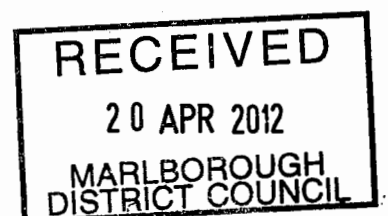




WASTEWATER MANAGEMENT REPORT

**FOR G HARRIS
MARAETAI BAY, TORY CHANNEL**

Our Ref: 25083
Date: April 2012



Our Ref: 25083

19 April 2012

WASTEWATER MANAGEMENT REPORT

G HARRIS
MARAETAI BAY, TORY CHANNEL

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1 INTRODUCTION

Our client requires a new on-site wastewater management system to replace an existing, failed system, serving a three bedroomed house.

We have been engaged to assess the site and confirm appropriate wastewater system details for the sustainable discharge of treated domestic wastewater. Our investigation included;

- a general visual inspection;
- excavation of test pits to evaluate the soil properties;
- an assessment of the potential environmental effects;
- a review of previous investigations carried out in this area.

2 SITE DESCRIPTION

The property is located at the head of Maraetai Bay and is approximately 0.3380 Ha in size and comprises of a moderate to steep north east facing slope which is covered in regenerating native bush.

There is a 20 m Sounds Foreshore Reserve to Mean High Water Springs (MHWS).

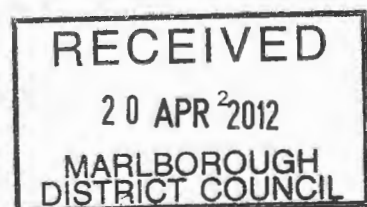


View from the East

3 DESIGN SUMMARY

• Soil Description	Clay loam
• Ribbon Length	60 – 80 mm
• Soil Category	4
• No. of Bedrooms	3
• No. of People	6 maximum
• Water Supply	Creek
• Wastewater Flow Allowance	160 l / person / day
• Daily Load	960 l

Our Ref: 25083



- Land Application Details
 - Method LPED
 - Design Irrigation Rate (DIR) 3 mm / day
 - Area (min) 320 m²
- Pump/Chamber Details
 - Size (min) 1260 litres
 - Pump Duty 85 m head at 20 litres/min.
- Treatment Type Primary (3,000 litre & 1800 l septic tanks in series, with filter)

4 **INVESTIGATION**

An investigation was carried out in accordance with AS/NZS 1547:2000 "On-Site Domestic Wastewater Management" and the Marlborough District Council "Guidelines for New On-Site Wastewater Management Systems". Refer to the site notes in the Appendix.

The moderately sloping north east face is clear of surface water and suitable for a wastewater land application system. The exposure to the sun and wind is good and the vegetation is well established regenerating native bush, providing good evapotranspiration assistance.

Three test pits were excavated by a combination of spade and logged. Refer to the site notes and logs in the Appendix.

The soil profile consisted of 100mm to 200mm of topsoil overlying a light brown, moist, firm silty clay to 600 mm.

The clay loam had a ribbon length that varied from 60 to 80 mm. The ribbon lengths indicate that the soil is a Category 4 clay loam. A 100% reserve area is available.

5 **DESIGN**

5.1 **General**

Any land application system should be kept shallow to make maximum benefit of evapotranspiration and biological activity in the upper soil. The system should also be kept as simple as is practically possible to keep costs and maintenance to a minimum.

The fourth Schedule of the Resource Management Act requires that, where the proposed land application system is likely to have a significant adverse effect on the environment, a description of the possible alternative locations or methods of land application shall be undertaken.

In this instance, we consider that there will be no adverse effects on the environment and therefore no detailed descriptions are necessary.

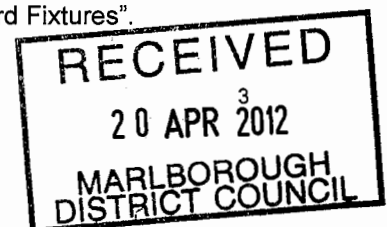
5.2 **Loading**

The existing three bedroomed dwelling has a good creek water supply. The house also has dual flush toilet cisterns and have therefore allowed for a reduction of 20 l / person / day for an 11 / 5.5 litre system.

For design purposes, the design wastewater loading is therefore 6 persons at 160 l / person / day i.e. 960 litres / day.

The wastewater allowance can be further reduced using water saving features within the dwelling but their enforceability is difficult and they are not generally recommended for design purposes.

The design wastewater loading was based on the Marlborough District Council "Guidelines for New On-Site Wastewater Management Systems for Households with Standard Fixtures".



5.3 Land Application System

Overall, primary treatment to Low Pressure Distribution System (LPED) pipe work is considered to be the Best Practicable Option.

The principle of the LPED system is to discharge primary effluent through a small diameter pipe nestled within a larger pipe to evenly distribute into the topsoil for evapotranspiration uptake by the vegetation covering the area.

Using a Design Irrigation Rate (DIR) of 3 mm / day for a Category 4 soil on slopes greater than 15°, an area of 320 m² or a line length of 320 m is required.

There are no environmental constraints which require treatment to a secondary level and therefore we do not consider it necessary to use a system which is more expensive and has additional ongoing maintenance and service requirements.

5.4 Distribution

It is proposed to distribute the treated effluent to the land application field by pump dose.

Distribution by pump ensures even loading throughout the whole field. The pump chamber should be sized for a dose load of 300 litres and an emergency storage capacity equivalent to the maximum daily load of 960 litres, making a total chamber size of 1260 litres minimum. The pump duty should be about 85 m head at 20 litres/minute flow.

