Sheffield City Council

Corporate
Tree Risk Management
Strategy

SCC Corporate Tree Risk Management Strategy

1.0 Introduction

Sheffield City Council is responsible for the management of an estimated 2 million trees spread over approximately 2000 sites. The city is rightly proud of its extensive tree cover that includes 1500 hectares of woodland and an estimated 400,000 trees in other open spaces and council properties. Nearly all of these sites are open to the public.

1.1 The Value of Trees

The value of a healthy and sustainable tree population to the people of Sheffield should not be underestimated.

Environmental benefits

- Trees filter the air of harmful pollutants and it has been estimated that Sheffield City Council trees absorb approx 9,000 tons of carbon dioxide each year, roughly equivalent to that created by 56 million car miles.
- Trees create a useful barrier to harmful ultraviolet radiation and are a critical element in regulating and reducing temperatures created by the urban 'heat island' effect.
- The presence of trees in open ground can help reduce the risk of flooding by retaining water, regulating flow and buffering against run-off.
- Groups of trees form wildlife corridors and links to the City Centre and countryside providing important wildlife habitats for shelter, breeding and feeding helping maintain our biodiversity duty.

Mental health benefits

Many people find a green environment more relaxing and it has been clinically proved that such surroundings reduce stress and emotions such as anger. In Sheffield, trees enhance the recreational experience on your doorstep in streets, parks, woodlands and open spaces.

Economic benefits

- People prefer to live, work and play in a green, leafy environment. Studies have shown that average house prices are between 2% and 18% higher where property is associated with mature trees – conversely there is a strong correlation between failing neighbourhoods and poor, run down environments.

- Our woodlands provide home-grown timber which is more sustainable than imports in terms of reducing the negative impact we have on the environment through transportation costs and associated pollution. Trees provide us with other useful products such as charcoal, bio fuel, paper and food for ourselves and for wildlife.

Educational benefits

Trees and woodlands are an educational resource where children can learn through play, adventure and exploration. Children can learn about the value of the environment and participate in tree planting projects to encourage wildlife, and to green their local area. It is resource that can engage children and young people who may not readily engage with main stream education.

1.2   Responsibilities

Such an extensive and in places ageing resource is not without its responsibilities. One such responsibility is the duty of care the council owes to people who use its parks, woodlands and open spaces by managing potential hazards that exist. Probably the greatest hazard that people may associate with trees is their potential to fall on them or their property. Though relatively rare, such failure within trees is often attributable to recognisable defects although even structurally sound trees can fail in extreme weather conditions. To completely remove the risk would necessitate removing all trees that may fall on people or their property, however, such an approach would be unacceptable to most people given the contribution that trees make to our environment. Therefore what is needed is a system of assessment that provides an acceptable level of protection whilst considering the value of the tree.

The Corporate Tree Risk Management Strategy is aimed at meeting those needs.

2.0   The Need for a System of Inspection

2.1   Legal Requirements

As the owner and manager of trees, Sheffield City Council has a 'Duty of Care' to protect people and property from harm caused by their failure. This duty is laid down in the Occupiers Liability Act 1957 & 1984, the Highways Act 1980 (especially section 130) and Health & Safety at Work Etc Act 1974 (for bystanders sec 3(1)). A breach of that duty may give rise to a claim of negligence from the injured party. In an extreme case this may also lead to the officer or officers involved facing manslaughter charges or civil action by relatives of the injured party. In the case of trees, negligence may arise by the omission of the owner to take sufficient care of a tree and to deal **reasonably** with hazards that were **foreseeable**.

In the landmark case of 1998 – Chapman v Barking & Dagenham Borough Council (where a falling limb resulted in a van driver being rendered a paraplegic) the judge remarked that *'foreseeability of danger can only be assessed, allowing timely remediation, if the hazardous thing (tree) is assessed'* i.e. without inspecting a tree, the manager is not in a position to know whether or not it poses a foreseeable danger. This case resulted in the first £1 million fine for damages being awarded in relation to the failure of a tree against the Local Authority.

Since this case there have been a number of significant judgements that have helped to shape industry guidance on appropriate and reasonable management of tree related risk.

One of the objectives of the SCC Corporate Health, Safety & Wellbeing Policy (2016-18) is 'Providing and maintaining a safe and healthy environment for all'. The policy also states managers will 'develop risk assessments to ensure that significant risks are identified, assessed, managed and monitored effectively'

3.0 The SCC Corporate Tree Risk Management Strategy (CTRMS)

3.1 Introduction
The following strategy has been developed to reflect current industry thinking and best practice. The strategy is subject to regular review and has been based on numerous sources of information including published literature and guidelines as well as seminars and training from national and international Arboricultural bodies. A list of these sources can be found in 5.0.

