

Nature Flow[®] Mark II

Budget Wastewater Treatment System
With Online Chlorination.



Owner's Manual

The Nature Flow[®] Mark II Budget Wastewater Treatment System with patented self-cleaning ultra violet technology requires minimal intervention by the owner.

The system should be serviced annually or as per your maintenance agreement by qualified service personnel as advised by the supplier/installer of the equipment.

The purpose of this leaflet is to introduce the operation of the controls and indicators on the system control unit and their use in the initial diagnosis and correction of problems if the unit alarms.

The Nature Flow[®] Mk II Budget HSTP has Department of Local Government, Planning, Sport and Recreation Approval (DLGPSR No 514). A full copy of our approval can be requested from the the Team Leader Standards and Onsite Sewerage at the DLGPSR or by contacting Nature Flow Systems P/L.

CONTENTS

PAGE	SUBJECT
3	Precautions & Disclaimer
4	Care of the System by the Owner
5	Do I have to use any special type of cleaners?
6	Nature Flow® Budget HSTP - Layout
7	Chlorinator
7	Servicing
9	Power Connection
10	Alarm System and Control Unit
10	Operation
11	Maintenance - Householder
12	Maintenance – Service Agent
18	Trouble Shooting - General
20	Trouble Shooting – High Level Wastewater Alarm
22	What is subsidence?
24	Material Safety Data Sheet – Chlorine Tablets
26	Warranty
27	Service Contract
28	Change of Ownership
29	Proof of Purchase

PLEASE READ THROUGH THIS SECTION FIRST.

Precautions

- The dial control valve and Bypass valve on the chlorinator are set by the service technician and must NOT be altered except by authorised personnel.
- If additional tablets are required contact your manufacturer/service agent to obtain the correct chlorine tablets.
- Exercise extreme caution when opening or servicing your feeder. Always switch off power supply before opening. Do not inhale any fumes from any chemical feeder or container. Protect your eyes, skin and clothing from chemicals at all times.
- When adding the chlorine tablets do not touch the tablets. Avoid chemical contact – do not drop the tablets into the unit.
- Servicing by service agent is recommended and may be mandatory by State/Local Authority.
- Maintain the highest regard for your personal safety at all times.

Disclaimer

- This information booklet is provided as a guide only.
- While every effort has been made to ensure that the information contained in this guide is accurate and complete, no liability can be accepted for any errors or omissions. Nature Flow Systems Pty Ltd reserves the right to change the specifications of the products and procedures described herein at any time without notice.
- No part of this guide may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form, by any means, without the prior written permission of Nature Flow Systems Pty Ltd.
- Nature Flow Systems Pty Ltd makes no warranties for damages resulting from use of this guide. Nature Flow Systems Pty Ltd accepts no liability for damages of any nature resulting from use of this guide.

Nature Flow is a registered trademark of Waterpac Patents Pty Ltd.

The “environmentally friendly system” tick logo is a registered trademark of Waterpac Patents Pty Ltd.

Other names and products not mentioned above may be registered trademarks or trademarks of their respective companies.

CARE OF THE SYSTEM – BY THE OWNERS

The Nature Flow[®] Wastewater Treatment System is an ON-SITE treatment system. The system has adequate capacity to accept the usual household products, such as soaps and detergents, provided they are used in moderate quantities. However, the householder is responsible for the continued safe and efficient management of the system and undertakes to avoid practices and products that are harmful to the biological treatment processes.

GOOD PRACTICE	AVOID or MINIMIZE
<p>Use phosphate free or low phosphate detergents and cleaners.</p>	<ul style="list-style-type: none"> • Strong acid cleaners / ammonia products • Chlorinated products / sterilizing agents • Antibiotics (as much as possible) • Hobby and home industry chemicals <p>These products may destroy the anaerobic efficiency of the system.</p>
<p>Stagger wash days to avoid heavy and continuous hydraulic loads.</p>	<p>Fats and greases which are extremely slow to decompose – these materials are best disposed of by some other means.</p>
<p>Primary Tank – De-sludge when required.</p>	<p>Irrigation areas</p> <ul style="list-style-type: none"> • As per AS 1547 – 1994 Section 2.6.4 • Effluent shall not be used for irrigation of fruit or vegetables. • The Owner undertakes not to use the irrigation areas for active recreation whilst there is any surface effluent evident.
<p>Sand Filter</p> <ul style="list-style-type: none"> • Keep air vents clean. • No motor vehicles over sand filter to avoid crushing of distribution pipes which are close to the surface. • Do not plant shrubs/trees with invasive roots near ASF. 	
<p>Pump Sump – Maintain water-tightness to prevent water and grass entry.</p>	
<p>Annual Inspections – As per council requirements.</p>	

WARNING: Some insects, such as small ants, find electrical devices attractive for various reasons. If your site or enclosure is susceptible to insect infestation you should implement a suitable pest control plan.

DO I HAVE TO USE ANY SPECIAL TYPE OF DETERGENTS AND WASHING POWDERS?

To protect the environment and ensure the longevity and optimal performance of your Nature Flow® HSTP we recommend that you use environment friendly detergents and cleaners.

The Nature Flow® System uses natural bacteria to break down effluent prior to final disinfection through either an online chlorinator or ultra violet sterilisation. Anaerobic bacteria are used in the primary chamber of the treatment system to break down the solids. Wastewater passes through a suspended solids filter and is pumped through a poly raft inside the sand media filter bed. Natural aerobic bacteria are present in the sand media filtration bed and are used to treat the fine suspended solids. Wastewater flows back into the fourth chamber of the tank where it is clear and is pumped through the final disinfection method (chlorine or UV) out to the dispersal field.

Using cleaners and detergents that contain high levels of ammonia (eg bleach) and/or phosphorus are hazardous to the biological health of your HSTP. These types of cleaners kill off the natural bacteria and micro-organisms used to treat the primary effluent. Reduction of the natural bacteria of your HSTP will result in a much lower level of primary treatment and may produce unpleasant "septic" odours. High levels of nitrogen and phosphorus also contribute to the growth of algae and other less desirable micro-organisms in the environment eg algal growth in waterways.

