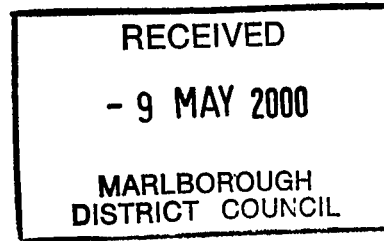




Our Ref: 6495

17 December 1999



**G & A BALDERSTONE  
EFFLUENT TREATMENT AND DISPOSAL  
OT 12, D.P. 16735, OKIWI BAY, CROISILLES HARBOUR**

1. **INTRODUCTION:**

G & A Balderstone propose to construct a new house on the above property located in Old Mill Road, Okiwi Bay.

Our brief was to assess to site conditions and likely effluent loadings and subsequently design and recommend an appropriate treatment and disposal system.

A site investigation was undertaken by this office in accordance with the draft A.S./N.Z.S. 1547 'On Site Domestic Wastewater Management', the Auckland Regional Council's Technical Publication No. 58 and the Proposed Marlborough Sounds Resource Management Plan.

2. **INVESTIGATION:**

The site was high exposure to the sun and wind. Approximately 50 mm of topsoil overlies a yellowish, firm, slightly moist clay with angular rock fragments 5-40 mm in size common.

Soil classification: 5  
Pedal content: High

The proposed disposal area is vegetated with manuka, whitey woods and young regrowth. This vegetation should be maintained and encouraged to gain maximum advantage from plant uptake of treated effluent.

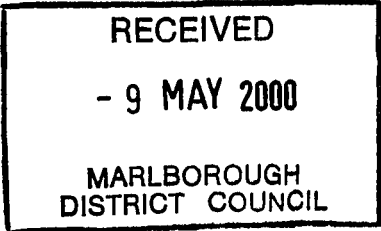
3. **ENVIRONMENTAL EFFECTS:**

3.1 **Proximity to Water Courses**

The proposed disposal field is located a minimum of 23 metres away from a watercourse to the southeast of the property which is less than the 30 metres nominal distance within which there could be an effect on the quality of surface water through its contamination by discharged treated effluent.

The clay soil however performs very well in removing bacteria from wastewater, and any effluent moving through the soil would be expected to be scrubbed clean within a few metres of the discharge point.





REF: 6495

It is our opinion that there will be no adverse effects on the environment for the effluent disposal system as proposed.

**3.2 Proximity to Other Disposal Fields**

Due to the nature of the subdivision and section sizes it is not possible to maintain the required 50 metres clearance between adjacent disposal fields. However, we do not consider that a number of properly designed and constructed disposal fields within close proximity should cause any difficulties, and in fact be any different than one large disposal field. No adverse effects can be reasonably anticipated.

**4. ASSESSMENT;**

We consider that the disposal area as shown on plan 6495 sheet C1 issue 'A' is suitable for the disposal of primary treated effluent to the ground. It is essential that the existing vegetation be retained and vegetation be restored where disturbed. The installation of two septic tanks each discharging to half of the total disposal field will simplify reticulation within the site while improving treatment performance through increased residence times. A pumped disposal system may also be used but we consider the two tank gravity system more advantageous due to lower cost and maintenance. To ensure an even distribution of effluent loading on the system, fixtures should be grouped as follows:

- Tank 1 - Kitchen sink and toilet.
- Tank 2 - Bathroom washbasin, shower and laundry.

**5. DISPOSAL SYSTEM:**

We have assessed the Long Term Acceptance Rate at 15 mm per day. We recommend that for the proposed three bedroom house with a design occupancy of five people and peak water use of of 180 litres per person per day, the effluent disposal system consist of the following.

**(a) Kitchen Sink and Toilet**

A 3,000 litre (minimum) septic tank with effluent filter on the outlet (Zabel, Biofilter or similar), distribution box and three 15 metre gravity fed shallow disposal trenches.

**(b) Bathroom Washbasin, Shower and Laundry**

A 3,000 litre (minimum) septic tank with a filter on the outlet (Zabel, Biofilter or similar), distribution box and three 15 metre gravity fed shallow disposal trenches.

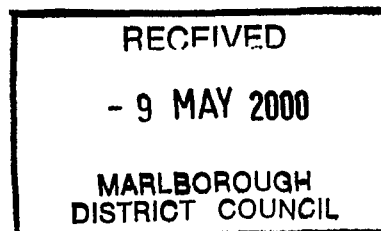
Refer to drawing number 6495 sheets C1 to C3 for further details.

It should also be noted that the septic tank treatment systems proposed will not meet the standards in the Proposed Marlborough Sounds Resource Management Plan in the following areas;

**(i) Septic Tank Compartments (2 minimum)**

This requirement is onerous and in fact the just released New Zealand Standard for Septic Tanks (AS/NZS 1546.1:1998) specifically allows single chamber tanks (Clause 3.4.2). Other information that we have indicates that the performance of a single chamber tank is equal to, or better than, a multi chamber tank of the same capacity.

REF: 6495



(ii) Quality

The quality limits in the Plan are set very high and reference information that we have indicates septic tanks in good operation are unlikely to better the BOD and SS limits and will certainly not achieve the faecal coliform limit (less than  $10^3$  per 100 ml).

However, with an effluent filter to the outlet of the tank, as we have specified, the effluent will be between the BOD/SS limits, but not the faecal coliform limit (probably  $10^3 - 10^4$ ).

To reduce the faecal coliform to less than  $10^3$  per 100 ml will likely require tertiary treatment such as ultra violet, ozone or chlorination treatment.

We therefore consider that the Plan has set a faecal coliform limit which in practical terms, for development in the Sounds, cannot be met.

6. SUMMARY:

- (a) We consider that the proposed site is suitable for the disposal of primary treated effluent to the ground.
- (b) The effluent should be treated by way of two septic tanks with filters and be disposed of by gravity through two distribution boxes to shallow trenches.
- (c) The disposal field should be located as shown on attached plan 6495 sheet C1 and vegetation be restored and encouraged over the disposal area.

