the ABC of trees, hedgerows and development

Teagasc
Agriculture and Food Development Authority
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An Chomhairle Oidhreachta
The Heritage Council

Crann
...giving trees a voice

a CRANN publication

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All proceeds from this booklet will go to support the work of CRANN.

I am delighted to have the opportunity to introduce this booklet as the need to protect our existing trees and hedgerows has never been greater. This is a timely publication given the current boom in building development and it should be read and acted on by all involved in planning and in the construction industry.

Trees in Ireland are under pressure, especially where they are most needed. In urban and semi-urban areas, trees and hedgerows are disappearing at an alarming rate due to incessant development.

Sustainable development is what we all would like to see occurring throughout Ireland but sadly too many fine trees are still being removed even though they could have easily been retained and would greatly enhance new areas of housing.

New (industrial) estates are appearing on the fringes of our towns and cities at an astonishing rate. It is essential that we include trees and hedgerows as part of these developments as trees create a healthier working environment and help to blend the outlines of buildings into the countryside.

I am reminded of Bill Vaughan's famous quote: "Suburbia is where the developer bulldozes out the trees, then names the streets after them." This book will aid planners, developers, potential homeowners and community development groups to appreciate the value and importance of trees and hedgerows, and integrate them into new developments.

I very much welcome the lead role that Crann plays in highlighting the importance of trees and hedgerows in developments.

Duncan Stewart

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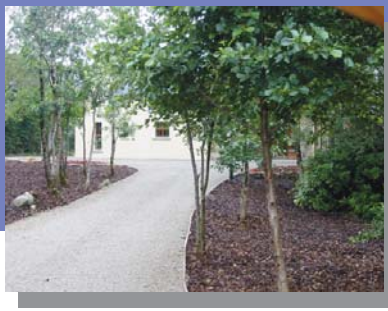

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Chapter 1

WHY?

Aims of this guide

To show that trees and hedgerows help integrate new and existing developments into the landscape, and benefit the environment.

To provide information on how to protect existing trees during construction work; and how to plant new trees and hedgerows within developments.

Value of trees and hedgerows in our lives

Trees and hedgerows improve the scenic appearance of the landscape

Forests of oak, elm, ash, Scots pine, hazel, yew, alder, rowan and birch once blanketed the island of Ireland. This dense woodland cover was interrupted only by lakes, mountain peaks and in the midlands, fens or raised bogs. Today, however, broadleaved woodlands are usually small and often in poor condition (for example overgrazed). Woodlands dominated by native species of trees and shrubs are particularly scarce.

A section of hedgerow with dog rose, privet and bramble

Woodlands, hedgerows and individual trees provide a haven for wildlife in the largely agricultural Irish landscape. The biodiversity value of broadleaved woodlands is often high due to the large number of plants and animals that like to live in such habitats.

Hedgerows also have considerable conservation interest as they provide a home for many plants and animals normally found in woodlands or woodland edges, as well as acting as ecological networks linking important wildlife habitats across the countryside.

Woodlands, hedgerows and individual trees have a high aesthetic and amenity value in rural, suburban or urban areas. Urban areas in Ireland generally have far fewer trees than many other European cities such as Oslo in Norway.

Planners, architects, developers and potential home owners increasingly recognise that trees are often worth more than the land they occupy and that they define the character of a site. Trees can increase property values by anything from 5-20%.

Trees and hedgerows help integrate developments into the landscape by softening their appearance and retaining some wildlife interest. They should therefore be used to best advantage when developing a site. The efforts required to retain existing trees and plant new trees successfully are far outweighed by the enormous aesthetic, environmental, amenity and financial benefits they bring.

Trees and hedgerows should be considered as an asset to be protected on a site

Trees and hedgerows can link developments to the landscape


1a.


1b.


2.


3.


4.


5.


6.


7.

Trees

Trees make a unique contribution to the character, attractiveness and value of a site.

1. Enhance the aesthetic, amenity and wildlife value of urban and rural developments.

2. Add character to townscapes.

3. Promote a sense of maturity in new developments and add to their market value.

4. Soften the appearance of built structures by adding contrasting textures, colour and structure.

5. Screen unattractive views and noise; provide privacy.

6. Improve air quality in urban areas by filtering dust and air pollutants, and releasing oxygen.

7. Provide shade and shelter, reducing heating costs by sheltering buildings.


1.


2.


3.


4.


5.


6.


7.

Hedgerows

Hedgerows can form living boundaries that soften the impact of new developments.

1. Help to form local and regional landscape character.

2. Provide food and shelter for a wide variety of insects, birds and other animals and suitable habitats for many plants.

3. Form wildlife corridors and ecological networks across the landscape.

4. Provide shelter and screening for housing and road users, and absorb road noise.

5. Improve the scenic appearance of the landscape.

6. Form excellent boundaries for single and clustered housing.

7. Are part of our historical and cultural heritage.

Why trees and hedgerows are disappearing from our landscape

Above: The Irish countryside is coming under increasing pressure from housing development.

Right: Despite the fact that trees can greatly improve the appearance of housing or other developments, potentially increasing their market value, they are often cleared 'out of the way' for ease of construction.

Despite an increasing awareness of nature conservation issues, and improvements in planning legislation, the destruction- both intentional and unintentional- of trees and hedgerows continues everyday on development sites across Ireland. The rapid pace of development in recent years and urbanisation of many rural areas is putting enormous pressure on the Irish countryside.

Planners regularly stipulate in the planning conditions that trees and hedgerows are retained within developments. Many good quality trees and hedgerows, however, are still lost on a regular basis due to inadequate protection during the development of the site. The damage to trees is often not immediately evident and in many cases irreparable damage is only apparent after a period of time.

Even where efforts are made to retain trees they are often damaged during the construction process due to lack of protection.

This attractive line of beech is under serious threat as the roots were severed to make way for the construction of a stone wall; to add insult to injury the stones are being stored on top of the tree roots potentially causing further damage.

