

RESOURCE CONSENT APPLICATION  
FOR  
HOPEWELL BACKPACKER LODGE  
SEWERAGE SYSTEM UPGRADE

Applicants: Michael Jonathan Clegg and Lynley Anne Perkins  
Hopewell  
Kenepuru Road  
Kenepuru Sound  
Marlborough Sounds

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Picton

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ASSESSMENT OF ENVIRONMENTAL EFFECTS

1. Description of Proposal

Hopewell Backpackers Lodge, located at the end of the Kenepuru Road in Kenepuru Sound, has been in existence since 1954 and currently comprises:

- A 3 bedroom house with two toilets, three bathrooms and a kitchen.
- One cabin containing two bedrooms with no wet areas.
- One cabin containing three bedrooms with no wet areas.
- One cabin containing two bedrooms and one kitchen/lounge with three sinks/basins, one shower and one toilet.
- One cabin containing a lounge and kitchen area with one sink..

The lodge is capable of sleeping 18 people plus the owners family in the main house.

The current sewerage system comprises one septic tank and leach drain system which is very old and in need of upgrading.

The proposal is to install a modern wastewater treatment facility provided by Gould GT Systems of Palmerston North. This system requires that the effluent be transported to a sub-surface, drip disposal field well away from any streams or foreshore. (See attached system description report from Gould GT Systems.) In selecting a system we have deliberately

FILE No.:	
OFFICER:	
DATE RECV'D	25 FEB 2002
MARLBOROUGH DISTRICT COUNCIL	

exaggerated the levels of wastewater to avoid installing a system that would then be required to operate close to a maximum level.

## 2. Description of Any Possible Alternative Location or Method

As there is no existing public sewerage scheme in the area, the options considered are limited to:

### 2.1 Domestic Septic Tanks

It would be possible to install a domestic septic tank for the main house, one for the cabin with the shower/toilet/kitchen sink and lounge area with the kitchen sink. Because of the proximity of the buildings to the foreshore, there are limited areas in which to site septic tanks and provide an adequate network of leech drains. Further, any discharge would occur far too close to the foreshore and, even if this were permitted, would be contrary to our own environmental beliefs.

### 2.2 Aerated Septic System

Install a series of up to five septic tanks in-line with one tank having an aeration unit to facilitate the aerobic breakdown of the effluent. Mitigating against this system are the space such a number of tanks would require, the likelihood of some residual smell, the high cost of the system, the high maintenance requirements, site considerations with respect to lifting large concrete tanks into place and the questionable quality of the treated effluent.

### 2.3 Gould GT System

This system is selected because the installers are of considerable experience, are able to design an appropriate system at reasonable cost, the system fits within the confines of the site, the treated effluent is of a high standard and they have full maintenance contracts to keep the system running over the long term.

### 2.4 Leach drains vs Effluent Disposal Field

There are two options for discharge of the treated wastewater, leach drains and disposal field.

Mitigating against the use of leach drains is the site itself. The whole property is close to the foreshore and some of the buildings even encroach on the foreshore reserve and are rated by DOC. A gravity-fed septic system must be placed lower than the buildings with the leach

FILE No.:	
OFFICER:	
DATE REC'D	25 FEB 2002
MARLBOROUGH DISTRICT COUNCIL	

drains being lower again. There simply is not enough space to allow for this within the existing site. Further, we do not wish to be party to anything that will potentially affect the foreshore, as close-proximity leach drains would do.

The only available option is, therefore, a field disposal system. This system will pump the treated effluent to a paddock some 110 metres from and approximately 20 vertical metres above the centre of the complex. The system is designed to leak at a specified rate into the subsoil and has a return line taking excess wastewater back to the primary treatment tank.

### 3. Assessment of the Actual or Potential Effect on the Environment

#### 3.1 Impact on Neighbouring Waterbodies

(Refer attached site plan)

##### Existing Waterbodies

- One creek that runs approximately 1000 metres from its' spring source to the sea and forms one boundary to the property.
- Kenepuru Sound.

There are no groundwater bores in the area.

The only creek water intake is the one the supplies Hopewell. This intake is approximately 30 vertical metres above the top of the proposed disposal field.

#### 3.2 Effects on Existing Waterbodies

##### The Creek

The disposal field consists of 10 parallel 50 metre lines spaced 2 metres apart and will therefore cover a rectangular area measuring 20 metres x 50 metres. This rectangle will begin 30 metres away from the creek and run away from the creek. There will be no effect on the creek as the wastewater will leach into the soil, evaporate into the air and be transpired by the plantings over the field. Therefore, there is very little possibility that there will be any leakage into the creek system. The top edge of the rectangle is approximately 80 metres from the creeks' outlet into the sea and there is no possibility of water usage being required along that distance.

