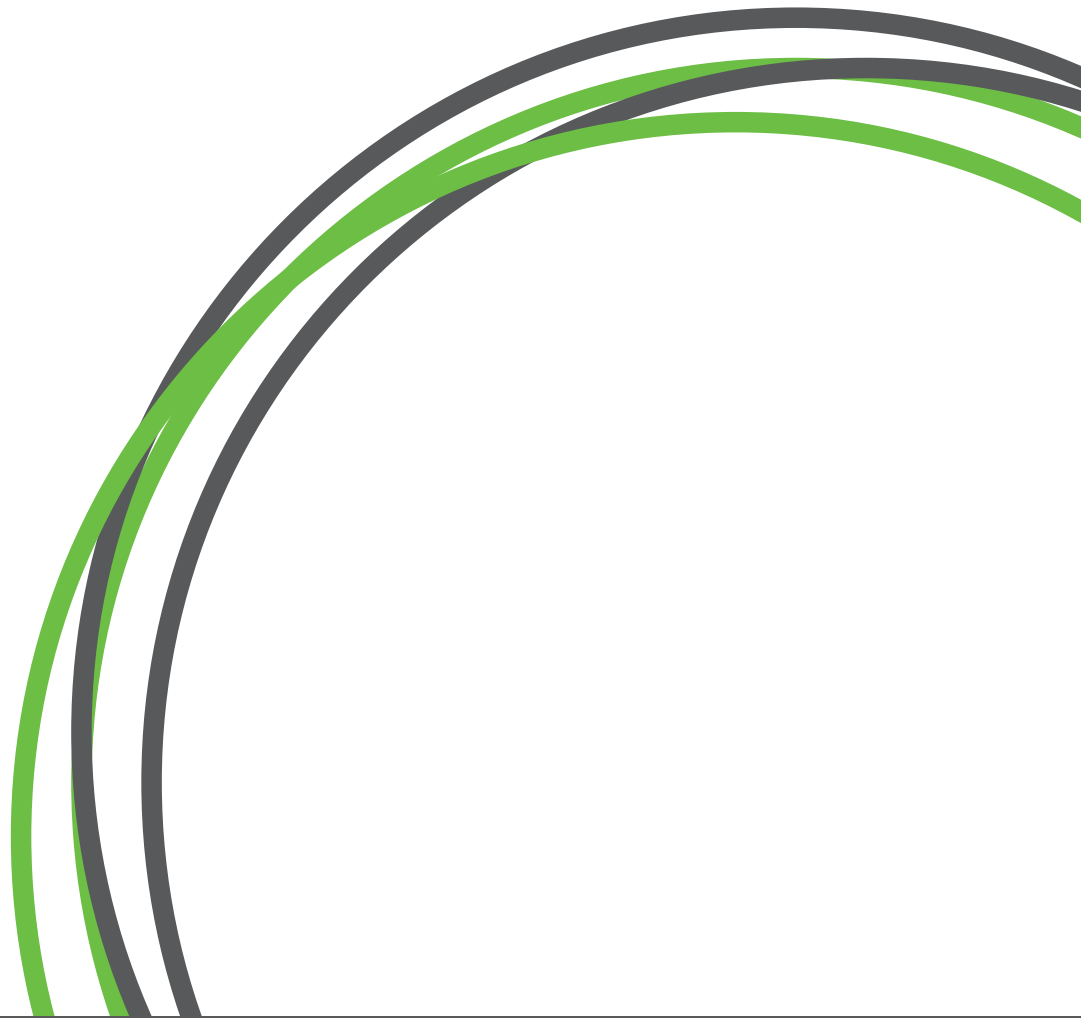




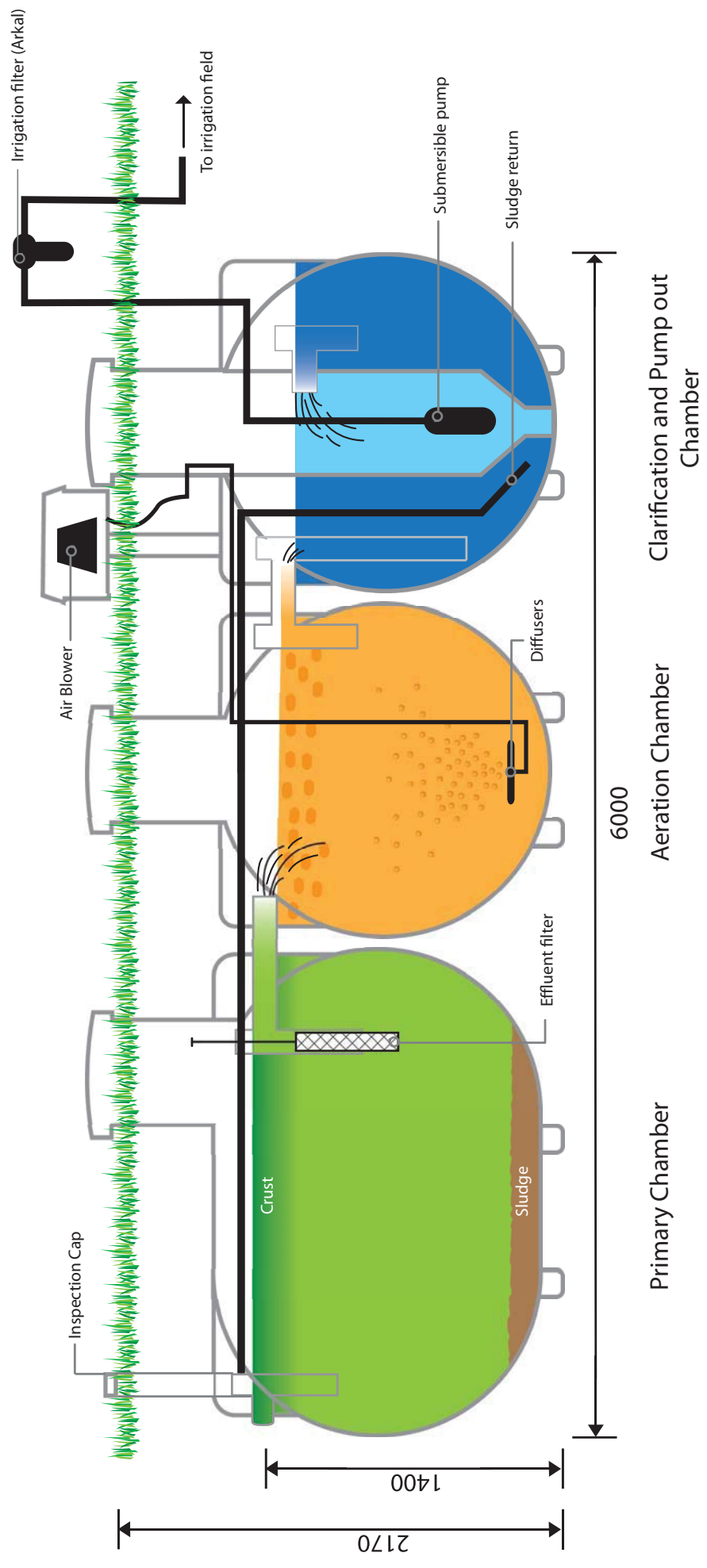
Integra

Reliable Wastewater Management



Installation Guide

Integra Wastewater Treatment Systems



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INSTALLATION OF INTEGRA SYSTEMS

The Integra wastewater treatment system (WWTS) has been designed with installers and service agents in mind. The fixtures and fittings used in the construction of the system are all items most plumbers and drain layers will stock in their van such as standard Hansen type fittings and standard ball valves. This means that if there is a failure for one of these items there are no speciality parts to be shipped as you should be able to fix it on the spot. The WWTS is simple in its configuration and operation, however there are several areas that need special attention during installation to ensure the product warranty is supported and the end user maximises the value from their Integra WWTS.