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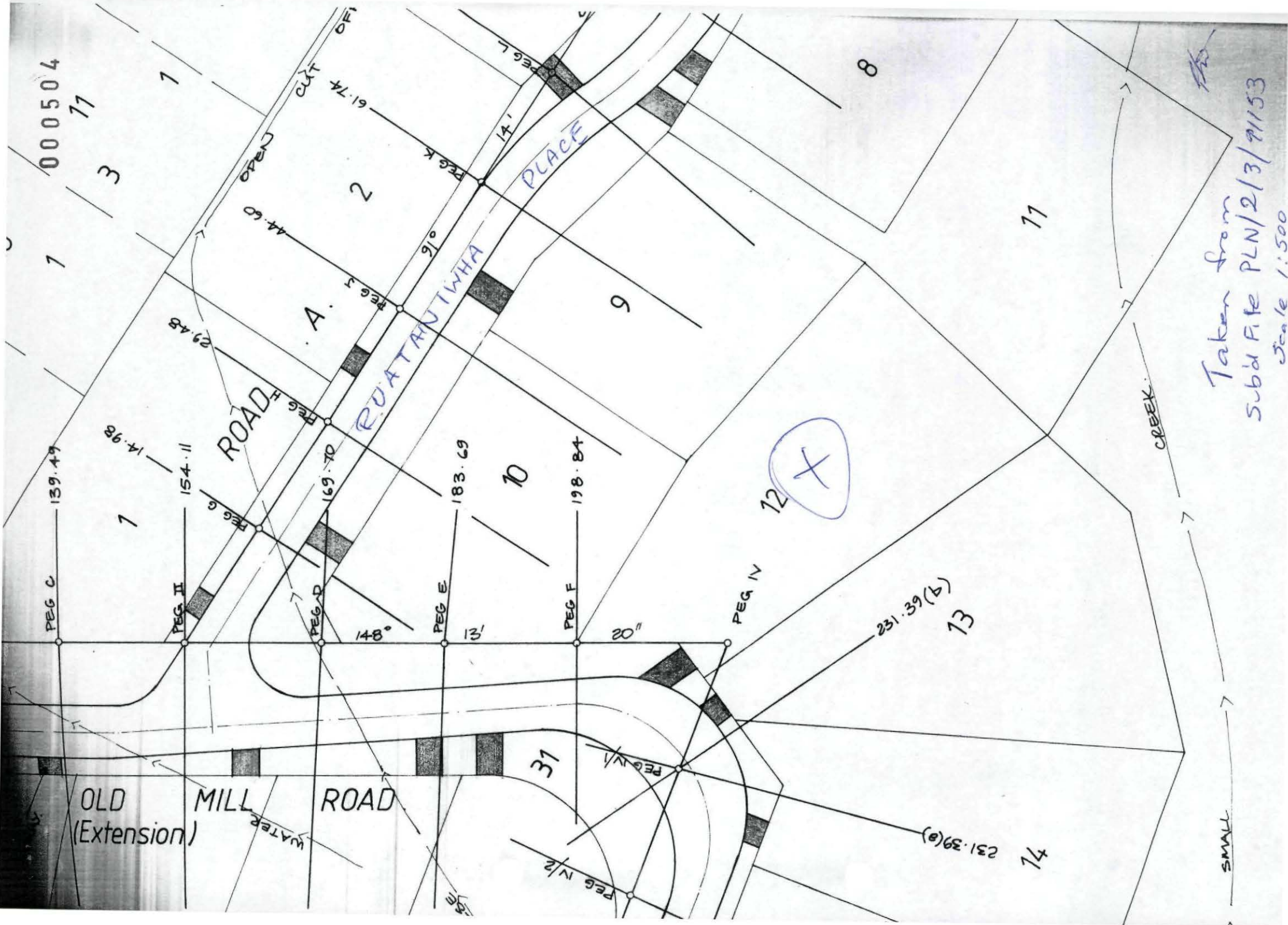


J P Bezuidenhout

pp W L McGlynn

JPB:JEN

Encl



000504  
17

Taken from  
Subd File PLN/2/3/9/153  
Scale 1:500

SMALL

OLD MILL ROAD  
(Extension)

ROAD A

ROAD B

ROAD C  
ROAD D  
ROAD E  
ROAD F  
ROAD G  
ROAD H  
ROAD I  
ROAD J  
ROAD K  
ROAD L  
ROAD M  
ROAD N  
ROAD O  
ROAD P  
ROAD Q  
ROAD R  
ROAD S  
ROAD T  
ROAD U  
ROAD V  
ROAD W  
ROAD X  
ROAD Y  
ROAD Z

RUATAHIWA PLACE

CREEK

PEG C

PEG II

PEG A

PEG B

PEG D

PEG E

PEG F

PEG IV

PEG V/1

PEG V/2

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

139.49

154.11

14.98

29.48

44.60

61.74

169.70

183.69

198.84

231.39(6)

231.39(9)