5.5 Treatment

The existing 3000 l septic tank was the approved size at the time it was installed.

However, current rules require a minimum 4000 l tank and we consider the best way to achieve this is to add an additional tank in series to the end of the existing. Tanks in series require slightly more volume than a single tank due to the additional solid build up the first tank. A 1800 litre second tank is considered the minimum size.

There may be stronger odour than normal from the second tank during the first few months of start up due to the lower solids loading and the slower development of non-odorous material.

The fitment of an approved effluent filter to the outlet of the second tank is required to prevent solids exiting the tank, improve treatment performance and the buffering of peak flows.

5.6 Installation, Operation and Maintenance

Appropriate operation and maintenance of the overall wastewater system is paramount to its performance and a service contract must be in place at the time of commissioning and remain so with the approved service agent. Records of maintenance work should be made available for Council inspection and records.

Davidson Group Ltd has carried out a site investigation and design in accordance with current codes and modern practice. However, the treatment and land application systems are biological (living) processes and modifications may have to be undertaken to the treatment and/or land application system in some circumstances, such as when there is/are;

- (a) An increase in design load
- (b) Disposal of inappropriate substances to the septic system
- (c) Poor maintenance
- (d) Poor workmanship or departure from construction drawings.



We strongly recommend that the homeowner and installer read and note the information included in the Appendix and shown on the drawings to ensure ongoing good practice and maintenance.

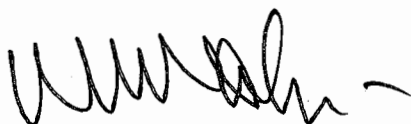
It is important that the septic tank (or the first tank of a dual tank system) is desludged whenever the scum (floating) and sludge (on bottom) occupy 2/3 of the volume of the tank. This may be every 5 – 10 years for this property.

Note that inspections by the Designer are required at the time of setting out of the new system and at completion at which time a commissioning test using fresh water will be carried out.

6 REFERENCES

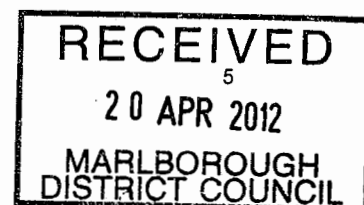
- 6.1 Crites, R and Tchobanoglous, A (1998). 'Small and Decentralized Wastewater Management Systems'.
- 6.2 ARC Environment, Technical Paper No. 58, Third Edition 'On-Site Wastewater Disposal from Households and Institutions'.
- 6.3 A.S./N.Z.S. 1546.1:2008 'On-Site Domestic Wastewater Treatment Units, Part 1: Septic Tanks.
- 6.4 A.S./N.Z.S. 1547:2000 'On-Site Domestic Wastewater Management'.
- 6.5 MDC (11 July 2005) 'Guidelines for New On-Site Wastewater Management Systems'.
- 6.6 Marlborough Sounds Resource Management Plan.

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W L McGlynn

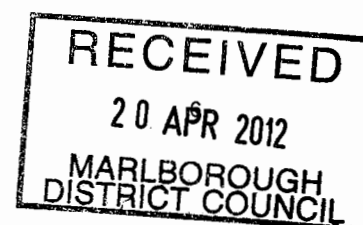
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APPENDIX

- A1. Site Investigation
 - Field Assessment Report
 - Test Pit Logs
- A2. Land Application System Design
- A3. Owner & Installer Guidelines
- A4. Drawing Numbers 25083 sheets;
 - C1 Location and Site Plans
 - C2 Typical Septic Tank Details
 - C3 Typical Pump Chamber and LPED and Distribution Details

Our Ref: 25083



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On Site Wastewater Design
Client Grant
Location Maraetai Bay
LPED Summary Sheet

Job No 25083
Sheet No 3
Name LM
Date 5.03.12

- | | | | |
|---|------------------|-------------|---|
| 1 | Septic Tank | | 4000 litres |
| 2 | Pump Chamber | Dose load | 300 litres |
| | | Reserve | 960 litres |
| | | Total | 1260 litres |
| 3 | Pump Details | Head | 17.0 m |
| | | Flow | 82 litres/min. |
| 4 | Rising Main | Type | 50 NB IDPE
50 ID |
| 5 | Sequencing Valve | Type | K RAIN 4400 |
| | | Ports | 4 |
| 6 | Submain | Type | 40 NB IDPE
38 ID |
| 6 | LPED Field | | 5.9 lines per subfield
1 m apart |
| | | each | 13.5 m max long from the centrally fed position |
| | | Holes | 3.5 mm dia |
| | | at | 2 m crs |
| | | Lateral dia | 20 NB pvc
22.55 ID |

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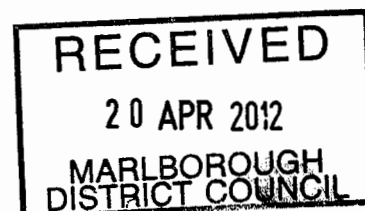


On Site Wastewater Design
Client Grant
Location Maraetai Bay
FLOW ALLOWANCES

Job No 25083
Sheet No 1
Name LM
Date 5.03.12

REFERENCES : 1 ARC TP # 58 Third Edition
 2 AS/NZS 1547:2000 "On Site Domestic Wastewater Management"
 3 ON-SITE NewZ Special Report - 97/1
 4 MDC, 11 July 2005, "Guidelines for New On -Site Wastewater Systems"