Ground Water

It is important that installation of the Integra WWTS is not carried out where permanent ground water is above the main body of the tank. Where a wastewater treatment system must be installed in an environment like this please consult Integra to assess whether an installation solution is possible such as the ground anchoring system detailed in your technical support manual.

Excavation

The excavation zone required for the installation of the underground tanks shall extend along a line from the base of the tank up at 1 vertical to 1 horizontal or the angle of repose, whichever is flatter, for soils above ground water table. For saturated or submerged soils the excavation shall extend along a line from the base of the tank up at 1 vertical to 1.5 horizontal or the angle of repose, whichever is flatter. In addition, excavations shall not be undertaken within a zone of 1 vertical to 2 horizontal from existing structures.

If there is any doubt use appropriate advice from a suitably qualified geotechnical engineer. The base of the tank is defined as a point vertically down from the outer extremity of the tank.

Base Soils

The sub-grade material upon which the base of the tank shall bear upon shall be a minimum soft clay or silty sand of minimum bearing capacity 100kPa. This material should be compacted to 95% of standard dry density +/- 2% from optimum moisture content prior to installation of the underground tank. Any sharp rocks or other material must be removed from the base soil.

Bedding

If the existing base is not suitable, compact bedding material shall be used to obtain a firm level base with a minimum depth of 100mm. Use pea metal, 7-10mm (GAP 7-10) aggregate or bedding material.

Positioning the Tank

Ensure there are enough people to assist in the process (trained) and that all lifting equipment is capable of lifting the tanks utilizing the lifting eyes. Check the orientation of the inlet and outlet. Check the manhole for level and alignment.

Maximum Depth

The maximum burial depth of the tanks is 670mm to invert bracket. (The height of the riser). This is critical to ensure the long service life of the vessels and where the vessels are buried deeper it is at the installer/homeowners risk and will void the product warranty.



Filling the Tanks

The tanks should be half full before back filling is commenced to stabilise the tank. Fill the tank immediately after back filling is completed to normal operational level. Check for any leaks.

Backfilling

The backfill material around the tank shall be free draining, granular material with a saturated density minimum of 18kN/m³, maximum of 21kN/m³, with a minimum coefficient of internal friction of 30 degrees. The backfill shall be compacted to minimum 95% of standard dry density +/- 2% from optimum moisture content in compacted layers (around the full circumference of the tank) of no greater than 200mm. We recommend pea metal less than 20mm (GAP 20). Ensure backfill is compacted into the underside of the tank. Do not backfill with clay soils.

No Go Zone

A zone around the perimeter of the tanks 2 metres from the edge of the tanks must be identified to stop the intrusion of vehicles, stacked materials and congregations.

Anti-Flotation

The tanks are designed to resist flotation in high ground water conditions if covered by at least 500mm of backfill when full to operating levels.

The tanks should only be emptied when ground water conditions are low (usually in summer time) and be refilled immediately after solids are removed.

Septic Tank Standard

The tanks are to be installed in accordance with Appendix B of the

Septic Tank Standard AS/NZS 1546.1.2008.

Health & Safety

Installation shall be carried out in accordance with the recommended MBIE Code of Practice for Safety.

Surface Runoff

Divert surface runoff away from the tank installation site.

Lid Sealing

The lid is fitted with a large O ring; ensure this is clean to achieve a good seal.

Vessel Placement

Separation distance between the primary vessel and the aeration vessel may be determined by the drain layer on site to suit any lower site contour situation and has no limitations.

It is necessary to install the aeration and clarification vessel within one metre of each other and to have them on the same plane.

Vessel Connections

The Integra WWTS is supplied as three (or more) separate components comprising of septic, aeration and clarification vessels.

The connections between the vessels are as follows:

- 100mm PVC drainage connections to inlet and interconnecting the vessels.
- 25mm connection between the vessels to facilitate the sludge return feature back to the Aeration vessel.
- 15mm hose is supplied to connect between the same vessels to supply air to the diffuser.

Blower Cabinet Installation

The air blower is supplied in a separate weather proof cabinet to be installed by the drain layer. The cabinet shall be solvent glue fixed to the system with a 500mm length of 100mm diameter PVC drainage pipe (supplied). 100mm diameter PVC end caps are fitted to the bottom of the blower cabinet and the top of the clarification vessel for locating purposes. The base of the blower box is intended to sit at finished ground level.

Effluent Discharge Field

Where specified by the system designer the WWTS is supplied complete with the materials and components to install the effluent discharge field. The main components supplied include:

- Discharge filter unit
- Stand pipe kit
- Irrigation fitting kit
- The appropriate number of dripper line coils.

Electrical Requirements

The installation of the system will require a 240 Volt, 50Hz, 16 Amp power supply fed from a dedicated RCD.

The controller is intended to be installed adjacent to the dwelling distribution board or sub board. Alternatively the electrician may install the controller as a separate sub board located as required.

Power and Alarm cables need to be routed from the Controller to the wastewater treatment system.

More detailed electrical information is included in the pages to follow.

Owners Manual

A comprehensive information pack is supplied with each system. The Integra Installer Agent is required to ensure that the owners manual is handed to the owner on completion of the installation.

The information provided in the owners manual shall be worked through with the owner to ensure a thorough understanding of the wastewater treatment system operational requirements. 95% of end user issues result from a lack of education on the operating requirements of the system so make the effort to ensure your (and our) customer has a hassle free experience with their Integra WWTS.

Commissioning

Make sure the vessels are filled to normal operational level, check for water tightness and add the activating enzyme supplied with the system. Included in the back of this book is a commissioning check list that is to be completed and returned to Integra to be retained on file for warranty purposes.

Warranty

Failure to comply with these instructions will invalidate the product warranty. The conditions of the warranty are further detailed further on in this installation guide.

Support

If at any point you are unsure about anything to do with your installation, Integra have experts on hand to assist with any technical issues you may encounter.

