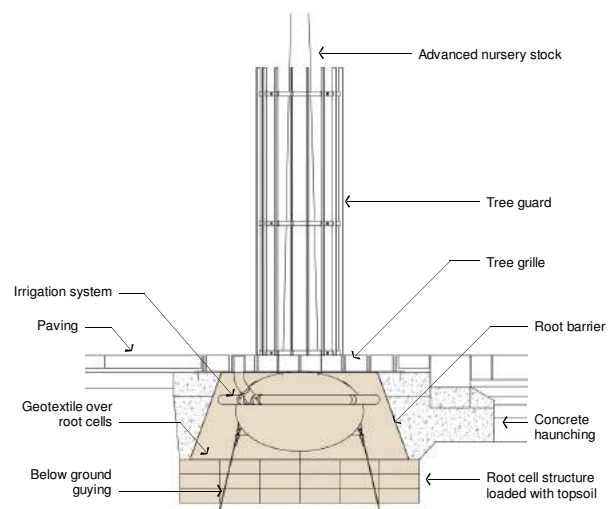
Two stakes with a crossbar provide improved anchorage and support, particularly for larger stock or in exposed positions. This method can also be used for supporting root-balled stock, where the stake cannot be positioned close to the stem. Triple staking gives further protection as a tree guard for all sizes of stock and necessary support for advanced nursery stock.



*Alternative staking methods*

For planting in exposed and/or hillside positions, a single stake driven in at an angle of 45° and leaning towards the prevailing wind can be used. This method is also suitable for feathered trees where it is difficult to position a vertical stake close to the stem. The tree should be fixed to the stake using proprietary rubber ties or canvas hosing.

Guying or underground anchorage is essential for securing advanced nursery stock trees. Preferably underground tensioned cables should be used, especially in paved areas, looped across the rootball and secured between anchoring devices located at the base of the pit. The tree requires a solid, firm rootball for this method to be successful. New trees in urban areas may also require root barriers, when in close proximity to existing services, and root cells for directing the root structure.



*Typical tree pit detail in hard/paving areas*



# Achieving results

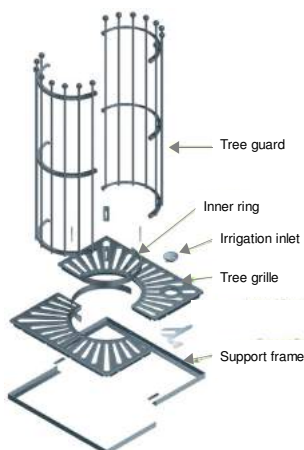
## Tree planting techniques

### **Irrigation and aeration**

Surface irrigation can ensure that sufficient water is provided to the tree at the right times, and consistently. Proprietary systems are available, that are efficient by applying water fed directly into the system via a hosepipe placed at the required location and minimising waste through spillage and evaporation.

### **Tree guards**

The purpose of tree guards is to reduce the likelihood of damage, either deliberate or accidental. They are available in many sizes and shapes, and should be fixed rigidly vertical either to or under a grille, and of sufficient height to reduce the likelihood of the tree being snapped. Where damage from manoeuvring vehicles is likely, such as car parks or on a verge where vehicles habitually park, a raised kerb detail surrounding the planting pit should be used.



Typical tree guard and grille assembly



### **Tree grilles and pit surfacing**

In a street or public space situation where trees are not planted in a grass verge or shrub bed, the planting pit should be finished at ground level with a decorative grille or a porous aggregate. This enables the tree to receive natural water and prevents surrounding soil from being compacted.

### **Planting time**

Generally the planting season for trees and hedgerows runs from mid-November to mid-March, when deciduous plants remain dormant. Root-balling, cold storage and containerisation can sometimes extend this period. Any planting beyond the March deadline should only be carried out if a comprehensive and regular irrigation programme can be provided.



Red oak (*Quercus palustris*) ready for planting - Girth: 14-16cm; Rootball: 50cm diameter x 30cm deep; Height of plant: approx 5.0m

## 4.5 Management and maintenance

### ***Tree management generally***

Trees in publicly accessible areas will from time to time require management, as necessary to ensure they are maintained in a safe, healthy and attractive condition as possible. This should include regular prioritised inspections and where necessary programmed maintenance work. This work may include the removal of some trees, pruning of others and replacement planting, with the aim of maintaining the overall tree cover in a safe, healthy and sustainable condition.

The management of publicly-owned trees in the County should be based on regular inspections by suitably qualified personnel. Subject to resources, the aim should be to move towards a situation where most trees in Council ownership are recorded and included within a prioritised inspection and maintenance regime.

