



INFORMATION SHEET

BUILDING SERVICES

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BUILDING NEAR TREES

Tree roots can crack slabs

Building near existing large (or future large) trees can create problems during construction and more importantly for slab-on-ground houses can often cause problems over the life of the home. So what can be done up front to help minimise the danger from tree roots next to a house?

The best advice is to get expert advice from someone with knowledge of trees and how their roots system works. However the following tips may help you ask the right questions and ensure that both the trees and the home you build can live happily together for many years to come.

Root Physiology

It is important to recognise that traditional methods of trenching and backfilling with concrete or aggregate may NOT WORK as root barriers or root deflectors.

To be able to predict what roots may or may not do, a knowledge of where they can and can't grow is needed before considering how to deflect them.

Tree roots need five important ingredients to grow

- Water
- Aeration
- Food
- Lack of contamination, and
- Most importantly - ROOM TO GROW

This means that most roots will grow within topsoil layers and spread out well beyond the canopy limit.

Root growth is far more dependent on soil conditions than species. Roots will take advantage of every opportunity to go rampant where soil conditions are suitable.

Therefore the best way to prevent roots growing next to a slab is to manipulate and/or eliminate some of the important ingredients for root growth.

Providing conditions which will allow for better growth away from the house is one way to prevent problems.

Trees and building can live together happily

The elimination of root growth ingredients nearest the house of course can best be achieved by mechanical means ie, root barriers or root deflects which are the ultimate eliminators.

However the trick is that ALL ingredients for best growth be eliminated permanently in the first instance to continually maintain the "eliminator" in the long term.

DISCLAIMER - The above is intended to provide general information in summary form. The contents do not constitute specific advice and should not be relied upon as such. Formal specific advice should be sought by members with respect to particular matters before taking action.

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Root Barriers and Root Deflectors

Traditionally the cut-off wall, consisting of a 300mm wide trench about 1 to 2 m deep filled with concrete or aggregate, has been used for root barriers but it has some drawbacks. It can be:

- expensive
- difficult to provide a complete barrier where service pipes cross
- ineffective - either not being deep/long enough or cost prohibitive
- eventually encounter concrete cracking allowing root penetration
- silting up of aggregate trenches or if aggregate is too small in the first place, it will exclude air voids and promote root growth
- lack of maintenance – landscaping over the trench
- does not address any of the soil conditions that may make root growth suitable near the house.

A case study

An engineer specified a backhoe root barrier drain 300mm by 1200mm deep for 5m with 20mm aggregate to allow the house to be built 2m away from the nearest tree. Five years later, due to silting and landscaping, roots as thick as an arm had broken through the barrier along the entire length of the trench to a depth of about 1m and massed towards the house for 4m in all directions.

Two years ago the aggregate barrier was extended for a further 10m to protect a new extension.

When the recent barrier restoration work was undertaken the most recent barrier was filled with a mass of hairy roots across the 300mm width and down the 1m i.e. heading for ideal conditions under the extension's slab.

The Solution - A proprietary plastic sheet was installed using a narrow width excavator (75mm) to a depth of 1200mm. The plastic sheet needs to be able to deflects any roots and not allow penetration at any time. Products on the market are robust enough for installation (approx. 1mm thick) and have mouldings to create ideal deflection barriers.

One particular plastic root barrier system uses sodium bentonite layered in the trench once the plastic root barrier is installed. The material is fine clay and with any moisture it sets like plasticine. This hopefully prevents roots from growing under the bottom of the barrier where the excavator has aerated the soil at the bottom of the trench. Any pipe penetrations of the barrier are treated in the same way with the bentonite on both sides of the barrier where the pipe has penetrated.

Moisture Barriers

A technique used for root barriers or root deflectors can be used for moisture stabilisation of problem sites i.e. highly reactive or wet sloping sites. The zone of influence is generally accepted as having a depth of 1.5m on the coast and 3m in highly reactive soils.

Conclusion

Tree root problems can be avoided and managed so the trees and building can live happily together. It is better to encourage root growth away from the house (without cutting the tree down) and make conditions next to the house as unsuitable as possible. Barriers or deflectors can be installed to protect against damage to foundations in the short term.

Tree root science is not an exact science and caution should be taken in all cases where there is any doubt of the effectiveness of a barrier. Tree arborists are the best qualified to give you advice on tree roots and the location of trees before you build.

HIA members can contact HIA's Building Services team for more information on 1300 650 620 or hia_technical@hia.com.au.