Tree Inspection Policy
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Runnymede BOROUGH COUNCIL

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1. Introduction

The Council has a statutory duty of care under the Health and Safety at Work Act 1974 and the Occupiers Liability Act 1999 to ensure that members of the public, and staff, are not to be put at risk because of any failure by the Council to take reasonable steps to ensure their safety.

2. Hazard and risk

Trees provide a wide variety of benefits to society and a balance needs to be reached between benefits and risk. (See Appendix '1')

Like all living organisms trees are subject to decline in old age, and to physical damage, or invasion by pathogens. A hazard is something that could cause harm i.e. in trees, the failure of parts of, or, the whole tree. Risk is the level of likelihood that a hazardous tree will cause actual harm. Risk is related to the location of the tree, the intensity of use of the location, and the proximity of the tree, people, buildings, and other structure (i.e. targets).

3. Zoning

The law recognises that there are limited financial, and staff resources available, and consequently all trees cannot be inspected at once, or every year. To use resources effectively it is necessary to prioritise inspections to concentrate on old/large potentially hazardous trees in high risk areas.

Zoning is a practice where landowners and managers define areas of land according to levels of use and the potential hazard of the trees. The following three zones are to be used - High Risk (colour coded red), Moderate Risk (colour coded yellow) and Low Risk (colour coded green).

The size, and bulk, of a tree will generally be closely related to the potential damage it could cause if parts, or all, of it failed. For the purposes of this policy trees have been separated into the three size classes of small, medium, or large. For simplicity, and ease of use, the diameter of the trees trunk at breast height (ie 1.5 mtrs above ground level) has been used. This is the most reliable indication of the comparative sizes of the whole tree.

Small sized tree - Diameter at breast height of under 250mm
Medium sized tree - Diameter at breast height of between 250 - 500mm
Large sized tree - Diameter at breast height of larger than 500mm

Risk zone category	**Areas and size of tree covered**
High	1. All trees within falling distance of a railway line. 2. All medium, or large, sized trees within falling distance of an 'A' Class road. 3. All medium, or large, sized trees close to an area with children's play equipment. 4. All medium, or large, sized trees close to a high use public car parking area. *1 5. All medium, or large, sized trees close to school buildings or play areas. 6. All medium, or large, sized trees close to overhead power lines. 7. All medium, or large, sized trees adjacent to a heavily used footpath (i.e. those with an average of greater than 36 pedestrians per hour). 8. All large trees within falling distance of a designated sports pitch (e.g. cricket, football etc) used more than two occasions per week). 9. All large sized trees adjacent to any permanent structures in high use parks, or public areas. *1 10. Any other trees considered appropriate for inclusion in this class.

Risk zone category	Areas and size of tree covered
Moderate	1. All medium, or large, sized trees within falling distance of a main road not in the High Risk Zone category. i.e. 'B' Class roads. 2. All medium, or large, sized trees close to a moderate use public car parking area. *2 3. All medium, or large, sized trees close to the bus stops in high use thoroughfares. *1 4. All large sized trees adjacent to any permanent structures in moderated use parks, or public areas. 5. All medium, or large, sized trees adjacent to any designated fishing platforms. 6. All large sized trees adjacent to the gardens of private dwellings. 7. Any other trees considered appropriate for inclusion in this class.

Risk zone category	Areas and size of tree covered
Low	1. All trees adjacent to low use roads and tracks. i.e. 'C' Class (and other) roads. 2. All trees within woodlands, other than large trees close to heavily used paths through woodlands. *3 3. All trees within low use parks or public open spaces. 4. All trees alongside rural footpaths.

*1 A high use area is where trees are closely approached by many people every day.
*2 A moderate use area is where trees are occasionally closely approached by people but not by many people every day.
*3 Heavily used paths are those with an average of greater than 36 pedestrians per hour.

