



22 September 2020

11698

Harry Lo

Email: harrykhlo@gmail.com
Cc: warren.sheddan@outlook.com

Dear Harry,

**SOIL BEARING INVESTIGATION
LOT 663 RAPERE STREET, FALCONS LANDING, ROLLESTON**

Testing & Results

We confirm that a soil bearing investigation was completed on 21 September 2020 at the above property and now report as follows.

The section is located on the North-Western corner of Rapere Street and Branthwaite Drive in the new Falcons Landing subdivision. The section is a relatively flat, grass covered site.

The investigation consisted of four penetrometer tests and two Hand Augers to determine the underlying soil conditions and allowable bearing capacity. The locations and results of the scala penetrometer tests are recorded on the attached plan and 'soil investigation record' sheets.

The static water table was not encountered in the scala penetrometers at the time of this investigation.

Due to the gravels encountered, it was difficult to penetrate the ground to a significant depth with a scala penetrometer or hand auger. Hand augers at test location '1' and '4' revealed topsoil to approximately 100mm overlying dark brown silts on gravels. The scala penetrometer results were quite similar in all locations with medium bearing capacity at the surface, increasing with depth, and refusal at shallow depths.

The penetrometer results showed that an ultimate bearing capacity of **300kPa** is available at approximately **200mm** below existing ground level, beneath the topsoil layer.

Other Information Reviewed

The Aurecon report dated 16 February 2017 has classified the site as TC1, with reference to MBIE guidance document.

Conclusion

Based on the testing results and other information reviewed, the site complies with the "good ground" criteria of NZS3604:2011.

We would infer that normal NZS3604:2011 type foundation details can be utilised for this site provided that the construction of the proposed dwelling is in accordance with NZS3604:2011.

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All rubbish, noxious and organic matter as outlined in NZS3604:2011 Clause 3.5.1 should be removed from the building area and the ground brought back up to formation using compacted hardfill if required prior to pouring the foundation slab. An engineer should inspect the foundations at the time of excavation to ensure adequate bearing throughout.

Please note that my recommendations are based on a limited number of penetrometer tests and the nature and continuity of subsoil conditions is inferred. It should be appreciated that actual conditions could vary from the tests results.

Please contact me should any further information be required.

Yours faithfully

Cory Bedford

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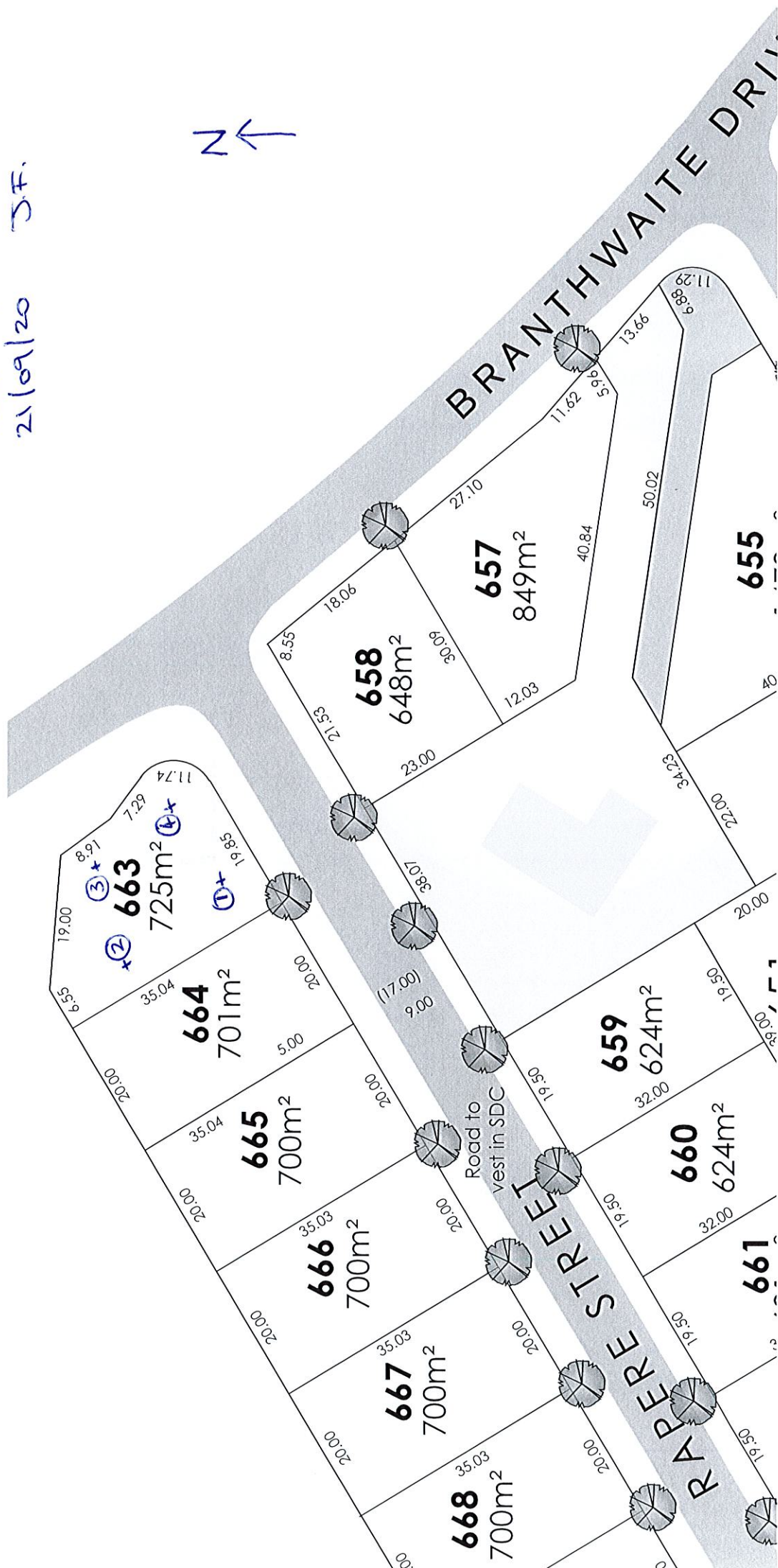
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Test locations
21/09/20 D.F.

