

Appendix D

– Wastewater Report

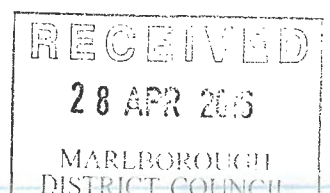
Marlborough Lodge

776 Rapaura Road, Blenheim

On Site Domestic Wastewater Management Report

31 March 2016

Our ref: 5355



Marlborough Lodge
 776 Rapaura Road, Blenheim

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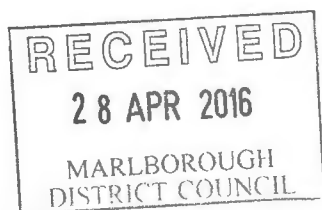
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Date	31.3.16					
Prepared By	NM					
Approved By	JH					



1 Executive Summary

Smart Alliances have carried out an engineering appraisal of the on-site wastewater management criteria for Marlborough Lodge at 776 Rapaura Road, Blenheim.

The building will provide tourist accommodation for up to 25 guests and 6 non-resident staff, and the design has allowed for a total discharge of 4740L/day.

The wastewater management system should comprise a secondary treatment unit. The wastewater should be distributed into a shallow bed land application area via a pump chamber. The application area should be 2 beds with a minimum total area of 95m² in area.

Installation is to be in accordance with the requirements and recommendations of AS/NZS 1547:2012.

The recommendations listed above should not be taken in isolation and must be read in conjunction with the balance of this report and the context of the proposed residential development at the site.

2 Introduction

The client proposes to upgrade and extend their property located on 776 Rapaura Road, Blenheim. The building will provide tourist accommodation facilities for up to 25 guests, and 6 non-resident staff.

The purpose of this report is to present the results of site investigations carried out in relation to an on-site wastewater treatment and land application for the building. The site investigations were carried out on 31 March 2016.

3 Location & Site Description

The property is located at 776 Rapaura Road, Blenheim.

The legal description of the property is Pt LOT 1 DP 9135 and the land area is 7.9Ha.

The property is mostly flat with occasional undulations.

Drinking water for the building comes from an on-site bore.

Locations of all the features of the property are shown on the site plan attached in Appendix A.

4 Wastewater Assessment

The site investigation has identified that the property is suitable for wastewater disposal by secondary treatment. A pump in chamber will alternatively dose load the shallow beds of the land application area via a sequencing valve. This system is considered the most appropriate when the site conditions, constraints and soil conditions are taken into account.

Three hand auger test pits, numbered AG1, AG2 and AG3, were put down at the site. Their locations are shown on the site plan provided in Appendix A. Logs of the representative soil properties are provided in Appendix B.

Based on the soil assessment carried out, an average drainage category of 3 has been adopted.

No mottling was encountered indicating ground water presence >2m deep. The treated wastewater discharge will be at approximately 0.4m below ground level, providing vertical setback of 1.6m. This is acceptable under AS/NZS1547:2012 and MDC guidelines.

The secondary treatment system is expected to achieve the following treatment levels:

- BOD after 5 days (average) < 20 g/m³
- Suspended solids (average) < 30 g/m³

Any system that meets the above standard is satisfactory.

A wastewater design sheet is provided in Appendix B with the design calculation based on the following criteria for the proposed development:

- 25 guests + 6 non-resident staff
- Total design flow of 4740 litres/day (25 guests@ 180 litres/person/day and 6 non-resident staff@ 40 litres/person/day –design flow allowance for Motels/hotels with bore supply from Table 4 of MDC guidelines for new on-site wastewater management systems).
- Soil category 3 and a design loading rate 50mm.

Based on the criteria above, the minimum total area of the application field bed is 95m².

We therefore recommend the application field be 2 beds, at 2.5m wide and 20m long. Details of the application bed are shown in Appendix A.

5 Environmental Assessment

An onsite wastewater system is required on this property as there is no wastewater reticulation available in the area for this property to connect to.

Because of the following reasons we do not envisage the wastewater becoming an environmental risk:

- Recommended loading rates are used.
- The environmental buffering capacity of land.
- No ground water or surface water in the vicinity of the wastewater field

The risk from the wastewater system contaminating drinking water is negligible. Set back distances are achieved; soil classification and loading rates used are conservative.