91°

148°

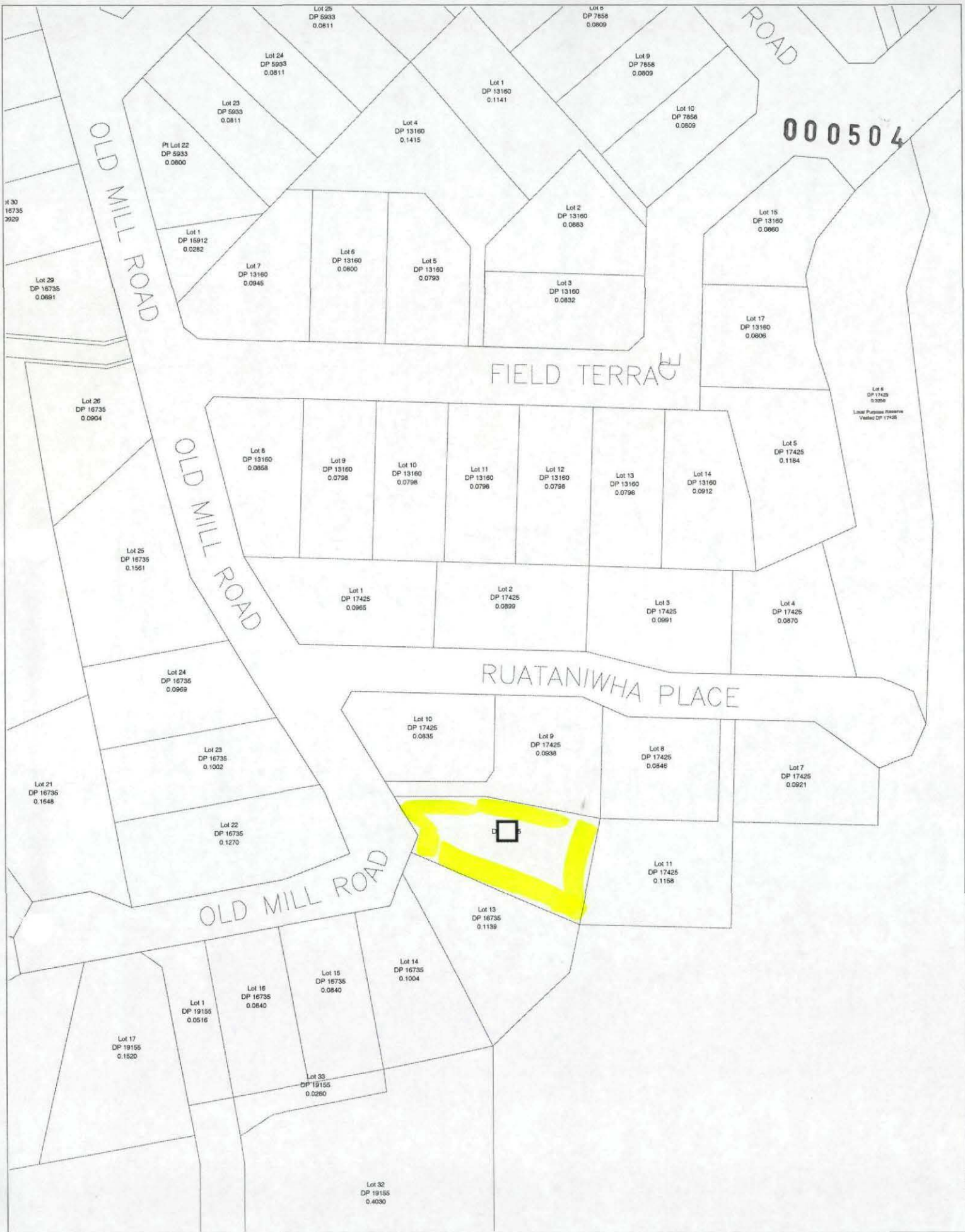
13'

20"

14'

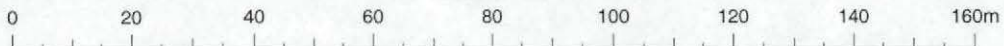
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SMALL



000504

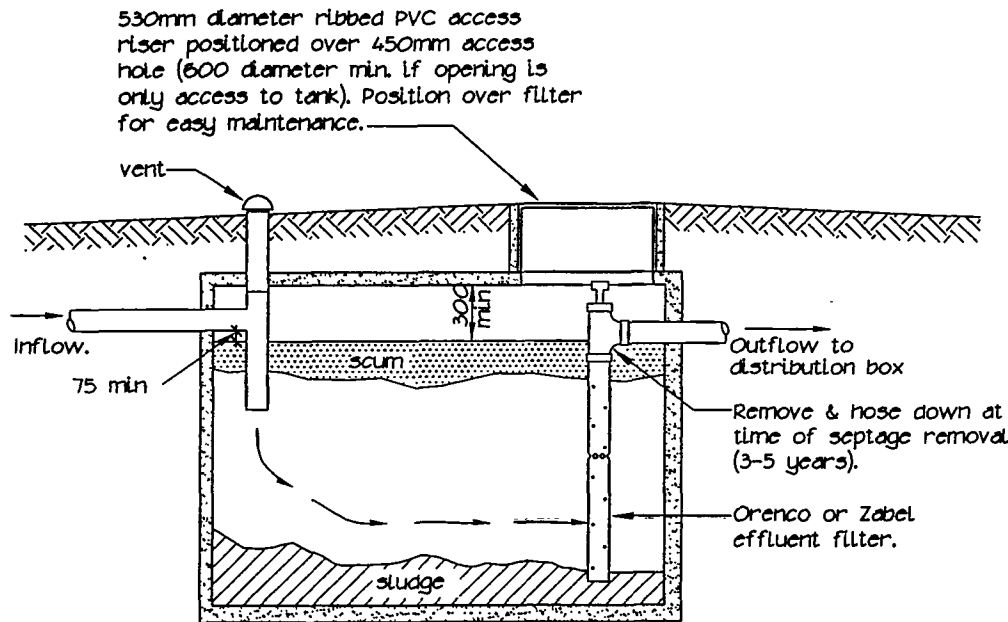
Scale 1:1260





## 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 de-sludging 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 fryer.  
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 scum layer comes to within 75mm of the bottom of the outlet tee or when sludge and scum have accumulated to the extent that the clear space (between scum and sludge) has a volume less than 1000 litres). Septage removal may need to be done as often as every three years but at no longer than five year intervals.



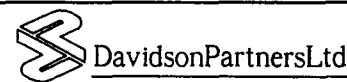
TYPICAL CROSS SECTION

1:25

Standard septic tank (min. 4500 litre). Refer AS/NZS 1546.1 "On-site Domestic Wastewater Treatment Units, Part 1: Septic Tanks".

