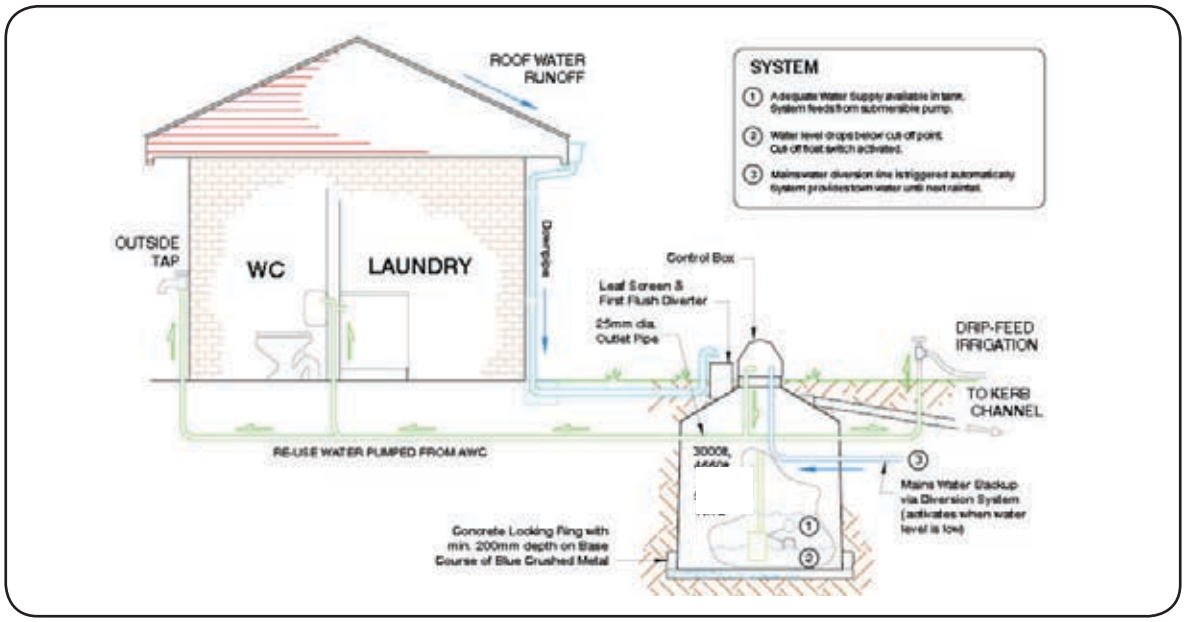
Diversion Master

UNDERGROUND RAINWATER HARVESTING SYSTEM
WITH MAINS DIVERSION AND CONTROL BOX



Correct installation of this Action Tank by a qualified tradesman, licensed in the state and local authority in which the system is to be installed, is mandatory for warranty and the quality of water stored.

The installation must be undertaken with due consideration given to the attached Action Tanks - OH&S Risk Assessment form and the Excavation Code of Practice.

CHECK THAT THESE INSTRUCTIONS CORRELATE TO THE TANK MODEL TO BE INSTALLED

STEP 1 - EXCAVATION - Refer to Excavation Code of Practice and OH&S Risk Assessment attached.

1. **Excavation using the specified minimum excavation size** (see table below & figure 3). Using minimum excavation size enables the top of the tank to be 100mm above **finished ground level**. (Please determine final finished ground level with your builder / installer).

