BIOTREAT – Technology serving the environment

AUTOMATIC IRRIGATION TO GARDEN
AUDIO VISUAL ALARM PANEL CONVENIENTLY LOCATED INSIDE YOUR HOME

HOME OWNERS MANUAL

A complete guide to the operation of your wastewater treatment system

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INTRODUCTION

Congratulations on the selection of the BioTreat wastewater treatment system. The system that you have purchased uses similar processes and technologies of the sewage treatment plants used in large townships and cities, and are suitable for use in most domestic and commercial applications. Correctly installed and maintained, the BioTreat system can efficiently treat all of the wastewater from your toilet, kitchen and bathroom so that it can be safely re-used in garden irrigation.

The BioTreat is designed to minimize the operational costs to the owner drawing a minimum amount of electrical energy. However, like all of your other assets, the BioTreat requires a certain amount of operating maintenance and most local authorities require these units to be serviced by persons accredited to perform this duty.

Your role as the owner is to ensure that routine maintenance on your BioTreat occurs, and to know the limitation of the system to ensure its effective operation. We recommend that owners take the time to understand their new asset and perform a weekly inspection of the unit. This inspection should simply include checking for any odors and sounds produced by the BioTreat.

Please take the time to read this manual carefully and completely. This will aid in avoiding needless service calls, protecting your investment and safeguarding the health of your family.

SYSTEM FUNCTIONS

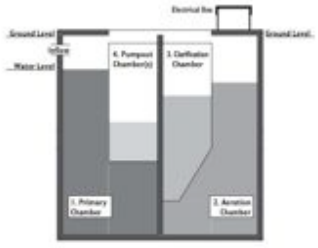
The BioTreat system works on the combined principles of primary settling plus aerobic and tertiary treatment. The treatment process is followed by nutrient removal through the irrigation system. The process generally uses a single tank.

All the wastewater flows first into the septic zone (1-Primary Chamber) where solids are settled out and the anaerobic microorganisms carry out the initial part of the purification process.

Liquid overflow from the septic zone passes to the aerobic treatment zones (2-Aeration Chamber) where a developed culture of the microorganisms' carries out the work of purifying the wastewater as its circulated and aerated within the aerobic zones.

Once organic impurities have been absorbed within the aerobic cultures of microorganisms, the water passes to the secondary sedimentation zone (3-Clarification Chamber). Clear water flows over into the disinfection zone (4-Pumpout Chamber) and the occasional films of microorganisms, which develop ageing characteristics, are automatically transferred back to the primary zone to improve its performance. In the disinfection zone, mild controlled chlorination is applied to complete the treatment process. The treated water is automatically pumped onto areas of your lawn or garden. Bio-Treat uses a special grade of chlorine based compounds so that when pumped onto the garden, any residual chlorine breaks down rapidly and allows for the excellent plant growth which has resulted where Bio-Treat has been installed.

Treated water quality is better than standards set by relevant health authorities on waste water re-use for irrigation purposes.



Cross Section of Typical System, showing Displacement Flow (Diagrammatic).

Top View of Typical System, showing Process Flow (Diagrammatic).

RESPONSIBILITIES AND LEGAL REQUIREMENTS

Although the Bio-Treat system removes most organic impurities, some in-organic materials such as nitrogen and phosphorus compounds remain in the water. These compounds usually encourage plant growth (refer recommended list).

It is essential that you have the irrigation area properly prepared and planted before you use your Bio-Treat system. It is also a council and Health Department regulation that this work be completed before you move into your new home or use the system. The minimum size irrigation area for above ground distribution is 200sqm, for some council it is more. For complete underground discharge, 100sqm may be allowed.

Some councils allow the irrigation hose to sit above ground level and it can be moved around. BE CAREFUL if you do move the hose, as kinks in the hose can stop the pump from operating and lead to an alarm condition, not covered by warranty. When the hose is buried, it is best that it should be no more than 100mm under ground level and backfilled with sandy soil. For underground irrigation, it is safest to use PVC pipe work that will not crush under soil pressure.

