

# **Low Pressure Sewer System**



## **Purchaser Information**



## LOW PRESSURE SEWER SYSTEM

As part of our Subdivision Consent, the Christchurch City Council require the installation of a low pressure sewer system for all lots. It is your choice whether you chose to purchase your pump off Aquatech or our recommended Ecoflo.

When your home is being built, the pump system will be installed with the rest of your house's plumbing & drainage works and at your cost. Please see the guide on our website [www.countrypalms.kiwi](http://www.countrypalms.kiwi) for full details of the installation requirements. **Please ensure your builder, drainage contractor and electrical contractor are provided with this information.**

The following information is sourced from condition 13 of the Subdivision Consent (*page 17*) & shall be registered on the land titles as a Consent Notice. Further information on this system and a copy of the Subdivision Consent is available on the General Information page of our website [www.countrypalms.kiwi](http://www.countrypalms.kiwi).

- Each lot is to be served by a low pressure sewer system comprising a pump and storage chamber which can accommodate at least 24 hours average dry weather flow is to be supplied by either Aquatech or Eco Flow and **installed by a Council Authorised Drain layer (Pressure Sewer Tanks)** at building consent stage in accordance with the Requirements for Low Pressure Sewer Pumps specified under a Building Consent. The pressure sewer system will be supplied complete with an IOTA One Box Control Panel. An updated list of authorised installers is available on the CCC web page or a short list is attached to this information summary.
- Ownership and control of the low pressure pump, chamber, boundary kit and One Box Control Panel will be vested with Council. A copy of the draft Transfer Deed is available on our website [www.countrypalms.kiwi](http://www.countrypalms.kiwi).
- The Council and its agents or contractors shall have the right of access to the property for the purpose of maintenance, monitoring or renewal of any part of the low pressure sewer system vested with Council.
- The electricity supply for the system shall be from the dwelling and metered to the dwelling serviced by the system. The property owner shall be responsible for the power costs of operating the system. *SEL have been advised the running cost is approximately \$35.00 p.a.*
- The property owner shall enter into a Deed with the Christchurch City Council (see attached draft) at the property owner's expense, drafted in terms approved by the Christchurch City Council, vesting ownership in the system prior to Code Compliance Certificate being issued for a dwelling on the relevant site. *SEL have been advised the CCC do not expect any legal/application costs from CCC's side for the Deed to be signed by CCC.*

***The information above is a guide only and should not be substituted for the full Resource Consent available on our webpage. Should you need any further clarification please don't hesitate to contact our office (03)***

***366 3729.***



### Installation of the System

When your home is being built, the pump system is installed with the rest of the drainage works. See the enclosed guide for full details of the installation requirements. **Please ensure your builder, drainage contractor and electrical contractor are provided with this information.**

On your street frontage you will find the boundary kit toby box with a black lid. This is the connection point for the pump's discharge line into the Council sewer network.

### *Council Approved Installers*

Shannon Joli  
Pipe Rite Drainage  
021 415 699

MC Contracting  
Ben 021 717 315

Drain Pro  
Nathan 021 217 1616

Hansen Contracting  
03 313 8418

*Ecoflow acknowledge these companies as experienced installers. An up to date list of Christchurch City Council approved installers is available on their website.*

### Maintenance of the Pump System

The pump system will be maintained by the City Council. Upon installation of the pump system please ensure that your builder contacts Ecoflow to arrange a commission inspection and pump test. The commissioning inspection needs to occur prior to wastewater entering the tank. Ecoflow will then notify the City Council that the system is operational.

In the event of any pump or control panel issue, the Council's maintenance contractor will inspect the system.

Please refer to the enclosed Homeowner's Guide for important information on what should not be flushed or discharged into the City Council's sewer network.

## DEED OF TRANSFER OF OWNERSHIP OF LOW PRESSURE SEWER SYSTEM

DEED dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

BETWEEN \_\_\_\_\_ ("the Owner")

AND **CHRISTCHURCH CITY COUNCIL** ("the Council")

### BACKGROUND

- A. The Owner is the owner of the property situated at \_\_\_\_\_ which is legally described as Lot\_\_\_ on Deposited Plan\_\_\_\_\_ and comprised in Computer Freehold Register\_\_\_\_\_ ("the Property")
- B. The Owner is the owner of the Property and has applied for a building consent under the Building Act 2004 ("the Building Consent") to erect a dwelling house on the Property ("the House").
- C. The Property is subject to a number of resource consent conditions as evidenced by a Consent Notice registered against the Computer Freehold Register to the Property ("the Consent Conditions").
- D. The Consent Conditions include a requirement that the Property is to be served by a low pressure sewer system comprising a pump, a storage chamber, a boundary kit, and an IOTA OneBox control panel in accordance with the Council's requirements, such system to be supplied by EcoFlow Limited and installed by a Council authorised drainlayer ("the Low Pressure Sewer System").
- E. The Consent Conditions require that ownership and control of the Low Pressure Sewer System is to be vested in the Council and that the Owner will enter into a deed to so transfer or vest ownership and control in the Low Pressure Sewer System in the Council prior to the issue of a code compliance certificate under the Building Act 2004 in respect of the Building Consent.
- F. The purpose of this Deed is to satisfy that requirement.

### AGREEMENT

1. In order to give effect to the Background above, the Owner hereby irrevocably transfers and vests without consideration title, ownership and control of the Low Pressure Sewer System in the Council.
2. Notwithstanding clause 1 of this Deed, the Owner acknowledges and agrees that he/she will:
  - a. ensure that the Low Pressure Sewer System is connected at all times to the electricity supply for the House and that he/she will be exclusively responsible for the cost of the electricity required to operate it; and
  - b. allow the Council and its contractors and agents access to the Property at all times for the purpose of monitoring, maintaining, renewing and replacing all or any part of the Low Pressure Sewer System.

