Integrated IBC Wicking Bed Construction Manual

Why IBC Wicking Beds

- Water-Wise solution
- User-friendly growing for all lifestyle types
- Multi-functional system with optional trellis & covered growing enhancements.
- Integrated biological worm farm
- Re-use & Upcycle of used materials/components
- Practical Design & Ease of Construction

How does it work?

- A **wicking bed** is a self-watering raised garden bed using capillary action.
- Its based on the principle of **sub-irrigation**, where the water in a reservoir below is drawn up and into the soil bed, to be used by the plants as required.

Considerations

- When considering wicking beds, it is important to determine whether this system is suitable for you, your garden and your property (climate, micro-climate & size etc).

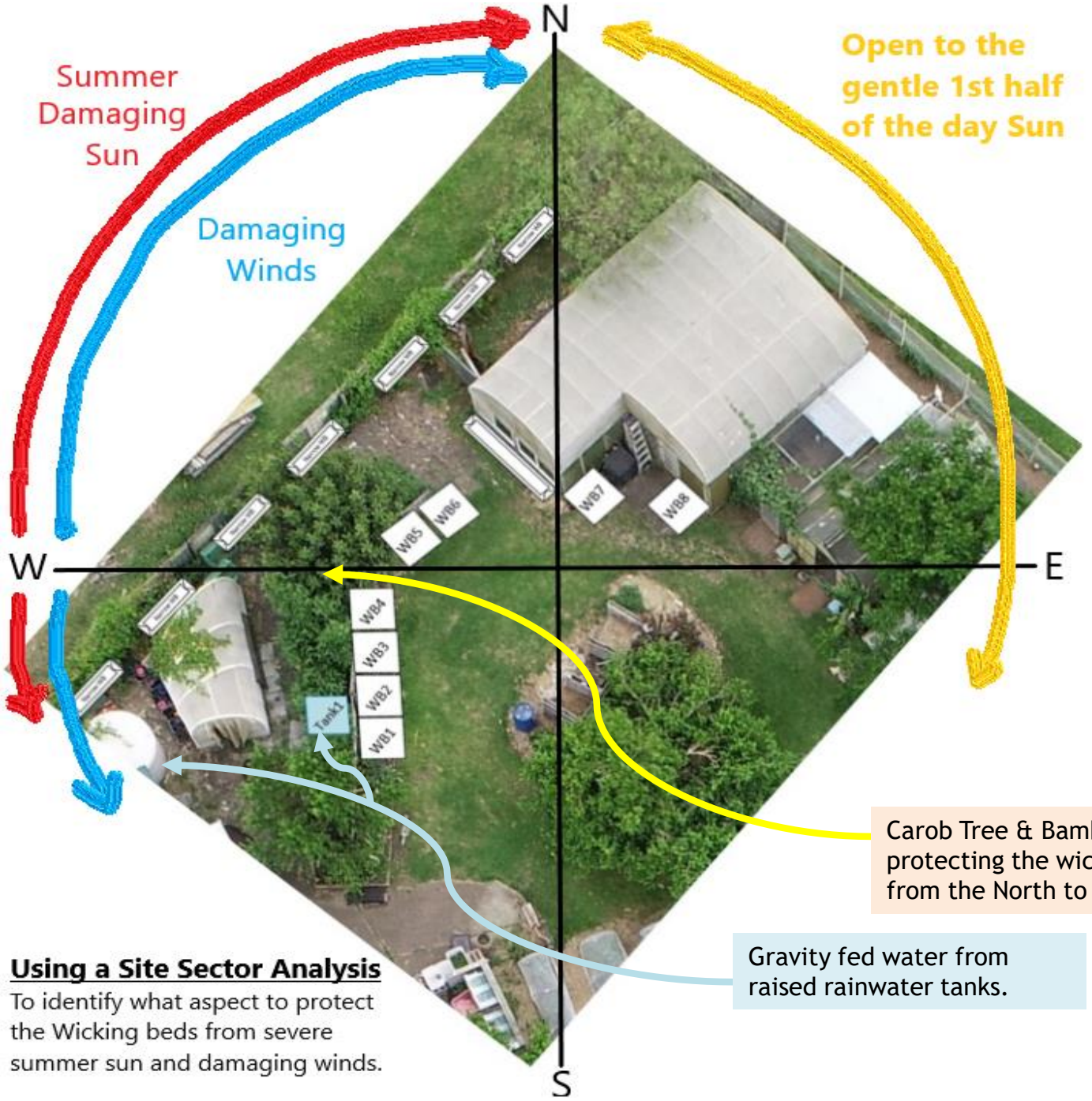
- Some plants require a wet-dry cycle to grow and most wicking beds create an environment which can constantly keep soil moist, this maybe unsuitable for some plants, so do your research..!