Environment friendly cleaners are those cleaners that either use no chemicals or reduced levels of chemicals. Conventional cleaning products may use labelling that indicated the phosphorus level of the product. Look for the following symbols on the packaging of cleaning products:

P

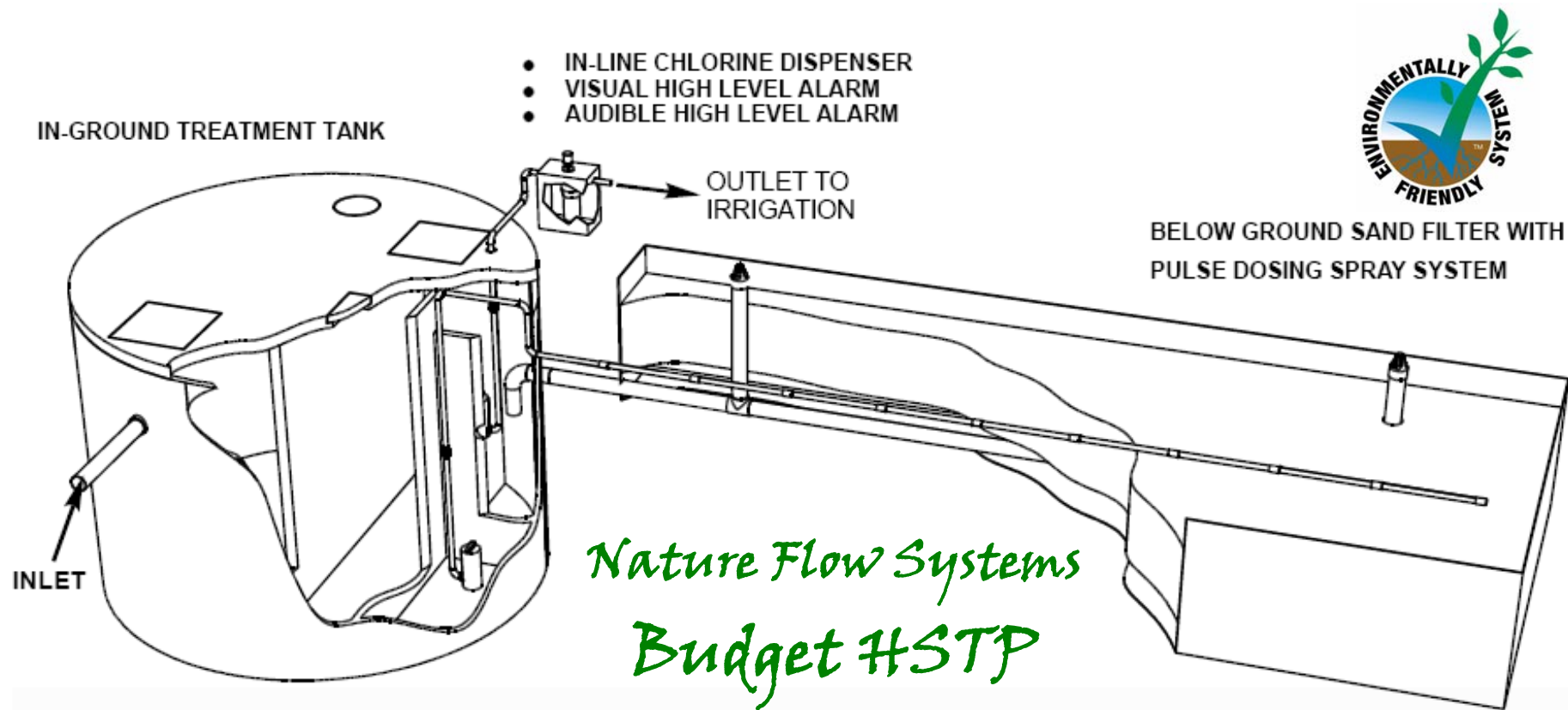
This symbol lets you know that the product complies with the agreed Australian industry standard on phosphorus, which imposes a maximum content of 7.8 grams per wash. The standard is designed to reduce the amount of phosphorus entering Australian waterways.

NP

This symbol lets you know that the product contains no added phosphorus. Levels of 0.5% may be present.

There are an increasing number of "green" cleaners and detergents available including products that are chemical free and made from all natural ingredients. Other cleaning products do not require the use of any chemical-based cleaning substances such as Enjo*. There are also "homemade" natural cleaning alternatives such as vinegar, bi-carb etc. (The internet has many websites dedicated to alternative cleaners.)

*Referral to individual products does not imply endorsement or otherwise by the Nature Flow Systems P/L.



- ✓ **Low maintenance.** Only ONE service a year NOT four! The Nature Flow HSTP only requires annual servicing compared with most other systems on the market today that require up to four services a year to maintain. Servicing is a local authority requirement that must be undertaken by a suitably licensed person.
- ✓ Provides you with **high quality recycled wastewater** suitable for irrigation to lawns and gardens. (Subject to your local authority requirements and site assessment.)
- ✓ **Energy efficient.** The system uses two small submersible pumps that on average operate for 25 minutes a day. Electricity consumption is minimal compared with aerated systems.
- ✓ **Rated at 10EP (10 person system standard).** A large operating capacity treatment tank (8 000L) and large media filter bed (approx 8m long x 2.4m wide x 1.2m deep) ensures a Nature Flow HSTP will handle peak loads comfortably. This larger design capacity means effluent stays in the treatment plant longer and thus increases the quality of the treated effluent at disposal.
- ✓ Pipe raft located inside the filter bed ensures that the whole of the filter bed is used. Effluent is pressure fed via a small submersible pump through this pipe raft ensuring even dispersion of the effluent throughout the whole bed (ie minimizing potential for channeling).
- ✓ **Environmentally responsible.** The Nature Flow Budget HSTP uses an in-line chlorinator ensuring that only minimal chlorine dosage required for effective disinfection is released into system. (Compared to in-tank canisters where dosage may not be controlled effectively.)

www.natureflow.com.au

HAYWARD CL-200 SERIES AUTOMATIC CHLORINE FEEDER

Your Nature Flow® Mark II Budget Wastewater Treatment System uses chlorine as the disinfection method. A pre-set chlorine doser ensures the correct amount of chlorine is released into the system to provide effective disinfection of wastewater. **DO NOT ALTER THE DIAL CONTROL VALVE SETTING.**

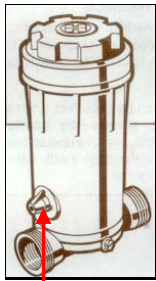
The Bypass Valve is also preset at installation. **DO NOT ALTER THIS SETTING.**

It is a requirement that you perform a quarterly visual inspection of chlorine tablets in the chlorinator unit to ensure adequate levels are maintained. Refer to instructions for checking and replenishing chlorine tablets section of this manual.

