meadowlands
at halswell

Sewer Pump Detail

meadowlands.co.nz

INFORMATION FOR PURCHASERS

MEADOWLANDS

Introduction

As you will be aware, a sewer pump system is to be installed at the owner's/purchaser's cost as part of the building works on all lots within the Meadowlands development. This sewer pump system will discharge wastewater into a pipe in the street and out to the wider council sewer network.

The purpose of this dossier 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 Meadowlands Development 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 9000 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 low 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 Panels.

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

Ecoflow is supplying the pumps, tanks and telemetry systems at a preferred rate for the Halswell Commons Development. 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.

Your building company or drainage contactor 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. 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.

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

Notice:

Installation of the E/One Tank System must be done by a drainlayer who is on the list of "CCC Authorised Drainlayers for Pressure Sewer Tanks"

www.ecoflow.co.nz

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 cabled 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.

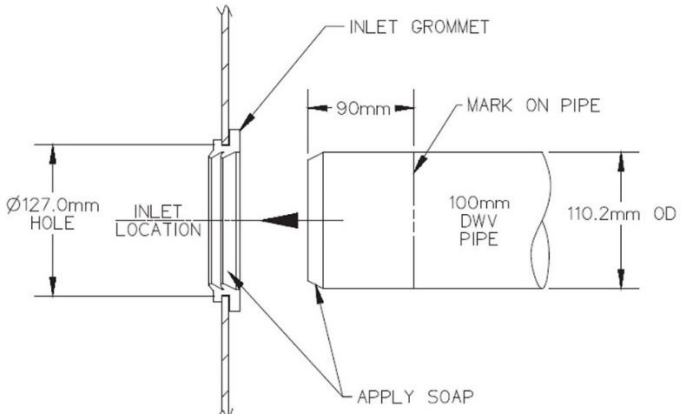
Draw a witness line on the pipe 80-100mm from the chamfered end. This line is where you will stop once it is visible inside the tank. Do not have more than 100mm and no less than 80mm inside the tank.

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 thinkness, 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 ¼ ") 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 issure. If pre-ballasting you need to installed lifting hooks to be used when lifting the tank in the hole. **Backfill** – Use clean compactable backfill which meets relevant local codes.