In order to comply with the Health Authorities' requirements, you should also ensure that there is no irrigated water run-off from your allotment to adjoining properties, public places, reserves or storm water drains.

The water may be applied to grass, ground covers or a combination of trees/shrubs surrounded by a layer of pine bark. The water should not be sprayed onto seedlings or very young plants. As minute particles may occasionally lodge in the spray heads, it is important for the owner to keep the spray heads clear. The Bio-Treat maintenance personnel do not normally do this work. It should be noted that it is illegal to run water onto bare ground (completely unplanted). The other problem with doing this is that, because of the nutrients in the water, green algae growth will be encouraged on bare ground and would appear as a green slime.

MAINTENANCE

QUARTERLY MAINTENANCE

To ensure that sewage treatment plants perform to the high standards set by the regulating bodies, a regular program of quarterly maintenance visits is mandatory. Failure to have the stipulated servicing carried out could result in a breach of public health legislation and subsequent legal proceedings by the relevant authority.

The first 12 months' servicing on your Bio-Treat system is included in the purchase price. After this, local authorities insist that you have a current Maintenance Contract on your system at all times. There is no need to ring up for normal quarterly service as the company's central computer controls it all.

You will receive a Service Contract Renewal from Peter Boyd Enterprises after the fourth service in any 12-month period. Please follow the instructions to ensure your Contract does not lapse.

Each quarterly maintenance service includes a full inspection/check of the system, with special attention to the following points:

- Cleaning of the system componentry, if necessary
- Water quality tests
- Adjustments to the air system, if necessary
- Monitoring and maintaining the balance of the purifiers
- Replenishing supply of chlorine tablets
- Servicing and maintenance check of the blower, irrigation pump and electrical system
- Detailed reports supplied to system owner and a copy is also forwarded to the local Council/Authority

MAINTENANCE contd

ESSENTIAL MAINTENANCE

Chlorine tablets need to be topped up regularly, usually at least every three to four months.

Reciprocating air blowers need the drive wear assembly replaced at intervals of 1.5 to 3 years.

Diaphragm air blowers need replacement diaphragms and valves at intervals of about 12-18 months. These are normally replaced at the routine service intervals and cost of parts only invoiced at that time. It is most important to replace these parts as they wear. (As with normal wear parts in a motor vehicle, if you do not replace them at recommended intervals, it can cost much more in the long run).

The submersible pump doesn't normally require replacement parts.

The electrical panel and alarm detection systems do not normally require replacement parts.

The sludge returns system occasionally requires adjustment. This is done as part of the normal service.

The checking of sludge levels and general adjustments of the aeration system is done as part of the normal service.

Water clarity tests, chlorine tests, and a general check of the entire tank operation are done on the routine service.

Should any special servicing or additional maintenance is deemed necessary at the routine service, the company will advise of this.

NB: Emergency call-outs may incur an extra charge in some circumstances.

PUMP OUT

As a result of a gradual accumulation of non-biodegradable materials in the system, it will be necessary to have it de-sludged on an average of every 3-10 years, depending upon individual usage. This applies to any type of septic tank system. The cost of this service is to be the customer's account. The company will advise you when this needs to be carried out by your local contractor (refer to the Yellow Pages under Septic Tank Cleaning).

GENERAL CARE

TIPS FOR A HEALTHY SYSTEM

- Do not allow newspaper, disposable or sanitary napkins, rubber products, nappy liners, cotton buds, etc to enter the system
- Do not use an in-sink garbage grinder. Most councils do not recommend these as they can add extra loading equivalent to about 2 persons.
- Do not use strong caustic, acids, alkalis or chemical detergents. These can damage the system and cause bad odors.
- Do not use disinfectants or other bacteriacides.
- Do not put grease/fats or food scraps down the kitchen sink i.e. plates should be scraped reasonably clean prior to washing up.

