WaterUps® Installation Guide

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The WaterUps® Cell

When planning your new garden think about the benefits of using WaterUps® and incorporate wicking systems into your design.

Dimensions of the Wicking Bed

WaterUps® are recycled plastic modular units, which allow you to construct a wicking bed of almost any length, width, shape and size.

Consideration needs to be given to the height of the bed. From your base, which can either be in ground or above ground, you will need to allow 12cm for the cell height.

Given that a good potting mix will generate efficient wicking up to a height of 35cm, we recommend that the standard height of a raised bed wall be between 45cm and 50cm.

The final height of the walls of your bed may also depend of what you intend to grow.

- There is no reason, for example, why you couldn't put WaterUps® cells in a window box or a herb garden with a potting mix depth of only 20cm.
- You could also put a citrus tree in 60cm of potting mix, provided that the base of the root ball sits at around 30 to 35cm above the wicking bed.

Construction Materials

Raised beds for WaterUps® wicking systems can be constructed out of most landscaping materials, eg. hardwood, sleepers, corrugated iron and recycled plastics such as eWood etc. However, we do not recommend the use of treated pine due to issues around leaching of the toxic treatment materials.

Other Materials Needed

- **Pond liner** – You will need:
  - 0.5mm or 0.8mm PVC or 0.7mm EPDM liners are suitable.
  - The amount required is calculated as the length of base + 40cms x width of base + 40cms.
- **Geo Textile fabric** – may be required in some situations:
  - We normally recommend that Geotec be placed around the internal walls to cover where the cells join. However, if the bed has been constructed so that the gap between the edge of the cells and the walls is less than 5mm, then Geotec will not be required.
  - Geotec can be also used in the base – see Level Base.
  - Where you have had to cut through the feet of a WaterUps® cell in order to retro-fit an existing bed, you will need to use Geotec to cover this area to ensure that soil does not get into the water reservoir below.
- **Silicon sealer** – This is needed to seal the inlet pipe and overflow pipes.
- **Hole Saw/Speed Bore** – You will need a 25mm hole saw or a speed bore to drill the wall of the bed/planter to locate the overflow pipe.
- **Cable Ties** – May be needed to secure the overflow pipe to the underside of the WaterUps® cell.

Level Base

The first requirement for installation of a WaterUps® Wicking Bed is the selection of a site suited to the plants or crop to be grown, which is both level and solid from any sinkage. If necessary, level the site and compact the area so the wicking bed will always remain level. Depending on the condition of the base soil you may wish to add 5cm of compacted road base or crusher dust to make the base more solid. If the base is level, but includes rough materials such as blue metal, you may wish to cover this with Geotec to protect the pond liner.

New Constructions

If you are constructing a new wicking bed, the optimal internal dimensions should be in multiples of WaterUps® cells - 40cm x 40cm. For example, 3 cells x 5 cells would be 120cm x 200cm, INTERNAL DIMENSION, plus an allowance for the pond liner of say 5mm on each side. In this example, then the internal dimensions of the bed would be 121cm x 201cm.

If you are adding WaterUps® cells to a large base area you need to ensure that the walls of the bed are braced to ensure that they don't bow with the weight of the soil. If you are using a pre-made raised bed frame you may need to cross brace the longer sides.

Retro-Fitting

You can also retro-fit WaterUps® to most existing growing situations. Wicking beds can also be made in most pots, troughs and planters, which can be sealed or waterproofed. WaterUps® can then be cut to shape and an inlet pipe and overflow pipe installed. WaterUps® can also be retro-fitted to existing raised beds.

If need be, WaterUps® can be cut to fit the desired internal dimensions and shape of the growing area by using a saw, or jigsaw for rounded sections. The best way to do this is to lay out a base of cells larger than the area required. Then, place the border, eg. raised bed frame, on top as the template for any cutting required. Trace around the perimeter with a white paint marker.