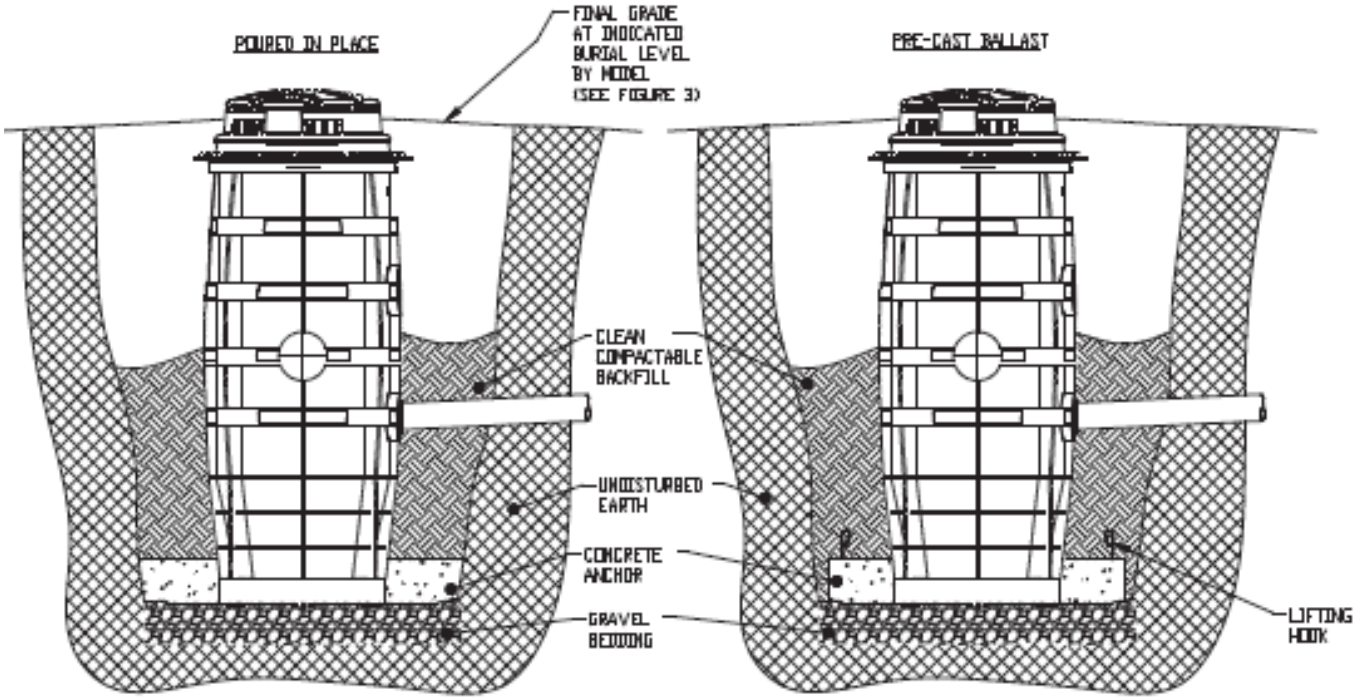
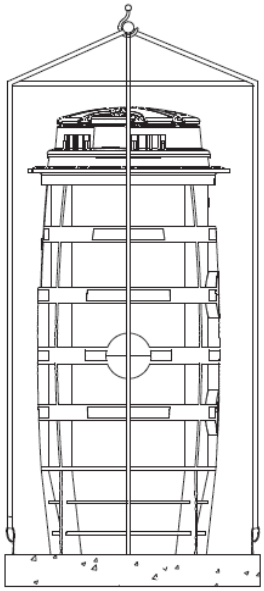
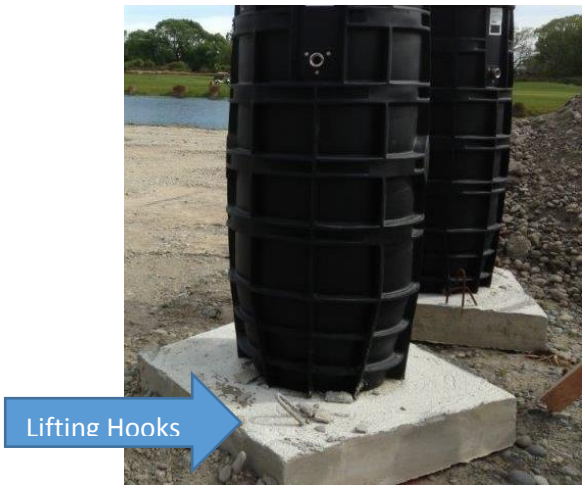


Fig. 2 - Excavation and Ballast

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 electrial 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 untill 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 senor & 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 not inside the house.

This will typically be on the outside of the house near other utliities and should be **within 7m** 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.

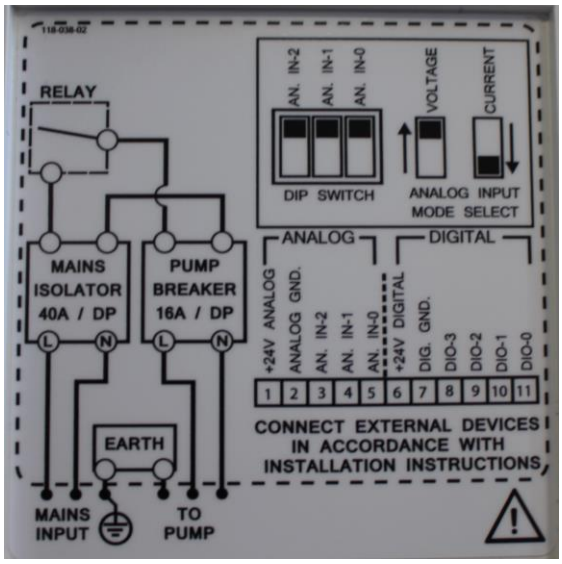
- **Minimum of 800mm** to the base of the panel from ground level.

