Tree Risk-Benefit Validator

1 Establishing the context

Trees give us many benefits that we need

1 The more obvious benefits that trees give us are visual beauty in the landscape, wood, and the various crops they produce. Further values include wildlife habitat, pollution filtering, and reducing the harmful effects of both weather and climate change. Trees also have important social value as part of our culture, history, or because they commemorate an important event. As if those benefits weren't enough, an increasing body of scientific evidence demonstrates that trees are fundamental to our physical health, mental wellbeing, and quality of life.

The overall risk to us from branches or trees falling is extremely low

2 Compared to other everyday risks we readily accept, the overall risk to us from branches or trees falling is extremely low. Our annual risk of being killed or seriously injured is less than one in a million. That's so low, we're at greater risk from a 200 miles (320km) round trip drive to visit friends for a weekend than from branches or trees falling for a whole year. Given the number of trees we live with, and how many of us pass them daily, being killed or injured by a tree is a rare event; one that usually happens during severe weather.

We can't be an insurer of nature or eliminate the risk from trees

3 Of course, we can't be an insurer of nature, and trees are living structures that sometimes shed branches or fall over. But this usually happens because of severe weather. Or because they have an obvious risk feature. Since we need the many benefits from trees, we have to accept we can't remove all of the risk. Trees can also drop cones, nuts, and fruits, though these risks are so low they're Acceptable: any exceptions are covered in the Plan.

1.1 Duty of care

Reasonable
Proportionate
Reasonably practicable

4 We have a duty of care to manage the risk from our trees. That duty also says we should be reasonable, proportionate, and reasonably practicable when managing risk. What that means is, there's a balance we need to strike between the many benefits trees provide, the risk, and the costs of managing the risk. By taking a balanced approach, we don't waste resources by reducing risk - and losing benefits – when the risk is already Acceptable or Tolerable.

We all have a responsibility to make reasonable decisions

5 We're all expected to act reasonably and responsibly. When severe weather is forecast, we can manage our exposure to the higher risk from tree failure by not going out. If we go out, we're choosing to accept some of the risk.

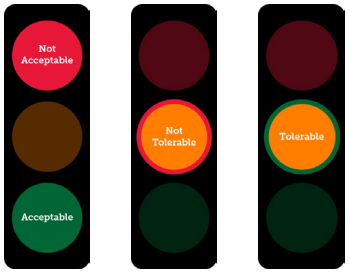
1.2 Risk tolerance

What's an Acceptable or Tolerable level of risk from our trees?

6 The Tolerability of Risk Framework (ToR) is an internationally recognised approach to making risk management decisions. It's used by duty holders where they manage a risk that's imposed on the public. ToR defines *Broadly Acceptable* and *Unacceptable* levels of risk. Between them is a region where the risk is *Tolerable* if it's 'as low as reasonably practicable' (ALARP). Put simply, ALARP means the risk is Tolerable if the costs of the risk reduction are much greater than the value of the risk reduction.

1.3 Risk ratings

Risk ratings are as easy to understand as traffic lights



7 VALID has applied ISO 31000 - Risk Management Standards and ToR to tree risk-benefit assessment and management, which we've adopted. We're going to manage the risk from our trees to four easily understandable traffic light coloured risk ratings.

Red	**Not Acceptable** risks will be reduced to an Acceptable level
Amber	**Not Tolerable** risks will be reduced to an Acceptable level, but with a lower priority than red Not Acceptable risks
	Tolerable risks will not be reduced but may require an increased frequency of assessment than green Acceptable risks
Green	**Acceptable** risks will not be reduced

2 What's Active Assessment?

A structured approach with three levels of assessment

8 Active Assessment is taking a structured approach where we're looking to find risks that might not be Acceptable or Tolerable. It has three levels to it that increase in depth of evaluation from, Basic, to Detailed, up to Advanced.