**SIGNED** by the Owner

In the presence of:

**SIGNED** by the **CHRISTCHURCH**

**CITY COUNCIL** under delegated authority

in the presence of:

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**Homeowner's Dossier**

## **E/One Grinder Pump System**

**CCC Approved Semi-Positive Displacement  
Wastewater Pump for installation at:**

### **Country Palms**

**Supplied by – Ecoflow Ltd**

**2/15 Anchorage Road**

**Hornby, Christchurch 8042**

**03 349 2506**

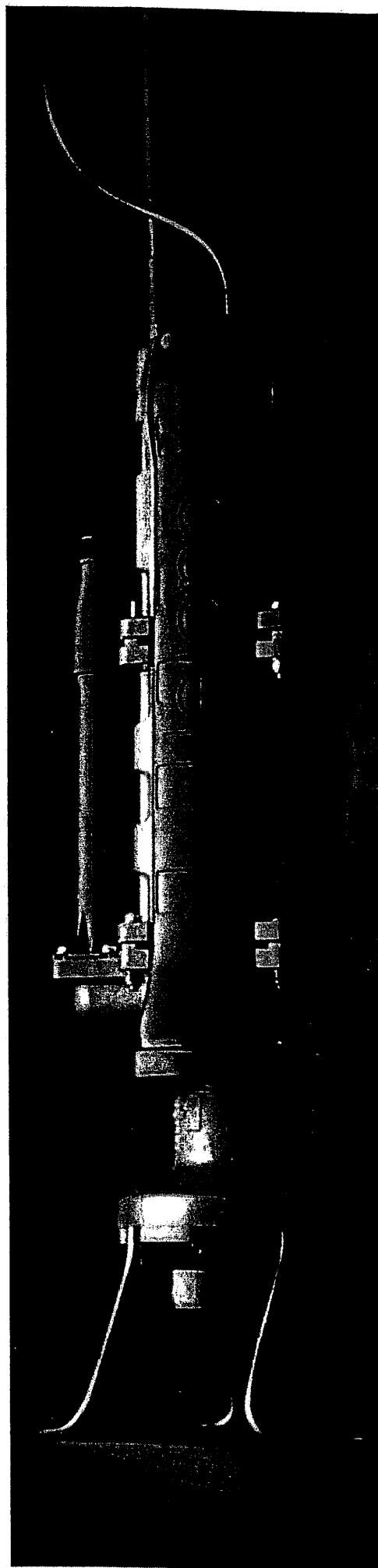
[www.ecoflow.co.nz](http://www.ecoflow.co.nz)

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**iota.**  
services

**e|one**  
SEWER SYSTEMS

**ecoflow**





**Ecoflow Ltd**  
15 Anchorage Road  
Hornby, Christchurch  
Ph: +64 3 349 2506  
Email: [info@ecoflow.co.nz](mailto:info@ecoflow.co.nz)  
Web: [www.ecoflow.co.nz](http://www.ecoflow.co.nz)

## **E/One Wastewater Pump System**

### **Introduction**

As you will be aware, a sewer pump system is to be installed as part of the building works on all lots within this stage of the Country Palms development. This sewer pump system will discharge wastewater into a pipe in the street and the onto the council sewer network.

The purpose of this document is to provide you, the owner, with information on the sewer pump system, where it can be purchased, and the installation requirements. Once the system is operational, the City Council will own this asset and will be responsible for the ongoing maintenance of the E/One pump system.

### **The Pump System**

The wastewater reticulation network for the subdivision has been designed to work with the E/One pump system. In New Zealand, the E/One system is supplied by Ecoflow Ltd. This system was designed in the late 1960's in the USA and over 600,000 have been installed worldwide. In New Zealand, there have been 10,500 installations since 2007. This system is approved by the City Council and is being used throughout the city. The pump system is a very robust and reliable piece of equipment as well as being very power efficient. The cost of power for the system averages \$25-\$35 per year and the homeowner is responsible for this cost.

Enclosed you will find information on the E/One pump system.

### **Telemetric Controls for Remote Monitoring**

The system incorporates the Iota OneBox Telemetric Control Panel. The OneBox was designed and developed in Australia. It is used in the largest pressure sewer scheme in the world, with over 16,200 homes. The OneBox has been adopted by the City Council to monitor and regulate the flows from individual pumps within the development. This will allow the Council to remotely monitor flows and to optimise the wastewater network, thus reducing maintenance inspections and repair timeframes.

Enclosed you will find information on the Iota OneBox Control Panel.



### **Where to obtain the Pump System**

Ecoflow is the distributor of the E/One pump system and Iota OneBox Control Panel and is located in Christchurch:

Ecoflow  
15 Anchorage Rd  
South Hornby  
Christchurch 8042  
Telephone 03 349 2506 [info@ecoflow.co.nz](mailto:info@ecoflow.co.nz)



Ecoflow is supplying the pumps, tanks and telemetry control panel for this project. The company also provides full support and advice so your drainage contractor and electrician are completely supported in the installation. The City Council requires that the pump systems are installed by drainage contractors who are on the Council approved list for pressure sewer tanks.

Your building company or drainage contractor should contact Ecoflow direct to arrange the supply of the systems.

### **Installation of the System**

When your home is being built, the pump system is installed along with the rest of the drainage works. Upon completion of the installation, an Ecoflow technician will conduct an on-site inspection of the system and will notify CCC that the system is operational.

See the enclosed guide for full details of the installation requirements. Please ensure your builder, drainage contractor and electrical contractor are provided with this information.

On your street frontage you will find the boundary kit toby box with a black lid. This is the connection point for the pump's discharge line into the Council sewer network.

### **Maintenance of the Pump System**

The pump system will be maintained by the City Council. Upon installation of the pump system please ensure that your builder contacts Ecoflow to arrange a commission inspection and pump test. The commissioning inspection needs to occur prior to wastewater entering the tank. Ecoflow will then notify the City Council that the system is operational.

In the event of any pump or control panel issue, the Council's maintenance contractor will inspect the system.

Please refer to the enclosed Homeowner's Guide for important information on what should not be flushed or discharged into the City Council's sewer network.

\* AQUATECH ARE AN APPROVED ALTERNATIVE

**eone**  
SEWER SYSTEMS

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services



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**Christchurch City Council Owned/Vested**