Tank Type	Min. Excavation Width	Min. Excavation Depth (Master)	Min. Excavation Depth (Servant)
5000lt Diversion Master	2.4m x 2.4m sq	2.2m	2.4m
4550lt Diversion Master	2.2m x 2.2m sq	2.2m	2.4m
3000lt Diversion Master	2.2m x 2.2m sq	1.7m	1.9m

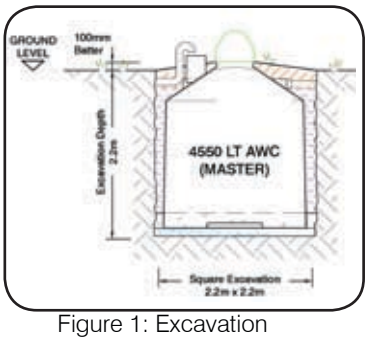


Figure 1: Excavation

STEP 2 - PLACEMENT

Materials needed: a) 100mm of 5 to 7mm crushed blue metal or recycled concrete below base of tank
b) 200mm concrete locking ring approximately 1/2 m^3 per tank

1. **Backfill excavation** with a minimum of **100mm** of 5 to 7 mm **Crushed Blue Metal** or **Recycled Concrete** (free of rocks), before placement of tank. NOTE: the depth of the tanks underground is up to the designer.
2. **Before placing the tank into the excavation**, check that the 50mm bung at base is tight (for single systems).

****LIFTING OF TANKS**** each system weighs approx. 270 kg. You must ensure your lifting gear is in good condition and capable of lifting more than 270 Kg. The excavator used to install the tanks must have a capacity greater than 270 kg, at its full extension. ENSURE SLINGS OR CHAINS DO NOT PRESS ON PUMP BOX AND THAT LOAD IS SPREAD.

3. **Place** Action Tank on a level 100 mm base of 5 - 7mm Crushed Blue Metal OR Recycled Concrete.
4. **Position tank in the hole** to suit desired site connections **using lifting lugs** on the Action Tank. If being installed with additional servant tanks, position other tanks.
5. **Multiple Tanks.** There is a step connection involved when installing multiple tanks (eg. master and servant) due to different base level. Please refer to the excavation table in Step 1). Remove 50mm bungs at their bases and make the interconnection between the tanks with 50mm high pressure poly pipe (at the base of the tanks). Tighten all connections (refer to figure 2) and surround with aggregate.
6. **Completely fill the tank with water**. These requirements apply to both Master and Servant Tank.
7. **Pour a 200mm min. thick ring of concrete around the base of the tank** (approx. ½ m^3 per tank).
   NOTE: No one is to enter the excavation unless the excavation has been benched or battered to reduce the depth of the excavation to less than 1.5 m.

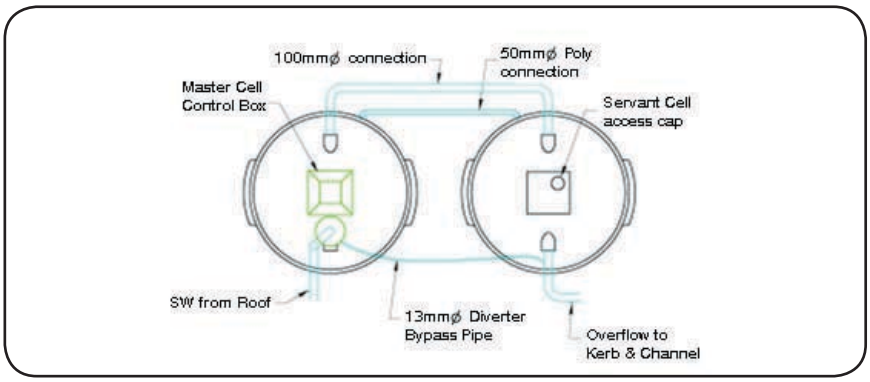


Figure 2: Tank Interconnection

STEP 3 - BACK FILLING

Materials needed: 5 - 7mm Crushed Blue Metal or Receycled Concrete approx. 8 tonne per tank

The use of specified backfill is important to prevent floatation and minimise soil settlement and the risk of connection failure resulting in water contamination.

1. **Backfill evenly around the Action Tank with 5 to 7mm Crushed Blue Metal or Recycled Concrete, up to the under side of overflow outlet.**

DO NOT DUMP FILL MATERIAL, ON ONE SIDE OF THE TANK AT A TIME OR USE MECHANICAL COMPACTION OR WHEEL ROLLING (To do so will void warranty and may reduce the Action Tanks capacity).