Conditions to retain trees and hedgerows are still disregarded by some due to the widespread attitude that exotic, often inappropriate ornamental trees are “better” than native or naturally-occurring existing trees. The desire to maximise the potential building land often leads to concerns that retaining trees and hedgerows will require too much space and effort. With good planning and site design, however, retention and adequate protection of existing trees and hedgerows can often be achieved without compromising, for example, the required residential unit densities and associated infrastructure.

People are often unaware of the laws concerning trees or hedgerows, and many landowners do not know of their responsibilities in relation to trees. As a consequence, trees are sometimes destroyed without felling licences and hedgerows are cut or removed during the bird nesting season when disturbance of hedgerows is prohibited (for more information on the legislation see page 13).

Hedgerows, in particular, are being ripped out at an alarming rate in Ireland to make way for one-off housing and other developments leading to a massive loss of wildlife habitats. Hedges are usually replaced by structures with little or no wildlife value such as block-built stone walls or inappropriate single-species hedging plants (green concrete!). In many cases, it is not necessary to remove the entire hedgerow along the

It is often forgotten that trees are living structures and not just wood

road frontage of a site to meet the requirements for visibility ("sight-lines"). Sadly, little consideration is given to the potential of hedgerows to form natural site boundaries with high aesthetic and wildlife value. To make matters worse, hedgerows regularly fall victim to poor management (see Crann, Teagasc, Heritage Council and Networks for Nature websites and publications for more information about hedgerows and appropriate hedgerow management).

Hedgerows along roads are disappearing fast to make way for housing.

Hedges are often replaced by structures with no wildlife value.

It is often forgotten that ties around trees need to be removed once the tree is well established to avoid strangling the trees.

New tree planting efforts within developments often fail. In many cases they are poorly designed, using inappropriate species, incorrectly sited and planted in very poor or compacted soil. The trees are often neglected following planting; ties around staked trees are not removed and as a result trees are strangled.

Attitudes to hedging are changing and the use of leylandii, for example, is being discouraged by some local authorities.

Trees, hedgerows and the law

This section is intended as an overview of the general legal issues associated with trees and hedgerows but does not provide a full statement of the law (contact a solicitor or the relevant local authority for more information).

Responsibilities of landowners/ tree ownership

Legally, trees are considered the property of the owner of the land on which they are growing, and generally the landowner is responsible for their safety and maintenance.

Under Section 70 of the Roads Act 1993, local authorities may require tree owners to trim or remove a tree, shrub or hedge if they are considered to obstruct or interfere with the safe use and/or maintenance of a public road. Under this Act, hedge cutting for safety reasons is allowed all year round i.e. outside the time period permitted by the Wildlife Act 1976 as amended by the Wildlife (Amendment) Act 2000 (normally prohibited between March 1st and August 31st).

Role of local government

Development Plans produced by local authorities must include objectives for nature conservation (Planning and Development Act 2000). Policies in the Development Plan are applied through planning control. Planning permission can be refused if a proposed development would result in the destruction of trees which are considered to have amenity value. In some cases planning permission is granted subject to certain conditions, which may require the retention of specified trees, the planting of new trees or the landscaping of a site. Failure of the developer to comply with conditions attached to a planning permission can lead to prosecution. Contact your local authority for further information.

Tree Preservation Order (TPO)

If a local authority considers that any tree, group of trees or woodland should be protected in the interests of amenity, they can make a TPO prohibiting the destruction, cutting down or lopping and topping of the trees, except with the consent of the planning authority. Such consent may be subject to certain conditions. In effect this simply brings trees under planning control so that the permission of the planning authority is needed before any trees are lopped, topped or felled. Under the new planning act, it is no longer possible to appeal a TPO to An Bord Pleannala (Planning and Development Act 2000). TPOs are not widely used in Ireland with the notable exception of County Wicklow.

Felling licences

Many trees are afforded some protection under the Forestry Act 1946. Under this Act, it is illegal to uproot or cut down any tree over 10 years of age without completing a Felling Notice and submitting it to the local Garda Síochana Station not less than 21 days or more than 2 years before the commencement of the tree felling. A Prohibition Order is normally served following which the trees are inspected by the Forest Service and a Limited Felling Licence may be granted, which can include environmental and replanting conditions. There are several exceptions where felling licences are not required.

Some of the exceptions where a felling licence is not required:

- Any hazel, apple, plum, damson, pear or cherry tree grown for the value of its fruit.
- A tree standing within 40m (100ft) of a building.
- Trees in a borough or urban district.
- A tree certified by the local authority as dangerous to road traffic on account of age or condition or being felled under Section 70 of the Roads Act 1993.
- A tree uprooted or cut down by direction of the Minister responsible because it is a danger or obstruction to telegraph or telephone wires.
- A tree cut down by a local authority in connection with road construction etc.

Wildlife legislation in Ireland

The most important mechanism for conserving wildlife and important natural habitats in Ireland is through nature conservation designation. The main conservation designations to be considered prior to applying for planning permission are Natural Heritage Areas (NHA) and Special Areas of Conservation (SAC). The other important designations, Nature Reserves and National Parks, cover mostly State-owned land and therefore are not of relevance here.

NHAs form the basis of the system protecting Irish natural habitats. All other nature designations overlap with NHAs. The Wildlife (Amendment) Act 2000 provides a mechanism for the statutory protection of NHAs (although at the time of writing this guide, most woodland NHAs do not yet have full statutory protection and are therefore referred to as proposed NHAs).

Special Areas of Conservation (SAC) are sites of particularly high conservation value and considered to be important in a European, as well as an Irish context. The legal basis for selecting and designating SACs is the European Union Habitats Directive, transposed into Irish Law under the European Union (Natural Habitats) Regulations 1997.

Planning authorities are obliged to consider the impact of development on designated sites on the wildlife and habitats present, and are supposed to consult with the National Parks and Wildlife Service in this regard.

There are a range of activities (Notifiable Actions) that cannot be carried out in NHAs or SACs without permission from the Minister (or National Parks and Wildlife Service), which include the following: grazing by livestock, reseeding, planting of trees or any other species, felling of trees, killing ivy, introduction (or re-introduction) into the wild of plants or animals of species not currently found in the area.

