

Tree Risk Management Plan

Adopted February 2011



CONTENTS

	Page		Page
SUMMARY	3	5.3 Individual and detailed tree risk surveys	17
1. INTRODUCTION		5.4 Documentation	17
1.1 Purpose of plan	6	5.5 Special site risk assessments	18
2. POLICY CONTEXT	7	5.6 Reactive tree risk assessments	18
3. APPROACH TO RISK MANAGEMENT		5.7 Privately-owned trees – the council’s legal powers	19
3.1 The council’s legal duties and liabilities	8	6. INTERVENTION	
3.2 National guidance on tree risk management	9	6.1 Proportionate response	20
3.3 Managing risk at an acceptable level	10	6.2 Major incidents	20
3.4 Quantifying risk - the QTRA approach	12	7. MONITORING & REVIEW	21
4. INSPECTION ZONES		APPENDICES	
4.1 Zone analysis	13	Glossary	22
5. INSPECTION REGIME		Appendix 1: Amendments & alterations	23
5.1 Inspection and risk assessment	15	Appendix 2: QTRA Documentation Updates	24
5.2 Walk-over and drive-by surveys	16	Appendix 3: Inspecting Officer Training	25
		Appendix 4: Tree Management Leaflet	26
		Appendix 5: Tree Major Incident Plan	29

SUMMARY

Vision

Trees are a fundamental part of the Green Infrastructure in North Somerset, which is defined as the:

“The multifunctional network of parks, open spaces, waterways, trees, countryside, green corridors and the coastal strip within and between the towns and villages across the whole of North Somerset.”

Our vision for Green Infrastructure is to;

‘Create and maintain a comprehensive and sustainable Green Infrastructure that:

- extends access, recreation and play opportunities,*
- connects and enriches biodiversity habitats,*
- helps us adapt to, and mitigate against, the threats posed by climate change,*
- enhances opportunities for good health and wellbeing,*
- enhances the diversity of landscape character, and*
- is managed in an appropriate cost effective manner.’*

Our vision for trees in North Somerset is;

“To have a growing, healthy tree population”

Aims

To be able to meet this vision we have several key aims that we are working towards

<p>Maximising tree benefits</p> <ul style="list-style-type: none"> The aesthetic, ecological, environmental and social benefits that trees bring to North Somerset will be championed, and trees valued as an important asset. 	<p>Adapting to environmental pressures including climate change</p> <ul style="list-style-type: none"> Our trees will be managed in anticipation of environmental change. 	<p>Reasonable risk management</p> <ul style="list-style-type: none"> North Somerset Council will maintain a defensible tree risk management policy, while avoiding unnecessary tree loss. This management will be consistent with a duty of care based on reasonable practicability.
<p>Meeting our legal obligations</p> <ul style="list-style-type: none"> We will manage trees to ensure that our legal demands are met. 	<p>Providing value for money</p> <ul style="list-style-type: none"> Tree management will be carried out to provide full value for money. 	<p>Influence others</p> <ul style="list-style-type: none"> Our approach will be well documented, implemented and communicated, so that others look to North Somerset Council as an example of excellence.

Summary of Tree Risk Management Plan

This document updates and improves the Tree Risk Management Plan adopted by the council in February 2011. It incorporates the national guidance of the National Tree Safety Group as well as lessons that have been learned during the first year of implementation of the adopted Plan.

The Plan specifically sets out to describe the way that we will manage our aim around ‘reasonable risk management’ and how we will:

- Implement the new National Tree Safety Group guidance ‘Common Sense Risk Management of Trees’, published December 2011.**

- **Use the Quantified Tree Risk Assessment methodology to assess the risk of harm from trees, which includes a formal inspection, with detailed inspections carried out as necessary.**
- **Plan surveys of identified high used zones on a frequency that is informed by the initial and subsequent assessments.**
- **Carry out remedial work to trees where appropriate, to reduce probability of harm to acceptable levels.**
- **Demonstrate how North Somerset Council is doing what is 'reasonably practicable' to meet its Duty of Care in respect of tree management.**

Priorities for 2012

- Planning and execution of 2012 walk-over/drive-by and individual/detailed tree surveys.
- Identification of council-owned land adjacent to the rail network and walkover surveys of trees growing on that land.
- Implementation of Confirm tree database management system to assist effective management of the tree population.
- Planning 2013 survey programme.
- Review of Risk Management Plan.

Priorities for the next 5 years (2012 – 17)

- Review of training and competence of council's tree inspection staff to ensure
- Continual review of amendments to QTRA methodology to ensure Tree Risk Management Plan is fully compliant.
- Continual review of legal judgments relating to tree risk management to ensure Tree Risk Management Plan adjusts to emerging case law.

1. INTRODUCTION

1.1 Purpose of the plan

North Somerset Council is a large tree owner with many thousands of trees growing in its woodlands, parks and open spaces and alongside the highway. These trees provide many benefits, including making the landscape more attractive, contributing to wildlife, absorbing pollution, helping us adapt to climate change and even adding value to the price of property.

Trees and their branches can fall to the ground, so it is important that whilst we maximise their benefits we also take precautions to keep the risk they pose to people and property within reasonable limits.

- **The Health and Safety Executive (HSE) concludes that the risk of being struck and killed by a falling tree is 'extremely low'¹.**

This risk therefore represents an extremely small proportion of the background risk that we commonly accept in our everyday lives, and the ongoing removal and general management of trees is probably the most important factor in keeping this figure at such a low level. However, there can be pressure to remove trees because of a perception of risk, which may be much greater than any actual risk a tree poses.

- **We want to make it clear that we cannot completely remove the risk from trees: to do so would create an unacceptable loss of the many benefits that trees provide.**

The removal of trees based on an unfounded perception of risk is not appropriate because it leads to the unnecessary loss of trees and their benefits. Instead, damaged and defective trees will be managed to control the **actual** risk they pose to people and property whilst fully recognising their value.

Implementing this Tree Risk Management Plan demonstrates that we have considered the risks from trees and have adopted a process that is proportionate to the risk; which evidence is beginning to show is relatively low.

