



clivus multrum

WATERLESS COMPOSTING TOILETS

CM HP

INSTALLATION AND OPERATION MANUAL



Thank you for purchasing the Clivus Multrum HP. Please read this manual carefully before installation.

"Clivus Multrum" is a brand of Ecoflo Wastewater Management Pty Ltd.

Visit our website at ecoflo.com.au.

TABLE OF CONTENTS

| | |
|---------------------------------|----|
| WHAT'S IN THE BOX? | 3 |
| TOOLS REQUIRED | 3 |
| CM HIGH PROFILE SCHEMATICS | 4 |
| INSTALLATION | 5 |
| POWERING YOUR FAN | 12 |
| EXCESS LIQUID ABSORPTION TRENCH | 12 |
| COMPOSTING ACCELERATORS | 13 |
| CARE & MAINTENANCE | 14 |
| ROTATION OF CHAMBERS | 15 |
| TROUBLESHOOTING | 16 |
| PRODUCT & COMPONENT WARRANTY | 18 |
| MAINTENANCE SCHEDULE | 19 |
| APPENDIX 1 | 20 |

WHAT'S IN THE BOX?

Please check the **packing slip** to ensure everything has been delivered. If anything is missing, please notify your supplier within 72 hrs of receipt.

Items you will need to complete your installation:

- Wall brackets to fix the vent pipe to the building
- A length of 100mm DWV vent pipe to connect to the air exhaust (length depends on specific installation)
- Dektite if DWV vent pipe will penetrate the roof

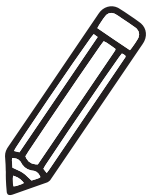
You will also require the following materials for the Excess Fluid Absorption Trench (check with your local Authority):

- 2.0m length of 100mm diameter agricultural pipe
- 2.0m x 0.5m synthetic or Hessian geotextile mat
- 0.30 cubic metre 20 mm Aggregate
- 50mm PVC pipe to connect the hose to the agricultural pipe

OR

Purchase a Drain Kit from Ecoflo.

TOOLS REQUIRED



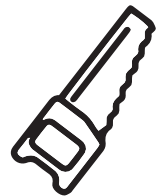
Marker



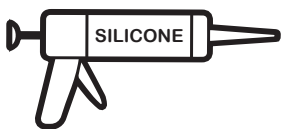
Tape Measure



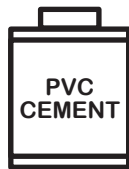
Shovel



Hand Saw



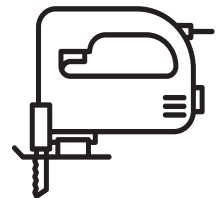
Caulk Gun



PVC Cement



Plumb Bob



Jigsaw



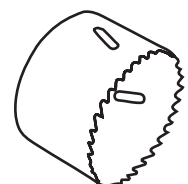
Power Drill



Philips Drill Bit

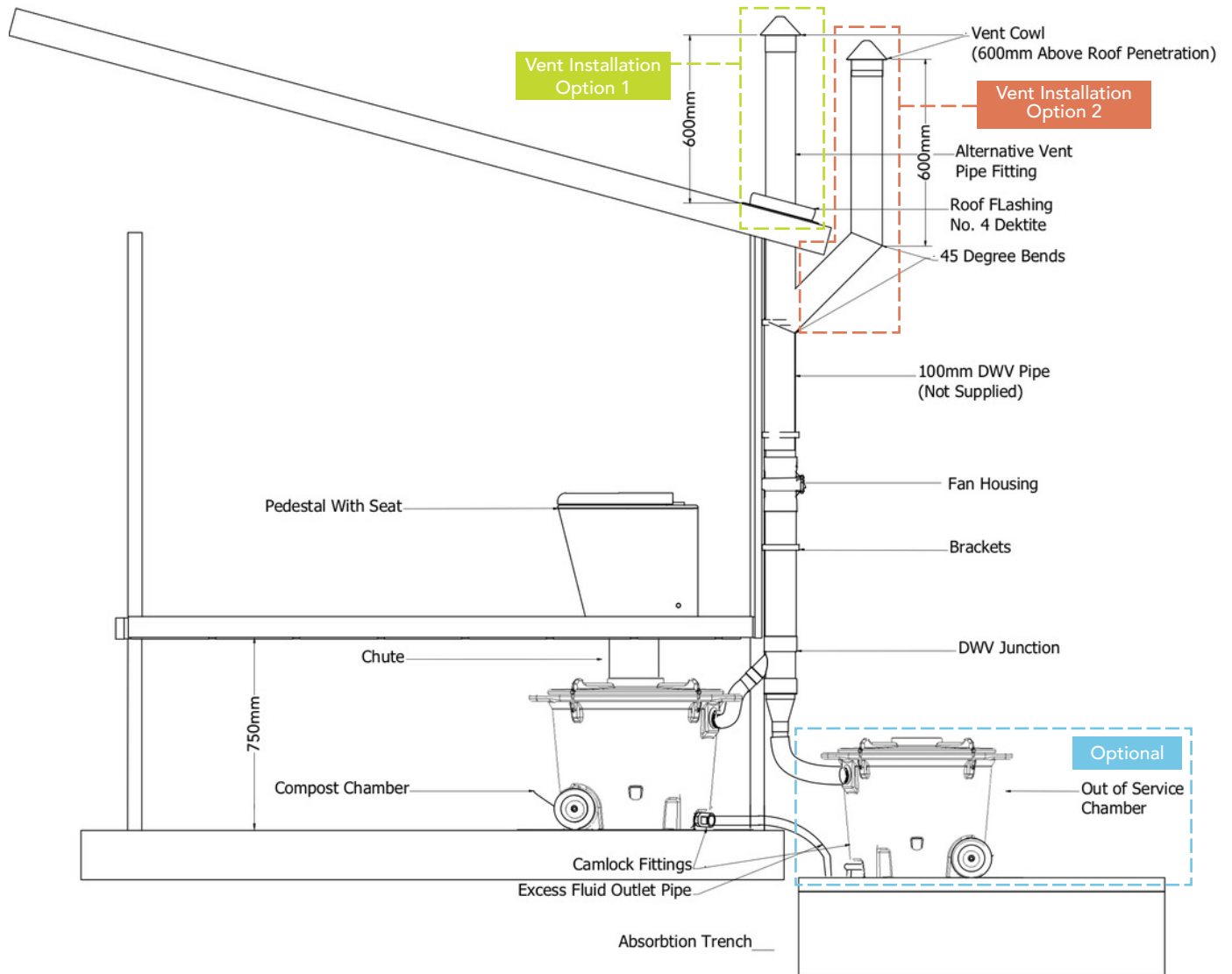


Masonry and Brad Point
Drill Bits



Hole Saw Drill Bit

CM HIGH PROFILE SCHEMATICS



If you are planning to excavate an area under the house for the compost chambers, please ensure the area is well-drained and any retaining walls are built to the satisfaction of the local authority.