**E/One Grinder Pump Systems  
with the Iota OneBox Controller**

**Supplied by - Ecoflow Ltd**

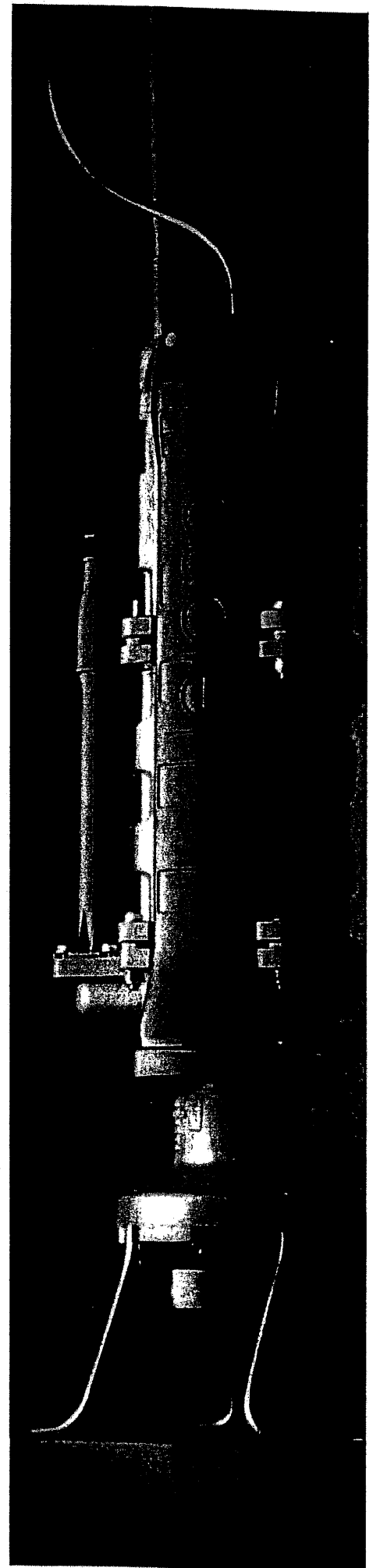
15 Anchorage Rd, Hornby Christchurch

03 349 2506

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**Notice:**

**Installation of the E/One Tank System  
is to be done by Licensed Certifying  
Drainlayers in conjunction with a  
CCC Authorised Drainlayer  
for Pressure Sewer Tanks.**



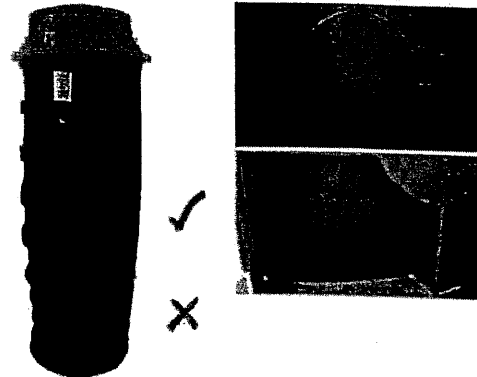


## Drainage Connection Instructions

Please avoid construction debris from entering the tank when carrying out this work.

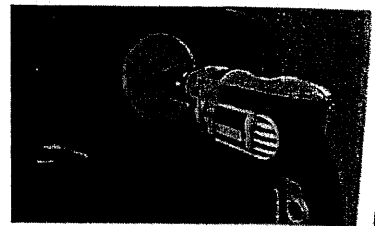
### Step 1: Choose an inlet location

Remove the lid from the tank. Choose an appropriate entry point for the 100mm PVC pipe. This must be above the tapered section of the tank (above the red line shown in the picture below). The inlet hole can be drilled in either the circular areas or in the recessed sections.



### Step 2: Cut the inlet penetration

Check that the tank isn't filled with water and then using a 127mm (5") hole saw, cut a hole in the chosen location.



### Step 3: Fit supplied rubber inlet grommet

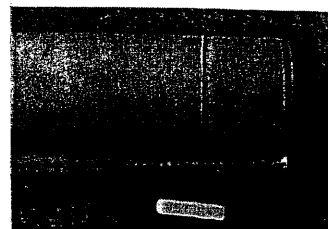
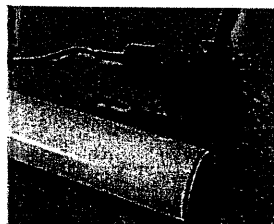
Remove any burs or shavings from the hole with a file or similar tool. Place the supplied rubber inlet grommet into the hole with the large flange to the outside of the tank. Rubber inlet grommet is cable tied to the valve inside every tank.



Additional specially designed E/One rubber inlet grommets can be supplied by Ecoflow if more than one inlet is required. ***Please do not use other inlet grommets as they are thinner than the E/One grommet.***

### Step 4: Prepare the PVC inlet pipe

Chamfer the 100mm PVC inlet pipe with a file or similar tool. This will make it easier to push through the rubber inlet grommet into the tank.



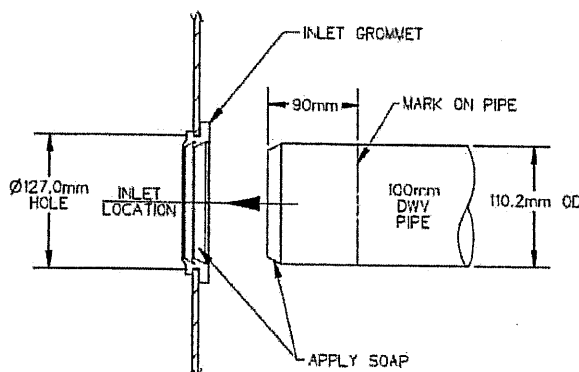
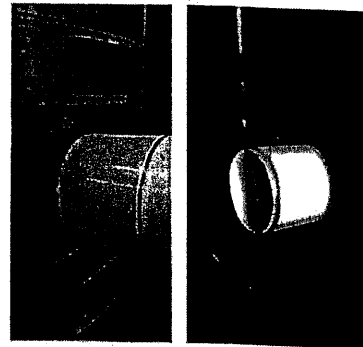
Draw a witness line on the pipe 80-100mm from the chamfered end. This line is where you will stop once it is visible inside the tank. Do not have more than 100mm and no less than 80mm inside the tank.

### Step 5: Fit the PVC inlet pipe

Apply a film of liquid soap or pipe lubricant up to the witness line on the pipe from the chafered end.

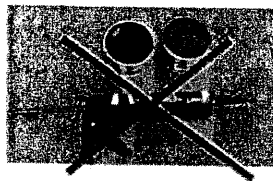
Push the pipe into the tank through the rubber inlet grommet. The flexible watertight seal is made once the PVC pipe has been pushed through. Pushing the pipe through will require some strength as it can be difficult.

Ensure the pipe has the required fall and check to make sure the rubber inlet grommet is seated correctly with the large flange hard up against the outside of the tank and is not pinched or rolled.



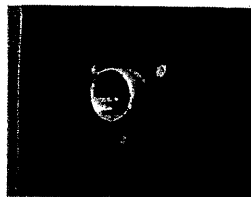
### Silicone's & Epoxy

**Silicone's and epoxy mortar's are not required at any stage so please do not use them.** The supplied rubber inlet grommet has been specially designed by E/One for the tank wall thickness, please do not use any other types as they won't seal correctly. The supplied rubber grommet creates a flexible watertight seal and allows for ground movement.