ACCESS

For maintenance purposes, please ensure that clear access is available to ALL manholes on the tank/s and to the Electrical box. This is a requirement of the regulating bodies. Soil, plants, bark etc must be removed prior to a maintenance service.

IRRIGATION SYSTEM

Irrigation lines, spray heads etc can clog up over extended periods of use. Manufacturers of such equipment recommend that these items be flushed at least monthly. To avoid any inconvenience and to keep costs down, please comply with manufacturers recommendations.

HOLIDAY/EXTENDED ABSENCES

If you are absent from the property for any length of time, the system should be left switched on. Power use is similar to leaving a light switched on in the home. Should you wish to switch the system off for any reason, please contact the office for advice.

CHANGE OF OWNERSHIP

To enable correct servicing records and procedures to be maintained, could you please:

1) Advise us if you sell your property and
2) Leave this manual for the new owner

APPROVED CLEANING PRODUCTS

BATHROOM:-

Pine O Clean or Toilet Duck (These products must only be used in very limited quantities.)

LAUNDRY:-

Dynamo / Surf / Care / Softly / Rinso / Fluffy / Cuddly / Lux / Sunlight / Rinso / Fluffy / Cuddly / Lux / Sunlight / Spree / Love & Care / Cold Power / Fab / Castle / Omo / Top Wash / Blue Sno / More / Woolmix / Gow / Embassy / Purelite / Hurricane / Ease / Alpha Plus / Aura / Blue Advance / Bio Z / Green Choice / Aware / Puren / Velvet / Excel Blue / Pental / Savings

KITCHEN:-

Sunlight / Kit / Green Apple / Down to Earth / Palmolive / Trix / Bushland / Earths Choice / Omo / Kwitcare / Topwash / Adds / Morning Fresh

Amway advise that all their products are safe to use with the exception of - Dry Chlorine Bleach

Nappies: Most nappy products are Anti-Bacterial Solutions and as such should not be used. If nappies must be soaked, make sure the wash water does not enter the system.

Bleach: Should not be used unless the water can be disposed of without entering the system.

Wash Days:Do not leave all your washing until the end of the week. Ideally you should do 1-2 loads per day over several days, this reduces the hydraulic shock loading on the system.

Most dishwashing detergents are strongly alkaline and should be used in moderation. The product suggestions made in these pages bear no reflection on the manufacturers. They are made to the best of our knowledge for use with a Bio-Treat system.

When shopping for various cleaners, detergents, toilet paper etc, check the labels to determine their safety to septic systems. Failure to comply with these recommendations can result in problems with your system.

PRODUCTS NOT LISTED:

Many other products are labelled “Safe for Septics”. Most of these should not adversely affect the system. If you wish to try a new product and it does not cause smell problems and the water remains clear, then it is probably safe to use.

SUITABLE PLANTS FOR THE IRRIGATION AREA

TIPS FOR A HEALTHY SYSTEM

Below is a general list of trees and shrubs suitable for wet soils. Please check with your local nursery for advice on suitability for your area.

COMMON NAME	BOTANICAL NAME	HEIGHT IN METRES
Banksia	Most species	Various
Bottlebrush Red	Callistemon Viminalis	3-6
Bottlebrush White	Callistemon Salignus	3-6
Bracelet Honey Myrtle	Melaleuca Armillaris	3-4
Broad Paperback	Melaleuca Quinquenervia	5-7
Bush Cherry	Syzgium Paniculatum	8-10
Coast Tea Tree	Leptospremum Laevigatum	5-6
Cootamundra Wattle	Acacia Baileyana	3-5
Cup Gum	Eucalyptus Cosmophylla	5-6
Dropping Shedak	Casuarina Stricta	3-5
Flooded Gum	Eucalyptus Grandis	10-20
Frangipani	Hymenosporum Flavum	3-6
Kanuka	Tristania Laurina	3-5
Native Apricot	Pittosporum	Various
River Red Gum	Eucalyptus Camaldulensis	15-20
River Shedak	Casuarina Glauca	6-10
Swamp Mahogany	Eucalyptus Robusta	6-9
Swamp Oak	Casuarina Glauca	6-12
Sydney Blue Gum	Eucalyptus Saligna	15-20
Western Tea Myrtle	Melaleuca Nesophila	2-4
Willow Myrtle	Agonis Flexuosa	5-6