The secondary treatment system will improve the BOD₅ and SS and lessen the risk of soil clogging.

The land application field is sited on flat exposed ground and not within any ground depressions that are prone to flooding.

The effect of a failed system will primarily affect the applicant's property. In the event of a failed system wastewater is likely to accumulate within the flat grassed area within which the field is located. Infiltration into the topsoil layers and the

environmental buffering capacity of the land will ensure all water sources and neighbours are protected.

The effects will be easily identifiable, inhibit the applicant's use of the land and be generally unpleasant. The owner will want to address the failure and repair / install a new wastewater system. A reserve area is available to relocate the field should the field fail.

Regular maintenance and inspection by the owner will ensure the onsite wastewater system is operating to a suitable standard.

6 Conclusion

There is sufficient area to treat and dispose of the wastewater created from the building.

The wastewater management system for the building should comprise a secondary treatment system. Treated effluent will be alternatively dose load the shallow beds of the land application area via a sequencing valve. The land application area should be two shallow beds with an area of 95m².

Installation is to be in accordance with the requirements and recommendations of AS/NZS 1547:2012.

7 Limitations

This report is valid for two years from the date of issue and covers the onsite wastewater treatment at 776 Rapaura Road. Any other areas are outside the scope of this report.

The reliance by other parties on the information or opinions in the report shall, without our prior review and agreement in writing, be at such parties' sole risk.

8 References

1. NZS 1547:2012 On-site Domestic Wastewater Management.
2. Marlborough District Council Guidelines for New On-site Wastewater Management Systems, July 2005.
3. Crites, R.W. and Tchobanoglous. Small and Decentralised Wastewater Management Systems. WCB/McGraw-Hill, 02/04/1998
4. Liping Pang (ESR Christchurch). Microbial removal rates in subsurface media estimated from published studies of field experiments and large intact soil cores. J.of Environmental Quality. Vol 38. July-Aug 2009. pp 1531-1559.

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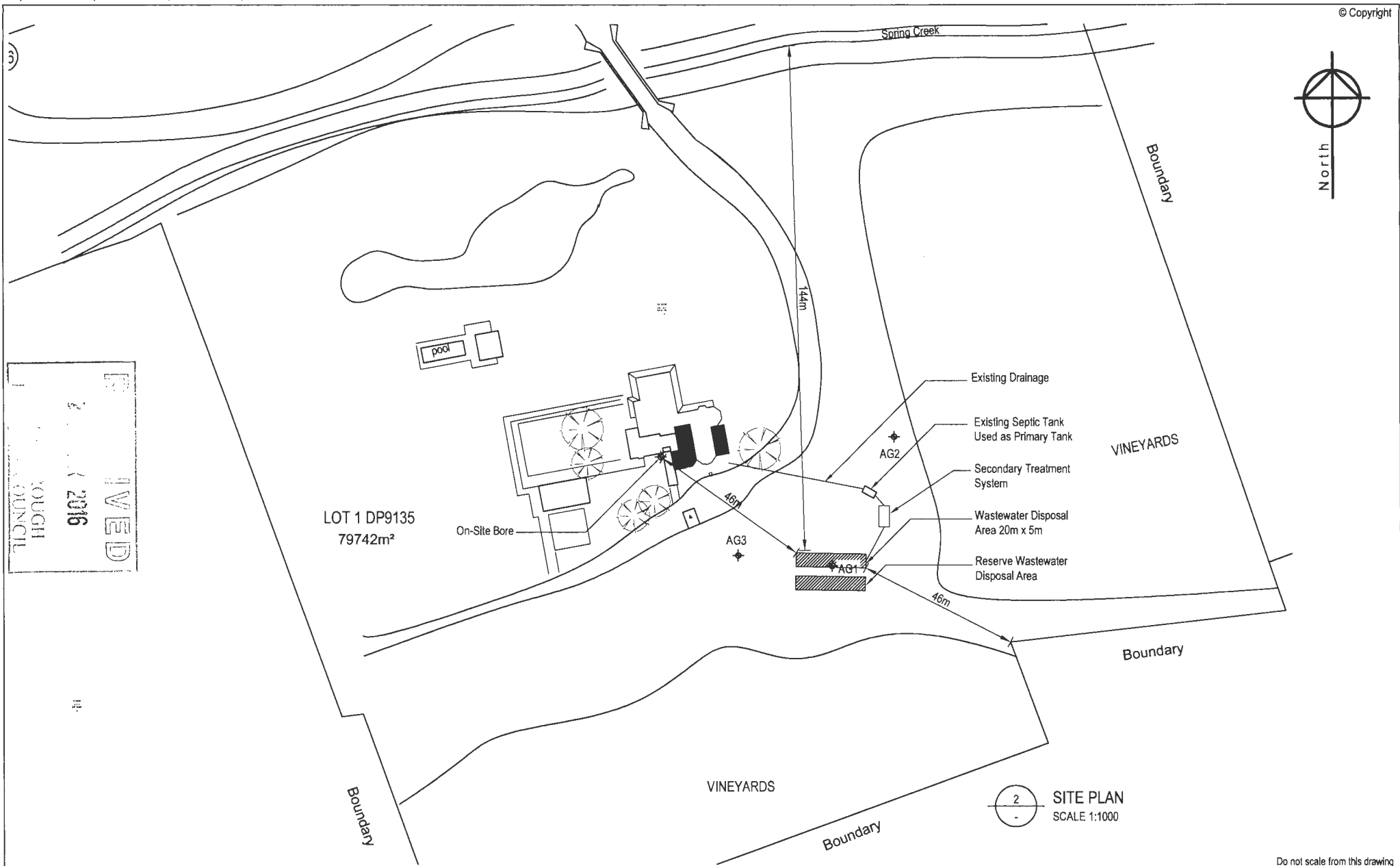
Nick Meeten
MIPENZ