The Corporate Tree Risk Management Strategy (CTRMS) was adopted by the Executive Management Team as corporate policy in October 2010 to be delivered as a corporate system from April 2011.

3.2 Scope of the Strategy
The strategy covers all trees situated on land managed by the Council with the exception of Highway trees and those on land leased to a third party where the lease specifically passes the responsibility for tree risk management to the lessee. At the time of writing the responsibility for the safety of Highway trees rests with the Councils Highways 'Client' team (Streets Ahead) and the highway contractor, Amey.

3.3 Aim
The aim of the CTRMS is to ensure that the City Council executes its duty of care to its employees and the public with regard to the safety of trees, thereby minimising its potential financial risk.

The council's vision for Sheffield's tree & woodland resource is: *Working in partnership to provide sustainably managed trees and woodlands which are rich, diverse, healthy and attractive and of maximum benefit to the public and wildlife*

3.4 Objectives
To maintain a system of tree risk assessment and risk management that is in line with current nationally accepted standards and procedures and that follows industry best practice.

All arboricultural work is undertaken in line with industry best practice and the councils vision of sustainably managed trees.

The CTRMS will be the accepted council policy to ensure that all possible resources are focused on managing potential tree related hazards

3.5 How the Strategy Operates
The strategy will operate based on the following rules:
- All sites are categorised and placed upon a recommended cycle of inspection (inspection frequency). The period between each individual inspection is based on quantified risk factors and current best practice.
- Each site will be inspected within the recommended timeframe.

- The results and recommendations of those inspections will form the basis of future tree pruning and felling contracts which will be implemented within a recommended timeframe.
- Details of all inspections and subsequent work will be recorded for future reference.
- Key officers will receive appropriate training
- The strategy will be subject to internal review and external audit.

3.6 Site Categorisation

3.61 Quantifying Risk
The assessment of tree risk is made up of three components
1. The likelihood of failure of the tree or part of it
2. The 'value' of the targets present (persons, property etc)
3. The severity of impact should failure occur (size of part that fails)

These three components vary greatly between sites and even areas within those sites. In order to determine a reasonable frequency or cycle of inspection each site will be categorised prior to inspection. This also helps to target resources where the threat is greatest.

3.62 Frequency of Inspection
The Highways Agency Trunk Roads Maintenance Manual (1996) recommends that the maximum length of time between inspections is 5 years. Using this figure as a benchmark, a reasonable inspection cycle can be calculated using a combination of the factors given above. Many of these factors will however change from day to day and from hour to hour. The calculations are therefore, based on average volumes, numbers and typical scenarios.

Site Usage (Target area)	Inspection Frequency (years*)
Arterial Roads; Railways; Playgrounds; high use areas in schools	1 year
Main Roads (see note below); High use areas in parks & open spaces	2 years
Secondary/residential roads; Normal use parks & open spaces; high use woodland paths, trees beside private gardens	3 years
Lower use woodland paths; Low use areas in parks & open spaces	5 years

Table 1: The base risk calculation used for the initial cycle of inspections
* period between inspections are approximate and are designed to fall within financial year constraints (see below).

The following additional factors have been considered when calculating the inspection cycle:
- All trees within falling distance of **arterial roads** will be inspected annually and will be zoned unless it is considered more economical to inspect whole site on such a frequent cycle.

- All trees within falling distance of **main roads** will be inspected either annually or every 2 years dependent on other circumstances (road speed, history of site, tree size etc). Again, zoning will be used unless it is considered more economical to inspect entire site on same cycle.
- All trees within falling distance of **secondary** or **residential** roads will be inspected every 3 years (depending on other factors which may increase or decrease cycle by 1 year)

The recommended cycle of inspection detailed above is only a guideline for the initial cycle of inspections. Inspectors will be able to recommend adjustments to the frequency on completion of each risk assessment allowing fine-tuning of the categorisation process. In all cases the suggested inspection frequency for each site will be reviewed on completion of its inspection.

The period given between each inspection (ie 1 year, 2 years etc) is based on the councils financial year timeframe. Therefore sites inspected in June 2016 and placed on a 2 year cycle, may receive a re-inspection before or after June 2018 and potentially as late as March 2019. This also allows trees to be inspected in different seasons under different climatic conditions.

