



## Advanced Faunal Habitat Program

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### 1. Coarse Woody Debris Salvage Specifications

The need to incorporate coarse woody debris (CWD) into broad scale offset and revegetation projects is now known to be a critical element in ecosystem recovery. The Sunshine Coast Council recognises that salvaged CWD holds immense value in accelerated habitat restoration and continues to seek to salvage and store this resource for current and future use.

Council seeks to salvage all usable CWD as a result of unavoidable tree clearing or removal which will be recovered and recycled to construct advanced terrestrial and arboreal faunal habitat within revegetation and offset projects where this is absent.



### Specifications for salvage timber are as follows:

Prior to selecting CWD for salvage the section below “*Phellinus noxius* Risk Management” must be read and followed. A qualified arborist must be confident that selected salvage timber is not contaminated by any form of brown root rot disease, as moving diseased timber around the coast could introduce infected material to a new site.

- Council will only accept CWD that meet all the following specifications.
  - Native hardwood species of the following genera will only be accepted e.g. *Eucalyptus*, *Corymbia*, *Lophostemon*, *Angophora* or *Syncarpia*.
  - Root balls from a tree that have a stem measuring 400mm at DBH (diameter breast height) as a minimum and above.
  - Stem material at a minimum of 400mm in diameter and above.
  - Stem material can be cut into random lengths with a maximum of 3m for efficient tandem tipper loading and transport.
- Existing dead/fallen timber that cannot be used on the project site can also be suitable for salvage if it meets the above specifications.
- An appropriately sized excavator with a log grab will be required to load the trucks transporting CWD off the site.
- Large hollow logs must not be destroyed, as they are more valuable and usable intact.
- Soil, rocks, weeds or any type of deleterious material will not be accepted including CWD that does not meet the specifications, and root balls must be free of soil as much as practicable.
- Should any native fauna be encountered living in or around CWD, works must cease and a Fauna Spotter/Catcher must be called to the site to manage the animal/s as is a legal requirement under the *Nature Conservation Act 1992*.

Council currently has three sites that have areas assigned as storage for CWD. The northern site is located at Eumundi, the central site is located at Palmview, and the southern site is located at Meridan Plains.

This validated program is now considered as ‘industry best practice’ by Council. It has been adopted by Council’s project managers and the Development Services Branch. More widely the benefits of this program are being noticed by the greater civil works industry, Energex and Transport & Main Roads. The program can be incorporated into planning documents and factored into budgets into the future as this practice demonstrates Council’s level of sustainability, environmental stewardship, industry best practice, and recycling of natural products.





## 2. *Phellinus noxius* Risk Management when Salvaging Tree Material for Advanced Terrestrial Habitat Construction

Over 200 species of native and introduced trees and shrubs are hosts to *Phellinus noxius* or Brown Root Rot including Eucalyptus species which are one of the main species that are salvaged to construct habitat stacks. There is a potential risk of unknowingly transporting infected tree material to another location if certain procedures are not observed. *Phellinus noxius* is difficult to control and can remain dormant in the soil for up to 50 years, so prevention and good management is key.

By addressing the points below, you will be reducing or eliminating this risk.

- Educate yourself and others about the potential risks of transporting *Phellinus noxius*.
- Have a qualified Arborist inspect the trees/timber for *Phellinus noxius* displaying fungus fruiting bodies.
- If you suspect any tree material of being infected do not touch it and cease any removal works on the tree; have a qualified arborist with the relevant experience inspect it.
- If required have someone take samples for analysis to confirm the presence of *Phellinus noxius*.
- Contact Councils Offset team for more information and or assistance via [mail@sunshinecoast.qld.gov.au](mailto:mail@sunshinecoast.qld.gov.au)

### What to look for

The fungus often produces a characteristic brownish sheath or 'stocking' on the bark surface and roots of infected trees which have a white margin when actively growing, turning a cinnamon colour, then brown as it ages. Not all infected trees display a visible 'stocking' as the stocking can be located below natural ground level.

On large trees, the stocking may extend for 2m+ or more above the root collar.