		Appliance / Fixture per Capita Daily Flow Allowance				Total per Capita Flow (l/p/d)
		Toilet	Washing Machine	Shower	Basin (kitchen, bathroom, laundry)	
1	Households with standard fixtures (11 L wc, top loading washing machine)	60	25	75	20	120
	Blackwater only	50	20	55	15	
	Greywater only	60	25	75	20	
		50	20	55	15	
2	Households with standard water reduction fixtures (11/5.5 dual flush wc, shower flow restrictors, aerator taps and water conserving automatic washing machines)	40	20	65	20	40
	Blackwater only	35	15	50	15	
	Greywater only	40	20	65	20	
		35	15	50	15	
3	Households with full water reduction facilities (6/3 dual flush wc, shower flow restrictors, aerator taps, front loading washing machine and flow/pressure control valves on all water use outlets)	20	15	55	20	
	Blackwater only	20	15	35	10	
	Greywater only	20	15	55	20	
		20	15	35	10	
Design wastewater flow per person per day						160
Number of Bedrooms						3
Equivalent Occupancy						6
Design Daily Wastewater Allowance						960
NOTES 1 Add 5 l/p/d for a bath 2 Figures in <i>[italics]</i> are for roof water supply. Other values are for creek, community and/or bore water supply						



**On Site Wastewater Design**

Client Grant
Location Maraetai Bay

Job No 25083
Sheet No 2
Name LM
Date 5.03.12

SEPTIC TANK

Daily flow	960 litres	
Minimum residence time required	24 hours	
Pump out interval required	5 years	
Sludge / scum accumulation	80 litres / person / year	
Allowance for scum / sludge	2400 litres	
Minimum tank size	3360 litres	
Let tank size be	4000 litres	(4000 litres min.)
Settling volume available	1600 litres	
Settling time available	40 hours	OK, > min. res. time

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On Site Wastewater Design
Client Grant
Location Maraetai Bay
LPED DESIGN

Job No 25083
Sheet No 3
Name LM
Date 5.03.12

1	Design Basis	Soil Category	4		
		DIR (Design Irrigation Rate)	3.00	mm/day	
		Minimum land application area (A)= Q/DIR	320.0	m ²	
		Let wetted width (WW) =	1	m	
		Total length of LPED required (L) = A/WW	320.0	m	
		No. of subfields	4		
		Lateral	NB	20 NB pvc	
			ID	22.6	mm
			max length	13.5	m
			hole dia	3.5	mm
			hole centres	2.0	m
			head req'd at end	2.0	m
		Submain	NB	40 NB IDPE	
			ID	38.0	mm
			max length	2	m
			elevation head (-ve if downhill)	-2.0	m
		Rising Main	NB	50 NB IDPE	
			ID	50.0	mm
			max length	50	m
			elevation head	10	m
Sequencing Valve	Type	K RAIN 4400			
	Min. Flow rate to activate	38	litres/min.		
2	Design Subfield	Flow variation	3.0%	OK,<5%	
		Head variation	6%	OK,<10%	
		Ideal dose vol	319.5	litres	
		Let dose vol be	300.0	litres	
		No.of doses / day	3.2		
	System head losses	Head at end of lateral	2.0	m	
		Line losses in lateral	0.7	m	
		Line loss in submain	0.1	m	
		Elevation head along submain	-2.0	m	
		Sequencing Valve	2.1	m	
		Line loss along rising main	0.6	m	
		Elevation head along rising main	10.0	m	
		Loss thru bends etc	1.0	m	
Total Head Losses	14.5	m			
3	Pump Details	Total Head, includes cham depth of at Max Flow	2	17 m 82 litres/min.	
4	Check Sequencing Valve	Min flow	38	litres/min.	
		Flow	82	litres/min.	
				OK,>min flow	

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GUIDELINES FOR INSTALLERS OF ON-SITE DOMESTIC WASTEWATER MANAGEMENT SYSTEMS

References

A.S./N.Z.S. 1546.1:2008 'On-Site Domestic Wastewater Treatment Units, Part 1:Septic Tanks'
A.S./N.Z.S. 1547:2000 'On-Site Wastewater Management'

1. GENERAL

- (a) All products and construction shall be in accordance with the relevant standards and in general the best trade practices shall prevail. If there are any questions about any aspect of the work, please contact Council in the first instance.
- (b) The Contractor shall act to protect the health and safety of staff and private persons at all times.
- (c) The Contractor must be aware of the inspection requirements of Council and/or the Engineer and the need to provide As-Built locations of the treatment and land application systems to Council and the Owner.
- (d) The Contractor should also educate the Owner about the functioning of their system, especially the maintenance requirements, and where appropriate put in place a maintenance contract for systems which rely on mechanical action in order to function properly.

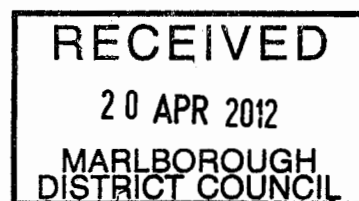
2. LOCATION OF TREATMENT AND DISTRIBUTION SYSTEMS AND LAND APPLICATION AREAS

- (a) All tanks and the land application area shall be located clear of structures to avoid the undermining of foundations. In general, a minimum clearance of 3.0 metres should be adequate but if in doubt check with Council or an Engineer.
- (b) The Contractor must be aware of the required separation distances of tanks and/or the land application area to surface water (ponds, water courses and drainage paths), wells and/or boundaries.
- (c) Treatment systems should be sited with consideration for access by desludging trucks.