The felling of trees should be considered as a last resort, unless pruning and site management solutions have been considered and discounted. In all cases, advice should be obtained from an experienced arboriculturalist on whether a tree needs to be felled or not. Mature trees of high amenity value should not normally be felled, unless there is very clear justification for the work.

There may be cases where the value of the tree, in terms of amenity, cultural importance or biodiversity may override the reason to fell.

Trees in groups or in woodlands may need to be felled as part of a regime of thinning to provide more space for the retained trees to grow and provide sufficient light so that ground flora and the shrub layer within the woodland can flourish.

Pruning, particularly heavy pruning, should be avoided for both visual and tree health reasons, since any cutting can weaken the tree and allow decay organisms to enter exposed and vulnerable tissue, causing significant decay.

Work to existing trees should be carried out by appropriately qualified and experienced staff, in accordance with current legislation, guidance, British Standards and Codes of Practice, where they apply.

### ***Tree Maintenance***

Maintenance of newly planted trees for at least three years, after planting is essential to their long term survival and growth. Larger trees in particular (those above 25cm girth) can take significantly longer to become fully established.

After planting, the following essential maintenance operations are required:

- Watering – regularly during dry periods and applied deeply enough to be beneficial. This can be phased out over three years to encourage the tree to establish its own root system in relation to existing groundwater conditions.

## Management and maintenance

- Weeding – a weed/grass free area should be kept around the tree to reduce damage by mowers and strimmers.
- Monitoring - of growth and for damage by storm, vehicles or by vandalism should be carried out on a regular basis and any necessary remedial action taken.
- Timber stakes should be removed three years after planting and when the tree is showing signs of strong growth.
- Damaged limbs should be pruned carefully.
- Irrigation/aeration inlets should be checked and cleaned annually.

### ***Hedgerow management***

Many hedgerows in Clare have become overgrown and 'gappy', which results in a loss of structure. In addition, many lack young trees, and this poses a potential threat to their future. Good management of a hedgerow, which includes traditional practices such as laying and coppicing, can rejuvenate a hedgerow, and extend its lifetime almost indefinitely. The hedgerow resource in Clare could be greatly improved with higher levels of management that follow general best practice.

Existing hedgerows can be enhanced if required by trimming, laying and infill planting in gaps. The Heritage Council<sup>(20)</sup>, Teagasc<sup>(21)</sup> and Crann<sup>(10)</sup> provide advice on their web sites and in various publications on hedgerow management.

Clare County Council is seeking to complement and support hedge cutting programmes by facilitating landowners and community groups in maintaining hedgerows alongside public roads throughout the county, through the Community Hedge Cutting Grant Scheme<sup>(22)</sup>, which was the first of its kind to be developed in Ireland.

Provisions relating to the cutting of hedgerows during the critical bird nesting period are set out in the Wildlife Act 1976 and Wildlife (Amendment) Act 2000<sup>(23)</sup>. It is therefore illegal to cut native hedgerows during the critical bird-nesting period (1<sup>st</sup> March to 31<sup>st</sup> August). The best time to cut deciduous hedgerows is in winter when the plants are dormant and the bird-nesting season is over.

Garden hedges can also provide a habitat and food for birds and it is good practice to cut them hard in winter in order to minimise the requirement to trim them in the summer months.

Coniferous hedges, especially those with fast-growing cypresses, need more regular trimming to keep them in shape. Broadleaved evergreens such as laurels and grisellinia also need trimming to maintain a good structure, while others such as holly are very low maintenance as they grow slowly.

# Appendices



## A. Acknowledgements

Special thanks to the numerous individuals and organisations for their continued inputs and support throughout the preparation of this Design Guide, and in particular:

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Ruth Hurley, Senior Executive Architect

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Andrew St Ledger, CELT Centre for Environmental Living and Training, County Clare