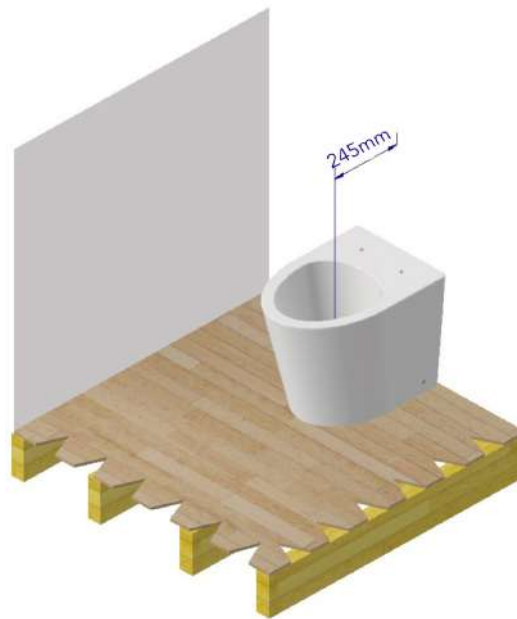
INSTALLATION

STEP 1: POSITION THE PEDESTAL

Locate the approximate area where you want the pedestal to go before cutting the hole.

The usual position for pedestals is centred between side walls.

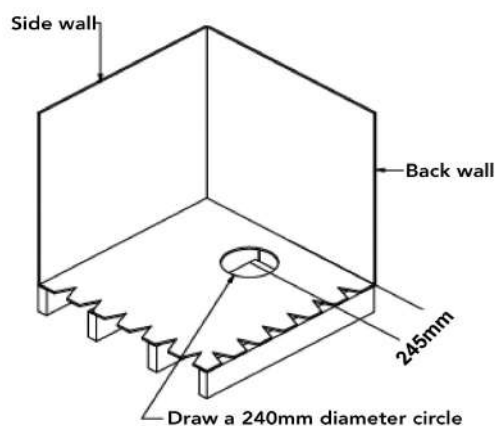
NOTE: Due to the pedestals being man made, the distance to the centre may vary from 245 to 255mm. Please check before cutting the hole.



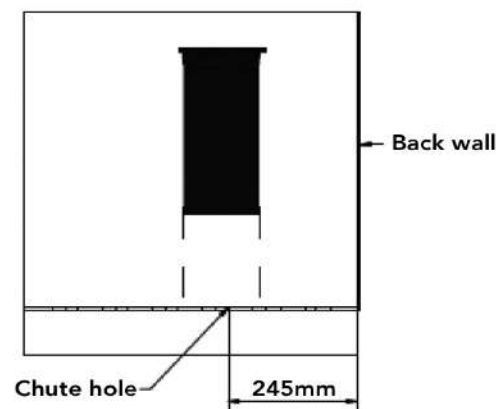
STEP 2: POSITION THE WASTE CHUTE

A 240mm hole must be cut in the toilet room floor to accommodate the waste chute.

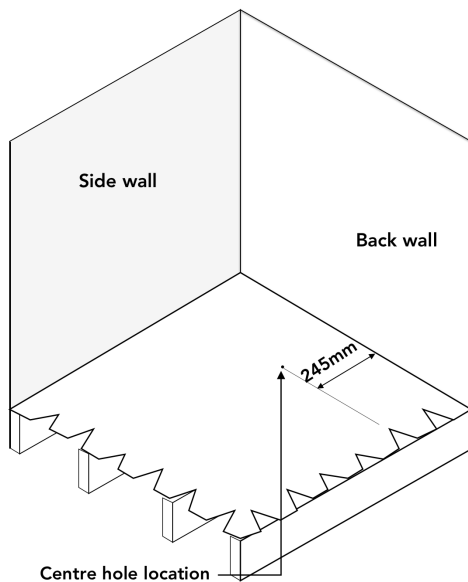
1



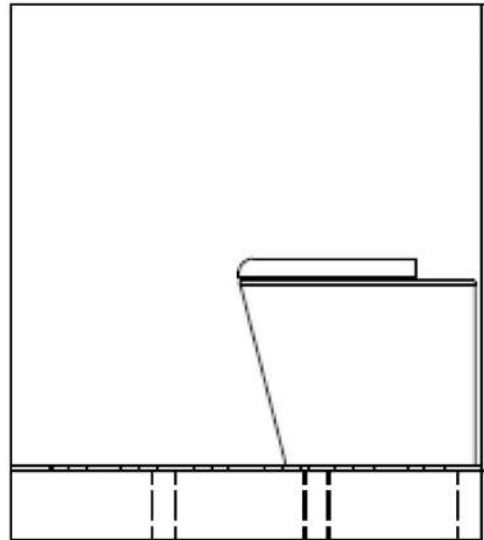
2



3



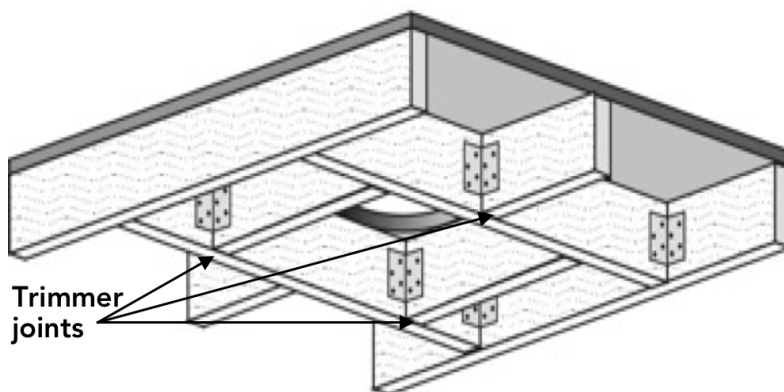
4



*Go to the underfloor area and look for the hole you have drilled.
Check to see if there is a floor joist, water pipe or electrical wiring under
the area you are going to cut.*

NOTE: If there is a joist in the way, either reposition the waste hole OR install trimmer joists to each end of the cut joist, and fix all connections with galvanised framing anchors with 4 nails each leg (refer to diagram below).

