This information sheet is an edited version of information supplied by Dr Katja Hogendoorn to the Transition Adelaide Hills Native Bee Project in 2015

How to make bee hotels for resin, leafcutter and masked bees:
Drilled wood blocks, bundles of bamboo and twigs, and mudbrick

Note:	This text tells you how to make bee hotels. It does not tell you how to use equipment. Taking the necessary safety precautions is your own responsibility. If uncertain about these, ask a professional carpenter.

Bees

In and around Adelaide, several species of resin bees (such as *Megachile erythropyga, M. aurifrons* and *M. lucidiventris*), leafcutter bees (*M. quinquelineata*) and masked bees (*Hyleoides concinna*, *Euprosopis elegans* and several other species) can be attracted to native bee hotels.
They are solitary bees that bring pollen and nectar back to the nest as food for their offspring. The offspring develop and survive inside the nest, often for nearly a year. The next year, most of the emerging female bees will keep using the bee hotel.
Resin bees use plant sap or resin, sometimes mixed with leaf pieces to seal the individual chambers or cells in the nest in which their offspring develop. Leafcutter bees wallpaper their cells completely with pieces of leaf to protect their offspring. Masked bees use cellophane-like gland secretion products to coat and seal cells and nests.

Drilled wood blocks

Choice of timber

An easy option is to drill tunnels in dead trees, stumps or branches in your garden. As an alternative you can make holes in blocks of untreated hardwood, such as eucalypt. Do not use pine, it is too soft. The tunnels need have dead ends and should be smooth inside without burrs.

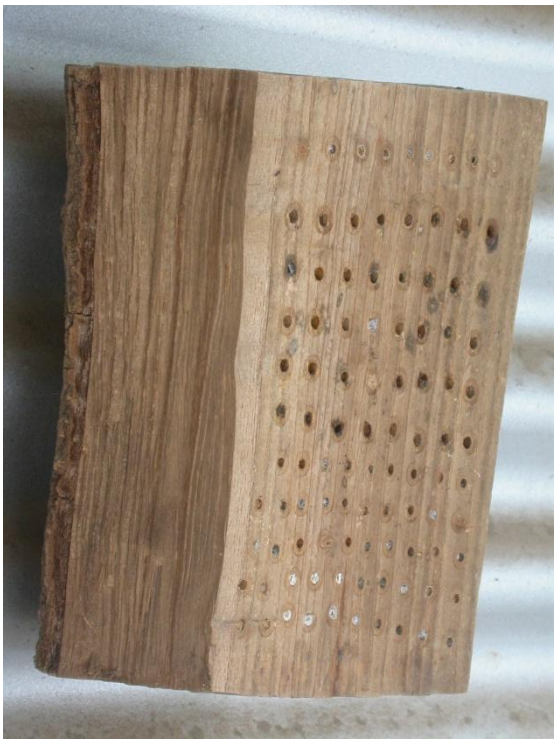
Drilling

Use sharp auger bit or long metal drill bits. Burrows should be 3 – 8 mm in diameter, at least 10 cm long. Tunnels with different diameters attract different species.

Mark the places for the tunnels on the face of the block, about 2 cm apart.

Preferably, tunnels should be drilled across the grain of the wood, because that reduces the number of burrs. Do not drill completely through the block!
While drilling, make sure you keep the drill bit straight to avoid drilling out through the side of the block or crossing other holes.

After drilling, shake all of the wood chips from the burrow. If using an auger bit you can remove the wood chips by drilling twice:
The first time, place the drill into 'reverse' when removing the drill bit from the wood, then re-drill 'forward' and pull out in 'forward' to clear remaining wood chips.
Repeat this process for each hole.



A nesting block made from a piece of hardwood

Finishing

Remove the burrs from each hole with a pair of needle-nose pliers or a file.

Burrows with burrs (left) will not be used by the bees. Using sharp drill bits ensures holes are smooth (right; Photos: Megan Halcroft)

Placement

Nesting blocks should be protected from rain, so place them in a sheltered position, for example under a carport, eve or decking. Alternatively make a roof that is waterproof and overhangs the block so it doesn't get wet through rain. Another option is to place some blocks, together with other materials in a bee hotel arrangement.

It may take up to two seasons before resin bees will inhabit the blocks.

Bamboo/twig Bundles

Bamboo

Use small iron saws to saw off stretches of bamboo of different inner diameters (5- 8 mm) at the node. Make sure the open stretch is at least 12 cm. Clean out the inside with a skewer. Make a bundle of about ten using cable ties or wire. Secure the bundle in a sheltered position, for example under the branch of a tree, or together with the nesting blocks.

Twigs with pithy stems

Some bees, such as small carpenter bees (*Exoneura*), like to dig their own nest, in the pithy centres of dead plant stems and twigs. For these bees, you can leave dead ends with the pithy centres of exposed when pruning shrubs, such as blackberry and grapevine.

Alternatively, make a bundle of pruned twigs with pithy centres such as lantana, blackberry, hydrangea or grapevine. Place the bundles in the shade, for example under a bush. These bees prefer that to the sun.

Mudbrick

Other bees, such as blue-banded bees dig their own nest in clay-rich soils, and can be attracted to blocks of mudbrick.

Small blocks

You can make small blocks by using 10 cm stretches of 90 mm square pvc stormwater pipe as casings.

Mix red Adelaide clay soil (without stones or coarse sand grains) with water to a thick paste. Fill the pipe pieces with the clay. After some drying, use a pencil to poke holes (6-7 mm in diameter, 6- 10 cm long). The clay should still be wet, but firm enough so that after withdrawing the pencil from the tunnel, it should keep its inner diameter. Drying time is dependent on the temperature and the thickness of the clay paste. Then slide the block out of the casing. These bocks can be placed in existing stone walls.

Nesting wall

To make a nesting wall, fill large or small besser blocks with clay. Make sure the clay fills the space, remove air bubbles. After 24hours, poke some holes in the blocks. Use the filled besser blocks to build your wall.