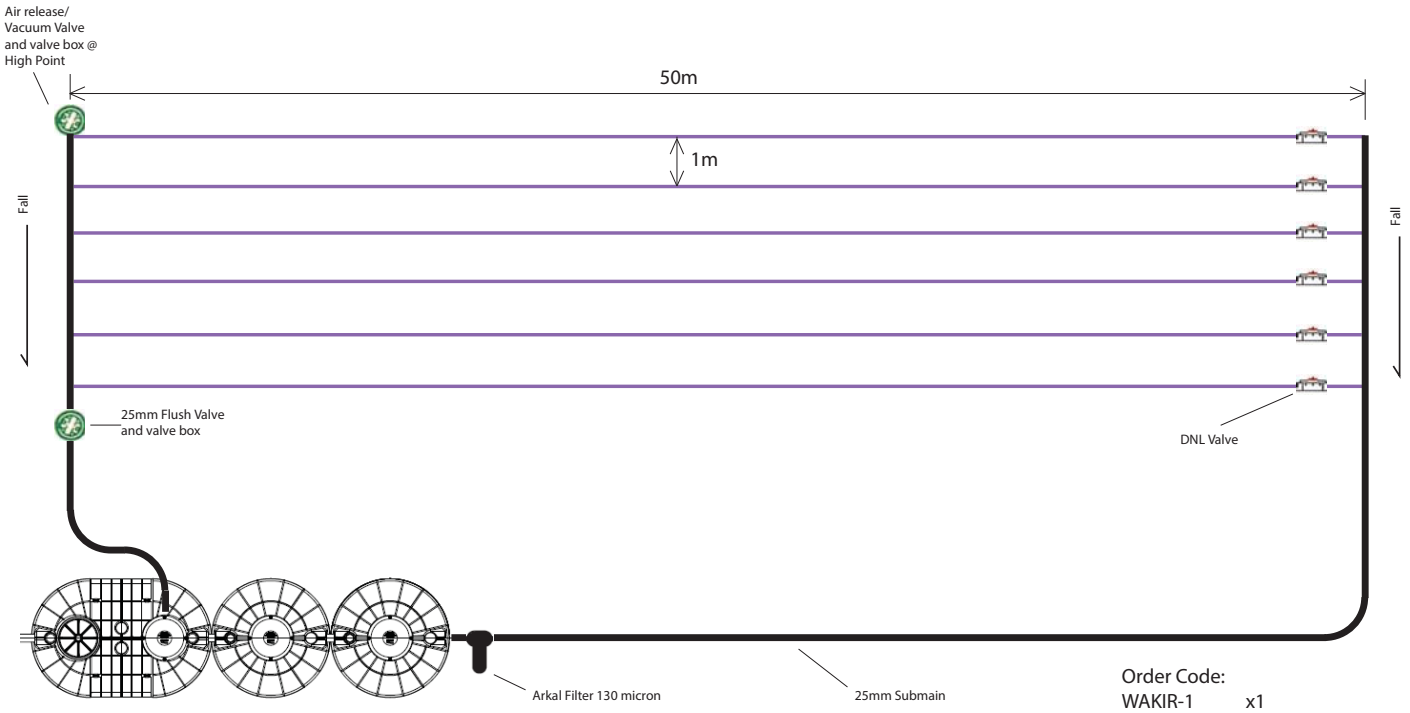




Technical Drawings and Diagrams

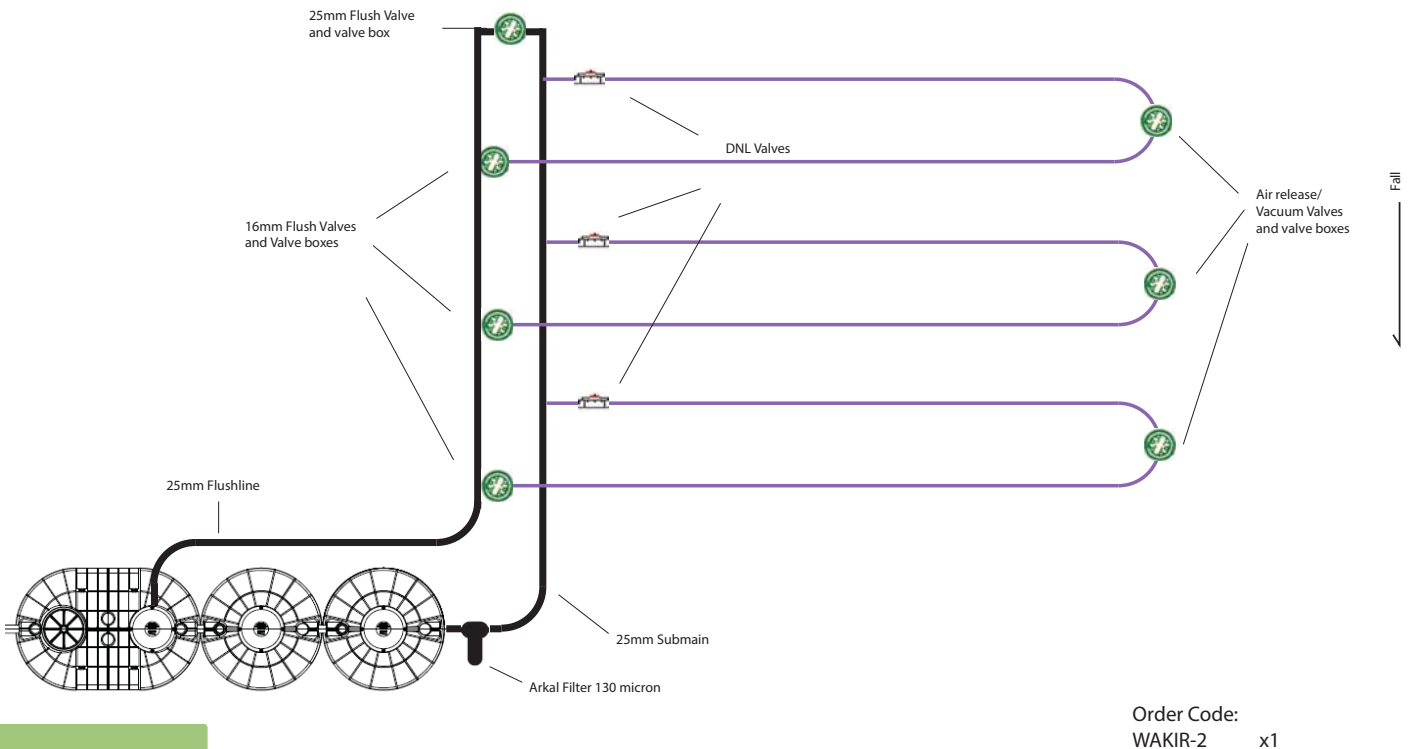
EFFLUENT DISCHARGE FIELD - 300m (BASIC)

The below schematic shows the basic layout of a 300 metre dripper field. This layout uses less flush box installations but the resulting slower line flushing velocity is less effective. A larger drawing is available in the Technical and Sales Manual or available from your account manager.



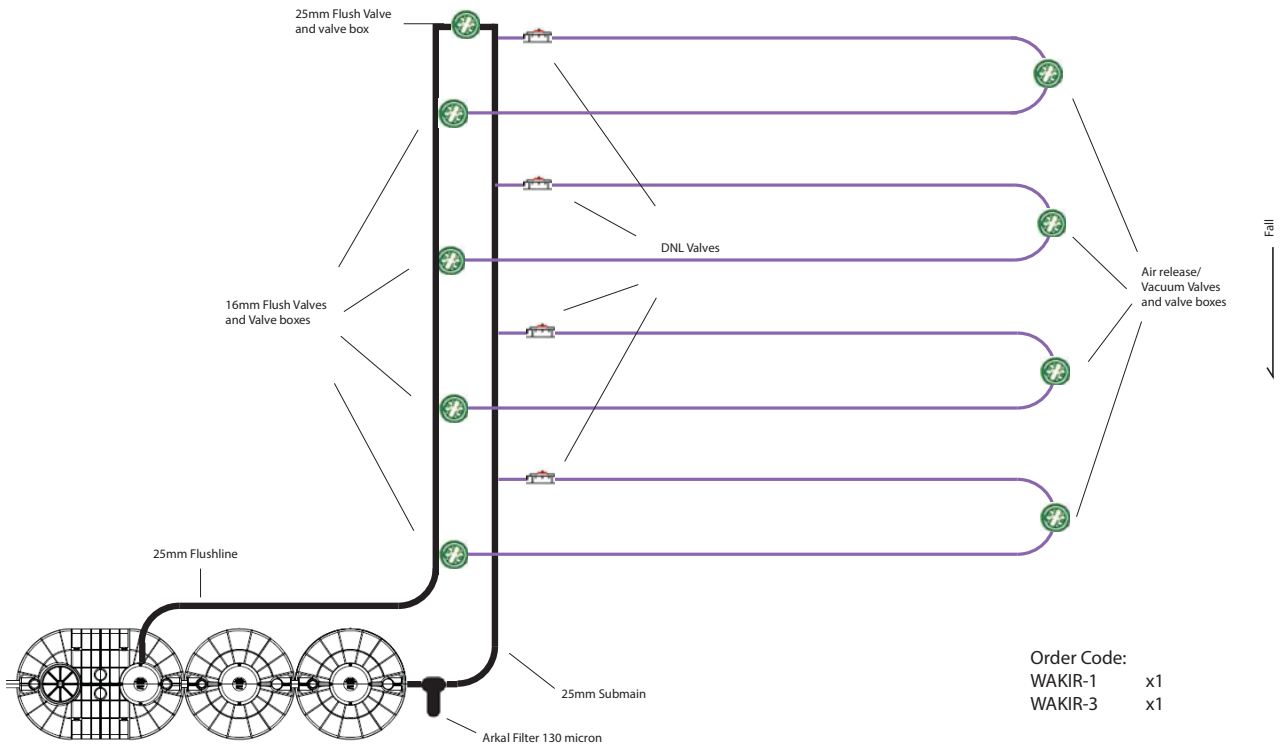
EFFLUENT DISCHARGE FIELD - 300m (STANDARD)

