CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL, STRUCTURAL,
ENVIRONMENTAL & GEOTECHNICAL ENGINEERS

12661-5
23 January 2008

COPY

Mr Ross Tocker
21 Victoria Heights
NELSON

Dear Mr Tocker

Re: On-site Wastewater Management, Admiralty Bay Dwelling

Enclosed please find two copies of an engineering report, plan and resource consent application for the wastewater management system for your proposed dwelling at Admiralty Bay.

If the documents are acceptable to you, please sign the Application for Resource Consent, and forward one copy of the documents to Marlborough District Council along with a deposit of $562.50.

Please do not hesitate to contact me if you have any queries.

Yours sincerely

Peter Born
CAMERON GIBSON & WELLS LTD

Encl.

cc. Mark Feilding (report & plan issued previously)

RECEIVED
09 SEP 2008
MARLBOROUGH DISTRICT COUNCIL

CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL, STRUCTURAL,
ENVIRONMENTAL & GEOTECHNICAL ENGINEERS

12661-2
02 October, 2007

Marlborough District Council
Private Bag
BLENHEIM

Attention: Consents Manager

Dear Sir/Madam

Re: Lot 4, DP304987, Hamilton Bay for Mr R Tocker
Building Site Certification

Cameron Gibson & Wells Ltd have previously investigated the above property, and provided a geotechnical report and 'Opinion as to Land Stability' to council, dated January 2005 on behalf of a former, Mr D Barr (Document 12381-4).

We have now been requested by the current owner, MR R Tocker, to review our earlier work, in relation to his proposed development on this property, which falls marginally outside the approved building site area on the site.

We have reviewed our previous work on this site, and other information relating to the original subdivision of the property held on our files.

Mr Tocker's proposed house is situated such that a small part of the house extends outside, to the east of the previously approved building site area, by approximately 4.0 m. This encroachment is considered minor, and is not immediately adjacent to any area of the site which was considered sensitive in our previous work.

DIRECTORS: S.R. CAMERON BE (HONS) MIPENZ (GEOTECHNICAL & STRUCTURAL) CPEng * R.B. GIBSON BE MIPENZ
G.G. GROCOTT MSc (ENG.GEOL) * K.J. McMANUS PhD MIPENZ (GEOTECHNICAL & STRUCTURAL) CPEng

44 HALIFAX STREET NELSON PHONE 0-3-548 8259 FAX 0-3-546 8412 EMAIL admin@cgwl.co.nz

CAMERON GIBSON & WELLS LTD

Accordingly we have prepared a revised plan of the certified building area, and forward this, together with our revised 'Opinion as to Land Stability' for your approval.

Yours sincerely,

R W L Wells
CAMERON GIBSON & WELLS LTD

Reviewed by:

Rod Gibson
CAMERON GIBSON & WELLS LTD

Encls.

CAMERON GIBSON & WELLS LTD

12661-3

Opinion as to Land Stability

Description of work: Building site certification
Hamilton Bay Lot 4 DP304987, for Mr R Tocker

I Richard William LeFevre Wells
Hereby confirm that:
I am experienced in the field of **soils engineering** and more particularly **land and foundation stability** and am formally recognised by the Marlborough District Council. I am familiar with and understand the purpose of the Marlborough District Council's geotechnical reporting standards. This professional opinion is furnished to the Marlborough District Council, for certification of a building site on the above Lot.

I have reviewed previous investigations and reporting as contained in our report dated 12 January 2005. The following professional opinion is based on the assumption that the data obtained from these investigations is representative of the whole area under consideration. In my professional opinion having examined the site it is reasonable for Council to assume that the data referred to above is representative of the whole area under consideration.