4. Frequency of inspections

Trees in the high risk zones will be inspected every 12 to 18 months. This will facilitate one inspection in the summer months being followed by the next inspection in the winter months and vice-versa.

- trees in the moderate risk zones will be inspected every 3 to 4 years
- trees in the low risk zones will receive no, or only informal inspections. It may be necessary to respond to reports of any problems in these areas.

5. Scope of inspection

All inspections will be carried out from ground level with the aid of a hammer for resonance testing and binoculars where necessary.

The following visual signs of potential hazard will be looked for:

Roots

- lifting of rootplate indicated by changes in soil level, or cracking of the soil around the roots
- included bark between buttress roots
- fungal fruiting bodies growing on, or from the roots
- physical damage of roots
- cavities, or decayed areas on the buttress roots
- lack of root flare
- loose dead bark on the buttress roots
- ooze, or exudate from roots

Trunk

- the presence of fungal fruiting bodies on the trunk
- wounds on the trunk
- splits within the trunk
- cankers on trunk
- areas of dead bark on the trunk
- epicormic growths on the trunk
- abnormal swellings on the trunk
- swelling of the trunk indicating possible internal decay
- cavities within the trunk
- ivy on trunk
- evidence of lightning strikes on the trunk
- sheer cracks along the plane of the stem from co-dominant stems
- signs of physical damage to the trunk from vehicular collisions or vandalism

Main branches

- signs of included bark between tight crouched unions between limbs and signs of incipient cracks
- presence of fungal fruiting bodies on limbs
- presence of longitudinal cracks on large limbs
- cracks on large limbs
- hanging limbs
- presence of dead, or broken limbs

- cavities within large limbs
- sudden changes in direction of limbs.
- presence of extensive growth of Ivy on limbs
- unbalanced asymmetrical crown shape

Canopy

- density of leaf cover
- check leaf size, colour, and condition
- dieback of the outer canopy
- dead smaller branches within the canopy
- gaps within the canopy indicating weakened or broken limbs
- broken branches within the canopy.

General points

- no invasive inspections of the tree, soil sampling or aerials inspections will be carried out unless initial visual inspections indicate the need for such. If the need for further investigation is required a climbing inspection, or use of specialist equipment, can be requested from a Arboricultural Consultant
- if an individual tree is found to be in a dangerous condition it will be made safe, or felled, as quickly as possible (usually within 24 h ours of the inspection)
- there are 3 types of inspection that can be carried out:

  Informal observations – people with good local knowledge of the site and its trees. Typically this will not be a tree specialist but a member of staff, or the public, who understands the way the site is used (areas most and least frequented). They should also understand the danger should a tree be found that is falling apart or uprooting. These reports should be acted upon and reported to a member of the Parks/Leisure Management Team, or if necessary the Tree Officer.

  Formal inspections - do not require specific qualifications but do require general tree knowledge, and the ability to recognize normal, and abnormal appearance and growth of trees for the locality. They need to be able to assess falling distances from the tree to high use areas, and to recognize obvious visual signs of ill health or significant structural problems, and when to request a detailed inspection. Staff carrying out these inspections would ideally have carried out the one day Basic Tree Inspection Course, or have career experience of working with trees. This would normally be officers within the Council's Parks team with site inspection duties or supervisory roles.

  Detailed inspections - Should be carried out by a competent person, experienced in the field of investigation that is to be carried out. They should have attained the Certificate of Advanced Tree Inspection and/or qualified to the level of Diploma/Technical Certificate in Arboriculture.

  Inter-departmental liaision - All reports carried out for client Departments/Sections of RBC by the Amenities Officer will be reported to them within 2 weeks of inspection, other than a dangerous tree which will be reported within 2 hours.

  Leisure trees - Following any inspections of trees within Leisure Land by the Amenities Officer he/ she will issue works to contractors to usually be completed within 4 to 8 weeks. Dangerous trees will be made safe, or felled, as quickly as possible. (Usually with 24 hours of the inspection).