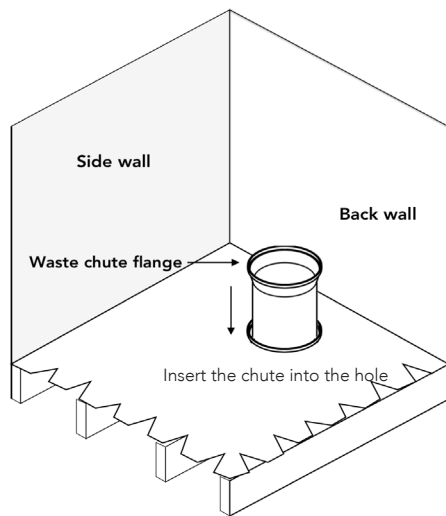
View from under floor



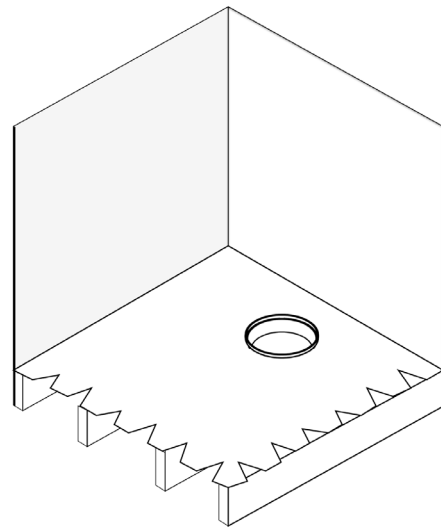
STEP 3: INSTALL THE WASTE CHUTE

First ensure the pad or ground level on which the 'In-service' chamber will reside is at its final level beneath the toilet room.

