

**BioCycle**

**8200 *Ecolution***

**HOME OWNER/OCCUPANT**

**OPERATION**

**AND MAINTENANCE**

**MANUAL**

**Published 1<sup>st</sup> May 2023**

***Congratulations!***

Thank you for investing in a BioCycle 8200 *Ecolution* Secondary Wastewater Treatment System for your property. We have strived to manufacture and supply high quality pre-cast concrete wastewater treatment systems in New Zealand since 1990 and we enjoy our position as one of the market leaders.

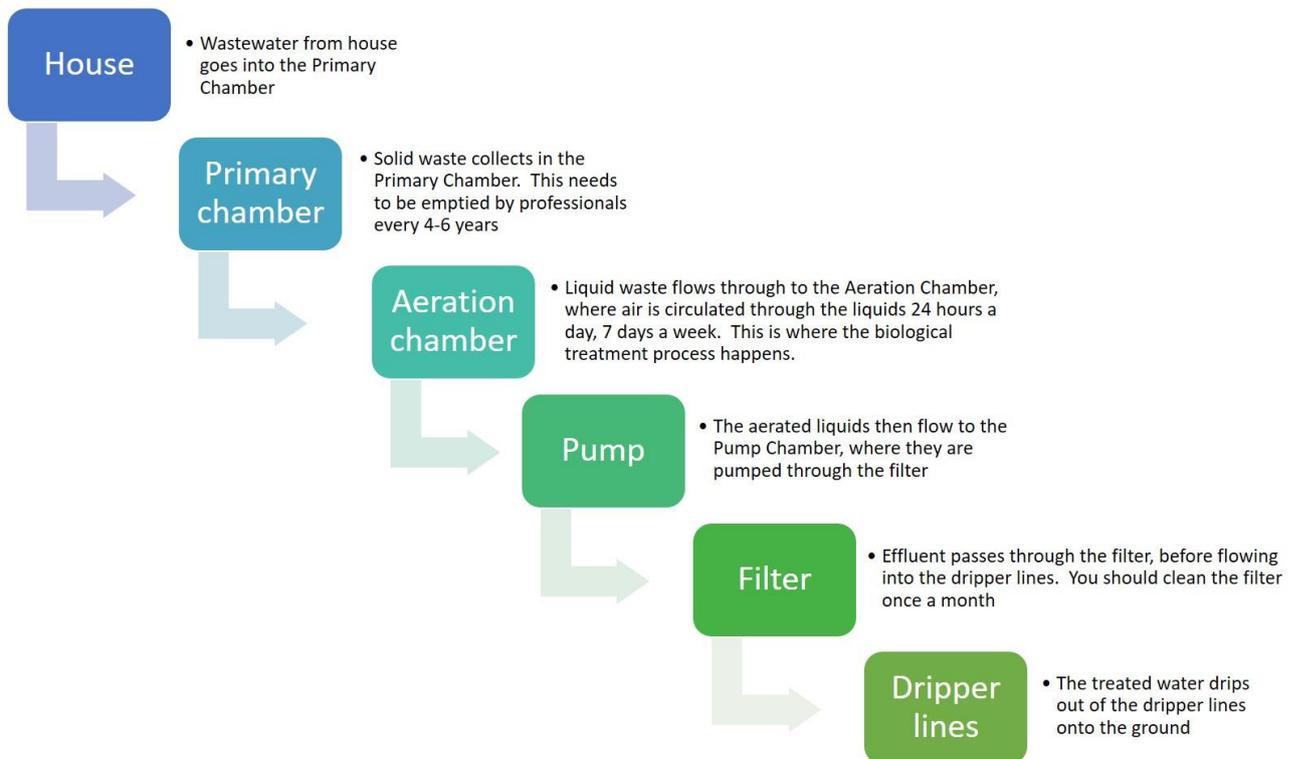
The 8200 *Ecolution* model has been refined to provide the highest quality effluent treatment possible, utilising high efficiency electrical components inside a singular cost-effective package treatment plant, built by New Zealanders, for New Zealanders.

