DavidsonPartnersLtd

Structural Engineering
Civil Engineering
Building Design
Project Management

Practising in association with Ayson and Partners, Registered Surveyors

Our Ref: 6871

18 June 2001

FILE No.:
OFFICER:
DATE RECV'D 19 JUN 2001
MARLBOROUGH DISTRICT COUNCIL

Marlborough District Council
P O Box 443
BLENHEIM

ATTENTION: P Harris

re: **ALEXANDER, 9 HUMFFREY STREET, GROVETOWN**

Thank you for your letter of 12 June 2001. We have the following comments by way of response.

1. Groundwater

Our test hole on site found the water table level to be at 1.0 metre below ground level. However, rust mottling of the clayey silt soil indicates that the groundwater can rise to within 400 mm of the ground surface.

The treated wastewater will be applied within the topsoil layer at a depth of 100 mm. There will then be a 300 mm separation between the discharge point and the maximum water table level.

2. Treatment System

The Contractor for the supply and installation of the treatment system will be confirmed this week. We will be requesting details of the system, including its maintenance requirements, from the chosen supplier and will pass these on once received.

3. Treated Effluent Quality

We anticipate that the quality of the effluent prior to discharge will meet the following standards.

Faecal Coliforms	Less than 10 CFU/100 ml
Total Suspended Solids	30 g/m^3
BOD	20 g/m^3

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Principals
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Stephen Sheat, BE, M.IPENZ, REGD
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4. Assessment of Effects

Section 3 of our Engineering Report dated 19 December 2000 submitted with the Application for Resource Consent contains an assessment of effects. In short, we consider that the use of drip irrigation provides the best practicable option for the site. Domestic water supplies draw from the Wairau Aquifer which is protected from contamination by discharges at/near the ground surface by a confining layer (known as the Dillons Point Formation) in the order of 20 metres in thickness.

In regard to loading rates, we evaluated two options. We considered a loading rate of around 3.0 mm per day to be suitable, which could be achieved with the use of the area of Road Reserve which is in garden. It is usual to contain land application areas within the subject property, which restricted the available area to 205 m^2 and raised the loading rate to 4.4 mm per day. We would only be happy with this if additional treatment of the wastewater was provided, hence the specification that if an increased loading rate was to be used then disinfection is required.

5. Consultation

Thank you for the provision of the requisite paperwork. We have passed this on to the owner for them to obtain the affected party approvals which we will forward once received.

We will be in touch with further information as requested in due course. In the meantime, if you wish to discuss any aspect of this matter please do not hesitate to contact us.

DAVIDSON PARTNERS LTD

R W Davis

pp W L McGlynn

RWD:RLF

FILE No.:
OFFICER:
DATE RECV'D 19 JUN 2001
MARLBOROUGH DISTRICT COUNCIL

File Ref: U010626

Ask For: Pip Harris

Davidson Partners
PO Box 256
BLENHEIM

ATTENTION: Ross Davis

12 June 2001

Dear Ross

Discharge Permit Application, L.A Alexander – Grovetown

With respect to the above application, I am writing to you request further information as detailed below.

Further information

Pursuant to Section 92 of the Resource Management Act 1991, the following information is required in order to assess your application:

1. Your report identifies that there is a problem in Grovetown for the application of waste water due to the high water table. Could you please confirm the depth between the wastewater disposal and the water table.

2. Please clarify which package plant is to be used at the property and advise of the maintenance schedule that will take place given the use of the residential dwelling.

3. Given the system to be installed, could you confirm the effluent quality from the system prior to discharge to the sub-surface irrigation field for the following parameters:

   - Faecal Coliforms
   - Total Suspended Solids
   - BOD

4. Could you please provide assessment of environmental effects particularly on groundwater. This assessment should recognise the depth of the groundwater, the nature of the effluent and the rate at which it is to be discharged. Your report specifies that an acceptable DIR for the site is 3.0mm, but the plans show a DIR of 4.4mm. Could you please provide further comment.

The above information will assist me to fully understand the nature of the application and to determine the effects of the proposed activities on the surrounding environment.