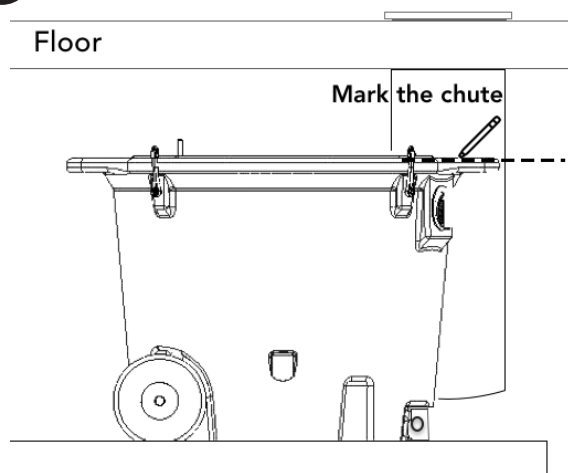
1



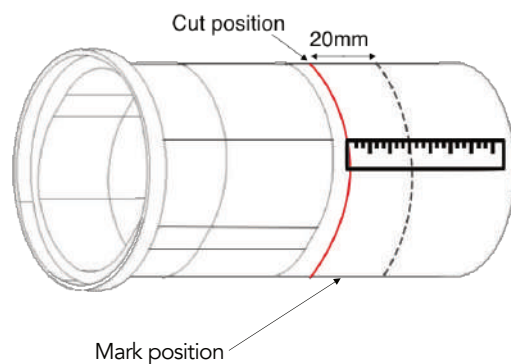
2



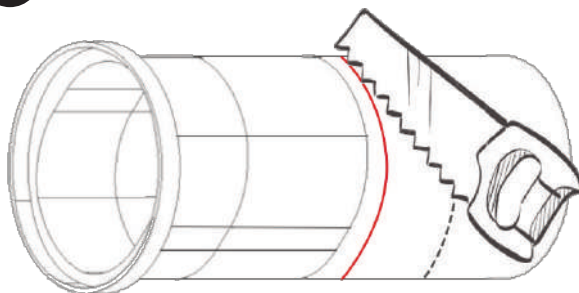
3



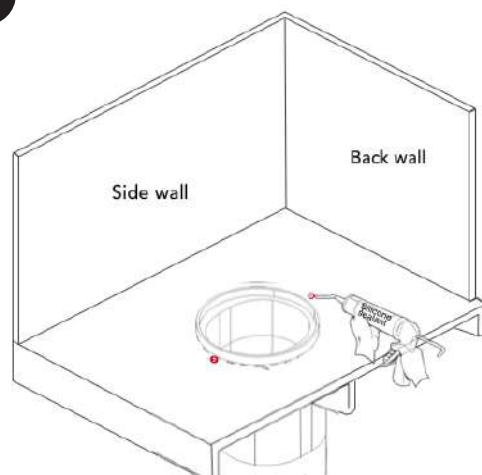
4



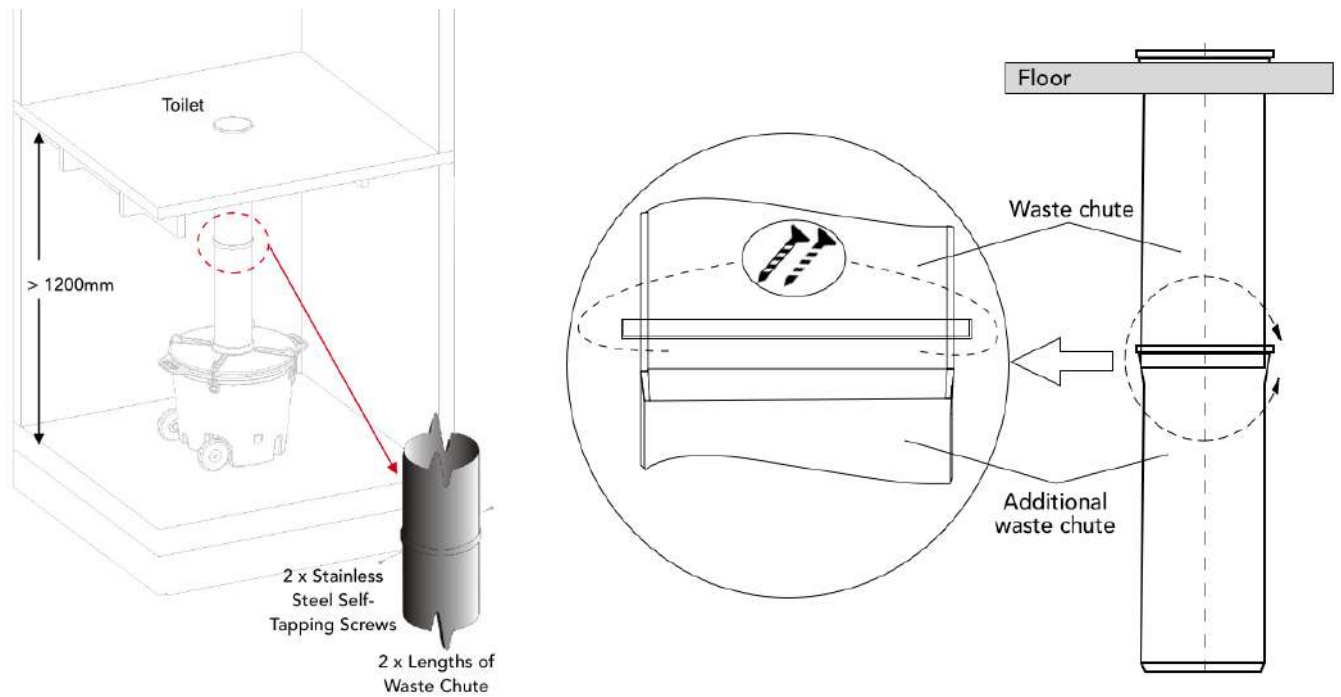
5



6



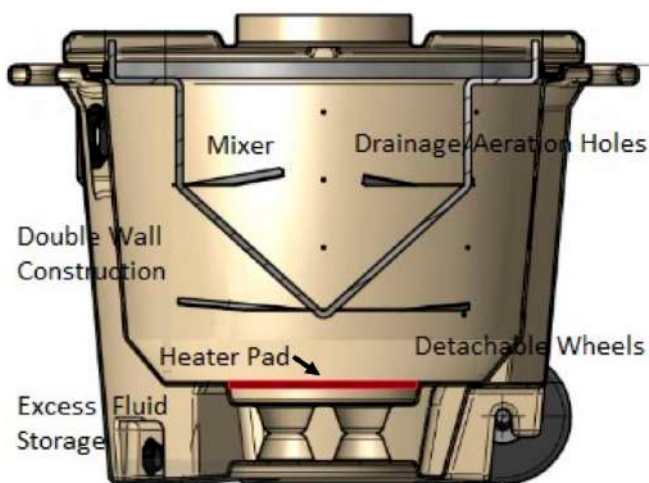
Extra Length Required for Under-Floor Areas



If the underfloor height exceeds 1200mm (floor-to-floor), you will require additional lengths of chute, fixed together with small stainless steel self-tapping screws below the flange of the additional waste chute.

As the chute joints are tapered, the top waste chute must be inserted through the toilet room floor first with additional waste chutes added from below.

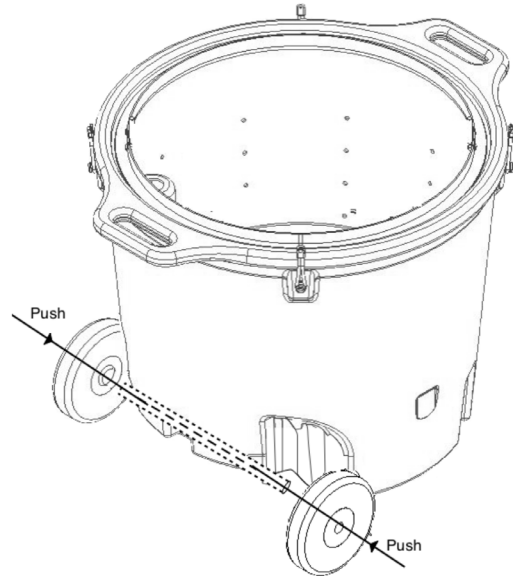
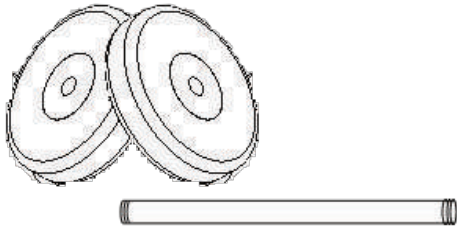
OPTIONAL: Heater Pad



To assist composting in colder climates, we recommend the purchase of an optional heater pad which is permanently fixed inside the chamber. The Pad will be factory installed. The Heater Pad runs on 12 Volt Power (refer to the supplementary manual).

NOTE: The Heater Pad should not be submerged. Check your 'Excess Fluid Outlet' for blockages regularly.

STEP 4: INSTALL THE WHEELS

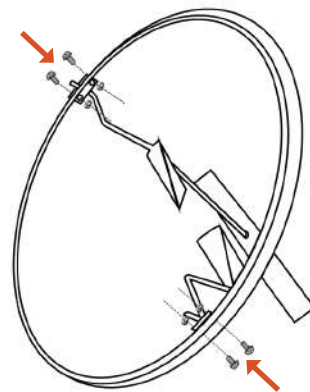


STEP 5: INSTALL THE COMPOST CHAMBER

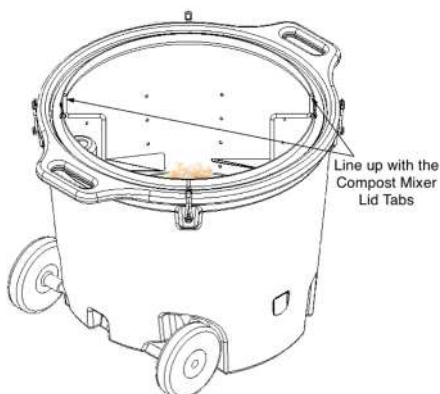
1. Add 50mm Bulking Agent to the Chamber.



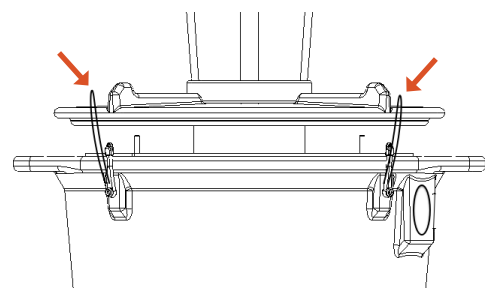
2. Use the x4 M6x25 Bolts, Nuts & Washers to connect the Compost Mixer to the Mixer Ring.



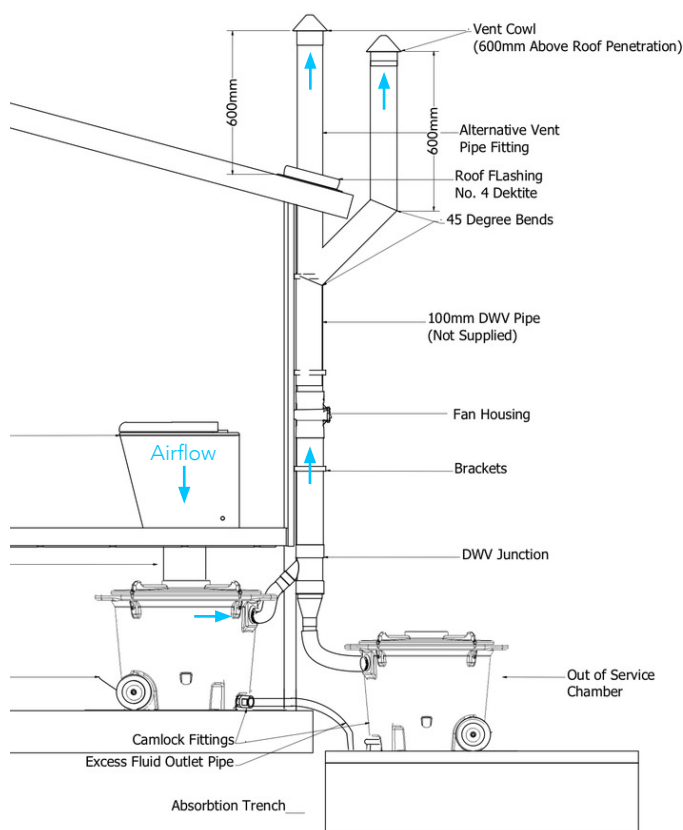
3. Put the compost mixer in the chamber.