In just the same way as you should maintain your motor vehicle, it is very important to engage a BioCycle accredited Service Agent to maintain your 8200 *Ecolution* system, ensuring its long life and efficient performance. Within this document is advice on how to best look after your system and save yourself untimely repair costs.

If you haven't already selected a location for your BioCycle AWTS installation, the general rules for placement of AWTS systems are:

- I. Keep the area clear of deep rooting trees and shrubs (these may grow into and cause blockage or breakage of the system).
- II. Clean and service pumps and filters according to manufacturers' instructions.
- III. Flush drip lines regularly to remove accumulated sediment/algae.
- IV. Mow grass and maintain plants in evapotranspiration areas.
- V. Ensure that surface water drains well around tank and land-application areas and keep clear to reduce ponding.

The person (CPEng Engineer or SQP Suitably Qualified Person) who completes your Wastewater System Design report for Building Consent Application, should take all these factors into consideration as well and locate the tank and disposal field in a well-considered position.



## **Moving into your new home.**

Firstly, it is critically important that your new BioCycle 8200 *Ecolution* system is commissioned by the installer, or an accredited Biocycle Service Agent either before or within 24 hours of you taking occupancy of your home. If power is not connected or turned on, the system cannot operate, and flooding will occur within days of occupancy.

A Commissioning Certificate should be supplied to you as part of your Building Code Compliance paperwork. If you haven't received this from your builder, Project Manager, or Drainlayer/Service Agent, you should request one immediately.

It is also highly important to request an "As Laid" plan from your drainlayer, showing precisely where the tank, irrigation field and flush valves have been installed. This "As Laid" document is needed for Council sign off, but should also be supplied to your Service Agent, ensuring they know exactly where to find everything in order to service your system properly into the future.

You should familiarise yourself with where the flush valve boxes are located, in case they need regular weed spray to avoid being covered up and lost.

It is BioCycle Limited's recommendation that a **routine service should be undertaken at six-monthly intervals.**

**Please note:** If this service regime is not adhered to within the first two years of operation, all warranties are void.

## **Essential operation rules and care of your wastewater system.**

All wastewater (toilets, bathrooms, kitchens, laundry) produced in a rural residential home is discharged via pipes to an on-site wastewater treatment and land dispersal system. The wastewater treatment system is a fragile biological (bacterial) process and therefore requires care by all residents and visitors using water on the property.

You can help maintain an effective wastewater treatment system on your site by ensuring **no toxic chemicals** are put down sinks, toilets or gully traps, and by using only environmentally friendly cleaning products. Toxic chemicals and drugs (e.g. antibiotics) kill bacteria in the treatment system. Bacterial organisms are essential for the treatment of wastewater and if healthy populations are not maintained, the system will fail, resulting in poorly treated wastewater discharging into the soil, offensive odour and increased maintenance costs. You should also restrict your water consumption to protect the system from overloading...Spread your laundry loads throughout the week, rather than doing five loads on a sunny Saturday morning.

## DO

- Try to take short showers in preference to baths.
- Use bio-degradable soaps and cleaners.
- Check all your cleaning products to see if they are suitable for septic tanks.
- Use natural soaps (rather than chemicals) for cleaning.
- Scrape all plates and dishes to compost/rubbish, removing as much food/fat as possible.
- Repair/fix all leaking taps as soon as possible.
- Use phosphate free or low phosphorus laundry detergents.
- Fit gauze mesh over gully traps to stop mosquitoes entering the BioCycle system.