- Please note, there maybe more advanced ‘water controlled’ designs available for the control of moisture levels within the soil.

Considerations

A **Site Sector Analysis** can be undertaken to give your wicking beds the best chance of success by noting potential energies that pass through & around your property and the protection your system may require!

- **Aspect**
- **Sun & Shade patterns**
- **Rainfall**
- **Wind patterns**
- **Existing Structures**
- **Fire threats**
- **Frost & Dry zones**
- **Dust**
- **Wildlife corridors**



Using a Site Sector Analysis

To identify what aspect to protect the Wicking beds from severe summer sun and damaging winds.

Carob Tree & Bamboo protecting the wicking beds from the North to West

Gravity fed water from raised rainwater tanks.

Construction Materials

- **Materials List for 1x IBC (Makes 2 Wicking Beds)**
- IBC x 1
- 125mm Grinder with steel cutting blade x 1
- Extra IBC Base or Pallet (Plastic or Hardwood) x 1
- External Guttering Silicone x 1
- Plumbers thread tape x 1
- 25mm hole saw x 1
- Mesh panels 1100mm x 900mm x 2off (can be old weld mesh fencing)
- Flush Outlet Reducer x 1 (Bottom half) > *slide 21*
- Flush Outlet Tap & connector (Top Half) > *slide 22*
- Overflow & water level adjustment for both halves > *slides 19 & 20*
- Wicking Pots 175mm – 200mm x 10
- Wicking sand (packing or river sand) approx. ¾ wheelbarrow
- Wicking pot linings 300m x 300mm x 10 (weed mat, Geo fabric ,etc)
- IBC soil lining 1.5m x 1.2m x 2off (weed mat, Geo fabric, etc)
- Soil / compost – approx. 4x barrow loads per half (8 barrow loads in total)
- Worm Farm – 300mm pot x 2 and 275mm pot x 2 (or PVC Pipe with lid or similar)
- Mesh Trellis – 3.6m long x 1.1m wide (gate insert) x 2
- 16mm Dowel insert for pipes – approx. 3m long x1
- Shelving – any material laying around approx. 50mm – 90mm wide
- External Lining – approx.. 500mm high (bark, bamboo, roof sheeting, shade cloth etc)
- 8g x 18 – 20mm Button Head Galvanised metal screws (pkt 100)

IBC Wicking Bed Construction

- Aim for ‘Food Grade’ first or Low Toxic Grade IBC’s (eg: detergent based).
- Make sure you know what was being stored in the IBC.
- Ensure there is no splits or damage to the outlet & lid
- If possible, track down an extra metal base for the top half.

IBC Wicking Bed Construction

Hardstand Set up

- Place IBC bases or Hardwood Pallets on level ground or build a level platform.
- Use materials like packing sand, pavers, hardwood, metal, bricks & blocks to achieve a level surface.

IBC Wicking Bed Construction

Cutting the IBC in half

- Sit IBC on side and centre the plastic container to the centre of the cage.
- Mark approx. halfway up from bottom of cage.
- Apply pen mark on both bars and plastic, marking completely around IBC.

IBC Wicking Bed Construction

Cutting the IBC in half

- Proceed to cut all of the cage bars and where the 125mm grinder can also reach the plastic.

IBC Wicking Bed Construction

Cutting the IBC in half

- Remove the bottom half of the cage & continue cutting the rest of the plastic container if required.

IBC Wicking Bed Construction

Cutting the IBC in half

- If the top struts are flat, twist so the bar sits flat against the tank to help support the top half container once it is turned upside down.

