Using the Risk Rating Matrix: ISA BMP. Rate the defect or conditions by Likelihood of Failure, then, look at the Likelihood of Impacting a Specific Target. Use the result and the Consequences of Failure in the final matrix for degree of risk. Degree of risk offers mitigation options. Reference; the 2013 ISA, manual; Dunster, Julian A., E. Thomas Smiley, Nelda Matheny, and Sharon Lilly. 2013." Tree Risk Assessment Manual". Champaign, Illinois: International Society of Arboriculture

Defect's	Likelihood of failure;
By defect or condition	

Likelihood of failure;
Improbable; the tree or branch is *not likely to fail during normal weather conditions and may not fail in many severe weather conditions;*

Possible; failure *could occur, but it is unlikely within normal weather conditions.*

Probable; failure *may be expected under normal weather conditions.*
These first 3 within specified time period.

Imminent; failure *has started or is most likely to occur in the near future, even if there is no significant wind or increased load*. This is a rare occurrence for a risk assessor to encounter, and may require immediate action to protect people from harm.

Likelihood of impacting a target;
Very low; the chance of the failed tree or branch impacting the specified target is remote.
A rarely used site fully exposed to the assessed tree, or an occasionally used site that is partially protected by the trees or structures.
Examples are a rarely used trail or trail head in a rural area, or an occasionally used area that has some protection against being struck by the tree failure due to the presence of other trees between the tree being assessed and the targets.

Low; it is not likely that the failed tree or branch will impact the target.
This would be an occasionally used area that is fully exposed to the assessed tree, or a frequently used area that is partially exposed to the assessed tree, or a constant target that is well protected from the assessed tree.
Examples are a little-used service road next to the assessed tree, or a frequently used public street that has a street tree between the street and the assessed tree.

Medium; the failed tree or branch may or may not impact the target, with nearly equal likelihood. In this case a frequently used area fully exposed on one side to the assessed tree, or a constantly occupied area that is partially protected from the assessed tree.
Examples include a suburban street next to the assessed street tree or a house that is partially protected from the assessed tree by an intermediate tree.

High; the failed tree or branch will most likely impact the target.
This is the case when a fixed target that is fully exposed to the assessed tree or a high-use road or walkway with an adjacent street tree.

Matrix for the <u>likelihood of tree failure impacting specific target;</u>

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	**Low**	**Medium**	**High**
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Consequences of Failure!

Negligible; negligible consequences are those that involve <u>low-value property damage</u> or <u>disruption that can be replaced or repaired</u>, and do <u>not involve personal injury</u>.
Examples of negligible consequences include:
- a small branch striking a fence
- a medium-size branch striking shrub bed
- a large part striking a structure and causing monetary damage.
- disruption of power to landscape lighting

Minor; minor consequences are those that involve <u>low-to-moderate value property damage</u>, small, <u>disruptions of traffic or a communication utility</u>, or <u>very minor injury</u>.
Examples of minor consequences include:
- a small branch striking a house roof from a high height.
- a medium-size branch striking a deck from a moderate height.
- a large part striking a structure and causing moderate monetary damage.
- short term disruption of power at a service drop to house
- temporary disruption of traffic on a neighborhood street

Significant; significant consequences are those that involve <u>moderate-to-high value property damage</u>, <u>considerable disruption</u>, or <u>personal injury</u>.
Examples of significant consequences include:
- a medium-size part striking an unoccupied vehicle from a moderate or high height
- a large part striking a structure and resulting in high monetary damage
- disruption of primary or secondary voltage power lines, including individual services and street-lighting circuits
- disruption of traffic on a secondary street

Severe; severe consequences are those that could involve <u>serious personal injury or death</u>, <u>high-value property</u> damage, or disruption of important activities.
Examples; a person that results in hospitalization, a medium-size part striking an occupied vehicle, a large part striking an occupied house, serious disruption of high-voltage distribution and transmission power line, disruption of arterial traffic or motorways.

Final Risk Rating Matrix; "The Level of Risk";
The combination of likelihood of tree failing and impacting specific target, and
Consequences of Failure!

Likelihood of Failure and Impact	Consequences			
	Negligible	*Minor*	*Significant*	*Severe*
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Risk Ratings and recommendations for mitigation and inspection frequency. Actions and mitigation depend on rating and <u>client tolerance to risk</u>. Extreme-risk trees; the extreme risk category applies in situations in which <u>failure is imminent</u> and there is <u>a high likelihood of impacting the target</u>, and the <u>consequences are "severe"</u>. The tree risk assessor should <u>recommend that mitigation measures be taken as soon as possible</u>. In some cases this may mean immediate restriction of access to the target zone area to avoid injury to people. **High-risk trees;** high-risk situations are those for which consequences are "*significant"* and likelihood is "*very likely"* or *"likely"*; or consequences are "*severe" and likelihood is "likely".* This combination of likelihood and consequences indicates that the tree risk assessor should <u>recommend mitigation measures be taken</u>. The decision for mitigation and timing of treatment depends on the risk tolerance of the tree owner or risk manager. In populations of trees, the priority of high-risk trees is second only to extreme-risk trees. **Moderate-risk trees;** moderate-risk trees are those for which consequences are "*minor"* and likelihood is "*very likely"* or "*likely"* or likelihood is "*somewhat likely"* and consequences are "*significant"* or *"severe"*; . The tree risk assessor <u>may recommend mitigation and/or retaining and monitoring.</u> The decision for mitigation and timing of treatment <u>depends on the risk tolerance of the tree owner or manager</u>. In populations of trees, moderate-risk trees represent a lower priority than high- or extreme-risk trees. **Low-risk trees;** the low-risk category applies when consequences are "*negligible"; and likelihood is "unlikely";* or consequences are "*minor"* and likelihood is "*somewhat likely."* Some trees with this level of risk may benefit from mitigation or maintenance measures, but <u>immediate action is not usually required</u>. Tree risk assessors may <u>recommend retaining and monitoring these trees as well as mitigation that does not include removal of the tree.</u>