FILE No.:	
OFFICER:	
DATE RECV'D	25 FEB 2002
MARLBOROUGH DISTRICT COUNCIL	

## Kenepuru Sound

The disposal field rectangle will have its bottom edge approximately 60 metres from and approximately parallel to Kenepuru Sound. Again, there will be no impact on the Sound as all wastewater will have been transpired well before reaching the sea.

Further mitigation of any possible environmental effects will be achieved by:

- The regular maintenance of the treatment facility by Gould GT Systems under our maintenance contract with them thus ensuring the highest quality of wastewater treatment.
- The use of only environmentally and septic tank-friendly cleaning products from [ecostore.co.nz](http://ecostore.co.nz). This will reduce or eliminate phosphates and protect the system bacterium ensuring a consistent, high quality of wastewater treatment.

### 3.3 Effects on Receiving Environment

(Refer attached site plan)

The disposal field will be located in a sloping paddock that lies between the lodge and the creek boundary, beginning approximately 110 metres from and 20 metres above the lodge.

The paddock is covered in a variety of grasses suitable for grazing animals. The disposal field area will also be planted out in a variety of native, evergreen trees, plants and shrubs, as per the enclosed recommendations, to assist in the transpiration of the wastewater. The paddock will be subdivided into four smaller paddocks to enable rotational grazing of sheep. This will enable the creation and preservation of a quality herbage layer.

The soil profile is:

0 - 200mm	Topsoil/organic matter layer
200mm - 800mm	Clay/rotten rock
800mm - on	Increasing rotten rock

A full contour map of the proposed site is attached.

The adverse effects on the receiving environment will arise from:

- Installation of the drip lines.

Possible adverse effects are:

FILE No.:	
OFFICER:	
DATE RECV'D	25 FEB 2002
MARLBOROUGH DISTRICT COUNCIL	

- Soil compaction from machinery
- Damage from excavation
- Excess Water discharge

These effects will be mitigated by using a mini, tracked digger to spread the weight over a greater area and minimise the effect of compaction. Also, instead of excavating trenches for the disposal lines, we will use a small mole plough to minimise disturbance to the soil.

Excess water discharge is mitigated by using low flush toilets, low volume shower heads and spreading the load over a large area.

The beneficial effects on the receiving environment will be:

- Visual
- Landscaping
- Fertility

At present the receiving environment is an untidy, badly fenced, overgrown and relatively infertile paddock. The new disposal field will introduce water to irrigate the new plantings, nutrients to feed the soil and vegetation and the paddock will be subdivided into four small paddocks to enable rotational grazing by sheep. New fencing will complete the project. Therefore, the receiving environment will look better, the landscaping will add to the amenity value of the area and the increase in fertility will produce a more lush environment.

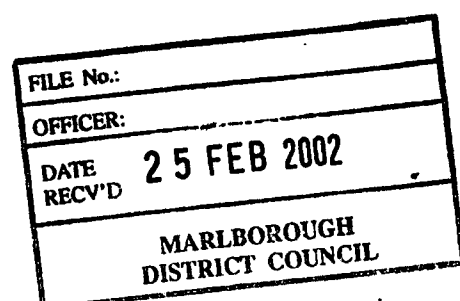
#### 4. Other Effects

##### 4.1 Effects on those in the neighbourhood

There is a neighbouring dwelling approximately 700 metres to the south of the site and another approximately 600 metres to the north of the site. The prevailing winds blow from the northwest and southeast. Both winds will take any smell away from those properties. Notwithstanding this, it is highly unlikely that the treatment facility will produce any smell whatsoever. Therefore, there will be no adverse effect on the neighbouring properties.

##### 4.2 Socio-economic effects

As Hopewell Backpackers is a small business, it does provide employment to some people in the area and will continue to do so. As well as direct employment, we contribute a large amount of business to the local water taxi operators in the area. However, it would not be possible to



continue to operate in the absence of a viable wastewater treatment facility. Therefore, any failure to be able to arrive at a cost-effective solution would have a negative socio-economic effect on the area.

Further, Hopewell currently provides a quality accommodation experience to over 1,000 overseas and New Zealand visitors each year. It belongs to a network of 298 Budget Backpacker Hostels throughout New Zealand and has a customer-generated survey rating of 90%. It is one of only 12 backpacker hostels that have a 90% or higher rating. Therefore, from a tourism point of view, Hopewell is a valuable asset for the Marlborough region. Being unable to continue to provide a quality experience will adversely impact on the area.

#### 4.3 Cultural Effects

Local Maori object to wastewater discharge into waterways and by discharging onto the land we are mitigating any cultural impact.

#### 4.4 Physical Effects

There will be no visual effects as the system is underground.

The drip lines will be installed using a small mole plough on a small, tracked digger. Therefore, the ground will be minimally disturbed by either excavation or compaction.

There will be a positive landscaping effect once the new plantings establish and the quality of the pasture in the paddock improves.

#### 4.5 Ecosystem Effects

There are no sensitive fauna or flora ecosystems in the vicinity.

The existing vegetation will benefit from the consequent addition of nutrients and water.