IBC Wicking Bed Construction

Cutting the IBC in half

IBC Wicking Bed Construction

Supporting the upturned Top Half

- You may need to ‘pad’ the underside corner sections of the upturned top half as it was never intended for use as a bottom ☺
- I use carpet tiles but you can use carpet, styrofoam etc
- This will help take the weight off the upturned top half cap.

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Sealing the cap

- Use a water sealing silicone around the cap thread and inside the cap opening.

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Making the ‘Wicking Pot’

- Using approx. 185mm to 200mm high pots, line the inside with weed mat or similar.
- Fill & firm down with river sand or similar. Raise sand above rim of pot.

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Wicking Pot & Mesh Base

- Use various mesh options
  (whatever you have laying around)
- The pots can be set out in a pattern of 5 or 8 depending on mesh thickness.
- The mesh must be able to press down into the sand.
- Mesh corners fold in so as not to penetrate plastic lining.

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Overflow Connector

- Fit overflow outlet just below mesh base.
- Use 25mm (1inch) hole saw.

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Overflow, Water Level Adjustment & Intake

- Make an ‘L’ shape pipe setup.
- The adjustment height pipe should be approx. 150mm above mesh level & able to swivel down to set the overflow height.
- This can also be used to fill the wicking bed via a hose.

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Flush Outlet (for Bottom Half Container)

- The bottom half comes with a flush outlet, so you can leave ‘as is’ or attach a ‘reducer’ adaptor for connecting a hose.

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Flush Outlet (for Top Half Container)

- Fit outlet connector above where the container begins to round off to the base. I use a short hose fitting.
- This allows a flush out system and also a rewatering option

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Soil Lining insert

- Use a pervious membrane as a soil liner. (weed mat, geotextile fabric etc)
- Have the lining come up the sides at least 200mm

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Worm Farm & Soil

- Install 300mm pot to same height as the IBC top edge.
- Fill IBC with your preferred soil mix.

- Fill ‘Worm Farm’ pot with compost and fresh greens for worms.
- Use a 275mm pot as lid.

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Fitting the Trellis (or Plastic / Net cover frame)

- For this example we used 3.6m x 1.1m gate insert mesh
- The width and length works perfect and you only cut each corner out.
- This simply slips in between the plastic container & the cage.

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Shelving & Top Edge Guard

- 16mm dowel fits perfectly into the cage tubes and allows for a shelf to be screwed directly onto the top.

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Container Protection

- There are many ways to externally line the IBCs, here we have used a ‘Bark Screen’ 1m x 3m (cut in half)

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Container Protection

- The screen was screwed on with Galvanised Metal Button Screws and the outlet were cut in with standard scissors

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Container External Linings

- External linings can be bark, bamboo, floorboards, mini-orb, colourbond, shade cloth, corflute and even painted.

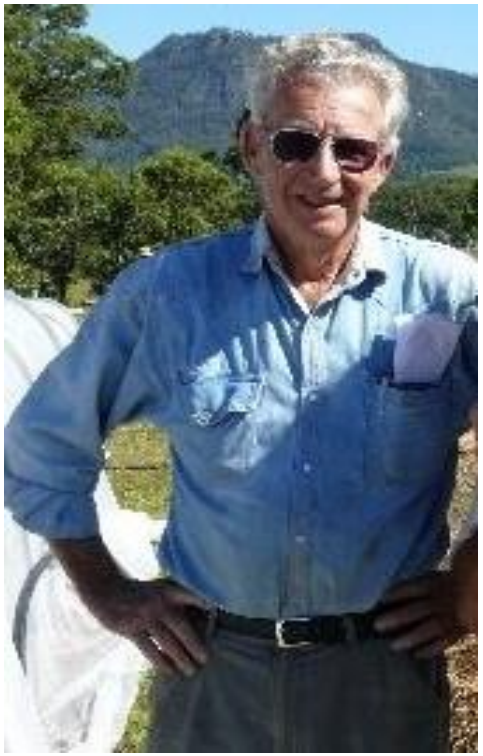
Acknowledgement

The demonstrated 'Limestone Permaculture' modified wicking beds are based on the initial developments by

Ken & Marnie

@

Misty Ridge Farm



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