Development on Sites with Trees

Trees are valued features of our towns and countryside and make an important contribution to the character of the local environment.

Under the Town and Country Planning Act 1990[1], local planning authorities have power to protect trees and woodlands in the interests of amenity by making tree preservation orders (TPO - see also Guidance Sheet LDG 1.5), and a duty to make adequate provision for the preservation and planting of trees when granting planning permission for development. (See Harrogate District Local Plan Policies HD13 - Trees & Woodland and C5 - Forestry and Woodland)

In Conservation Areas, anyone proposing to cut down, lop or top a tree which is not subject to a TPO is required to give 6 weeks notice to the local planning authority who will then consider making a TPO, taking into account the visual, historic and amenity contribution of the trees to the character and appearance of the area.[2]

Designing with trees in mind

Trees are often seen as a constraint for development, restricting the available area for new buildings. However, development that is sympathetically designed to work with trees can benefit from:

- a mature setting that complements new buildings and integrates them into their context.

Queens Court, Harrogate.

- microclimatic effects such as reduction of adverse wind effects and excessive heat gain, reduction in airborne pollution including dust particles.
- an established sense of place.
- aesthetic experiences including seasonal change, sounds of birdsong or rustling leaves, movement between sunshine and shade.

A good understanding of the amenity value, health and condition of the trees is an essential element in assessing development potential of a site. The local planning authority can advise on the amenity value of the trees. An arboricultural survey from a qualified arboriculturalist will set out the location, spread and condition of existing trees and will recommend any tree surgery works needed to keep the trees in good health or to remove them safely.

Tree surgery works and removal of trees should be carried out by a professional tree surgeon. Local Authority permission is required for works proposed to trees subject to Tree Preservation Orders, and 6 weeks notification is required for works proposed to trees in conservation areas. A felling licence from the Forestry Authority is also required if more than 5 cubic metres of timber is to be felled in any calendar quarter.

A tree may take a century to reach maturity, but it can be damaged or felled in only a few minutes.[3]

Existing Trees with New Developments

The implications of trees for the **design of new development** vary according to the site conditions, the tree species, the habit of the tree on site, and the development proposed. A tree survey of the site may be required. The requirements of a tree survey are outlined at the end of this Design Guide Sheet. Think about:

the stage of the tree:

- Will it spread further or increase in height, will the trunk girth get bigger, or is the tree at its maximum size already?
- The ultimate size quoted in plant books often relates to the largest specimens found growing in good soil and open ground situations: most trees are limited by their situation and never attain ultimate size, altering their form to suit the context.

the habit of the tree:

- Has it adapted a particular form to cope with site conditions, and what will be the effect of altering these conditions?

[1] as amended by the Town and Country Planning (Trees) Regulations 1999 (SI 1999 no. 1892) [2] paragraphs 4.38 - 4.40, PPG15 Planning and the Historic Environment (1994) DoE, DNH [3] BS5837:1991 paragraph 3.1.5

the type of tree:

- Is the root system deep/shallow, spreading/compact or plate-forming?
- Is water demand high/low?
- Is the canopy dense/light, deciduous/evergreen, early/late opening?

the site conditions:

- Is the soil/subsoil clay, rock or sandy? (clay soil shrinks when the water content is reduced but other soils are more stable)
- What are the groundwater conditions? (existing mature trees can remove significant amounts of water from a site.)

the long term health & management of the tree:

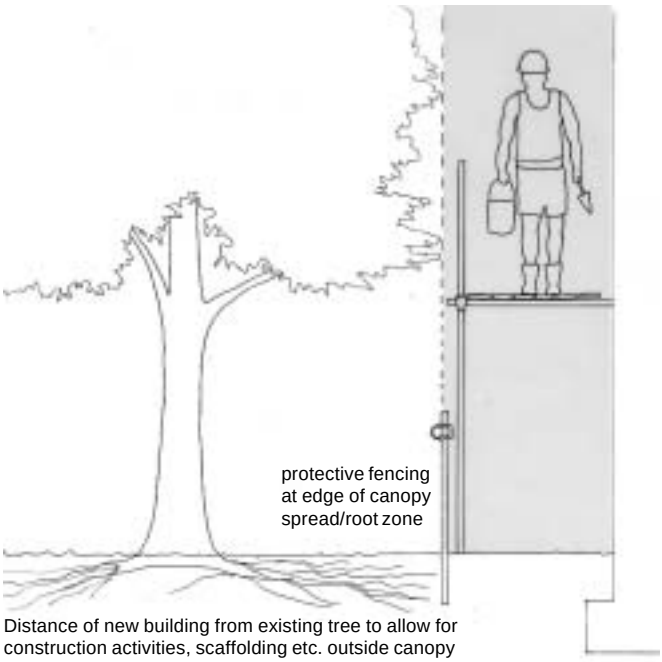
- Can air and water penetrate to the root system?
- Who will be responsible for management of the trees?

the proposed activity & use:

- Are there potential conflicts?
- Is there sufficient unshaded space for residential amenity?
- Are there future planned developments which should be taken into account?

the construction period:

- How will protective fencing for the trees affect phasing and construction methods?
- Where will materials be stored?
- How will large machinery move around the site?
- A construction stage plan to accompany the planning application is very helpful.
- How will scaffolding avoid conflict with the trees?