### 5. Maintenance Contract

The Gould Wastewater System comes with a three year maintenance contract. This allows for the servicing of the plant on a bi-annual basis. Subsequent to this we undertake to continue the maintenance contract for the life of the system.

FILE No.:	
OFFICER:	
DATE RECV'D	25 FEB 2002
MARLBOROUGH DISTRICT COUNCIL	

## 6. Summary

There will be minimal adverse effects under any categories in the RMA. The overall effects of the new system will be to:

- Remove all wastewater smells from the area.
- Improve the visual landscaping of the area.
- Continue to provide economic benefits to the area.
- Remove the effects of using harsh cleaning products as the new system will utilise only environmentally friendly cleaners thus prolonging the life of the facility, ensuring a high standard of treatment and reducing the input of phosphates into the area.
- Removing the likelihood of foreshore and waterway contamination by wastewater seepage.
- Enhancing the foreshore shellfish habitat.
- Removing the risk of people eating contaminated shellfish.

FILE No.:	
OFFICER:	
DATE RECV'D	25 FEB 2002
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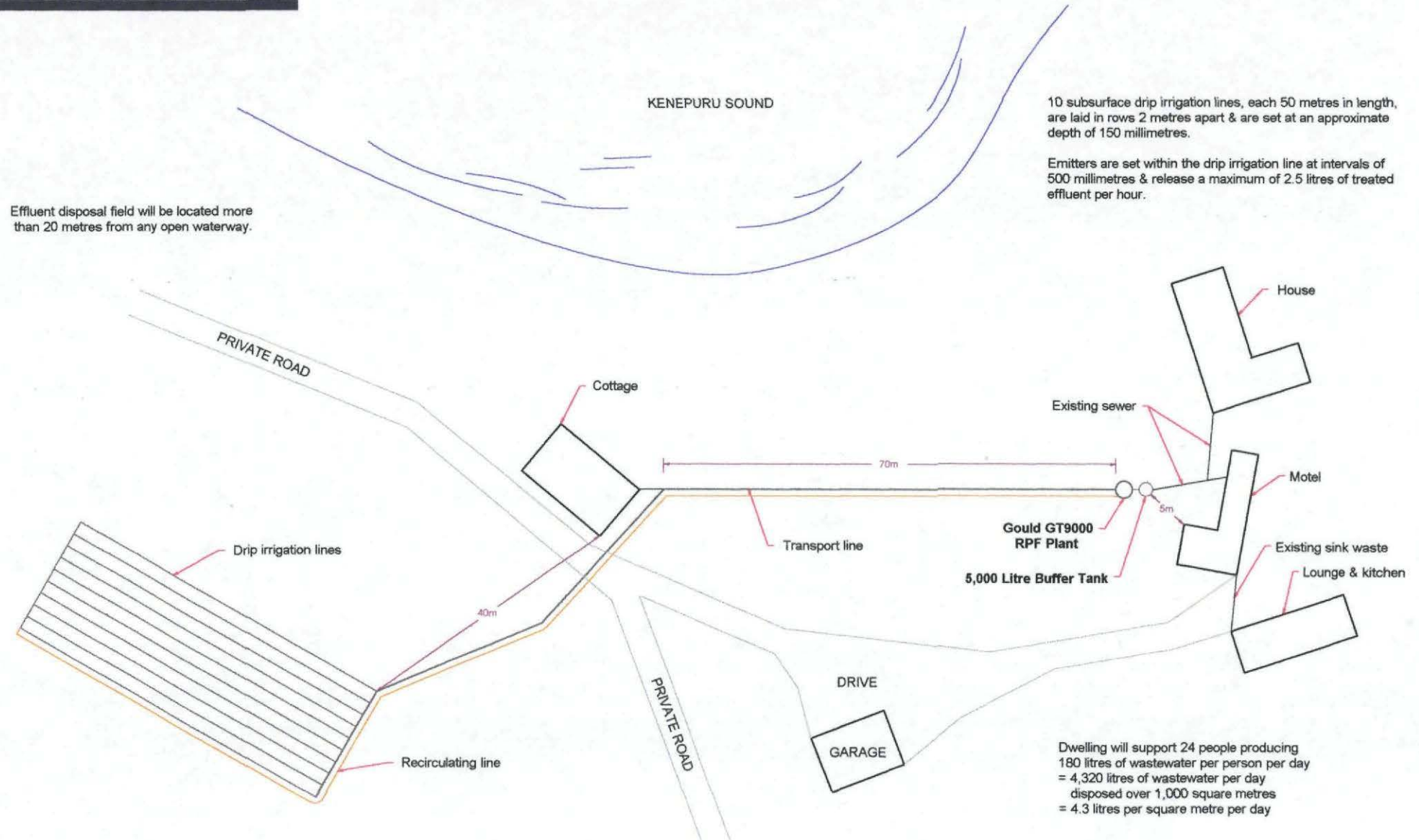


