

15 April 2015

Greg Dewe
 Land Development Manager
 Fulton Hogan Land Development Limited
 15 Sir William Pickering Drive
 PO Box 39185
 Christchurch 8545

Dear Greg

**Fulton Hogan Land Development Limited Stage 6 Rosemerryn Subdivision Geotechnical Completion Letter Report – Resource Consent 135618
 Our Ref: 224464**

This geotechnical completion letter report is submitted in accordance with Section 12.4.1 of the Selwyn District Council Engineering Code of Practise.

1 Introduction

As part of the Fulton Hogan Land Development Limited (FHLD) Rosemerryn Subdivision Development located at Lincoln, Aurecon has completed a geotechnical investigation and assessment for Stages 3 to 6. This is detailed in the Aurecon geotechnical report “*Geotechnical Assessment Report Rev 3, Rosemerryn Farm Stages 3 to 6, Fulton Hogan Land Development Limited*”, dated 3 May 2012.

The report was issued following the publication of the Ministry of Business Innovation & Employment (MBIE) formerly the Department of Building and Housing, guidelines in November 2011, which define the new Technical Category zoning and the liquefaction induced deformation limits for each Technical Category.

The categories and corresponding criteria are summarised as follows:

- **Technical Category 1 (TC1)** – Future land damage from liquefaction is unlikely, and ground settlements are expected to be within normally accepted tolerances.
- **Technical Category 2 (TC2)** – Minor to moderate land damage from liquefaction is possible in future large earthquakes.
- **Technical Category 3 (TC3)** – Moderate to significant land damage from liquefaction is possible in future large earthquakes.

For the Canterbury region, the MBIE has released a new classification system for residential ‘Green Zone’ land on the flat in regard to liquefaction susceptibility. These are summarised below:

Table 1: Liquefaction Deformation Limits and House Foundation Implications

Technical Category	Index Liquefaction Deformation Limits				Likely Implication for House Foundations (subject to individual assessment)
	Vertical SLS	ULS	Lateral Spread SLS	ULS	
TC1	15mm	25mm	Nil	Nil	Standard NZS3604 type foundations with tied slabs
TC2	50mm	100mm	50mm	100mm	MBIE enhanced foundation solutions
TC3	>50mm	>100mm	>50mm	>100mm	Site specific foundation solution

2 Liquefaction Analysis and Results

The liquefaction analysis for Stage 6 was based on the CPT testing carried out as part of the geotechnical investigations for the larger subdivision. The geotechnical investigation information used to assess Stage 6 is part of a large group of geotechnical information and only the tests that are relevant for this stage has been assessed. Consideration was given to information and data from outside the stage boundary when assessing geotechnical hazards and issues.

Based on the liquefaction and lateral spreading results, we consider Stage 6 falls within the liquefaction deformation limits of Technical Category 1.