WARRANTIES

The following is to inform you in writing of the guarantees supplied by our company, and others, as both the manufacturers and suppliers of the rainwater tanks, and BioTreat MK6.

Rainwater Tanks: 10 years from date of installation

BioTreat MK6: 15 years from date of installation

Electrical components (except pumps): 12 months from date of commissioning

Pipe work (includes disposal area pipe work and sand filters): 12 months from date of commissioning

Water Pump (Davey/Onga): 2 years from date of commissioning

Pump Out Pump: 2 years from date of commissioning

Aeration Pump: 2 years from date of commissioning

Fault Finding

In the unlikely event of a malfunction, please refer to Guide below. The owner taking simple corrective action can rectify many minor problems. If, after taking the recommended actions, the system is still malfunctioning, please contact our office. Don't panic - the system has been designed with sufficient reserve capacity to allow normal household use until a technician arrives.

ALARM PROBLEMS

If the alarm goes off, there is no need to panic. Whether there is a problem with the Pump or the Air Blower, you can still flush toilets and have short showers but should keep water usage to a minimum until the problem is rectified. The high water alarm is set to allow a few days with prudent water usage before the tank will fill up. Nevertheless, please advise the company after checking for possible causes under this section. If you cannot solve the problem, please contact our office on 07 3382 6011.

FAULT - The alarm sounds and the "WATER" light illuminates	
Possible Causes	**Action**
1) Kinked irrigation hose	Unkink hose
2) New system - full up before switched on	Level will eventually drop when power is switched on
3) Blocked irrigation system	Investigate and clear blockage - usually blocked sprays. Line may also need to be disconnected and flushed out.
4) Pump failure	Check that pump is plugged in and that there is power to the system. If unsuccessful, contact the company.

FAULT - The alarm sounds and the "AIR" light illuminates	
Possible Causes	**Action**
1) Blower stopped	Check that blower is plugged in and that there is power to the system.
2) Blower stopping and starting	Unplug blower, leave power on the rest of the system and contact the company

FAULT - Excessive foaming	
Possible Causes	**Action**
1) Too many washes in a short time	Do 1 or 2 washes per day ONLY.
2) Use of excess or non recommended detergent	Reduce quantity used and check recommended list.

FAULT - Odours	
Possible Causes	**Action**
1) New system	Most systems develop organisms naturally within a fortnight without requiring assistance. However, if a smell problem persists with a new system it is usually due to insufficient biological activity. This is best overcome by use of Actizyme. The addition of a few kilograms of Dynamic Lifter can also help.
3) Too much water use at one time	Avoid using the bath, shower, dishwasher and washing machine too close together.

Alarm Controller Operation Manual

SPECIFICATIONS:	
Rated Voltage:	240V 50Hz +/- 5%
Electrical Supply:	16A single phase dedicated circuit – RCD protected
Operating Conditions:	5°C to 40°C
Minimum Cable Size:	2.5mm^2 (increase as necessary to allow for voltage drop)
Aerator Motor Power:	86W or 130W (depending on required air flow)
Pump Motor Power:	0.15kW

1.0 INTRODUCTION

The Bio Treat Alarm Controller provides power distribution, monitoring and remote alarms for the Bio Treat waste treatment system. The Alarm Controller consists of two main components – the control unit and the remote alarm plate.