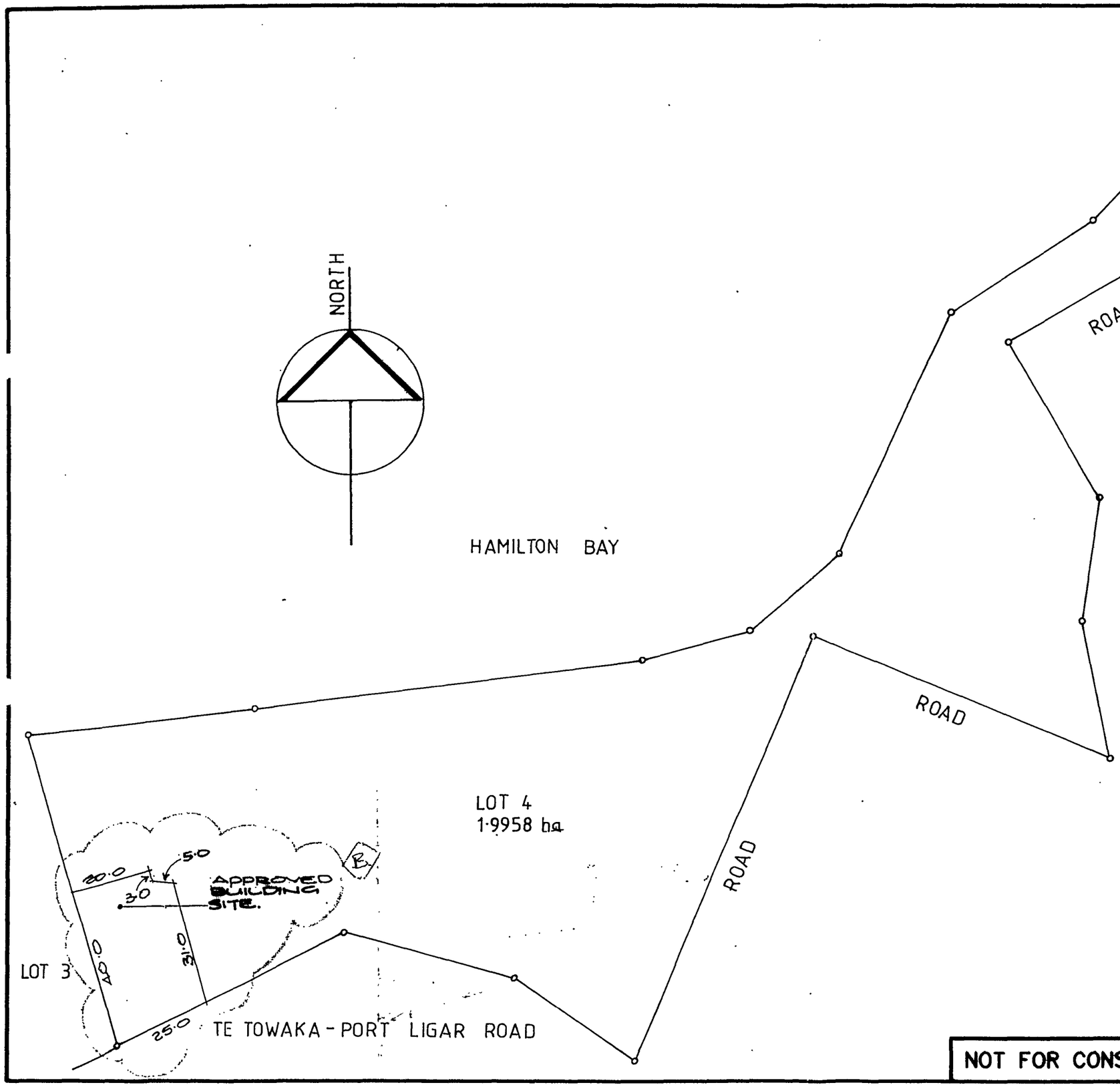
In my professional opinion and having regard to the specifics of the site which I have investigated to the extent that acceptable engineering practices require giving due regard to acceptable engineering principles and practices for land slope and foundation stability, then the building site area on Lot 4 as shown on our plan No. 12661, DATE October 2007 is considered suitable for the erection of a residential building, provided that the recommendations given in our report, ref 12381-3, dated 12 January 2005 as set out below are followed.

1. Foundations for any building to be erected on this site should be excavated to bear on the firm stony clay materials beneath the topsoil and weathered surface materials
2. Foundation excavations should be checked and approved by a suitably qualified engineer
3. Excavations associated with building development are permitted. These should either be battered back to a safe angle, or supported by a retaining structure as directed by a suitably qualified engineer.
4. Stormwater discharge from the site access way, and building roof areas, should be collected and piped to discharge to an established drainage path, clear of the building site, and effluent disposal areas.