  Records - A full list of the sites to be inspected will be prepared indicating the appropriate zones within each site.

  A copy of the inspection sheet used to record the findings of detailed inspections is attached. See Appendix 4.

The benefits of trees

Trees are fundamental to our well-being and quality of life. Their size, number and age make them one of the most visible and continuous aspects of our lives. Their beauty and majesty have inspired artists, poets and writers. Trees may be significant to use personally, marking historical occasions, commemorating a birth, family event or celebration of a life.

Trees are integral to natural ecosystems, providing a wide range of related benefits to humankind (ecosystems services), including mitigating the harmful effects of climate change. Trees are an important part of the economy, providing timber and non-timber products. They also bring communities together, playing a part in their cultural and spiritual values and aesthetic appreciation.

Their importance is recognised in international, national and local government policies, and many non-governmental organisations have policies dedicated to conserving trees and their biodiversity.

Tree in cities and towns

Around 85% of the UK population lives in urban areas, where the pressures of modern living are often most evident. Trees are an integral component of greenspaces in our towns and cities.

The Environment and Social Justice Review argues that the quality of greenspace acts as a powerful indicator of whether an area is a good place to live, while the Cabinet Office Strategy Unit advocates urban greenspace and green infrastructure as a primary element affecting quality of life.

"Trees bring people together. They contribute to a sense of place and play an important role in fostering social cohesion and reducing negative social behaviours"

- During 1999-2000, publicly-maintained street trees in Davis, California produced nearly $1.7 million in tangible benefits for residents - a net return of $3.78 for every $1 spent on their management.

Trees in the countryside

Trees are important in the countryside, for residents and for the many visitors. This importance is likely to grow as populations increase, towns and cities expand and the climate changes. Despite the centuries-long importance of trees, woods and forests to the UK economy, and a drive for afforestation during the last century, the UK remains one of the least forested countries in Europe.

Trees and woodland can help manage water quality and reduce the risk of flooding when planted at a river catchment scale. River basin management plans produced for England and Wales recognise the role of woodland planting in reducing the risk of surface water runoff, affecting the quality of rivers and streams.

- Woodland can reduce floods from hill slopes and in headwater catchments, and may have a marked impact on floods flows at a local level, particularly in the UK which has less than 12% woodland cover.

- Each year the UK loses 2.2 million tonnes of topsoil to erosion. Trees and woodland can help reduce soil erosion, protecting a vital resource and reducing the risks of surface water runoff. Runoff from farmland, brownfield and contaminated sites can lead to rivers and streams becoming clogged up and contaminated.

- Soil infiltration rates were 60 times higher under young hedgegrows and shelter belts than heavily grazed pastures in Mid Wales, with infiltration rates improving within two years of tree planting.

- Shade from trees next to water courses reduces the temperature and improves oxygen levels in the water, benefitting fish and other wildlife.

- Trees can play a vital role in adapting farming systems to climate change, including through providing shelter and shade for livestock and crops, and in managing surface water runoff and pollution of water courses.

- Trees provide shelter for crops, reducing wind and rain damage and water loss and encouraging crop pollination. They may reduce the incidence and severity of some crops pests and diseases. Windbreaks of trees help increase crop yields, particularly during dry summers.

- Mature trees in the countryside provide a range of ecosystem services, including critical habitat for wildlife, particularly when growing scattered.

Ninety two percent of survey respondents in the Park Life Report said they visit parks and greenspaces, and 97% believe that parks and greespaces help to create a good place to live.

The Royal Commission on Environmental Pollution recognised the benefits that the natural environment provides in urban areas.

"Our towns and cities have always relied on the natural environment to provide water, regulate climate and accept waste. Now, the natural environment offers opportunities for increasing flexibility and resilience in the face of new environmental and social challenges including climate change".

By the 2080s, average annual temperatures in the UK may have increased by between 1^0C and 5^0C, with higher summer temperatures and milder winters. Increased winter rainfall and drier summers, particularly in the south and east, will be accompanied by more frequent storms, heat waves and other severe weather events.

