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Our Ref: LP15687a

15 August 2012

MacDonell Consulting Ltd
PO Box 35928
Browns Bay

Dear Barry

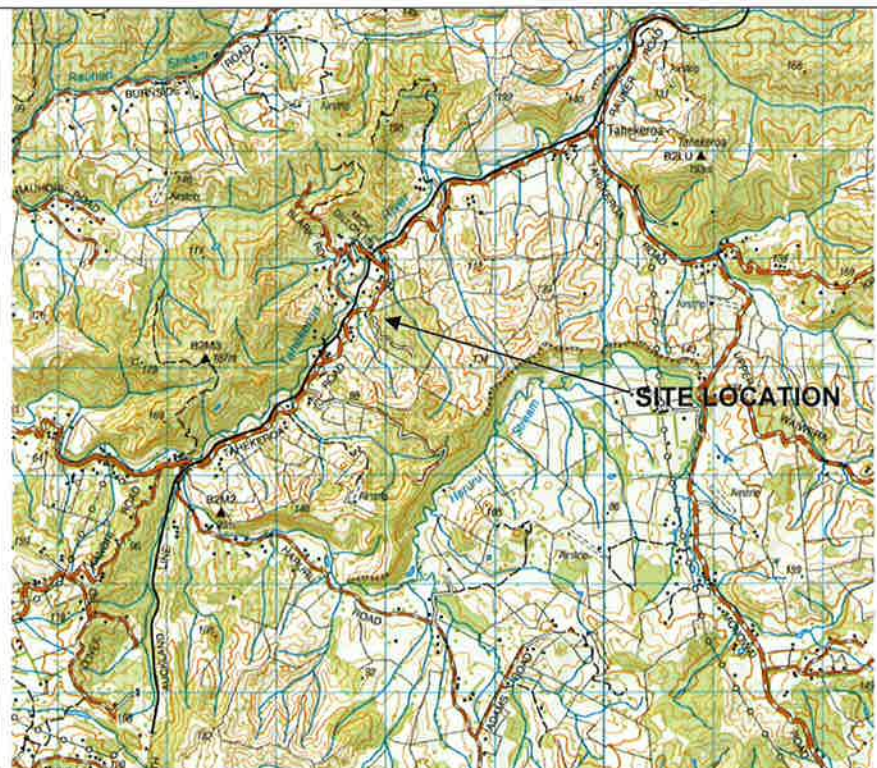
**RE: PROPOSED 6 LOT SUBDIVISION AT TAHEKEROA ROAD,
MAKARAU FOR SH16 LTD**

INTRODUCTION

This office has visited and inspected the above site on Wednesday 1st August 2012. This report has been prepared to support an application for subdivision consent with Auckland Council and to provide recommendations for the proposed stormwater neutrality of the site.

SITE LOCATION

NZ Topo50
Sheet AZ31
Warkworth



SITE DESCRIPTION

The property is about 31.5 Hectares in area and is situated on the southern side of Tahekeroa Road. The property is bisected by a deep gully and the recommended building platforms are on the high ground on the south-western side of the property.

SITE INVESTIGATION

A geotechnical investigation report was completed by Engineering Geology dated 23 August 2006 Ref 6045. A stable building platform was nominated on each of the proposed sites.

ACCESS

The access to the proposed six lots will be via a right of way. The right of way will be formed on an approximately 3.0 m wide existing metal track. The right of way will be a metal formation where the longitudinal gradient is less than 12.5% and concrete where it is steeper. The approx. first 400m will be 3.0m wide concrete with the remainder a 3.0 m wide metalled formation. Passing bays will be provided at suitable locations in accordance with the RDC Engineering Standards. The initial 12 m of the right of way will be 5.5m wide.

There are only minimal earthworks required to form the right of way. Erosion and sediment control devices will be installed in accordance with TP 90.

We note that the RDC Engineering Standards have a general rule (clause 356.2) that suggests right of ways serving 6 or more sites be 5.5 m wide.

Widening the right of way to 5.5 m wide where it serves 6 lots would require extensive earthworks and we believe would not be warranted as passing bays and widening at the entrance will be provided.

WATER RETICULATION

All lots will be serviced by harvesting rainwater from roof collection into on site storage tank(s). The tanks should be installed at the time of dwelling construction.