Feidhlim Harty, FH Wetland Systems Ltd. Ennis, County Clare

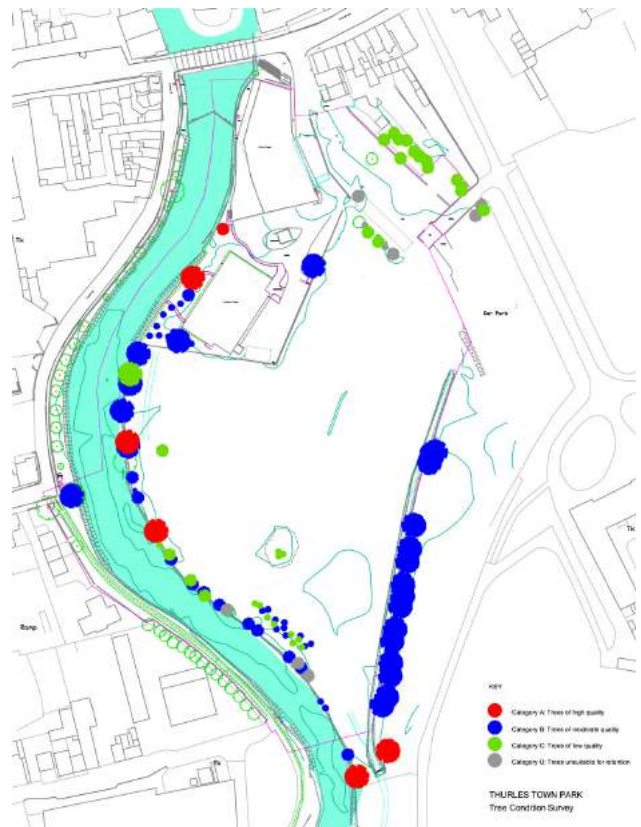
Noel Lane, Tree Care Services, County Galway

## B. Site survey methods

### Survey of existing trees

The starting point for achieving a tree-friendly town and village is to undertake a thorough survey of all existing trees in the area - this should include an identification of the species, approximate age and overall condition, the appearance and how well each tree is performing in relation to the surroundings. This information should be collected as early as possible, and clearly presented on a map of the area under consideration for new tree planting.

Where necessary, e.g. for more complex tree planting projects, the survey should be undertaken by an arboriculturalist or other suitably qualified person, and according to the detailed guidance given in British Standard BS 5837:2012 Trees in relation to design, demolition and construction - Recommendations.



Typical Tree Survey Plan, as BS 5837:2012

## C. References

1. *Landscape Character Assessment of County Clare*, 2004, Clare County Council
2. *Tree Survey of Towns and Villages in County Clare*, 2015, Clare County Council
3. *Rural House Design Guide*, 2015 (second edition), Clare County Council
4. *Buds of the Banner – a Guide to Growing Native Trees and Shrubs in Clare*, 2007, Clare County Council
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22. *Community Hedge Cutting Grant Scheme*, Clare County Council, Roads & Transportation Department, Ennis, Co. Clare, www.clarecoco.ie
23. *Wildlife Act 1976 and Wildlife (Amendment) Act 2000*, Irish Statute Book, www.irishstatutebook.ie

## D. Glossary of terms

The following glossary provides descriptions and definitions of words used within the Tree Design Guide and the practice of landscape planting generally, and are taken from the following references:

*A-J of Tree Terms: A Companion to British Arboriculture*, Philip Wilson (2014)

*Planning Portal Glossary*, UK Department for Communities and Local Government

*BS 3975 Glossary for Landscape Work (since withdrawn)*, British Standards Institution

**Acid:** having a pH less than 7.0. Contrast with alkaline.

**Aesthetic:** pleasing to the senses, visually or otherwise.

**Aftercare:** Management of newly planted trees to avoid mortality and to facilitate establishment.

**Alien:** A plant originally introduced from other areas.

**Alkaline:** having a pH greater than 7.0. Contrast with acid.

**Arboriculture:** practice and study of the care of trees and other woody plants in the landscape.

**Arborist:** professional who possesses the technical competence gained through experience and related training to provide for or supervise the management of trees and other woody plants in residential, commercial, and public landscapes.

**Bare root:** tree or other plant removed from the ground for re-planting without soil around the roots. Contrast with balled and burlapped, container grown, containerized, and in-ground fabric-bag grown.

**Berry:** Strictly a pulpy, normally several-seeded, indehiscent fruit.

**Biodiversity:** Refers to aspects of variety in the living world; used to describe the number of species, the amount of genetic variation or the number of community types present in the area.

**Buffer zone:** The area closely surrounding a wildlife site or wildlife corridor, identified as worthy of recognition and sympathetic management.

**Canopy:** collective branches and foliage of a tree or group of trees.

**Catkin:** Normally dense spike or spike-like raceme of tiny, scaly-bracted flowers or fruits.

**Central leader:** The clearly defined single, dominant stem at the top of the tree.

**Character:** The appearance of any rural or urban location in terms of its landscape or the layout of streets and open spaces, often giving places their own distinct identity.

**Columnar:** Tall and cylindrical or tapering.

**Conical:** Cone-shaped.

**Coniferous:** Cone bearing (mainly evergreen).

**Container grown:** Having been individually grown from propagation in a container.

**Containerised:** Having been transferred at some stage of development (usually prior to transplanting) into a container for purposes of sale, transport or decorative effect.