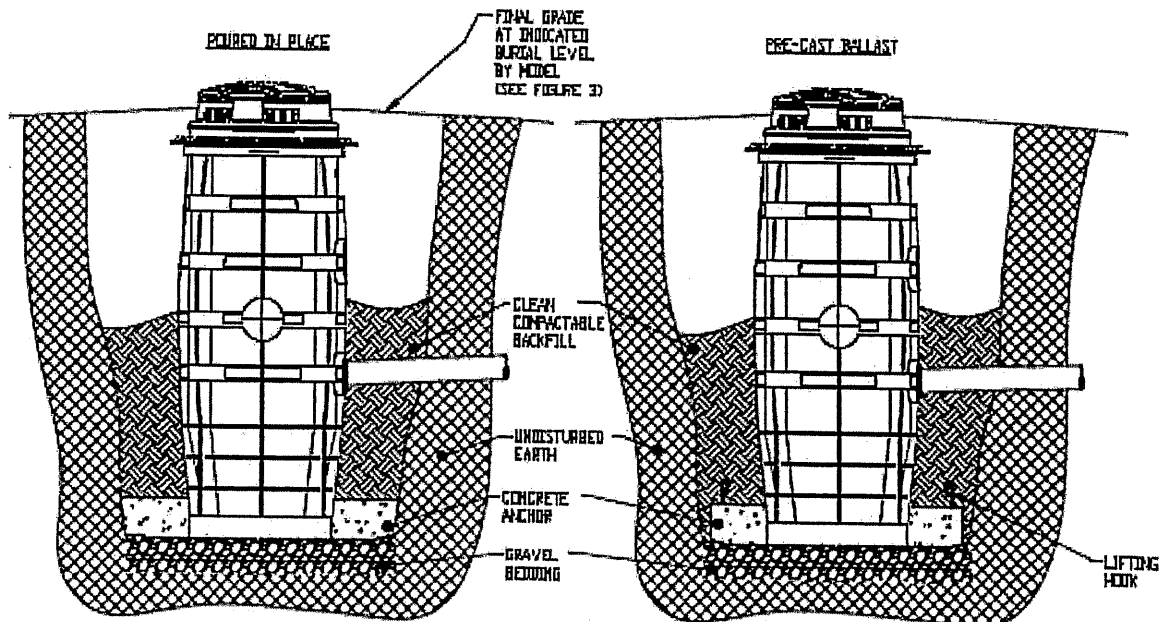
### Step 6: Discharge Pipe Connection

Connect a 40mm OD PE100 PN16 discharge pipe the the 32mm (1 1/4") fitting on the chamber. Electrofusing fitting are to be used when connected to the discharge pipe onto a Council pressure sewer network.



### Tank Ballast Requirement and Backfill

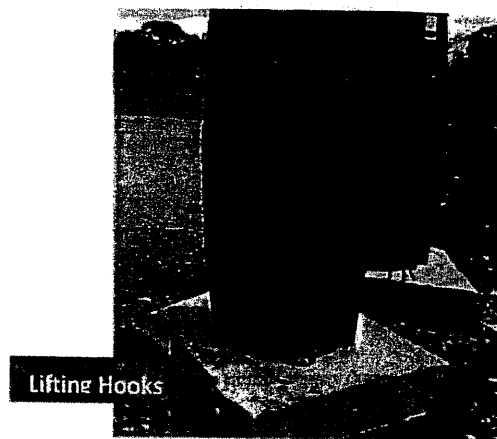
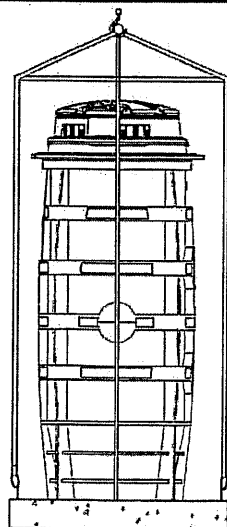
A concrete ballast anchor is required to prevent floatation of the tank. See the diagram below indicating the concrete ballast required. The tank can be pre-ballast if ground water is an issue. If pre-ballasting you need to install lifting hooks to be used when lifting the tank in the hole. **Backfill** – Use clean compactable backfill which meets relevant local codes.



**Fig. 2 - Excavation and Ballast**

### Lifting Pre-Ballasted Tank Using Hook

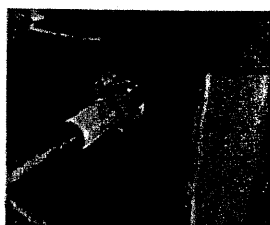
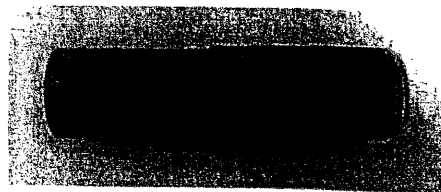
### Picture of Pre-Ballast Tank



## Electrical Cable Instructions

### Step 1: Install electrical spigots

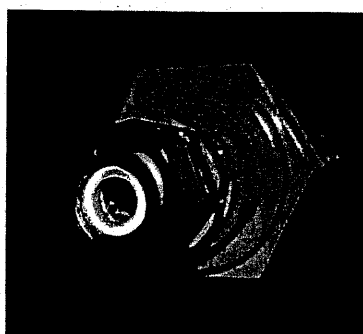
Two electrical conduit starter spigots are supplied inside every tank. This will be cable-tied to the valve. Screw this grey plastic spigot into the electrical bulkheads on the outside of the tank – this started will allow easy connection to 25mm conduit



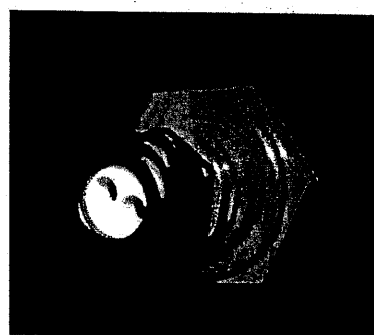
All Cables between Tanks and Control Panel are to be installed with Rigid Conduit  
  
Do not use flexible conduit

### Step 2a: Install the E-One pump supply cable

Open the lid of the tank and locate the pump supply cable connector on the inside of the tank (this is the larger single cable). Loosen the nut on the cable connector and feed the free end (end without the E/One connector) through from the inside of the tank. Pull the supply cable out through the connector until the metal crimped is level with tank opening. The free end of the supply cable is to be cut to length (if needed) and connected to the OneBox Panel. Run the cable underground in rigid conduit to the location of the Panel. Retighten the supply cable connector nut inside the tank.



*E/One Pump Cable gland*



*Double gland for level sensor & high level float*

### Step 2b: Install the Level Sensor and High Level Float Cables –

As with step 2a - Locate the cable gland, this time the gland with two holes. Pull the cables for the high level alarm and level sensor through the connector to the panel – **NOTE: Leave all addition lenght of these cable in the tank.** Again the two cables are to be install into a 25mm rigid conduit and run to the OneBox Alarm Panel. Re-tighten the supply cable connector nut inside the tank.