The Hayward CL-200 series automatic chlorine feeder is designed for installation in the Pump-Out line to your Dispersal Area. It uses slow-dissolve Trichloro-S-Triazinetrione (Tri-Chlor) tablets **ONLY**. **No other type of chemical should ever be used in your chlorine feeder.** Your CL-200 holds up to 18 large (7cm diameter) tablets and has a dial type control valve to regulate the rate of water flow through the chlorine feeder. Please note that the chlorinator is fully loaded at commissioning of the system. A standard household of 4-6 persons can expect to use approx 5 chlorine tablets per quarter.

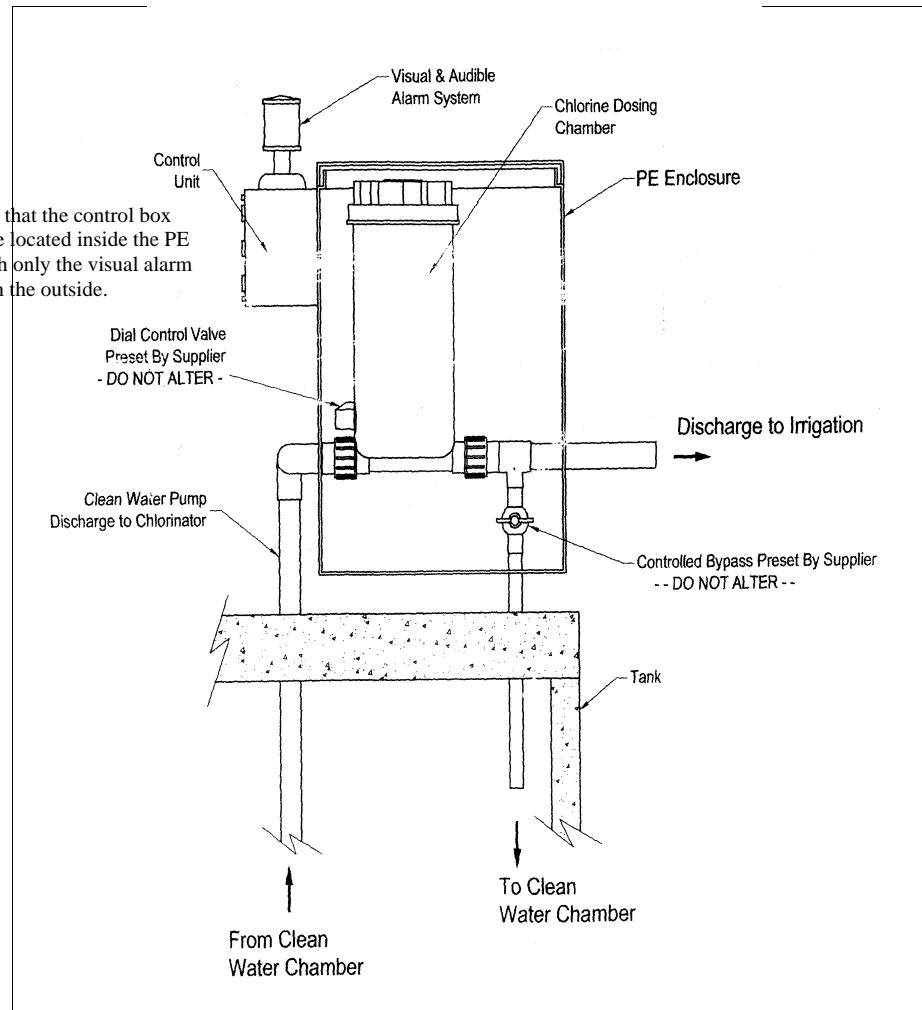
Chlorinator Unit Detail

Chlorinator 3D View



**Dial Control Valve
DO NOT ALTER**

Please note that the control box may also be located inside the PE cabinet with only the visual alarm mounted on the outside.



POWER CONNECTION

Your Nature Flow® HSTP is NOT to be hardwired. Standard installations will require a minimum of three (3) weatherproof GPO's located at the tank.

The ASF (sand filter) pump will be plugged into one of these GPO's. The control box will also be plugged into one of these GPO's. The disposal pump may be plugged into one of these GPO's or alternatively may be plugged into a socket on the control box. **Variations of the aforementioned connections may exist subject to site and age of system.** Please refer to your supplier/installer or service agent should you have any questions regarding power connection and your HSTP.

Warning: When servicing or attending your Nature Flow®, always ensure power is switched off and lead unplugged. Electrical connections should be serviced only by qualified persons.

Do not use long extension leads as they cause substantial voltage drop.

The Nature Flow System has a blue strobe light (to be mounted in a visible location near the unit). This light will be illuminated whenever the control box senses a high wastewater alarm. There is also an audible alarm (a "buzzing" sound) in the event of a high wastewater level alarm. These alarms will only work when unit is connected to the correct electrical supply. 240VAC mains power required at the unit.

WARNING: Some insects, such as small ants, find electrical devices attractive for various reasons. If your site or enclosure is susceptible to insect infestation you should implement a suitable pest control plan.

Electrical Power Surge Protection

An electrical power surge or spike can travel on the supply lines and cause serious damage to your electrical equipment. If the installation is subject to electrical power surges or lightning we strongly recommend the use of suitable surge protection devices on ALL electrical equipment.