3. GOOD CONSTRUCTION TECHNIQUE

(a) Treatment and Distribution Systems

- (i) When working with existing systems or carrying out maintenance tasks, measures shall be in place to ensure staff are adequately protected from contact with wastewater.



- (ii) All tanks located in areas where high seasonal groundwater levels are known to occur shall be weighted down or provided with anchorage in accordance with clause 3.2.2 of A.S./N.Z.S. 1546.1:2008.
- (iii) The Contractor shall allow to carry out any treated effluent testing required by Council. Samples should be taken once the system has been in operation for approximately three months. In a holiday home situation, testing should be done in January.
- (iv) All pump chambers shall be vented. The commissioning of pumped distribution systems shall consist of at least the following:
 - A check of pump out and emergency storage volumes (reserve capacity equivalent to the peak daily flow should be provided).
 - Three drawdown tests.
 - Testing of the operation of controls and alarms.
 - Checking of uniform flow throughout any pressurised distribution network prior to covering over.

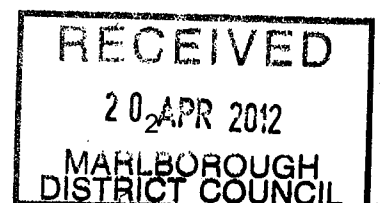
(b) Land Application Area

The following excavation techniques shall be observed so as to minimise the risk of damage to the soil.

- (i) Plan to excavate only when the weather is fine. Pudding, where washed clay settles on the base of the trench to form a relatively impermeable layer, must be avoided.
- (ii) Avoid excavation when the soil has a moisture content above the plastic limit. This can be tested by seeing if the soil forms a "wire" when rolled between the palms.
- (iii) During wet seasons or when construction cannot be delayed until the weather becomes fine, smeared soil (smooth) surfaces should be raked to reinstate a more natural soil surface taking care to use fine tines and only at the surface.
- (iv) When excavating by machine, fit the bucket with "raker teeth" if possible, and excavate in small "bites" to minimise compaction.
- (v) Avoid compaction by keeping people off the finished trench or bed floor.

In particular for trenches and beds:

- (vi) If rain is forecast, cover any open trenches to protect them from rain damage.
- (vii) Excavate perpendicular to the line of fall or parallel to the contour levels.
- (viii) Ensure that the inverts are horizontal or sloped at not more than 1 in 200.



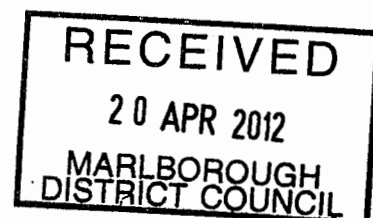
DAVIDSON GROUP LTD

HOW TO GET THE BEST FROM YOUR ON-SITE WASTEWATER MANAGEMENT SYSTEM

Helpful Information for Homeowners/Occupiers

1. GOOD HOUSEHOLD PRACTICES

- (a) Reduce solids disposal to treatment tanks as much as possible including food scraps, fats, grease etc. Scrape all dishes before washing and do not install a waste disposal unit unless the wastewater system has been specifically designed to carry the extra load.
- (b) Do not put any of the following down sinks, drains or the toilet.
 - (i) Oil/grease from e.g. a deep fryer;
 - (ii) Stormwater and any drainage other than wastewater generated in the house;
 - (iii) Petrol, oil and other flammable/explosive substances;
 - (iv) Household, garden, garage and workshop chemicals (e.g. pesticides, paint cleaners, photographic chemicals, motor oil and trade waste);
 - (v) Disposable nappies and sanitary napkins.
- (c) In order to keep the bacteria working in the tank and in the land application area:
 - (i) Use biodegradable soaps;
 - (ii) Use a low-phosphorus detergent;
 - (iii) Use a low-sodium detergent in the dispersive soil areas;
 - (iv) Use detergents in the recommended quantities;
 - (v) Do not use powerful bleaches, whiteners, nappy soakers, spot removers and disinfectants including cold water washing products.
 - (vi) Do not put chemicals or paint down the drain.
- (d) Conserve water. Less water means a lower load on the treatment system and land application area, with ensuing improved and more reliable performance. Conservation measures include:
 - (i) Installation of water-conservation fittings such as low water use toilets, spray taps and water saving automatic washing machines;
 - (ii) Taking showers instead of baths;



- (iii) Only putting the dishwasher or washing machine on when there is a full load.
- (e) Space washing machine and dishwasher use out to avoid overloading the wastewater system. Try not to do a large amount of washing in any one day and avoid running the washing machine and dishwasher at the same time.
- (f) For the physical protection of treatment and land application systems:
 - (i) The treatment unit must be protected from vehicles;
 - (ii) Pedestrian traffic routes should not cross effluent field areas;
 - (iii) No vehicles or heavy stock should be allowed on effluent fields;
 - (iv) Deep rooting trees or shrubs should not be grown over absorption trenches or beds.

2. **MAINTENANCE**

(a) **General**

The appropriate maintenance of your treatment and land application systems will be the key to their effective and reliable performance. Please contact a drainlayer or Council if you are unsure about anything or require further advice.