## EFFLUENT FILTER

1. 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.
2. The filter shall be cleaned at the same time as normal septic tank servicing (3-5 years).
3. 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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AGENZ

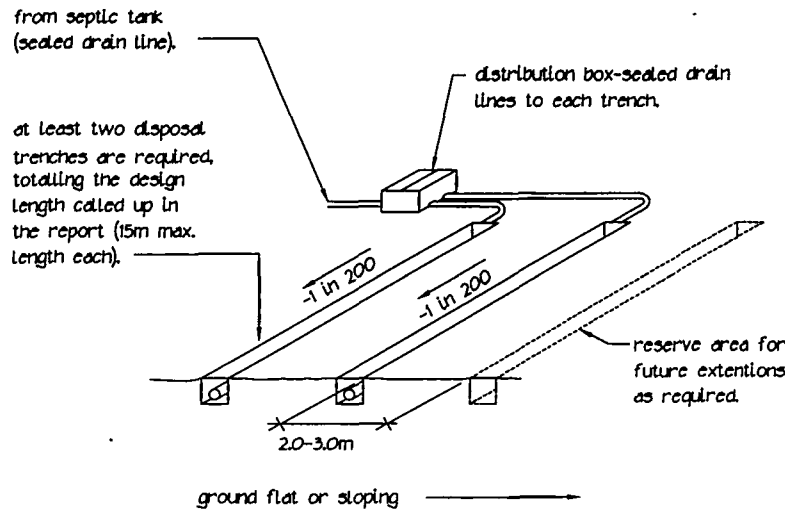
Devonson Aynson House  
4 Nelson Street, P.O. Box 288  
Blenheim, New Zealand  
Telephone 03 578 7029 Fax 03 578 7028

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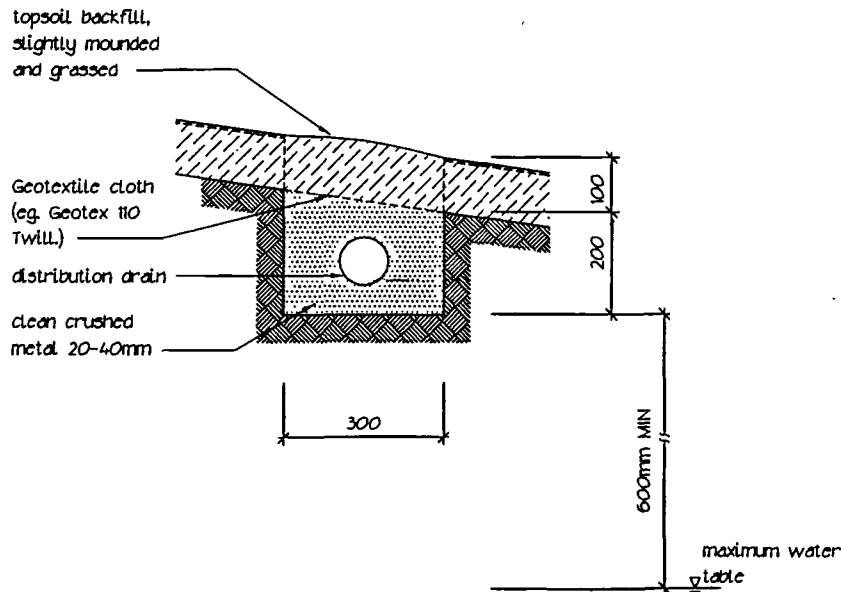
A & G BALDERSTONE  
PROPOSED RESIDENCE  
OLD MILL ROAD, OKIWI BAY

effluent disposal  
typical septic tank details

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
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DES L.M.	DRN L.R.	APP ZS	CAD C:\ACAD\4029\STD_A3	A202



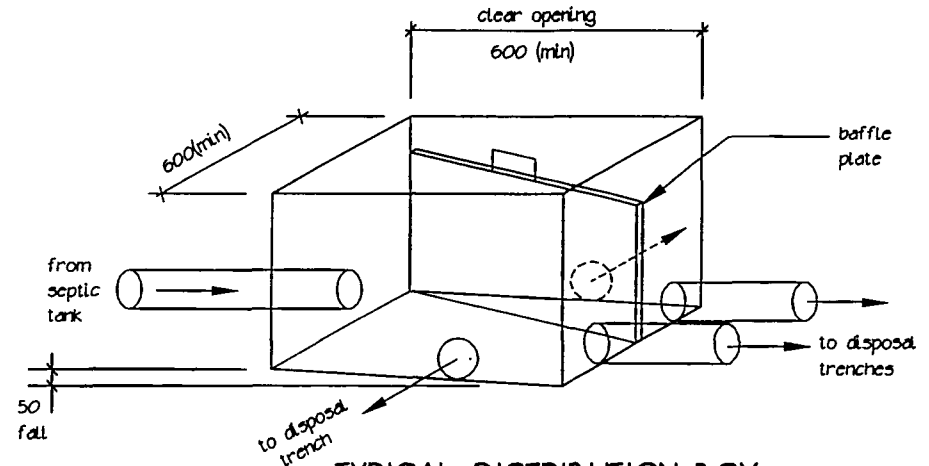
TYPICAL TRENCH LAYOUT



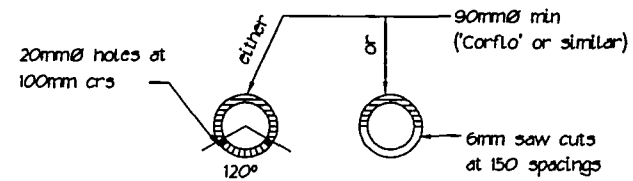
SHALLOW DISPOSAL TRENCH

NOTES-

- (1) Inlet and outlet pipes 90-100mm diameter.
- (2) Lid to be made up flush with ground level.
- (3) Construction to be of approved materials.
- (4) Baffle plate to be used for alternation of loading and resting cycles. It should be removed when system is fully loaded.
- (5) Distribution pipes to be 90mm diameter min.
- (6) Distribution pipes to be laid flat or at gradient not greater than 1 in 200.



