

**7.0 Statement of Professional Opinion as to Suitability of Land for Building Development**

**Scheme Plan No: R59597**

**Owner: Cabra Developments Limited**

**Address: Matua Road**

**Locality: Huapai**

**I, Ian Thomas Hutchinson of Ian Hutchinson Consultants Ltd,  
154 Centreway Road, Orewa 0931  
P O Box 150, Orewa 0946**

Hereby confirm that:

1. I am a Chartered Professional Engineer experienced in the field of geotechnical engineering and was retained by the Owner/Developer as the Geotechnical Engineer on Stage 3A (release stages 7, 8 and 9) of the Matua Estate Subdivision at 179 Matua Road, Huapai.
2. The extent of my inspections during construction and the results of all tests carried out are described my report ref: L17550m dated 21<sup>st</sup> August 2015.
3. In my professional opinion, not to be construed as a guarantee I consider that:
  - (a) The earthfills shown on the attached as-built cut/fill depth contour plan No: 17550AB/EW-103 has been completed in compliance with NZS 4431:1989 and the Rodney District Council Standards for Engineering Design and Construction.
  - (b) The completed works give due regard to land slope and foundation stability considerations. However as indicated on the appended as-built batter consent notice area plan 17550AB/CN-603 areas within lots 158 to 167 (inclusive) have gradients or are adjacent to slopes with gradients steeper than 1 in 4.

No building construction and no earthworks should be undertaken in these zones unless endorsed by specific design of all foundations and retaining walls completed by a Chartered Professional Engineer.

All building construction on or near the toe of slopes within these zones should be specifically designed and should consider the impact of any cuts on batter stability. We envisage all fills and/or cuts should be supported by a specifically designed retaining wall.

Landscape retaining wall design parameters are given below:

- $c' = 0\text{kPa}$
  - $S_u'$  (to calculate pole embedment) = 100kPa
  - $\phi' = 30^\circ$
  - $\gamma' = 18\text{kN/m}^3$
  - Timber pole wall active ( $K_a$ ) horizontal soil loads.
  - Lateral earth pressures should be modified for appropriate ground slope above and/or below the wall and should account for future possible (vehicle or back slope) surcharge loading.
- (c) A geotechnical ultimate bearing capacity of 300kPa may be used for foundation design on all lots except as a result of the presence of soft natural sub-soils within the likely influence of shallow foundations on Lots 138, 139 and 149 to 151, an ultimate bearing capacity of 210kPa should be adopted. Using stiffened rib-raft type foundation systems is a preferred option on these lots however it does not preclude the use of a four bar perimeter foundation system.
- (d) A retaining wall is located on Lots 157 and 158. Refer to the appended as-built consent notice area plan 17550AB CN-601.
- No building construction, including the construction of additional retaining walls and/or earthworks should take place above and/or below walls within 1.5 x the retained height of the wall measured from either the top and/or base of the wall, unless endorsed by a Chartered Professional Engineer experienced in geomechanics and familiar with the contents of this report to ensure no additional loads are applied to the wall and/or to ensure toe support is not removed from below the wall.
- (e) As is normal practice within residential subdivisional building development involving foundations within the zone of influence from pipe inverts will require engineering input and design review.
- (f) The assessed AS 2870 expansive Site Classification for all lots is M (moderately expansive).
- (i) All shallow foundations should extend a minimum of 750mm below finished ground level.
  - (ii) Alternatively foundation design may be undertaken in accordance with AS 2870:2011 sections 3 and 4 for Site Class M.
  - (iii) Post subdivisional construction filling on Lots 69 to 86 is limited to 200mm above constructed subdivisional finished ground levels limiting finished concrete slab levels of future dwellings to no more than 500mm above the original ground level at any point around the perimeter foundation.

- (iv) Where brittle exterior cladding such as brick veneer, stucco plaster, solid plaster, block work, styrofoam type cladding or sprayed plaster over harditex systems, etc is proposed, consideration should be given to detail control joints. Particular attention should be given to joints positioned around doorways, windows and building envelope returns where potential cracking is most likely to occur.
- (g) Subject to the geotechnical limitations, expansive soil assessments, restrictions and recommendations contained in clauses 3 (a, b, c, d, e, and f) above, the filled and natural ground within the residential lot boundaries is generally suitable for residential buildings constructed in accordance with NZS 3604:2011 Timber Framed Buildings and related documents.
4. Road subgrades have been modified to accommodate the pavement design requirements.

The professional opinion contained in this report is furnished to the Auckland Council and Cabra Developments Limited for their purposes alone on the express condition that it will not be relied upon by any other person. Prospective purchasers should still satisfy themselves as to any specific conditions pertaining to their particular land interest.

**Signed:**

  
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I.T. Hutchinson  
**MANAGING DIRECTOR**  
BE (Civil) ME MIPENZ  
CPEng Civil Structural IntPE (NZ)

**Date:** 21 August 2015

CPEng Reg No: 63973  
**Member:** ACENZ and IPENZ

**Table 7.1 – Suitability Statement Summary**

<b>Lot No.</b>	<b>Requirements</b>	<b>Ultimate Bearing Capacity (kPa)</b>	<b>AS2870-2011 Class</b>	<b>Indicative Topsoil Depth (mm)</b>
69	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	150
70	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	250
71	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	250
72	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	150
73	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	350
76	Specific design within Stormwater Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	150
77	Specific design within Stormwater Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	200
78	Specific design within Stormwater Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	150
79	Specific design within Stormwater Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	150
82	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	150
83	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	200
84	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	200
85	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	250
86	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M*	350

***M\* denotes the sites may be classified as Class M (moderately expansive) provided no more than 200mm of fill is placed above the finished site level (existing grass level). Any additional filling of the site may lead to consolidation of the soft natural subsoils and the effects of this need to be considered. If these sites are filled more than 200mm above existing finished site level, the AS2870 classification shall be Class H1 and specific design will be required with due consideration given to potential post construction settlement.***

Lot No.	Requirements	Ultimate Bearing Capacity (kPa)	AS2870-2011 Class	Indicative Topsoil Depth (mm)
87	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
88	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
89	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
90	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
91	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
118	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
119	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
120	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
121	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
122	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
123	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
124	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
125	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
126	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
127	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
128	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
129	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
138	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	210	M	200
139	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	210	M	200
140	Specific design within Stormwater Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
141	Specific design within Stormwater Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
142	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
143	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150
144	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
145	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
146	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	150

Lot No.	Requirements	Ultimate Bearing Capacity (kPa)	AS2870-2011 Class	Indicative Topsoil Depth (mm)
147	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
148	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
149	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	210	M	150
150	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	210	M	300
151	AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	210	M	200
157	Specific design within Retaining Wall Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
158	Specific design within Batter and Retaining Wall Consent Notice Areas. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
159	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	350
160	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
161	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
162	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
163	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	250
164	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	300
165	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
166	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200
167	Specific design within Batter Consent Notice Area. Elsewhere AS 2870 raft foundation or NZS 3604 with minimum foundation depth of 750mm.	300	M	200