(b) **Septic Tanks**

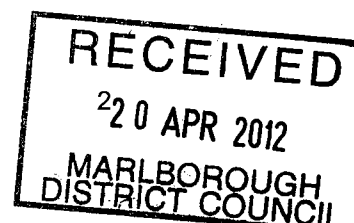
Any septic tank (primary wastewater treatment unit) will need to:

- (i) Be cleaned out regularly i.e. every three to five years or when scum and sludge occupy two thirds of the volume of the tank (or first stage of a two-stage system). All scum, sludge and septage material must be disposed of in an approved manner. Pump chambers should be cleaned out at the same time if necessary;
- (ii) Have grease traps cleaned out regularly (typically three monthly or as required);
- (iii) Keep the access cover of the septic tank exposed;
- (iv) Have any outlet filter inspected and cleaned, normally at the same time as septic tank cleaning. Remove the cartridge and rinse off with a garden hose, being careful to rinse all septage material back into the tank. It is not necessary that the cartridge be cleaned "spotless". The biomass growing on the filter aids in the pre-treatment process and should be left on the cartridge.

(c) **Secondary Treatment Systems**

Improved treatment systems, such as aerated plants or media systems, require specialist maintenance and must be looked after under a maintenance contract. Owners should ensure that they are aware of the manufacturers/suppliers recommended maintenance intervals and that a contract is in place for routine checks of mechanical components.

These systems will typically have a primary treatment stage which should be treated as in (b) above.

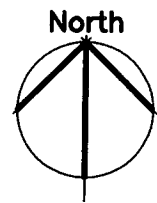


(d) Effluent Field

Reliable performance from your effluent field (including shallow trenches or beds, drip or LPED irrigation fields) will be aided by regular attention including one or more of the following depending on the type of system:

- (i) Keep any surface water diversion drains upslope of and around the land application area clear to reduce absorption of rainwater into trenches or beds;
- (ii) Evapotranspiration and irrigation areas should have their vegetation maintained to ensure that these areas take up nutrients with maximum efficiency;
- (iii) Ensure pumps, alarms and sequencing valves are operating correctly;
- (iv) Clean disc filters or filter screens on irrigation-dosing equipment periodically by rinsing back into the primary wastewater treatment unit;
- (v) Irrigation systems which discharge wastewater that has only been treated by a septic tank and filter (i.e. LPED systems), must be flushed through with clean water before and after any significant period of non-use.
- (vi) Regular maintenance of the treatment system (as per manufacturers recommendations), especially for aerated and media-type systems.





LOT 1
DP 6474

LOT 1
DP 9454

MARAETAI BAY

SOUNDS

MHWS

WALKING TRACK
FORESHORE

20 NB UPVC (3.5 Ø
HOLES AT 2m CRS)
IN 65 Ø NOVAFLO
(1m MIN CRS)

40 NB
LDPE
DELIVERY
PIPES

K-RAIN 4400 (4 PORT)
SEQUENCING VALVE

50 NB LDPE
PUMPING LINE

EXISTING 3000
ltr SEPTIC
TANK

NEW 1300 ltr
(MINIMUM) PUMP
CHAMBER WITH
DAVEY D42A/B
SUBMERSIBLE PUMP

EXISTING
HOUSE

100 Ø NOVAFOIL
STORMWATER
DISCHARGED TO
TRACK WATER TABLE

RESERVE

EXISTING SEWER
EFFLUENT FIELD TO
BE ABANDONED

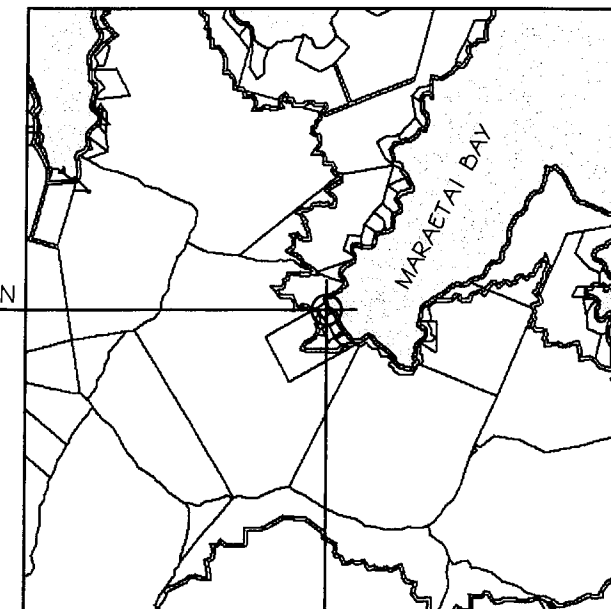
RECONNECT BATHROOM
& KITCHEN WASTE TO
SEPTIC TANK

NEW ADDITIONAL
1800 ltr SEPTIC
TANK WITH
EFFLUENT FILTER

LOT 1
DP 6122

PAPER ROAD

LOT 1
DP 9454



5432080mN

1694870mE

LOCALITY PLAN (NZTM)
1:50000

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B - TEST PITS ADDED - 19/14/2012 - TA

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G & J HARRIS
MARAETAI BAY, TORY CHANNEL
NEW WASTEWATER SYSTEM

site & locality plans

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
04/12	A3	25083	C1	B
DES	WLM	DRN	TA	CK
REF				