TYPICAL DISTRIBUTION BOX



DISTRIBUTION DRAINS

(for gravity feeding only)

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 Civil Engineering  
 Building Design  
 Project Management

Davidson Aynson House  
 4 Nelson Street, P.O. Box 256  
 Blenheim, New Zealand  
 Telephone 05 578 7025 Fax 05 578 7028



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A & G BALDERSTONE  
 PROPOSED RESIDENCE  
 OLD MILL ROAD, OKIWI BAY

effluent disposal field  
 typical details

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
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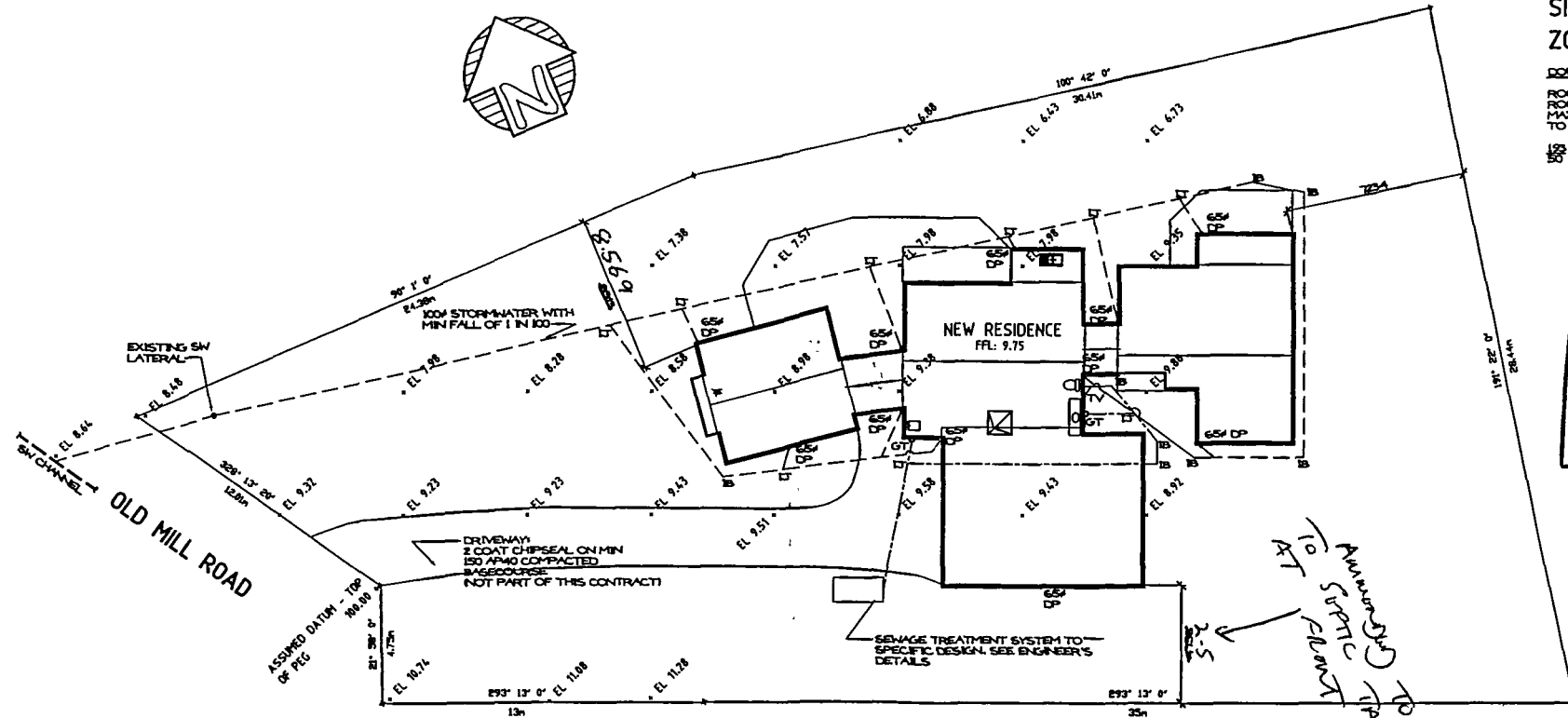
DES L.M. DRN D.M. APP  CAD C:\ACAD\4029\STD\_A3\A200

LEGAL DESCRIPTION:  
 LOT 12, DP 16735  
 SITE AREA: 1097sq m  
 FLOOR AREA: 177.43sq m  
 SITE COVERAGE: 16%  
 ZONE: SOUNDS RESIDENTIAL

DOWNPIPE CALCULATIONS:  
 ROOF AREA: 195m<sup>2</sup>  
 ROOF PITCH: 30°  
 MAX ROOF AREA PER 65NB DOWNPIPE  
 TO COMPLY WITH NZBC EL/AS1 = 50m<sup>2</sup>  
 195 / 50 = 4 DOWNPIPES

9.75  
 6.49  
 2.97

RECEIVED  
 - 9 MAY 2000  
 MARLBOROUGH  
 DISTRICT COUNCIL



ANNEXED PLAN  
 FOR STATIC  
 PLANT OF  
 2.5 GUNS  
 OUTFLOW  
 BRIDGEMINT.

5679135

7335

SITE & DRAINAGE PLAN 1:200



Alan Walters - draughtsman  
 NZOD(arch), DANZ (reg), ANZIOS  
 Phone (03) 541 8156 Wakefield

CONTRACT

3 BEDROOM RESIDENCE  
 FOR ANNETTE & GARY BALDERSTONE  
 AT OLD MILL ROAD, OKIWI BAY

ORIGINAL SCALE(S)

1:200

DRAWING TITLE

SITE & DRAINAGE PLAN

DRAWN

SJC

DATE

SEP '99

SHEET No.