¹ Sector Information Minute 01/2007/05 'Management of the risk from falling trees', HSE, 2005
www.hse.gov.uk/foi/internalops/sectors/ag_food/1_07_05.pdf

2. POLICY CONTEXT

Direction for the management of our trees comes from the policy areas described in the Green Infrastructure strategy² which builds on the policies described in the Sustainable Community Strategy³ and the North Somerset Council Corporate Plan⁴.

North Somerset Council's corporate plan draws from the community strategy and highlights key aims for the council. The Green Infrastructure contributes to a number of these priorities, including:

- Enhancing health and well-being
- Protecting and improving the environment
- Building safer and stronger communities

The council has also identified nine key areas where it plans to focus its efforts until 2011 and several of these priorities relate specifically to the role of tree management:

- Address environmental concerns. Tree growth helps lock up carbon – the main greenhouse culprit. Trees and woodlands can play a significant role in emissions reductions in the short term, and 'buy time' to allow new, low carbon technologies to be implemented⁵. Trees have a positive impact on health by filtering out polluted air and shading out solar radiation. Lower temperatures help us to adapt to climate change.
- Make our streets and communities safer. Research in the United States since the mid 1990s⁶ finds that crime in neighbourhoods with trees and vegetation is up to 7% lower than those without them, even after factors such as income and education are taken into account. Trees encourage greater use of open spaces, and people feel safer in green neighbourhoods.

² This can be found at www.n-somerset.gov.uk

³ This can be found at www.northsomersetpartnership.co.uk/

⁴ This can be found at www.n-somerset.gov.uk/Your+Council/Policies+plans+and+strategies/Corporate+Plan/

⁵ Forest Research www.forestry.gov.uk/website/forestresearch.nsf/ByUnique/INFD-5Y2JFA

⁶ <https://webs.aces.uiuc.edu/herl/docs/environment&crime.pdf>

- Improve customer services.

The tree team dealt with over 860 calls in 2009 relating to trees under our management. Prioritising the response is essential in using resources effectively. The new Confirm tree management software will integrate with the council's existing customer services system, and allow Tree Officers to work more efficiently by prioritising their response more effectively.

3. APPROACH TO RISK MANAGEMENT

3.1 The council's legal duties and liabilities

- ***North Somerset Council has a legal 'duty of care' to ensure that users and neighbours of its land and highways are reasonably safe⁷. The council must also ensure that risks to its employees and contractors are reduced as far as is 'reasonably practicable'⁸.***

Trees are constantly changing as they grow and vary with the seasons. They can also reach considerable size and can become damaged by the elements or affected by pests and diseases that can weaken them. Trees can fall over or lose branches meaning they have the potential to cause harm where they grow in areas of public access or within falling distance of structures or highways (within this document, the people and property that might be injured or damaged by trees or branches are referred to using the standard arboricultural term 'targets').

We must balance this risk with the aesthetic, ecological, environmental and social benefits that trees bring.

“Reasonableness” is a key legal concept when considering the risks of trees to the public and tree owners’ obligations⁹.

The council’s fundamental responsibility, in taking reasonable care as a reasonable and prudent landowner, is to **consider the risks** posed by its trees. The level of knowledge and the standard of inspection that must be applied to the inspection of trees are

⁷ The Occupiers Liability Act 1957 & 1984

⁸ The Health and Safety at Work etc. Act 1974

⁹ For a summary of English Law as it relates to trees see Chapter 3 ‘What the law says’ in National Tree Safety Group (2011) Common Sense Risk Management of Trees. Forestry Commission, Edinburgh, or in Appendix C below.

of critical importance, but the courts have not defined the standard of inspection precisely. Generally, the courts appear to indicate that the standard of inspection is proportional to the size of and resources available (in terms of expertise) to the landowner. It is of note that the HSE states that: “for trees in a frequently visited zone, a system for periodic, proactive checks is appropriate”¹⁰.

Where harm occurs, liability is a matter for the courts to determine. The question is whether or not the council has discharged its duty of care, which will be largely dependent upon whether or not the council has taken a reasonable and proportionate approach to the management of tree safety.

3.2 National guidance on tree risk management

- ***This Plan implements the new National Tree Safety Group guidance ‘Common Sense Risk Management of Trees’, published December 2011.***

The National Tree Safety Group (NTSG)¹¹ was convened in August 2007 to develop a nationally-recognised approach to tree safety management and to provide guidance that is proportionate to the actual risks from trees.

The NTSG released its guidance ‘Common Sense Risk Management of Trees’¹² in December 2011. This is the first national guidance on tree risk management available to tree owners, and followed extensive industry and government consultation.

The NTSG’s overall approach is that the evaluation of what is reasonable should be based on a balance between benefits and risks from trees. This position is underpinned by a set of five key principles:

- Trees provide a wide variety of benefits to society
- Trees are living organisms that naturally lose branches or fall
- The overall risk to human safety is extremely low¹³

¹⁰ Health and Safety Executive (2007). Management of the risk from falling trees. HSE Sector Information Minute, SIM 01/2007/05. (Guidance for HSE Inspectors and local authority enforcement officers)

¹¹ <http://www.ntsg.org.uk>

¹² The full NTSG document ‘Common Sense Risk Management of Trees’ is summarised in the ‘Landowner Summary’ document produced by NTSG and included in Appendix C. Both are available to download free of charge at <http://www.forestry.gov.uk/publications>

¹³ NTSG have identified that the overall estimated risk of death per year from falling or fallen trees and branches in the UK is about 1 in 10 million, whereas the annual risk of death in a road accident is about 1 in 16,800. So far as non-fatal injuries in the UK are concerned, the number of A&E cases attributable to

- Tree owners have a legal duty of care
- Tree owners should take a balanced and proportionate approach to tree safety management.

The NTSG's guidance states that tree owners should take a balanced and proportionate approach to tree management that forms the basis of a tree safety strategy which covers three essential aspects:

- Zoning: appreciating tree stock in relation to people or property
- Tree inspection: assessing obvious tree defects
- Managing risk at an acceptable level: identifying, prioritising and undertaking safety work according to level of risk.