Risk ratings are limited by the level of assessment

9 Risk ratings have limitations that are dependent on the level of assessment at which they're made. For instance, at a Basic Assessment level, if there are no obvious tree risk features then the risk is Acceptable. A Detailed or Advanced Assessment is an increase in depth of evaluation that might find risk features which weren't obvious at a Basic level, and could mean a higher risk. However, carrying out these higher levels of assessment without an obvious risk feature to trigger them is not reasonable, proportionate, or reasonably practicable.

2.1 Basic Assessment

Finding the few trees where the risk might not be Acceptable or Tolerable

10 A Basic Assessment is our starting point. At this level, we aim to find trees with obvious features where the risk might not be Acceptable or Tolerable. We'll carry out a Detailed Assessment on these trees.

We'll assess the trees from easily accessible ground

11 We'll assess the trees from easily accessible ground, by foot, bike, or in a vehicle with a drive-by.

If we can't get a close enough look at a tree we'll let you know

12 If there are any trees with obvious risk features that we need to get a closer look at, but can't because of climbing plants, undergrowth, basal growth, hedgerows, or the ground. These trees will be noted and we'll let you know about them. Similarly, if there's a boundary tree and we need permission from a neighbour to take a look at from the other side.

The trees or what they could fall on and the type of assessment will be recorded

13 Trees or what they could fall on and the type of assessment are recorded. For example, in a park, individual or groups of trees are plotted and recorded as having been assessed on foot. Whereas, if there are many trees beside a road, the road will be recorded as having been assessed on foot or with a drive-by.

No obvious risk features the risk is Acceptable

14 Unless individual trees have been picked out for a Detailed Assessment, the risk will be recorded as Acceptable at this Basic Assessment level.

2.2 Detailed Assessment

We do a Detailed Assessment when a tree needs a closer look

15 A Detailed Assessment is carried out on trees picked out during a Basic Assessment as needing a closer look because they have an obvious risk feature. Or, because we've been asked to take a closer look at a particular tree.

The risk is assessed with the App

16 The assessment is done from ground level using the Tree Risk VALID App.

We'll produce a report

17 The report will include the risk rating, risk review year, risk reduction work options (if necessary), and any general management advice.

2.3 Advanced Assessment

Large and important trees might be worthy of more effort and cost

18 If we need more information about the likelihood of failure, an Advanced Assessment can be carried out. This might be an aerial inspection, or because we suspect extensive decay with significant strength-loss, and want to find out whether the tree has a high enough 'safety factor' - is it strong enough?

What we'll advise depends on the tree and your budget

19 If we think a tree needs an Advanced Assessment we'll let you know and go through the options with you. If the costs are substantial, we can help you to decide whether the tree has enough value and future benefits to justify the expense. When we carry out an Advanced Assessment, we'll produce a report explaining what we did and the results. The report will also include the risk rating, risk review year, risk reduction work options (if necessary), and any general management advice.

When might a tree be dangerous?

Trees with the highest risk are the easiest to spot

When a tree has a risk that might not be Acceptable or Tolerable, it'll often have an obvious tree risk feature that you can't help but notice. If you come across one of your trees with any of these obvious features in a well-used area, then you need to get in touch with us for advice.

Root failure

Be watchful after storms

Storms can break tree roots without blowing them over

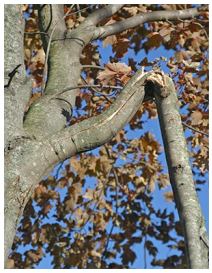
Tell-tale signs are
Change in angle of the trunk
Large cracks in the soil
Hump in the ground on one side

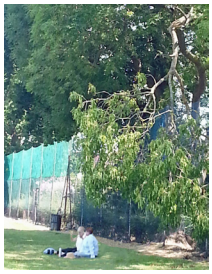

Hanging branches

Don't forget to look up

Branches can break during storms and still hang on

Sometimes they can get stuck up there for quite a while

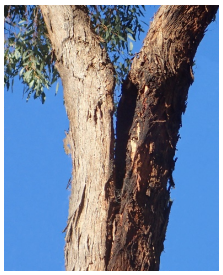




A crack or split into the wood, beyond the bark

When trees bend and twist in storms the wood can split and crack

Vertical cracks in the bark are just the tree growing well there's no need to worry