Hedgerows have little or no protection outside of the bird nesting season unless they occur within areas designated for conservation.

The Wildlife (Amendment) Act 2000 strengthens the provisions prohibiting the cutting of hedgerows during the critical bird-nesting period (1st March to 31st August) and includes a requirement that hedgerows may only be cut during that period by public bodies, including local authorities, for reasons of public health or safety.

The Flora (Protection) Order, 1999 lists rare plant species protected under the Wildlife Act, 1976. It is illegal to disturb or remove these species. This protection applies wherever the plants are found and is not confined to sites designated for nature conservation. Sites can be afforded protection from development on the basis of the presence of listed species.

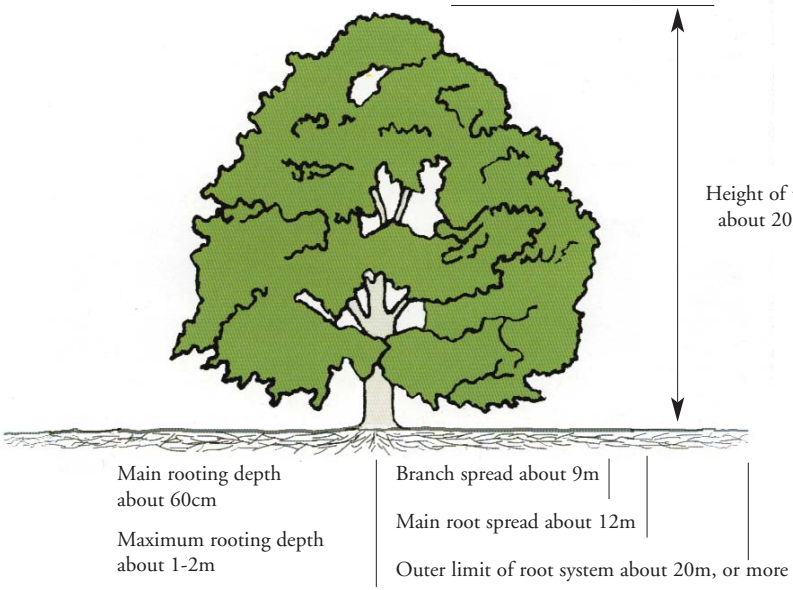
Buckthorn, an uncommon shrub generally found around lake shores.

Legislation can only be effective if there are sufficient resources for monitoring and enforcement.

Chapter 2

WHAT

trees like and don't like



An indication of root spread of a typical tree on typical soil.

Trees are living things that can be easily damaged or destroyed. Each part of a tree has an important role to play. The leaves use the sun's energy to make food. The trunk and branches form the main structure of the tree and bear the leaves. Huge amounts of water travel up the trunk and branches through vein-like structures in the bark from the roots to the leaves, and food produced in the leaves travels down to the rest of the plant. While the below-ground roots are not visible, they are extremely important. Roots are responsible for the uptake of water, air and nutrients from the soil, as well as anchorage. Most tree roots generally occur within half a metre of the soil surface. They normally extend beyond the spread of the crown of the tree and frequently to a distance well in excess of the tree height.

How trees can be damaged

The most vulnerable part of a tree is its root system. Contrary to popular belief, the root system of a mature tree spreads out and does not normally go down. Root systems are shallow and extensive and rely upon the topsoil for oxygen, water and nutrients. Great care must be taken, therefore, not to damage the roots, as well as the trunk and branches of trees during construction works.

The root system is frequently ignored because it is not visible. Most of the roots usually occur within the top 600mm (2ft) of the soil. The effects of damage to roots may only become evident several years later and may lead to the death of a tree.