The NTSG's guidance requires that areas of land are defined according to levels of use, prioritising the most used areas. High use zones are areas used by many people every day, such as busy roads, other well-used routes, car parks and children's playgrounds, or where property may be affected. Trees in areas of high public use require an inspection regime. Trees in areas with low public use require less frequent inspection. The risk of death or serious injury from trees in infrequently-used areas is so low that it is reasonable that these should receive no formal inspection or visual check. However, owners may need to respond to any reports of problems.

If reasonably carried out, the strategy should meet the duty of care required by law. In the event of an accident, documents will provide supporting evidence that reasonable care has been taken.

3.3 Managing risk at an acceptable level

- ***This Plan manages the annual risk of death or significant harm from trees within the Health & Safety Executive's 'Tolerability of Risk Framework', by assessing risk and recommending control measures that reduce that risk as low as reasonably practicable, and below the 1 in 10,000 threshold of Tolerable Risk.***

People are constantly exposed to, and accept or reject, risks of varying degrees. For example, if society desires the convenience of electric lighting, it must accept that, having implemented control measures such as insulation, there remains a low risk of electrocution; this is an everyday risk taken and accepted by millions of people.

being struck by trees (about 55 a year) is exceedingly small compared with the roughly 2.9 million leisure-related A&E cases per year, such as footballs (262,000) and children's swings (10,900).

The Health and Safety Executive advises that each year between 5 and 6 people in the UK are killed when trees fall on them¹⁴. The HSE concludes that the risk of being struck and killed by a falling tree is extremely low. Around 3 people each year are killed by trees in public spaces. Measured against the entire UK population, the average risk of death is about one in 20 million. The risk of the average tree causing fatality, is about one in 150 million for all trees in Britain.

If absolute safety from tree failure were achievable, the community would almost certainly find the cost, in terms of the loss of trees, unacceptable¹⁵. In this regard, the NTSG guidance advises that it is reasonable for a tree owner to operate a broad threshold of 'acceptable risk' where tree failure is concerned, that balances the risk from trees on one hand and the benefits they bring on the other. **The UK Health and Safety Executive (HSE) suggests, "For members of the public who have a risk imposed on them 'in the wider interest' HSE would set this limit at 1/10,000 per annum"**¹⁶.

The HSE have developed the Tolerability of Risk Framework which has been incorporated into the NTSG guidance. Risks above 1/10,000 per annum are unacceptable. Risks between 1/10,000 and 1/1,000,000 per annum are tolerable, but should be managed 'as low as reasonably practicable' (ALARP).

To put the 1/10,000 probability of significant harm into perspective, Table 1 is reproduced from the British Medical Association Guide¹⁷ and illustrates the risk of death (in 1987) from a range of hazards.

Table 1

Activity	Risk of an individual dying in any one year
Smoking 10 cigarettes a day	1 in 200
Influenza	1 in 500
Road accident	1 in 8,000
Playing football	1 in 25,000
Accident at home	1 in 26,000
Accident at work	1 in 43,000
Hit by lighting	1 in 10,000,000

¹⁴ Sector Information Minute 01/2007/05 'Management of the risk from falling trees', HSE, 2005
www.hse.gov.uk/foi/internalops/sectors/ag_food/1_07_05.pdf

¹⁵ <http://www.qtra.co.uk/cms/>

¹⁶ Health and Safety Executive (2007). Management of the risk from falling trees. HSE Sector Information Minute, SIM 01/2007/05. (Guidance for HSE Inspectors and Local Authority enforcement officers).

¹⁷ "Living with Risk", British Medical Association, 1987

Release of radiation from nearby nuclear power station	1 in 10,000,000
Struck by falling tree (2009)	1 in 20,000,000

The council has adopted the 1 in 10,000 threshold of acceptable annual risk of death or significant harm from any particular tree hazard. This approach reflects the independent data provided by both the British Medical Association and the Health and Safety Executive.

The threshold will be applied flexibly, and balanced with the benefits conferred by the tree. Where a tree has limited or perhaps insignificant value, the council might choose to implement risk control measures at a risk lower than 1 in 10,000; conversely where a tree has particularly special value a risk greater than 1 in 10,000 might be tolerated. Certain sites and locations, such as schools, may, in some circumstances, attract a lower limit of acceptable risk because the council may choose to manage risks to vulnerable groups differently. Whilst guided by the threshold, the treatment of trees around the threshold may be considered on a case-by-case basis.

3.4 Quantifying risk - the QTRA approach

- ***This Plan adopts the Quantified Tree Risk Assessment methodology to assess the risk of harm from trees, which includes a formal inspection, with detailed inspections carried out as necessary¹⁸.***

A purely reactive approach to risk management is vulnerable to being difficult to defend in the event of an incident. Instead, North Somerset Council has adopted the principles of Quantified Tree Risk Assessment (QTRA) for managing tree failure risk¹⁹. The key feature of QTRA is its position that the condition of trees should not be the first consideration. Instead, tree managers should consider first the usage of the land on which the trees stand, which in turn will inform the process of assessing the trees.

The council considers that the QTRA system is the only robust approach currently available in an environment of uncertainty, and in which there is sparse case law. The QTRA system provides a great deal of substance, should the council need to demonstrate that it has done what is 'reasonably practicable'.

¹⁸ www.qtra.co.uk/cms/

¹⁹ The QTRA methodology is regularly refined through updated User Manual and Practice Notes. Appendix X is a log of these updated methods.

QTRA applies established and accepted risk management principles to tree safety management. It is based in part on published academic research, guidance from the Health and Safety Executive and other government bodies, and UK government statistics²⁰.

The QTRA system evaluates risk in terms of:

- **Targets** - firstly, the targets (people and property) underneath or within falling distance of the trees are assessed and quantified, so that the inspecting Officer can determine whether or not, and to what degree of rigour, a survey or inspection of the trees is required.
- **Impact Potential (Size)** - where necessary, the tree or branch is then considered in terms of both impact potential (size) and
- **Probability of Failure** - This is an assessment of the likelihood that the tree or branch will fail, based on the observations, technical knowledge and experience of the inspecting Officer.