STORMWATER DRAINAGE

All stormwater runoff from the building site, tank overflows, hardstand areas, surface and subsoil drainage should be collected into a sealed stormwater system and discharged through a suitable scour resistant outlet (ie: a tee-bar diffuser) well clear of the building site and ideally into the existing drainage ditches located within the site.

Concentrated stormwater flows should not be allowed to discharge close to the building(s) or onto sloping ground within the vicinity of the building site. This would be detrimental to foundation conditions and slope stability.

All pipes at the inlet, between and at the outlet of water tank(s) should have flexible connections.

Stormwater neutrality is required for 2, 10 & 100 year ARI storm event. A stormwater neutrality has been prepared by this office, dated 15 August 2012 Ref LP15687 which has attenuation volumes and orifice sizes.

ON-SITE WASTEWATER DISPOSAL

The proposed lots have sufficient area to service a standard three-bedroom dwelling as required by Auckland Council. The proposed dwelling will utilise on-site tank water from roof collection. Approximately 200-litres per person per day of wastewater will be generated. The above flow allowance is based on a household with standard fixtures including 11 litre flush cisterns; automatic washing machine and dishwasher, refer to TP58; Table 6.2.

The soils encountered during the geotechnical investigation beneath the site are considered category 5, slow drainage in terms of TP58; Table 5.1.

We have adopted a conservative application rate (from TP58; Table 9.2 and Table TS5-2) of:

- 3mm/day (a maximum loading rate of 3-litres/m²/day).

Typical design requirements for on-site wastewater treatment and disposal system for a standard dwelling in category 5 soils are as follows:

Occupancy Allowances:	Number of bedrooms	= 3
refer Table 6.1	Occupancy	= 5 persons
Flow Allowances:	Roof water tank supply	= 200ℓ/person/day
refer Table 6.2		
Max Daily Wastewater Discharge:	5 x 200	= 1,000ℓ/day

$$A:V \text{ Ratio} = \frac{15,000\text{m}^2 \text{ (Gross Area of smallest lot)}}{1,000\ell/\text{day} \text{ (Max Daily Flow)}} = 15$$

This area:volume ratio exceeds the 3.0 threshold and the maximum daily flows do not exceed 2000-litres/day therefore the activity is a Auckland Council permitted activity (PA) in accordance with the fourth permitted activity rule no. 5.5.23 decision version 2004.

We recommend the installation of an On-site Wastewater Treatment and Disposal System providing secondary treatment with an Aerated Wastewater Treatment System (AWTS) or advanced secondary treatment with recirculating textile filter (ST-TF) or similar system, utilising surface or near surface wastewater disposal via Pressure Compensating Dripper Irrigation (PCDI). The disposal field should be well vegetated.

We do not recommend the use of primary treatment systems with conventional trenches on sites.

The above recommendations are a guideline to demonstrate that on-site wastewater disposal is achievable on the proposed lots for a 3-bedroom dwelling using an AWTS or SF-TF. This does not preclude the use of primary, advanced secondary, tertiary or any other approved wastewater treatment and disposal systems or using different application rates. The wastewater treatment and disposal system shall be specifically designed for the site and proposed dwelling at building consent stage, with special consideration given to the type of system used for large occupancy dwellings.

LIMITATION

This report has been prepared solely for the benefit of SH16 Ltd as our client with respect to the brief. The reliance by other parties on the information or opinions contained in the report shall, without prior review and agreement in writing be at such parties sole risk.