The below schematic shows the standard layout of a 300 metre dripper field. Using more flush box installations the field can be installed in tighter areas than the 'basic' installation shown above. A larger drawing is available in the Technical and Sales Manual or available from your account manager.



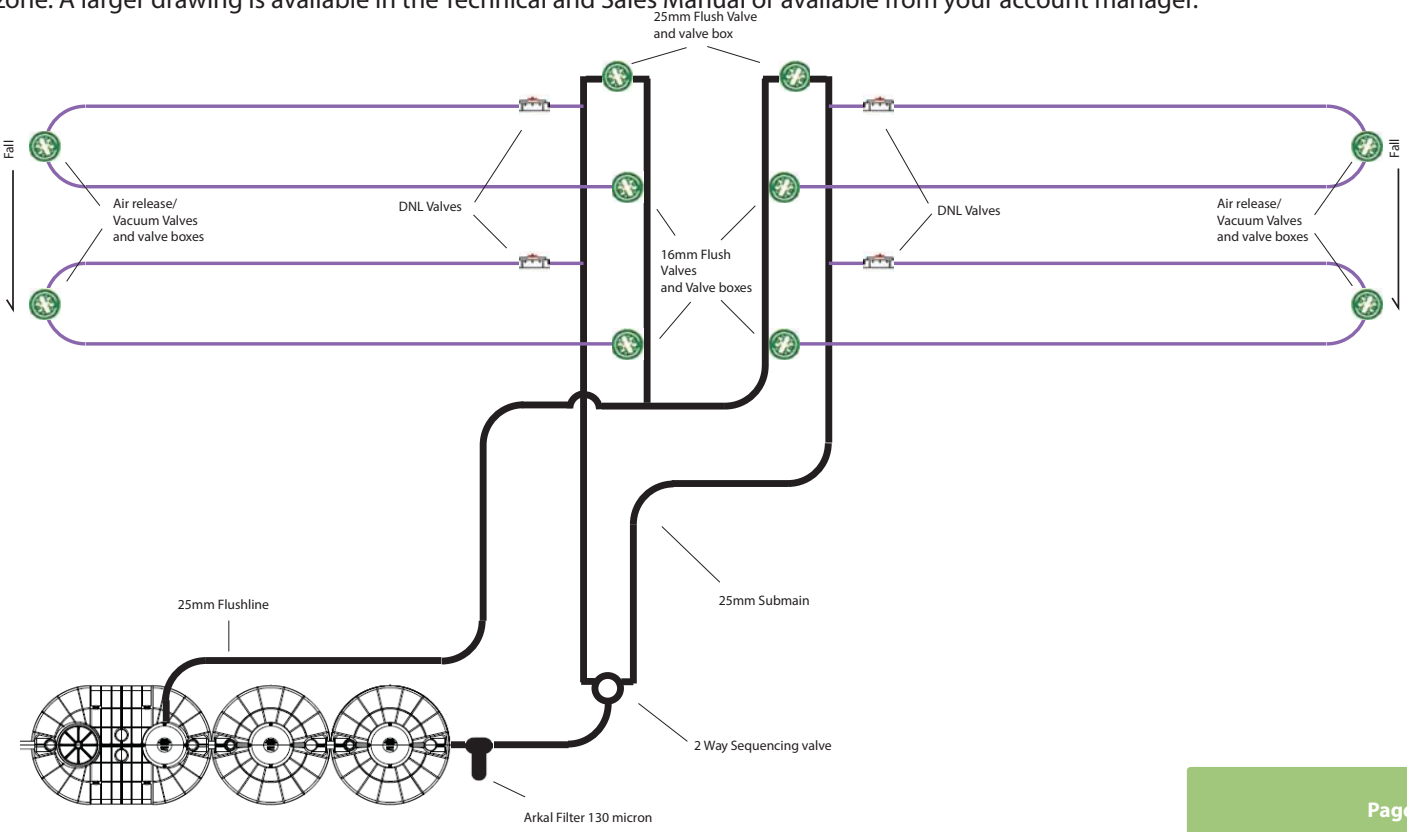
EFFLUENT DISCHARGE FIELD - 400m (STANDARD)

The below schematic shows the standard layout of a 300 metre dripper field includes a 100 metre expansion pack for larger field requirements. A larger drawing is available in the Technical and Sales Manual or available from your account manager.



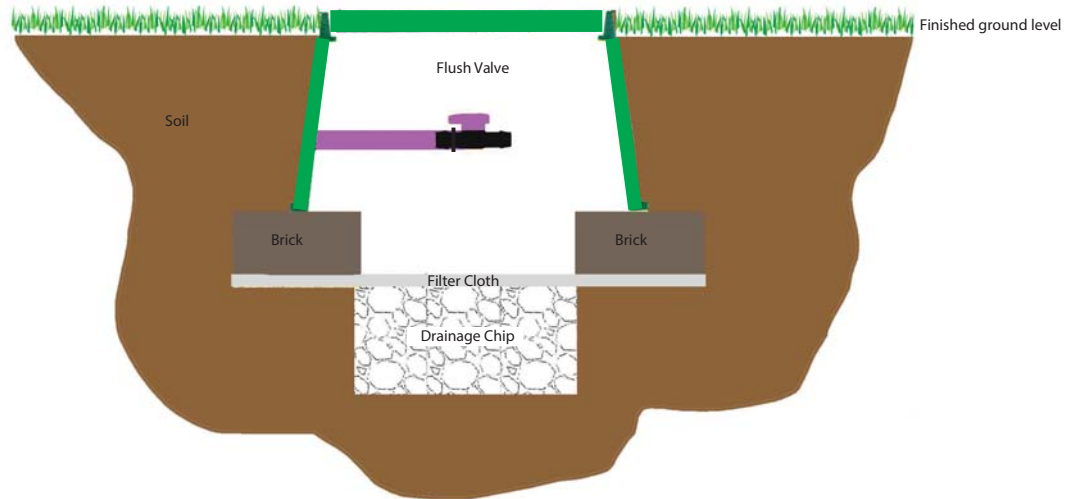
EFFLUENT DISCHARGE FIELD - 400m (SEQUENCING)

The below schematic shows the sequencing field layout of a 400 metre dripper field. Expansion packs can be applied to this field option to provide more flexibility in disposal field design when disposal field should be no larger than 400 metres per zone. A larger drawing is available in the Technical and Sales Manual or available from your account manager.



FLUSH BOX SOAK HOLE

The below schematic shows the suggested configuration of a flush box. It is no longer permissible to have flush lines discharge on the land surface. A larger drawing is available in the Technical and Sales Manual or available from your account manager.