# WASTEWATER TECHNOLOGY

**FREEPHONE: 0800 253 273** 25 FEB 2002

This Gould Sewage Treatment Plant carries a three-year service contract

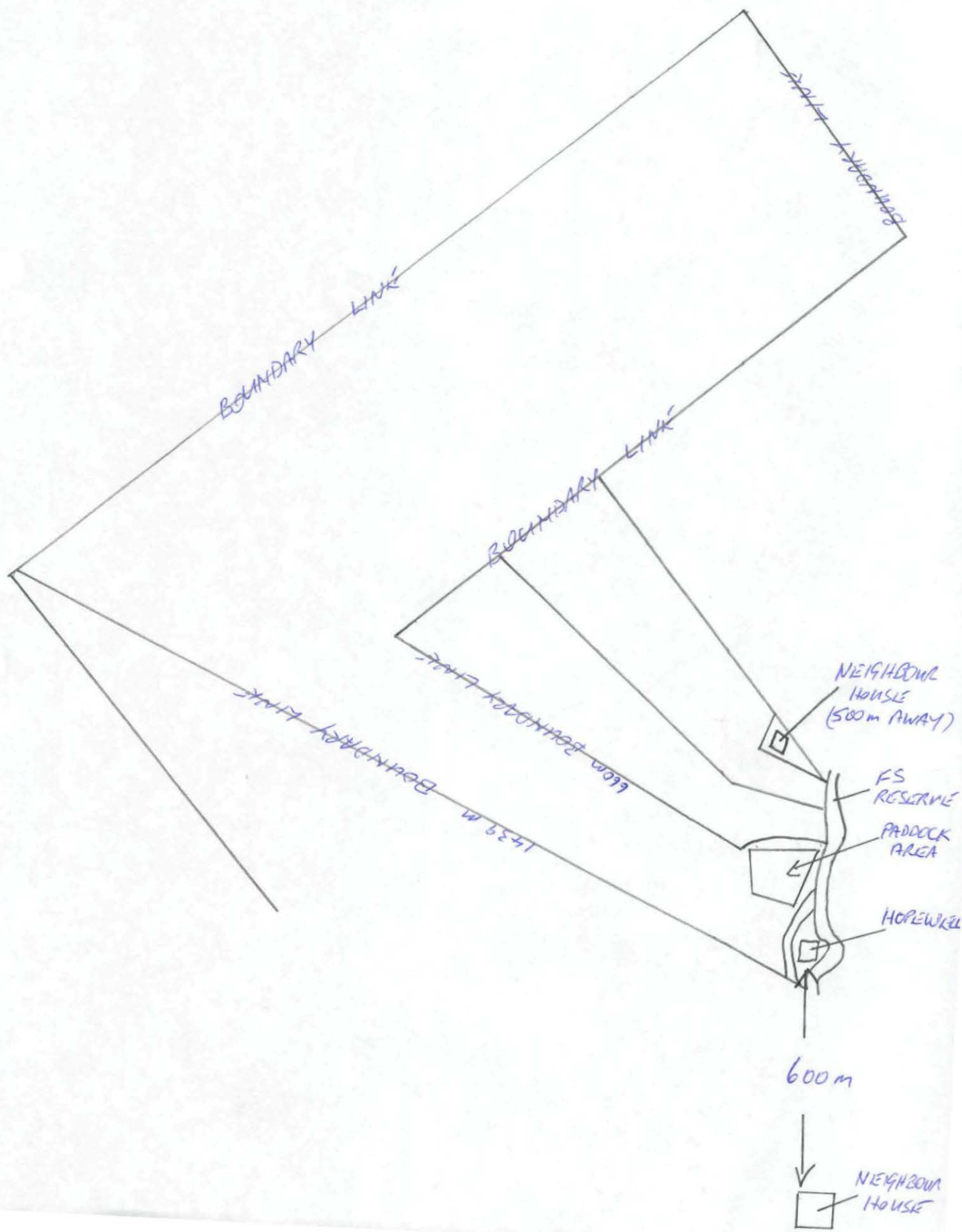
FILE No.:	
Contract:	Mike Clegg
Location:	Hopewell Kenepuru Sound
Date Drawn:	11 February 2002
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SECTION PLAN

FILE No.:	
OFFICER:	
DATE RECV'D	25 FEB 2002
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SITE PLAN

NORTH

KENEPURU SOUND

BOUNDARY CREEK

COOKIES TO EAT  
52 LEB SONS  
MAY 1994  
MAY 1994  
MAY 1994

PRIVATE ROAD

COTTAGE

HOUSE

100m

WZS

MOTEL

LOUNGE

PADDOCK AREA  
(SEE ATTACHED)

PRIVATE ROAD

CARPARK

BOUNDARY

FILE No.:	
OFFICER:	
DATE RECV'D	25 FEB 2002
MARLBOROUGH DISTRICT COUNCIL	

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DATE REC'D: 25 FEB 2002  
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NORTH

Paddock  
Area

FIELD DISPOSAL GRID

 $\leftarrow S_M \rightarrow$ 

← 20m →

30m

122m

CARRY CREEK

WINDY CREEK

PRIVATE

ROAD

COTTAGE

KENEPURU  
SOUND





# WASTEWATER TECHNOLOGY FREEPHONE: 0800 253 273

This Gould Sewage Treatment Plant  
carries a three-year service contract.