Affected Parties

In accordance with Section 94 of the Resource Management Act 1991, in order for this application to proceed on a non-notified basis, the approval of affected parties must be secured. The affected parties with respect to this proposal are considered to be the adjoining properties, due to the proximity of the disposal field to the boundary and that the properties take water from wells.

1. Mr and Mrs R Schroder, Lot 2 DP 10352 (Postal address: 7 Humffrey Street, Grovetown)

2. Mr J Cook, Lot 48 Pt Sec 42 (Postal address: 11 Humffrey Street, Gorvetown)

3. Mr and Mrs J Yarral, Lot 1 DP 10352 (Postal address: 26 Fell Street, Grovetown)

I have put this application on hold pursuant to Section 92 of the Resource Management Act 1991 pending receipt of this further information.

If you would like to discuss any of the above matters or any other matter relating to this application, please do not hesitate to contact me

Yours faithfully

PIP HARRIS
RESOURCE MANAGEMENT OFFICER

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DavidsonPartners Ltd

Structural Engineering
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Practising in association with Ayson and Partners, Registered Surveyors

Our Ref: 6871

1 June 2001

FILE:
OFFICER:
DATE RECV'D - 5 JUN 2001
MARLBOROUGH DISTRICT COUNCIL

Marlborough District Council
P O Box 443
BLENHEIM

ALLOCATED TO
Pip. H
PEER REVIEW
JKe

ATTENTION: Mr P Hawes

re: **ALEXANDER, 9 HUMFFREY STREET, GROVETOWN**

Herewith attached is L A Alexander's Resource Consent Application along with the required documentation. This includes:-

(a) An "Assessment of Effects" statement, contained within our Engineering Report dated 19 December 2000.

(b) Drawing number 6871 sheets C1 and C2 issue 'A'.

Please note that of the options described in the Report, the secondary treatment system with disinfection and discharge within the boundaries of the subject property has been chosen (Recommendation 3.4 (b)), as shown on sheet C2.

Please also note a Building Consent Application has also been forwarded to Council.

If you require further information contact Ross Davis or Leigh McGlynn of this office.

DAVIDSON PARTNERS LTD

R W Davis

pp W L McGlynn

RWD:RLF

Encl

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Our Ref: 6871

19 December 2000

FILE NO.
OFFICER.
DATE RECV'D - 5 JUN 2001
MARLBOROUGH DISTRICT COUNCIL

MARLBOROUGH DISTRICT COUNCIL
WASTEWATER MANAGEMENT UPGRADE
LOT 1 D.P. 2743
9 HUMFFREY STREET, GROVETOWN

1. INTRODUCTION

When this property was developed the relevant local authority of the time approved the location of its effluent field on the adjacent lot to the northeast. This area has subsequently been built over and the wastewater system has now failed.

Our brief was to assess the site conditions and design and recommend an appropriate sustainable domestic wastewater management solution within the subject property to replace the existing failed system, given the physical and practical constraints of the site.

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. The locations of the proposed new land application area and other features are shown on the attached plan 6871 sheet C1 issue 'A'.

2. INVESTIGATION

The property is within the residential area of Grovetown, all of which is served by on site sewer systems. Grovetown is a known problem area for ground application of wastewater because of the high water table.

The existence of high seasonal water table levels is confirmed by the rust mottling of the clayey silt soil within approximately 400 mm of the ground surface at our test hole location as shown on the plan. Water bearing silt with a septic odour was found at 900 mm depth. The site is near-flat and has moderate exposure to the sun and wind due to the sheltering effects of buildings and vegetation. The topsoil depth is approximately 150 mm.

The available grass and garden area for an effluent field is limited. Much of the property is covered by the house, deck, driveway, large garage, and pathways. In addition, the front 3.0 to 4.0 metres of the property is on Road Reserve which significantly reduces the apparent area available.

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All domestic supply water in the Grovetown area is sourced from wells founded in the Wairau Aquifer. The aquifer is protected by a confining layer from contamination by effluent discharges.

3. ASSESSMENT

3.1 Effluent Field

The Wairau/Awatere Plan requires a 600 mm minimum vertical separation between the maximum water table level and the underside of the effluent distribution field. This distance is not available within the existing ground, and would only be able to be achieved by the importation of soil to raise the ground level.