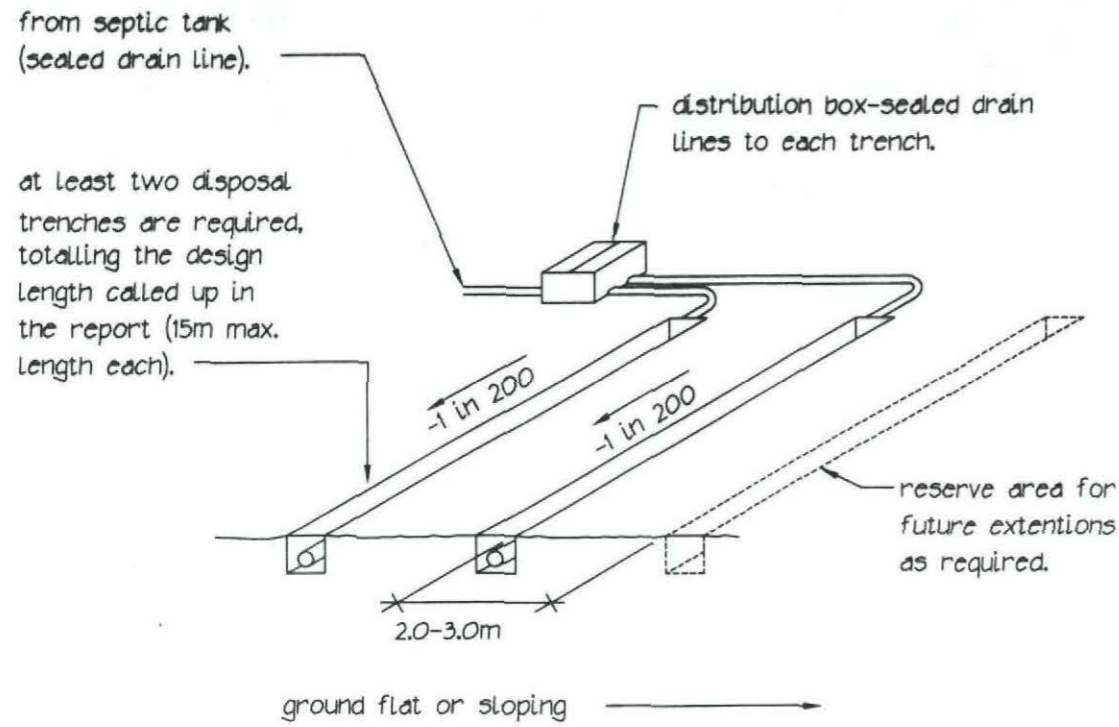
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JOB No.