2.0 OPERATION

The aerator runs continuously to provide oxygen for the wastewater treatment process. The pump is controlled by an internal float switch set to start the pump at the upper level and switch the pump off at the lower level.

3.0 CONTROL UNIT

The control unit provides 240 distribution to the air blower and pump through two 240V sockets on the lower side of the unit. Power to the unit is supplied by a 240V flexible lead that is plugged into a local GPO. Also provided by the control unit is the electronics required to monitor the alarm conditions and send the data to the remote alarm plate. Two air tubes are also provided for sensing of high water and air pressure loss. The only other connection is to the remote alarm plate through the cable marked “Alarm Cable”.

4.0 REMOTE ALARM PLATE

The remote alarm plate provides audible and visual indication of high water, air fault and power loss states in the Bio Treat waste treatment system.

4.1 Power Alarm:

The remote alarm plate features a backup battery that provides the unit with power even in the event of a power failure at the treatment plant. The power LED will be lit when the power is OK. In the event of a power failure the alarm will sound and the power LED will blink once every 2 seconds. The backup battery is charged whenever there is power supplied and will last up to 12 hours during a power loss.

4.2 Air Fault Alarm:

When the aerator and associated air piping are functioning properly the Air Fault LED will remain off. If the air pressure drops below a set threshold for more than 30 seconds, the Air Fault LED will light and the alarm will sound.

4.3 High Water Alarm:

If the water level in the treatment plant reaches the high level point, the High Water LED will light and the alarm will sound immediately.

4.4 Audible Alarm:

When there is an alarm condition within the treatment plant the buzzer on the remote alarm plate will sound. The audible alarm can be silenced at any time by pressing the Mute button but the muted state will only last for 12 hours before the alarm will begin to sound again.

Note that the mute button can be pressed even when in the mute state so that the mute time will be extended to 12 hours from that time (thus the mute button can be pressed before going to bed to prevent the alarm sounding during the night).

The muted state will also be reset if another alarm occurs. The alarm will automatically clear itself once the fault condition is rectified.

4.5 Power Switch:

The remote alarm plate also features a power switch to disconnect the backup battery. This can be accessed by removing the switch plate surround and using a pen or small screwdriver to actuate the switch located in the bottom right corner. Switching to the left connects the battery and switching to the right will turn it off. Note that the remote alarm plate will still operate correctly when power is supplied from the treatment plant but if the switch is off the backup battery will not be charged and in the event of a power loss the remote alarm plate will fail to operate.

5.0 CONNECTIONS

The remote alarm plate connects via the two-core insulated cable marked "Alarm Cable". This connection is polarity independent and it does not matter which wire connects to which terminal on the remote alarm plate. The remote alarm plate can be connected up to 100m away from the control unit by wiring a suitable extension.

The alarm connections are a safe low voltage however care still needs to be taken that good connections are made and that the joins are well insulated as connection problems can interfere with the alarm signal and cause problems with the remote alarm plate. The alarm connection cable must be rated to 240V 75°C in order to comply with AS3000 electrical wiring standards.

The air blower and pump are simply plugged into the 240V sockets on the bottom side of the control unit and the pressure tubes are connected to the appropriate points in the plant. The tubes can be identified by checking which pressure switch the tube connects to on the circuit board inside the alarm controller unit.

Note that the control unit contains no user serviceable components and if the warranty seal is broken then warranty will be void. Return to the manufacturer for repairs.

Circuit and Wiring Instructions

WARNING! All electrical warranties will be invalid unless the electrical work is carried out by a licensed electrician and done in accordance with the SSA wiring specifications AS3000.