The impact of climate change will be felt acutely in built-up areas where the 'urban heat island effect' will further increase temperatures. Concrete, brick, tarmac and other hard surfaces will also impede water infiltration, increasing the risk of surface water flooding. These effects are likely to increase significantly unless measures are taken to adapt to climate change.

The UK carbon transition plan highlights the role of greenspace and trees in providing shade and shelter, which adapt buildings to climate change and reduce their energy budgets.

- Each year 33 million people make 2.5 billion visits to urban greenspaces. Access to urban greenspace can increase longevity as well as engendering positive feeling about the local community. Well designed tree planting can create a 'calmer and more social atmosphere' that enhances community security, and minimises concealment for anti-social activities.

- For every 1^0C increase in temperatures above 21^0C, heat-related deaths increase by 3%. An increase of 10% in urban green cover in high-density residential areas in Greater Manchester would decrease the expected maximum surface temperature in the

2080s by around 2.5^{0}C (and up to 4^{0}C). Conversely, removing 10% green cover would increase the expected maximum surface temperature by 7^{0}C.

- Trees strategically placed around buildings can reduce energy consumption producing 10-15% savings in air conditioning costs and 4-22% in savings from winter heating costs.

- Trees intercept precipitation and in urban areas can reduce the pressure on the drainage system and lower the risk of surface water flooding. Research by the University of Manchester has shown that increasing tree cover in urban areas by 10% reduces surface water run-off by almost 6% through agricultural landscapes, supporting connected networks for colonising species.

- Based on savings to the engineering costs of flood control, the value of existing woodlands for flood alleviation is around £1,200 per hectare in a river catchment in south-east Northumberland.

Health benefits

Trees may offer important health benefits; yet removing trees seldom takes account of the risks to human health and well-being.

- Each year 24,000 people in the UK die prematurely from the effects of air pollution. Leaves and branches take fine, harmful particulates out of the air, reducing the risk of respiratory illness and saving health care costs. Doubling the tree canopy cover in the West Midlands alone could prevent around 140 premature deaths per year.

- Trees and woodland can decrease sulphur dioxide, nitrogen dioxide and ozone concentrations in the air, benefiting human health. Conversely the loss of mature trees can have significant human and economic costs.

- Trees not only store carbon, but their removal of carbon gases, principally carbon monoxide, has considerable cardiovascular health benefits.

- Trees reduce stress and improve mental heath, and can reduce hospital recovery time. The quality of natural features and trees in the city helps reduce mental fatigue and stress, improves the concentration of those suffering from attention deficit disorder and benefits child development.

- A barrier of trees over 15m wide may reduce noise levels by 5-10 decibels and lessens nuisance by screening the perception of noise.

- Prison inmates in cells with a green outlook place fewer demands on health services.

Location of trees

Trees within falling distance of roads, railways etc

Amongst the relatively few accidents from falling trees, the greatest risk to public safety is normally from trees within falling distance of where people move at speed in vehicles. However, even trees in well-used areas pose an overall level of risk to public safety that is extremely low. On average over the past decade, four people a year have died from roadside trees falling onto vehicles or from collisions with fallen trees, mainly because:

- risk of harm from falling trees is related to the force of impact.
- the likelihood and extent of harm is influenced by speed at which vehicles may impact.
- risks are higher when vehicles are travelling at speed in high winds.

It is both the high usage of roads and the speed at which people travel along them that makes this the most likely way that people will be killed by trees.

Not all trees alongside all roads pose a significant risk

Not all roads are busy roads and not all roadside trees are large enough to kill or injure if they fall. It is nonetheless reasonable that certain roadside trees, particularly those alongside busy public roads, should be inspected. This also applies to trees alongside railways, where the train speed and number of people who could be affected in one incident increase the level of risk.