4. Connect the lid to the waste chute, position the chamber under the lid, then hook the bungee loops around the lid.



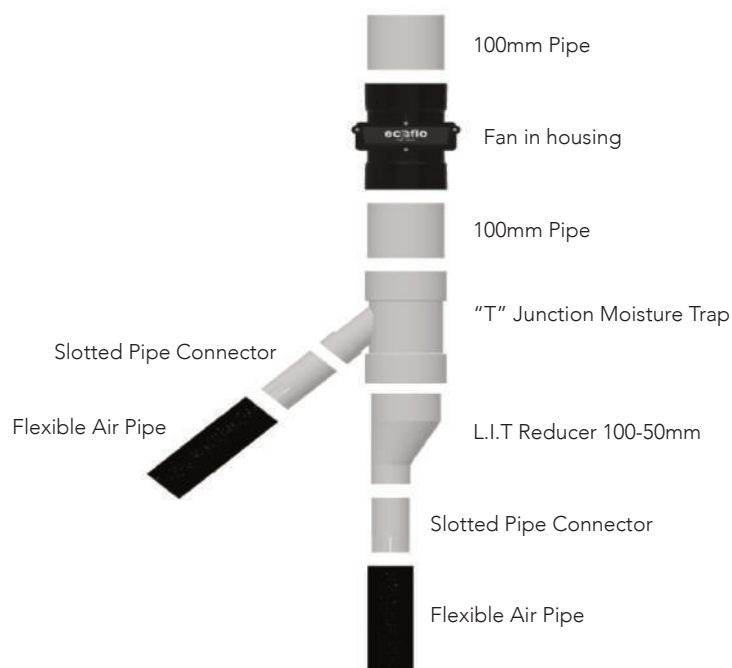
STEP 6: CONNECT THE VENT PIPE AND FAN TO THE 'IN-SERVICE' CHAMBER



The fan runs 24 hours a day to continuously circulate air through the compost heap.

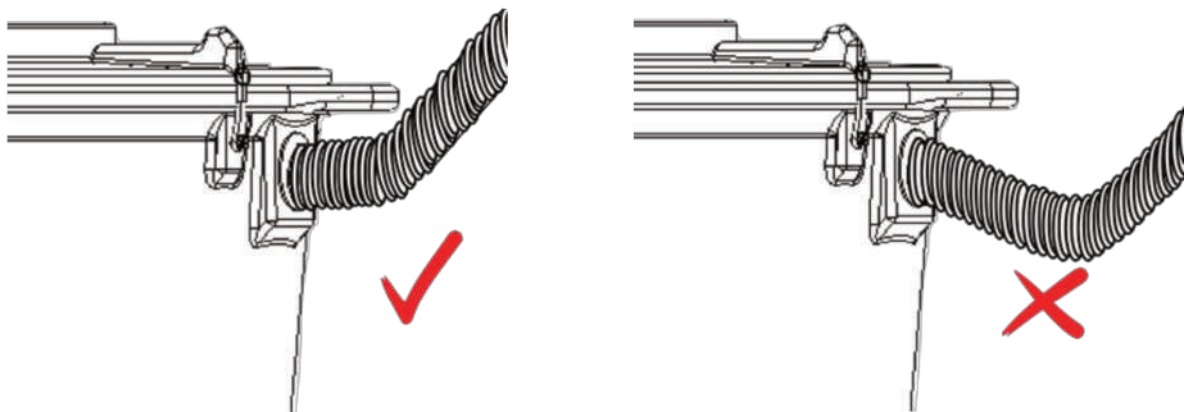
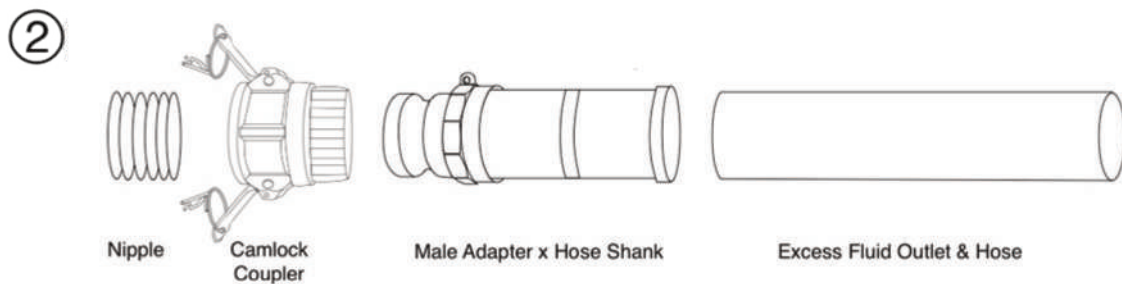
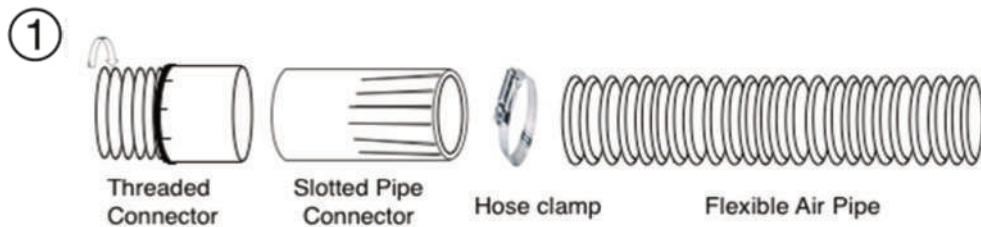
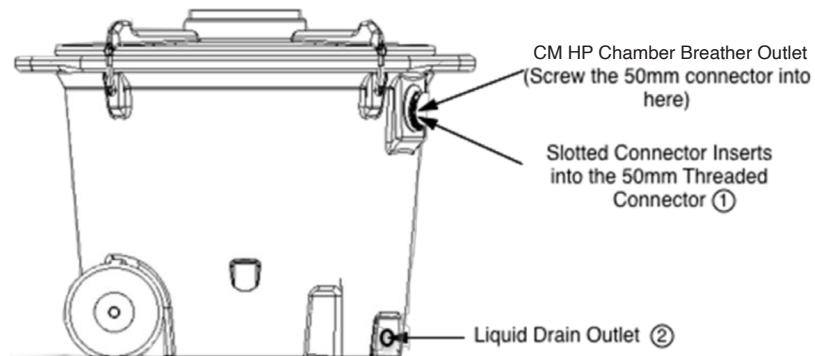
Air is drawn down the toilet pedestal through the compost chamber and out the vent pipe.