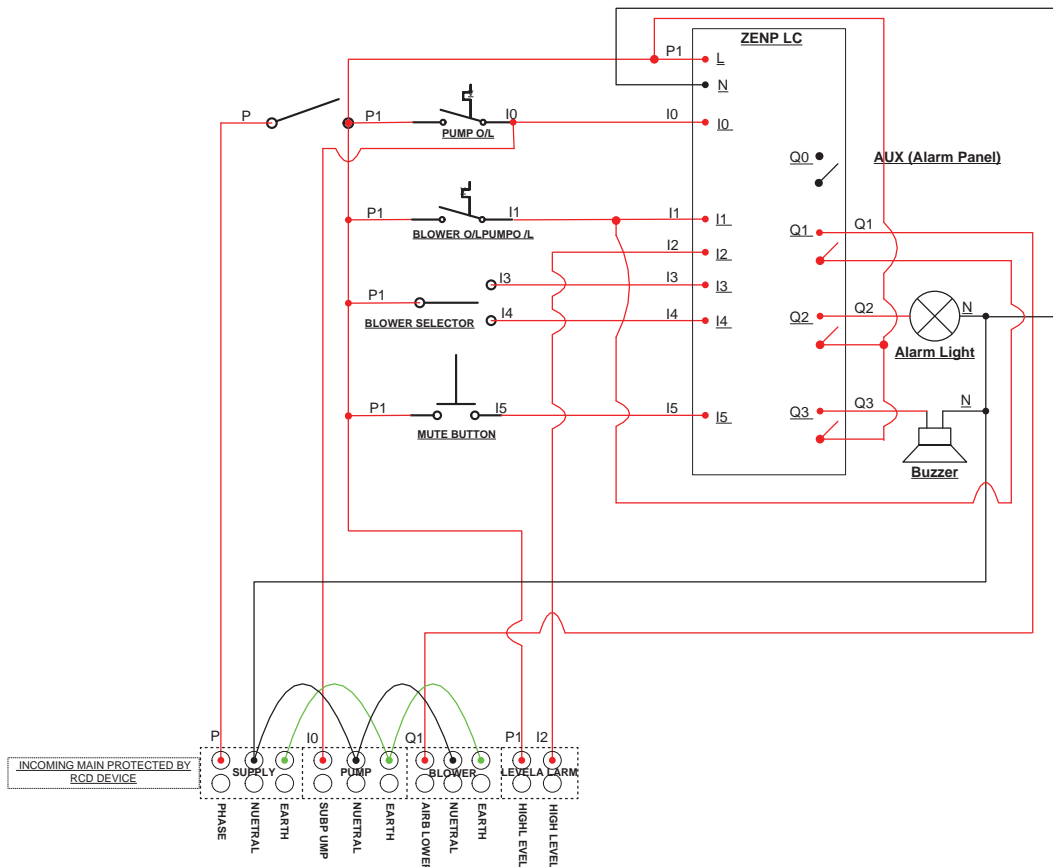


Note:

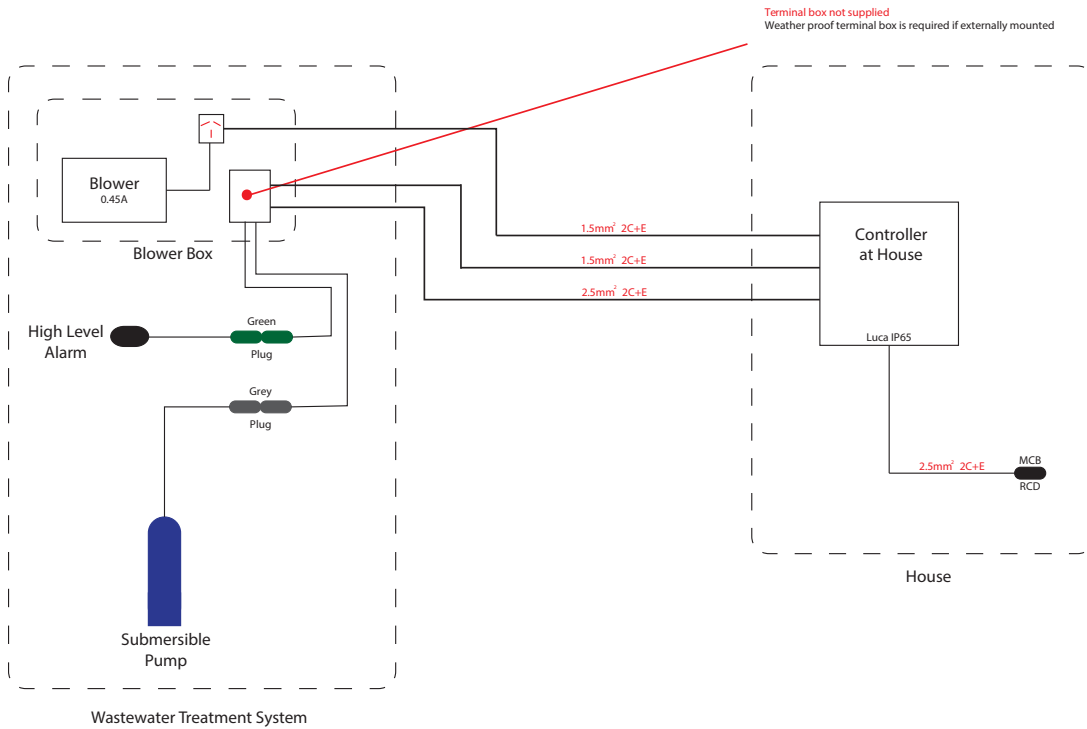
Soak hole must hold 6x the volume of header and drip lines flushing to soak hole

17mm Drip line holds approx 12L per 50m
25mm Sub main holds approx 25L per 50m

ELECTRICAL DIAGRAM



REMOTE PANEL ELECTRICAL SCHEMATIC



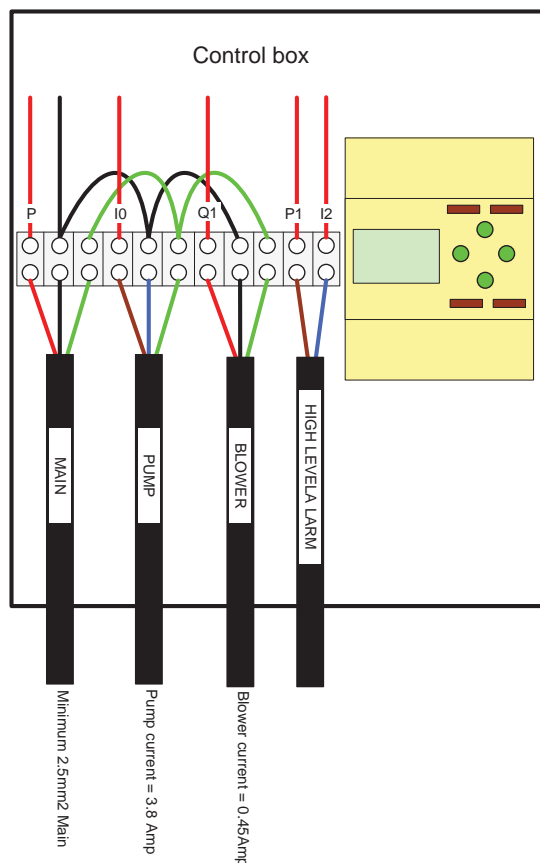
CONTROLLER ELECTRICAL DRAWING

Note:

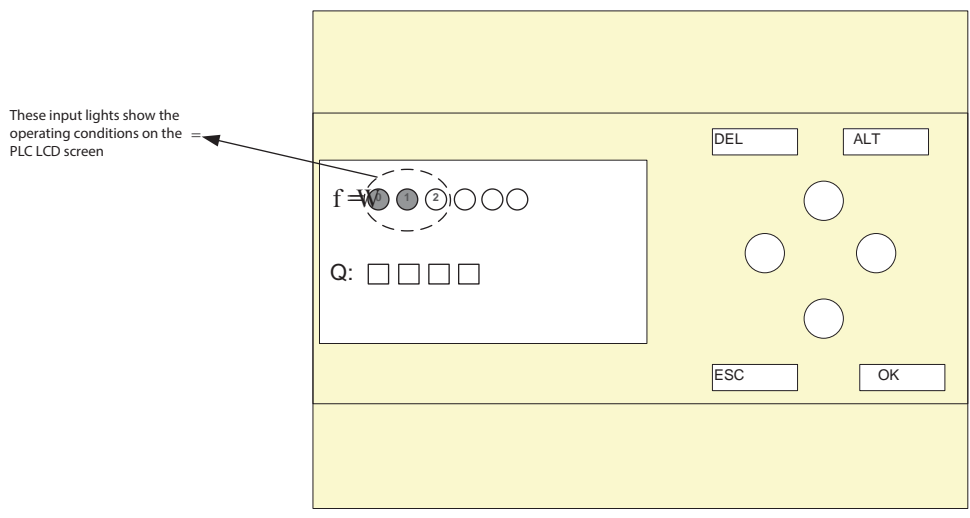
Water proof plugs must be tighten on site to ensure no moisture gets in.

Green Plug = High Level Alarm
Grey Plug = Submersible Pump

Incomming main to be protected by RCD device



SYSTEM DIAGNOSTICS



- Normal Operation : I0 = ON I1 = ON I2 = OFF (as pictured)
- Sub-pump fault: I0 = OFF I1 = ON I2 = OFF
- Blower fault: I0 = ON I1 = OFF I2 = OFF
- High Level Fault: I0 = ON I1 = ON I2 = ON

ELECTRICAL CONTROL PANEL

Note:

Blower Modes:

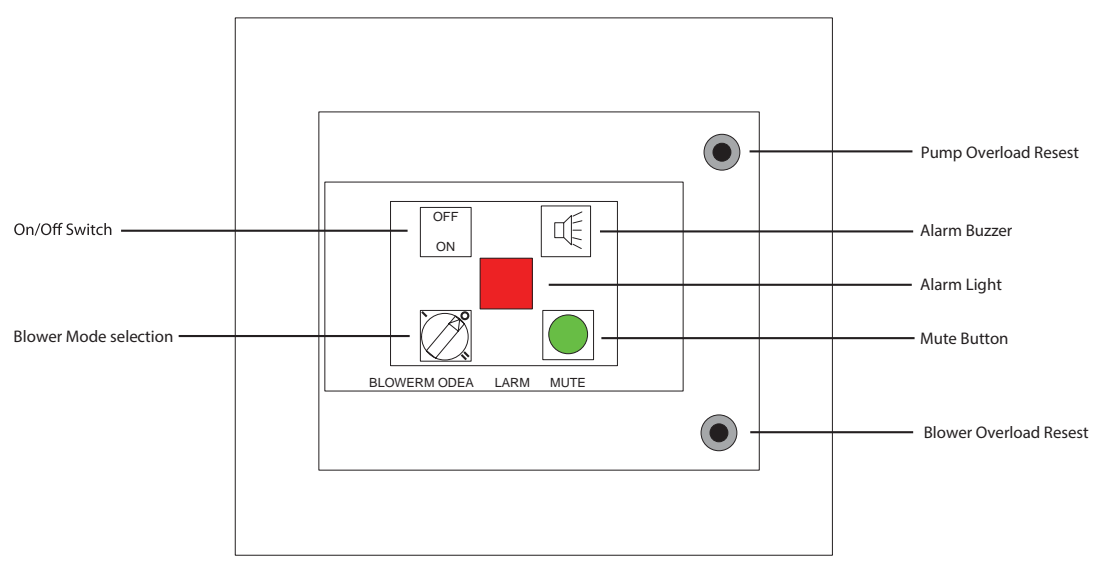
- 0 = 24 Hour operation (factory)
- I = 3 hours on 1 hour off (2 people only)
- II = 1 hour on 6 hours off (vacation mode)