All pentrations into the panel should be one the bottom of the panel enclosure

- Any extra holes made into the panel may cause moisture to enter enclousure 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 (cost of the insolatoin switch is in addition to the E/One pump system price)

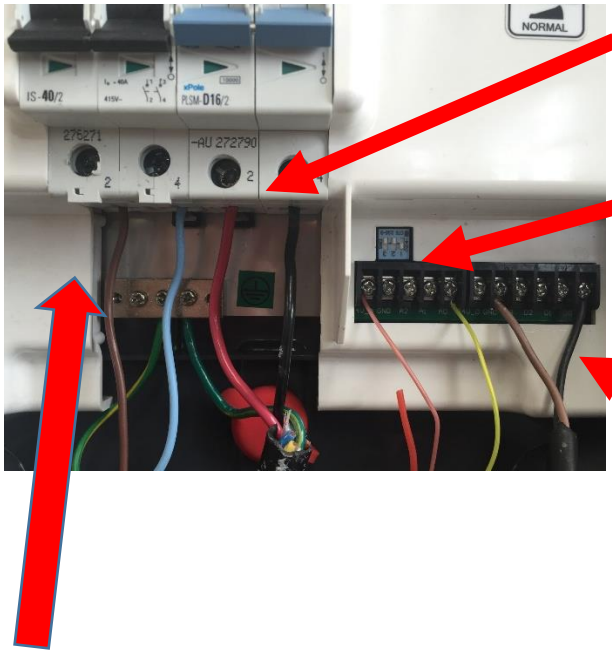
Step 2: OneBox Wiring Instructions

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 :



Pump Cable (6 core)

Red – Live Black – Neutral Green –Earth

-the 3 Other wires can be isolated

Transducer Level Sensor

1 Red - +24V_A 5 Yellow – A0

Other wires can be isolated

Red tube – is to be left as is

High Level Float

7 Brown – GND

11 Black - DO

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 CCC unless the Ecoflow inspection is completed.

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 audiable alarm.