Contract: Mike Clegg  
Location: Hopewell  
Kenepuru Sound

Date Drawn: 11 February 2002

Inspection 1 before drains back filled  
Inspection 2 when system commissioned

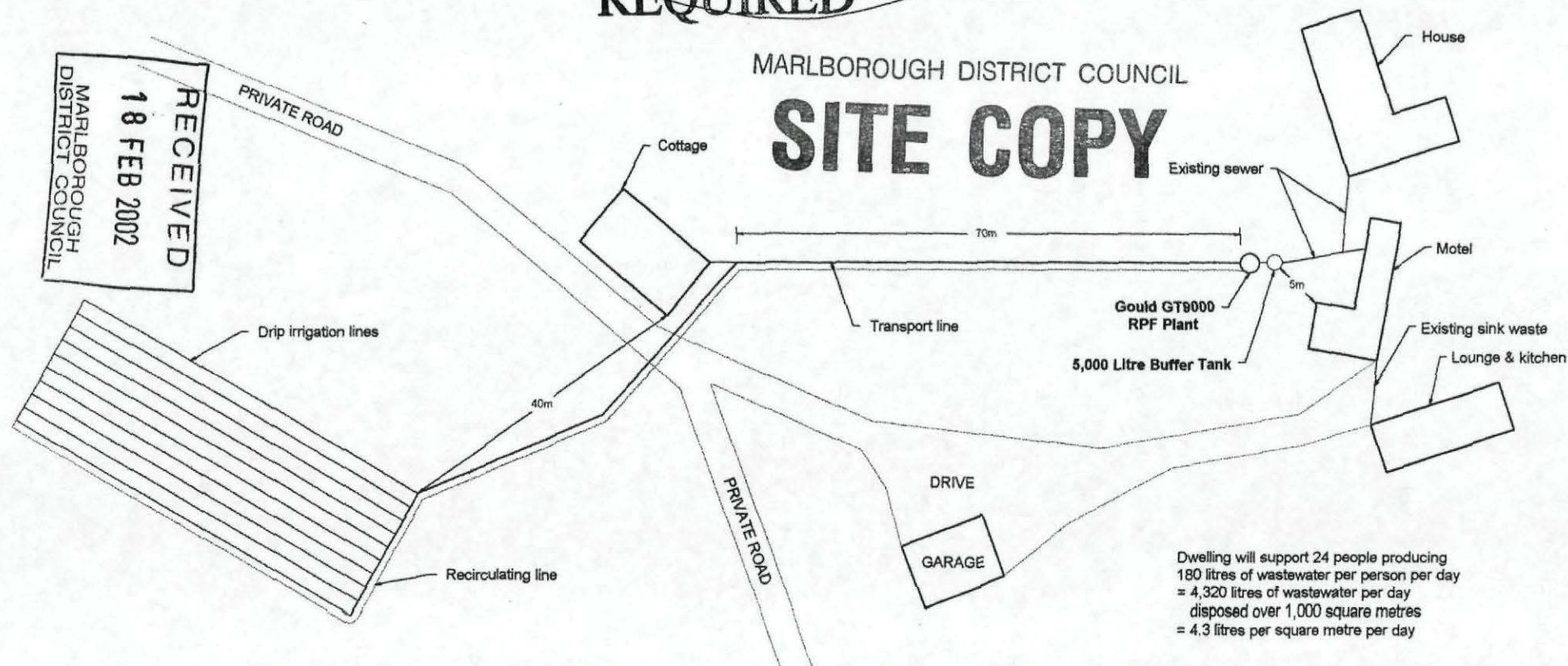
MARLBOROUGH DISTRICT COUNCIL  
Approved subject to all work complying with  
the N.Z. Building Code.

## CONTINUING MAINTENANCE REQUIRED

10 subsurface drip irrigation lines, each 50 metres in length,  
are laid in rows 2 metres apart & are set at an approximate  
depth of 150 millimetres.

Emitters are set within the drip irrigation line at intervals of  
500 millimetres & release a maximum of 2.5 litres of treated  
effluent per hour.

Effluent disposal field will be located more  
than 20 metres from any open waterway.