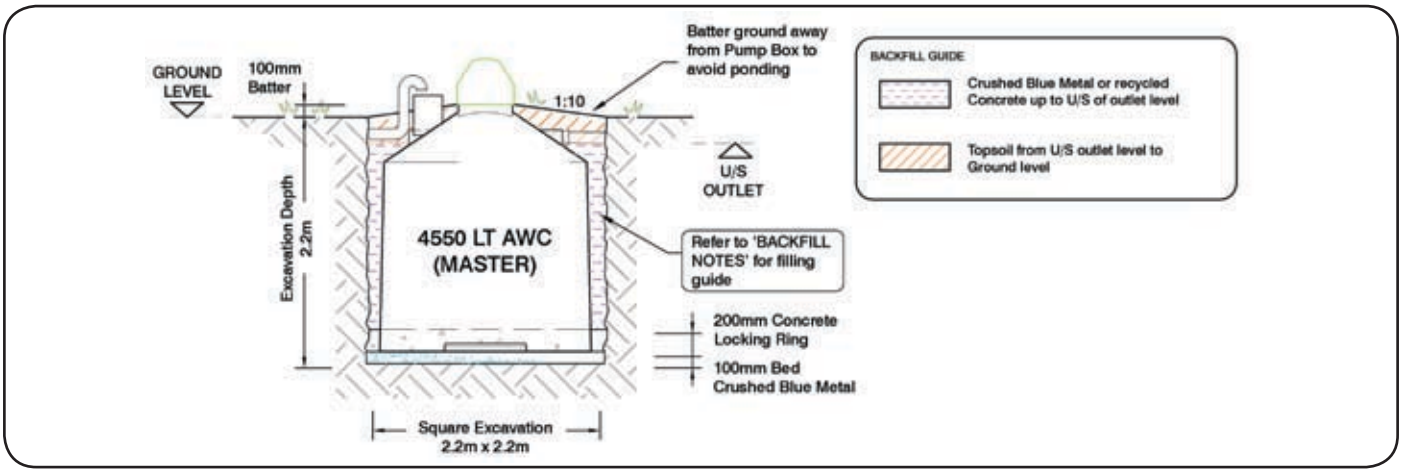


Figure 3: Excavation & Back filling

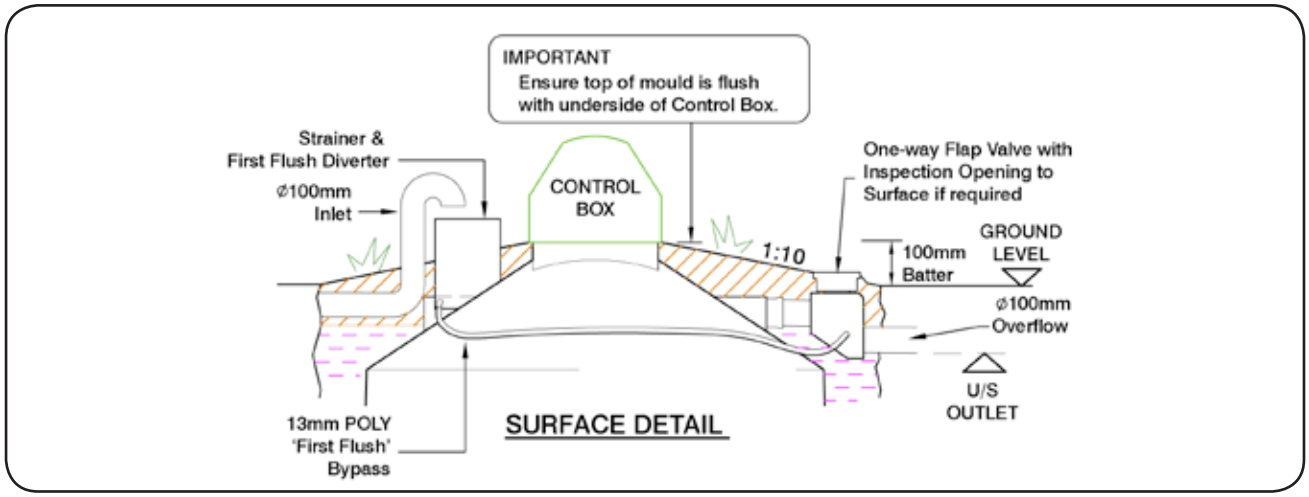


Figure 4: Storm water connections

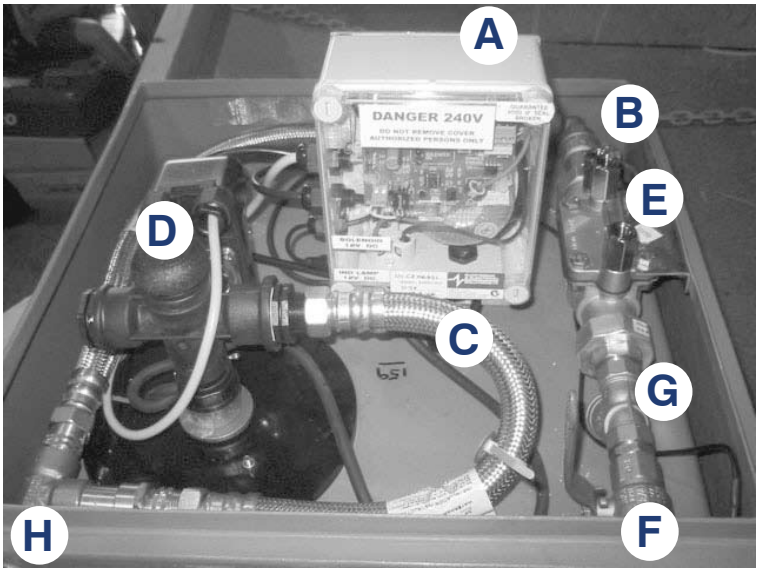
The Action Water tank has been tested and certified by a geotechnical Engineer, not to lift out of the ground when installed in accordance with these installation requirements, even when the cell is empty and the external ground water level is 200mm from the top of the Action Tank.

STEP 4 - CONNECTIONS (Control Box / Pump Installation)

Loose item found in Action control box (there are required for tank system commissioning)

1 x Plumb Easy Hose (braided silver)	**1 x Nut & Tail**
1 x black 13mm poly hose	**2 x Hose Clamps**
1 x Stainless Steel wire (Pump Support)	**1 x Poly Fitting (for pump)**
1 x 100mm non-return valve	**1 x Yellow high pressure hose**

1. **Connect roof water** from downpipes to 1st flush diverter. The 100mm inlet stormwater pipe from the downpipes should rise up out of the ground and empty into the top of the 1st flush diverter/leaf screen. The pipe should be deflected into the leaf screen with a 45 degree bend leaving a 100mm gap allowing for the easy removal of the 300mm leaf filter, for cleaning. Landscaping should make provision for over-flow from the strainer during periods of peak rainfall. Refer to figure 4.
2. **Connect Overflow** from tank to kerb or easement. Install the supplied 100mm non return flap valve (check flow direction) and connect the supplied diverter hose (located inside control box), from the 1st flush diverter to the overflow. Refer to Figure 4.
3. **Connect Mains water** to the mains inlet on the control box. You must flush out mains water line before connection and install a 'Stop Cock/Valve' ! A pressure limiting valve will be required if mains pressure exceeds 500kpa. Refer to figure 5 (G).
4. **Connect Rainwater** from the Control Box 'House' outlet, to the house. Install an isolating/ball valve at this point. Refer to Figure 5 (H)