Due to the subject property being a small residential section, the construction of a mound or mounds to apply treated wastewater onto is impractical. The only real option is to distribute highly treated effluent as shallow, thinly and evenly as possible across the available area, which leads to the use of pressure-compensating drip irrigation pipework laid within 100 mm of the ground surface.

We have shown a land application area on plan 6871 sheet C2 which allows a distance of 1.0 metre of buildings and boundaries and space for a new treatment system. This gives an available area of approximately 205 m^2, which for a five person design loading and peak wastewater flow of 900 litres per day equates to a Design Irrigation Rate (DIR) of 4.4 mm per day. Because of the sensitivity of the site and its moderate exposure we consider a DIR in the order of 3.0 mm per day to be required to adequately mitigate the potential contamination risk. Inclusion of the vegetated area on Road Reserve (as shown on sheet C1) would lower the DIR to 3.3 mm per day which would be considered acceptable.

3.2 Treatment

High treated effluent quality is required to assist in the protection of the groundwater from contamination. An intermittent sand contactor will provide the best and most consistent treated effluent quality in terms of bacteriological removal without disinfection.

An aerated wastewater treatment system (AWTS) would require disinfection by a tablet chlorinator and could be set up at a lower overall cost than a sand contactor. However, the AWTS and chlorinator system will be much more reliant on maintenance for consistent, reliable treatment performance.

3.3 Discussion

A treatment plant/drip irrigation wastewater management system will provide a much more appropriate solution than the septic and soakage systems that are almost exclusively in place in this area. From our observations the shallow groundwater in Grovetown is contaminated, and although the systems we are now recommending still do not completely eliminate the contamination risk, they are significantly better than present systems. In addition, drinking water is sourced from the protected deep aquifer and will not be affected by the proposed discharge.

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The main point for consideration is whether the part of the developed area on Road Reserve can be used for land application, allowing the reduction in loading rate which we consider would mitigate the contamination risk sufficiently to avoid the need for disinfection.

3.4 Recommendations

We recommend that for the three bedroomed house (design occupancy five persons) with a peak wastewater loading of 180 litres per person per day, the new wastewater treatment and disposal system consist of one of the following.

(a) Application of intermittent sand contactor – treated effluent over 270 m^2 of lawn and garden area, including approximately 60 m^2 of Road Reserve, by Netafim Raam pressure-compensating subsurface dripline at a DIR of 3.3 mm per day.

(b) Application of disinfected secondary-treated effluent over 205 m^2 of lawn and garden area within the property by Netafim Raam pressure-compensating subsurface dripline at a DIR of 4.4 mm per day.

4. SUMMARY

4.1 Option (a) (sand contactor) is our preferred option due to the robustness of the treatment process and avoidance of the use of chlorine. Our cost estimate for this option is $15,000.00-$18,000.00 including G.S.T.

4.2 Option (b) (AWTS and disinfection) has the advantages of being contained within the property and lower cost. Our cost estimate for this option is $10,000.00-12,000.00 including G.S.T.

4.3 Either system will require Resource Consent due to the proximity of the shallow water table.

5. REFERENCES

5.1 Brown, L J (1981). Water Well Data, Northern Marlborough DSIR Report NZGS 93.

5.2 Crites, R and Tchobanoglous, A (1998). 'Small and Decentralized Wastewater Management Systems'.

5.3 Cunliffe, J J (1988). Water and Soil Resources of the Wairau, Water Resources, Volume Two. Marlborough Catchment and Regional Water Board.

5.4 Fietie, L (1991). 'General Authorisation for Sewage Tank Effluent Disposal - Technical Support Document'. Pollution Control Section, Canterbury Regional Council.

5.5 Gunn, I (1997). 'On-Site Wastewater Systems and Bacterial Reduction in Sub-Soil Disposal Areas, A Review'. On-Site New Zealand Special Report 97/2.

5.6 Potts, R J (1997). 'Small Sewage Treatment Plants'.

5.7 Singhal, N and Fang, F (1999). 'Development of Criteria for Septic Tank Discharge Based on Groundwater Quality Consideration'. Paper presented at N.Z.W.W.A. 1999 Conference.