Dwelling will support 24 people producing  
180 litres of wastewater per person per day  
= 4,320 litres of wastewater per day  
disposed over 1,000 square metres  
= 4.3 litres per square metre per day

# Hamish Wells

Ph/Fax (06)364 6728  
Mobile 025 459 757  
PO Box 188  
215 Rangiuru Road  
Otaki

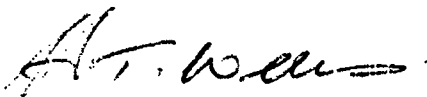
## To whom it may concern

### Regarding the construction of cement mortar septic tanks by:

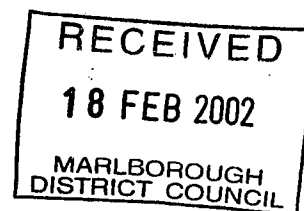
**Gould GT Systems (NZ) Ltd**  
**Works Road**  
**Longburn**

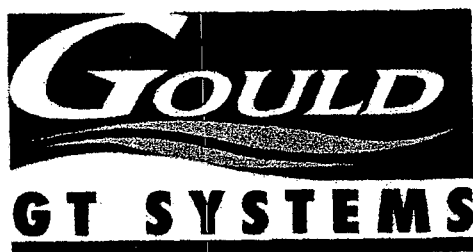
***I, Hamish Wells, Technical Member of the Institute of Professional Engineers New Zealand and Director of Hamish Wells Limited Consulting Civil Engineers certify that:***

- 1) *I have physically examined the construction methods, materials and procedures of Goulds GT Systems Ltd. With regard to the manufacture of cement mortar septic tanks.*
- 2) *Those construction methods, materials and procedures are in accordance with:*
  - a) *New Zealand Concrete Tank Manufacturers Association Specifications and*
  - b) *NZS 3106:1986 Concrete structures for the storage of water*
  - c) *AS/NZS 1546.1:1998 on site domestic wastewater treatment units Part 1: septic tanks*



**Hamish Wells**  
**TMIPENZ**  
**1/11/2000**





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## SUITABLE PLANT SPECIES FOR EVAPO-TRANSPIRATION SYSTEMS

KEY:	<u>Height</u>	<u>Durability</u>
	1. Approximately 1 metre or lower	A. Very Hardy
	2. Approximately 2 metres	B. Hardy
	3. Approximately 3 metres and taller	C. Soft

### SECTION A: TREES - GENERAL

Evergreens are preferable, although some deciduous trees do offer very good transpiration, eg:

Elms	3A
American Oaks	3A
Birch	3A
Shrubby Pussy Willow, Bitter Willow	3A
Hydrangea	2A
Cataipa	3B

### SECTION B: FRINGE TREES

Kawakawa	3A
Castor Oil Plant	2-3B
Geniostoma	3A
Hibiscus (various indigenous and exotic)	1-2B
Catalpa	3B
Trumpet Flowers (Brugsansia)	3B
Karaka	3A
Pukatea (for very wet conditions)	3A
Kohekohe	3A
Puka (Meryta)	3B
Puriri	3A
Makomako	3A
Lemonwood (pittosporus)	3A
Parapara (Shelter, at least for initial establishment, may be necessary)	3C



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#### SECTION C: PLANTS AND EVERGREENS

Canna	1B
Taro	1C
Gingers	1B
Aralias	1-2B
Rhubarb	1A
Arum Lily	1A
Rock Lily (Arthropodium)	1B
Rangiora	2A
Fushia	2A
Philodendrons (Large range)	1C
Flax (Phormium tenax)	2A
Buddleia	2-3A
Agapanthus	1B
Kaka Beak (Clanthus)	1-2A
Swan Plant	2-3A
Gunneras (Larger varieties)	1-2A
Geraniums (Larger range)	1A
Poroporo (Solanua aviculare)	2B
Begonias (Large range suitable underplant in sheltered places)	1C

#### SECTION D: GRASSES

Kikuyu (will tolerate extreme wet and dry but may be difficult to crop)  
Paspallum (will tolerate extreme wet and dry)  
Poa species  
Crested Dogs Tail (Cynesusurus Cristatus)  
Yorkshire Fog (Suitable for regularly wet areas)  
Canary Reed Grass (Phalarus Arundinacea)

#### SECTION E: GROUND COVERS

Mercury Bay Weed (Dichondra, may be useful on light soils)  
Yellow Clovers (or pseudo clovers, suitable for extra wet areas)

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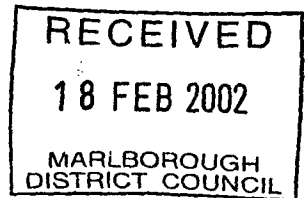
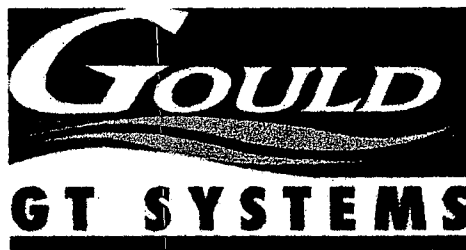
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### **Proposed Sewage Treatment Installation:**

**Client:** M J Clegg & L A Perkins  
**Site Address:** Hopewell  
Kenepuru Sound

FILE No.:	
DATE REC'D	18 FEB 2002
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### **Site Inspection Report - to be read in conjunction with enclosed site plan.**

Inspection of the soil structure within the proposed disposal area revealed that topsoil/organic layer reached a depth of approximately 200mm, and that below, at least to a depth of 800mm, is a clay/rotten rock.