Figure 1 Flat 'resupinate' fruiting body of *Phellinus noxius* (Brown Root Rot) on a Eucalypt tree



Figure 2 another example of the 'resupinate' fruiting body of *Phellinus noxius* (Brown Root Rot)



Figure 3 Bracket fruiting bodies of *Phellinus noxius* (Brown Root Rot)

The fruiting bodies normally only develop after extended periods of rain. They can be flat and leathery or woody and hard. The fungi produce air borne basidiospores that have the potential to spread the disease. *Phellinus noxius* can generally be recognised by the 'stocking' or the 'bracket' as seen in Figure 1, 2 & 3 above.

### Plytophthora

*Phytophthora cinnamom* is another, but more common fungi known to be present on the Sunshine Coast and affects a range of species – both natives and introduced species. It's an introduced pathogen that came here in the early stages of Australian settlement.

Symptoms include stunting, wilting, yellowing foliage and shoots, die back and the entire plant soon dies. It's underneath the ground where the roots are being damaged. Plants with root rot lose their ability to absorb moisture and nourishment from the soil. The fungus releases spores into the surrounding soil, which travel in soil water to infect the next plant.

Plants often resemble those suffering from drought, stress and mineral deficiencies. Trees with root rot develop cankers, ooze reddish or black sap and sometimes develop dark vertical streaks. *Phytophthora* thrives in wet and poorly drained soils and under severe waterlogging rapid decline of trees may occur. When *Phytophthora* attacks large mature trees, the disease can take years to kill the plant.

*Phytophthora* is usually transmitted as a result of moving infested soil from one area to another. This can be as a root ball, attached to a spade, on walking boots or on the tyres of a vehicle, and it can also move in water. It's difficult to diagnose the disease accurately without relying on laboratory tests and it can be confused with a number of other non-disease problems, such as drought stress. The fungus has another advantage in that the spores can live for up to 10 years in the soil, and the fungus itself can live up to 20 years.



Further information can be found on the Queensland Bioscurety website via the following link.

<https://www.business.qld.gov.au/industries/farms-fishing-forestry/forests-wood/pests-diseases/trees-timber/brown-root-rot>

Information on collecting samples can be found on the Queensland Biosecurity website via the following link.

<https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/crops/test/grow-help-australia/package>

### **3. Nest Box Construction from Salvaged CWD**

**In South-east Queensland bushland, arboreal habitat is in very low existence due to removal of most of the mature trees. This means there is now a gap of between 50 and 100 years for semi-mature trees to develop into mature, over mature or dead trees and develop natural spouts and hollows.**

Native trees provide nectar, shade, and habitat, and are considered the next generation of hollow bearing trees for fauna species dependent on arboreal cavities. Unavoidable impacts to these trees need to trigger the ecological and ethical requirement to have nest boxes installed.

Class 1 timber species were selected and milled into 40mm x 200mm boards and constructed into nest boxes. These have been installed into a reserve with monitoring devices that can demonstrate successful habitation.

As with the demonstrated benefits of installing terrestrial habitat stacks, the same goes for nest boxes - “if the habitat is not there the fauna won’t be there” and “if you install the habitat the fauna will find it”.

The Queensland Government’s QTimber website (<https://qtimber.daf.qld.gov.au/>) advises that Durability Class 1 timber will last over 40 years above the ground which is decades longer than a conventional plywood nest box.

It is believed that the 40mm rough sawn local hardwood will have better thermal properties and be more enticing to native wildlife given the natural timber smell and feel.

If you are considering installing nest boxes, a nest box plan will need to be created by an ecologist who will use a combination of field and desk top assessments to establish which boxes and how many should be installed. Each individual box will also need to be installed at the correct height and aspect to suit the target species in order to get the best results.

They do cost more to purchase and install, though the benefit of increased longevity greatly outweighs the expense.