For any further technical advice please call

Ecoflow Christchurch Office 03 349 2506

Your guide to the pressure wastewater system

Christchurch City Council

(03) 941 8999

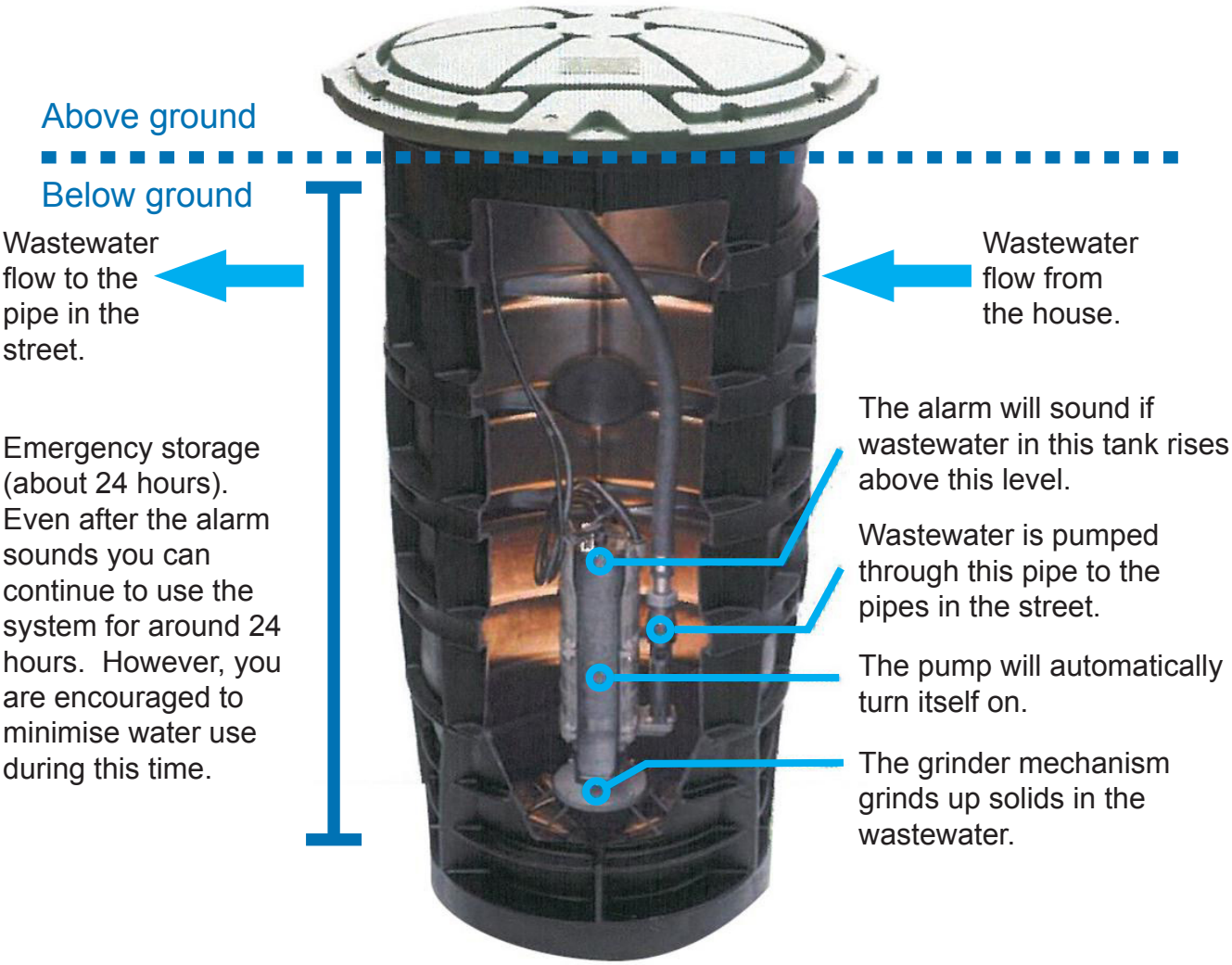
The pressure wastewater system

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**
- **petol, diesel**
- **stormwater runoff**

Before you go on holiday

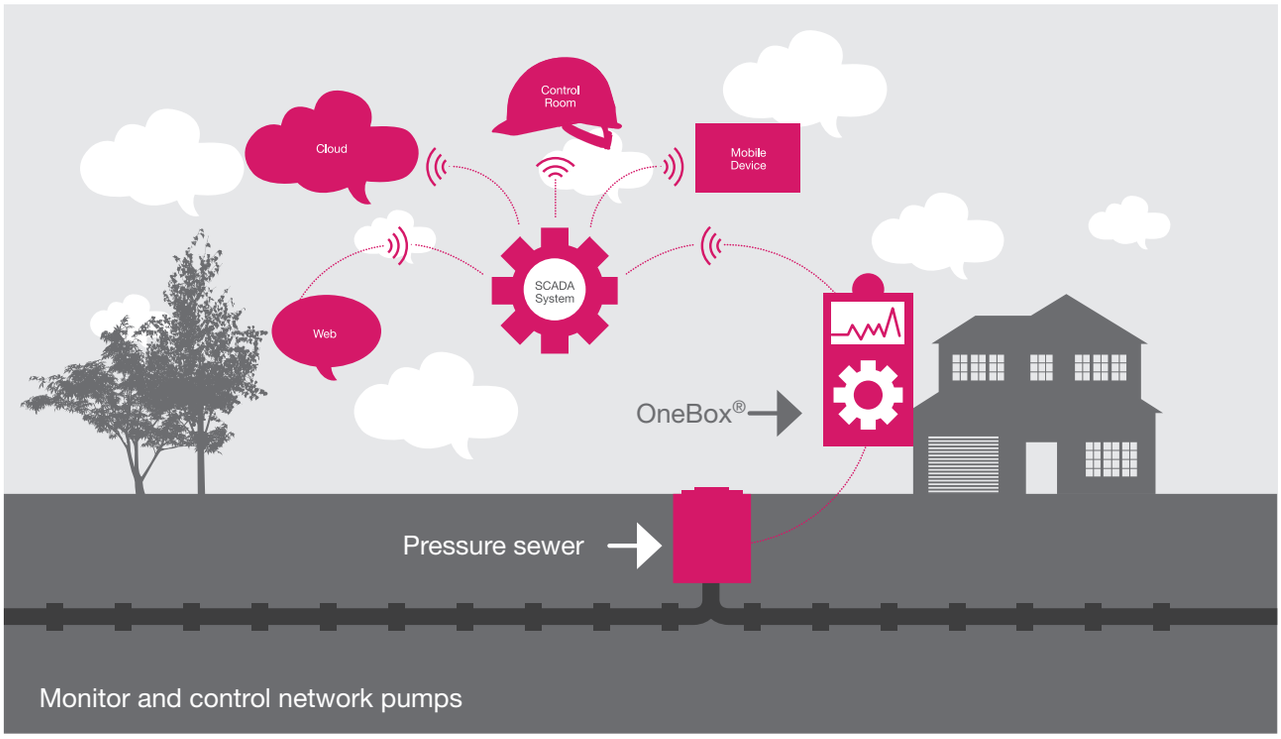
Before you go on holiday, even if it is just for a few days, you should flush the pressure wastewater system before you go. This is to avoid the possibility of the system becoming smelly while you are away. **To flush the system simply run a tap in the kitchen or bathroom sink for about five minutes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