Fan and Vent Pipe Installation Details



*The fan is IP68 rated so will not be effected by moisture.
Do not glue the fan housing to the DWV fittings.*

STEP 7: CONNECT THE FLEXIBLE AIR HOSE ① AND EXCESS FLUID HOSE ② TO THE CHAMBERS

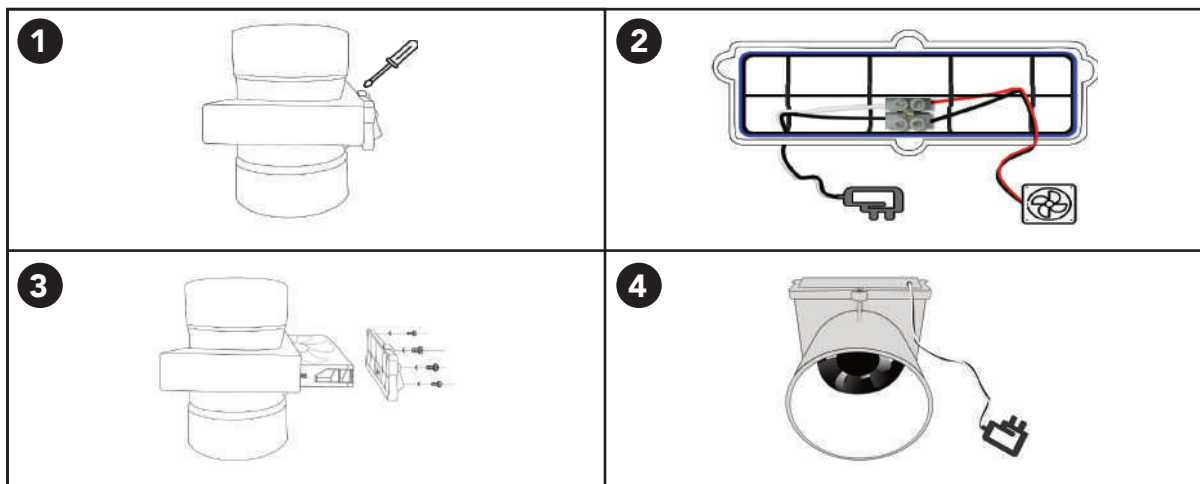


POWERING YOUR FAN



Mains Power

A 240/12 volt regulated transformer is included to run the fan from mains power. The positive wire on the transformer is marked with a white line. The fan has anti-polarity protection and would not run if connected incorrectly. Connect the fans to the transformer as follows:



We recommend a spare fan is kept on hand at all times, particularly after a year of use.

Shop fans and solar: ecoflo.com.au/products/fans-and-solar



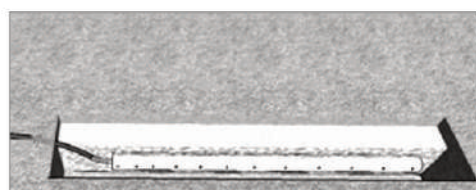
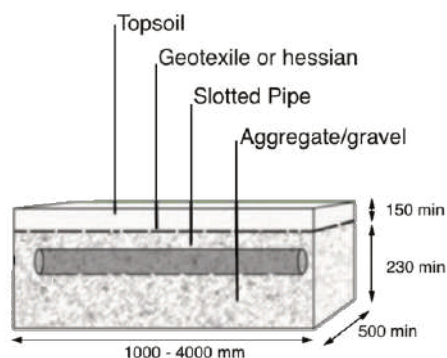
Solar Power

Refer to Solar Panel Installation Manual.

EXCESS LIQUID ABSORPTION TRENCH

An Absorption Trench Kit is available – Please see Appendix 1.

Alternatively; if your council allows, you may wish to construct your own Absorption Trench. The Liquid Drain Hose should run into either a length of 50mm PVC pipe; drilled to allow liquid to escape, OR a length of slotted Ag pipe buried in the absorption trench as shown in the diagram. Both chambers should be connected.



COMPOSTING ACCELERATORS



Whilst Clivus Multrum users report successful composting without the use of any additives, we strongly recommend the use of the following in order to optimise composting, particularly when the toilet is in permanent use by more than two people.

Bulking Agent

This should be added on a regular basis, preferably a handful after each solid use. Alternatively, if this is not possible, add the equivalent of this on a daily or weekly basis. The bulking agent can be added through the pedestal.



We do **NOT** recommend the use of :

- Sawdust as it creates an anaerobic condition within the chamber.
- Cypress, cedar or eucalypt wood shavings due to their antimicrobial properties.
- Sugar cane mulch as it makes using the mixer difficult.

Nature Flush Enzymes

A 125ml bottle of enzyme concentrate is supplied with the toilet. Please refer to the label for instructions and spray into the waste chute. A spray flask is provided. Any staining of the pedestal can also be removed with the spray.



Nature Quick Microbes

This should be used each time a chamber is changed to kick start the process in the new chamber.



Shop consumables:
ecoflo.com.au/products/consumables



CARE & MAINTENANCE

DAILY OR WEEKLY

- Clean restroom & toilet fixtures using only biodegradable cleaners.
- Add 1 cup of bulking agent to toilet after every solid use.
- Turn the Compost Mixer backwards and forwards once a week; or possibly more often. Please read "Compost Mixer" section for benefits.

NOTE: Do not force the compost mixer too much. If it is hard to turn, add water to the compost pile via the waste chute (approx. 2-4L) and turn the mixer back and forth until it frees up.

MONTHLY

- Inspect the 'In-service' chamber, depends on usage, prepare another 'In-service' chamber for use once the chamber becomes full (refer to **Rotation of Chambers**, page 15).
- Check vent pipe & remove any foreign matter.
- Check the fan is operating
- Check that system is draining correctly

6 MONTHS

- Remove and clean fan



Shop consumables at
ecoflo.com.au/products/consumables



ROTATION OF CHAMBERS



It is important to observe safety procedures when dealing with fresh human waste. Please ensure you wear protective clothing (gloves and old clothes). Do not attempt to move the chambers on your own.

Your first rotation of the chambers:

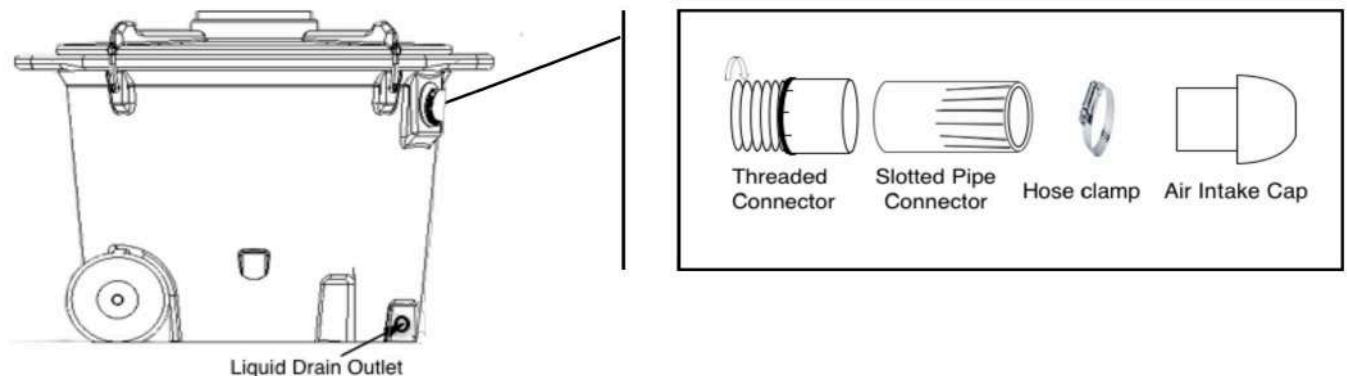
The Clivus Multrum composting toilet chambers will need to be changed on a regular basis. A sufficient number of chambers must be purchased to allow the 'Out-of-service' chamber a minimum 6 months; depending on climate, from the time they are disconnected from the waste chute.