Mute Button

Silence alarm for 24 hours

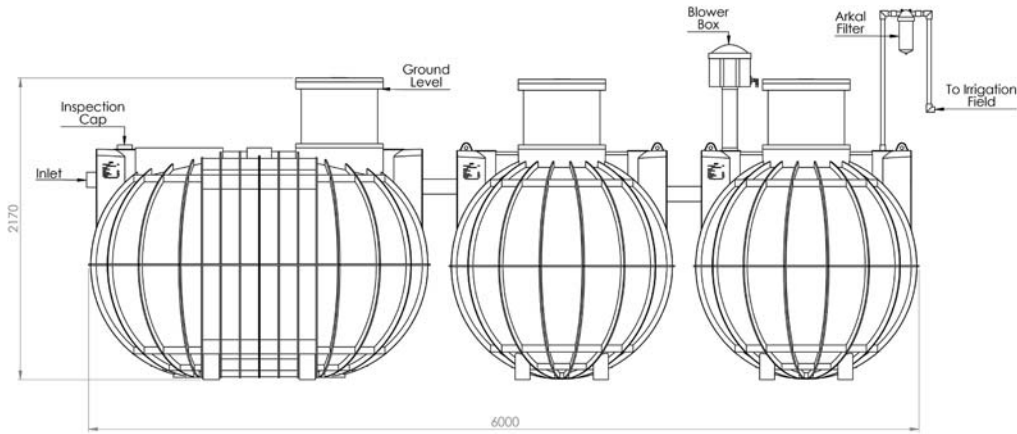
Reset buttons

Resets blower and pump

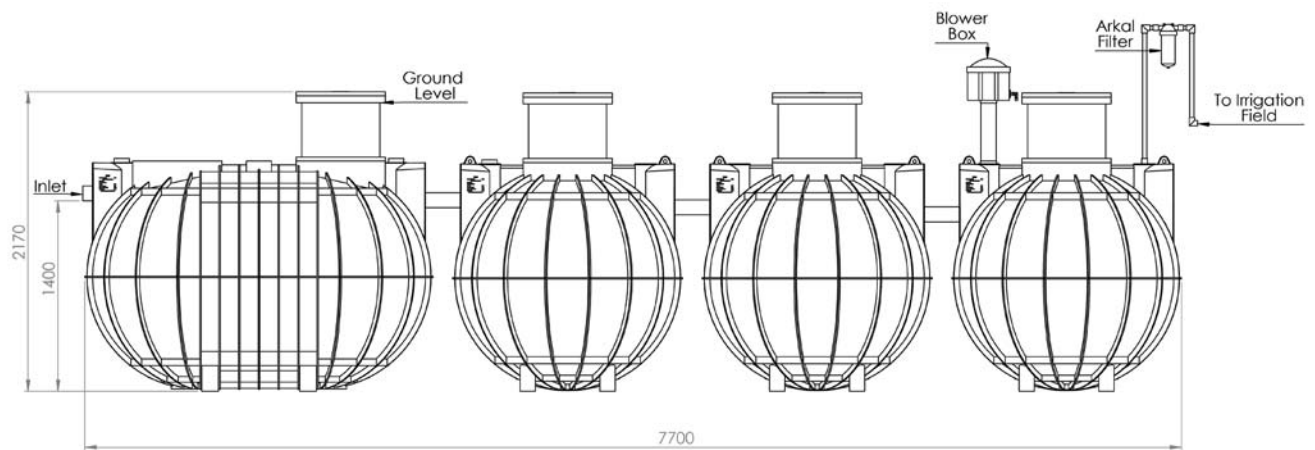


SYSTEM DIMENSIONS

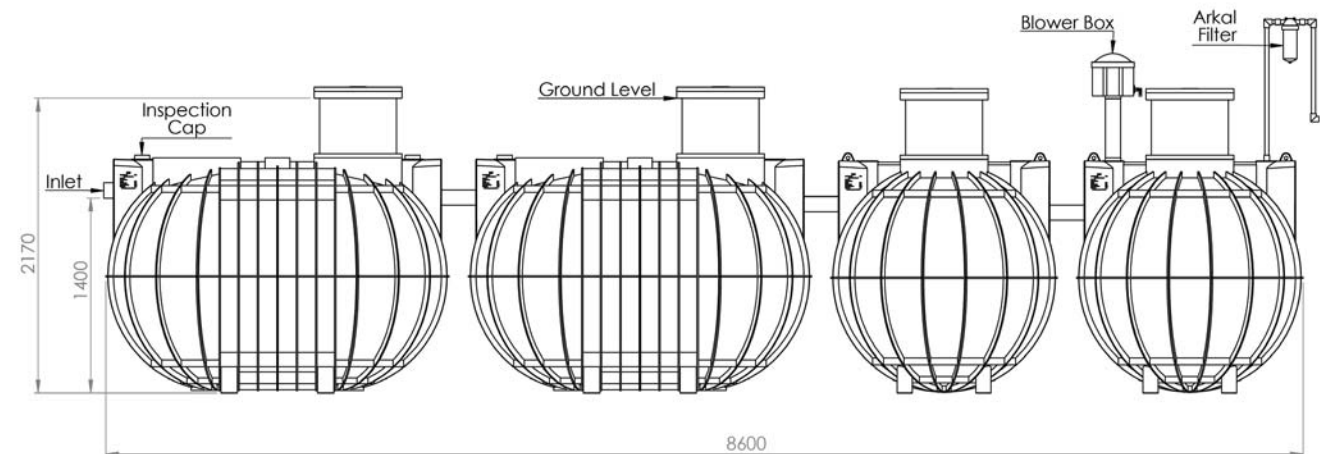
S15 Dimensions



S20 Dimensions



S25 Dimensions



Agent Servicing Requirements

AGENT SERVICING REQUIREMENTS

General Information

Two manuals are supplied with each Integra WWTS at the time of delivery. They are found inside the cabinet located on the top of the system. One manual is for the home owner and the other manual is for the installer, electrician and service technician.

To assist with the successful operation of the WWTS it is important that the owners manual is provided to the end user of the system. Where the dwelling is a rental property it is important to mention to the owner that the manual should be made available to any tenants to ensure all users of the home are familiar with the system and its requirements.

A smelly system usually means the anaerobic and aerobic bacteria have been killed off with harsh laundry or dish washing powders, cleaners, sanitizers and biocides etc. (ie: products put down the waste pipes into the system). This is where the home owner and their understanding of the WWTS operational requirements can play an important and fundamental role in the successful operation of the system.

It is important that the person servicing, or checking the system is wearing appropriate personal protection equipment. WWTS servicing work is not work that the home owner would normally be expected to undertake due to the nature of the septic waste product. Septic waste is a hazardous substance with serious potential associated health risks. All service staff involved in servicing work should be fully vaccinated to be protected against Tetanus, Typhoid, Hepatitis A and Hepatitis B as a minimum requirement to minimise the associated health risk.

Diagnosing a Smell Issue

A smell issue from the system could suggest that the seals under the lids may not be doing the sealing job they are designed to do. Ensure the square section rubber ring is in good condition and is correctly fitted prior to refitting the lids. Replacement seals can be ordered from Devan Plastics via your account manager.

Smells from the effluent field would suggest that there is not enough mulch (150mm thick layer required) covering the dripper line field, or excessive ground saturation issues from the dripper outlets or damaged, cracked or cut effluent pipe. A list of suitable and recommended plantings with coarse root systems is included in the owners manual.

If smell is an issue, it is generally because the bacteria in the system are being affected by something that is killing them or giving them a hard time due to cleaners (biocides), dish washing powders, laundry powders or toilet bowl / cistern sanitizers being put into the system.

Check these items out with the occupiers. Refer to the relevant section in the owners manual regarding suitable and avoidable products to be used in conjunction with the WWTS. Experience tells us not to always take the word of the dwelling occupier in relation to what products they use. Ask to see the cupboard under the sink and where their cleaners are stored in the laundry or elsewhere to search for possible caustic agents causing problems. Also take note if there is a secondary dwelling feeding the system or a self contained unit as they will often have their own store of cleaners etc.

If smell is an on going issue there may be good cause to check out the terminal vent location and discharge point. The prevailing wind could be aggravating the smell issue. On warm, calm and humid days smell can often be perceived to be a major issue whereas it is actually no worse than normal, it is just the environment making the smell more apparent.

System Bacteria Dead

Where it is suspected that the bacteria have been decimated or killed in the system, several options can be considered to restart the bacteria.

The bacteria in the system may need to be reactivated with higher strength

commercial products such as 'Bio-Zyme' to kick-start the bacteria operation. This may be flushed down the toilet, poured into an active gully trap or poured directly into the septic vessel. Bio-zyme is an active deodorising agent and may also be added directly to the aeration vessel. Pouring directly into the aeration vessel will not however assist the bacterial operation of the septic vessel.

Air Blower

The air blower is located in the cabinet on the system. The blower air filter should be checked and cleaned six monthly to ensure maximum blower durability. A dust free and clean filter will provide maximum blower operational life.

The Septic Tank Section



The condition of the Crust on the top of the surface should be checked and assessed.

The Septic tank has an Eco Filter which needs to be cleaned six monthly. Remove the filter and gently tap on the side of tank to clean, the solids and lumps will fall off. Hosing off the Filter with a water jet is not recommended as this completely removes the beneficial bio-film from the filter.

The inlet junction should be checked for possible visible blockage. A blockage would cause the drain discharge into the system to flow over the top of the crust, - not the ideal situation.

The Septic Tank will need to be emptied every three to five years depending on usage and solid waste input levels.

When the sludge (solids) layer on the bottom of the tank becomes approx. 600mm thick it is necessary to arrange for the tank to be emptied. Immediately after emptying it is imperative that the tank is refilled with water to its original operational level as soon as possible.

The thickness of the Crust and depth of the Sludge on the bottom of the tank can be assessed by the use of a 'Sludge Judge' (a clear pipe with a non-return valve on the bottom) when carefully lowered to the bottom of the tank and removed for viewing. This will visually show the actual cross section through the septic tank with crust thickness and Sludge depth which will provide an accurate assessment of when tank emptying is required. Tank emptying should be arranged when the sludge thickness reaches 600mm in depth. Alternatively a straight piece of fencing wire with a 100mm 'L' shaped foot bent on the bottom can be poked through the Crust, rotated and lifted to the under side of the Crust to give a thickness on the wire, - and similarly the wire can be dropped to sit on top of the sludge and then pushed to the bottom of the tank noting the difference between the two points.

Note: It is not recommended that the tank be pumped out and emptied in winter when high ground water tables

are regularly experienced and extended heavy rain falls are common to avoid the tank 'popping' out of the ground.