SITE PLAN
1:500

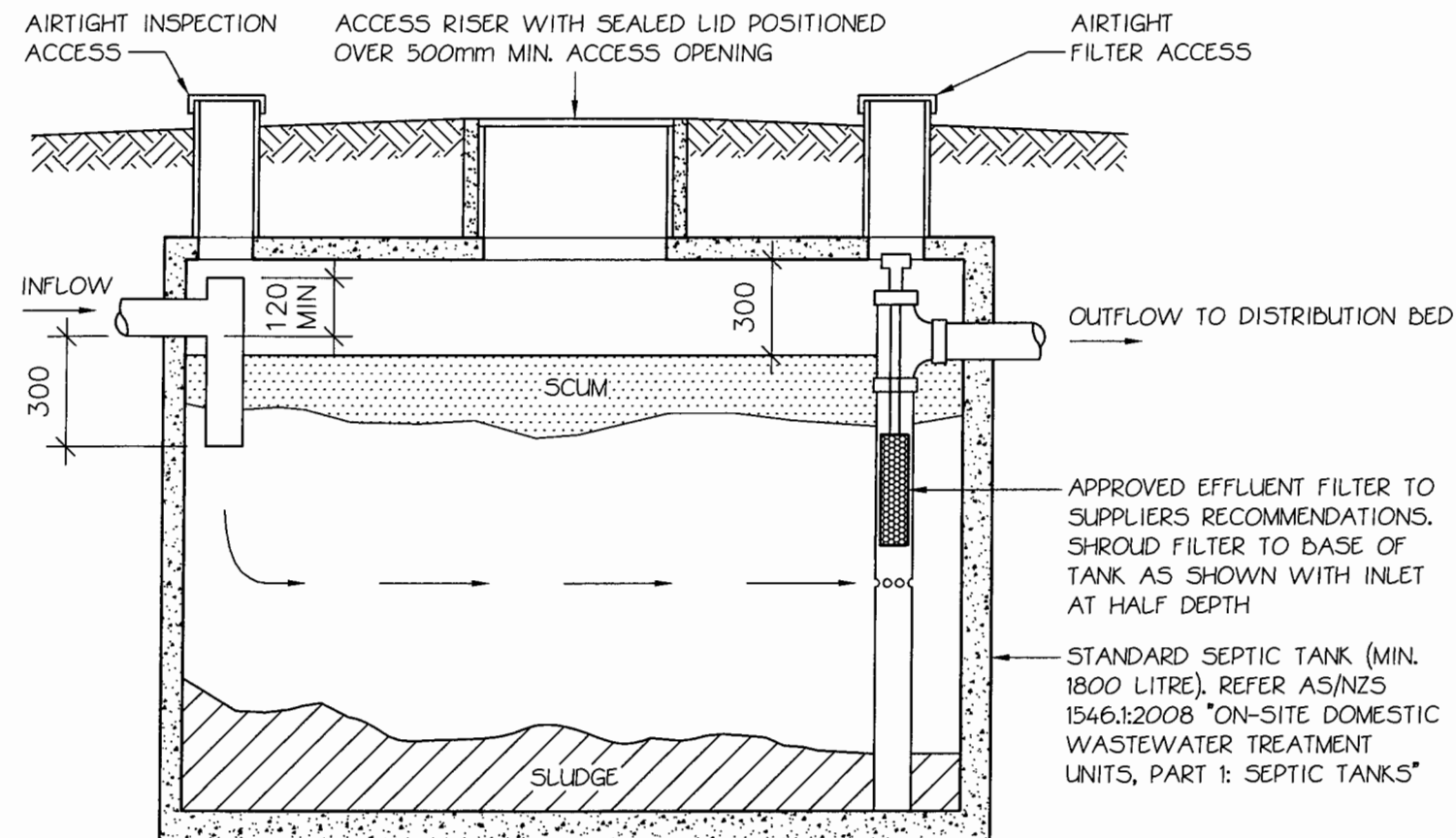
0mm

100mm

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SUGGESTED OPERATION AND MAINTENANCE SEPTIC TANK

- 1.) THE INFLOWING HOUSEHOLD SEWAGE SHOULD NOT CONTAIN ANYTHING OTHER THAN HUMAN WASTE AND TOILET PAPER, AND FOOD MATERIAL SUCH AS MAY GO DOWN A KITCHEN SINK DRAIN. GARBAGE GRINDERS ARE NOT RECOMMENDED, ALTHOUGH THEY NEED NOT BE FORBIDDEN. MORE FREQUENT DESLUDGING OF THE SEPTIC TANK MAY BE NEEDED IF A GARBAGE GRINDER IS USED. NORMAL USE IN THE HOUSE OF SOAPS, DETERGENTS, BLEACHES, PLUMBING FIXTURE CLEANERS, DRAIN CLEANERS AND DISINFECTANTS WILL NOT HARM THE FUNCTIONING OF THE SEPTIC TANK OR THE SOIL ABSORPTION SYSTEM.
- 2.) PROHIBITED DISCHARGES TO THE SEPTIC TANK INCLUDE:
OIL/GREASE FROM E.G. A DEEP FRIER.
STORMWATER AND ANY DRAINAGE OTHER THAN SEWAGE GENERATED IN THE HOUSE.
PETROL, OIL, AND OTHER FLAMMABLE/EXPLOSIVE SUBSTANCES.
HOUSEHOLD, GARDEN, GARAGE, AND WORKSHOP CHEMICALS (E.G. PESTICIDES, PAINT CLEANERS, PHOTOGRAPHIC CHEMICALS, MOTOR OIL AND TRADE WASTE).
DISPOSABLE NAPPIES AND SANITARY NAPKINS.
- 3.) SEPTIC TANKS NEED TO BE PUMPED (SEPTAGE REMOVED WHEN THE SLUDGE AND SCUM HAVE ACCUMULATED TO THE EXTENT THAT THE CLEAR SPACE (BETWEEN SCUM AND SLUDGE) HAS A VOLUME LESS THAN 1500 LITRES). SEPTAGE REMOVAL MAY NEED TO BE DONE AS OFTEN AS EVERY THREE YEARS BUT AT NO LONGER THAN FIVE YEAR INTERVALS.