The components above are entered onto the QTRA calculator to select a risk of harm. The risk of harm is calculated for all possible combinations of target, size and probability of failure Monte Carlo simulations, which means that a calculation has been run 10,000 times for each combination of target, size and probability of failure, and it is the mean value from each set of results which is the QTRA risk of harm.

QTRA conforms to standards accepted in the UK as best practice in the management of industrial and workplace risk and provides:

- A clear structure within which to assess tree safety
- A framework within which trees can be assessed at all levels of detail, from an overview of the municipality to the detailed appraisal of a single tree
- A numerical basis for comparative risk assessment of trees
- A numerical basis for the application of a threshold of acceptable risk.

The system moves the management of tree safety away from labeling trees as either 'safe' or 'unsafe' and thereby away from requiring definitive judgments of the council's Tree Officers or their advisors. Instead, QTRA quantifies the risk of significant harm from tree failure in a way that enables the council to balance safety with tree values and operate to a predetermined limit of reasonable or acceptable risk.

²⁰ For bibliography, see documents at <http://www.qtra.co.uk/cms/index.php?section=26>

4. INSPECTION ZONES

4.1 Zone analysis

The focus of QTRA on land use directs the council to dealing firstly with trees in busier areas and according to the value of who or what might be harmed or damaged. This initial 'target' analysis is achieved by placing sites within common categories of target value and occupation. Such 'zoning' of people and property is the first step recommended in the evolving national guidance²¹. The following list identifies the order in which inspections of our trees will be carried out.

- ***In summary, we will survey trees near transport routes first because they are our most used sites. Roads will be prioritised according to traffic volume; trees within falling distance of train tracks are prioritised equally. This will be followed by schools, because children are considered vulnerable²². At the same time our busiest parks will be surveyed. Available resources thereafter will be targeted at the remaining sites we own.***

The rationale for this order of assessments is therefore primarily around dealing with the most frequented areas where the potential for harm is greatest. The zones include trees from adjoining areas that are within falling distance of them:

- 1) **Transport routes – Highways and land next to the rail network** – The council's most used sites with many trees within falling distance that have the highest probability (because of lack of intervention) of structural or health defects. On our roads, surveillance of risk by users (drivers) may be at a high level, but reporting levels may be low. On the railway, a high-speed impact with a fallen tree or limb may be inevitable and cause very serious harm to many passengers, and damage to high value property. Tree failure has a very high probability of causing harm on roads and railways, because of the risk of impacts at speed. Roads are prioritised and target value determined according to weekly average traffic census data supplied by the council's Highways Team; busier routes are surveyed first. Trees within falling distance of train tracks are prioritised equally.
- 2) **Schools and their forecourts**– Sites that the community value extremely highly, and with trees that are more likely than most to be under some sort of management. Surveillance and reporting of risk by users (teachers and guardians) is likely to be at a good level, but the community expects children and vulnerable adults to be a safety priority. Children have a lower

²¹ <http://www.forestry.gov.uk/website/forestry.nsf/byunique/inf-d-7t6bs5>

²² This relates only to schools that have signed up to the council's tree survey service.

ability to assess and control the risks from trees that they are exposed to. All schools are prioritised equally, but inclusion in the council's inspection regime is the decision of the school's management²³.

- 3) **Formal Parks and Public Gardens and children's play spaces** – Our next most frequented sites with a tree stock that is a feature and attraction. Some trees are likely to have had repeated management, but the probability of harm from tree failure may still be high. Surveillance and reporting by users (residents, visitors and staff) is likely to be at a good level.
- 4) **Neighbourhood open spaces, outdoor sports facilities and play spaces** – prioritised equally.
- 5) **Woodlands, conservation areas & green corridors.**

5. INSPECTION REGIME

5.1 Inspection and risk assessment

The Health and Safety Executive 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.”*²⁴

Instead, the council's Tree Officer team will carry out risk assessment and inspection of the council's tree population using the methods described below.

Officers carrying out inspections will have a Level 3 professional arboricultural qualification as a minimum (such as BTEC National Diploma or Technician's Certificate in Arboriculture). They will also have relevant professional work experience, and take part in Continuing Professional Development (CPD) through membership of a relevant professional body, such as the Arboricultural Association.

²³ As of 2012 many schools, including some new Academy schools, have opted-in to this tree risk management plan for a period of four years until March 2016. The service will include one full risk assessment during the four year period. Other schools may join the service during this period. Where schools have decided not to opt-in to the service, they have been advised that they should make their own arrangements for the risk management of their trees.

²⁴ Sector Information Minute 01/2007/05 'Management of the risk from falling trees', HSE, 2005 www.hse.gov.uk/foi/internalops/sectors/ag_food/1_07_05.pdf

- **Inspecting Officers must be (and currently are) licensed and competent users of the Quantified Tree Risk Assessment system. Maintaining a licensed and competent inspection team is critical to the defendability of this tree risk management plan²⁵.**

Where additional expertise is needed to inform an especially complex or contentious tree management decision, this must be sought from an external, suitably qualified arboricultural consultant. The Senior Tree Officer will have responsibility for monitoring the need for external expertise, on a case-by-case basis.

5.2 Walk-over and drive-by surveys

Inspections and surveys will be carried out by the council's trained, competent and qualified Tree Officers (see 3.1). Following the QTRA methodology, each site identified in Section 4 will be the subject of a 'walk-over' or 'drive-by' survey, at a frequency to be determined following the initial and subsequent assessments to identify the type of tree population and its relationship with significant targets (drive-by surveys are reported to discover up to 85% of defective trees).

Recent research²⁶ has compared QTRA target assessments (property value and pedestrian volumes) made by Tree Officers at two sites, with its own more detailed survey data, and found that the Tree Officers had over-estimated these values. It concluded that there may be quite large discrepancies in estimates of usage and target value between the opinion of an assessor and data obtained through detailed surveys. However, the data collection approach taken for the research entailed 37 hours of data collection at these two sites.

While we agree that QTRA calculations should be based on reliable data, it is also important that data collection must be proportionate to the risk. A key feature of QTRA is that it allows the inspecting officer to establish whether or not, and at what degree of rigor the assessment of trees is required. Where the council has collected relevant, accurate and recent traffic census data it will be used. Where data is not readily available, we consider that the judgment of the competent inspecting officer is the most reasonably practicable approach.