Prepare a new 'In-service' chamber for use (refer to **Step 5: Install the Compost Chamber, page 9**).

Pour a small bucket of bulking agent (clean mulch) down the pedestal to cover up the waste pile before removing the full chamber.

Extra Chamber/s:

The 'Out of Service' chamber should be put in a warm position with the Air Intake Cap attached to threaded connector and the dust plug attached to the camlock.



Removal of Compost:

The pile should have reduced in size to approximately 20% of its original size and contain a maximum of 75% moisture. This 'humus' must then be disposed of as per the local health department regulations. This normally means digging the humus into the soil and covering with at least 100mm of soil.

Returning a Chamber to Service:

1. Ensure all hose and vent connections are clear.
2. Prepare the 'In-service' chamber for use (refer to **Step 5: Install the Compost Chamber, page 9**).

If the 'Out-of-service' chamber is to be placed away from the Main Vent assembly, you will need to dig a small second trench (20 x 20 x 20cms) to allow residual liquid to exit the chamber. Connect the second liquid drain hose from the chamber to the trench.

TROUBLESHOOTING

Please read this section before using your toilet.

Clivus Multrum toilets have proven themselves to be one of the easiest systems to manage. However, being a natural process, reliant on a number of factors beyond our control, it can occasionally need some help to maintain an appropriate balance.

THE 'IN-SERVICE' CHAMBER IS FILLING TOO QUICKLY:

This may be caused by a number of factors:

THE TEMPERATURE IS TOO LOW for effective composting.

INSUFFICIENT AIR FLOW.

This can be caused by a broken fan or the chamber being too full. Check the fan is operating and the level of the pile is not too high. This problem could also be caused by a blocked insect screen in the vent cowl.

THE PILE BEING TOO WET.

This could be the result of the outlet of the liquid chamber being blocked and causing the upper chamber to flood. Check the drain hose is not blocked and flush with a hose if necessary. You may need to change chambers if the blockage is in the chamber and thoroughly flush out the contents of the liquid chamber.

ANTIBIOTICS AND DISINFECTANTS WILL SLOW DOWN OR STOP THE PROCESS.

Restart the composting by reintroducing microorganisms. In many of these situations Nature Flush Enzymes will help solve inefficient composting by breaking down the solids and thereby speeding up decomposition.

THE 'OUT-OF-SERVICE' CHAMBER IS COMPOSTING TOO SLOWLY:

This may happen due to one or more of the problems described above. At this point the most effective course of action is to aerate the pile by turning it over with the Compost Mixer. You could also add 500ml of Nature Flush Enzymes from a domestic spray bottle as you turn the material and add a quantity of Nature Quick Microbes.

You should consider locating the chamber where it has a greater exposure to direct sun light. However, if you find the pile is drying out too quickly put the chamber in a shadier position.

If you find none of the above measures are effective, it means the local climatic conditions are less than ideal. This can happen in cold or humid conditions and you will need to purchase an additional chamber in order to provide an extended composting period.

If you need to change your 'In-service' chamber and the 'Out-of-service' chamber is not yet composted, dispose of the waste as normal and order an extra chamber from Ecoflo.

THE ODOUR FROM THE 'OUT-OF-SERVICE' CHAMBER IS UNPLEASANT:

If the 'Out-of-service' chamber is not connected to the vent pipe it may smell immediately after it has been taken 'Out-of-service'. Odours can be greatly reduced or eliminated by covering the top of the pile with straw or dry grass clippings. You may wish to do this before disconnecting the chamber.

THE ODOUR FROM THE 'IN-SERVICE' CHAMBER IS UNPLEASANT:

If this is not caused by a failed fan, or blockage in the vent pipe, liquid drain hose or fitting, please see the "'In-service' chamber is filling too quickly" section for how to resolve this problem.

THE POWER HAS FAILED RESULTING IN TOILET ROOM ODOURS:

Cover the pedestal with cling film until the power is restored. If you are connected to mains power consider installing an Uninterrupted Power Supply (UPS), available at Ecoflo Wastewater Management. The UPS will cut in with power from a 7Ah battery when there is a loss of mains power.

Helpful hints from our customers:

- Paint the Vent Stack black to produce an upward air flow.
- Add a wind assisted turbo vent to the Vent Stack.

MIXER NOT TURNING:

Do not force the mixer to turn if it is hard. Firstly add water to the compost pile (say 2-4L) and leave for an hour. Then attempt to rotate the mixer back and forth until it frees up.



Find more Troubleshooting and FAQ information online at

ecoflo.com.au/FAQ

or call us on

1300 138 182

PRODUCT & COMPONENT WARRANTY

Ecoflo will furnish new parts to a customer whose toilet fails within the allotted warranty period for the particular component, provided that our inspection shows such failure is due to defective material or workmanship. Any part supplied is warranted for the balance of the original warranty period. The warranty period for a part begins from the date the original product was dispatched (plus 10 working days for transportation).

Warranty Period:

| | |
|---|-------------|
| Any electrical component including solar | 1 year |
| Any rotomoulded component | 10 years |
| Any fibreglass/porcelain/polymarble component | 3/4/5 years |
| Toilet seats | 1 year |
| Any other component | 1 year |

This warranty does not cover:

- Damage resulting from neglect, abuse, accident or alteration; or damage caused by fire, flood, acts of god or other causality.
- Damage resulting from failure of the purchaser to follow normal installation and operating procedures outlined in the manual or in any other printed instructions supplied with the system.
- Labour and service charges incurred in the removal and replacement of any parts found defective under this warranty.

Items subject to a dispute, where photographic evidence is inconclusive, must be sent prepaid to Ecoflo. The cost will be reimbursed by Ecoflo should the claim be found valid.

In addition to the above, Ecoflo will only replace a fan that fails during the warranty period under the following conditions:

- The fan has only ever been connected and powered by either a 12 volt transformer plugged into mains power or a solar system supplied by Ecoflo. Connecting your fan directly to a power source other than one supplied or specified by Ecoflo may result in damage to the fan and void the warranty.
- The fan and transformer must not be modified/alterd in any way.
- The faulty fan is returned to Ecoflo for inspection, if required.