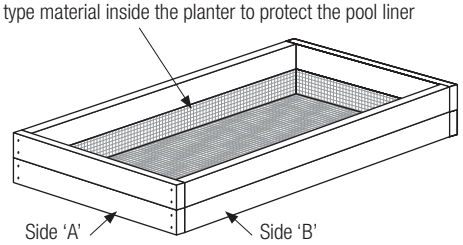
Work out the best positioning of the frame aiming as much as possible to avoid cutting through any of the feet. This may not always be possible, but is not a problem as the affected area can be covered with Geotec fabric to ensure that soil does not penetrate the water reservoir. If the resulting hole in the top of the cell is particularly large, you can also screw on a piece of corflute (corrugated plastic) and then cover with Geotec.

Pond Liner

Ensure that the compacted base of the bed is free from sharp objects that could damage the pond liner. This can be achieved by laying Geotec fabric (optional) on the base and 20cm up the wall of the raised bed/planter. The water proofing liner can be laid on top of the Geotec. Refer Figure 1 below.

Figure 1.

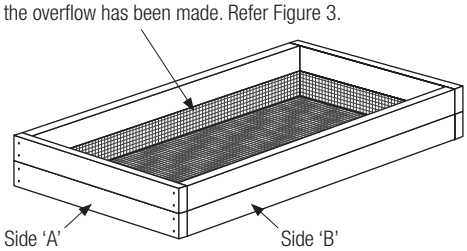
On a compacted, level surface place a protective shade cloth type material inside the planter to protect the pool liner



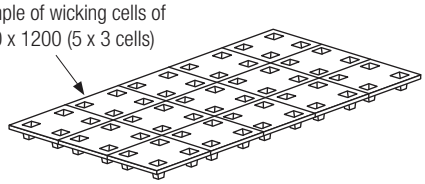
Ensure that the pond liner is pushed into each corner of the base. Before the liner is fitted in position and the overflow pipe is installed, ensure that the liner and the shade cloth extend 20cm above the base. Refer Figure 2 below. If using a timber frame you can (optional) tack the pond liner to the walls using 30mm Galvanised Clouts to keep the pond liner in place.

Figure 2.

Install the pool type liner but do not complete until the overflow has been made. Refer Figure 3.



Example of wicking cells of 2000 x 1200 (5 x 3 cells)

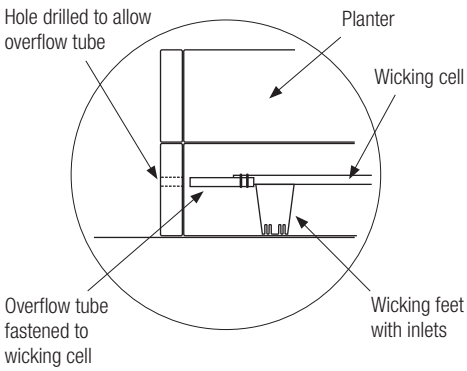


Overflow Pipe

In deciding where to position the overflow pipe you also need to consider the position of the inlet pipe. Whilst not essential, we suggest that they be located close to each other so that you can see when water is flowing out of the overflow pipe when you are filling the reservoir. This will indicate that the water reservoir is full.

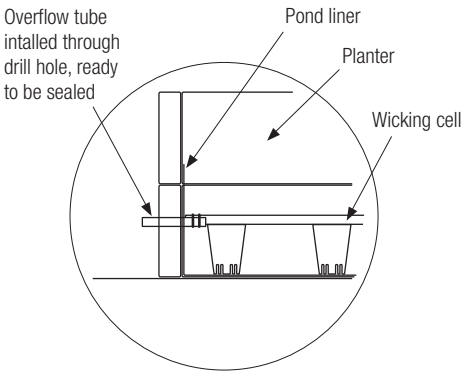
Locate the overflow pipe firmly to the space provided on the underside of the WaterUps® cell and secure with cables ties, leaving around 10cm of the pipe protruding past the edge of the cell. Refer Figure 3 for drilling instructions.