²⁵ Appendix X includes a log of update training undertaken by Inspecting Officers.

²⁶ Papastavrou, V. et al. (2010) *Determining pedestrian usage and parked vehicle monetary values for input into Quantified Tree Risk Assessments – Two case studies from urban parks in Great Britain*. Arboricultural Journal 2010, 33: 1

- **Trees identified as posing an unacceptable risk of harm will be recorded and may require an ‘individual tree risk survey’ (see 5.2 below).**

5.3 Individual tree risk surveys

The individual survey will inform management options to reduce the ‘risk of harm’ to within acceptable limits. Risks approaching and exceeding 1 in 10,000 will be considered for remedial action. The individual survey will use the Visual Tree Assessment (VTA) process described by Mattheck & Breloer²⁷. This method is recognised professionally throughout the UK, and is incorporated into essential arboricultural texts including Lonsdale²⁸.

Essentially, VTA proceeds in three phases:

- 1) Visual assessment for defect symptoms and vitality. If there is no sign of a problem then the investigation is concluded.
 - 2) If a defect is suspected on the basis of symptoms, its presence or absence is confirmed by examination.
 - 3) If a defect is confirmed and has potential to present a significant risk of harm, the tree might be evaluated in more detail using tools including the Resistograph decay test drill.
- **Tree work decisions are then determined based on the outcome of this inspection (see Section 6 below).**

5.4 Documentation

The identified target zones, survey dates and data (including the risk of significant harm), and records of remedial work carried out, will be recorded within the Confirm system.

²⁷ Mattheck, C. and Breloer, H. (1994) *The Body Language of Trees: A handbook for failure analysis*. The Stationery Office, London.

²⁸ Lonsdale, D. (1999) *Principles of Tree Hazard Assessment and Management*, Forestry Commission, The Stationery Office, London

- **The database will allow the council to confidently defend claims of liability. This plan, and the tree management records within the database, will form a publicly transparent documentary system of tree risk management.**

5.5 Special site risk assessments

On occasion, surveys of tree populations may take place for the purpose of making an inventory, or for other tree management purposes. Surveys may be carried out, for example, where a new site is brought within the council's management, or where a detailed understanding of a site's trees is needed to inform a management plan for the site.

While a detailed survey is being carried out, the opportunity may also be taken to carry out a special QTRA risk assessment of the trees at a level of detail that should be informed by either the current or proposed land use. This could be done even though:

- resources have yet to allow similar sites to be risk assessed, or
- the site does not fall within one of the prioritised zones at all.

5.6 Reactive tree risk assessments

The council receives many enquiries each year from residents or businesses with concerns about trees in the district. The concern may be actual or perceived, and may relate to council-owned or private trees. These concerns demand a response from the council's Tree Officers. The response must be appropriate and considered, and within the legal powers available to the council.

Where tree safety concerns are raised, a site visit will always be made, as a priority.

The council has a prioritised response to these concerns, which operates on a simple to understand traffic light system (see Appendix 2, pg 22). Once on site, a risk assessment will be carried out by the Tree Officer, which will most commonly be an Individual tree risk survey (5.2 above).

- **The council will intervene where a significant risk to people or property exists, and where the QTRA assessment identifies an unacceptably high risk (see section 3.4).**

We may also decide to intervene if it is clear that the risk is likely to worsen significantly in the near future.

Where our assessment finds that an actual risk is acceptably low, and that the council has no legal obligation to intervene (including the shading of properties, poor TV reception or natural litter caused by trees), we will only undertake work when priorities allow. The council will endeavour to be neighbourly, but must balance the needs of individuals with the wider objectives of the Green Infrastructure Strategy (section 2) to enhance and improve the environment.

5.7 Privately owned trees – the council's legal powers

The council has delegated its powers under the Town and Country Planning Act 1990, in relation to trees, to its Tree Officers.

Under the Act, work to privately-owned trees protected by a Tree Preservation Order, or situated within a Conservation Area, is likely to be subject to the council's approval. The council may approve of proposals of work, may refuse to allow the work, or may make a new tree preservation order to prevent it.

- **Where tree work proposals are made on the grounds of risk to people or property, the council's Tree Officers will apply the QTRA risk assessment methodology to help inform the council's position.**

On the basis of such an assessment, the council may ask for additional expert evidence before a decision can be reached.

The council has powers under Section 24 of the Local Government (Miscellaneous Provisions) Act 1976 and Section 154 of the Highways Act 1980 to order a tree owner to carry out remedial work to dangerous trees, or to otherwise carry out the work itself.

- **The council's Tree Officers will apply the QTRA risk assessment methodology to inform the decision process when a tree is identified as posing a hazard to the highway.**

6. INTERVENTION

6.1 Proportionate response

Intervention decisions will be made where the probability of harm from trees has been assessed, and exceeds an acceptable limit.

- **The HSE suggests that an appropriate limit for a risk imposed on the public should be set at 1 in 10,000 per annum.**

Where an unacceptable risk is identified for a tree, or group of trees under council responsibility, the following action will be taken by the Officer present or on duty, depending on the circumstances:

- 1) The public will be isolated from **imminent hazards** and remedial work carried out as an emergency.
 - 2) **High risks** will be highlighted for remedial action at the earliest opportunity, with the order of work being carried out generally in descending order of risk, unless practical matters such as traffic control permissions mean this is not possible.
 - 3) **Lower-risks** will be dealt with within the planned management programme for the site or road. A schedule of remedial work will be devised. Completion of the work will be confirmed and recorded.
- Where arboricultural intervention could have a significant effect on the value of trees, modification of targets will be considered first. Moving a park bench or obstructing a desire-line footpath are examples of modifying targets to eliminate or reduce the need for arboricultural intervention.
 - All arboricultural operations will be specified and implemented in accordance with current best practice such as BS3998: 2010 Recommendations for Tree Work and the Arboriculture and Forestry Advisory Group guidance.

6.2 Tree Major Incidents

North Somerset Council has a Tree Major Incident Plan (Appendix 3, pg. 24).