Providing the above conditions have been met replacement fans are shipped the same or following day free of charge by regular post.

MAINTENANCE SCHEDULE

Please place this maintenance schedule close to your 'In-service' Chamber and complete the table as you rotate your chambers.

Model: CM HP

Date First Put into Service: ____/____/____

The 'Out-of-service' chamber must compost for a minimum of 6 months from the date it was first rotated 'Out-of-service'.

Date chambers were last rotated:

| | | | |
|--|--|--|--|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |



Wear protective clothing including gloves and eyewear when servicing, rotating or emptying chambers.

APPENDIX 1

INSTALLING EVERTRENCH LINERS FOR SULLAGE - WASTE WATER DISPOSAL

AS/NZS 1547:2012 provides basic information for the design and construction of many on-site waste-water disposal systems. This manual also includes information offered by EVERHARD, which has found to be of value. EVERTRENCH injection moulded polypropylene Arched Liners is used for "Conventional" evapotranspiration-seepage (ETS) and evapotranspiration-adsorption (ETA) layouts described in the standard.

All waste-water poses a health hazard. All layouts for Wastewater disposal land application areas must be designed by competent and authorised persons, taking the following factors into account:

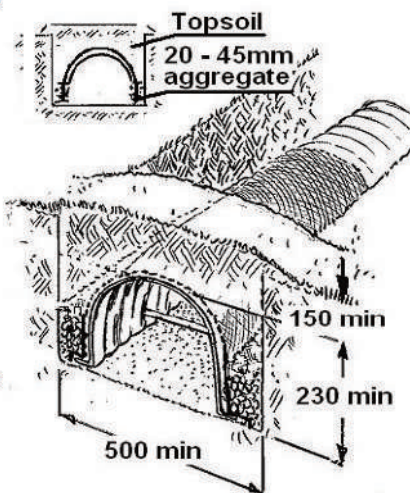
- ☐ The Volume of wastewater, based on household size and appliances.
- ☐ The rate of absorption of the surrounding soil.
- ☐ Limits imposed by site conditions, such as slope, contours, prevailing wind and permanent shade etc..

Before beginning design and construction of wastewater disposal system, check State and local authorities for requirements for your area. Conventional trenches and beds may not be permitted.

Plants should be selected from approved lists for disposal areas, to minimise root intrusion problems.

Method 1: Trenches: These are generally used in sites where soil is permeable enough to allow projected amounts of wastewater to drain freely into the trench floor. Trench should be wide enough for the EVERTRENCH Liner and deep enough for the selected Liner to be not less than 150mm below the surface.

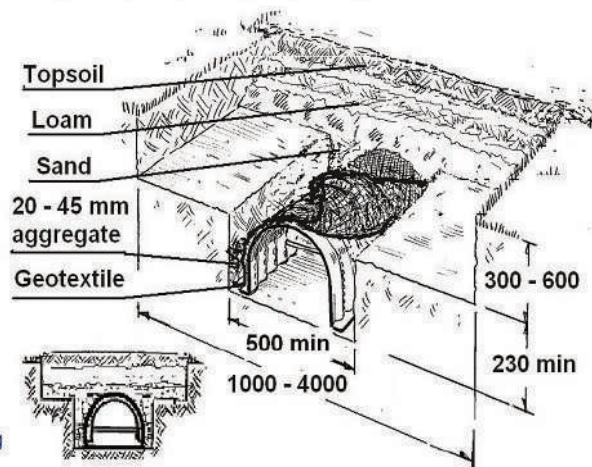
1. Excavate the trench along a level site contour, with the floor not less than 50mm deeper than the invert of the pipe from the Septic Tank or sullage distributor, with at least 150mm cover over the top of the Liner.
2. The trench floor should be level, evenly raked, and have no low spots which would allow "ponding".
3. Allow at least 75mm overlap for each length of EVERTRENCH Liner.
4. Fit Three Brace Bars into each Standard EVERTRENCH Liner, the first 220mm from the inlet end, then equally spaced along the excavation.
5. Cut the pipe entry hole in one Trench Liner End Cap, and fit the Caps to the Liner. Connect piping from the Septic Tank or Sullage Distributor.
6. Lay geotextile fabric over the full length of Trench Liner.
7. Place a 150mm layer of 20 - 45mm aggregate material along both sides of the Trench Liner, and at both ends to secure the End Caps. Rake level.
8. Cover the installation with a layer of topsoil, less permeable than the parent soil to help prevent stormwater entering the trench. Leave a slight mound for natural compaction. Turf may be laid over the trench area.



DO NOT COMPACT the trench area or expose it to traffic.

Method 2: Beds: These are generally used where soil conditions do not allow the planned volume of wastewater to drain freely from normal trench systems. Evapotranspiration beds encourage treated wastewater to be taken up by plant roots over a wide area, as well as draining into the soil, offering additional safety for seepage systems. Beds consist of standard width trenches, deeper than normal, with the area above the selected Trench Liner of much greater width, and filled with material allowing easier penetration of roots and transfer of moisture. Bed designs may vary widely, depending on soil conditions.

1. Excavate a bed area between 1000mm and 4000mm wide, at least 300mm deep along a level site contour.
2. Excavate a central trench along the full length of the prepared bed, to take a selected Liner. The top of the Liner should be level with the bottom of the prepared bed, and the trench floor not less than 50mm below the pipe from the Septic Tank or sullage distributor. The floor should be level, evenly raked, with no low spots.
3. Allow at least 75mm overlap for each length of EVERTRENCH Liner.
4. Fit Three Brace Bars into each Standard EVERTRENCH Liner, the first 220mm from the inlet end, and then equally spaced along the excavation.
5. Cut the pipe entry hole in one Trench Liner End Cap, and fit the Caps to the Liner. Connect piping from the Septic Tank or Sullage Distributor.
6. Lay geotextile fabric over the full length of the Liner.
7. Place a 150mm layer of 20 - 45mm aggregate material along both sides of the Trench Liner, and at both ends to secure the End Caps, and rake level.
8. Cover the Liner and the floor of the excavated bed with 100mm of coarse sand, then with sandy loam.
9. Lay a final 150mm layer of topsoil less permeable than the parent soil, to help prevent stormwater entering the bed.
10. Leave a mound for natural compaction. Turf may be laid over the area.



DO NOT COMPACT the bed area or expose it to traffic

EVERHARD INDUSTRIES Pty Ltd recommends a non-woven needle punched Geotextile designed for waste-water disposal land applications

(See "Excess Liquid Absorption Trench", page 12)

Ecoflo Wastewater Management Pty Ltd

www.ecoflo.com.au

www.clivusmultrum.com.au

Phone:

1300 138 182

(07) 3889 6144

Email:

info@ecoflo.com.au



Proudly Designed and Assembled in Australia by
Ecoflo Wastewater Management