A: Action controller
B: 3/4 inch solenoid valve
C: 1 x Plumb Easy Hose (braided silver)
D: Poly Tee & pressure switch
E: 3/4 inch testable double check valve
F: Mains water inlet
G: Shut-off valves for testing
H: Outlet to house

NOTE: Status indicator light
FLASHING RED = mains water use
OFF = rainwater in use

Figure 5: Control Box

STEP 5 - COMMISSIONING SUBMERSIBLE PUMP / MAINS POWER & TESTABLE DOUBLE CHECK VALVE

1. **Remove 3 screws from plate under the poly tee and pressure switch.** Lift up and unscrew pump from thread.
2. **Connect pump non-return valve (supplied) directly to top of pump.** Check the float switch on pump is clipped into position at top of pump. Unfurl yellow high pressure delivery hose and connect hose, using clamps, poly fittings and nut & tail provided to the non-return valve on top of pump. Then connect to underside of plate making sure the hose is not twisted before final tightening.
   NOTE: It is recommended that you DO NOT leave the pump submersed in the tank for longer than 2 weeks prior to commissioning.
3. **Check stainless steel safety wire is connected and that all other connections are tight.** Lower pump into water until plate Can be secured in original position (do not dislodge the pre-set positioning of the float switch).
4. **Connect silver braided Plumb Ezy** to the side of the poly tee then to pump discharge outlet. Check pump power is plugged into the underside of the Action Controller.
5. **ELECTRICIAN** Hardwire 240volt 10amp single phase mains power to round electrical connection box located on the side of Action Control inside control box. It is recommended there be an isolation switch located in the electricity box.
   NO ADJUSTMENT TO SUCTION HOSE OR SAFETY WIRE LENGTH IS NESSASARY. CHECK PUMP TURNS ON AND OFF WITH PRESSURE BUILD UP AND RELEASE.
5. **PLUMBER: Test and commission 'Testable Double Check Valve'. This needs to be done after mains water has been connected to the sytem. A copy of the test report must be submitted to the council.**

STEP 6 - FINAL BACKFILL

1. **Top up backfill to finished surface level with top soil free of rock and stones that is suitable for planting.** It is recommended that the Action Tank is installed high enough to create a landscaping mound of a minimum 100 mm or higher so as to prevent any ponding of water around the top of the tank and the base of the control box.
   *****Back fill must NOT be higher than the bottom edge of the green pump box.******

STEP 7 - CHECK SYSTEM / INSTALLATION

1. **Check that all strainers are clear of wrapping** and other obstructions and that all signage as required by the relevant local authority has been installed. i.e. 'Rainwater Water'.
2. **Check system for leaks** and that it is working correctly. (Movement may occur during transport).
3. **Check system performance by turning outside tap.** If surging in flow is noticed after 60secs, return to control box and adjust 'Pressure Switch' located on black poly tee. Open Pressure Switch hosing and tighten the small spring until surge disappears (Approx. 2 turns). **IMPORTANT!!** Shut off tap and make sure that the pump light in controller switches off after 30secs, if not, small spring has been over tightened and will need to be backed off until pump light turns off.
4. **Ensure control box lid is fastened using S/S screws.**
5. **Test mains water diversion -** turn on hose tap, then unplug the pump from the underside of the Action Controller. Check that you have mains water coming out of the same hose tap while the pump power is turned off. Then switch off mains power at house switch box to confirm mains water diversion still occurs.