7. MONITORING AND REVIEW

A frequency for tree risk assessments or inspections has not yet been imposed or specified in English law. National guidance has yet to recommend a frequency. Instead, the frequency of reassessment will be determined by the initial and subsequent assessments on a site by site basis. If an assessment frequency is specified in law or national guidance, it will be adopted.

- **This Tree Risk Assessment Plan will be reviewed annually.**

The process will be monitored during team meetings by the Senior Tree Officer, with relevant staff and issues discussed and resolved as necessary.

This Tree Risk Management Plan document is subject to continual review and change as circumstances require. The attached sheet in Appendix 1 records amendments and alterations to the document.

GLOSSARY

Hazard	A hazard is a situation (somebody or something) that poses a level of threat to life, health, property, or environment.
Highway	A "Public Highway " is a road or footpath over which the public has the right of access, i.e. the opposite of a "private road", and includes streets and lanes as well as main roads and trunk roads. The Highways Agency is the government agency responsible for England's motorways and trunk roads. North Somerset Council is the highways authority with a duty, under the Highways Act 1980, to maintain adopted roads at the public expense.
NTSG	The National Tree Safety Group (NTSG) was formed in August 2007 to discuss the need for a nationally recognised approach to tree safety management. Member organisations include the Arboricultural Association, Forestry Commission, Royal Institute of Chartered Surveyors and Institute of Chartered Foresters, among others. A priority is the provision of tree safety guidance that is proportionate to the risk posed by trees and defensible rather than defensive. Consultation on the group's draft guidance document "Bringing Common Sense to Tree Management" closed in June 2010.
QTRA	Quantified Tree Risk Assessment (QTRA) is a tree safety management system developed and licenced by Quantified Tree Risk Assessment Ltd, Poynton, Cheshire (www.qtra.co.uk) It applies established risk management principles to tree safety management. It is described in more detail in Section 3.3 above.
Risk	Risk is the likelihood of something going wrong – the danger that injury, damage or loss will occur. Risk is calculated as the likelihood of an occurrence multiplied by the seriousness if an incident occurs.
Target	A target is something – people or property - beneath or near a tree that would be damaged or injured should a part of the tree fail. A target may be mobile or static, fixed or moveable.
VTA	Visual Tree Assessment (VTA) is a process described by Mattheck & Breloer in <i>The Body Language of Trees: A handbook for failure analysis</i> (1994, The Stationary Office, London). The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot, or area of mechanical stress. An arboriculturalist with a broad range of experience of different tree species, as individuals and in groups, makes informed and reasoned decisions about the condition and safety of a tree.

APPENDIX 1: AMENDMENTS & ALTERATIONS

Date	By	Section	Amendment
09/04/2010	IM	All	Amendments following team & JF review. Addition of Appendix 2
24/05/2010	IM	All	Amendments following NTSG document release and JF edit
23/07/2010	IM	All	Amendments following review by Mike Ellison of QTRA Ltd.
22/09/2010	IM	All	Final amendments following MM review
23/02/2011	IM	All	Further corrections and change of title date following Councillor Decision 10/11 DE123 to formally adopt the Management Plan.
February & March 2012	IM	All	First year review of Plan following updated QTRA methodology, new NSTG national guidance and lessons learned in first year plus officer training table.
November 2013	LS	Appendices 2 and 3	Updates to QTRA documentation table and officer training log
March 2014	LS	App. 3	Update to officer training log
September 2014	LS	Index; App. 3	Index page numbers; update of officer training log
September 2015	LS	App. 3	Update of officer training log
September 2015	LS	3.4	Amendment to include Monte Carle calculation

APPENDIX 2: QTRA DOCUMENTATION UPDATES

The QTRA methodology is regularly refined through an updated User Manual, user training and Practice Notes. The user manual is subject to minor annual updates between more significant revisions. The Quantified Tree Risk Assessment Practice Note is a technical summary of the QTRA method as it is currently practiced and includes guidance on how risk assessments can inform the management of risks from falling trees. Documents are available to the Licensed Users at <http://www.qtra.co.uk>

The following log tracks updates to printed documentation:

Date	Document	By	Notes
To Dec 2011	QTRA User Manual V3.04 - 10	QTRA	Version 3 was first published in 2007. Replaced.
To Oct 2011	QTRA Practice Note V3.04 – 07	QTRA	Replaced
Nov 2011	QTRA Practice Note V4.02 (UK) 11-2011	QTRA	Replaced
Jan 2012	QTRA User Manual V3.05 2012-01	QTRA	Replaced
November 2013	QTRA User Manual v5.0/13	QTRA	Replaced
December 2013	QTRA User Manual v5.1/13	QTRA	Current

APPENDIX 3: INSPECTING OFFICER TRAINING

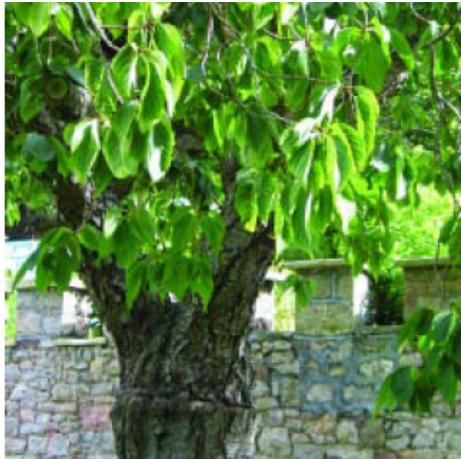
Key: JC – Jason Cox, Tree Officer; JM – James McCarthy, Tree Officer; JF – John Flannigan Community and Environment Services Manager; LS – Linda Saretok, Principal Tree Officer. (Colleagues no longer working with us: IM – Ian Monger; JH – Jenna Higgins)

The following log tracks training undertaken by Inspecting Officers:

Date	Document / training	By	Trainee	Notes
14/09/2009	QTRA Licensed User Training	QTRA Ltd	IM, LS, JC	
15/09/2009	Practitioners Guide to VTA	QTRA Ltd	IM, LS, JC	
16/09/2010	QTRA Update Training	QTRA Ltd	IM, LS, JC	Bespoke training at North Somerset sites
01/07/2011	QTRA Benchmarking exercise	IM	IM, LS, JC	In-house Tree Officer team exercise
06 to 08/09/2011	Professional Tree Inspection 3 Day Course	Arboricultural Association / Lantra	IM	
11/11/2011	QTRA Practice Note revision V4.01 discussion	IM	LS, JC	In-house update session
01/12/2011	Q&A email to Mike Ellison	IM	LS, JC	Email to Mike Ellison of QTRA to resolve specific questions and issues
16 to 18/05/2012	Professional Tree Inspection 3 Day Course	Arboricultural Association / Lantra	JC and LS	
10/10/2013	QTRA Update Training V5.0	QTRA Ltd	JC, JF, LS	Updated QTRA calculator. Risk of Harm for all possible combinations of target, size and Probability of Failure have now been calculated using Monte Carlo simulations. Risk of Harm cannot be calculated without the manual calculator or software application.
4/3/2014	QTRA licensed User Training	QTRA Ltd	JH	

5/3/2014	Practitioners Guide to VTA	QTRA Ltd	JH	
9-11/7/2014	Professional Tree Inspection 3 Day Course	Arboricultural Association / Lantra	JH	
28/7/2015	QTRA licensed user training	QTRA Ltd	JM	
29/7/2015	Probability of Failure training	QTRA Ltd	JM, JC, LS	New approach with QTRA Ltd guidance on probability of failure benchmarking

APPENDIX 4: TREE MANAGEMENT LEAFLET



No: _____

Tree Inspection Findings

on: _____

the Tree Officer for North Somerset Council has been to: _____

to assess the works priority of your tree enquiry.

The work falls into the following category:

- Red**
will be attended as quickly as possible
- Amber**
will usually be attended to within six months
- Green**
may be attended to at the appropriate time

Signed _____

Date _____

The importance of trees

- trees can add value to an area by creating an attractive environment
- some people find trees provide spiritual values
- trees provide shade and shelter as well as filtering pollutants from the air
- a tree rich landscape can help biodiversity
- interception of rainfall by trees can help reduce the risk of flooding

**Streets & Open Spaces Group
Environmental Management
North Somerset Council
Town Hall
Weston-super-Mare
Somerset BS23 1LH
01275 884 273
e: trees@n-somerset.gov.uk
www.n-somerset.gov.uk**

This publication is available in large print on request. Help is also available for people who require council information in languages other than English.

Please contact
01275 888 638

**tree
management**
protecting &
improving the
environment

tree management protecting and improving the environment

North Somerset has a rich heritage of trees that adorn its streets, parks and open spaces, providing a high quality treescape. Trees provide many benefits; helping trap carbon-dioxide, filtering dust from the air, providing shade from harmful ultra-violet radiation, supporting wildlife as well as being pleasing to look at and reflecting the changes in the seasons.

However, being living, growing organisms they do need management. Our policy is that works are only undertaken to trees if they are dead, dying, diseased or dangerous.

Top priority for our tree management team is public safety. Work on any tree identified by us as being in a hazardous condition will be treated as a priority. Other priority tree work will focus on any legal nuisance issues such as branches obstructing footpaths or roads, touching or damaging buildings or obscuring street lamps and road signs.

On average we receive 600 calls a year relating to trees under our management as well as the ongoing maintenance of managing 1,500 sites. Protecting the environment coupled with limited resources mean decisions have to be made on the priority of our work.

This leaflet has been produced to help you understand how decisions are made about tree management in North Somerset. It:

- considers how urgent the work is
- describes when the work should be completed
- explains who to contact for further information.

If you make a request for tree works to council owned or managed trees for whatever reason the following steps will be undertaken, based on a three category process:

- the initial enquiry/report is logged
- a council tree officer will inspect the tree before deciding which of the three categories is appropriate
- a time scale for the completion of any work will be provided but will be dependent on workloads at that time.

The three categories are:

- Red** Urgent works that will be completed as quickly as possible to trees that are dead, dying or dangerous, trees implicated in legal claims or are obstructing the highway.
- Amber** Trees that need attention to prevent future problems, such as them becoming hazardous or to continue previous management techniques such as pollarding. The work will be completed in a timely fashion as part of our programmed works – usually within six months.
- Green** Tree works that are not essential – a list of typical examples are shown on the next page. No guarantee can be made that such work will be undertaken and any work that does happen will be at the discretion of North Somerset Council. We will take into account good arboricultural practice, tree species, proximity to property and the personal circumstances of the enquirer.



The Green category

The following works to trees fall into the green category and will only be undertaken when priorities allow. These works have been given this priority because tree owners are not legally required to prune or fell trees for these reasons. Trees are also a valued element of the environment and their retention is desirable.

- **Sun light** – trees will not generally be pruned or felled to allow greater access for light
- **Tree debris** – Falling fruit, leaves, seed and sticky honeydew are not considered sufficient reason to prune or remove trees
- **TV reception** – Pruning or felling is not generally undertaken to improve reception for televisions
- **Large trees** – The fact a tree is large and swaying in the wind is not sufficient in itself to justify removal or pruning.

We will endeavour to be neighbourly but must balance the needs of individuals with wider tree management objectives to enhance and improve the environment.

We will not grant permission for residents, or their contractors, to prune or fell trees on its land for consistency of management, Health and Safety and insurance reasons.

APPENDIX 5: TREE MAJOR INCIDENT PLAN

1. BACKGROUND

The purpose of this document is to detail the response of North Somerset Council's Green Infrastructure Team to a major incident involving a large number of tree failures, through high winds. Such trees may be in a dangerous condition; they may be blocking public highways - thus impeding emergency services and they may also be causing an obstruction on Council owned land.

A 'tree major incident', for the purposes of this document, is any event which leads to a level of tree failure requiring the dedicated efforts of the Council's tree officers to resolve. In real terms this is likely to be a situation in excess of four incidents an hour. The great storms of October 1987 and January 1990 clearly fall within these criteria. Lesser storms, which could result in a major incident classification, occur on average every two years.