RWL Wells BE FIPENZ
CAMERON GIBSON & WELLS LTD

9/10/07.

Rod Gibson,
CAMERON GIBSON & WELLS LTD



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(2) VERIFY ALL DIMENSIONS ON SITE

(3) DO NOT SCALE FROM DRAWING

(4) THE ADEQUACY OF THE DESIGN INCORPORATED ON THE PLANS IS SUBJECT TO THE REQUIREMENTS INCLUDED IN THE SPECIFICATION FOR THE WORKS AND THE DESIGN ASSUMPTIONS INCORPORATED IN THE CALCULATIONS AND REPORTS FOR THE PROJECT

NO	DATE	AMENDMENT	DES	DRN	CHD	APD
B	10/10	AMENDED BUILDING SITE	RW	AD		
A	12/1	RESOURCE CONSENT.	RW	AD		

CAMERON GIBSON & WELLS LTD
CONSULTING CIVIL & STRUCTURAL ENGINEERS
PH. 548-8259 NELSON FAX 546 8412
EMAIL cgw@xtra.co.nz

JOB TITLE

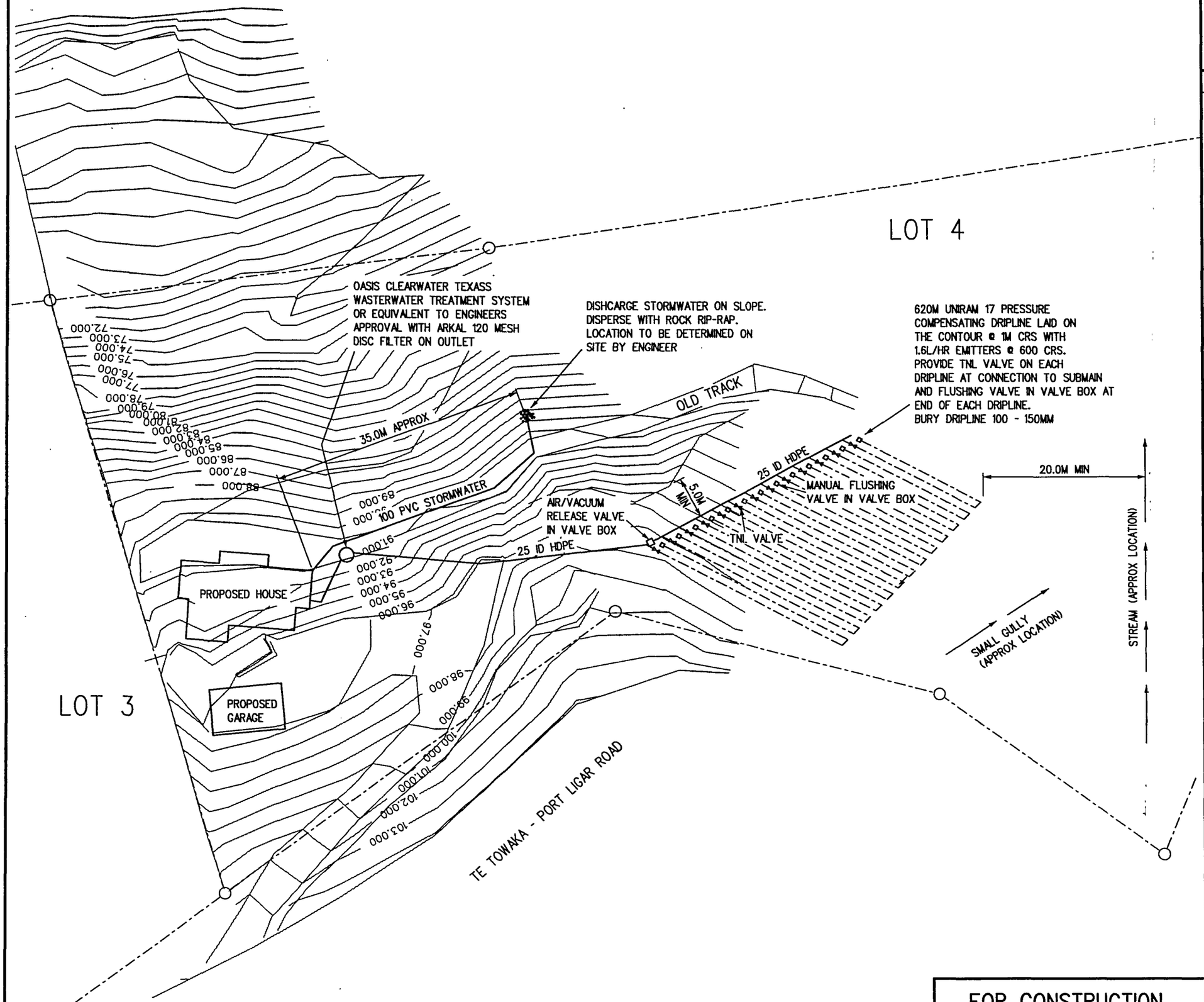
MR. R. TOCKER (B)
HAMILTON BAY
MARLBOROUGH SOUNDS

DRAWING TITLE

APPROVED BUILDING SITE LOCATION

SCALE	OF SHEETS
1:1000	
JOB NO 12661	SHEET 2

NOT FOR CONSTRUCTION



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NO	DATE	REVISION	DES	DRN	CHD	APD
A	21.1.08	FOR CONSENT				

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JOB TITLE

TOCKER DWELLING
HAMILTON BAY
MARLBOROUGH

DRAWING TITLE

WASTEWATER MANAGEMENT PLAN

SCALE	REVISION
1:500	A
JOB NO 12661	SHEET 4

FOR CONSTRUCTION

CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL, STRUCTURAL,
ENVIRONMENTAL & GEOTECHNICAL ENGINEERS

12661-4
22 January 2008

Marlborough District Council
Private Bag
BLENHEIM

Attn: Consents Manager

Dear Sir/Madam

Re: Wastewater Treatment, Proposed Tocker Dwelling, Lot 4 DP304987 Hamilton Bay, Admiralty Bay, Marlborough Sounds

1.0 Introduction

The following report outlines the evaluation of the suitability of the site at the Tocker Dwelling for on-site wastewater management to be assessed by the Marlborough District Council for compliance with existing drainage requirements in order to obtain Building Consent and Resource Consent.

The discharge of domestic wastewater through an on-site wastewater management system is a limited discretionary activity, so a resource consent is required (Rural Rule 36.3).

2.0 Site and Soil Evaluation

A site and soil evaluation was carried out on 28 June 2005. The report on that evaluation is attached as Appendix 1, including a site plan sketch.