3.63   Zones
Where sites have widely varying risk factors and it is considered, due to the size of the site, to be economically beneficial, zoning may be considered appropriate. For instance Ecclesall Woods has 3 significantly different levels of risk. Those trees overhanging Abbeydale Road South could be considered to be of high risk. Those beside the main paths and buildings inside the woodland could be considered to be of medium risk, whilst those trees beside secondary paths could be considered low risk. In this instance it would not be economical to inspect all trees annually (recommended cycle for inspection of trees beside Abbeydale Rd). Likewise, it could be considered negligent to only inspect those roadside trees once every 5 years (along with the trees beside the secondary paths). Zoning allows those parts of sites that are considered to be of a higher risk category to be inspected on a separate, more regular cycle to the remainder of the site making best use of available resources whilst maintaining a reasonable system.

3.64   Individual High Risk Trees
In certain instances individual trees perceived to have a higher risk potential than others within the same site or zone, will require inspection on a more regular basis. These trees may be considered important due to significant habitat or amenity value where reducing the risk to that of surrounding trees may affect their value disproportionately. Such trees will be placed on an individual inspection cycle and monitored accordingly.

3.7   Tree Inspection

3.71   Inspection Format
All tree inspections will be undertaken based upon current national standards and best practice. The level of detail of the inspection will be based on the level of risk

associated with the tree and the usage of the surrounding area. In all cases the inspection format will be one of the following

- Walkover inspection
- Detailed inspection

3.71.1 Walk-over Inspection
The Walk-over Inspection is a brief form of survey aimed at assessing the general condition and level of risk within an area of trees whilst identifying obvious hazards that exist. It will typically be used in areas of sites or whole sites where a moderate or low level of risk exists. The walk-over inspection format will be used in zones 3, 4 and 5

The walkover survey will involve:
- A general assessment of the tree cover within the area from ground level at walking pace
- A cursory glance at the existing trees within the site, in most cases by walking along existing footpaths or access routes, boundaries and edge trees.
- Those trees that appear to exhibit signs of decline, disease or weak structure will be subject to a Detailed Inspection.
- All trees requiring works or monitoring action will be recorded on a tree inspection schedule.
- All work will be subject to the timeframe guidelines given in 3.9

3.71.2 Detailed Inspection
A detailed inspection involves a closer visual inspection, from ground level, of each individual tree within the given zone. It will typically be carried out on individual or groups of trees that are within falling distance of main roads, high use buildings, main thoroughfares or areas of high use. The detailed inspection format will be used in zones 1 and 2

Detailed inspections are initially carried out from ground level with the aid of non-invasive tools such as nylon hammer and binoculars. If following the initial brief visual inspection, the tree shows no external signs of decay, structural weakness or unexplained adaptive growth then no further action will be taken. Trees that appear to present no unreasonable hazard during the inspection will, under normal circumstances, not be documented in terms of their condition. Any omission from the record therefore implies that their hazard level is considered negligible.

Trees that are considered to pose an unreasonable hazard or those that require further investigation will be documented on a Tree Inspection Schedule and marked on a site plan.

In cases where potential defects are suspected but the Inspector feels that further investigation is required, details of the tree will be placed on a monitoring form and the inspector can amongst other things, choose to:
- Re-inspect the tree at a later date as specified on the form
- Re-inspect with the aid of specialised diagnostic devices
- Carry out an aerial inspection

- Ask for a second opinion from another member of the Trees & Woodlands team

3.71.2 Ad-hoc Inspections / Response to Enquiries
Inspections of individual or groups of trees within sites may be necessary following enquiries from the public, members or other officers. In all cases the method of tree inspection and recording of information will follow the procedures given for whole site risk assessments, in particular those procedures in 3.7, 3.8 & 3.9 of this document.

3.72 Inspection Tools
There are a number of options in terms of diagnostic tools available to officers involved in the tree inspection process.
- Each officer is supplied with an inspection toolkit that includes: nylon hammer; binoculars; compass; VTA field guide; probe; knife & hand lens.
- Access to Resistograph and fractometer
- Access to digital camera
- Access to other more specialist equipment via arboricultural contractors

3.73 Hazard Rating
A hazard rating matrix has been developed to assist the inspection staff in their consideration of what level of risk exists and the timeframe for carrying out the work. It must be stressed that this system is to be used as a guide and in no way should it be a substitute for sound professional judgement. The system is based on the International Society of Arboriculture model. A copy of the Hazard Rating is shown in Appendix 1.

3.74 Use of Non-Arboricultural Staff
Whilst the identification of certain hazards require specific arboricultural knowledge and training it is recognised that a valuable contribution to identifying more obvious hazards can be made by less qualified staff, such as rangers, parks operational staff and volunteers who visit the site more regularly. A programme combining appropriate in-house training along with a system of notification and record keeping has been developed to help with this process. Delivery of this training to other service areas within the council is ongoing.