Appendix A - Drawings

- Site Plan Drawing
- Field Area Details





2 SITE PLAN
SCALE 1:1000

Do not scale from this drawing

01 19-10-15 ISSUED FOR BUILDING CONSENT			<p>1st Floor - River View House - 10 High Street - Blenheim - New Zealand T: 03 579 8211 F: 03 579 8233 PO Box 546 - Blenheim - 7240 E: info@smartalliances.co.nz Website: www.smartalliances.co.nz</p>			CLIENT Marlborough Lodge		PROJECT 776 Rapaura Road, Blenheim WASTEWATER PLAN		DATE 31-03-16		SCALE (A3) 1:1000	
REV DATE DETAILS			REV DATE DETAILS			ISSUE BUILDING CONSENT		DRAWING SITE PLAN		DRAWN NM		REVISION 01	
								APPROVED NM		DWG NO. 5336-G10			

SYSTEM USE & MAINTENANCE

The wastewater 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 system may be needed if a garbage grinder is used.

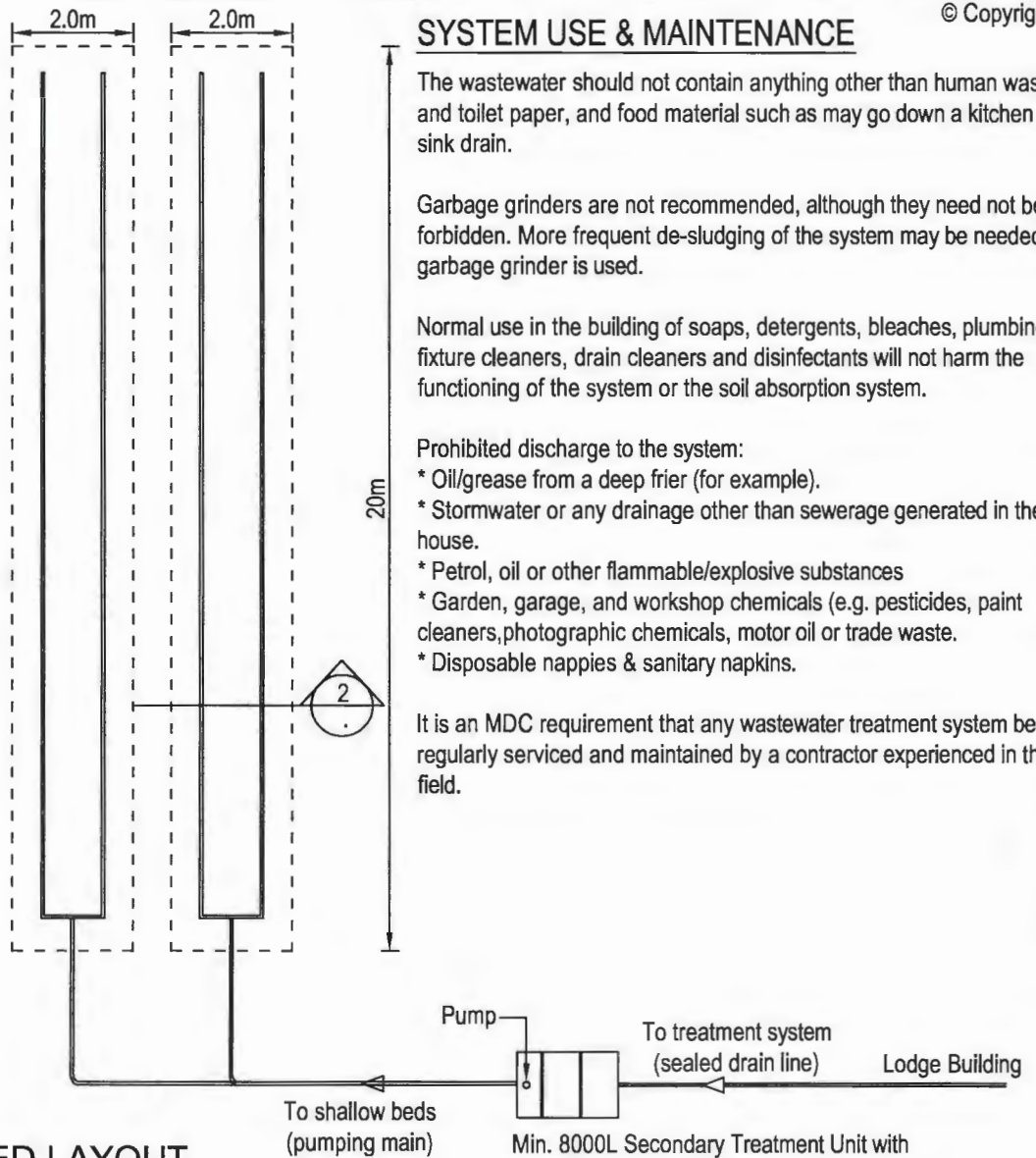
Normal use in the building of soaps, detergents, bleaches, plumbing fixture cleaners, drain cleaners and disinfectants will not harm the functioning of the system or the soil absorption system.

Prohibited discharge to the system:

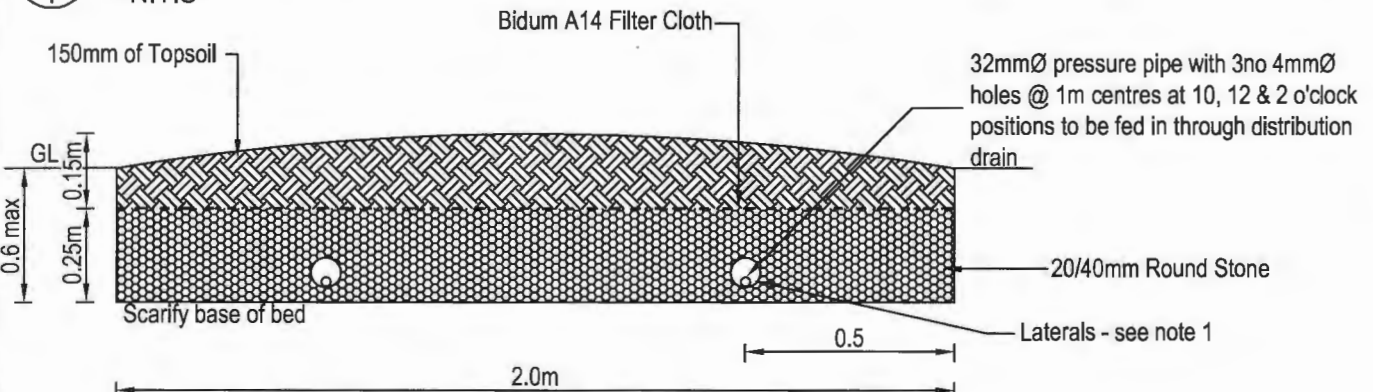
- * Oil/grease from a deep frier (for example).
- * Stormwater or any drainage other than sewerage generated in the house.
- * Petrol, oil or other flammable/explosive substances
- * Garden, garage, and workshop chemicals (e.g. pesticides, paint cleaners, photographic chemicals, motor oil or trade waste.
- * Disposable nappies & sanitary napkins.