Rural footpaths do not normally need inspecting

Severe weather normally deters people from using rural footpaths. Pedestrians walk at low speeds and are likely to be reasonably aware of their surroundings as they do so, seeing and/or hearing signs of actual tree failure and therefore being more likely to get out of the way of a falling tree. Therefore, it is reasonable that trees along most footpaths have low associated risks and do not require special tree inspection.

Trees in other well-used areas need inspecting

It is reasonable to inspect trees in falling distance of other well-used areas, such as car parks, gardens open to the public or urban public spaces. Zoning according to the levels of public use helps to decide which areas pose higher risks than others.

Understanding the risks from trees

Real risk and public concerns

Trees grow in many different situations, with a greater or lesser level of interaction with people. Where it is appropriate to manage trees, this management seeks to enhance their significance (in terms of value, access and other benefits) and to reduce the undesirable impacts they can have (such as damage from roots, subsidence, and risk to human safety). Considerable concern and uncertainty about managing trees for safety has arisen in the last few years. This has largely been stimulated by a handful of court cases and other responses to incidents where a falling tree or branch has killed or injured a member of the public. Addressing these concerns requires information about the 'real' risk involved and the level of public concern.

Risk tolerability: a philosophy of risks, values, benefits and costs

Very simply, a hazard is something that can cause harm; here, the hazard is a tree. Risk is characterised by reference to potential events and consequences, or a combination of the two. It is often expressed as a combination of an event's consequences and the likelihood of it occurring. In this case, the consequences are death or serious injury and the important part of the assessment is the likelihood of either occurring. Levels of risk are judged against a baseline, which is usually the current overall maintenance regime of that hazard (the tree). When assessing a tree, owners and managers need to judge whether the management measures they adopt will fulfil society's reasonable expectations. 'Reasonableness' is a key legal concept when considering the risks of trees to the public and tree owners' obligations.

Significance of the identified risks

The individual risk of death attributable to trees is **ten times less** than the threshold of one death in a million per year which the HSE says people regard as insignificant or trivial in their daily lives. Because trees present a very low risk to people, owners and managers should be able to make planning and management decisions within this context and avoid unnecessary intervention, survey and cost.

The expectation of society and the courts reflects the fact that trees grow in many different types of location. By carefully considering how trees fit into a particular local context, owners and managers can better identify those areas and situations requiring some action. It will also help them ensure that any management is proportionate to a fair balance between the real risk and benefits.

A comparison of risks of deaths

Table 1 is reproduced from HSE's Reducing risk, protecting people with the risk of falling and fallen trees added for comparative purposes.

Table 1 Annual risk of death for various causes over entire population

Cause of death	Annual risk	Basis of risk and source
Cancer	1 in 387	England and Wales 1999
Injury and poisoning	1 in 3,137	UK 1999
All types of accidents and other external causes	1 in 4,064	UK 1999

Cause of death	Annual risk	Basis of risk and source
All forms of road accident	1 in 16,800	UK 1999
Lung cancer from radon in dwellings	1 in 29,000	England 1996
Gas incident (fire, explosion or carbon monoxide poisoning)	1 in 1,510,000	GB 1994/95-1998/99
From trees	1 in 10,000,000 or less if high wind incidents are excluded	This study
From lightning	1 in 18,700,000	England Wales 1995-99

The public perception of risk

One reason why trees fall into the 'low' level of risk category is because over past decades we have taken good care of our trees (where this is needed). It is the natural behaviour of trees to shed branches and ultimately fall down. This is going on all the time and people have simply learnt how to live beside them. However, it is well known in risk management that it is not simply the actual risk of some harm that troubles people and generates responses, but how they perceive that risk.

HSE refers to the role of perception in its Sector Information Minute (SIM) as follows:

"The risk, per tree, of causing fatality is of the order of one in 150 million for all trees in Britain or one in 10 million for those trees in, or adjacent to areas of public use. However the low level of overall risk may not be perceived in this way by public, particularly following an incident".