## OneBox Control Panel Installation Instructions

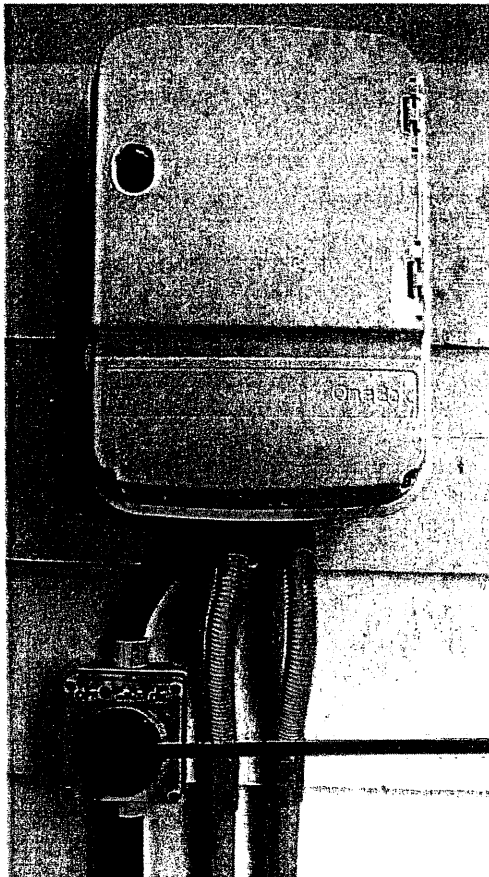
### OneBox Control Panel Requirements

- Requires an independent circuit from the main switch board.
- A 20amp 'D' Curve circuit breaker is to be used for a Simplex (one pump) system
- No RCD device to be installed.
- 240V +/- 10% to Alarm Panel (216V to 264V)
- A lockable isolation switch near the panel is required by CCC – supplied by Ecoflow

### Step 1: Choose an appropriate mounting location

The OneBox Panel must be mounted in an outside location and on the outside of the house.

The panel must be mounted onto the outside of the house and should be within 11m of the tank. If further away, then longer cables will need to be ordered and addition costs will apply.

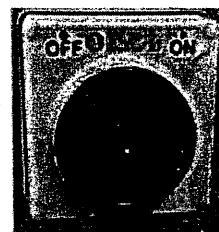


The panel must be mounted at an appropriate height to enable the service technician easy access in the event of a service issue.

- Minimum of 800mm to the base of the panel from ground level.

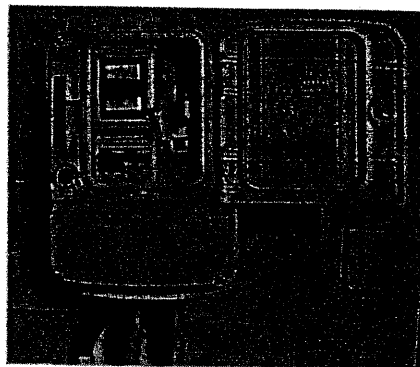
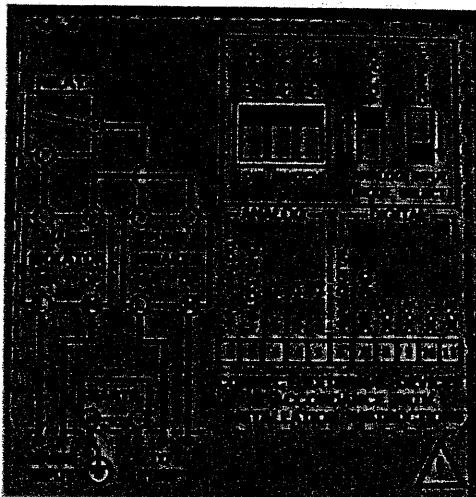
*All penetrations into the panel should be one the bottom of the panel enclosure*

- Any extra holes made into the panel may cause moisture to enter enclosure and will void warranty.
- The panel includes a mounting bracket and screws & fitting – which are found inside the panel.
- Use sealing conduit connecting glands for the cable penetrations at the base of the panel.
- Install a lockable external isolation switch – Supplied by Ecoflow



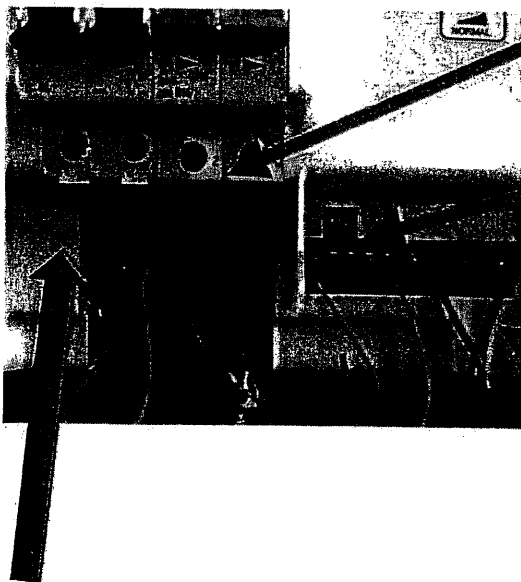
## Step 2: OneBox Wiring Instructions

This diagram is located on the inside of each OneBox panel door.



Three penetration will be made in the bottom of the panel - as shown below above

Wiring to be as shown :



Red – Live    Black – Neutral    Green –Earth  
-the 3 Other wires can be isolated

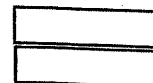
### Transducer Level Sensor

Terminal 1 - +24V\_A -wire colour

Terminal 5 – A0      wire colour

Other wires can be isolated

Red tube – is to be left as is



### High Level Float

7 Brown – GND

11 Black - DO

### Pump Cable (6 core)

Supply from main circuit breaker

## **Final Inspection of the E/One Sytem and OneBox**

**This inspection must be arranged prior to any wastewater entering the tank.**

**The system is not vested to Council unless installed by an CCC approved drainage contractor and the Ecoflow inspection is completed.**

**The drainage and electrical contractor will be required to supply the builder/owner a compliance form stating the installation of the systems is compliant to the requirements of both the supplier and CCC.**

### **Ecoflow will visit each E/One station to carry out a final inspection.**

The builder or home owner will need to contact Ecoflow to arrange this inspection.

#### **Prior to inspection:**

Please ensure that the following have been completed:

- The PVC drainage lateral pipe has been installed correctly
- Control Panel has been installed correctly
- Power is supplied to the Control Panel
- The tank is half full of clean water
- The tank is not full of construction debris

This allows the technician to run the pump and carry out a system test.