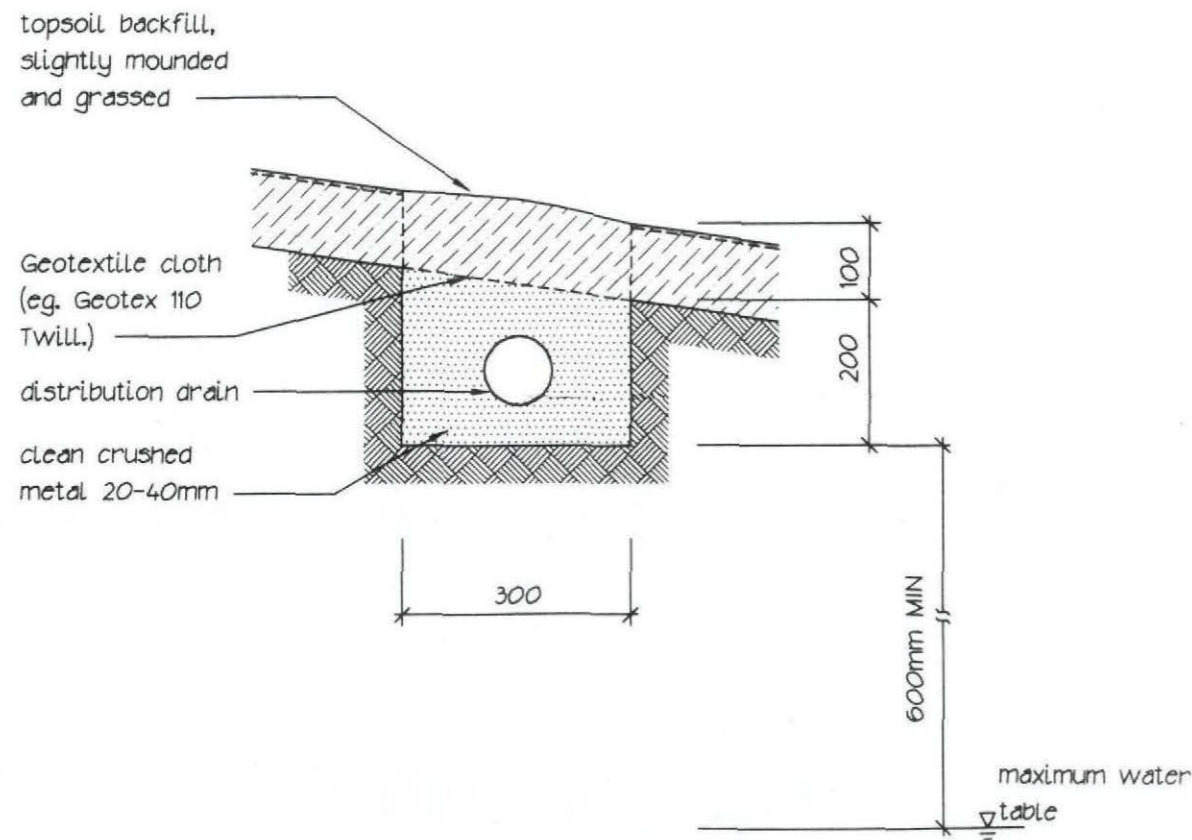
1555

AMENDED: 12th NOV '99





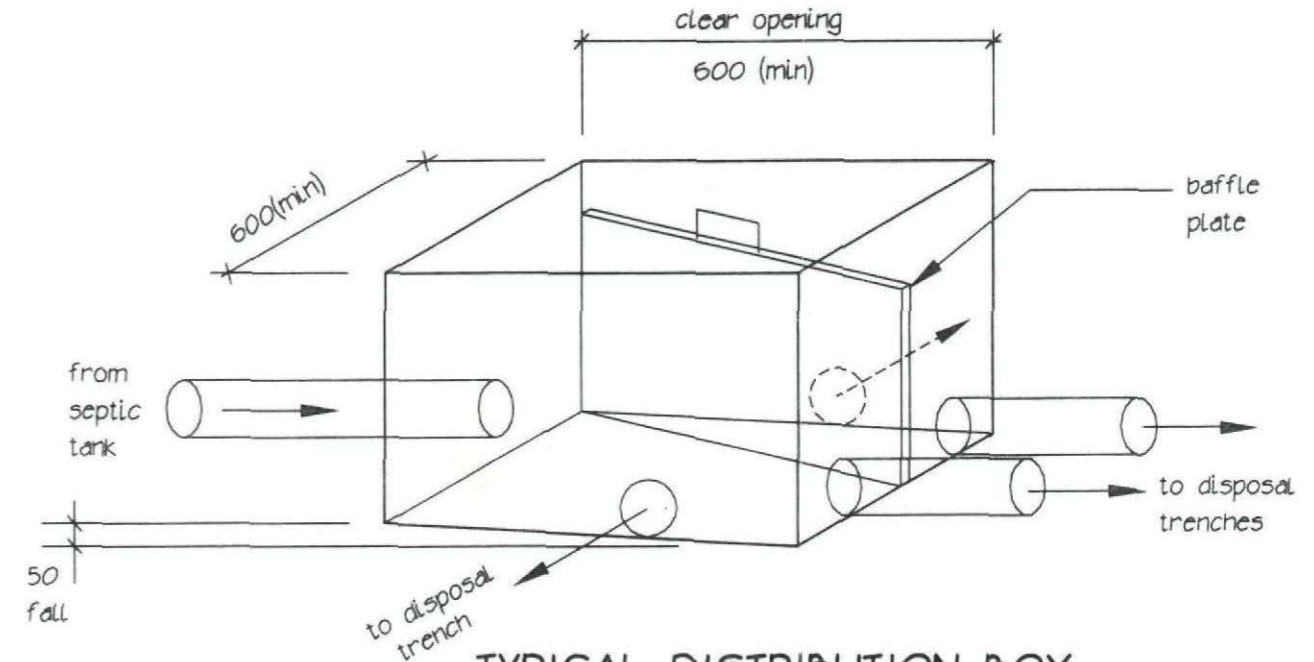
TYPICAL TRENCH LAYOUT



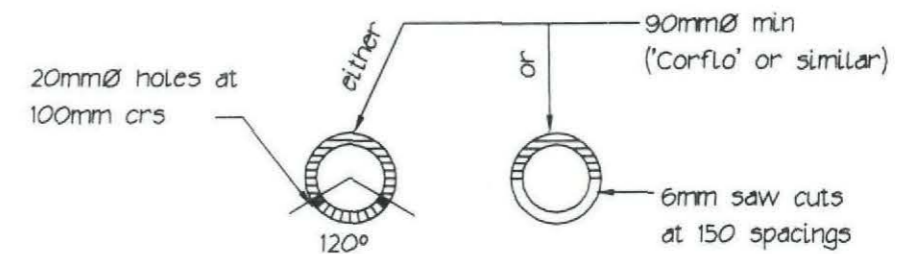
SHALLOW DISPOSAL TRENCH

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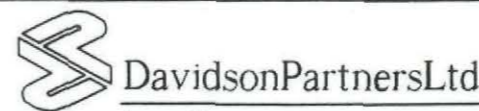
TYPICAL DISTRIBUTION BOX



DISTRIBUTION DRAINS

(for gravity feeding only.)

CURRENT AS OF: 30/11/99



Structural Engineering  
Civil Engineering  
Building Design  
Project Management



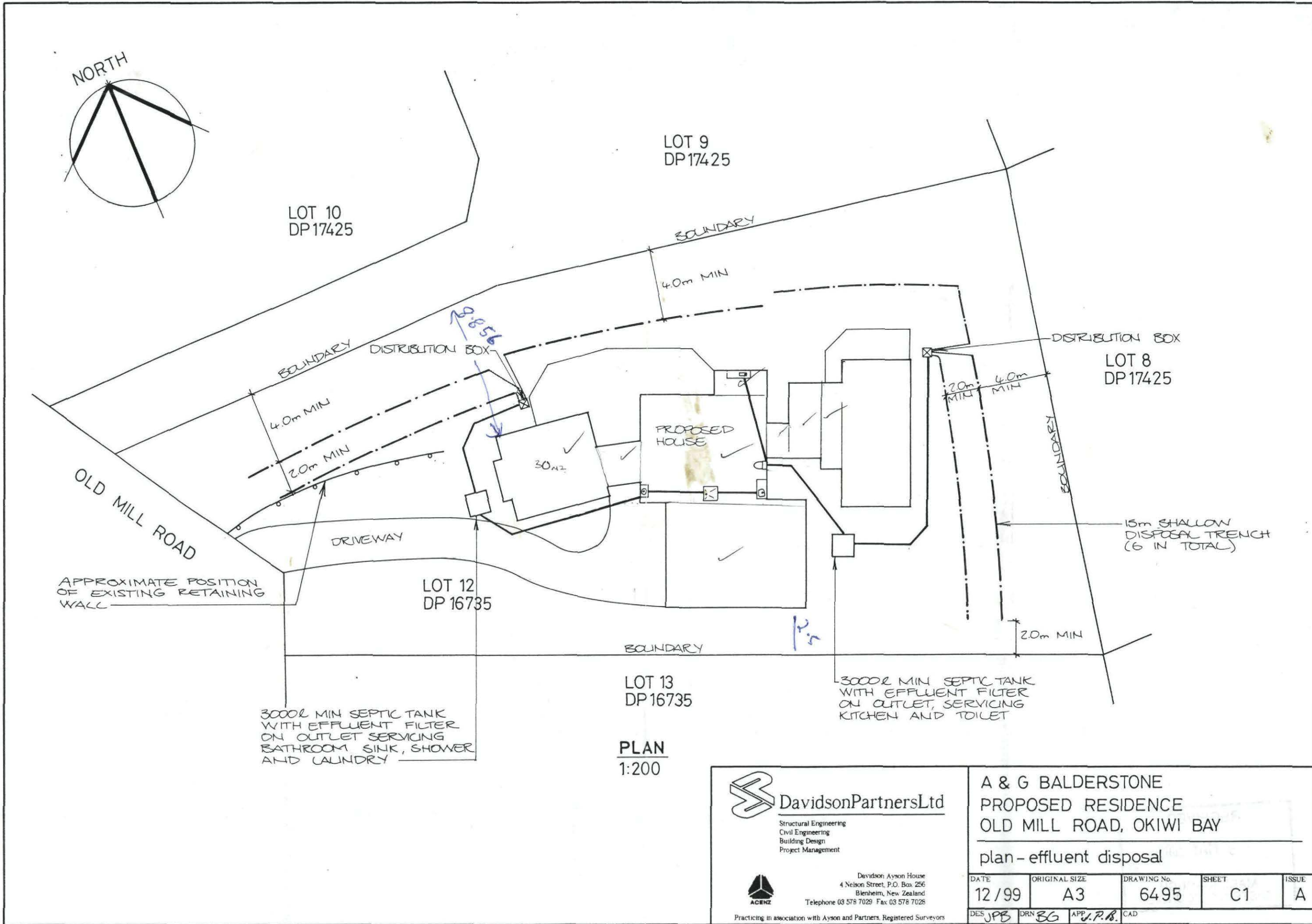
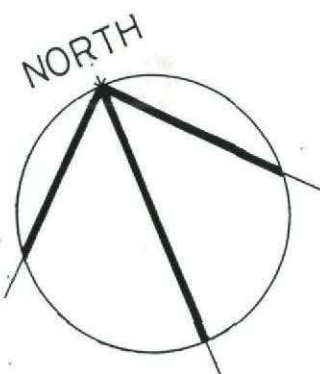
Davidson Ayson House  
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Blenheim, New Zealand  
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A & G BALDERSTONE  
PROPOSED RESIDENCE  
OLD MILL ROAD, OKIWI BAY