Nature Flow also recommend the use of an RCD or earth leakage circuit breaker (safety switch) on the power supply of your unit.

SERVICING

Units should be serviced annually (unless otherwise recommended).

Refer to maintenance section of this manual.

ALARM SYSTEM AND CONTROL UNIT

If an alarm condition is detected an audible alarm is produced and the blue strobe (flashing) light mounted on the outside of the PE cabinet will activate.

Switching the power off at the GPO silences the alarm.

Switching the main power at the GPO off and on will return the system to normal operation. Permanent faults will cause the system to alarm again.

Faults of a temporary nature (eg temporary pump blockages or power "outs") can be cleared by switching power at the GPO off, wait 10 seconds and then switch back on.

High Level Alarms indicate a possible pump failure. Refer to Troubleshooting section of this manual for further details.

OPERATION

Primary 1 – Used to collect all black and grey water. The large size of primary collection increases the retention time and the quality of the treated wastewater. A large proportion of the solids settle to the bottom of this chamber prior to the effluent flowing to the second primary.

Primary 2 – This second primary chamber/tank allows the effluent to settle further before it passes through a suspended solids filter to the media filter pump well.

Pump Well – A submersible pump with high level alarm is used to pump wastewater through the media filter and returned via the drainback to the clear water pump well.

Media Filter (Aerobic Sand Filter - ASF) – The use of in-ground media filter provides a significant surface area increasing the quality of the wastewater treatment. Wastewater is pressure fed through PVC rafts (slotted) to ensure that the whole of the media bed is effectively used and to avoid channelling. The type of media filter varies depending on the installation – standard domestic systems use slow sand filtration.

Clear Water Pump Well – wastewater is relatively clear. A submersible pump with high level alarm is used to pump wastewater through the final disinfection method.

Hayward CL200 Chlorinator – dial-up online chlorinator used for final disinfection prior to dispersal.

Dispersal: Site dependant – surface or subsurface as per site assessment and/or State/Local Authority requirements.

MAINTENANCE – HOUSEHOLDER

1. Ensure that a quarterly inspection of the chlorine tablet level is carried out and chlorine tablets are replenished when required. Refer to instructions for checking and replenishing chlorine tablets section of this manual.
2. Ensure your system is serviced as per the manufacturer's recommendations and State/Local authority requirements. Most domestic installations require annual servicing by an appropriately qualified person. This is a local authority (council) requirement and will be enforced.
3. Follow the guidelines outlined in Care of the System by the Owners section of this manual. Maintain awareness of cleaning agents used. NEVER drive any type of vehicle (ride-on mowers excluded) over your sand filter as this may result in damage to underground pipework.
4. Keep the area around the tank and sand filter mown. Do not allow grass to become overgrown.
5. Maintain access to the top of the tank. Manhole lids MUST be accessible at all times.
6. Do not plant trees or shrubs in or close to the sand filter bed. Do not plant trees or shrubs with invasive root systems close to the tank.
7. Maintain your dispersal field. NEVER drive any type of vehicle (ride-on mowers excluded) over your dispersal field as this may result in damage to underground pipework.
 - a. Where surface irrigation is used, ensure that the area is regularly mown, maintain vegetation (ie no bare patches of ground only) and regularly alternate sprinkler between irrigation areas.
 - b. Where subsurface irrigation is used, ensure use of non-invasive plants, maintain mulch cover of pipework at all times.
8. Ensure landscaping does not divert groundwater in the vicinity of the sand filter and preferably not in the dispersal field. Maintain or construct (if required) retention and diversion mounds to ensure run-off is guided appropriately. Contact your supplier/installer or service agent should you require any further information.

MAINTENANCE – SERVICE AGENT

Primary tank	Clean suspended solids filters on outlet. Hose any matter off the filters back into the second primary chamber of the tank.
Pump Chamber (ASF)	Check operation of alarm by pressurising clear alarm tube connected to control box. Check pump & high level alarm operation.
Sand Media Filters	Check for ponding. Check drainback to pump chamber. Check air venturi – ensure carbon filter in good condition. Advise owner on general state of maintenance around treatment plant (i.e. mowing, weed control, fencing, signage etc).
Pump Chamber (Disposal)	Check operation of pump & high level alarm.
Nature Flow Chlorine Disinfection Unit	Check unit operation. Check chlorine tablet level and replenish if required. Service every 12 months. Check condition of o’ring that seals the lid to the chlorinator. Take care when screwing lid onto unit that the o’ring is correctly located.
Disposal Field	Check and service rotary valves (if applicable). Check for ponding. Advise owner on general state of maintenance around disposal field (i.e. mowing, weed control, fencing, signage etc). Check sprinklers for blockage.
Diversion/retention mounds	Check condition of mounds and advise owner of any maintenance requirements.

Refer also to “Service Contract” in this manual.

TESTING

Samples are to be taken from the disposal line after chlorine disinfection.

STANDARD REPLACEMENT PARTS

O’ring for Chlorinator

All prices subject to change without notice. Excludes packaging and freight.

INSTRUCTIONS FOR CHECKING AND REPLENISHING CHLORINE TABLETS.

Visual inspections should be carried out by the Owner **every three (3) months**.

Exercise extreme caution when opening or servicing your feeder. Always switch off power supply before opening. Do not inhale any fumes from any chemical feeder or container. Protect your eyes, skin and clothing from chemicals at all times. Refer to Materials Safety Data Sheet for chlorine tablets for further information.

If additional tablets are required contact your manufacturer/service agent to obtain the correct chlorine tablets. The chlorine tablets used in your system are slow-dissolve Trichloro-S-Triazinetrione (Tri -Chlor). (Chlorine tablets are all different and the tablets used within this system are of a specific composition.) **Never add liquid chlorine or chlorine tablets of a different composition to your system. No other type of chemical should ever be used in your chlorine feeder.**

Step 1: Turn HSTP off at power point and unplug.

Step 2: Remove lid on poly cabinet (screws on side of lid).

Step 3: Unscrew lid on canister anti-clockwise.

DO NOT INHALE ANY FUMES FROM ANY CHEMICAL FEEDER OR CONTAINER.