It is an MDC requirement that any wastewater treatment system be regularly serviced and maintained by a contractor experienced in this field.

Distribution Field
(indicative)



1 TYPICAL BED LAYOUT N.T.S



2 TYPICAL BED CONSTRUCTION N.T.S

Note:

1. Distribution drains to be U-PVC 90mmØ perforated pipe laid flat with perforations comprising at least 2% of surface area (8mmØ slots at 100mm centres from 4 to 8 o'clock positions) with nested 32mmØ pipe as detailed

Do not scale from this drawing

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01 31-03-16 REPORT

REV	DATE	DETAILS
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1st Floor - River View House - 10 High Street - Blenheim - New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 - Blenheim - 7240
E: info@smartalliances.co.nz Website: www.smartalliances.co.nz

CLIENT
Marlborough Lodge

PROJECT
Marlborough Lodge
776 Rapaura Road

DRAWING
WASTEWATER DETAIL

ISSUE
Building Consent

DATE	SCALE (A4)
31-03-16	N.T.S
DRAWN	REVISION
NM	01
APPROVED	DWG NO.
RE	5355-G11

Appendix B – Wastewater Details, Calculations and Logs

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WASTEWATER SYSTEM DESIGN SHEET
To AS/NZS 1547:2012

Number of Occupants: 6 staff + 25 visitors
Intended water Supply: Bore or Well Supply
Soil Category Determined on Site Category 3
Recommendation for this site: Secondary Treated Effluent in shallow gravity fed bed disposal

DRAINAGE CONTROLS:

Need for surface water collector / cut-off drains? No

AVAILABILITY OR RESERVE / SETBACK AREAS

Reserve area available for extensions, % of design area: 100%

Setback distance? (between development and disposal system):

DESIGN

Daily Loading Rate: 50.0 mm/day

Occupancy: (staff) 6 Persons

Occupancy: (visitors) 25 Persons

L/person/day: (staff) 40 L/p/d = 240 L/day from Table H4 AS/NZS 1547:2012

L/person/day: (visitors) 180 L/p/d = 4500 L/day from Table H4 AS/NZS 1547:2012

DESIGN DAILY FLOW: 4740 L/day

AREA REQUIRED: 94.8 m²

LENGTH REQUIRED: 38 m with 2.5 metre wide beds

RESERVE AREA REQUIRED: 100% of specified

BED LENGTH: 19 m

NUMBER OF BEDS: 2

RECOMMENDED LAA = 2 x 20m by 2.5m bed



Wastewater Logs - 5355

Three hand auger test pits, numbered AG1, AG2 and AG3, were put down at the site in the approximate area of the proposed land application area and their locations are shown on the site plan in Appendix A. The representative soil properties are:

AG1

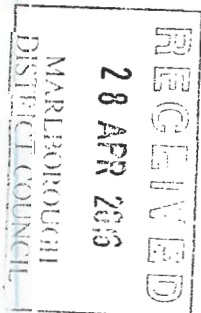
Lower Depth (m)	Horizon or Layer Boundary	Genesis	Description							Drainage Category
			Colour	Field Texture	% + 2mm Fragments	Compactness	Consistency	Structure	Moisture Condition	
0.1	A	Topsoil	Dark Brown	Loam	0%	Medium	Moderate	Moderate	Moist	3
0.5	B	Alluvial	Dark Brown	Sandy Loam	5%	Loose	Moderate	Weak	Slightly Moist	3
Refusal – hit gravels										