## DO NOT

- Do Not pour any toxic/harsh chemicals (paint, oil, grease, thinners, pesticides down any drains).
- **Do Not flush any products other than standard toilet paper** down the toilet! This means no tampons, pads, condoms, cigarette butts or 'wet-wipes'.
- Do Not discard any drugs down the toilet or sink.
- Do Not use strong cleaners (bleach, Canesten, Napisan, ammonia or alcohol base).
- Do Not tip chlorine, anti-**septic**, anti-**bacterial**, or disinfectant type products down drain.
- Do Not use chemical drain cleaning products to clear a blockage – call a plumber!!
- Do Not do all your laundry in one day – spread your loads throughout the week (No fabric softeners).
- Do Not install sink garbage grinders. If a grinder exists, don't discharge high volumes of scraps, especially carbohydrates, bones or fats & oils into it.
- Do Not put coffee grinds down the sink drain.

## **Suitable Plants for Pressure Compensated Dripline Irrigation Fields**

Your Building Consent may require your PCDI field to be planted out with vegetation known to be perfect for high evapotranspiration. Please refer to this unexhaustive list for guidance on suitable plants.

### **Natives:**

Hebe  
Manuka (Leptospermum Scoparium)  
Flax (Phormium Tenax)  
Cabbage Tree (Cordyline Australias)  
Lacebark (Hoheria Populnea)  
Rangiora (Brachyglottis Repanda)  
Heketara (Olearia Rani)  
Kohuhu (Pittosporum Tenufolium)  
Coprosma (Propinqua)  
Poataniwha (Melicope Simplex)

### **Grasses:**

Standard Lawn Grasses  
Longwood tussock (Carex Comans)  
Pukio (Carex Secta)  
Jointed Twig Sedge (Baumea Articulata)  
Toetoe (Native cutty grass, DO NOT USE PAMPAS GRASS)  
Hooksedge (Ucinia Uciniata)  
Umbrella Sedge (Cyperus Ustulatus)

### **Introduced Species:**

Canna Lilies  
Aralia  
Fuschia  
Philodendrons  
Begonias  
Taro

Please note that while your BioCycle system produces a high quality of Secondary treated effluent discharge, the final effluent output is **NOT SAFE for human or animal contact, nor ingestion**. Sub-surface or mulched PCDI effluent discharge is perfect for irrigating landscaped garden mounds with decorative plants and trees but **should not be used to irrigate vegetable garden beds** nor fruit trees wherever food is intended to be harvested off the ground.

While contamination is arguably unlikely, the potential severe risk to health is not worth taking.



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## **What's involved in your Service Agent doing a routine service.**

We strongly recommend you don't try to service your own wastewater system, but rather that you contract one of our local BioCycle accredited Service Agents.

There are a few components within the Biocycle system which need skilful cleaning and specialist adjustment. Your Service Agent's staff should know what to do in this regard and will carry out a complete service with methodical diligence.

On arrival to your site, lids will be removed, and the system inspected, providing an initial assessment of performance and effluent condition (If mosquitoes are present, this must be dealt with to kill, remove and inhibit future infestation, as their larvae block filters rapidly).

The Thomas air pump should be turned off and the filter removed to be cleaned with fresh water, squeezed out and left out to dry while the rest of the service is completed.

The Biological filter (Polylok Zabel or similar) in the Anoxic Chamber should be removed and thoroughly cleaned of all sludge material (preferably into the Primary Chamber), then returned to its housing.

The scum and sludge thickness within the Primary chamber should be measured. (If the sludge level is more than 1metre above tank base, the Primary chamber should be vacuumed out completely by commissioning an environmental sucker truck operator. The Anoxic and Pump chambers should be vacuumed out at the same time. As a rough guide, a family home with four occupants should have their system vacuumed out every 5 years. Failure to do so will result in poor performance and blocked filters, and possible premature failure of the discharge pump.)

The Clarification chamber should have any floating solids vacuumed or skimmed off the surface and returned to the Primary chamber for retreatment.

The Pump chamber should be washed down entirely with high pressure water hose. The pump float switch will engage the pump during this process and discharge most of the effluent. Once the float switch has dropped and disengaged the pump, the remaining effluent and sludge should be vacuumed out by the Service Agent and emptied into the Primary chamber for retreatment.