Release lock tab to allow lid to unscrew. Take care not to cross thread the lid when unscrewing from the canister. An O'Ring is used to seal the lid – ensure that care is taken when the lid is removed not to damage this O'Ring.

Step 4: Check level of remaining chlorine tablets. If less than 5 full tablets remain then canister requires refilling. (A packet of 5 chlorine tablets lasts approx 3 months for a standard household of 4 people.)

Step 5: Wear gloves & eye protection. **Replenish chlorine tablets if required. NB: When adding the chlorine tablets do not touch the tablets.** Hold the middle of the packet. Carefully split the bottom of the packet while holding it over the chlorinator container and allow the tablets to gently fall into the unit.

Avoid chemical contact – do not drop the tablets into the unit.



Step 6: Grease O'Ring with lubricant (rubber grease or Vaseline) before replacing lid on canister. Ensure O'Ring is placed correctly into groove. Replace the lid on the canister. Screw clockwise to tighten. Take care not to cross thread. **DO NOT OVERTIGHTEN!** The lid has a lock tab mechanism – do not overtighten past this point.

NB: If O'Ring is stretched (ie sits loose in the groove) then it must be replaced. See your service agent or installer.

Step 7: Replace lid on poly cabinet.

Step 8: Plug leads back into power points and turn on.

Remember that this is a quarterly requirement. Checking the level of chlorine tablets should be carried out every three (3) months. This is the householder's responsibility.

Please contact your service agent or installer should you have any questions or require further information.

TROUBLESHOOTING- GENERAL

Servicing by your service agent or other suitably qualified person is recommended and may be a State or Local Authority requirement. Refer to Precautions & Disclaimer at start of this manual.

The following points are offered as guide for initial diagnosis of faults and may enable the householder to rectify minor concerns. **It is not recommended that the householder undertake any course of action outlined in this trouble shooting guide for which he/she is not confidently and competently capable of completing.** Should the fault occur within the first twelve months following original installation please contact your supplier/installer. For any faults occurring after this period please contact your service agent.

A visual (blue flashing light) and audible alarm (buzzing sound) will activate to notify householders of a fault with their treatment system. (Be aware that these alarms will not activate in times of power loss/disturbance.)

The alarms will activate in response to a high level of wastewater in the tank (possibly caused due to pump failure/sprinkler hoses blocked etc).

Identify the two manhole lids that contain the pump chambers. Stand at the green control box on the ground facing the tank. At this position the first two manhole lids on the left hand side are the ones containing the pump chambers. Check level of wastewater in the treatment tank by carefully sliding the manhole lid aside and visually inspecting the chamber. Take care not to catch fingers or other body parts when removing the manhole lid. Ensure that chamber is allowed to ventilate. Do not place head or other body parts into tank. Do not breathe in vapours or fumes from tank.

If wastewater is at correct level the pump float switch and/or the pump should be visible. If wastewater is above this level then fault is most likely to be a high level alarm. Refer to section on Troubleshooting – High Level Alarm in this manual.

TROUBLE SHOOTING – HIGH LEVEL WASTEWATER ALARM

The blue strobe light is flashing. Inspection of tank chambers confirms high level of wastewater in tank. This indicates a high level alarm. A high level may be caused due a number of reasons including pump failure, irrigation sprinkler/hose blockages, power failure or groundwater entering the system during rain.

Is this the first time you have turned the system on? If the sprinkler is operating the high level is probably caused from the initial volume of water placed in the tank at installation to prevent uplift. Once this initial volume reduces to the appropriate level the alarm should cease.

Has there been a power outage? The fault may be caused due to the build-up of treated effluent in the tank due to pumps not operating from power failure. Once power supply is re-established check irrigation area to see if system is pumping out. If the sprinkler is still pumping out then the fault is probably due to a build-up of effluent. The blue light will continue to flash until the high level float has dropped to the prescribed level.

Has it rained during the period prior to the alarm activating? The fault may be caused due to groundwater entering the system during rain. Check that the sprinkler is pumping out. If the sprinkler is still pumping out then the fault is probably due to groundwater. The blue light will continue to flash until the high level float has dropped to the prescribed level. Please note that this alarm condition may continue until some time after the rain ceases as the pumps continue to operate to reduce the high level (keeping in mind that it is not only the groundwater but also the everyday production of effluent that must be treated).

Is the sprinkler pumping out?

No – Possible pump failure or blocked sprinkler/hose.

1. Check if the sprinkler/hose is blocked or kinked.

- a. Check that hose is uncoiled, straight, un-kinked and that the sprinkler key is correctly clicked into place. Turn the system off at the powerpoint. Wait 10 seconds and then turn back on. Wait 2 minutes for time delay to pass and then check if pumping out. Is the sprinkler pumping out? Yes - the fault has been cleared - the blue light will continue to flash until the high level float has dropped to the prescribed level.
- b. Remove sprinkler head from hose. Turn the system off at the powerpoint. Wait 10 seconds and then turn back on. Is treated effluent being pumped out through hose? Yes – blockage has been removed. Turn the system off at the powerpoint. Replace sprinkler head on hose. Wait 10 seconds and then turn back on. Wait 2 minutes for time delay to pass and then check if pumping out. Is the sprinkler pumping out? Yes - the fault has been cleared - the blue light will continue to flash until the high level float has dropped to the prescribed level.

2. Check if the submersible pumps are operating.

- a. Listen to hear if the pump motors can be heard working.
- b. Lift the inspection covers and check the levels in the pump chambers. CAUTION: Always take care of your personal safety and that of others. NEVER leave the inspection holes uncovered. ALWAYS replace the covers immediately after inspection. Take care not to catch fingers or other parts of the body when removing or replacing the covers.
- c. While the inspection hole is uncovered, visually inspect the location of the floats. Are they hanging freely? Are they hooked up on the pump/pipework/tank wall? Always take care of your personal safety and that of others. NEVER stick your head or any other part of your body into the septic tank. Potentially dangerous gases may be produced in septic tanks. The effect of these gases can overcome you very quickly.

Is the sprinkler pumping out?

Yes - Possible sand filter pump failure. Contact your supplier/installer or your service agent.