3.8 Recording / data capture
Detailed records of each part of the risk management system will be kept. The recorded information will include the following:
- Date of inspection
- Site details including clear information on hazards detected
- Name of inspector
- Recommendations
- Work undertaken (contract documents)
- Details of enquiries or complaints relating to trees on the site

3.9 Undertaking Identified Work
The validity of this system is dependent on the identified remedial works being

undertaken within the recommended timeframe. Recommended target response times are as follows:

Category	Example	Target response
1: Immediate	Emergency situations where likelihood of imminent failure	As soon as practicable – inform contractor within 2 hours
2: Urgent	Dangerous trees that require planning and consultation	Work completed within 2 weeks of inspection date
3: Moderate	Those trees noted as hazardous on inspection forms	Work completed within 14 weeks of inspection date

Table 3: Target response times for remedial works

Immediate
Action: Contractors alerted immediately and necessary steps taken to minimize risk to the public (May necessitate road closure, cordoning off of site etc. and where appropriate the Police, Highways, site managers and senior management alerted)
Scenario: Where, in the Tree Officers professional judgment, failure of the tree (or limb) is likely to occur within 2 weeks of the inspection date.

Urgent
Action: Steps taken to organize and carry out remedial work within 2 weeks of inspection date. Necessary consultation carried out (planning, highways, councillors etc notified)
Scenario: Where, in the officer's professional judgment, failure is likely to occur within 14 weeks of the inspection date.

Moderate
Action: Contract documents prepared; works placed out to competitive quotation/tender; consultation and notification of interested parties. Completion date limited to 14 weeks from date of inspection.
Scenario: Where in the officer's professional judgment, failure is likely to occur before the next planned inspection (dependent on designated cycle of inspection)

Recommended timeline for 'moderate' works
0 weeks: Inspection date
2 weeks: contract drawn up and sent out to contractors for pricing.
5 weeks: latest date for return of prices
7 weeks: Order sent to successful contractor
12 weeks: Contract completion date.
Further 2 weeks allow for extension of completion date following extraordinary circumstances e.g. Contractor pulling out of contract, unforeseen extreme weather conditions etc.

Review of Timeframes
The recommended timeframes shown above will be reviewed as part of the internal review to assess their suitability.

3.9.1 Signing Off Completed Works

Each contract will be checked on site to ensure that all recommended works have been completed. The signed and dated schedule will be filed with the other documents relating to that risk assessment.

3.10 Training and Tracking Legislation

As with other professions, the Arboricultural industry is subject to ongoing review, change and innovation. In order to stand up to scrutiny (in court if necessary) it is important that the persons responsible for managing and undertaking the council's tree risk systems are kept up to date with current law and industry best practices. In particular, those officers undertaking the risk assessments (Tree Officer) are expected to hold a recognised award/certificate such as the Professional Tree Inspection award, National Certificate or Diploma in Arboriculture. In order to maintain conformity across the system and within the team, regular meetings and discussions regarding issues such as complex cases will be held and the continual sharing of information and use of second opinions will be encouraged. In order to track their development a record of each officer's training requirements and undertakings will be maintained and reviewed as part of the annual appraisal process.

3.11 Failure Log

A failure log is maintained as part of the system. Events such as tree failures are recorded as soon as practicable after they occur. Such information is important for identifying the cause of the failure and can help in prevention of similar incidents in future. The log will be updated after all storm occurrences and other events such as one off failures or incidents involving trees.

3.12 Emergency Procedure

Out of normal office hours (Mon-Fri 9am-5pm) it is standard practice for all tree related emergencies to be reported to the out-of-hours response team managed by the highway contractor, Amey. They currently operate a 24 hour call out system that utilises their in-house arboricultural operational staff.

Emergency situations during normal office hours involving trees on non-highway council land will be reported to the Trees & Woodlands section (in Parks & Countryside). When notification is received by the Trees & Woodlands section, the following procedure is adopted:
- Details of the incident including location, caller and nature of incident are recorded and a copy is passed to the support officer or officer covering that role. Those details are logged onto the Confirm Enquiry System
- In most cases and unless the incident is considered to be minor, an officer will either visit the site and/or give instructions for the clear-up work to be undertaken. The instruction will go to external contractors.
- The investigating officer will record details of the incident on a Tree Failure Log form

During storm events involving multiple incidents the following additional procedures will be adopted:

- Available officers will be expected to contribute to deliver a co-ordinated response system overseen by the Tree Manager or designated officer.
- The team will be divided into those managing incoming calls and others who will be mobile visiting incident sites.
- External contractors and the Amey tree team will be contacted to ascertain availability for undertaking clean-up work.
- A brief review of the procedures will be undertaken within 2 weeks of the event
- High risk trees (individual high risk trees and those within annual inspection zones) will be subject to a brief 'walkover' inspection within 2 weeks of the event

3.13 Strategy Review

The strategy will be subject to a periodic review and audit from the Tree & Woodland management team. The review will include:
- Checks to ensure that the practice is in line with the policy
- A review of resource issues
- Existing strengths and weaknesses of the policy and recommended alterations

It is recommended that the review is carried out on an annual basis.