DO NOT…

✘ Drive over the roots of trees/shrubs compacting the soil

✘ Raise or lower the soil level around trees

✘ Cover the rooting area with tarmac or other impervious materials

✘ Change the water table

✘ Mechanically remove topsoil or excavate in the rooting area

✘ Deposit toxic materials around trees

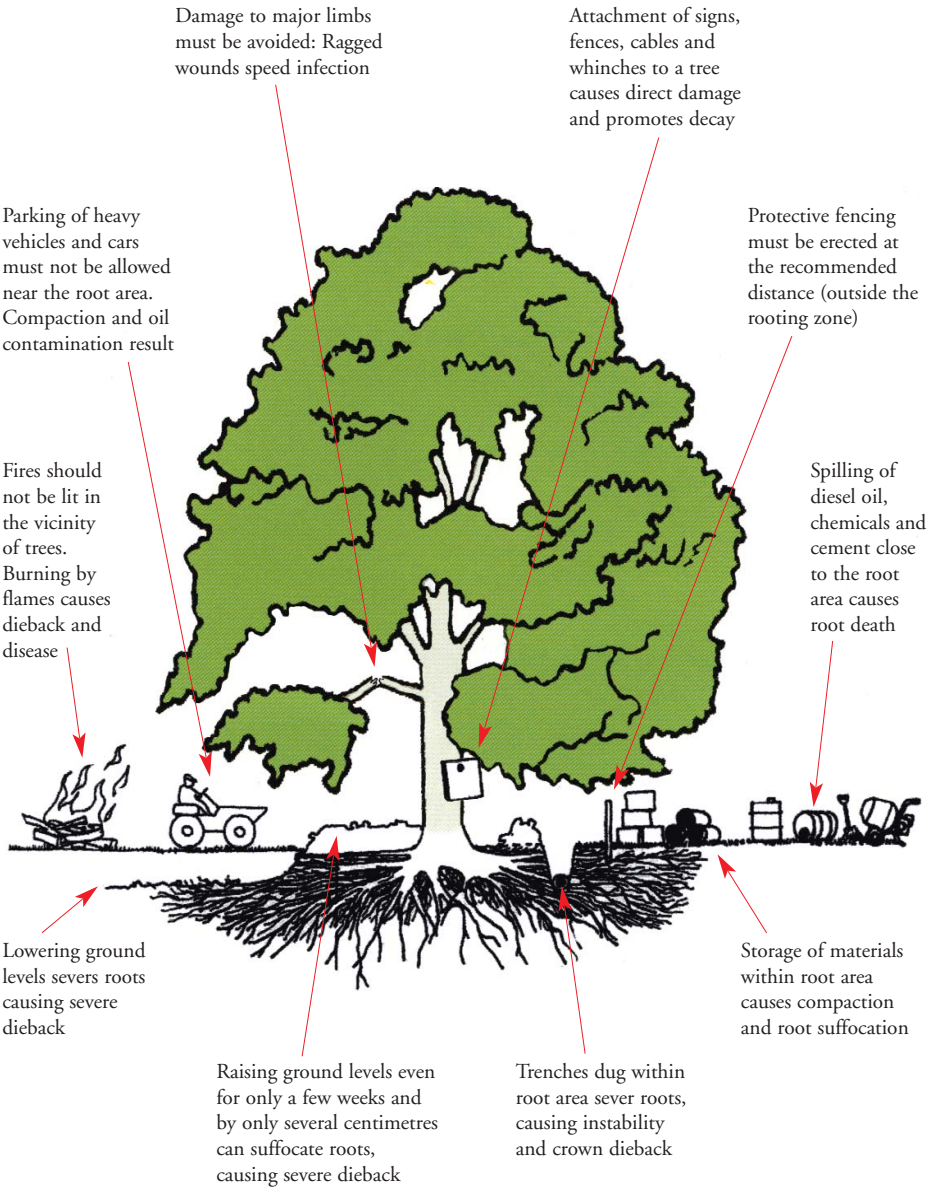
✘ Damage the bark or branches of trees

✘ Light fires close to trees

✘ Store materials under trees

DO…

✓ Protect trees prior to construction work by erecting a protective barrier (see page x)



Common causes of damage to trees that can lead to tree death.
Modified version of figure from The Arboricultural Association, UK

Examples of bad practice damaging trees

A tree may take a century to reach maturity but it can be damaged or felled in only a few minutes

Chapter 3

HOW

to protect and integrate trees and hedgerows in developments

To maintain the integrity of a landscape it is important that the existing trees, shrubs and hedgerows are considered in the design process, are given adequate protection during construction, and are monitored after the development is complete.

It is easy to draw up plans identifying 'trees to be retained' or indicating the location of new plantings but it is much more difficult to ensure that healthy trees and intact hedgerows remain and that new trees are established successfully where they will greatly enhance new developments.

Much of the information that follows is based on the British Standard, BS 5837 (currently being revised) and the An Foras Forbatha publication 'A Manual on Urban Trees' which should be consulted (among others listed in the Appendix 2) for further information.

To successfully integrate trees in development sites requires knowledge, good planning and co-operation between professionals.

Site and tree surveys

Site surveys record all the site features including trees.

Careful planning is essential to achieve a functional, sympathetic and attractive development, no matter how small. The information collected in the site and tree surveys can help decide how to fit a new development into the landscape by retaining existing trees and hedgerows together with new planting. Planning applications without a tree survey report (or with an inadequate tree survey report), where appropriate, are commonly rejected with a request for additional information.

Decisions in relation to trees and hedgerows should be made by an appropriately qualified tree expert (e.g. arboriculturist). For large developments or on sites with trees of particular interest, the arboriculturist should be contracted for the full duration of the development process.

Site survey

The site survey documents all the relevant existing features on the land, including trees, shrubs and hedgerows, as well as recording site topography. Advice should be sought from a professionally qualified tree expert on sites where trees and hedgerows are involved.

Trees should be numbered for identification on site and the accurate location of each tree recorded should be noted on a site map.

The recording of topography and soil levels is important to ensure that changes in soil level do not occur around trees.

The main habitats present should also be noted and the presence of plants indicative of wooded habitats, such as bluebells, should be recorded.

Trees growing on adjacent land should also be noted in order to assess the landscape context.

Tree survey

The aim of the tree survey is to identify the trees or shrubs noted in the site survey and assess their condition. The tree survey should be conducted by a suitably qualified and independent tree expert.
Background information on the site is collected. This may include details of Tree Preservation Orders, conservation designations on the site or adjacent sites, and local authority policies on the retention of trees and hedgerows or new tree planting.

Hazel leaves and fruit.

Tree surveys usually collate the following relevant details in a report and, where appropriate, on the site map:

- Tree information: species, height, trunk diameter (at 1.3m above ground level), the accurate canopy/crown spread, condition, health and vigour of each tree including details of defects and necessary or proposed remedial works, a rough indication of the age of each tree and/or life expectancy.
- Accurate location of trees.
- Current and potential future amenity and/or wildlife value of the trees.
- Photographic and/or video record.
- The composition, structure and location of hedgerows.
- Written site specific recommendations for tree protection measures to be taken (requires expert advice).
- Tree protection areas (see page 24) should be marked on the site map.

Groups of trees should receive a high priority for retention. Stands of trees are best treated as a group rather than individuals.

The tree survey report and map indicates the trees to be retained, and those which are proposed for removal. If trees are to be considered for removal, the reasons why should be submitted in writing to the planning authority.

Oak Leaves.

A tree survey by a professional arboriculturist or tree expert should be carried out for all developments which may impact on trees. For larger developments and/or on sites with trees of particular interest, an arboriculturist should be contracted for the duration of the development to advise on all tree matters

Site layout design

Good design utilises existing trees and hedges to best advantage, thus helping new developments fit into the landscape. Retaining trees and hedgerows helps reduce landscaping costs at a later stage, and can result in a more attractive and mature development that will attract higher property values.

Site access and services

The provision of permanent and temporary site access is an important part of designing the site layout. It is often not necessary to remove the road frontage hedgerow in order to provide site access and meet visibility requirements ('sight lines'). Some hedgerow or trees, however, may need to be removed and/or pruned. Where it is essential to remove hedgerow or trees at the site entrance, they should be replanted at an appropriate location back from the road to preserve hedgerow continuity which is important for wildlife.

Road frontage hedgerow should be retained where possible; it can mitigate against the visual impact of ribbon development.