OneBox®

Get remote control of your pressure sewer system



Monitor and control network pumps

Imagine if you could monitor your pressure sewer units in real time and operate them remotely.

The OneBox® telemetry system gives you complete control of your fleet of pressure sewer pumps from your office desktop or smartphone.

You can improve customer service, fix faults as they arise, and dramatically improve your efficiency.

With OneBox® you can:

- Monitor and control individual sewer pumps in real-time, remotely
- Receive alerts even before the customer becomes aware of any faults
- Analyse trends, generate reports and determine your peak flow demand
- Improve efficiency and save on routine monitoring
- Smooth out flows and maximise efficiency of downstream infrastructure
- Identify infiltration for targeted removal.

Real-time information at your fingertips

With OneBox®, your pressure pump effectively becomes a sewer smart meter. You can integrate OneBox® into your SCADA network and get the information you need about tank storage capacities, power failures, blockages and faults… instantly. Diagnostics for individual properties, streets or whole networks are available, cost effective and in real-time.

More efficient, proactive customer service

You no longer have to wait for a distressed customer to call you. With OneBox® you can receive alerts (and fix the fault) before the customer even knows there's a problem. Be proactive and small problems won't turn into nightmares.

iota. services

Gain remote control and minimise your costs

Gain remote control

Change the pumping set points, change to peak smoothing or select sites across your network to stop and restart. You can smooth peak flows to pump stations and treatment plants by simultaneously controlling all the pumps in the network.

In times of high rainfall you can even slow or shut the pumps down and wait for the storm to pass.

Minimise your costs

Even better, you can prioritise and schedule repairs at your convenience. With OneBox® you can reduce your routine inspections, scale back your regular maintenance, improve efficiency – and make real cost savings.

The data you get from OneBox® can make a genuine difference to your decision making. Analyse trends, generate reports and determine your peak flow demand.

You can maximise efficiency of your downstream infrastructure by using smaller diameter pipes, smaller storage capacity and smoothing out flows to pump stations. You can also find leaks and crossed connections.

It's no wonder OneBox® recently won a global innovation award from the International Water Association.

OneBox® is now available to you through iota's distributor, Ecoflow Ltd.

Contact us now for more information:

Phone 03 349 2506
Email info@ecoflow.co.nz

iota services

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 121.7Hrs*0.75kW = 91.3kWHrs.
  Electricity cost of $0.26/kWhr * 91.3 **= $24/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

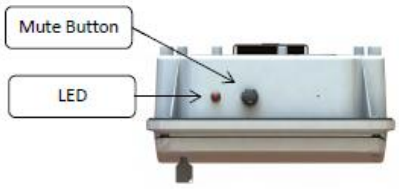


Figure 21: Top of enclosure, Mute Button and LED

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:

- Glass / Metal
- Gravel, sand or aquarium stones
- Seafood or Egg shells
- Nappies, sanitary pads or tampons
- Baby or cleaning wipes

- Kitty Litter
- Flammable materials
- Oil / Grease
- Strong chemicals
- Petrol, diesel
- Storm-water
- Plastics

The new Pressure Sewer System

e one SEWER SYSTEMS