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5.8 ARC Environment, Technical Paper No. 58, Second Edition 'On-Site Wastewater Disposal from Households and Institutions'.

5.9 A.S./N.Z.S. 1546.1:1998 'On-Site Domestic Wastewater Treatment Units, Part 1: Septic Tanks.

5.10 A.S./N.Z.S. 1547:2000 'On-Site Wastewater Management'.

5.11 Wairau Awatere Resource Management Plan (Proposed).

5.12 Winery Wastes Seminar Proceedings, August 1995.

DAVIDSON PARTNERS LTD

R W Davis

pp W L McGlynn

RWD:RLF

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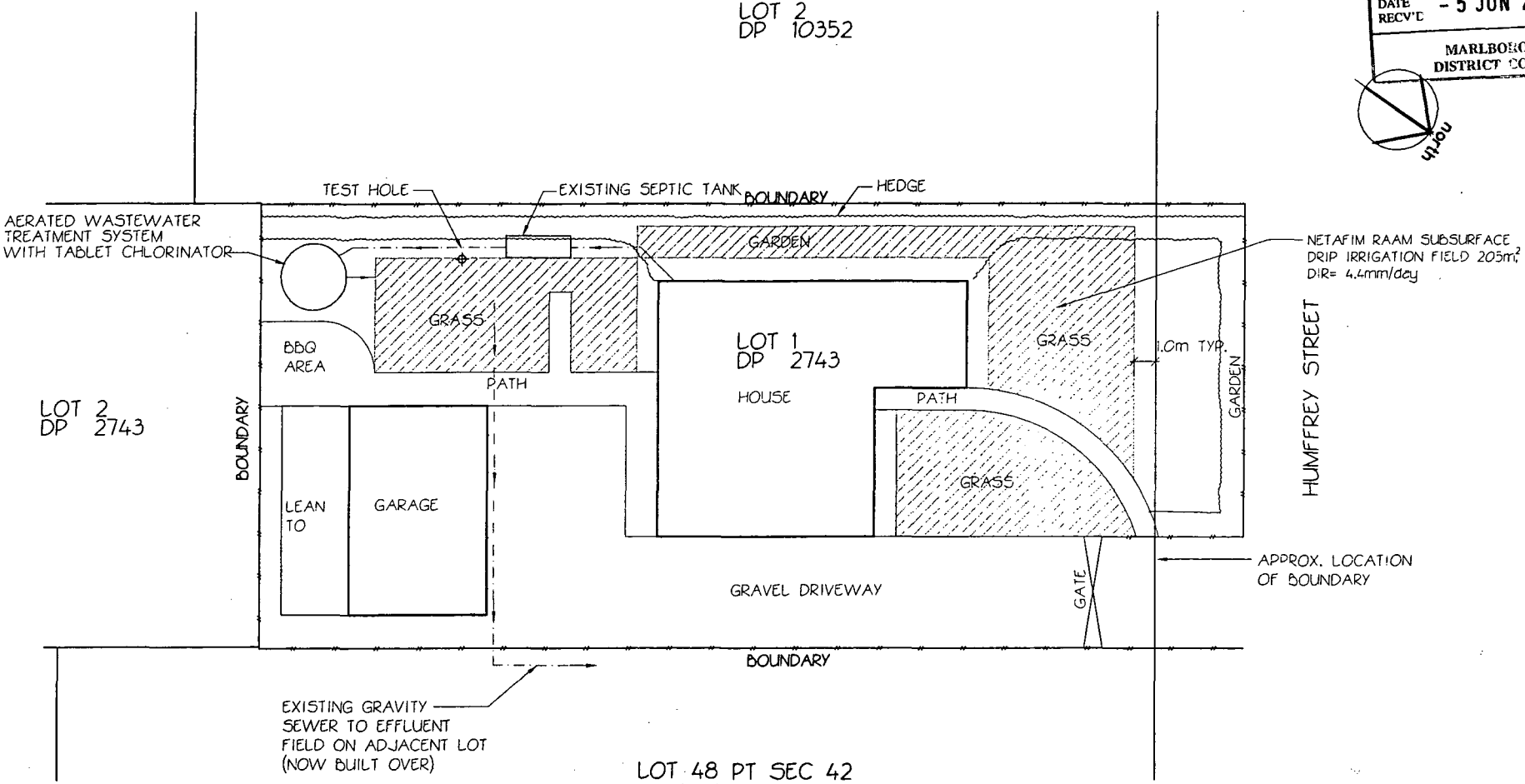