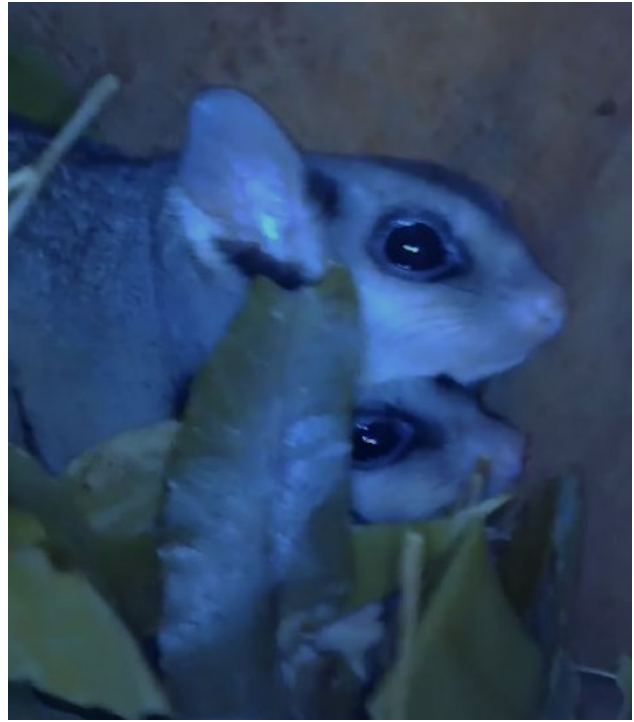
Further information on Durability Ratings can be found on the Qtimber website or via this link. [Natural-durability-ratings](#) or at <https://qtimber.daf.qld.gov.au/guides/natural-durability-ratings>

Durability Class 1 Queensland timber species fact sheets can be viewed at the below link.

[Queensland Timber species](#) or at <https://qtimber.daf.qld.gov.au/browse-timbers>



Sugar glider nest box.



Baby sugar gliders photographed using an endoscopic camera in hardwood nest box during monitoring.



Brushtail Possum and baby photographed using an endoscopic camera in hardwood nest box during monitoring.





Range of nest boxes available.

Further information is available via the below link or on Councils website.

<https://publicdocs.scc.qld.gov.au/hpecmwebdrawer/RecordHtml/20003743>

#### 4. Guide to Habitat Stack Construction

**Sunshine Coast Council has learnt to construct habitat stacks through advice from local ecologists.**

When constructing a habitat stack, we are essentially mimicing a natural large tree fall as happens after hundreds of years of growth. The fallen tree then becomes terrestrial habitat for a large range of fauna.

Because we have full control over the replication of the 'tree fall' we are able to form the salvaged CWD into a constructed stack which will last much longer and provide better quality habitat.





## Some key points to follow when building a habitat stack:

- Install CWD where it is absent and access for small machinery is good.
- Make a stack plan using a GIS platform.
- Locate stacks at 20 – 40 tonnes / hectare in a steppingstone fashion to facilitate faunal movement between forest patches.
- Stacks can contain anywhere between 5 and 10 tonnes of CWD each.
- Understand that each stack will be different given the unique features of the natural CWD at hand and so as long as these key points are followed your stacks will be suitable and effective for many years.
- For each stack, have selected a range of timber sizes from 400mm – 1,000mm +
- 2 x large root ball/plates.
- 1 x hollow log (or more).
- Keep the stem material in lengths no longer than 2 – 3m.
- Importantly, place the timber pieces close together to keep voids as small as possible.

## Construction Method (note: this is a general guide only)

1. Start by installing two large root balls at both ends of the stack. Scratch out the ground with the grab attachment to settle the ball into the ground to ensure maximum contact and stability. Then if you have one, place a hollow log in between.





2. Then stack logs lengthways between the root balls and above the hollow log to provide good cover and connectivity.



3. Place more logs on top of that, once a stack shape is starting to appear timber can be placed across at varying angles and to also fill voids.





4. Smaller pieces of CWD can be selected to fill gaps and finally any remaining smaller sticks and bark etc can be used to cover the stack.



5. The completed habitat stack (note: each stack will appear different and will be unique).



Further information and videos can be found via the below link or visit Council's website.

[Habitat-stacks](https://www.sunshinecoast.qld.gov.au/environment/education-resources-and-events/environment-resources-and-publications/natural-resource-management-and-conservation-techniques/habitat-stacks) or <https://www.sunshinecoast.qld.gov.au/environment/education-resources-and-events/environment-resources-and-publications/natural-resource-management-and-conservation-techniques/habitat-stacks>

**For further information on these articles, please contact Council's Natural Areas Offset Officers on (07) 5475 7272 or email [naturalareas@sunshinecoast.qld.gov.au](mailto:naturalareas@sunshinecoast.qld.gov.au) or visit [www.sunshinecoast.qld.gov.au/environment/education-resources-and-events/environment-resources-and-publications](https://www.sunshinecoast.qld.gov.au/environment/education-resources-and-events/environment-resources-and-publications)**