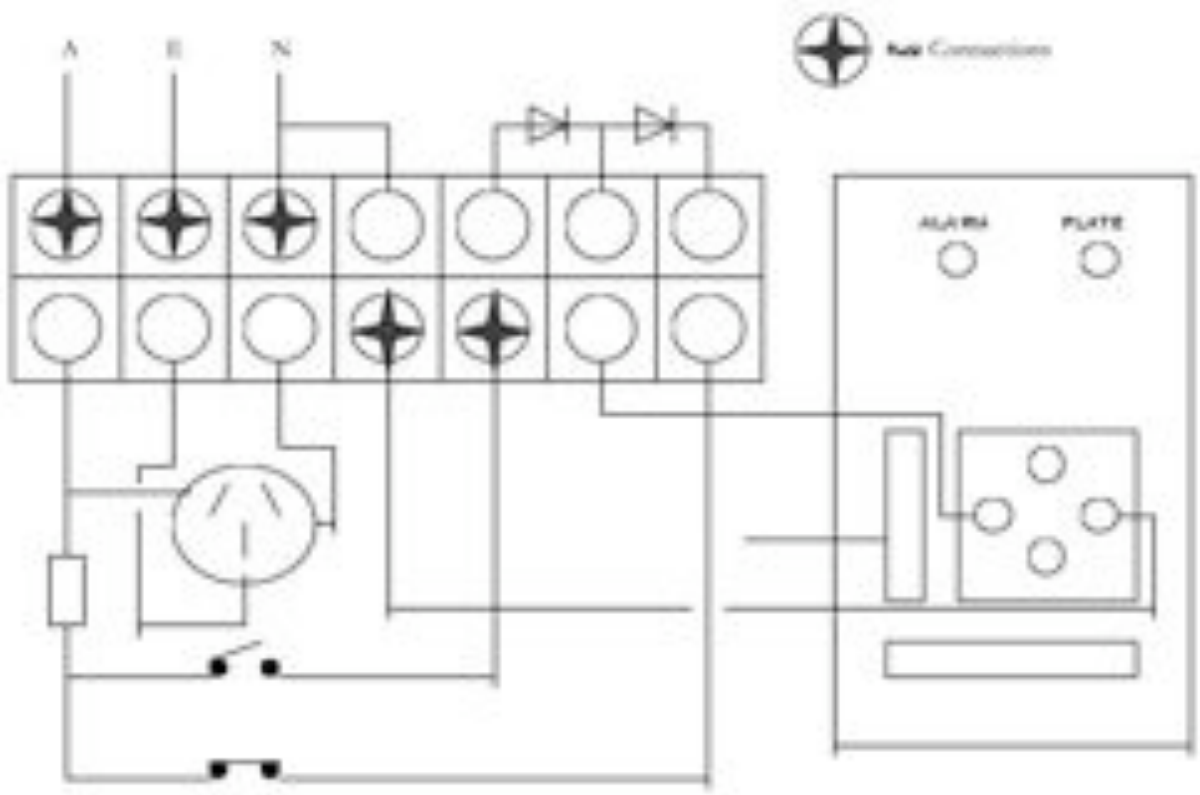
POWER SUPPLY BETWEEN THE HOUSE AND THE CONTROL BOX UNDER THE BLOWER COVER.

This circuit should consist of an active, earth and neutral in 2.5mm conductor size. It should be protected by a 20 AMP (max) circuit breaker or a 16 AMP re-wire fuse.

INTERNAL ALARM PANEL CONNECTION BETWEEN THE HOUSE AND THE CONTROL BOX ON THE TANK

This connection should be done using 1.0mm twin cable from the control box to the alarm panel. Field connections are marked inside the control box. Refer to wiring diagram below for further details.

NB: It is important that the owner should be consulted as to their preferred positioning of the Alarm Panel. Ideally it should be in the kitchen or in some area which is used regularly.



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Updating Our Records

In order to help us with the correct servicing of your unit, it would be appreciated if you could please complete the following and return it back to us at PO Box 6044, Yatala DC QLD 4207

Mr/Mrs/Ms: _____

Postal Address: _____

Physical Address: _____

Home Phone: _____

Mobile Phone: _____

Work Phone: _____

Notes: _____

_____

ACCESS:

It is a condition of this agreement that the customer will:

a) Provide the company such access as the company from time to time requests to the places where the system is installed

b) Ensure free access to all inspection points on the system and electrical box. Any soil and debris or other material must be cleared by the customer prior to the time of services.