SUBSIDENCE

1. What is subsidence?

Subsidence and/or ground movement is an event caused by Nature – it is unpredictable and extremely difficult to avoid. The degree of subsidence is dependent on individual site conditions including, but not limited to, weather (prior to, during and after installation), soil type and location of installation.

It is an event not covered by warranty.

2. What kinds of problems result from subsidence?

Subsidence around tanks installed in-ground may result in increased pressure on any pipework connected to the tank. Sometimes this increased pressure will result in the pipework/fitting becoming “sheared off”, stretched or split (leaking) or broken.

Defects arising from subsidence are not covered by warranty. Generally subsidence only occurs in the first instance of changed weather conditions (i.e. after rain) however it may occur under other circumstances. Usually after the first instance the ground (and consequently the tank and other componentry) “finds it level” and you should not experience any further problems from this phenomenon. In very reactive soils or other unstable conditions, subsidence may occur again.

Defects caused by subsidence are possible in any installation involving tankage and pipework being placed in and below ground.

Common minor defects are:

- Shearing, leaking or breakage at the poly dispersal line from the HSTP tank to irrigation.
- Shearing, leaking or breakage at the PVC pipes between the ASF and HSTP tank.
- Shearing, leaking or breakage at the stormwater pipe into the rainwater tank.

These defects can be rectified by a suitably licensed person.

3. Can anything be done to prevent subsidence?

Unless otherwise agreed, all installations are for “loose” backfill only. Compacted backfill cannot be completed around concrete tanks as the uneven pressure created when backfilling will result in movement between mouldings. It is also exorbitantly expensive and will not guarantee that subsidence will not occur.

The use of sand and other bedding materials will also not guarantee the prevention of subsidence. Often the sand will simply be pushed out of the trench or cavity by the flow of water leaving a depression that places strain on the pipework.

The best prevention of defects caused by subsidence is simply to be aware of the possibility and to maintain vigilance in ensuring depressions are “topped up” and/or breakages etc are repaired in a timely manner.

4. Questions?

Please do not hesitate to contact us on info@natureflow.com.au should you have any questions or require further information.

MATERIAL SAFETY DATA SHEET

AUSTRALIA: Emergency Response: 1800 625 526 Swift and Company Limited ABN 44 000 005 578 1 st Floor, 372 Wellington Road Mulgrave, VIC 3170 Ph: (03)8544 3100 Fax (03)8544 3299	NEW ZEALAND Emergency Response: 0800 500 288 Swift New Zealand Limited 72 Hayr Road Mt Roskill, Auckland Ph: (09)625 6169 Fax (09)625 6655
---	---

Hazardous according to criteria of NOHSC Australia.

I IDENTIFICATION

Product Name: TCCA Gran and Tablets

Other Names: Trichloroisocyanuric Acid. Proper Shipping Name is "TRICHLOROISOCYANURIC ACID".

MSDS Code: 4004893

UN No: 2468

Hazchem Code: 2WE

Dangerous Goods Class: Class 5.1 (Oxidising Agent)

Sub Risk Class: No Subsidiary Risk.

Packaging Group: II

EPG: 5A1

Most EPGs may now be substituted by the "Initial Emergency Response Guide" available from Standards Australia.

Poison Schedule: S5 (Australia), S4 (New Zealand)

Product Type: Organic solid.

Chemical Family: Chlorinated aliphatic solid.

Uses: Chlorination of water, especially in domestic swimming pools.

Physical appearance & Properties:

Appearance & Odour: White tablet. Odour of chlorine.

Melting/softening point: 225°C

Boiling point and vapour pressure: Decomposes.

Volatile materials: Nil.

Flashpoint: Does not burn.

Specific gravity: 2.1

Solubility in water: 1% at 25°C

Corrosiveness: Slightly corrosive.

Ingredients:

Chemical entity	CAS No	Proportion % ^x	Worksafe Exposure Limits	
			TWA ³ mg/m ³	STEL ³ mg/m ³
Trichloroisocyanuric acid ^x Commercially pure.	87-90-1	pure ^x	not set	not set

This is a commercial product, and the exact ratio of components may vary. Trace quantities of impurities are also likely.

II HEALTH HAZARD DATA

Health Effects:

No specific data is available for the product for chronic exposure symptoms. The ingredients are not listed as carcinogenic in Worksafe's document "Exposure Standards for Atmospheric Contaminants in the Occupational Environment" (May 1995).

Acute Effects:

Swallowed: Data indicates that the product should be considered as harmful by ingestion.

Eye: Data indicates that this product should be classified as an eye irritant. However, permanent eye damage should not be expected.

Skin: Data indicates that product is irritating to skin.

Inhalation: Inhalation may cause irritation of the nose and throat and cause coughing and chest discomfort.

Primary route of exposure is inhalation and skin and eye contact.

Swift and Company Limited Phone (03)8544 3100
Swift New Zealand Limited (09)625-8189

Page 1 of 3

Product: TCCA Gran and Tablets
Issued: November, 2000

MATERIAL SAFETY DATA SHEET

First Aid:

Swallowed: If swallowed, do NOT induce vomiting. Rinse mouth with water. Give a glass of water to drink. Contact a doctor or the Poisons Information Centre if symptoms of poisoning develop.

Eye: If this product comes into contact with eyes, hold eyes open and wash continuously for 15 minutes with running water. Ensure irrigation under eyelids by occasionally lifting eyelids. Do not attempt to remove contact lenses unless trained. Transport to hospital or doctor immediately.

Skin: If this product comes into contact with skin, wash skin with soap and water for 15 minutes. Remove contaminated clothing and footwear. Ensure contaminated clothing is thoroughly washed before using again. Transport to hospital or doctor immediately.

Inhalation: If dusts or combustion products are inhaled, remove to fresh air. Lay victim down & keep warm and rested. If breathing is shallow, or has stopped, ensure clear airway and apply resuscitation or oxygen if available. Transport to hospital or doctor immediately.

Eye wash stations or baths and deluge showers should be available where product is being used.

Advice to doctor: Treat symptomatically. Note the nature of this product.