The design of the site layout must take no-go areas such as the tree protection areas (see page x for more details), which encompass the tree rooting zone, into account.

The location of driveways or roads on the site should avoid the tree rooting zone where possible. Technical solutions can be found in some situations but expert advice must be sought.

Similarly, routing of service trenches should avoid the tree rooting zones to ensure that roots are not severed. Where it impossible to avoid routing services through the tree rooting zone, the NJUG (National Joint Utilities Group) guidelines should be followed (expert advice should also be sought).

Routing of services should avoid tree rooting zones

Care is also needed in the routing of over-ground services so that trees are not damaged.

Keep the landscape assets, such as trees and hedges, present on the site: use it don't loose it!

Designing with existing trees in mind

The existing trees and hedgerows have the potential to greatly enhance the site design by linking the development to the landscape and adding maturity. They must, however, be adequately protected to ensure they are not damaged during the development of the site.

Work with what you have already: keeping existing trees and hedgerows is far cheaper than starting from scratch when landscaping.

The tree protection area must be established around each tree or group of trees on the site in order to avoid construction damage and these areas should be indicated on the map of site layout. Operations that cannot take place in these zones include: excavations, ground level changes, passage of machinery, storage of materials and equipment etc.

Tree planting helps blend this new house into the landscape by adding colour, contrast, shelter and screening.

Adequate space for future growth of existing trees and hedgerows should be considered at the design stage.

Designing with new trees in mind

Tree planting is an integral part of any development scheme and should be purposefully designed to complement the new development and to help it blend into the surrounding landscape. It is important to be clear from the outset what the purpose of the proposed planting is (e.g. landscaped garden, wildlife area, screening etc.) so that the appropriate choice of species and planting locations can be made.

Ongoing advice should be sought where required (for example from a landscape architect or ecologist). For further considerations on new planting (see page 26).

Design with trees in mind, both during construction and beyond.

Construction

Protective fencing was erected around these spectacular trees prior to any development of the site. Photo: Ben Rose.

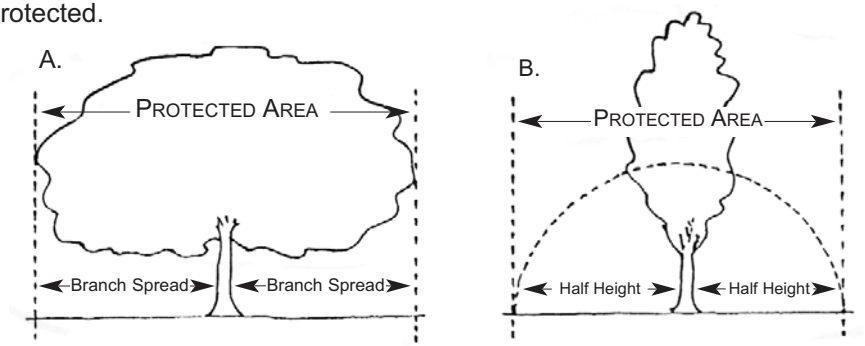
Tree protection

If trees are to be retained successfully, they must be adequately protected.

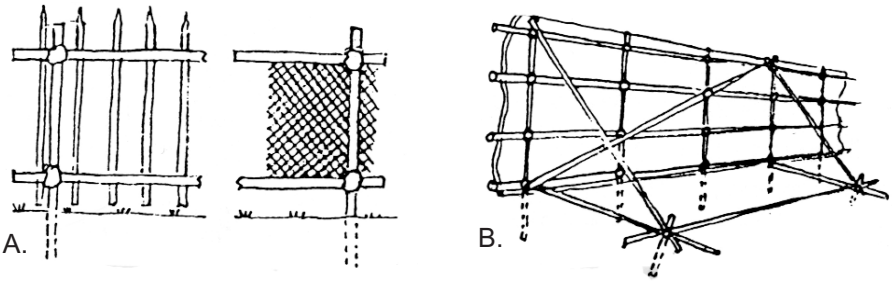
A tree protection area should be established around each tree or group of trees by erecting an immovable barrier prior to any development of the site.

The protected area should be large enough to provide sufficient protection for the tree rooting zone. Usually at least the area encompassing the crown of the tree should be included and an area much wider that the crown for tall trees with short branches, for example Scot's pine.

This area must be clearly signed and should not be moved for the duration of the development. Robust fencing at least 1.2m high should be used for the barrier.



Guide to identifying the minimum area around trees that should be protected (either A. or B. whichever is greater). These tree protection areas should be clearly signed and surrounded by a protective barrier.



Examples of appropriate fencing for tree protection areas. A. for normal trees/conditions or B. for special trees/conditions.

The protected area should be considered sacrosanct and as such not removed or breached during the construction process without prior consultation and agreement with a tree expert.

Protective fencing is the single most basic necessity for successful tree retention.

Inadequate fencing being breached by a digger!

Tree work

Following the tree survey, there should be a list of all the trees and hedgerows on the site including those requiring removal or tree surgery, and a map indicating their accurate location on the site.

The tree protection area should be established around trees to be retained prior to any work on the site (as described above).

Only qualified personnel (e.g. a tree surgeon and/or arboriculturist) should undertake any work on trees that involves felling or surgery.

This tree is vulnerable to serious damage to the roots, trunk and crown due to lack of protection.

The guidelines contained in the 'British Standard Recommendations for Tree Work' should be followed (BS 3998: 1989).

Those working on the trees should be given clear written instructions as to what needs to be done and what the desired results are.

Trees should not be felled until a felling licence has been issued (where required).

Trees for felling should be marked on site. Before felling, it should be confirmed that the marked trees correspond with those listed in the tree survey report to be felled. Care must be taken to avoid damaging trees and hedgerows that are to be retained during tree work.

Tree stumps should be removed where possible provided their removal

does not cause damage to trees to be retained.

The trees to be retained should not be used as anchorages in any operations.

Soil is prone to compaction during wet weather and therefore any activities requiring the use of heavy machinery should be avoided during those periods.