The driveway access and partial house platform has been cut into the slope on the western side of the lot. As indicated in the geotechnical report, the house site is located in an area of colluvial soils. Downslope of the house site is a steeper slope that drops to an area of moderately sloping ground above the beach. To the east of the house site the ground rises slightly to a north-east sloping moderately steep (about 20°) ridge of deeply weathered soil.

The ridge is covered in grass and sparse small scrub. An old track runs across the site immediately below the house site and across the above mentioned ridge at a lower level. A stream runs down a bush clad gully to the west of the ridge. The road cuts back towards the coast on the west side of the gully, almost severing the lot into two parts. The area of the lot further west was not investigated, but from an aerial photograph appears to be relatively steep bush clad slopes.

The area in the vicinity of the house is very limited in respect to potential for land application, and considering the colluvial soil and steeper slope below, not considered suitable for effluent discharge. The flatter ground near the beach appears to be a wetter area (presence of rushes and sedges) and also being closer to the coast is also considered less suitable for land application.

The ridge to the west of the house site was therefore considered the most suitable area for land application.

One hand excavated and two hand augured test pits were investigated in the ridge area. The soil was consistently a moderately thick layer of topsoil (150-250mm) over a layer of silty clay to a depth of 400 to 550mm over a heavy clay to the depth of the tests of up to 1100mm. This profile was also reflected in a cut in the east side of the ridge (to a greater depth) as part of the driveway excavation. The silty clay is classified as Category 5 and the heavy clay as Category 6 (AS/NZS 1547:2000). Considering there is a reasonable depth to the base of the silty clay and the good potential for evapotranspiration in the area the Category 5 soil has been used as the basis for design.