Figure 3.



How to mark hole to drill and allow for overflow tube. (Section of planter box)

Figure 4.

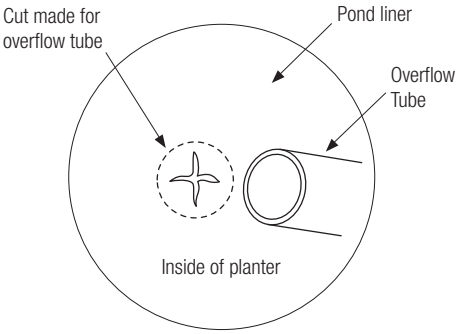


Once cut is made in the liner, cell & overflow tub are located and liner is fixed ready for install of potting mix

Move the cell into place where the location of the overflow pipe can be marked against the inside edge of the bed for drilling.

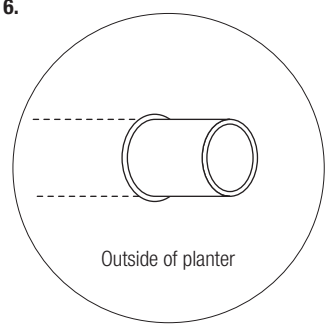
Once the hole has been drilled, using a 25mm Speed Bore or Diamond Hole Saw, then the liner can be put into place up the wall and a small cut (X) made in the liner corresponding to the drilled hole. Refer Figure 5.

Figure 5.



Once hole is drilled, make a small 'X' cut to allow overflow tube to be fitted and sealed

Figure 6.



Overflow tube through the planter and sealed

As the overflow pipe is placed in position to the 'X' cut in the liner, spread some waterproof sealant around the pipe as it is located and inserted through the liner and into the hole in the planter box.

At this stage there should be at least 5cm of pipe visible between the liner and the cell so spread some additional sealant around the hole in the liner and move the cell firmly into place against the liner, ensuring a good seal is made.

Leave to dry in accordance with the Sealant Manufacturers Recommendations before any water is added via the inlet pipe.

Insert the Inlet Pipe

You should already have worked out which cell will house the inlet pipe:

1. There is a marked circle on each cell to indicate where to attach the inlet pipe. You will need to cut out the circle (only the flat section with the writing). A Stanley knife, or similar, is best.
2. As indicated above, locate the inlet pipe close to where you have installed the overflow pipe.
3. Before inserting the inlet pipe add silicon to the bottom of the pipe and the insert point.
4. Insert the pipe and add additional sealer if required.

The inlet pipe is installed by removing the centre piece where indicated on the cell. Use a Stanley knife or similar. The pipe should then fit easily into the groove provided. **Note:** It is important that you silicone the pipe in place to ensure that it remains secure.

5. When filling push the hose down to the bottom of the bed. This helps prevent reflux up through the top of the cells.

Adding the WaterUps® cells

You will already have positioned the cell containing the overflow pipe. The remainder of the cells can now be installed with joiners supplied to complete the deck, which will support the potting mix.

TIP: At this stage you can nail or tape the liner to the internal walls. This will make it easier to add the remaining cells.

The last step, prior to filling with potting mix, is to lay some Geotec, if required, around the outer edges of the cells where they meet the wall. The Geotec should overlap the top of the cells by approximately 10cm. It can be anchored to the top of the base using the joiners. This is to ensure that dry soil does not get into the water reservoir below, which could occur if the gap is more than 5mm. Before adding any potting mix spray water over the cells.

Potting Mix

For optimal wicking, the soil mix contents should give a friable structure, which is ideal for plant growth, whilst being free draining. We suggest the following basic soil/potting mix compositions for vegetables and perennials.