Tree felling or surgery should only be carried out by suitably qualified and insured personnel

New tree planting

Careful planning and site investigation is essential for successful and appropriate tree planting

The choice of trees to be planted must be matched carefully to the soil type, available space and location. The right trees should be planted in the right place!

Ireland has about 20 native tree species and various native shrubs but there are other appropriate species to choose from that will grow in Irish conditions.

In locations with a high nature conservation value (e.g. adjacent to designated conservation areas), special consideration should be given to the choice of species and seed provenance used, as well as species mix and overall design of the planting (preferably with the advice of an ecologist or from the National Parks and Wildlife Service).

For more detailed information, including a guide to tree selection, see the Crann publication 'the ABC of planting trees' or the Crann website.

Tree planting ideas

When planting trees, aim for continuity of tree cover by incorporating a mix of existing trees and new planting. Consider planting single trees and clumps of trees along avenues and boundaries, in gardens, and in open spaces. Plant a mixture of sizes. Planting larger trees create an instant effect but young trees and whips transplant better and will develop faster. Keep in mind the likely future development of roots when planting trees to ensure that as the trees and roots grow, walls, drains, paths and drives etc. are not damaged.

Planting of trees in urban areas improves quality of life.

Soil

Dig a small test hole using a spade to check your soil. The uppermost (and nutrient-rich) darker layer will hopefully be over 30 cm in depth. Soil can vary from heavy clay (sticky soil that if rolled between your fingers will form a little sausage) to very sandy causing water to drain quickly. Soil can also be peaty: very black and spongy. Knowledge of the soil type will aid selection of the right trees to plant.

Digging a test hole will tell you a lot about the soil you have.

Check if water will drain reasonably quickly away from the test hole by pouring in a bucket of water. Additional drainage may be required if it takes 24 hours for the water to drain away.

A wet area can also be ecologically rich and rather than drying out the area extensively, you could consider growing trees that thrive in those conditions such as willow and alder.

What and how to plant?

Trees and shrubs are available as bare-rooted trees, cell grown (plug) trees or potted trees.

Plug trees.

Bare-rooted broadleaf trees (the cheapest option) should be planted in the dormant season from the end of November to March. Conifers can still be planted in April.

Plug trees are young saplings grown in a cell of compost and can be planted at most times of the year although it is best to plant them towards the end of the dormant season.

Potted or container trees are generally larger and considerably more expensive. They can be planted year-round although late spring is best. Avoid buying any trees with pot-bound roots.

Trees should be planted as soon as possible after buying. Avoid exposing the roots to air, even for a few minutes.

Good soil preparation and good planting technique are essential for successful growth.

More detailed information on how to go about tree planting is provided in the Crann publication ‘the ABC of planting trees’.

Post-planting maintenance

Trees need all the help they can get to establish in their new surroundings. Grass and weeds compete very aggressively with young trees for light, water and nutrients, and therefore need to be controlled.

Grass and weeds around this tree need to be trampled urgently.

Both organic and sheet mulches can give very satisfactory results if applied correctly (again see the Crann guide to the 'the ABC of planting trees'). Regular trampling of grass and weeds around young trees can also be satisfactory.

Livestock (including rabbits and hares) can cause havoc and therefore suitable fencing may be required.

Planting a native hedgerow

If an existing hedgerow has to be removed it should be replaced with a similar hedge with the same shrubs or small trees (in the new location allowing for road frontage visibility or site access).

Hawthorn hedgerow in flower.

Before planting a hedgerow it is important to consider the road frontage section carefully in terms of location, access points and traffic safety

Hawthorn (whitethorn) is our most common hedgerow shrub. It is easy to grow and quickly forms a bushy hedge if maintained properly.
Hawthorn can be used as the dominant species with some of the following: blackthorn, hazel, holly, dog rose, crab apple and/or guelder rose.
Before selecting species for a new native hedge, hedgerows in the surrounding landscape should be examined to see what the dominant shrubs are and, where possible, these

species should be used. Using a range of species creates a more attractive hedge that is of greater value to wildlife.

Planting bare-root specimens is the most economical way of planting a hedge.

The plants should be planted in a double row of staggered plants using approximately six hawthorn plants/metre (for a predominantly hawthorn hedge).

After planting, cut the hawthorn stems back to 10cm.

It is important to control weeds for the first few years after planting and, if necessary, fence off to protect from livestock.

Biodegradable mulches (straw, grass, bark, rushes, etc.) work well to keep down weeds.

For further information on hedgerow planting, see Crann, Teagasc or Networks for Nature publications and websites.

Spindle: the leaves turn a lovely orangey-pink in the autumn and the berries with their bright pink coats are spectacular.

Appropriate hedging species:
Hawthorn, blackthorn, holly, hazel, spindle, dog rose, gorse, guelder rose, field maple, common beech, hornbeam.

Hedging species to be avoided in rural areas:
Elder, ash, sycamore, snowberry, box, yew, rhododendron, cypress, leylandii, cherry laurel, etc. (because of aggressive growth patterns or poisonous plant parts).

Appropriate hedgerow trees (every 20-30m):
Oak(s), rowan, field maple, whitebeam, ash (sometimes), crab apple, wild cherry, bird cherry, wild pear; use alder or birch on damper sites.

Finished surfaces around trees

Once the main construction works are completed, it may be necessary to develop footpaths, car parking spaces, driveways etc. within the site and around the existing trees.

Hard surfaces are not appropriate within the protected area and soft surface finishes are preferred around trees.

Specialist arboricultural advice must be sought when a hard surface finish within the tree rooting zone or protected area is unavoidable, for example, on driveways or roads. Specialist techniques are available for such work such as the ‘no dig’

Left: A covering of tarmac over most of the rooting area of this large tree may prevent adequate supplies of water reaching the roots.

Below: Tree roots need water and air to survive and as a result soft surface finishes around trees are preferable.

excavation method and the use of geotextile membranes or cellular confinement systems.

Soft surface finishes such as soil, gravel and bark chippings are preferred around trees as they tend to lead to less construction damage, and they allow adequate penetration of both water and air into the soil.

The main considerations to protect the health of the tree when finishing surfaces:

- Prevent physical damage to the roots during construction of the surface.