3.0 Design Flows

The system has been designed based on wastewater flows expected from a five bedroom dwelling using a stream fed water supply on the basis that the guest lounge could be used as a bedroom. In accordance with the Marlborough Sounds Resource Management Plan this equates to an occupancy of ten people, resulting in a design flow of 1800 litres/day. (Refer Appendix 2)

2.0 Wastewater Treatment

Secondary quality treatment is recommended for the site to permit the use of pressure compensated drip irrigation. The treatment plant must produce "secondary quality" effluent as defined in AS/NZS 1547. Being potentially used by the present or future owners as a holiday home due to its location in the Sounds, the treatment system should be one that can adequately cope with intermittent use by incorporating a biofilter configuration, rather than an

activated sludge process (aerated treatment plant). Possible alternatives include Gould GT Systems Enviroclear, Innoflow Advantex system, Enviroflow Waste Water Treatment Systems Ltd plant, or Oasis Clearwater Texass system.

The system must be equipped with an audible and/or visual high level alarm. A maintenance contract with the system supplier is recommended.

4.0 Land Application Area

Land application of effluent shall be through pressure compensating drip irrigation as shown on Cameron Gibson & Wells drawing 12661 sheet 4. Driplines shall be UNIRAM 17 at 1 metre centres with emitters of not more than 1.6 litres per hour at 0.6 metre centres laid approximately on the contour.. The application rate shall not exceed 2.9 mm/day at the design flow, requiring an application area of 620 m^2. The lines shall be buried to a depth of 100mm – 150mm. Suggested planting species are provided below, although their suitability in the coastal environment will need to be considered.

A very small gully on the east side of the ridge should be avoided and a minimum 20 m setback shall be provided from the stream in the main gully to the east. A surface water cut-off drain shall be constructed immediately upslope from the application area to divert surface water away.

Examples of Suitable Evapo-Transpiration Plants (Gunn, 1994)

Trees:	Plants and Evergreens:	Grasses:
Birch	Rangiora	Paspalum (will tolerate extreme wet and dry)
Hydrangea	Fuchsia	Poa species
Geniostoma	Flax	Crested Dogs Tail (Cynosurus cristatus)
KawaKawa	Canna Lily	Yorkshire Fog (if fairly regularly wet)
Karaka	Agapanthus	Canary Reed Grass (Phalarus Arundinacea)
Kohekohe	Kaka Beak (Clianthus)	
Puka	Swan Plant	
Puriri	Geraniums	
Makomako		
Lemonwood		

3.0 Assessment of Effects

The treatment system and land application area proposed have been designed to minimise the risk of contamination of coastal waters. High quality effluent will be evenly applied over a

large area on an open north to north-east facing slope. The application area will be about 60 m from the coast, and at least 20 m from a stream leading to coastal waters. Therefore the risk of contamination is very low.

No other effects are foreseen as a result of the proposed wastewater system.

4.0 Conclusion

A wastewater management system has been designed for the Tocker dwelling in accordance with AS/NZS 1547:2000. The system is appropriate to the site and proposed use, including intermittent or permanent residence.

If you have any queries regarding this report, please contact the writer.

Yours sincerely

Peter Born
CAMERON GIBSON & WELLS LTD

Reviewed by

Richard Wells
CAMERON GIBSON & WELLS LTD

Encl.

Appendix 1

CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL & STRUCTURAL ENGINEERS

Site & Soil Evaluation Report

Job No.:_12661__

Site Information (Desk-top)

Location Details

Owner: Ross Tocker
Address: Hamilton Bay, Admiralty Bay, Marlborough Sounds

Legal Description: Lot 4 DP 304987
Territorial Authority: Marlborough District Council

Soil & Geology

Soil Type: Refer report Source:
Geology: Source:

Climate

Annual Rainfall: Source:
Rainfall Intensities: Source:
Seasonal Variation: Source:

Water Supply

Reticulated ☐ Roof ☐ Bore/well ☐ Other √(specify)____Stream___

Other Information

Four bedroom house. However as there are two lounge areas, one of which could easily be converted to a bedroom, the wastewater system must be designed based on five bedrooms. In accordance with MDC guidelines this equates to an occupancy of 10 people.