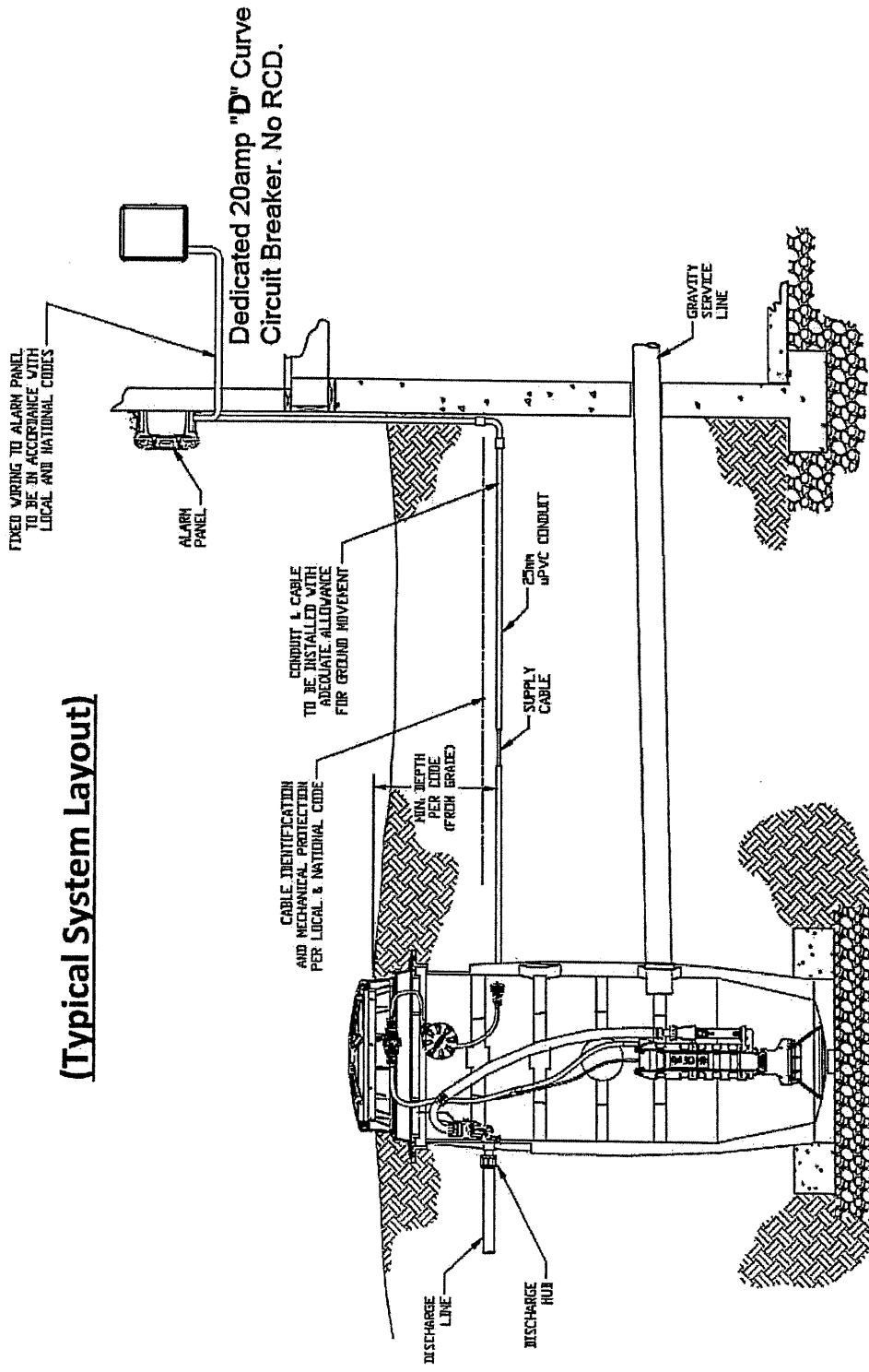


#### **Upon completion of the final inspection:**

Once the technician is satisfied that the E/One system has been installed as per specification, a sticker will be placed on the Control Panel door showing the phone number which is to be called in the event of an audible alarm.

**For any further technical advice please call  
Ecoflow Christchurch Office 03 349 2506**

## (Typical System Layout)



**SUPPLY CABLE VOLTAGE DROP**  
240 VAC PUMP = .308 VOLTS PER METER OF CABLE  
(MAXIMUM RECOMMENDED LENGTH = 30.5 METERS)

Any Question





## Frequently Asked Questions – E/One Grinder Pumps System with the Iota OneBox Monitoring Panel

- **Q: How do I know if the grinder pump is working? How do I know if the grinder pump has stopped working?**
- A: The E/One grinder pump is controlled by the Iota OneBox monitoring panel. If your grinder pump is working properly, you shouldn't notice it at all — the pump will turn on as needed and pump down the tank; the pump will turn off after a few minutes.
- A: If your pump should stop working, the OneBox panel will send a signal to council's maintenance contractor and they will investigate and visit the site as needed.
- **Q: Am I limited to what I can put down the drain?**
- A: The grinder pump will handle all typical household waste. However, you should not allow strong chemicals, oils, baby wipes, sanitary napkins, flushable wipes, tampons, nappies, plastics, etc. to enter the pump station.
- **Q: What is the duration of operation per day?**
- A: Typically the pump will run for only 15 and 20 minutes in total per day for typical residential houses.
- **Q: What is the size of the discharge line from the grinder pumps to the street connection?**
- A: The low pressure lateral service line is typically 40mm OD polyethylene from the tank to the boundary.
- **Q: What is the average yearly electrical cost to operate a unit servicing the typical single typical home?**
- A typical family home uses around 600 – 800 litres of water per day. The E/One grinder pump flow rate is 40 L/min. Therefore the pump only operates 15 – 20 minutes per day, or 121.7 Hrs/year. The EOne pump is a 0.75kW motor (power consumption is typically between 500 – 600 watts).  
Therefore  $121.7\text{Hrs} \times 0.75\text{kW} = 91.3\text{kWHrs}$ .  
Electricity cost of  $\$0.26/\text{kWhr} \times 91.3 = \$24/\text{year}$  in electricity.
- **Q: What do I need to know about my grinder pump?**
- A: All of the wastewater in your home from toilets, showers, dishwashers, sinks, etc. empties into the grinder pump system. When the water in the tank reaches a certain level, the pump will turn on automatically and pump out the wastewater to the sewer system. Most of the time, you won't even notice the pump running; it produces about the same level of noise as a washing machine and usually runs for only a few minutes.
- A: Take care not to dump oil, grease, paint, strong chemicals, sand, kitty litter, etc. down your drain. Feminine products and personal/cleaning wipes should be disposed of in a garbage can.

These items should not be introduced into any sewer or septic system; they can damage or cause premature problems (parts wearing out) with the pump, or build up in the tank and prevent your pump from working properly.