SITE PLAN
1:200

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MDC–ALEXANDER
9 HUMFFREY ST
GROVETOWN

site plan– AWTS & drip

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
12/00	A3	6871	C 2	A

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FILE No.:
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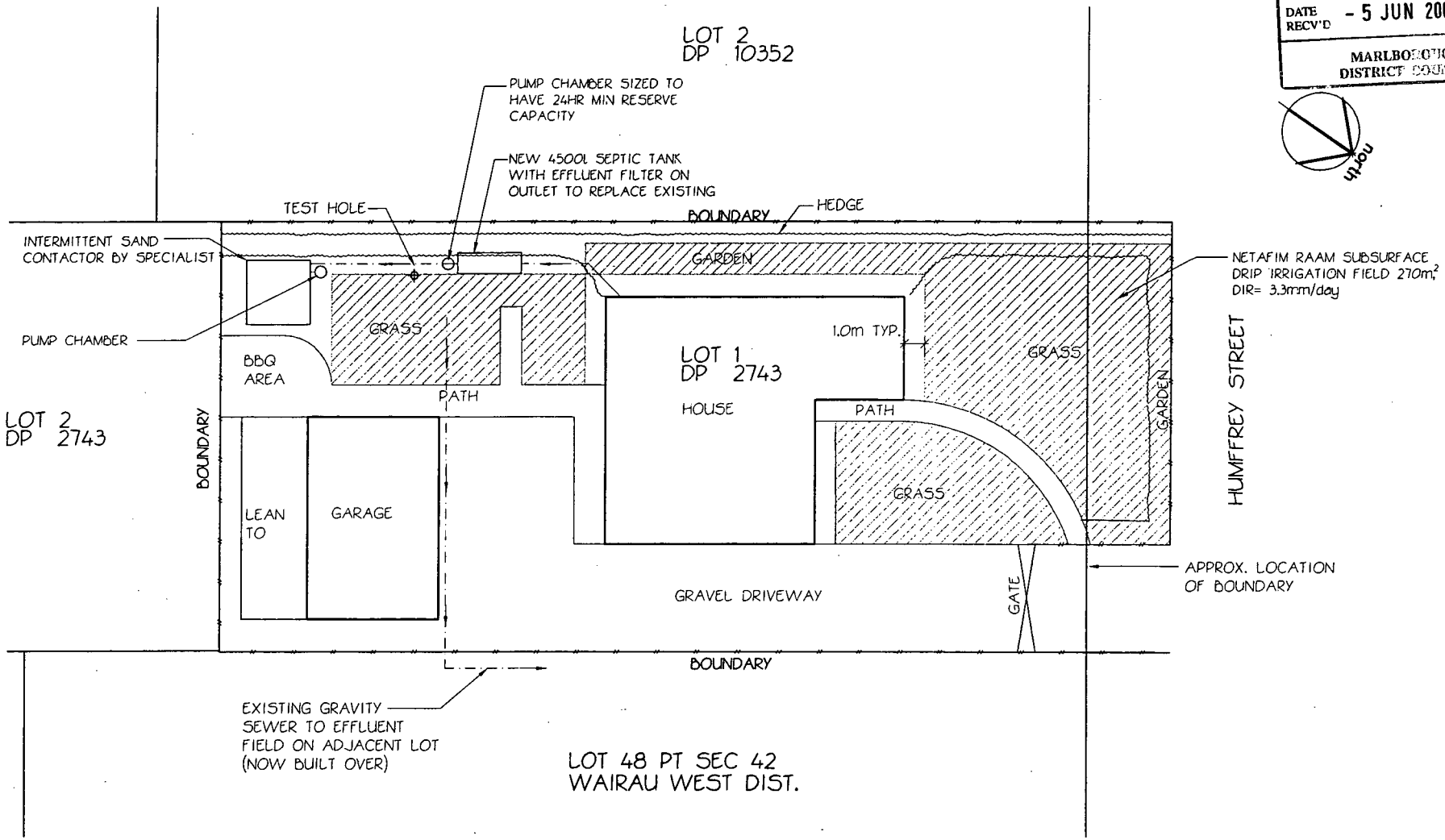