- Ensure water and air can reach the roots.
- Allow for future growth of the root system.

- Avoid water-logging.

Monitoring

Monitoring by planning authorities is essential to ensure that planning conditions in relation to trees and hedgerows are followed.

In large developments or developments with important trees, regular monitoring is required by a tree expert to ensure adequate protection measures for the trees are in place during the development of the site.

Post - Construction

Remedial work on trees

All retained trees should be re-examined by a tree expert following completion of the construction work to ensure they haven't been damaged.

Damage to this tree is obvious but the results of damage to roots may not be immediately visible.

Before action is taken to remedy any damage, the condition of the whole tree should be assessed and reasons for any symptoms should be determined. Only then should remedial action be formulated in writing and submitted to the local authority.

Where soils have been compacted, there are technical solutions that can be used in some cases, as a last resort. Expert advice from an arboriculturist is essential.

New tree aftercare

Maintenance of newly planted trees is

Trees roots are sensitive to soil compaction and therefore vehicles should not be allowed to drive in the rooting zone.

of particular importance during the establishment period, that is, for not less than 2 years following planting.

Weeds must be controlled for the first few years; ties should be loosened or removed as appropriate, broken or dead stems should be replaced.

Newly planted trees should be monitored by the local authority to ensure that the conditions of the planning application in relation to new plantings are fulfilled. Some local authorities require developers to deposit a monetary bond which is not released until all landscaping has been completed or established and maintained for a certain period of time.

Chapter 4

The Way Forward

Left: Planting a hedgerow on the boundary of this estate would help fit it into the landscape.

Below: Urban areas are greatly enhanced by the presence of trees.

Trees and hedgerows help integrate developments, big or small, into the landscape. The effort required to retain existing trees and hedgerows is far outweighed by the enormous aesthetic, amenity, financial and environmental benefits it brings. It is much cheaper to keep what you have, and use it to best advantage, than to have to start from scratch. Retaining trees and hedgerows also protects the local environment and maintains the wildlife value of the area.

A knowledge of how trees are damaged (remember the roots!) and how to protect them (by erecting a suitable barrier during construction) is

Prevention (retaining trees) is better and cheaper than cure (planting trees)

the key to successful retention of trees and hedgerows. Successful tree and hedgerow planting can easily be achieved by following the guidelines described above.

Further advice is widely available from a variety of sources such as CRANN, Teagasc, the Arboricultural Association, the Forest Service, your local Heritage Officer, the National Parks and Wildlife Service, Networks for Nature, local authorities and the Tree Council (see Appendix 1 for more information on the relevant organisations and contact details).

CRANN has some specific suggestions to improve the quality of developments and the fate of trees and hedgerows in the built environment:

• Legislation that protects trees, either directly or indirectly, is adequate in some instances but resources are not available to the relevant bodies for effective monitoring and enforcement. More resources must be made available to local authorities, the Forest Service and the National Parks and Wildlife Service to protect trees and hedgerows effectively.

• Many local authorities in Britain have a Tree Officer who is responsible for providing advice on all tree-related aspects of planning applications, preparing TPO's and dealing with applications for works to trees subject to TPO's or within conservation areas. A similar position would be extremely valuable in Irish local authorities where the planners and enforcement officers are already stretched to the limit.

• The provisions for protecting hedgerows within the Wildlife (Amendment) Act 2000 should be strengthened further. Additional legislation to protect hedgerows may be required as they have no protection outside of the bird nesting season. In Britain, it is illegal to remove most hedgerows without permission from the local planning authority (these laws do not apply in Scotland or Northern Ireland).

• Where hedgerows have to be removed along a stretch of road frontage to meet visibility

requirements or for road-widening efforts, they should be replanted with a similar mix of species further back from the road as appropriate and connected to neighbouring existing hedgerows. The increasingly rapid loss of hedgerows on the Irish landscape is an ecological time-bomb that will have major implications for wildlife and the conservation of biodiversity if left unchecked.

• Many trees are unwittingly damaged due to a lack of knowledge of how trees work. People often don't realise that tree roots are particularly sensitive to damage. Education of all sectors involved in development, construction and planning is required to ensure that trees and hedgerows to be retained are not damaged. A code of practice for all those working around trees should be developed in conjunction with all the relevant stakeholders.

• There appears to be a grey area between the Planning Acts and the Forestry Act 1946 that should be resolved. Planning conditions may require the removal of road frontage hedgerow (including trees) to meet visibility/splay requirement but the Forestry Act 1946 prohibits the felling of trees in the absence of a felling licence.

Appendix 1

List of useful organisations and websites

Organisation	Contact Details	Relevant Publications/ Information Available
Crann Crank House, Banagher, Co. Offaly.	Tel: (0509) 51718 info@crann.ie www.crann.ie	Crann have produced a number of relevant leaflets in their Countryside Companion Series; the most recent publication is *the ABC of tree planting.*
Teagasc Teagasc HQ, Oak Park, Carlow.	Tel: (059) 9170200 www.teagasc.ie Teagasc offices are located around the country.	Range of interesting leaflets in the Countryside Management Series including The Value of Hedgerows, and New Farm Hedgerows.
The Heritage Council Rothe House, Kilkenny.	Tel: (056) 7770777 mail@heritage.ie www.heritagecouncil.ie	The Heritage Council have many publications including two booklets: Conserving Hedgerows, and Conserving and Enhancing Wildlife in Towns: A Guide for Local Community Groups.
The Arboricultural Association Ampfield House, Ampfield, Romsey, Hampshire, SO51 9PA	Tel (44) (0) 1794 368717 www.trees.org.uk Irish branch: www.geocities.com/arbassoc	Produced a series of highly informative leaflets about trees including three on the protection of trees on development sites. Many other publications and advice on tree matters available.
The Forest Service Department of Agriculture and Food, Johnstown Castle, Co. Wexford.	www.agriculture.gov.ie	Information on forestry policy and legislation can be obtained.
National Parks and Wildlife Service 7 Ely Place, Dublin 2.	Tel (01) 6472300 LoCall 1850 321 421 www.natureconservation.ie	Information on nature conservation sites, the designation process and legislation available.
Networks for Nature PO Box 9184, Churchtown, Dublin 14.	info@networksfornature.com www.networksfornature.com	Information on website about hedgerow conservation and management
The Tree Council The Park, Cabinteely, Dublin 18.	Tel: (01) 2849211 trees@treecouncil.ie www.treecouncil.ie	Several publications and posters available

