

precisely

GeoVision Australia Tree Risk

Product Guide

Version 2020.07.0



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1 - Introduction

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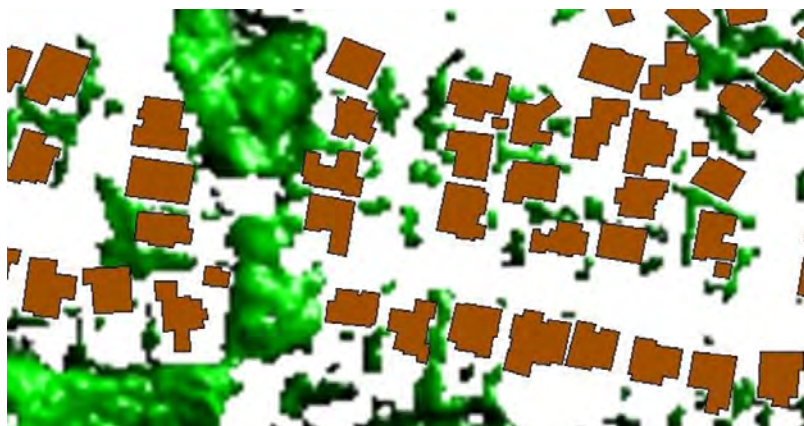
Overview

Precisely GeoVision is a value-added version of PSMA's Geoscape® product, designed to simplify and enhance the experience of using this nationally important new dataset.

The GeoVision Tree Risk data provides a simplified indication of the risk to building integrity from proximate trees, particularly during high wind events. The risk data is derived from a combination of building footprints and raster tree cover data. The model incorporates the following factors:

- The height of each tree
- The distance of each tree from a building
- The number of trees that may affect a building
- The direction each tree would need to fall to affect a building

Note: Trees do not respect property boundaries and the same tree may affect one or more properties or buildings.



GeoVision Australia data: Building footprints and 2m trees raster data for simplicity, the following assumptions are made:

1. That each 2 x 2-meter pixel in the **TREES** raster layer is representative of a tree, capable of falling in any direction
2. That the base of the tree is the same height as the base of the building
3. If a line is drawn at 45 degrees from the base of the building then no pixel lower than that line can affect the building
4. The tree will fall on the closest point of the building

It can also be assumed that:

1. A tall tree falling close to a building will cause more damage than the same tree further away – i.e. the risk for trees of the same height is inversely proportional to their distance from the building.

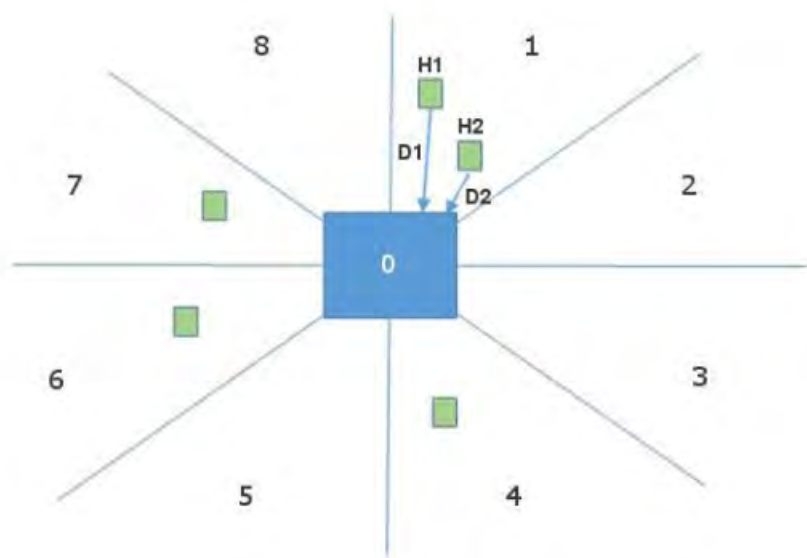
2. The damage caused in a tree fall is proportional to the tree height – i.e. the risk from trees of different height at the same distance from a building is proportional to the height of each tree.

Please note, the following factors may also affect the risk to a building from trees, but are not presently considered as part of the model:

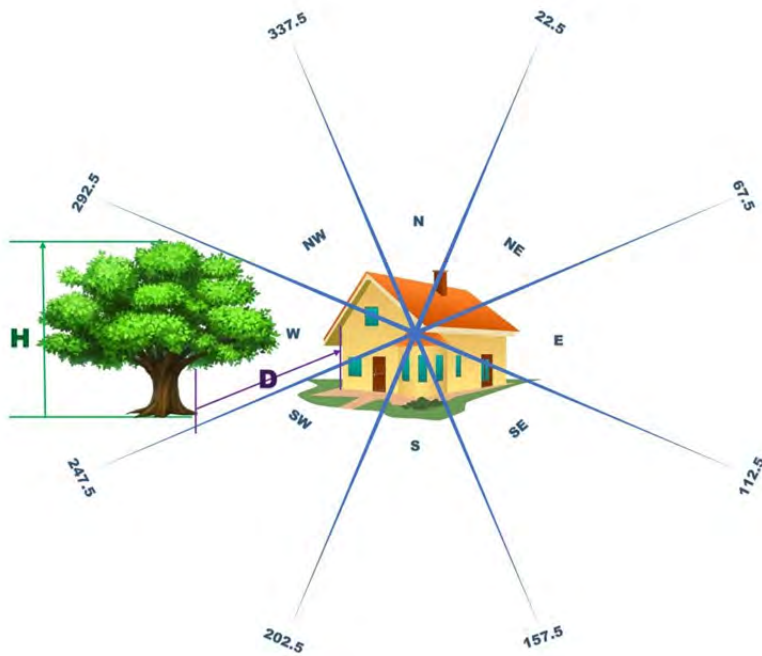
1. The elevation of the base of each tree relative to the building
2. The species of tree
3. The age of the tree and its health
4. The girth of each tree trunk
5. The size of the canopy and lateral branches

Aggregated Tree Risk

The diagram below shows how the tree pixel data is related to the building polygons. The blue rectangle represents a building footprint. The green squares represent raster pixels indicating tree height.



In the **Aggregated Tree Risk** file, risk has been divided into eight octants representing the compass directions. Octants N, NE, E, SE, S, SW, W, NW represent eight possible directions from the building to the Tree Cell. Octant 0 contains references all grid cells with a centroid above the roof.



To calculate the risk factor:

H is the height of each pixel above the ground.

D is the distance to the building.

The risk that trees pose to the building can then be calculated for each octant, for each building:

Tree Risk Factor $N = \sum H/D$ where $H/D > 1$ and Height > 3 meters

Tree Risk Factor $NE = \sum H/D$ where $H/D > 1$ and Height > 3 meters

Tree Risk Factor $NW = \sum H/D$ where $H/D > 1$ and Height > 3 meters

Tree Risk Factor $0 =$ where Height > 3 meters

Raw Tree Values

The **Raw Tree Values** table contains a collection of information about each tree pixel and its relationship to buildings. There may be multiple records for each tree pixel and each building.

System Information

The Tree Risk product is provided in pipe delimited text format (.txt).

To open the files in MapInfo Pro, in the Open Table dialog, select the **Pipe-delimited text** option in the **Files of type** drop-down. You can then insert the pipe '|' character as the delimiter in the **Other** option.

For existing GeoVision Australia customers, the Tree Risk tables can be joined on **BUILDING_PID** directly to any of the **GEOVISION** tables.

For those customers not already using GeoVision Australia, an extra table is provided in the Stand-alone Tree Risk product. The **GEOVISION_ADDR** table contains address information, and can be joined directly with G-NAF (Geocoded National Address File) to place each building in a map location.

2 - Layer Descriptions

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GeoVision Tree Risk Data Model

GeoVision Tree Risk contains two layers (three in the stand-alone product), each with a range of information. The layers can be joined based on the unique **BUILDING_PID** value.

The layers are provided in text format (pipe-delimited) which can be used by a range of applications or opened directly into MapInfo Pro.

Aggregated Tree Risk Layer

The **Aggregated Tree Risk** layer contains the aggregated risk for each building, from each octant. Trees that are inside the building polygon are not included in this table.

Field Name	Description
BUILDING_PID	Identifier of a building polygon
TreeRiskFactor_N	Risk for North octant
TreeRiskFactor_NE	Risk for Northeast octant
TreeRiskFactor_E	Risk for East octant
TreeRiskFactor_SE	Risk for Southeast octant
TreeRiskFactor_S	Risk for South octant
TreeRiskFactor_SW	Risk for Southwest octant
TreeRiskFactor_W	Risk for West octant
TreeRiskFactor_NW	Risk for Northwest octant
TreeRiskFactor_0	Risk for Trees over the roof

Raw Tree Values

The **Raw Tree Values** is a collection of information about each tree pixel, and its relationship to buildings.

Field Name	Description
TreelD	Identifier of a tree partial location
BUILDING_PID	Identifier of a building polygon
Octant	Octants N, NE, E, SE, S, SW, W, NW, or 0 - location of tree pixel relative to the centre of the building. "0" denotes the tree is closer than 1 meter
Height	Height of tree pixel in meter
Distance	Distance to building in meter
Bearing	Bearing of tree with building
ImpactOnBuildings	Number of buildings this tree may impact

3 - Notices and Product Support

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Product Feedback and Support

Contact our **Support** team for product support and additional product information. You can also submit your innovative ideas or comment on existing submissions in a way that is visible to all participants. Our Support site also includes information about our complete portfolio of Data products.



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