On-Site Evaluation

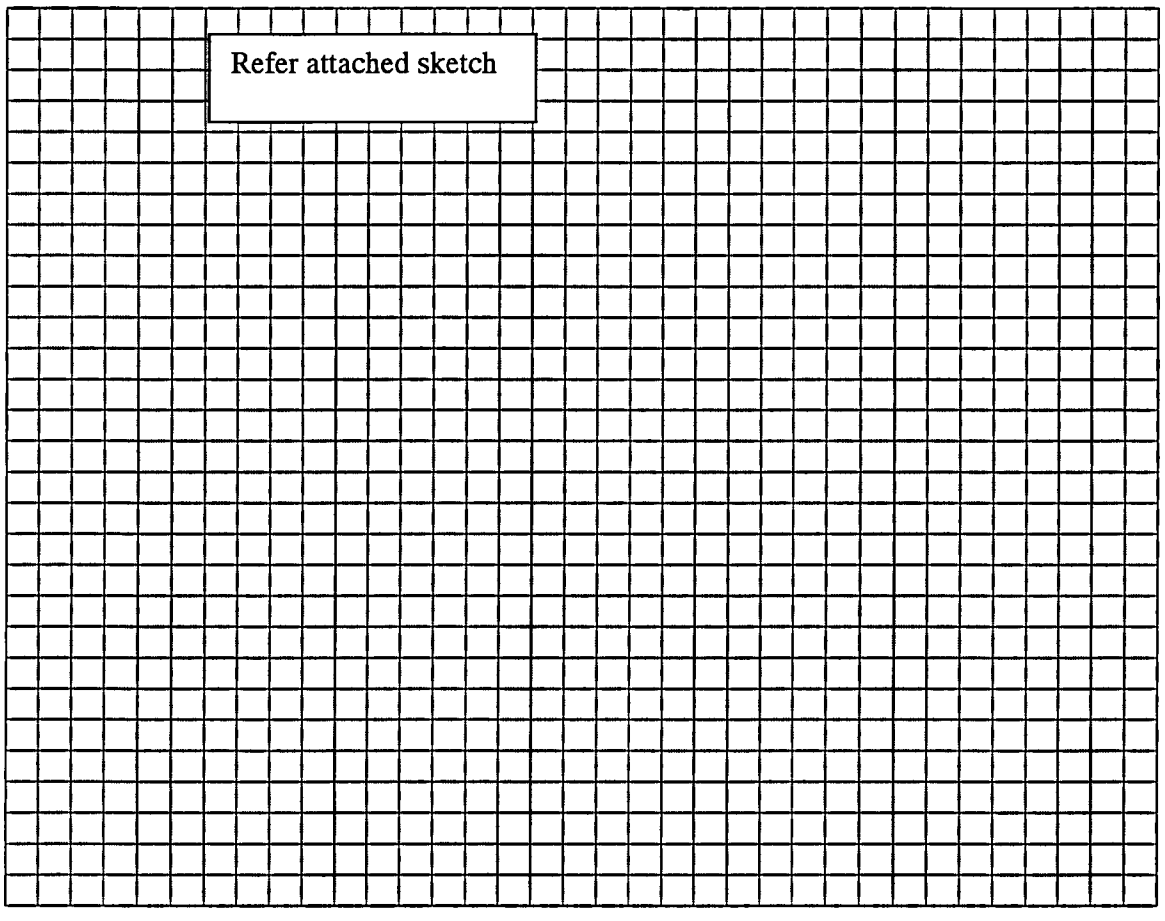
General

Date:	28/6/05
Weather:	Fine

Topography/Exposure

Slope:	20°
Ground Cover:	Grass and low scrub
Land Use:	Grazing
Aspect:	North - east
Pre-dominant Wind Direction:	Northerly
Shelter:	Open accept ridge to south

Site Plan Sketch



Environmental Concerns

Waterway √ Wetland ☐ High Groundwater ☐ Coastal Area √

Other ☐ (specify)_____

Site Stability

Expert assessment required? Yes ☐ No ☐ Refer report

Drainage

Depth to Groundwater: Measured: High:

Groundwater cut-off drains required? Yes ☐ No √

Surface water cut-off drains required? Yes √ No ☐

Recommended Setbacks

From	Setback
Steam	20 m

Soil Investigation

Soil Profile Determination

Test ID: TP1 Test Method: Hand Augur Groundwater Depth: None

Layer	Lower Depth	Moisture Condition	Colour (moist)	Texture	Structure	% Course Fragments	Permeability	Category
1	200	Dry	Dark brown	Topsoil		nil		
2	500	Slight moist	Yellow brown	Silty clay		nil		5
3	1100	Moist	Red brown	Heavy Clay		nil		6
4								
5								

Test ID: TP2 Test Method: Hand Augur Groundwater Depth: None

Layer	Lower Depth	Moisture Condition	Colour (moist)	Texture	Structure	% Course Fragments	Permeability	Category
1	250	Moist	Dark brown	Topsoil		nil		
2	550	Moist	Yellow brown	Silty clay		nil		5
3	900	Moist	Red brown	Heavy Clay		nil		6
4								
5								

Test ID: TP3 Test Method: Hand excavate Groundwater Depth: None

Layer	Lower Depth	Moisture Condition	Colour (moist)	Texture	Structure	% Course Fragments	Permeability	Category
1	150	Dry	Dark brown	Topsoil	Strong	nil		
2	400	Moist	Yellow brown	Silty clay	Strong	nil		5
3	600	Moist	Red brown	Heavy Clay	Strong	nil		6
4								
5								

Recommendations

Treatment System Type:	Secondary treatment
Disposal System Type:	Subsurface drip irrigation
Design Loading Rate:	2.9 litres per day

Discussion:

The site in the vicinity of the proposed dwelling is insufficiently large for on-site disposal and given consideration to the colluvial soils in this area and steep slope downslope of the dwelling, application of wastewater near the dwelling is not be recommended.

The clay soils and sloping site make a conventional (septic tank and trench) configuration impractical and contrary to the Marlborough Sounds Resource Management Plan for new on-site wastewater management systems.

To the east of the proposed dwelling is a moderately steeply sloping ridge of deeply weathered soils on which subsurface drip irrigation could be applied. The open exposure and north to north-east aspect will provide good evapotranspiration potential.

Prepared By

Peter Born
Cameron Gibson &Wells Ltd

N

HAMILTON BAY

BEACH

10°±

GRASS, RUSHES SEDGES & SMALL SCRUB

BUSH

LOT 4
1·9958 ha

TP2

TP3

TP1

OLD TRACK

20°±

SMALL GULLY

GRASS & SMALL SCRUB

STREAM

ROAD

PROPOSED HOUSE

DRIVEWAY

LOT 3

ROAD

TE TOWAKA - PORT LIGAR ROAD

CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL & STRUCTURAL ENGINEERS

22.1.08

Mark

Tocker Dwelling Wastewater report & drawing enclosed (includes stormwater discharge.)

Please forward to MDC with building consent and discharge consent application.

Peter Born

44 HALIFAX STREET NELSON PHONE 0-3-548 8259 FAX 0-3-546 8412
EMAIL cgwl@xtra.co.nz
MOTUEKA PHONE 0-3-528 8123

ACENZ

Appendix 2

CAMERON GIBSON & WELLS LTD

CONSULTING CIVIL & STRUCTURAL ENGINEERS

On-site Domestic Wastewater Management

Land Application Area Design

Client:	Tocker	Job No.:	12661
Location:	Admiralty Bay		
Legal Description:	Lot 4 DP 304987		
Territorial Athority:	MDC	(MDC, TDC, NCC,etc.)	

Design Flow:

Number of Bedrooms:	5	including suitably sized offices etc.	
Occupancy:	10	(MDC Guidelines)	
Water Supply:	1	(1=reticulated, bore or stream; 2=roof collection)	
Water Saving Option:	1	(1=no reduction, 2=standard reduction, 3=full reduction)	
Per-capita Flow:	180	litres/day	(AS/NZS 1547:2000)
Design Flow:	1800	litres/day	

Comments On Site:

North to north-east aspect
Good exposure to drying winds

Land Application System:

Soil Texture:	Silty clay		
Soil Structure:	strong		
Soil Category:	5		(AS/NZS 1547:2000)
Distribution System:	irrigation		
Design Loading Rate:	2.9	mm/day	(AS/NZS 1547:2000)
Area:	620.6897	m^2	
Width:	1	m	Trench width or centre to centre spacing for arial loading
Length:	620.6897	m	