

Trees and subsidence Risk assessment & management

The main cause of subsidence movement in the UK is the influence of tree roots in clay soil. Over 60% of all subsidence claims are triggered by trees.

Tree species vary considerably in their ability to cause clay soil shrinkage. Some species are not good at rooting to depth on clay soils while species like Oak, Willow and Poplar are able to maintain viable roots to a depth of several metres.

In most soils, however, there tends to be a mixture of soil types and so many species will be able to grow roots to sufficient depth to influence buildings; especially where the foundations are not deep enough.

Other influencing factors may include:

- Age of the tree
- Relative health of the tree
- Previous tree management or maintenance
- Prolonged periods of drought

Each tree has a zone of influence - the area from which a tree absorbs moisture. The potential impact on a property depends on whether a property sits within the zone of influence. The extent of the zone depends upon the type of tree and the location of other trees.

Species	Normal Mature Height (m)	Safe Distance (m)
Apple/Pear	12	10
Ash	23	21
Beech	20	15
Cypress	25	20
Cherry	17	11
Elm	25	30
Hawthorn	10	12
Holly	14	6
Horse Chestnut	20	23
Laurel	8	6
Magnolia	9	5
Oak	24	30
Pine	29	8
Plum	12	11
Poplar	28	35
Sycamore	24	17
Spruce	18	7
Willow	24	40
Yew	12	5

Tree management

Where risk factors appear to be significant and trees are close to the property, reasonable vegetation management may be appropriate. However, the pruning of trees to reduce water absorption is not considered to be a particularly effective remedy and it may be necessary to consider removal of trees where other risk factors are high.

The removal of trees requires consideration, as trees in the urban environment make a very significant contribution to people's quality of life and research has found that many people who live close to trees value the benefits that they bring.

Apart from their aesthetic qualities, trees provide several practical benefits in built-up areas. They improve air quality, reduce wind speed and reduce the urban heat island effect, caused by the build-up of temperatures in hot summers.

It is the intention that tree cover in urban areas should be increased and in many cases, this has been written into government or local policy. In London, it is the intention that tree cover should be increased from about 20% to 30% of land cover.

Tree management strategies should be considered to mitigate any risk caused by future growth. It is advisable to consult a local tree surgeon. Here are some key considerations:

- If the trees are too close and were planted after the property was built, they may be relocated if of a suitable size. If it is impractical to move the vegetation, ensure it is regularly managed to control the moisture uptake. This can be achieved by crown reduction and crown thinning.
- If the trees are too close and were planted before the property was built – manage them by crown reduction and crown thinning. They should not be removed without specialist advice as this could cause uplift of the ground (i.e. heave); which can result in structural damage.

There are two standard pruning techniques used to reduce the crown size of mature trees. The first, crown reduction, reduces crown size but allows the natural shape of the tree to be preserved. This involves an overall reduction of both height and spread by removing the outer portions of all major branches.

The second technique, crown thinning, reduces the number of side lateral branches coming off the major branches; not affecting the original volume of the crown but reducing its density. For both techniques, the industry standard is to aim to reduce the canopy leaf area by up to 30%, depending upon the species.

Tree preservation orders and conservation areas

Before undertaking any tree works it is important to investigate any legal constraints. If the trees are protected by a Tree Preservation Order, or your property is located within a Conservation Area, they can only be pruned or felled with permission from the Local Planning Authority.

What if the trees are not on my property?

If the tree is in a neighbour's garden (owned or rented), a sensible and non-confrontational approach is advised. Ask your neighbour to seek and take appropriate action. Only if your neighbour is uncooperative should you then write to them by recorded delivery and keep a copy of the letter.

If the tree is owned by the Local Authority or a business, the first stage will be to write to the relevant department or the Company Secretary of the business. The letter should remind the legal owners of their duty of care to ensure that the vegetation is maintained.

Local Authorities are usually considered to have the technical knowledge of the impact of tree roots on buildings. Immediate action by the Local Authority can be problematic as trees have played a large part in the street scene for many years and provide a range of benefits. To this end, local authorities are reluctant to take them down as the removal of trees is contentious and residents regularly challenge their removal.

They require a considered response with an amount of information to be provided. The Joint Mitigation Protocol (JMP) has been established, with insurers working together with Council representatives to produce a guide and structure as to the process of tree migration activities. The JMP is readily available and can be found on the London Tree Officers Association website: www.ltoa.org.uk.