Power to the discharge pump should now be switched off, the mac-union unscrewed, and the pump assembly uplifted from the tank for cleaning the pump base where impellor and bearings are located. A high-pressure water hose may suffice, but depending on the model of pump in service, the screen filter may need to be removed and cleaned thoroughly before return to position within the Pump chamber (Take care not to dislodge and drop the rubber O-ring from the mac-union when reconnecting pipework). Cable ties should be replaced to keep loosely coiled cables up and away from effluent liquor.

Now is the best time to unscrew and clean the 130-micron disc filter. The disc filter and housing should be properly clean before refitting (Do not overtighten screw cap).

Once the discharge Pump has been returned to position and the clean disc filter housing reassembled, the Pump chamber should be filled with clean water.

When the Pump chamber is full of clean water, the power switch for discharge pump should be turned on and the pump should engage immediately (Check orientation of both floats...neither should be obstructed in any way by chamber wall or rope, or cables etc. If they are, REMEDY, or they may get stuck causing pump failure and system flooding to occur).

At this time the PCDI or LPED flush valves should be opened and observed until clean water is flowing from each one. The valve closest to the tank should be closed first, ensuring any sludge or sediment build up within the pipes is flushed to the furthest point last (If leaks are found, these must be repaired with urgency).



Replace clean and dry filter to within the Thomas air pump. Check gaskets are in good condition or replace. Aeration performance should be checked to ensure that air bubbles are spread evenly between both diffusers. If not, valve adjustment may be required. Generally, **the aeration valve should be fully open.**

At this point, test that both the High-Level Alarm Float and Air Pressure Alarm are working properly (Homeowners should ensure the Service Agent has audible access to the alarm panel if a remote alarm panel is located inside the home.)

Ensure all lids are bolted back down tight enough so children cannot gain access.

The above methodical service should take approximately 1 - 1.5hours.

NOTE: BioCycle Limited does not employ Service Personnel. All Service Agents are independently owned contractors specialising in their field. The Service Agents' contract is with the homeowner, not with BioCycle Limited. BioCycle Limited take care to provide training, support and accreditation to Service Agents.

Where there is a dispute, BioCycle Limited will appoint a manager to attempt mediation between Service Agent and Homeowner, but BioCycle Limited will accept no liability for negligence or costs incurred on behalf of Service Contractors nor their delegated staff.

### BioCycle Alarm Panel

You may have an optional BioCycle Alarm Panel like this fitted within your home.



During normal operation of your BioCycle 8200 *Ecolution*, please ensure the Mute switch is in the down position. If your alarm sounds and a red light is visible, please phone your local service agent directly to advise of the fault immediately, or if you don't know your local agent's direct phone number, call our 0800 number displayed on the panel. Only after you have notified your agent of your fault should you flip the switch up to the mute position (and the alarm will stop making the audible squeal, while the light will stay on until the fault is remedied).



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**Holiday periods** where no wastewater has been flushed down drains for several weeks, is not ideal for your BioCycle system and can result in odours emanating for a week or so after your return. However, this can be managed easily either by asking your neighbours or other trustworthy person to use your toilet a few times while you're away, or alternatively by notifying your Service Agent in advance. They can pour a bacterial growth additive into your system and it will be fine for up to one month.

You should build a close working relationship with your local Service Agent. They are the communication link between yourself and Biocycle Limited and their wide experiences of various household wastewater production anomalies means they now best how to solve most problems and can keep your system in top condition.

## Troubleshooting guide

There is very little to go wrong in your Biocycle 8200 *Ecolution* wastewater treatment system. However, electrical components will fail at some point in time, so the below will help to diagnose faults.