Vegetables

- 70% Greenlife soil with dolomite and complete fertilisers or Composted pine barks
- 20% Coarse sand and ash
- 10% cow manure

Ornamentals

- Composted pine bark
- coarse sand
- composted sawdust
- ash
- coco peat
- fertilizers

It is not essential that all of the above are present. However, a potting mix that is friable (i.e. easily crumbled) and contains the majority of these ingredients will work well. We suggest contacting your local landscape supplier or nursery to discuss your requirements with them.

Further information about how to calculate the amount of potting mix required etc are included in the FAQs Sheet on the website.

Adding the Potting Mix

The potting mix should be placed initially and firmly into the cell's "legs", which is necessary for the wicking process. Now give the top of the cells a light spray of water. This will help compact the potting mix in the legs and prevent dry potting mix penetrating the holes in the top of the cells. Then, add potting mix evenly across the top of the wicking cell platform to a depth of around 10cm. Once this base level has been established give the mix another light spray to assist the compaction. Continue filling the planter by 10cm layers with a light spray of each level until the planter is nearly filled, has ideal compaction and the potting mix is moist.

Give the bed a final soak and then insert the hose into the filler tube and fill with water until you observe the overflow pipe discharging water, which indicates the reservoir is full. Then place the filler cap on the inlet pipe to prevent insects or other debris entering the reservoir. Refer Figure 7.

TIP: Do not push the cap on too tight as this may be difficult to remove later or may result in dislodging the inlet pipe from the cell below.

A wicking bed of 120cm x 200cm (15 WaterUps® cells) will contain almost 300 litres of water.

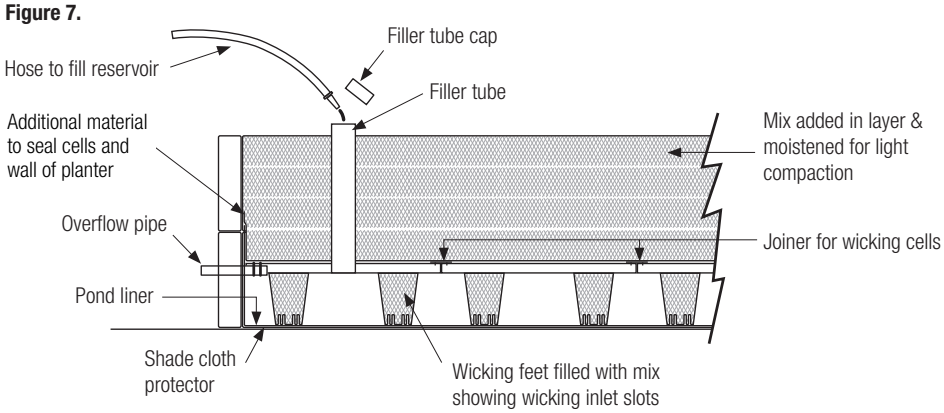
Ideally, allow 24 hours for the soil to wick water up into the bed and then fill the reservoir again via the inlet pipe.

The wicking bed is now ready to use. If planting small seedlings, the bed will need surface watering until their roots develop to reach the wicking beds moist soil.

Add Mulch

Mulching is vital to keep the top of the soil moist at this stage – within 2-3 weeks the plants will begin to be established and the efficiency of the wicking bed will be fully appreciated.

Figure 7.



A wicking bed will operate at its optimal efficiency when approximately 2cm of fine mulch is applied to the top of the bed. The ideal mulches are:

- Lucerne
- Sugar cane, and
- Tea Tree

TIP: Ensure that the mulch is kept away from the stem of each plant to avoid collar rot.

After the mulch is applied give it a light watering to settle it in.

Observing the Water Level

To observe this efficient use of watering place a dip stick (e.g. piece of dowelling or bamboo) down the inlet pipe to check the levels each week and only fill when the level drops to around 3cm.

Enjoy your gardening made easy and continue to improve your soil biology with the addition of manures, compost and organic matter and your WaterUps® Wicking Bed will reward you with nutrient rich, homegrown, healthy plants and produce while saving time, water and money.