The Council's responsibilities with regards to trees in these circumstances is restricted to the following:

- 1) The Council is required to remove obstructions from the public highway and public rights of way. This includes powers to enter private property and make safe trees considered to be endangering the public highway.
- 2) The Council has a duty of care towards the trees within its ownership.

The Council is not required to:

- 1) Remove or make safe trees located on private property – unless they obstruct or pose a threat to a dedicated public right of way
- 2) Provide agreement for removal of trees protected by virtue of a Tree Preservation Order – it is incumbent upon the tree owner to show at a later date (if required) that the tree in question was dangerous and thus outside Tree Preservation Order legislation.

2. ORDER OF OPERATION

Most tree related incidents are dealt with via contact with the Tree Officers who in turn instructs one of the Council's term contractors. Out of hours, the Council's Emergency Service has a list of numbers to contact, beginning with the Area Officer, who will inspect the incident and instruct contractors accordingly.

However, when an incident is escalated to the major category during office hours, as defined above this changes, and co-ordination will be carried out by one member of staff in the Natural Environment Team – usually the Senior Tree Officer.

Works during a major incident will be prioritised on the following basis:

- 1) Trees blocking major arterial routes across the District, which link the Fire, Police and Ambulance stations and Weston Hospital
- 2) Major arterial routes throughout the District (as described by the winter maintenance gritting routes)
- 3) Bus routes - as identified on the District map
- 4) Trees required to be made safe
- 5) Other trees

Various officers, contractors and support staff will be required to undertake specific tasks, namely:

3. Council Connect

During office hours all external telephone calls should be directed to extension 6989.

If that number is busy all messages received will be recorded on the database AND a message with the following information phoned through to the Senior Tree Officer:

- a) A contact name
- b) A contact telephone number
- c) The location of the tree
- d) A brief description of the nature of the incident

4. SENIOR TREE OFFICER (Bronze Command)

This officer will be based at their usual desk. The role of this officer will be to:

1. Establish the time the emergency began in relation to the 10 hour period that the contractors are able to continuously work
2. Assess the scale of the incident in conjunction with the Inspecting Trees Officers – and other command agencies if applicable.
3. Locate additional resources if required.
4. To collate incidents derived from telephone or passed message – giving each incident a unique number.
5. To pass such information to the Trees Officers
6. To receive from the Trees Officers completed works details to file for later settlement.
7. Establish contact with the contractor teams deployed for the duration of the emergency.
8. Assess incidents as reported and compile initial priority order.
9. Communicate with the Inspecting Trees Officers listing incidents received, and suggested order of inspection.
10. Communicate with contractor(s) providing works instructions.
11. Retain information on contractor's whereabouts.
12. Detail on incident sheet, the size of the tree, which contractor completed the works, and the cost centre to which works will be charged.
13. Initiate a five hour review of the emergency. Consider resources in light of this – including possible stand down times and rest periods.

5. INSPECTING TREES OFFICER (Tactical Bronze)

These Officers will be based in the field in communication with the Office Based Senior Trees Officer by mobile telephone or land line. The role of this officer will be to:

1. Retain contact with the Office Based Senior Trees Officer.
2. Inspect incidents as directed by the Office Based Senior Trees Officer.
3. Advise the Senior Trees Officer as to the priority level of each incident and advise as to the most appropriate contractor to undertake each task.

6. SILVER COMMAND LIASION

If an incident is sufficiently serious to require the instigation of a Silver or Gold level of command, priority of the arboricultural response will be governed and guided by those command levels as directed.

The contact officer for arboriculture and Gold or Silver Command will be the Natural Environment Manager. This role will include giving reports, statements or briefs to the higher command levels or media as required.

7. ARBORICULTURAL CONTRACTORS

Will undertake works as directed by the Office Based Senior Tree Officer. These works will be issued one job at a time with the contractors required to telephone the Office Based Senior Tree Officer to confirm completion and receive their next instruction.

8. FATIGUE

The nature of tree work and the equipment required to deal with tree related incidents is hazardous. The risk to contractors engaged in work is increased through fatigue. In order to reduce this risk management of the incident will include consideration of fatigue to contractors. This will be based on the assumption of a tree gang being able to work for a maximum of ten hours. The management response to this will be:

- i) Once an emergency has been declared the 'clock' will begin ticking on the 10 hour period.
- ii) An initial immediate assessment will be made on whether the emergency might over run the 10 hour period. If this appears likely the Senior Tree Officer will attempt to locate additional personnel / resources.
- iii) Five hours into the emergency the Senior Tree Officer – with other command agencies if applicable – will assess the likely remaining duration of the emergency in light of the 10 hour threshold. If an over-run appears inevitable and no additional resources have been identified, some gangs may need to be rested if they are to be expected to return and provide continuity after the ten hour period has passed.

9. GROUNDS MAINTENANCE STAFF

Prior agreement will be made with the relevant Grounds Maintenance contractor to supply equipment and staff to assist with the arboricultural response. The aim of this provision is to increase the range and number of incidents the arboricultural section is able to respond to, whilst still operating within the structure of the arboricultural response and/or Gold and Silver Command. The staff will effectively come under the control of the Office Based Senior Trees Officer for the duration of the incident.

The equipment required would consist of:

- a) A tractor equipped with a mounted winch,
- b) A large trailer,
- c) A sufficient number of staff for the above.

The primary role of the Grounds Maintenance input will be to:

- a) Winch aside major trees and/or limbs to regain access along major routes.
- b) Assist with the removal of debris.

There would not be a presumption that the Grounds Maintenance staff would undertake technical arboricultural operations.

10. TIPPING ARISING

Contractors may, with the agreement of the Office Based Senior Trees Officer, tip tree arisings and debris at selected sites throughout the district. This will be in order to save time removing arisings to contractors' yards.

11. TOTAL LOSS OF TELECOMMUNICATIONS

Should a major incident occur where all telecommunications are lost, officers and contractors will make their way to Castlewood, Tickenham Road, Clevedon, BS21 6FW.

Clearance of roads will then occur on main roads to the hospital and then in order following the gritting route.

Subsequent clearance works will occur as per the blue marked bus route map until telecommunications are restored.