Figure 1: Stage 6 Rosemerryn Subdivision

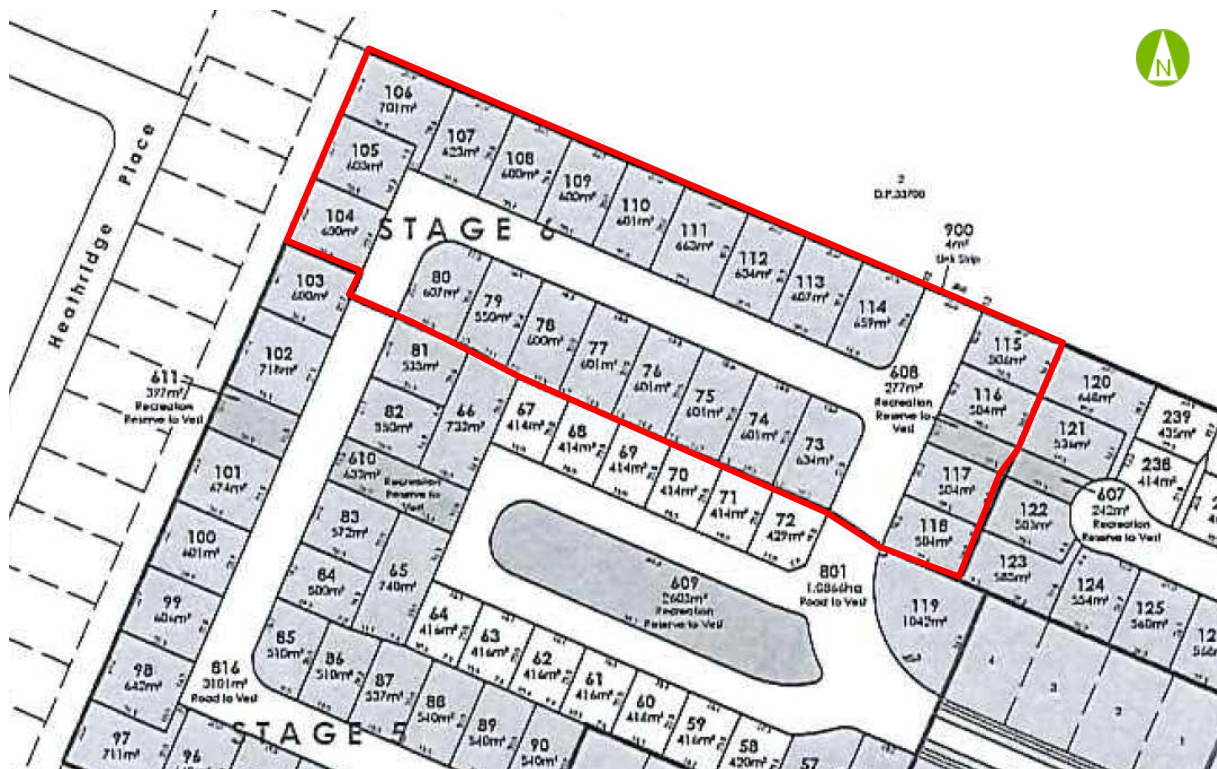


Table 2: Inferred Technical Category of Lots within Stage 6

Lot	Technical Category (Based on calculated liquefaction deformation limits)	Lot	Technical Category (Based on calculated liquefaction deformation limits)	Lot	Technical Category (Based on calculated liquefaction deformation limits)
73	TC1	104	TC1	112	TC1
74	TC1	105	TC1	113	TC1
75	TC1	106	TC1	114	TC1
76	TC1	107	TC1	115	TC1
77	TC1	108	TC1	116	TC1
78	TC1	109	TC1	117	TC1
79	TC1	110	TC1	118	TC1
80	TC1	111	TC1	608	N/A

Lot 608 is a reserve area; therefore no Technical Category Classification is applicable for this lot.

A TC1 Classification effectively means that the MBIE believe that ‘*Future land damage from liquefaction is unlikely, and ground settlements are expected to be with normally accepted tolerances.*’ Standard type foundations (e.g. NZS3604, NZS3229 etc.) are acceptable subject to shallow geotechnical investigation.

3 Limitations

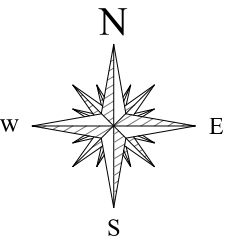
The contents of this letter are for the sole use of the Client and no responsibility or liability will be accepted to any third party. Information or opinions contained within this letter may not be used in other contexts or for any other purposes without our prior agreement. The comments in this letter are based on our investigations of the site for the sole purposes of the geotechnical aspects only, as requested by the Client. Only a finite amount of information has been collected and this letter does not purport to completely describe all the site characteristics and properties. The extent of our investigations and the results of all the tests carried out are as described in the geotechnical report for Stages 3 to 6 “*Geotechnical Assessment Report Revision 3, Rosemerryn Farm Stages 3 to 6, Fulton Hogan Land Development Limited*”, dated 3 May 2012.

We trust this meets your requirements and if there are any further queries please do not hesitate to contact us.

