

Quantified Tree Risk Assessment Newsletter July 2010

QTRA Calendar

QTRA Training - UK

07 Sep - Chorley, Lancs
07 Sep - Guildford, Surrey
14 Sep - Truro, Cornwall
28 Sep - Dundee, Angus
26 Oct - Cambridge

Licensed User Update Workshop

08 Sep - Chorley, Lancs

A Practitioner's Guide to VTA- UK

08 Sep - Guildford, Surrey
15 Sep - Truro, Cornwall
27 Oct - Cambridge

QTRA Training - Australia

06 Jul - Sydney

The Evolution of QTRA

by Mike Ellison



Back in 1995 the goal was to find a tool for the assessment of tree-failure risk that would both assist in providing management recommendations and help clients to prioritise tree safety management. My initial approach was to modify the risk ranking method developed by the North American arborists Nelda Matheny and James Clark. In 1992, Matheny and Clark had published a numerical method in their book 'A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas', which was modified in a 1994 revision. This method, which sums values applied to three components of the risk, was and is still widely used, both in the published form and in various reincarnations. The authors advise the user that the hazard ratings calculated using their method should not be used to define a line for action – or, in other words, a threshold of acceptability. For me, this defeated the object of the risk ranking exercise and I modified the method in an attempt to find that elusive threshold. But, no matter how I quantified and combined the inputs to my assessments I could not produce results that were sufficiently consistent to enable a threshold to be used. It has since become apparent that I was not the first to recognise that whilst the Matheny and Clark method had some merit and provided a structured approach, its practical use was limited when seeking to prioritise tree safety management and, perhaps more importantly, apply a safety threshold below which risks could be tolerated.



Several authors, considering the risk from tree failure, had proposed methods of valuing or ranking the risks from trees and most used abstract values or scores that related only to the assessment of a particular tree and had little or no relationship to any external value. In contrast, in 1990, UK Arboriculturist and Ecologist Rodney Helliwell had published a short paper in the Arboricultural Journal which proposed that the likelihood of tree failure could be quantified as a probability. Helliwell also recognised that the level at which land is occupied could also be quantified and this was the key to quantifying the risk from tree failure. In a letter to the editor of the Arboricultural

QTRA facilitates a reasonable approach to tree safety management

QTRA enables the value of the tree to be balanced against the risk

QTRA provides a proportionate approach to tree safety

QTRA is supported by an online User Discussion Group

Journal in 1991 and following critical comments from a reader, Helliwell proposed a method for calculating the risk of a falling tree hitting or being hit by a vehicle. On the basis of road speed and traffic flow, the method calculated the probability that a given point on the road would be occupied, and this method is still used in QTRA today.



On rediscovering Helliwell's work, the tree risk jigsaw became clearer and in 1995 Quantified Tree Risk Assessment was born out of combining his approach with the components (Target, Size and Likelihood of failure) proposed by Matheny and Clark. The first version of QTRA produced a high incidence of anomalous outputs when assessing the failure of small trees and branches and it was evident that these anomalies were related to the 'Size' component. For eight years, QTRA was very much 'work in progress' until a colleague directed me to allometric 'whole tree biomass' studies, which consider the mass of trees in relation to stem diameter. This 'discovery' was a turning point in

the development of QTRA, which enabled a reasonable quantification of the relative weights of trees and branches and no longer were smaller trees and branches over-valued in the risk assessment.

QTRA is no longer so much a 'work in progress', but, with the benefit of user feedback, continues to evolve and become increasingly robust. Our current developments include the revision of the Probability of Failure ranges used on our manual and software calculators, with the addition of a sixth range. We are also amending our advice and guidance on the application of the method and in particular aligning our advice with the Health and Safety Executive's (UK) 'Tolerability of Risk Framework'.

QTRA and the Tolerability of Risk Framework

At Quantified Tree Risk Assessment we are constantly monitoring user comments, which combined with our own experiences results in the ongoing development of the method.

For some time now we have been considering aligning QTRA with the UK Health and Safety Executive's (HSE) 'Tolerability of Risk Framework' (ToR) which provides advisory thresholds for the consideration of both the acceptability and tolerability of risk.

For the majority of large UK landowners the management of trees is part of their business undertakings and as such falls within the scope of Section 3 of the Health and Safety at Work Act (1974). Probably the most onerous legal duty on UK landowners is that imposed by this Act. To assist the duty holders' consideration of their duty, HSE provides extensive guidance on the assessment and management of risk associated with everything from nuclear power plants to trip hazards encountered in the workplace. Indeed, as has been mentioned here before, HSE have even produced internal guidance on the management of risks from falling trees.

Having considered this duty in the context of both HSE's stated position on tree safety management and its wider risk management guidance, we have decided that every effort should be made to align with ToR.

Applying QTRA in the context of ToR means that the tree owner will be able to consider the costs and benefits of implementing risk control when formulating management. If the risk control involves removal of a hazardous tree, the costs of implementing the control can be considered as well as the benefits. The risk reduction benefit of risk control is clear, but the costs can be more complex. An obvious cost of the removal will be the financial expenditure, which in itself can be considerable, but often overlooked is the cost of losing the not inconsiderable benefits conferred by most trees. The baseline benefits are associated with most healthy trees and include moderating climate, interception and regulation of atmospheric pollution. As the tree matures and increases in size, these benefits can be expected to increase and further benefits evolve, including economic, ecological, visual, shade and flood mitigation. Never before have tree managers been able to balance the risks and benefits in this way and we look forward to developing this process further in concert with all stakeholders.

QTRA is regularly reviewed

QTRA users are provided with regular updates

QTRA users have access to risk calculator software

International Training



We continue to run our 'Quantified Tree Risk Assessment' and 'Practitioners Guide to Visual Tree Assessment' training workshops internationally. In March this year we delivered six workshops in Australia and have a further QTRA training workshop in Sydney on 6th July and Auckland, New Zealand on 2nd August delivered by Australian arborist Mark Hartley who has been co-presenting workshops with our UK trainers Mike Ellison and David Evans.



Hosted by Allen Lim of King Fung Envirosapes, in May we were in Hong Kong delivering both of our workshops, to arborists from a wide range of backgrounds who are managing tree safety in areas with high levels of public access. Delivering the workshops was an immensely rewarding challenge for Mike Ellison, assisted in no small part by Allen, Suei Tang and James Watt, who were his interpreters over the eight days of workshops.

In France, naturalised English arborist and seasoned arboricultural educator William Moore will be presenting for the first time a two-day QTRA training workshop in Périgueux.



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