Advanced decline or death

To be healthy and stay strong trees need 'solar panel' leaves to make food and new rings of wood

When trees are suffering there's often much less leaf cover and many more dead branches

Standing dead trees have great habitat benefits but need checking



Decay fungi fruiting bodies

To decay fungi these 'fruits' are like apples to an apple tree

Decay fungi and trees mostly live happily together creating essential habitat for wildlife

Fungi can sometimes 'eat' too much wood and weaken the tree



Photographs

Jake Miesbauer, Michael Richardson, Roy Finch, Mark Hartley, Rick Milson, David Abrahams Felicity Cloake & Wilf, David Humphries, Jack Prynn.

VALID in a nutshell

VALID is the first complete tree risk-benefit management system. It comes with a super smart **Tree Risk App**, which we train 'Validators' to use and carry out tree risk-benefit assessments.

To partner the App, we've got a range of free, common sense **Tree Risk-Benefit Management Strategies** to help meet the needs of any duty holder.

We're a not-for-profit organisation dedicated to providing training and giving guidance about the risk from tree failure.

Tree risk-benefit assessment

VALID has been stress-tested to breaking point

When they carry out a Detailed Assessment, trained Validators use our **Tree Risk App** to enter the Likelihood of Occupancy, Consequences, and Likelihood of Failure categories. The App then works out the level of risk.

The engine of the App has been built with a Professor of Natural Hazards & Risk Science. The Professor's an internationally distinguished expert in this field. He's test-driven the model to breaking point;

> *"We have stress-tested VALID and didn't find any gross, critical sensitivities. In short, the mathematical basis of your approach is sufficiently robust and dependable for any practical purpose."*
>
> Willy Aspinall
> Cabot Professor in Natural Hazards & Risk Science
> University of Bristol

Tree risk-benefit management strategies

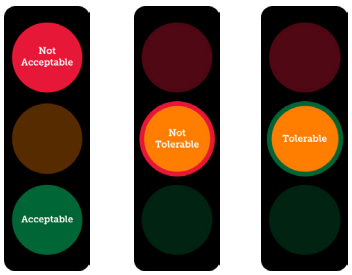
Reasonable
Proportionate
Reasonably practicable

Whether you're a Government Agency, Landowner, or Homeowner if you own trees you have a duty of care to manage the risk from them. That duty of care says, be reasonable, proportionate, and reasonably practicable when managing the risk. What this means is, there's a balance that needs to be struck between the many benefits trees provide, the overall risk from them, and the costs of managing the risk.

VALID has a range of easy to understand, common sense **Tree Risk-Benefit Management Strategies**. These are forged on ISO 31000 Risk Management Standards and the Tolerability of Risk Framework (ToR). As part of our not-for-profit mission, they're free and released under a creative commons license. They explain how you can go about meeting your duty of care whilst being reasonable, proportionate, and reasonably practicable. Validators can customise the strategies for duty holders to formally adopt. They also have a potted version that can be used to help clients who have yet to formally adopt a strategy.

Tree risk ratings

Risk ratings are as easy to understand as traffic lights



Yes, it really is that simple. There's no confusion about what vague words or complicated numbers mean. We have four easy to understand traffic light coloured risk ratings based on ToR, which is an internationally recognised approach to making risk management decisions.

Red **Not Acceptable** risks need to be reduced to an Acceptable level

Amber **Not Tolerable** risks need to be reduced to an Acceptable level, but have a lower priority than red Not Acceptable risks

Tolerable risks do not need to be reduced, but may require an increased frequency of assessment than green Acceptable risks

Green **Acceptable** risks do not need to be reduced