III PRECAUTIONS FOR USE

Risk Phrases are: R8, R22, R31. Combination Risk Phrases are: R36/37. Contact with combustible material may cause fire. Harmful if swallowed. Contact with acids liberates toxic gas. Irritating to eyes and respiratory system.

Exposure Standards:

A time weighted average (TWA) concentration for an 8 hour day, and 5 day week has not been established by Worksafe Australia for any of the ingredients in this product. There is a blanket limit of 10mg/m³ for dusts or mists when limits have not otherwise been established. The nature of this product makes it unlikely that this level will be approached in normal use. See ingredients section on page 1 of this data sheet.

Engineering Controls:

Ventilation must be adequate to ensure that the working environment is below the TWA value. Otherwise, use respiratory protection. Some materials should only be used when respiratory protection is being worn. For information on respiratory protection, consult AS1718. See below for further information.

Personal Protection:

Respiratory Protection: A face mask or respirator is not generally necessary when this material is being used. For help in selecting suitable equipment consult AS/NZS 1715.

Protective Gloves: Rubber or PVC gloves are advised. For help in selecting suitable gloves consult AS 2181.

Eye Protection: Full face mask, safety glasses or goggles are advised. Consult AS 1336 and AS/NZS 1337 for information about eye protection.

Clothing: Clean overalls should be worn, preferably with an apron. All skin areas should be covered. Consult AS 2919 for advice on Industrial Clothing.

Safety Boots: Wearing safety boots would be advisory. Consult AS/NZS 2210 for advice on Occupational Protective Footwear.

Flammability Limits: Does not burn.

Note that these recommendations are for frequent or continuous contact situations, and are not generally necessary when used in domestic applications. However, even in this type of application, the product should be treated with care.

IV SAFE HANDLING INFORMATION

Safety Phrases are: S8, S26, S41. Keep container dry. In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre. In case of fire and/or explosion, do not breathe fumes.

Storage & Transport:

UN number is 2468 and Hazchem code is 2WE. It is classed as "Class 5.1 (Oxidising Agent)"

Being a scheduled poison, the product must be stored, maintained and used in accord with relevant state poisons act. Not to be transported with Classes 1 (Explosives), 2.1 (Flammable Gases), 2.3 (Poisonous Gases), 3 (Flammable Liquids), 4.1 (Flammable Solids), 4.2 (Spontaneously Combustible Substances), 4.3 (Dangerous When Wet Substances), 5.2 (Organic Peroxides), 6 (Toxic Substances) (nb when substance is capable of being ignited and burning), 7 (Radioactive Substances), 8 (Corrosives), and 9 (Miscellaneous Dangerous Substances) (nb when substance is capable of being ignited and burning). Observe all regulations associated with this classification when carrying by road or rail.

Swift and Company Limited Phone (03)8544 3100
Swift New Zealand Limited (09)625-8169

Page 2 of 3

Product: TCCA Gran and Tablets
Issued: November, 2000

MATERIAL SAFETY DATA SHEET

Containers should be kept closed in order to minimise contamination. Keep from extreme heat and open flames, and make sure the material does not come into contact with water or acids.

Spills and disposals:

In event of a major spill, clear area of personnel. Alert fire brigade and advise of nature & location of spill. Wear protective clothing. Prevent spillage from entering drains or water courses. Stop leak if safe to do so, and contain spill. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage. Recycle containers wherever possible.

After spills, wash area, preventing runoff from entering drains. If material enters drains, advise emergency services. This material may be suitable for approved incineration or landfill. Dispose of only in compliance with local, state and federal regulations. Launder all contaminated clothing before re-use.

Fire/Explosion Hazard:

There is no explosion hazard from this material under normal circumstances.

Flashpoint: Does not burn.

Extinguishing Media: Use media suited to burning materials.

Special Fire fighting procedures: None.

Unusual fire & Explosion hazards: Does not burn but in a fire, may emit toxic and corrosive gases.

Stability: Stable.

Polymerisation: Will not polymerise.

Decomposition Products: Carbon dioxide, carbon monoxide, oxides of nitrogen, chlorine, water.

Materials to avoid: Strong acids, strong alkalis, calcium hypochlorite, sodium hypochlorite, ammonium compounds, amines, oil and greases.

Note: This product is classed as a Dangerous Good. We suggest you consult your state's Dangerous Goods laws in order to clarify your obligations regarding the storage of this product.

V OTHER INFORMATION

This MSDS is prepared in accord with the Worksafe Australia document "National Code of Practice for the Preparation of Material Safety Data Sheets", 1994.

It also conforms with the New Zealand OSH Guidelines for the Preparation of MSDSs (May 1995).

Contact Points:

		AUSTRALIA	NEW ZEALAND
Police and Fire Brigade:	Dial	000	111
If ineffective:	Dial	132203 (Exchange)	-
For emergency response:	Dial	1800 625 526	(0800)500 288
National Poisons Information Centre:	Dial	13 1126 (from anywhere in Australia)	

THIS MSDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER SHOULD READ THIS MSDS AND CONSIDER THE INFORMATION IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE INCLUDING IN CONJUNCTION WITH OTHER PRODUCTS. IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY. THE RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This MSDS copyright © Kilford & Kilford Pty Ltd, November, 2000.

<http://www.kilford.com.au/> Phone (02)9516 2079

WARRANTY GENERAL

Parts supplied directly by Nature Flow® (either to the end-user or to our authorised agents) are guaranteed for a period of one year from the date of original installation to be free of materials or manufacturing defects. Should any part fail as a result of such defects within this period, the part will be repaired or replaced at Nature Flow's discretion. Pumps, tank(s) & Chlorinators are covered by their manufacturer's parts only warranty commencing from the date of original installation. (Duration and type of warranty varies – please check with supplier/installer for specific warranty details for your installation.) Please check with your supplier/installer for any other materials used in your installation as to their warranty conditions.