STEP 8 - OWNERS MANUAL / WARRANTY

1. **IMPORTANT Complete the 'Owners Manual' enclosed** with the warranty sheets in the control box making sure that the serial number of the Action Tank has been entered in the manual (this number is found on the inside of the control box lid).
2. **PLEASE CHECK: The installation instructions correlate with the tank you have purchased and installed.**
3. **IMPORTANT - PASS THE COMPLETED OWNERS MANUAL ONTO THE PROPERTY OWNER OR BUILDER.**

Considerations

1. Where ground water or high water table exists (i.e. tidal areas): de-water your excavation and follow steps 2 to 6 whilst maintaining de-watering.
   NOTE: these requirements apply to both Master and Servant Action Tanks.
2. Consideration should be given to the volume of water and area of roof space that is being directed into the tank system (maximum suggested water volume of 8l/sec or 170m2 of roof space to be directed into each 100mm 1st flush diverter, refer AS3500).
3. Action Rainwater Harvesting Systems in most cases will require no other backflow prevention devices but you are advised to seek confirmation from the relevant local authority or council.

****It is very important that the attached OH&S Risk Assessment form is referred to prior to the commencement of installation works****

Additional information is available on our web site www.actiontanks.com.au
Action Tanks (Qld) 07 5442 4242 (NSW) 02 9453 0300 (Vic) 0409 861 197

ACTION TANKS
Water Conservation Solutions

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RISK ASSESSMENT

INSTALLATION OF UNDERGROUND ACTION RAINWATER HARVESTING SYSTEM

Project Name:	Date:
Person completing form (Name):	(Signature):

Please tick all appropriate boxes

Equipment to be used

Ladders		Shovels	
Excavator			
Power Tools			
Power Leads			
Wheelbarrow			

Personal Protective Equipment

Hard Hat		Safety Harness	
Safety Boots		Safety vest	
Safety Vest		Gloves	
Hearing protection		Barrier Cream	
Safety Glasses			

Activities

Excavation of earth		Cement Work	
Back filling excavation			
Drainage			
Plumbing			
Landscaping			

Incident codes

CLASS 1: (High Risk) Permanently diasable or kill	
CLASS 2: (Medium Risk) Temporarily disable or serious injury	
CLASS 3: (Low Risk) Cause minor injury	

Potential Hazards	Possible Controls	
Fall into Excavation	Do not allow persons into excavation for single tank installs. When required to enter the excavation for multiple tank installations, ensure that excavation is battered or benched as per code and/or that safety precautions are taken to ensure the excavation does not collapse. Refer below.	
Collapse of Excavation	Ensure that the excavation is supervised by a qualified person. Make sure that spoil from excavation is placed a safe distance away from edge. Enter excavation only during multiply tank installations. Batter or Bench excavation, if required, in accordance with code. Provide stops/barriers to stop machinery approaching too close to the edge of the excavation. Be aware of zone of influence to other structures	
Slip, trip & falls	Area clear of building material, good working surface available, ensures you are working from stable ground.	
Cuts	Ensure all sharp edges are protected Glass or broken materials are removed. Gloves are worn to protect hands; All sharp material is stacked and removed from site	
Lack of Supervision	As installation of Action Tank can be achieved within a few hours never leave excavation unattended without barricading or roping off with safety tape. Continually monitor the works to ensure that conditions remain safe and that excavation does not become water logged or encroached apon by other building works. If excavation is left overnight, barricades and safety fencing must be erected.	
Injury Caused by Machinery	Ensure that high visibility safety clothing is worn and good communication with a competent machine operator is maintained.	
Machinery flipping over	Ensure the excavator is working on stable ground. Plant inspections are carried out. Operator is trained in safe use of the plant. Look for electrical hazards.	
Contact with Electricity	Watch for overhead powerlines. Turn off any power that is capable of being cut or touched during excavation, before starting work, ensure all power tools are protected by RCD, Ensure all power tools and leads are tested and tagged.	
Manual Handling	Ensure good manual handling techniques are used when lifting, pushing, pulling, twisting and stretching. If the load is heavy use two man lifts or mechanical devices.	
Safe use of PPE	Ensure correct PPE is being used for the task at hand. Hearing protection, Safety glasses, safety harness, safety boots, high visibility safety clothing.	
Drowning	If there is a risk that the excavation may collect or retain water, ensure fall protectionis in place, qualified person is available to perform EAR or CPR. Floatation devices are worn.	