Fault	Probable cause	Remedy
Air Alarm	<ol style="list-style-type: none"> <li>1. Air pump failure.</li> <li>2. Air hose kinked or broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair or replace pump.</li> <li>2. Reposition or repair hose.</li> </ol> <p>If fault persists, call Service Agent.</p>
Water Alarm	<ol style="list-style-type: none"> <li>1. Blocked discharge filter.</li> <li>2. Faulty pump (or electricity supply).</li> <li>3. Blocked irrigation field.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn off power, remove filter from housing and clean thoroughly. Return and turn power on. If fault persists for more than 10 minutes, call Service Agent.</li> <li>2. Call Service Agent to inspect, repair or replace pump.</li> <li>3. Service Agent to inspect and flush field to identify damage to pipes and repair.</li> </ol>
Foul Odour	<ol style="list-style-type: none"> <li>1. Chemical or drug contamination in tank causing toxic environment for bacteria.</li> <li>2. Excessive flow rate.</li> </ol>	<ol style="list-style-type: none"> <li>1. Call Service Agent. May require tank to be vacuumed out and recommissioned.</li> <li>2. Reduce daily flow rate to below what the system was designed for at Building Consent.</li> </ol>
Discharge filter is blocking weekly	<ol style="list-style-type: none"> <li>1. Daily flow rate too high for system design.</li> <li>2. Excessive sludge and crust solids in Primary chamber.</li> <li>3. Sludge Return valve setting is too aggressive.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce flow rate to below Building Consent design.</li> <li>2. Call Service Agent to arrange sucker truck for vacuum removal of Primary Chamber sludge.</li> <li>3. Service Agent to reset Sludge Return valve at Biocycle recommended flow rate.</li> </ol>

## **BioCycle Warranty**

Your BioCycle 8200 Ecolution tank is covered under limited warranty.

1. The concrete tank and lid are covered under warranty against manufacturing defects or integral failure for a period of 10 years from the date of delivery to the purchasers property.
2. All electrical components, air diffusers and PVC pipework installed within the BioCycle tank are covered under manufacturers warranty of 2 years (24months) from the date of installation.

There are limitations to warranty cover which must be noted in order to ensure operational compliance and system care. Failure to observe any one of the following limitations may result in all warranties becoming void. These limitations are (at BioCycle Limited's exclusive discretion):

1. Where the manufacturer's operational scheduled servicing regime (six-monthly) is not adhered to for any reason, for a period of two years (24 months) after the date of delivery to site.
2. Where the manufacturer's scheduled servicing regime is not undertaken by a BioCycle Limited accredited Service Agent's technician.
3. Where a kitchen waste disposal (Insinkerator) type device has been installed.
4. Where toxic chemical influent has been determined as present within the tank liquor.
5. Where excessive in-flow has been determined as a cause of electrical component failure. Pumps generate significant heat internally when running continuously. The pump supplied within the BioCycle system is designed for short intermittent periods of discharge.
6. Where it has been determined that property occupants or homeowner have failed to clean the discharge filter at least bi-monthly. Failure to clean the filter regularly (between scheduled servicing) can result in system flooding and premature failure of the discharge pump.
7. Where it has been determined within the first two years of operation, that persons other than BioCycle Limited accredited Service Agents have interfered with any internal components of the BioCycle tank.
8. Where it has been determined that textile-type products (e.g. Wet-wipes, condoms, sanitary pads, plastic fabric, etc), plastic beads or swarf, fruit seeds or grains, or any product other than toilet paper have been flushed into the system.
9. Where the electrical supply to the system has been tampered with in any way to accommodate electrical equipment other than which is supplied within the BioCycle tank.
10. Where it has been determined that the discharge irrigation pipework or field has been altered without consultation and express consent from BioCycle Limited accredited Service Agent, or original system installer.
11. Where the tank or any external component supplied with the BioCycle tank has been subjected to impact or crushing damage during transit or installation, wherever transit or installation is not arranged by BioCycle Limited directly.
12. Where the Primary Chamber has not been vacuumed clean within 6 years of commissioning date.