TERMS AND CONDITIONS

1. This guarantee applies to all states and territories of Australia only and is subject to the provisions of the Trades Practices Act (Aust) and the Goods and Consumer Protection Legislation of the various Australian states as applicable.
2. The guarantee period commences on the date of original installation of the equipment. Evidence of this date of original installation must be provided when claiming repairs under this guarantee. It is recommended you retain all receipts in a safe place.
3. This guarantee is extended to those Nature Flow® HSTP's installed by Nature Flow Systems P/L or our authorised (written) representatives only and is subject to the standard conditions of sale. Nature Flow® HSTP's installed (whole or part) by third parties are excluded. Assembly &/or workmanship associated with the actual installation is warranted by the party performing the work. Please confirm details with your supplier/installer.
4. Subsidence is excluded. Please refer to the subsidence section in this manual for further information.
5. This guarantee covers parts and labour only – travel is excluded. Faulty parts are to be returned freight paid to Nature Flow Systems P/L for examination and if applicable repair or replace at Nature Flow's sole discretion.
6. This guarantee is subject to due compliance by the original purchaser with our standard terms and conditions of sale, our supplementary standard conditions and our Privacy Policy.
7. This guarantee is subject to due compliance by the original purchaser with all directions and conditions set out in the Owners and Maintenance Manuals. Failure to comply with these instructions, damage or breakdown by fair wear and tear, negligence, misuse, incorrect installation, chemical or additives in the water, lightning or high voltage spikes or through unauthorized persons attempting repairs are not covered under this guarantee. The product must only be connected to 240VAC mains power unless otherwise specified by the manufacturer in writing.
8. Without limiting the original purchaser's entitlements under the Trade Practices Act (Aust.) and the Goods & Consumer Protection Legislation of the various Australian states. Nature Flow Systems and/or its authorised agents shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from the product or any defect.
9. Where the Trade Practices Act (Aust.) and the Goods and Consumer Protection Legislation of the various Australian states does not apply, Nature Flow Systems and/or its authorised agents shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from the product or any defect and the purchaser shall indemnify Nature Flow Systems and/or its authorised agents against any claim by any other person whatsoever in respect of any such loss, damage or injury.
10. Nothing in this guarantee is intended to have the effect of contracting out of the provisions of the Trade Practices Act (Aust.) and the Goods and Consumer Protection Legislation of various Australian states except to the extent necessary to give effect to that intention.
11. Nature Flow Systems and/or its authorised agents may be collecting personal information only to use this information in accordance with the Provisions of the Privacy Act 1988 (Cth).

Nature Flow® Wastewater Treatment System SERVICE CONTRACT

This Agreement is made between (Owner/Occupier) _____

of (Address) _____

and Nature Flow Systems P/L or their duly appointed agent.

The duration of the Agreement is for a period of twelve calendar months.

Nature Flow Systems P/L or their agent, upon payment of **\$125 per year plus travel & consumables (where applicable)** and the signature of the afore-named person at the place indicated below, and upon acceptance of this application by a duly authorised employee of Nature Flow Systems P/L, agrees, for the period indicated to the following:

1 Annual field service inspection will be made by a trained employee at approximately one year from the date this Agreement is signed (or if the first service after installation then approx one year after the date of commissioning).

Inspections include the following checks:

- a) Efficiency of chlorinator. Check dial up residual and Bypass Valve is set correctly.
- b) Level of chlorine tablets (Cost of replenishing chlorine tablets is **NOT** included in maintenance fee.)
- c) Check irrigation and recirculating pumps are operational
- d) Amount of sludge accumulation in the septic chamber
- e) Zabel filter/or equivalent
- f) Media filter vents checked for damage and mosquito proofing
- g) Drainback to final effluent chamber is running freely
- h) Visual inspection for ponding above filter
- i) Condition of all hoses and irrigation sprays
- j) Condition of irrigation area

Inspection includes the following tests:

- a) pH level of effluent
- b) Level of dissolved oxygen
- c) Temperature of effluent
- d) High water level alarms
- e) Clarity of water
- f) Free residual chlorine level

2 This maintenance agreement does NOT include the maintenance of the irrigation area or repairs to any part of the treatment system, chlorinator unit or pumps. The cost of replenishing chlorine tablets is NOT included in this maintenance agreement.

3 Both labour and materials will be charged for any emergency service call outside the annual service call specified above.

4 All repairs are strictly on a COD basis.

5 This Agreement does not bind Nature Flow Systems P/L or its duly appointed agent to be responsible for the quality of the effluent. However, it will at all times wherever possible, recommend how the effluent quality can be maintained at its maximum and alter and adjust the system during annual service to obtain the best possible effluent standards.

In applying for this Agreement, the undersigned acknowledges that this Agreement is binding while they are the owner/occupier of the premises. Nature Flow Systems P/L will transfer the unexpired portion of this contract to any new owner/occupier to comply with the relevant health legislation.

I hereby apply for the above Agreement and agree to the annual service fee payable of \$125 plus travel & consumables (where applicable).

(Owner/Occupier's signature)

Accepted the _____ day of _____, 20_____.

By: _____

CHANGE OF OWNERSHIP

It is a requirement as part of the standard conditions of supply of a Nature Flow® Sewerage Treatment Plant that you notify Nature Flow Systems Pty Ltd of any change to ownership.

STP Site Address	
Name of Current Owner	
Name of New Owner	
Postal Address of New Owner	
Contact Numbers of New Owner (if known) Landline	
Fax	
Mobile	
Date Effective from	

Please forward the completed form to:

Nature Flow Systems Pty Ltd
PO Box 2009
Hervey Bay QLD 4655.

Thank you.

Please attach Proof of Purchase (receipt) here.

Purchased from:	
Address:	
Date of Purchase:	

Nature Flow® Budget Wastewater Treatment Systems are manufactured by:

Nature Flow Systems Pty Ltd

Ph: 07 4128 8019

Fax: 07 4128 8171

Email: info@natureflow.com.au

Web Address: www.natureflow.com.au

Postal Address: PO Box 2009 Hervey Bay QLD 4655

Your system was supplied/installed by

Contact your supplier/installer or Nature Flow Systems Pty Ltd should you have any questions or require further information, or to arrange for annual servicing of your system to ensure its high level of performance is maintained.

This information booklet should be kept in an accessible area at all times.