TYPICAL CROSS SECTION
NTS

EFFLUENT FILTER

- 1.) THE OUTLET FILTER SHOULD PREVENT DISCHARGE OF SUSPENDED PARTICLES $> 3\text{mm}$ AND ENSURE $\text{TSS} < 100\text{g/m}^3$.
- 2.) THE SEPTIC TANK SHOULD BE PUMPED PRIOR TO REMOVAL OF THE FILTER TO PREVENT ANY SOLIDS FROM ESCAPING TO THE TRENCHES WHEN THE CARTRIDGE IS REMOVED.
- 3.) THE FILTER SHALL BE CLEANED AT THE SAME TIME AS THE NORMAL SEPTIC TANK SERVICING (3-5 YEARS).
- 4.) REMOVE THE CARTRIDGE AND RINSE OFF WITH A GARDEN HOSE, BEING CAREFUL TO RINSE ALL SEPTAGE MATERIAL BACK INTO THE TANK.
IT IS NOT NECESSARY THAT THE CARTRIDGE BE CLEANED "SPOTLESS".
THE BIOMASS GROWING ON THE FILTER AIDS IN THE PRE-TREATMENT PROCESS AND SHOULD BE LEFT ON THE CARTRIDGE.

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G & J HARRIS
MARAETAI BAY, TORY CHANNEL
NEW WASTEWATER SYSTEM

typical septic tank details

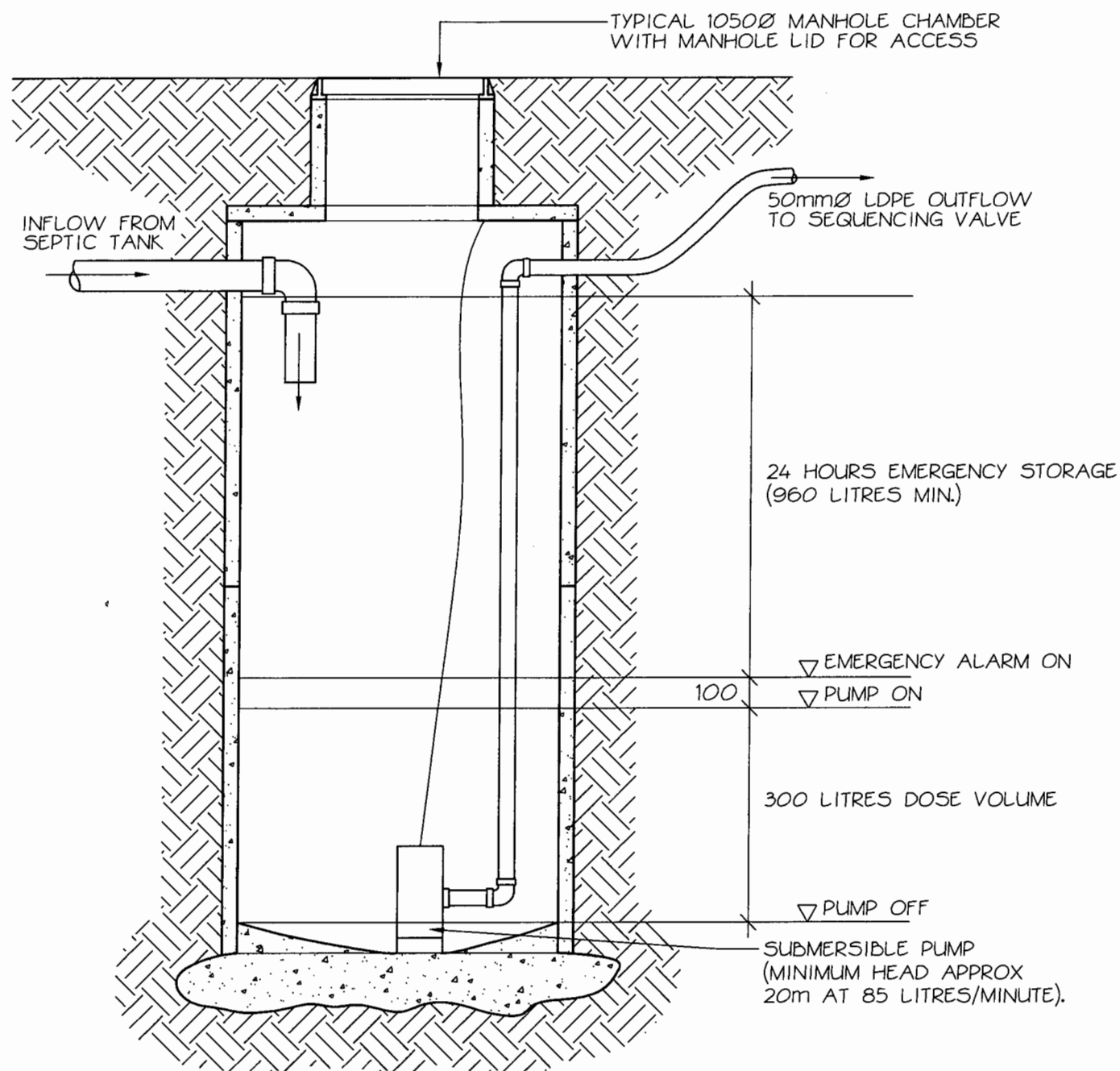
DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
04/12	A3	25083	C2	A
DES RWD	DRN B.H.	CK RWD	REF	