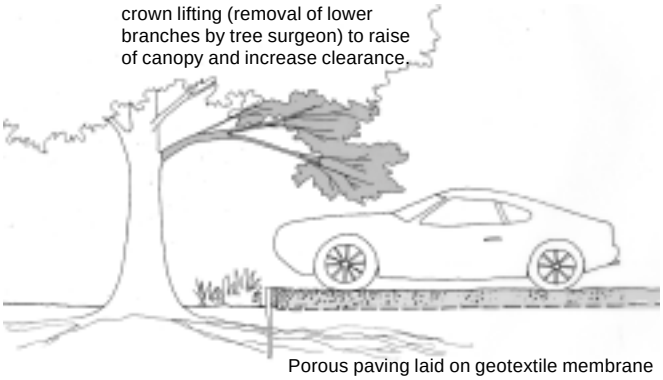
Distance of new building from existing tree to allow for construction activities, scaffolding etc. outside canopy spread/root zone.

Design Solutions

There are design solutions to most issues, for example:

- Crown lifting raises the canopy by removing lower branches, creating higher space beneath the branch spread.
- Crown thinning reduces the amount of branches within the canopy, reducing the amount of shade and improving air circulation
- Porous paving materials (such as gravel, porous asphalt) cater for pedestrian and vehicle movement whilst allowing air and water to penetrate to the roots.
- Cantilever and lintel foundation systems can bridge over root systems and avoid their severance or removal.

crown lifting (removal of lower branches by tree surgeon) to raise of canopy and increase clearance.



Porous paving laid on geotextile membrane above existing ground level (no excavation within canopy spread/root zone).

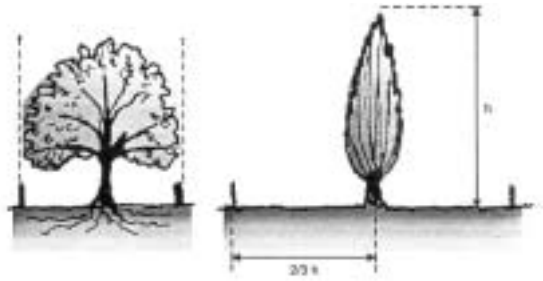
- Appropriate foundations can prevent damage from soil shrinkage.
- Root barriers can prevent roots invading ducts or foundation zones.
- Location and orientation of buildings together with site-specific internal arrangements can make best use of sunshine and shade within the development site.

Plan the construction stage carefully:

select an area for the site compound that will:

- Avoid areas of landscape elements to be protected such as tree canopy spread, shrubberies, future planting areas;
- Minimise disturbance to adjacent residents;
- Allow safe and efficient working;
- Identify construction routes: construction traffic causes compaction which destroys topsoil and kills trees; traffic may also require height clearance so avoid overhead cables and trees.

Prior to site clearance work or construction work: fence off trees, shrub areas and hedgerows to be retained; preferably by a sturdy fence of timber post and rail or scaffolding poles to discourage accidental damage. The fencing should run outside the 'drip-line' of the canopy except for fastigiate (columnar) trees where the fencing should be at a distance of two-thirds the height of the tree.



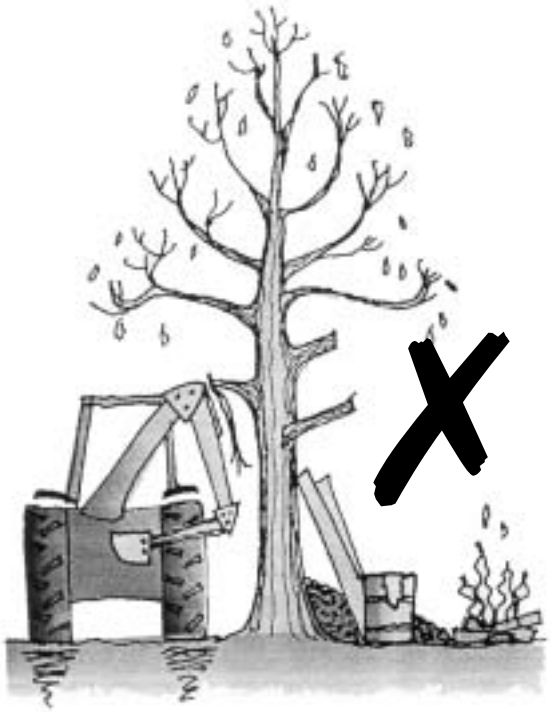
As part of the planning application, the local planning authority will require the applicant to declare if there are trees on/adjacent to the application site. If there are trees, the following information is required:

- An arboricultural method statement and survey to BS 5837:1991 assessing the trees on/adjacent to the site, describing proposed tree surgery works and their phasing, and an assessment of the ability of the trees to withstand the proposed changes in site conditions.
- Plan showing the proposed development including utility services and changes in ground level, trees to be retained and any to be removed, canopy spread, location of protective fencing during construction, extent of scaffolding, compounds and construction access.
- Details on type and phasing of protective fencing including provision for tree protection during demolition and site clearance works.
- Where the site contains woodland or substantial tree belts, a long term management plan including identification of responsibility. In residential developments, woodland or tree belts should not become part of individual gardens but should be managed through a management company.

Tree Protection

To avoid mistakes on site, clearly identify trees to be removed by brightly coloured spray paint. Make sure the contractor has a copy of the plan and schedule identifying trees to be retained and those to be felled. Where work near trees is unavoidable, take care! Damage to trees is caused by:

- Indiscriminate, unskilled lopping or felling: use a professional tree surgeon.
- Change of ground level within the root spread: excavations may expose, sever or kill roots; raising of levels suffocates roots and rots bark.
- Heavy traffic over roots: this compacts the soil, suffocating and killing roots.
- Storage of chemicals near trees: weedkillers, concrete mixer washing, paints and fuel oils are poison to trees.
- Bonfires within 3 metres of branch spread: keep bonfires more than 3 metres away and downwind to avoid scorching.
- Stacking/storing material under trees: causes compaction and can physically damage trunk and branches.



Minimise trauma to the tree by:

- Hand-digging excavations.
- Bridging over significant areas of roots with a beam or lintel.
- Treating damaged roots by cutting back cleanly and treating whit a fungicidal sealant.
- Backfilling round exposed roots by hand with small size material such as sharp sand before placing foundation materials such as hardcore.

Tree Survey

Where there are trees on development sites a tree survey is required. This survey should show the location of all the trees on the site, their species, appearance and overall health and any work proposed in a schdule of tree works. Remember that over-mature trees have the highest wildlife value and retain them wherever possible.

The following is a specification showing the requirements of a detailed tree survey which should be carried out by a qualified arboriculturalist. This can be used as a basis for specifying tree survey work but the level of detail shown here may not be required for every site.

Tree Survey Specification

A plan showing the location of the trees to be surveyed is required.

The following shall be included in the survey:

a) A brief introduction which describes the location and extent of the survey, states the number of trees/scrub groups surveyed and gives the relevant drawing number(s).

b) Schedule of trees and related drawing(s) with references. Tag trees individually on site. All trees shown on the drawing(s) exceeding 75mm diameter at 1.25 metres (breast height) from ground level are to be surveyed. Tree numbers shall be plotted on drawing(s) supplied by the EA.

c) Dimensions of trees to be provided as follows:
   - overall height
   - crown diameter
   - bole diameter
   - height of first branches.

d) Condition and quality of trees to be defined by class.

e) Age of trees by class.

f) Note and comment on any of the above aspects which may be relevant to EA considerations and interests e.g. future management requirements.

g) Scrub groups and hedgerows to be numbered and species composition described.

The above information shall be supplied as set out below:

No:	Refers to metal or plastic tag fixed to tree and plotted on drawing.
Name:	Botanical name in full followed by common name for first entry thereafter abbreviated botanical name eg. Sambucus nigra (Elder) becomes Sam nig.
Height:	Estimated in metres
Crown Diameter:	Estimated in metres
Bole Diameter:	Diameter of trunk at 1.25 metres (breast height) from ground level, in centimetres
Height to first branch:	Estimate in metres the under-canopy clearance for machinery.
Condition:	1. No defects 2. Minor defects 3. Moderate defects 4. Very defective
Amenity Quality:	1. Excellent 2. Good 3. Fair 4. Poor
Age:	YT Young Tree SM Semi mature M Mature OM Over mature
Descriptors:	Multi (more than 3 stems) Coppice, Pollard etc.

The report cover should include the location and date of the survey and clearly indicate the authorship of the report. Pages must be numbered and Headers/Footers used to identify the Survey location and date on every page.

Impact Assessment

Assess the effect the proposed works would have on the existing trees and classify the impact in accordance with the following:

1. No adverse effect
2. Minor effect
3. Moderate effect, some remedial work will be required
4. Severe effect that is likely to necessitate removal

The nature of the effects and specific causes are to be described and proposals made for their mitigation. Suggestions shall include adaptation of the design proposals in order to reduce the effect of the works.

If specialist tree work is likely to be required the report should indicate the general nature of this work e.g. hand digging, vast pruning, canopy thinning. A schedule of tree work shall also be produced as part of this brief.