- **Q: What if the power goes out?**
- A: Limit your water usage as much as possible. The tank has storage capacity and should be adequate for the short term because you are not using the dishwasher, washing machine, etc.
- When the power comes on again the pump will run and it will take a few minutes to pump down the tank to a normal level.
- **Q: What do I do if alarm sounds?**
- A: The OneBox monitoring panel audible alarm will sound if the system has been in an alarm status for over 16 hours. This audible alarm will sound for a 10 minute max or until someone pushes the mute button on top of the control panel. If alarm sounds call the Council's Call Centre 03 941 8999

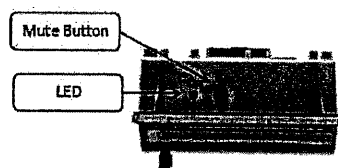
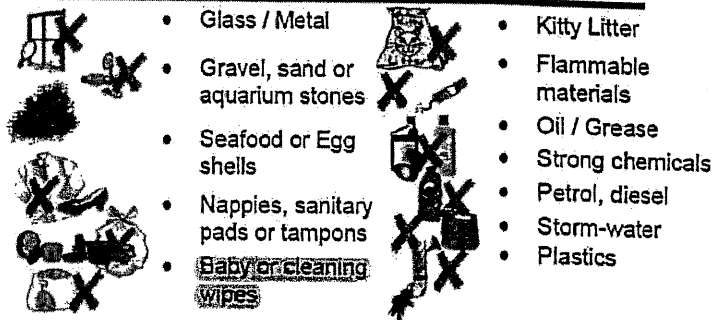


Figure 21: Top of enclosure, Mute Button and LED

Top view – push the rubber “alarm mute” button and call the Council Call Centre 03 941 8999

To avoid blockages and damage to the Pressure Sewer System the following items should **NOT** be put into the pump station:



**The new Pressure Sewer System**

**e one**  
SEWER SYSTEMS

# **Your guide to the pressure wastewater system**



**Christchurch  
City Council**



**(03) 941 8999**

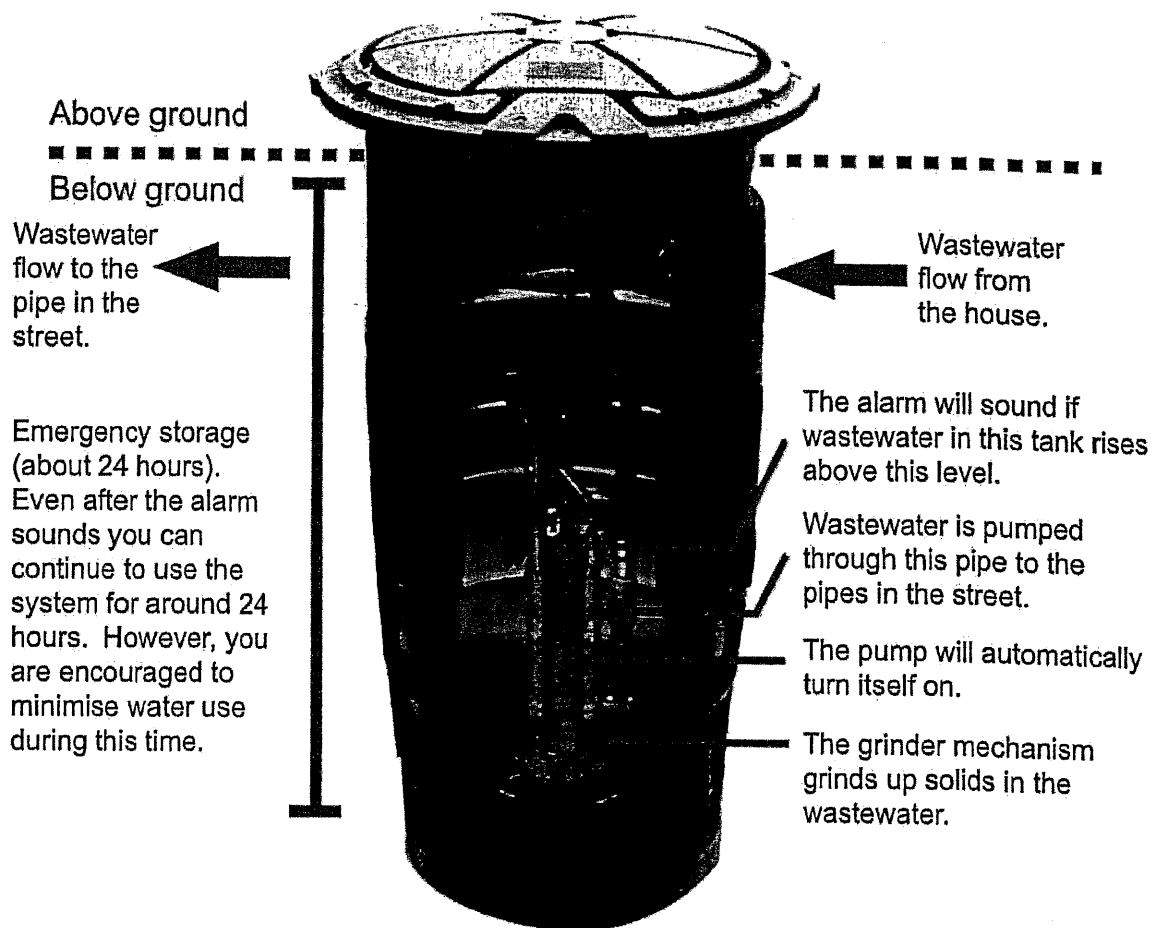
# The pressure wastewater system

The wastewater system for this property is a pressure wastewater system.

A pressure wastewater system includes an individual pump and tank. The pump is located within the tank. The tank is located underground and you will only see the lid at the surface. Wastewater from your house flows through a pipe (a private lateral) to the tank. The tank then pumps the wastewater to the pipes in the street. From the street the wastewater goes to the wastewater treatment plant.

The pressure wastewater system is very reliable and robust. There is very little you need to do and very little that can go wrong.

## The pressure wastewater system



## Using the system

There are a few things you need to know to ensure that the pressure wastewater system runs smoothly. The system operates like a normal wastewater system. It takes wastewater from your toilet, sink, shower, bath, dishwasher, and washing machine and transfers it to the wastewater pipes in the street, and onto the wastewater treatment plant.

To avoid blockages and damage to the pressure wastewater system there are a number of items that should not be disposed of via the system.