effluent disposal field  
typical details

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
12/99	A3	6495	C3	A
DES L.M.	DRN D.M.	APP [Signature]	CADC: \ACAD\4029\STD_A3\A200	



PLAN  
1:200

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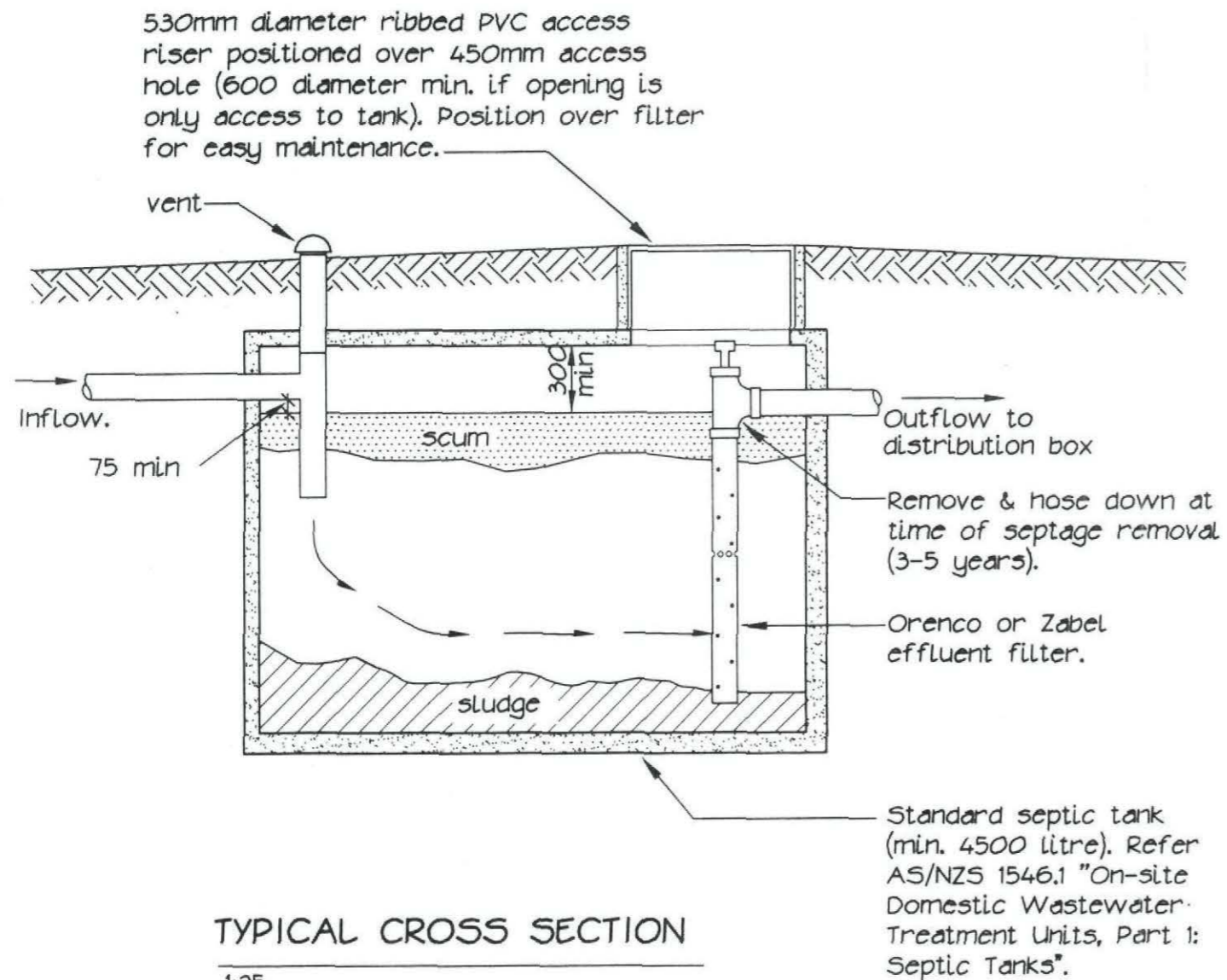
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A & G BALDERSTONE  
PROPOSED RESIDENCE  
OLD MILL ROAD, OKIWI BAY

plan - effluent disposal

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
12 / 99	A3	6495	C1	A
DES JPB	DRN BG	APP J.P.B.	CAD	

## SUGGESTED OPERATION AND MAINTENANCE SEPTIC TANK



TYPICAL CROSS SECTION

1:25

- 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 de-sludging 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.
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A & G BALDERSTONE  
PROPOSED RESIDENCE  
OLD MILL ROAD, OKIWI BAY

effluent disposal  
typical septic tank details

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
12/99	A3	6495	C2	A
DES L.M.	DRN L.R.	APP ZS	CADC: ACAD\4029\STD_A3\A202	

CURRENT AS OF: 30/11/99