Organisation	Contact Details	Relevant Publications/ Information Available
ENFO	www.enfo.ie	Have produced numerous leaflets includings ones on tree planting, hedgerows, and trees and development
An Taisce	www.antaisce.org	An NGO concerned with planning issues and the conservation of our built and natural heritage
Northern Ireland Planning Service	www.planningni.gov.uk	Publications include: Trees and Development booklet, TPO leaflet; also see Planning Policy Statements in relation to trees
The Forest of Belfast 4-10 Linenhall Street, Belfast, BT2 8BP.	Tel: (028) 9027 0350	Publications include several leaflets on trees including advice on tree aftercare

Appendix 2

Further reading

Anonymous 2003.
Trees and Development Guidelines.
Macclesfield Borough Council,
Macclesfield.

British standard:
Trees in relation to construction (BS5837: 1991). Currently being revised and updated (see www.trees.org.uk).

British Standard:
Recommendations for tree work
(BS 3998: 1989).

British Standard: Code of practice for general landscape operations (excluding hard surfaces). (BS 4428:1989).

Hickie, D. 2004. Irish Hedgerows:
Networks for Nature.
Networks for Nature, Dublin.

Maguire, B. 2001.
A Review of Legislation that Impacts on Irish Forestry. COFORD, Dublin.

Meyen, S. 2004.
The ABC of planting trees. Crann.

McCullen, M. and R. Webb 1982.
A Manual on Urban Trees.
An Foras Forbartha, Dublin.

NJUG. 1995.
Guidelines for the planning, installation and maintenance of utility services in proximity to trees. National Joint Utilities Group Publication No. 10. London.

People's Millennium Forests. 2000. Our Trees: A guide to growing Ireland's native trees in celebration of a new Millennium. The People's Millennium Forests Project.

CRANN was formed in 1986 with the aim of “Releafing Ireland”. CRANN is Ireland’s leading voluntary tree organisation dedicated to the promotion and protection of our trees, hedgerows and woodlands. It is a membership-based, non-profit registered charity uniting people with a love for trees.

www.crann.ie

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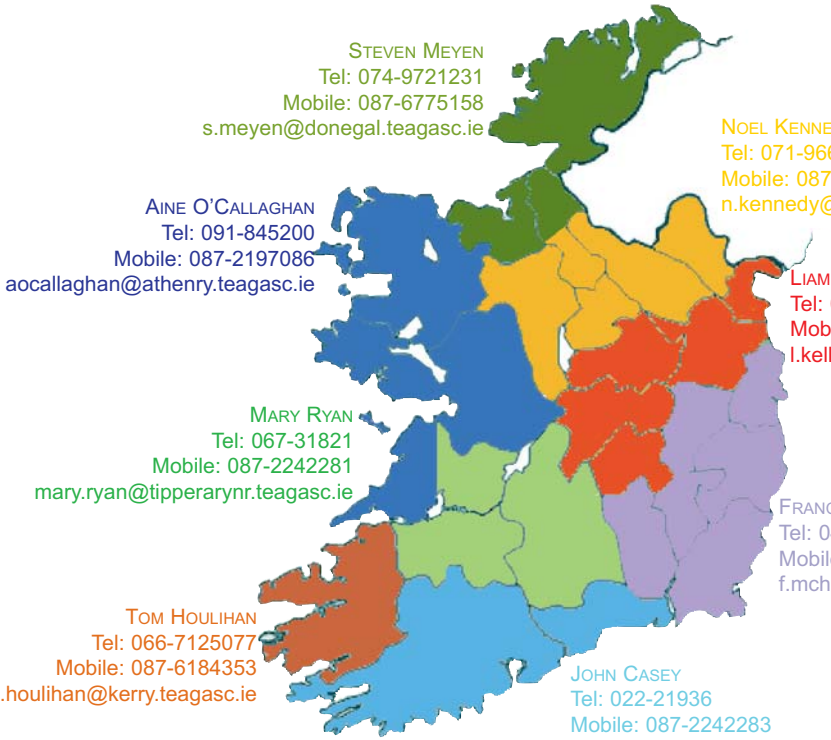
Do you have any questions about trees, hedgerows or woodlands?

Contact your local Teagasc Forestry Adviser:



Steven Meyen
Tel: 074-9721231
Mobile: 087-6775158
s.meyen@donegal.teagasc.ie

Noel Kennedy
Tel: 071-9662189
Mobile: 087-9090504
n.kennedy@roscommon.teagasc.ie

Aine O'Callaghan
Tel: 091-845200
Mobile: 087-2197086
aocallaghan@athenry.teagasc.ie

Liam Kelly
Tel: 044-40721
Mobile: 087-9090495
l.kelly@westmeath.teagasc.ie

Mary Ryan
Tel: 067-31821
Mobile: 087-2242281
mary.ryan@tipperarynr.teagasc.ie

Frances McHugh
Tel: 0402-38171
Mobile: 087-6222111
f.mchugh@wicklow.teagasc.ie

Tom Houlihan
Tel: 066-7125077
Mobile: 087-6184353
t.houlihan@kerry.teagasc.ie

John Casey
Tel: 022-21936
Mobile: 087-2242283
j.casey@corkeast.teagasc.ie

Head of Forestry Development Unit:
Nuala Ni Fhlatharta
Teagasc, Mellows Centre, Athenry, Co. Galway
Tel: 091-845200, Mobile: 087-2242282
nnifhlat@athenry.teagasc.ie

teagasc
Agriculture and Food Development Authority
www.teagasc.ie

Forest Service

NDP
National Development Plan

The Department of Agriculture & Food
An Roinn Talmaiochta agus Bia