## Glossary

**Coppice (management):** Several broadleaf species were traditionally coppiced for small-diameter rods and poles, which were harvested every 5–25 years. The neglect of coppicing in recent decades is said to have been prejudicial to biodiversity.

**Crown:** The foliage bearing section of the tree formed by its branches and not including any clear stem/trunk.

**Deciduous:** The fall of leaves or other plant parts at the onset of winter, as opposed to evergreen.

**Downy:** Covered with soft hair or down.

**Ecosystem:** All of the organisms of a given area and the encompassing physical environment.

**Evergreen:** Remaining green during the winter.

**Fastigate:** With branches erect and close together.

**Feathered whip:** Young tree for out-planting, generally bigger than a whip with well-developed side branches.

**Flood plain:** A river valley bottom, generally in the lower reaches of a river, that is flat and prone to flood when the river bursts its banks.

**Girth:** The measurement around the circumference of something of more or less circular cross-section such as a stem.

**Ground cover:** A group of plants which by their natural habit of low, close growth are suitable for covering the ground surface and discouraging weeds.

**Guying:** Cables (guys) are attached to stabilise a tree.

**Habitat:** The environment of an organism; the place where it is usually found.

**Indigenous** Having origin in a particular locality, district, county or country.

**Invasive:** Of plant and animal species, having the capacity to spread naturally to the exclusion of other species. Many invasive species are aliens that displace native species.

**Landscape:** The environment, as viewed by a human observer, including the built environment.

**Leader:** The main terminal shoot at the apex of a stem or principal branch.

**Native:** Present in a defined region for a certain amount of time without having been brought by humans.

**Natural surveillance:** The discouragement to wrongdoing by the presence of passers-by or the ability of people to overlook a site.

**Naturalised:** Having been introduced, and allowed to colonise.

**Natural regeneration:** Growth from seed which was naturally dispersed. The natural regeneration of trees in a woodland is an alternative to planting.

**Nut:** Non-splitting, one-seeded, hard or bony fruit.

**Ornamental:** Serving to adorn, decorative, pleasantly striking.

**Pit planting:** Planting in a prepared pit.

## Glossary

**Pleached:** A style of growing trees in a line, derived from the French 'plechier' (to braid), where branches of the young tree are trained along a bamboo framework to create an artificial shape - trellis can extend to the ground to maximise coverage and screening.

**Pollard:** To cut off all the branches of a tree, leaving only the trunk.

**Public realm:** Any publicly owned streets, pathways, right of ways, parks, publicly accessible open spaces and any public and civic building and facilities.

**Riparian:** Relating to the banks of a stream or river, important habitats (which generally support diverse species) and important in the control of soil erosion and flood control.

**Root Ball:** Refers to the root system of a container or balled-in-burlap nursery sack.

**Root Collar:** The junction between the root of a plant and its stem, often indicated by the trunk flare.

**Sessile:** Attached without a stalk.

**Scrub:** A vegetation type dominated by shrubs and saplings, whose abundance varies from scattered to closed-canopy, usually less than 5m tall but sometimes with scattered trees.

**Shelterbelt:** A linear planting of trees, the line typically perpendicular to the prevailing wind, whose main purpose is to provide shelter.

**Soil pH:** The pH of the soil water. The pH of most mineral soils is influenced by parent material, from chalk and limestone which are alkaline to hard rocks like granite.

**Stake:** A slender piece of wood pointed at one end, driven into the ground and used to support an individual tree (tree stake).

**Standard (nursery stock):** A tree of girth/height 60/2500mm.

**Topsoil:** The uppermost layer of soil, approximately equivalent to the 'A' soil horizon.

**Townscape:** The general appearance of a built-up area, for example a street a town.

**Transplant:** The smallest specification of bare-rooted nursery stock, minimum height about 25cm, and so-called because it is transplanted in the tree nursery. Transplants may also be outplanted.

**Urban fringe:** The transitional area between urban areas and the countryside.

**Variegated:** An ornamental variant of a tree or shrub in which the leaf is not uniformly green in colour, having a margin, spots or streaks which may be a paler green, yellow, pink or creamy white.

**Veteran tree:** Has features associated with advanced age (for its species), having the connotation of a 'battle-scarred survivor'. As such a veteran tree has features which increase its value as habitat for wildlife (dead wood, cavities etc.) irrespective of its chronological age.

**Waterside plant:** A plant suitable for growing in the edge of water and tolerant of periodic flooding.

**Weed:** A plant growing where it is not intended to be.

**Wetland:** Broadly, any tract of land that is permanently, seasonally or periodically waterlogged or inundated for some or all of the year.

**Whip:** Young tree for out-planting consisting of a centre leader with few or no side branches, perhaps 1.0m tall.