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MDC–ALEXANDER
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GROVETOWN

site plan– sand contractor & drip

DATE	ORIGINAL SIZE	DRAWING No.	SHEET	ISSUE
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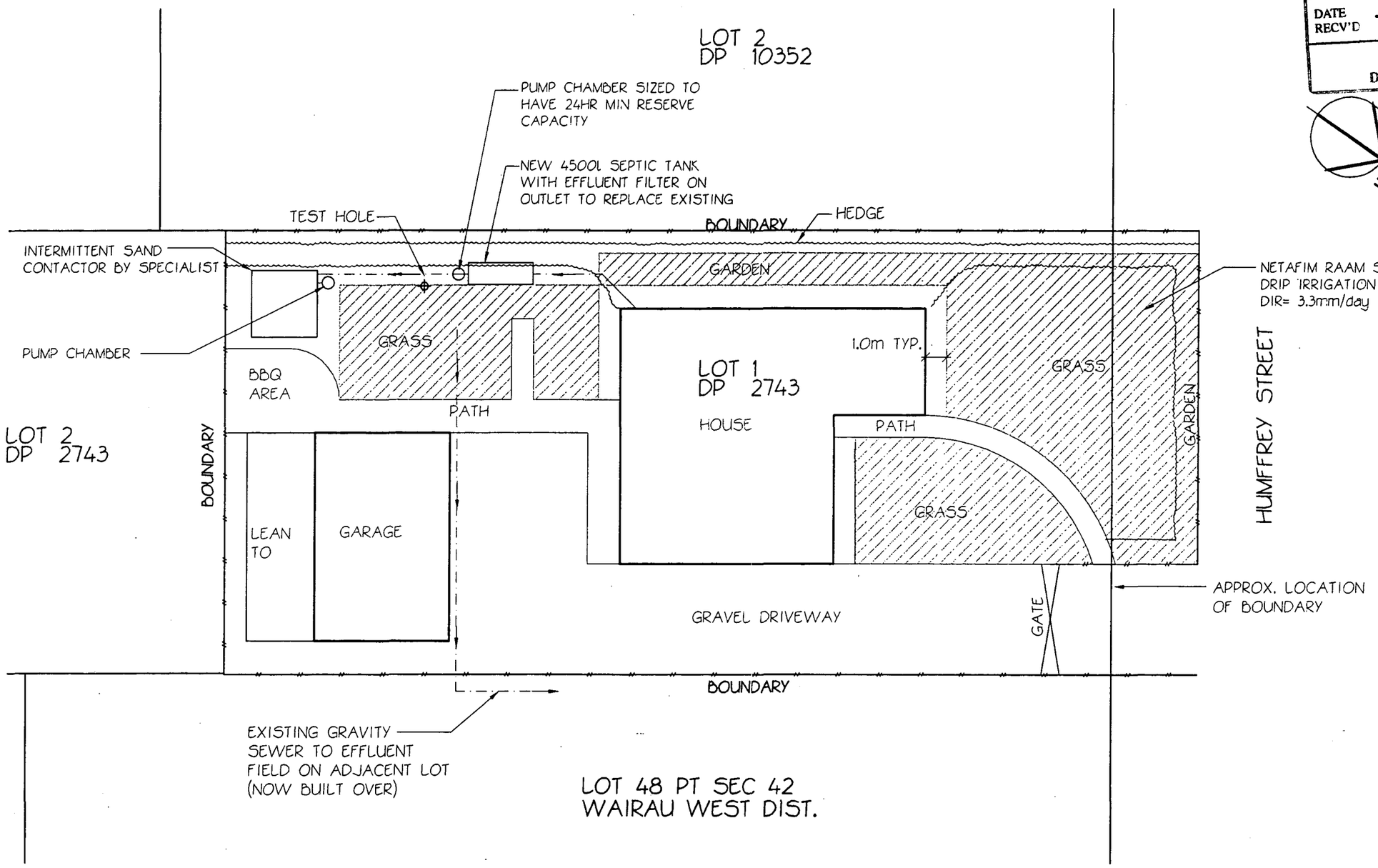