AG2

Lower Depth (m)	Horizon or Layer Boundary	Genesis	Description							Drainage Category
			Colour	Field Texture	% + 2mm Fragments	Compactness	Consistency	Structure	Moisture Condition	
0.1	A	Topsoil	Dark Brown	Loam	0%	Medium	Moderate	Moderate	Moist	3
1.0	B	Alluvial	Dark Brown	Sandy Loam	5%	Loose	Moderate	Weak	Slightly Moist	3
Stopped Drilling										

AG3

Lower Depth (m)	Horizon or Layer Boundary	Genesis	Description							Drainage Category
			Colour	Field Texture	% + 2mm Fragments	Compactness	Consistency	Structure	Moisture Condition	
0.1	A	Topsoil	Dark Brown	Loam	0%	Medium	Moderate	Moderate	Moist	3
0.3	B	Alluvial	Brown	Sandy Loam	5%	Loose	Moderate	Weak	Dry	3
Refusal										



Appendix C – Photographs



AG1



AG2

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AG3



Site Looking North

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Site Looking West

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Regarding the discharge of wastewater from the development site

30.1.8.2 On Site Sewage Disposal

The discharge of any contaminant from any domestic on-site treatment system onto or into land is a permitted activity subject to the following conditions:

30.1.8.2.1 A public sewer is not located within 60 metres of the lot boundary.

***No public sewer in close proximity to the site**

30.1.8.2.2 A public sewer does not exist within 60 metres of the closest building on the lot to be serviced.

***No public sewer in close proximity to the site**

30.1.8.2.3 The discharge is not within any catchment classed NS as defined in Appendix J.

***Catchment not classed as NS as defined in Appendix J**

30.1.8.2.4 Where discharges are to soil absorption systems (drainage fields) these shall include the following functions:

(a) The effluent must be able to infiltrate the soil;	Recommended application rate with disposal beds. Category 3 soils provide good drainage.
(b) The effluent must be able to percolate through a sufficient distance of soil such that it is 'renovated' to have no measurable impact on any surface or ground water body, or any coastal water	Distance to ground water estimated to be >2m, so vertical setbacks of 1.6m achieved. Category 3 soils provide good level of treatment.
(c) Any effluent directed to the drainage fields should be of a consistent high quality and meet the following standards: <ul style="list-style-type: none"> • Faecal Coliforms <10,000/100ml • BOD <100g/m³ • Suspended solids <60g/m³ and not be subject to episodic high values of suspended solids and BOD 	Secondary treatment provides: <ul style="list-style-type: none"> • Faecal coliforms <10,000/100ml • BOD₅ <20g/m³ • Suspended solids <30g/m³.
(d) No stormwater shall enter the treatment system;	Low Risk – sealed drainage infrastructure and elevated land application area
(e) The system shall be maintained in a functional condition at all times;	System regularly maintained.
(f) The rate of discharge shall not exceed 2m ³ /d averaged over any one week period;	Potential Discharge >2m³/d. Secondary treatment process utilised.
(g) The discharge shall not be within	Discharge areas over 100m from Spring Creek

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30 metres of any surface water body;	water course
(h) There shall be no surface ponding of any effluent, nor runoff of any contaminant either directly or indirectly into a surface water body;	Low Risk- Refer section 5 of the Engineering Report
(i) The discharge shall be no less than 600mm above the ground water table at all times;	Groundwater depth estimated to be >2.0m, so 1.6m vertical setback achieved.
(j) The discharge shall not be within 30 metres of any bore drawing ground water from an unconfined aquifer;	No bore in close proximity
(k) No objectionable odours shall be able to be detected at or beyond the legal boundary of the area of land on which the contaminants are discharged;	Low Risk- Refer section 5 of the Engineering Report
(l) The effluent treatment unit shall be located in a manner that can be readily accessed for periodic servicing.;	Treatment unit readily accessible

30.1.8.2.4.1 In the case of a septic tank being utilised that it:

(a) Shall have a minimum design life of fifteen years (Note: The building Act 1991 deals with other matters relating to construction and performance.)	N/A - secondary treatment system being utilised.
(b) The septic tank shall have provisions for 24 hour minimum retention time of average daily flow after three years sludge/scum accumulation at full loading i.e. sludge/scum accumulation at a rate of 80 litres per person per year as a 3 year average.	N/A - secondary treatment system being utilised.