These results place the property in category 4 - 5 (AS/NZS 1547:2000 On-site domestic wastewater management standards) indicating that the area has imperfectly to poorly drained soil and dictating that an evapotranspiration system is necessary in order to obtain a suitable evapotranspiration rate.

Good evaporation will occur within the topsoil, and also mediocre soakage will occur in the strongly structured clay present beneath, suggesting that the effluent disposal field could easily cope with the application of 6 - 7 litres of treated effluent per square metre per day. However the proposed treatment plant will only apply 4.3 litres of treated effluent per square metre per day.

An existing septic tank is presently pumping effluent to LPED disposal fields, which are not working correctly. Therefore the owners, who are upgrading the property in order to cater for greater visitor numbers, require a more advanced system that will cope with the increase in volume.

The design of the proposed sewage plant is based upon a maximum occupancy of 24 persons at any one time. Each occupant is expected to produce a maximum of 180 litres of wastewater each day, resulting in a total daily volume of 4,320 litres of treated effluent to be disposed of.

Ten rows of Polaris compensating drip irrigation lines; each 50 metres in length and containing emitters at intervals of 500mm will be used to form a 1,000m<sup>2</sup> disposal field. The rows will be set 2 metres apart from each other as they are on a slope of approximately 20 degrees. This configuration of the irrigation lines will result in an effluent loading rate of 4.3 litres/m<sup>2</sup>/day.

-meets reqn  
of AS/NZS 1547

The proposed sewage treatment plant is a five stage Gould GT9000 RPF (recirculating progressive filtration) system with a total capacity of 9,000 litres which will be located beside the existing septic tank. A sequencing filtration system is used within the system in the final stage of filtration providing effluent quality superior to that of aerated treatment plants.

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A buffer tank will also precede the GT9000 RPF plant to assist in processing shock loads. As indicated on the enclosed plan a total distance of 110 metres will exist between the treatment plant and the disposal field.

The drip irrigation lines will be buried at a depth of approximately 150mm using a small chain digger and will then be covered with the existing soil. The disturbed soil will return to its normal state and therefore there are no beds as such.

The owners are advised that the disposal area should be planted in small trees and shrubs in order to increase the volume of discharged treated sewage that is transpired.

The installation of a Gould RPF system includes a three-year service contract and thereafter the owner enters into a maintenance contract with Gould GT Systems (NZ) Ltd that allows for bi-annual services at an approximate cost of \$40.00 to \$50.00 plus GST per visit. These services are to be conducted only by Gould GT Systems (NZ) Ltd employees or approved installers.

The following practices are strongly recommended to assist in the continual smooth operation of the treatment plant:

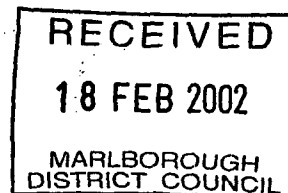
1. Minimal sanitary products and no nappies should be introduced into the tank
2. Water should be conserved
3. No strong chemicals or cleaners should be introduced into the tank, and we recommend the use of environmentally friendly products
4. The tank should be pumped out regularly, the average period between emptying is three to five years however this may vary depending on the use of a particular system.

All fixtures, vent pipes and fittings required by the building code are to be supplied and fitted by the owners' drainlayer.

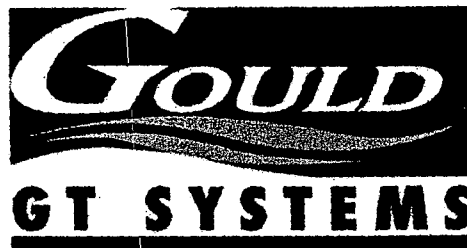
The concrete treatment plant is guaranteed for a period of fifteen years and all pumps and electrical fittings are guaranteed for three years.

  
Warrick Gould

Encl.    Site Plan  
         Plant list  
         Copy of Hamish Wells' AS/NZS report  
         Management of Your Treatment Plant



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## **Management of Your Treatment Plant**

The disposal irrigation lines that form part of your new Gould sewage and wastewater treatment plant are installed in shallow trenches and care must be taken to prevent damage to the pipes that are buried just below ground level.

No heavy stock such as pigs, cattle or horses may be allowed onto the disposal field. To keep grass down sheep or goats may be grazed on the disposal field periodically for short periods only.

Mowers and weed eaters may be used safely but no heavy vehicles can be driven across or over the disposal field. In fact the disposal area should be well maintained with regular mowing and trees and shrubs tended to.

We strongly recommend that the disposal area be planted with ground cover species and small shrubs as this significantly increases the volume of discharged treated effluent that is transpired by the plants.