**The following items should not be flushed down the toilet or sink:**

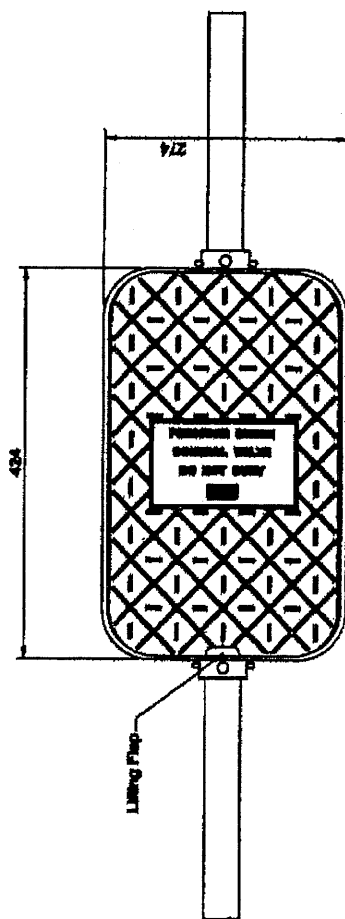
- wet wipes of any kind
- nappies, sanitary napkins, tampons
- gravel or sand, including stones from fish tanks
- seafood shells
- socks, rags, clothes
- plastic, rubber or latex products
- glass, metal, dental floss
- kitty litter
- explosives
- flammable materials
- lubricating oil and grease
- strong chemicals
- petrol, diesel
- stormwater runoff

## Before you go on holiday

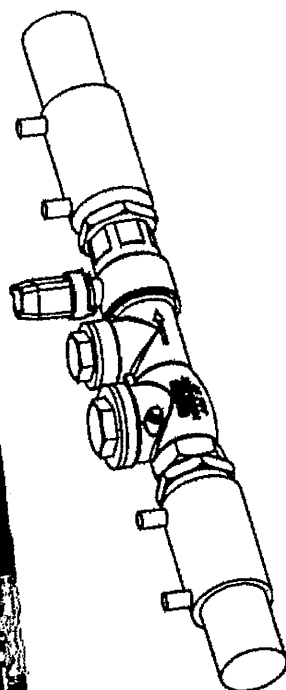
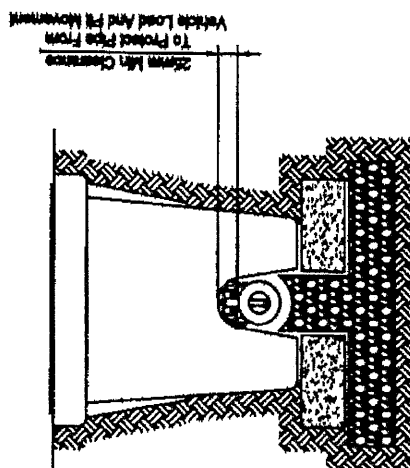
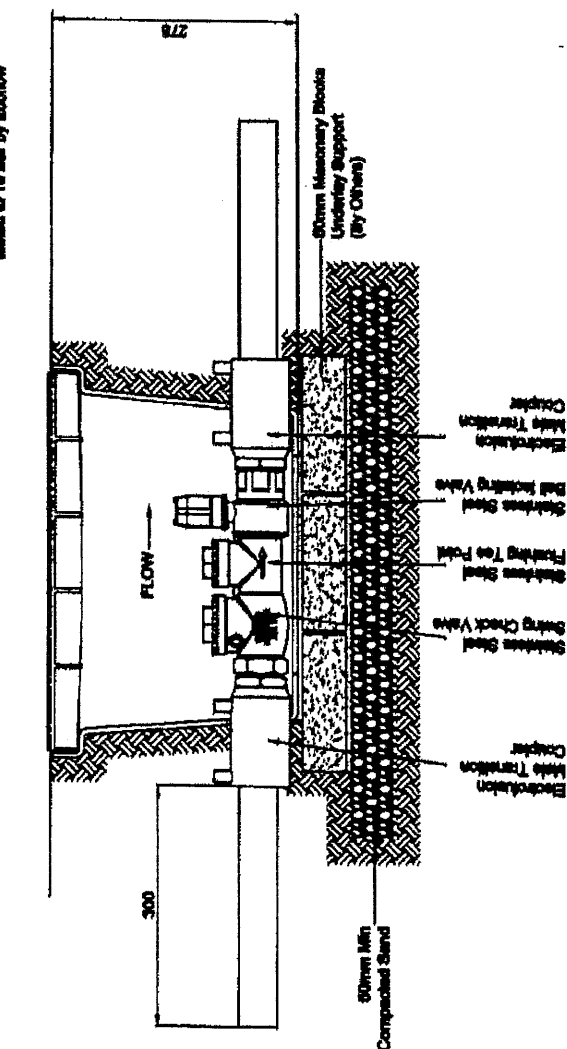
Before you go on holiday, even if it is just for a few days, you should flush the pressure wastewater system before you go. This is to avoid the possibility of the system becoming smelly while you are away. **To flush the system simply run a tap in the kitchen or bathroom sink for about five minutes before you go.**

## **Taking care of the system**

- ◆ **Do not flush any inappropriate items through the system.**
- ◆ **Do not put heavy weights on the lid of the tank. The lid can be walked on, but this should be avoided.**
- ◆ **Do not touch the valves in the boundary kit.**
- ◆ **Do not turn off the power to the pump unless evacuating in an emergency or if there is a broken wastewater pipe.**
- ◆ **Do not cover the unit in any way. This includes covering it with dirt, garden mulch, or concrete.**
- ◆ **Ensure access to the unit is available at all times.**
- ◆ **If you are going on holiday, even for just a few days, you should flush the system before you go. Simply run clean water down your kitchen or bathroom sink for five minutes (5 mins).**
- ◆ **If you do accidentally break a pipe under the ground contact the Christchurch City Council on (03) 941 8999 immediately and tell them what happened. While waiting for the pipe to be repaired minimise the amount of wastewater going through the system.**
- ◆ **Contact the Christchurch City Council on (03) 941 8999 if you install a swimming or spa pool.**
- ◆ **Contact the Christchurch City Council on (03) 941 8999 if you are making any modifications to your home which may affect the system (for example a house addition).**
- ◆ **Do not attempt to repair the system yourself. Always call the Christchurch City Council on (03) 941 8999.**



Each boundary kit supplied with 500mm length DN40 PE100 PN16 elbows each end E/F welded and complete unit pressure tested to 16 Bar by Ecoflow



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**ecoflow**

	BY	DATE
	DRAWN MC	17N/13
	CHECKED JM	17N/13

CLIENT APPROVED

**Environment One - Boundary Kit  
With Extended Stubbs  
New Zealand Standard**

2000	2000	1:20	1:20
2000	2000	1:20	1:20