If you have access restrictions to your property please contact us and will discuss this with you.

Call out fees may apply if we are called out between your scheduled services.

I/We hereby accept the above terms

_____ _____

SIGNATURE DATED

AGREEMENT

This agreement shall come into force upon receipt by the company of the acceptance duly signed and dated by the customer together with the full maintenance fee payable. Until then there shall be no agreement but only an offer by the company, which may be revoked at any time.

TERM

The term of this agreement shall commence on the date that the signed and dated acceptance and the maintenance fee is received by the company and shall expire on the date which is twelve (12) months from the date of commencement EXCEPT that where this agreement is to renew a prior such agreement for a further successive term and the signed and dated acceptance and maintenance fee is received by the company then the date of commencement of this agreement shall be the day next following the last day of the term of the prior agreement. The company shall attend at the site during normal working hours four times during the twelve (12) month term of this agreement at intervals of not less than two (2) months and not greater than four (4) months to inspect the plant and to perform the maintenance work 'periodic service' PROVIDED that the company shall not be liable for any non compliance with the provisions of this clause where such non compliance is caused by bad weather, strikes, suppliers' failure to supply materials or the inaccessibility of the site. Some systems require only once a year servicing.

MAINTENANCE WORK

One each periodic service the company will perform the following work:

a) Adjust the air intake where necessary
b) Monitor and maintain the balance of the purifiers
c) Replace the supply of the disinfecting agent
d) Test water quality of the site
e) Report to the governing bodies as discreted

NB The following work is NOT included:

a) Cleaning out of any tank or compartment/s
b) Parts and labour for any repairs and/or additions or modifications to any part of the system. (Parts and labour charged extra at current prices and rates)

ADDITIONAL WORK

If at the customers request the company carries out the work to the system other than that specified, then the customer shall pay the company's reasonable additional charges for work done and materials supplied. Also the customer shall pay the company's reasonable charges for work and materials in respect of work which is specified in the maintenance program where the need for such work and materials result from the customer's failure to ensure compliance with any operating instructions, suggestions, or recommendations or from negligent or willfully damaging actions of any person or from the system being required to bear a work lead which is extraordinary for its design or from earthquake, fire, flood, storm, lightning, tempest or land slip or from persons not authorized by the company interfering with the system in any way, or from the customer's failure to comply with this agreement or any agreement pursuant to which the company or any other person installed the system. Such reasonable charges shall be in addition to the price paid by the customer on acceptance of this quotation.

CLEANING OUT OF SEPTIC TANK/S OR COMPARTMENT/S

The company shall advise the customer if any septic tank/s or compartment/s require cleaning out to ensure the proper operation of the system and upon request by the customer, the company shall undertake such clean out at the customer's expense PROVIDED always that if the customer does not cause a prompt and proper clean out to be undertaken then the company will not be liable for any inadequate performance of the system and the provisions of clause 5 hereof shall apply in respect of any further work made necessary due to the customer's failure to effect such clean out.

ACCESS

It is a condition of this agreement that the customer will:

a) Provide the company such access as the company from time to time requires to the place where the system is installed
b) Ensure free access to all inspection points on the system and electrical box/es. Any soil and debris or other material must be cleared by the customer prior to time of services.

DISTURBANCE

The company will cause as little disturbance as practicable to lawns and gardens. It will not be responsible for replacement of earth, lawns, plants or trees.

NOT TRANSFERABLE

This agreement is not transferable to any other person without the company's written approval

WHOLE AGREEMENT

The customer acknowledges that this document comprises the whole agreement between the parties and that in entering this agreement the client is not relying on any representation or warranty that is not set out in this document.