When more of the discharged effluent is transpired less is left for the soil to absorb. This prolongs the life of your disposal field by increasing the long-term acceptance rate of the soil.

Conservation of water is an essential practice to observe in a rural environment and a range of water flow control devices are readily available. These devices will not only conserve the amount of water you use, but will also conserve power (there will be less water to pump) and will reduce the volume of wastewater to be processed by your treatment plant.

Your treatment plant will also require regular emptying and the average period between having the tank pumped out is 3 to 5 years. However individual use of your treatment plant may cause variation.

An electrical connection is installed as part of the treatment plant and among other items this powers a high level alarm that monitors the level of treated effluent in the final pump chamber of the plant.

This alarm may activate temporarily after large volumes of wastewater are discharged. If you have emptied a bath, completed several loads of washing or your family has had several showers one after another, the alarm light may activate until the pump is able to 'catch up'.

However if the alarm persists please contact Gould GT Systems (NZ) Ltd or your local Approved Installer immediately.

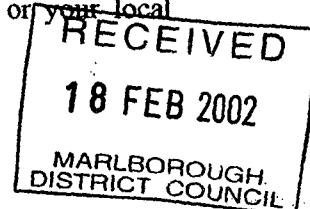
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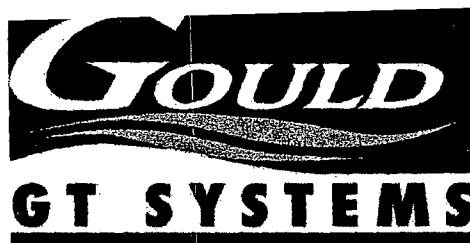
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## **Treatment Plant Operation**

### **Prohibited Discharges**

- No storm water, including roof and rainwater tank overflow and surface drainage water is to enter the tank.
- No back flush water from a swimming pool or water softener is to enter the tank.
- Any discharge or back flush from a spa pool exceeding 60 litres
- Any disposal napkins, nappies, clothing or plastic sheeting
- Any trade waste
- Any petrol or other flammable or explosive substances whether solid, liquid or gas.
- Do not use any harsh disinfectants and try to use only biodegradable products.
- Any other strong chemicals.
- Any matter or substance, which, in the opinion of the local authority, would impair the effective functioning of a septic tank or treatment plant.
- Introduction of sanitary products should be kept to a minimum.

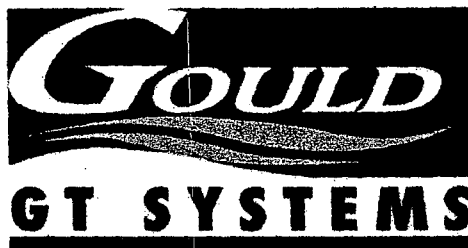
*A septic tank or treatment plant may be considered a living ecosystem as it contains beneficial living organisms. A healthy bacterial population inside your tank is necessary to breakdown and process all incoming solids, and therefore is it advisable to carefully consider and observe the above points.*

*The performance of your sewage and wastewater treatment plant can be enhanced by the observance of the above points and also of the recommended practices.*

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*Specialist Manufacturers of Wastewater Treatment Plants, Filtered Septic Tanks and Effluent Filters*

### **Caring for your new Gould treatment plant**

- Do use water conservatively.
- Be aware of your treatment plant and disposal field locations.
- Be aware of the high-level alarm function of the sewage pump.
- Have your treatment plant regularly serviced by an Approved Installer.
- Do not use strong chemicals in your home that may affect your treatment plant.
- Use alternative methods of disposing of sanitary products and disposable nappies.
- Do not direct roof or surface water into your treatment plant.
- Do not drive heavy vehicles over your treatment plant or disposal field.
- Do not build over your treatment plant or disposal field.

We have mentioned a number of times that no strong or harmful chemicals should be introduced into the treatment plant as they will kill the beneficial bacteria that process your waste.

A number of excellent environmentally friendly products are available from stores throughout the country. Your local 'organic' or 'health' shop should stock a range of household cleaners and laundry products.

Ecostore in Auckland has a huge range of ideal products including laundry liquid and powder, stain remover, cloths whitener, wool and fabric softener, pet shampoo and soap, dishwashing liquid, dishwasher powder, oven cleaner, disinfectant, multi-purpose cleaner, floor cleaner, floor wax, shower cleaner, cream cleaner, window cleaner, toilet cleaner, 'Eco System' cleaners with micro organisms, septic tank starter, spa and pool water cleaner, heavy duty hand cleaner, concrete cleaner, turpentine, furniture wax, environmentally safe paint and a comprehensive range of personal hygiene and beauty products.

You can visit their store on line at [www.ecostore.co.nz](http://www.ecostore.co.nz) or request their mail-order catalogue by telephone. The store number is 0800 432 678. If you prefer we can arrange for the delivery of a catalogue to your home.

**FREEPHONE 0800 253 273**

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