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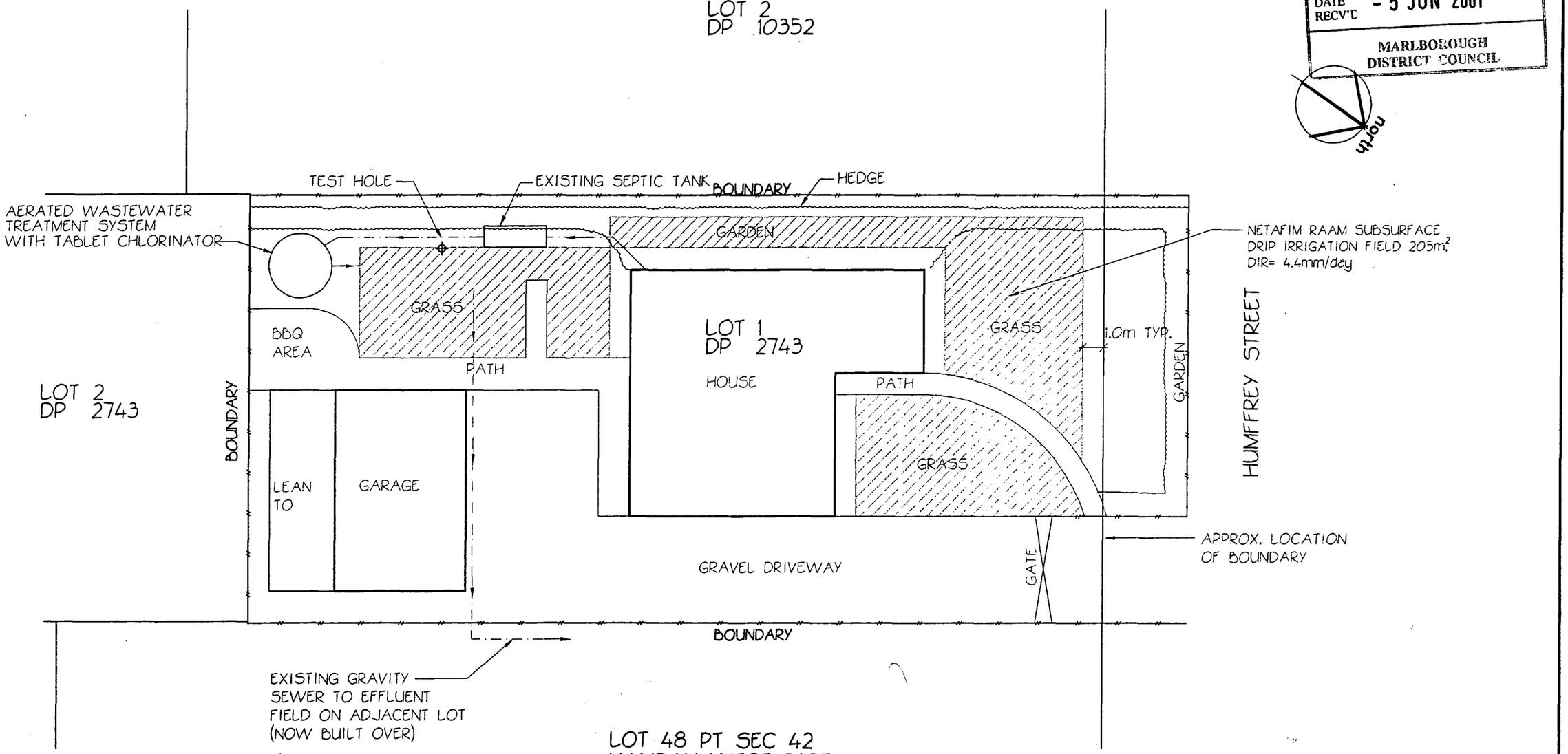

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