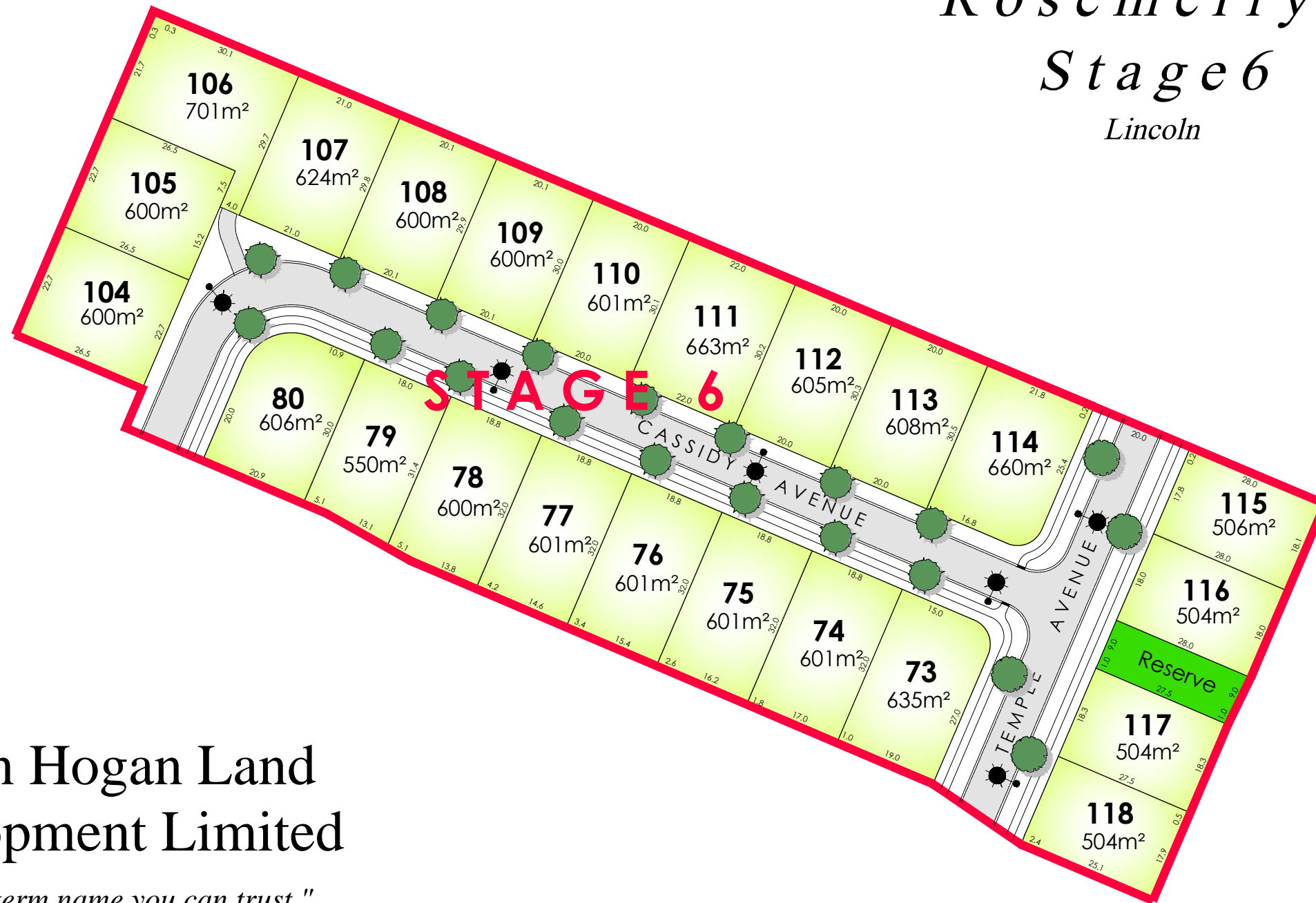
Yours sincerely


Dr Jan Kupec
 Technical Director – Ground Engineering

Enc: SDC Approved Subdivision Plan for Rosemerryn Subdivision



Rosemerry Stage 6 Lincoln



Fulton Hogan Land
Development Limited

" The long term name you can trust "



Note:

Areas and dimensions are subject to final survey and deposit of plans.
J:\17001\SI7001 STAGE 6 SALES.dwg