Accidents from falling trees - newsworthiness

It can be predicted that if a falling tree kills a member of the public, there will be a passing story in the local, and occasionally national, media. This is because unusual events, such as tree-related deaths, are more likely to be newsworthy than commonplace accidents, even though the latter pose a far greater risk and cause much more harm overall.

This newsworthiness does not imply a greater statutory duty to control the hazard, or that it would be in the public interest to attempt to do so. There might be a stronger case for this were trees likely to kill large numbers of people in one accident or were they to arouse societal concerns, but there is no evidence that this is the case. It is hard to imagine and in most circumstances also exceedingly unlikely, that a tree could cause ten or more fatalities, or somehow be involved in some major disaster.

Likewise, trees are not known to invoke societal concerns as a result of the risk of harm that they pose. In fact, there is far more evidence of a true public societal concern being sparked when trees are felled, the concern being a public desire for the retention and preservation of trees.

There are many records of local outrage following the removal or threat of removal of trees, sometimes on alleged health and safety grounds. This sense of outrage could increase as more people realise that trees of significant stature are being lost, especially in urban areas, and that these same trees have many benefits. As the House of Lords Select Committee on Economics has put it.

"*the most important thing government can do is to ensure that its own policy decisions are soundly based on available evidence and not unduly influenced by transitory or exaggerated opinions, whether formed by the media or vested interests".*

Evaluation of what is reasonable

The Health and Safety Executive believes that: "public safety aspects can be addressed as part of the approach to managing tree health and tree owners should be encouraged to consider public safety as part of their overall approach to tree management". This is a useful position to establish, even though it is almost certainly not necessary to agree that 'tree health' is the only relevant criterion in managing trees. This statement suggests that HSE accept that human safety is to be considered within a wider management context rather than in isolation. The courts have frequently referred to this trade-off in civil cases.

The first stage of an evaluation, therefore, should focus on the context and role of the trees themselves. In the context of the low level of risk noted already, the HSE SIM further states that:

"Given the large number of trees in public spaces across the country, control measures that involve inspecting and recording every tree would appear to be grossly disproportionate to the risk".

What is inherent in this evaluation is a sense of proportion. This can only be achieved by considering the trees' place in a wider context and people's relationship to that context.

Managing the risk from trees

Exposure to an element of risk is an unavoidable consequence of all environments where trees are part of leisure activities. In such circumstances, tree management aims to offer people the chance to encounter acceptable risks as part of a stimulating and beautiful environment. People enjoy what they perceive to be 'natural' or 'unmanaged' countryside, valuing trees that have been subject to minimal or no intervention, and are prepared to accept a degree of risk because of the pleasure they derive from visiting or participating in leisure activities in these environments. Therefore it is argued that, although the tree management should not expose people to significant likelihood of death, permanent disability or life-threatening injuries, it may occasionally be unavoidable. This is only tolerable in the following conditions:

- The likelihood is extremely low.
- The hazards are clear to users.
- There are obvious benefits.
- Further reducing the risks would remove the benefits.
- There are no reasonably practicable ways to manage the risk.

For example, a mature tree in a city park presents a low but irremovable risk of falling on somebody, even if it is frequently inspected and treated. This risk is usually tolerable. The likelihood is typically low and people benefit from the retention of a feature that is inextricably linked to why they visit the park. The risk cannot be further reduced without removing the tree and taking away the benefits.

Tree Inspection Sheet

Site _____

Tree no.	Tree type	Size	Zone	Comments	Recommendations	Date of inspection	Action taken

S Small Diameter at breast height of under 250mm
M Medium Diameter at breast height of between 250 - 500mm
L Large Diameter at breast height of over 500mm

Zone H High
M Moderate
L Low

O/N Order Number

Developed by the Parks and Amenities team and adopted by the Community Services Committee in June 2012.

Runnymede BOROUGH COUNCIL