3.14 External Audit

A full review of the strategy by an independent and suitably qualified person will be carried out every 10 years. This review should assess the strategy critically and report its findings to the head of the section. If the review recommends fundamental changes to the strategy then a report will be produced detailing proposed changes.

4.0 Resources Implications

4.1 Staff Resources

A key requirement of the CTRMS is for the council to recognise that adequate resources, both staff and financial are made available.

A review of the staffing requirements will be undertaken as part of the internal review.

4.2 Financial Resources

Adequate financial resources are essential for recommendations to be met and for the strategy to be considered defendable. On the other hand it is recognised that the council does not have unlimited resources and therefore work must be prioritised by risk level. However, if the necessary funds are not available it may result in hazards being identified but no work being undertaken to remove them. If such a hazard were to subsequently fail resulting in injury, death or damage then the council may be subject to a clear case of negligence.

Financial resources will be reviewed as part of the internal review of the CTRMS. Any resource issues that arise that may impact on the viability of the strategy will be escalated to senior management.

5.0   Sources of Information

- National Tree Safety Group (2011). Common Sense Risk Management of Trees
- Lonsdale, David (1999). Principles of Tree Hazard Assessment and Management. DTLR / HMSO
- Mynors, Charles (2002). The Law of Trees, Forests and Hedgerows. Sweet & Maxwell, London.
- Strouts, R.G., Winter, T.G. (1994). Diagnosis of ill-health in trees. DoE / HMSO
- Matheny N.P. & Clark J.R. (1994). A photographic guide to the evaluation of hazard trees in urban areas.
- DoE Circular 36/73 Inspection Maintenance and Planting of roadside trees
- The Highways Agency Trunk Roads Maintenance Manual (1996)
- International Society of Arboriculture, Annual Conference 2004 – Strategic Tree Risk Management, Droitwich.
- Trees in Towns II Case Study 7: Surveying, monitoring and risk assessment (ODPM - 2005)
- Professional Tree Inspection. Lantra Technical Awards 2006
- Tree Surveys: a guide to good practice. Arboricultural Association 2005
- External Audit Report. Tree Legal Ltd 28.07.08

Appendix 1: Hazard Rating System – partial or whole tree failure

Probability of failure	Examples of defects (use as guide only as probability of failure depends on multiple factors including species, size, age, exposure and defect development stage)	Score
Imminent	Partial failures, uprooting, moving fractures, unimpeded hanging branches	8
Probable	Significant decay fungi in advanced state, recent major root severence, advanced included unions	3
Potential	Dieback in crown, decline in root system, deadwood, initial stages of included bark, end weighted limbs	2
Unlikely	Tree with no significant defects	1

Target value	Examples of levels of use	Score
Very High	Constant use, standing traffic or arterial road, well used playgrounds, cafe seating areas (Visitor rating 1: 36/hour)	5
High	Main roads, less used playgrounds, benches, bus stops, busy footpaths (Visitor rating 2: 10-36 persons per hour)	4
Medium	Occasional traffic - secondary/residential roads, moderate use footpaths. (Visitor rating 3: 24-240 persons per day)	3
Low	Low use areas with infrequent visitors. (Visitor rating 4: 1 - 24 persons per day)	2
Very Low	Hardly ever used (Visitor rating 5: 1-7 persons per week)	1

Size of defect	Examples of potential harm/damage	Score
>500mm	Serious injuries/fatalities; major structural damage; vehicles destroyed	4
100 – 500mm	Injury; significant vehicle/property damage	3
25-100mm	Minor injury (abrasions); Minor damage	2
< 25mm	Little or no damage or injury	1

Hazard Calculation: Probability of failure **X** Target **X** Size of defect **=** Rating

Rating	Recommended Action
72+	Immediate – carry out remedial work as soon as practicable – inform contractor within 2 hours
48-71	Urgent - remedial work within 2 weeks of inspection date. Necessary consultation carried out (planning, highways, councillors etc notified)
24-47	Moderate - Work completed within 14 weeks of inspection date
8-23	Low priority - Works of low priority that may be considered if budgets allow