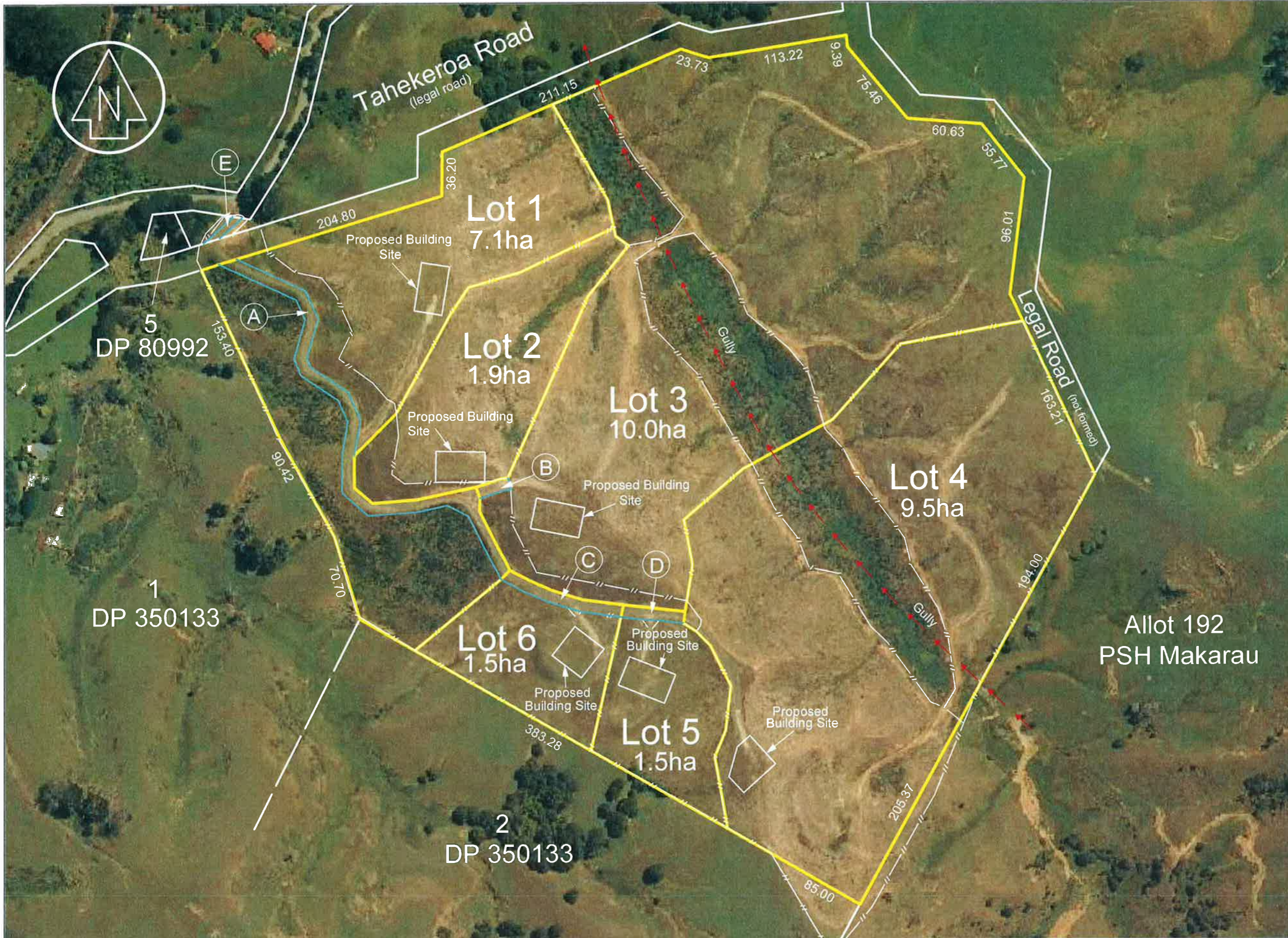
Should you wish to discuss any aspects of the above information, please contact the above office.

We trust this meets with your approval.

Yours faithfully
HUTCHINSON



Phil Fairgray
GENERAL MANAGER



Territorial Authority: Auckland Council

Proposed Easements			
Purpose	Shown	Servient Tenement	Dominant Tenement
R.O.W. & Services	(A)	Lot 1 hereon	Lots 2-6 hereon
	(B)	Lot 3 hereon	Lot 2 hereon
	(C)	Lot 6 hereon	Lots 4 & 5 hereon
	(D)	Lot 5 hereon	Lot 4 hereon

Existing Easements			
Purpose	Shown	Servient Tenement	Created by:
R.O.W.	(E)	Lot 12 DP 79858	T529036.1

Sheet 2 of 2

Total Area:	370.5256 ha
Comprised in:	542882 NA139D/227 NA139D/227 540527 540525 540526 475158

Notes:
 1. This plan is prepared for the purpose of obtaining subdivision consent and is not to be used for any other purpose.
 2. All metric measurements and areas are subject to final survey.



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Drawing Title:
 Lots 1-14 Being Proposed Subdivision of
 Lots 7-12 DP 438073, Lots 8 & 14 DP 209381
 Lot 13 DP 211770, Lot 2 DP 419730
 Lot 13 DP 79858 & Lot 8 & 10 DP 337037

Client:
SH16 Limited
Tahekeroa Road
Makarau

Original Scale:	Original Size:
1:3000	A3
Date:	Job Number:
June 2012	2203