The Aeration Tank Section

The Aeration pattern from the diffuser needs to be checked and assessed. The surface of the water above the diffuser should appear as though it is simmering strongly, - not boiling and breaking the surface of the water.

Ideally the colour of the water should be a light golden brown and semi transparent. The use of Eco friendly type laundry products using plant extracts will leave the water colour looking dark grey.

The floating Media rings should have a brownish bio-film formed on all the surfaces. The media rings are there to provide additional surface area for the bacteria to cling to. If there is a white film (Sulphides) apparent in the media rings this means you have dead bacteria. This suggests that something will have been put down the drain into the system which has killed the bacteria. Where a white film is evident it is necessary to break up the film by stirring up the media rings so the film can be broken off and drop to the bottom of the tank.

The venturi return pipe removes sludge

from the bottom of the clarification chamber and returns the sludge back to the primary chamber. This discharge as it exits from the pipe needs to be checked for the correct flow levels.

The flow requirement is for an inconsistent medium low to low flow from the pipe in tank two. It is important that the flow does not stop all together.

The Clarification Tank Section

The clarification vessel houses the pump chamber, submersible pump with integral float switch and high level alarm float switch.

The high level alarm float switch should be checked for operation with each service. The controller buzzer should sound after a short time delay of 10 seconds once the high level alarm float switch is held up high. The buzzer can be muted by pushing the mute button on the alarm panel.

Submersible Pump

The pump float switch should be checked for pump operation. The pump needs to be removed and the intake screen cleaned.

The Grundfos Submersible Pump is fitted with a non-return valve as standard to prevent the effluent from





siphoning and running back into the pump chamber. This will cause the submersible pump to short cycle and reduce its operational life, with the disadvantage of increased power usage

Arkal Filter



The arkal filter protects the effluent dripper line from suspended particles that may block the dripper line outlets and is located adjacent to tank three. Turn the power supply to the system off prior to checking the arkal filter.

The Arkal Filter discs need to be hosed clean three monthly. The red discs need to be separated with the water jet from

a hose to clean the discs. Alternatively the filter discs and holding frame can be placed in a bucket with bleach (or similar) for twenty minutes and agitated several times. Re-install the filter assembly. Remember to turn the power back on.

Dripper Lines



The dripper lines installed in the effluent field need to be flushed six monthly. This lifts any settled out sludge from the bottom of the dripper line pipe work to reduce the risk of the dripper outlets becoming clogged or blocked.

There should be a 17mm plastic ball type flushing valve fitted for this purpose at the end of the dripper lines. The valve is normally located in a plastic valve box with a green lid.

If the incorrect type of plantings with fibrous root systems have been planted in the dripper field area, it may be that the fibrous roots have penetrated the outlets and blocked off the drippers,

reducing the efficiency of the dripper line field and reducing the submersible pump flow whilst increasing the pump head. This is detrimental to the pump operation and will likely reduce the pumps working life.

Vacuum Break Valve

This valve is required to be fitted at the highest point in the effluent field. Check to ensure the Vacuum Break Valve is sealing off after a short period of operation and not continually leaking on pump out.

Surrounding Ground Level

The finished ground level surrounding the system (including mulch) should be no higher than the bottom of the lid fixing flange. It is important that the surrounding ground should fall away from the system lids to prevent ground water pooling and other potential issues arising.

Note

Any family member on a course of antibiotics will likely kill the anaerobic and aerobic bacteria in the system. For additional information on suitable and non-recommended products, refer to the list of avoidable and suitable products included in the owners manual supplied at the time of installation.



WARRANTY POLICY

Your Devan product has been manufactured to the highest standards utilising advanced technology and production procedures. Devan Plastics Limited ("Devan") warrants their products to be free of defects in workmanship or materials for the period defined in Appendix A, provided the provisions detailed below have been complied with.

A third party manufacturers' warranty applies to all other components used in the manufacture of Devan products. Third party manufacturer's warrant their products are free from defects in material and workmanship at the time of shipment and will make good, by repair or at its option replacement, any defects which occur during the warrantable period as defined in Appendix A provided the provisions below have been complied with.

Necessary provisions

In order for a warranty claim to be accepted by Devan Plastics Limited or a third party manufacturer the following provisions must be met:

1) The equipment was correctly installed and in proper use as was intended by the manufacturer in accordance with the Installation and operating instructions supplied, and generally accepted code of practice or national standard/s.

2) The warranty period (as defined in Appendix A) from the date of invoice to the end user has not lapsed.

3) The claim for goods under warranty arises solely from faulty material or manufacturers' workmanship.

4) The customer or agent of the customer must return goods under warranty (where appropriate), stating the date and place of purchase promptly and within the product liability period.

5) No repairs must be entered into by anybody other than a specified distributor or repairer as agreed and appointed by Devan Plastics Limited.

6) Devan must be given a reasonable opportunity to inspect the tank and, if deemed necessary by Devan to have an independent engineering or other expert analysis of the cause of failure carried out.

Exclusions

Both the Devan warranty and third party manufacturer's warranty do not cover the following exclusions:

1) Except where otherwise stated by law, the manufacturer shall not be under liability for any injury, damage, or loss, including consequential damage or loss resulting from the use of its products, or resulting from defects therein. This may specifically refer to the cost of carriage, installation, electrical or plumbing requirements etc.

2) Damage caused by abnormal operating conditions, war, violence, cataclysm, or any force majeure.

3) Damage caused by the equipment being used for an application for which it is not manufactured or recommended by the original manufacturer or Devan Plastics Limited.

4) Damage caused by sand or abrasive

materials, corrosion due to salt water, hazardous liquids, electrolytic action, and liquid temperatures beyond the recommended range, cavitation, and improper power supply voltage or outages.

5) Attempted repair, dismantling or any other tampering with any component of the system without the prior written approval of Devan Plastics Limited will void any warranty.

6) If the Devan product or third party component has not been maintained in accordance with Devan Plastics instructions.

7) Ingress of water or insect infestation to electrical components due to post-manufacture electrical penetrations not being appropriately protected.

8) Incorrect installation or negligent practices of the installer of the product.

This warranty does not exclude any condition or warranty implied by the Consumer Guarantees Act 1993, Fair Trading Act 1986, and the Commerce Act 1986 and is in addition to any rights the purchaser may have at law.

Appendix A - Product warranty periods

Product	Warranty Period
Water tanks (residential)	20 years
Water tanks (commercial)	10 years
Molasses tanks	10 years
Septric tanks	15 years
WWTS vessels	15 years
Grease traps	10 years
Flout tank	10 years
Detention/retention tanks	15 years
Drums	1 year
Refuse bins	1 year
Industrial bins	1 year
Third party components (WWTS)	2 years
Third party components (other)	1 year
Grundfos pumps	2 years



Aerated Wastewater Treatment System Commissioning Sheet

Date of system commissioning _____

System serial number (located on outside of electrical box) _____

Owners Name: _____

System site address: _____

Local Authority: _____

System Model (circle):

S15	S20	S25
C20	C30	C40

Commissioning Check List

Commissioning check list item	Y	N	NA
Arkal filter installed allowing easy servicing			
System filled with water and backfilled			
Inlet invert is less than 700mm			
Pump operating correctly			
Float switches are free from obstruction			
Blower operational			
Alarm working			
Venturi return operational			
Diffuser operating correctly			
Irrigation operating as per design			
Bark/mulch covering installed (if applicable)			
System location is isolated from vehicular traffic			
Biozyme supplement added			
Homeowner manual provided to user			
Service contract entered into with customer			
Additional comments:			

Agent business name: _____

Installers' name: _____

Installers' signature: _____



INTEGRA WASTEWATER TREATMENT
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Integra
Reliable Wastewater Management