CURRENT AS OF: 27/05/09

0mm

100mm

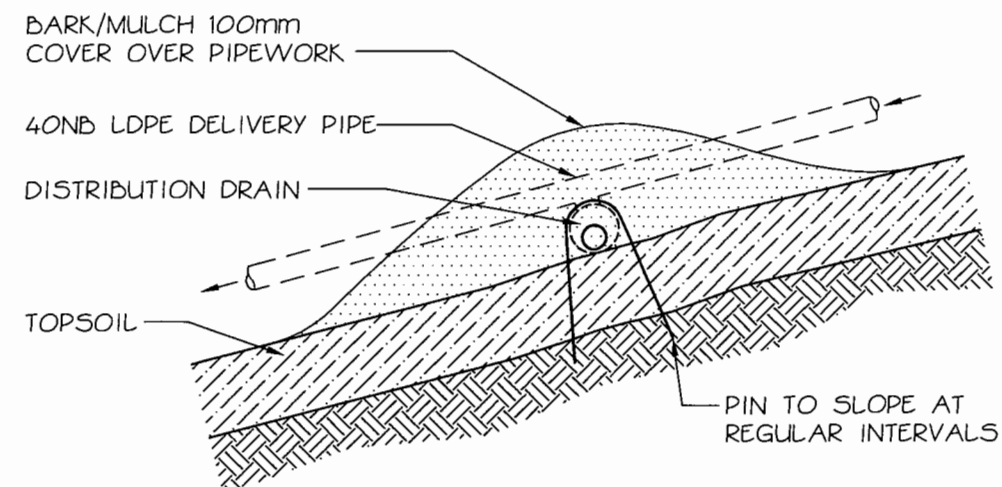
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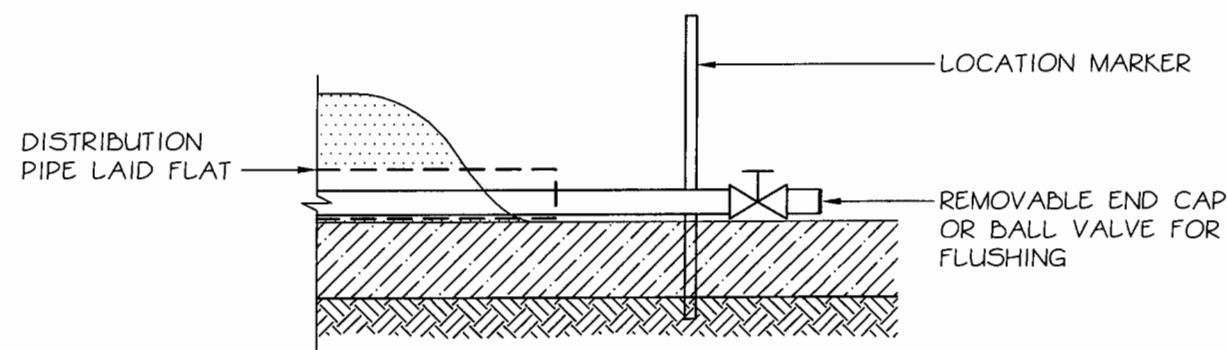
PUMP CHAMBER
1:20

NOTES:

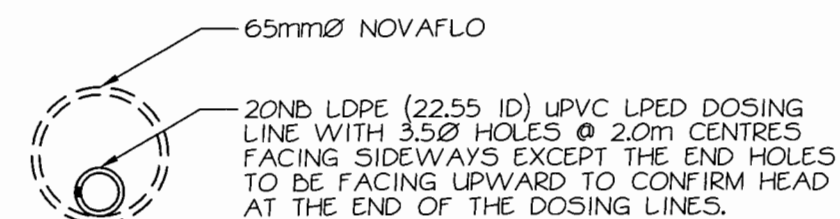
- 1.) MATERIALS AND INSTALLATION OF WASTEWATER SYSTEM TO BE IN ACCORDANCE WITH AS/NZS 1547:2000, AS/NZS 1546.1:2008 AND THE MANUFACTURERS SPECIFICATIONS.
- 2.) PUMP CHAMBER TO BE FITTED WITH A HIGH LEVEL FLOAT SET JUST ABOVE NORMAL OPERATING LEVEL. WIRED TO AUDIO AND VISUAL ALARMS.
- 3.) PUMP CHAMBER SHOWN IS AN EXAMPLE ONLY. OTHER TYPES COULD BE APPROVED, E.G. MODIFIED SEPTIC OR WATER TANK.
- 4.) OPERATION OF DISTRIBUTION SYSTEM TO BE FULLY TESTED PRIOR TO COVERAGE OF PIPEWORK. ENGINEER TO BE PRESENT.
- 5.) FIT SCREW CAP AT ENDS OF 200mm LPED FOR FLUSHING.



**LOW PRESSURE
EFFLUENT DISTRIBUTION
(LPED) ON SURFACE**
1:10



LPED END DETAIL
1:10



DISTRIBUTION DRAIN
1:5

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MARAETAI BAY, TORY CHANNEL
NEW WASTEWATER SYSTEM

pump chamber & distribution drain

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
04/12	A3	25083	C3	A
DES RWD	DRN MM	CK	REF S:\FILES\Stddwgs\STD_A3\200\A211	