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soil investigation record

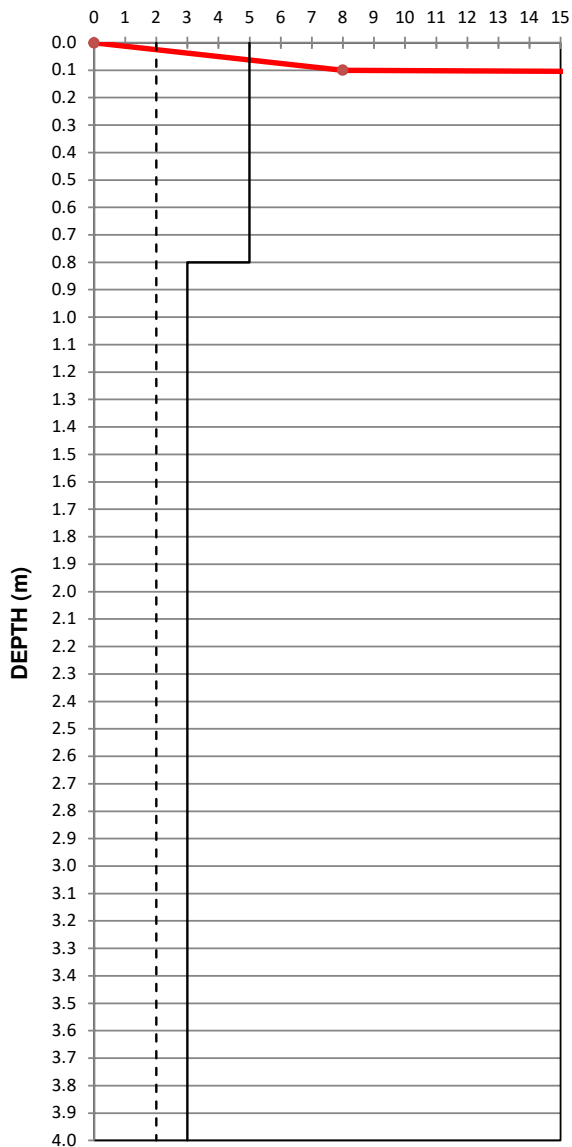
Project:	LOT 663 RAPERE STREET, FALCONS LANDING, ROLLESTON		No.:	1 OF 5
Ref:	11698		Date:	22/09/2020
By:	CH		Checked	CB

Test Location 1

Depth (m)	Bore Log (Hand Auger)		Scala Penetrometer
	Symbol	Description	(Blows/100mm)
GL		Topsoil	
0.2		End (Drop-weight Bounced)	
0.4			
0.6			
0.8			
1.0			
1.2			
1.4			
1.6			
1.8			
2.0			
2.2			
2.4			
2.6			
2.8			
3.0			
3.2			
3.4			
3.6			
3.8			
4.0			

Notes:

- Refer to attached site plan for location.
- Based on Stockwell, M.J. , 1997: Determination of allowable bearing pressure under small structures, New Zealand Engineering (32:6), dated 15 June 1977, using a factor of safety of three to back calculate the UBC.
- The allowable bearing pressure has been calculated using a factor of safety = 3.
- 100 kPa allowable bearing pressure corresponds to the NZS 3604:2011 requirements for "Good ground".
- 65 kPa allowable bearing pressure corresponds to the MBIE Guidelines requirements for use of foundation options 1-4 (TC2).



DEPTH (m)

Blows/100mm

100 kPa Allowable Bearing Capacity

65 kPa Allowable Bearing Capacity

soil investigation record

Project:	LOT 663 RAPERE STREET, FALCONS LANDING, ROLLESTON		No.:	2 OF 5
Ref:	11698		Date:	22/09/2020
By:	CH		Checked	CB
Test Location 2				
	Bore Log (Hand Auger)		Scala Penetrometer	
Depth (m)	Symbol	Description	(Blows/100mm)	
GL				
0.2				
0.4		End (Drop-weight Bounced)		
0.6				
0.8				
1.0				
1.2				
1.4				
1.6				
1.8				
2.0				
2.2				
2.4				
2.6				
2.8				
3.0				
3.2				
3.4				
3.6				
3.8				
4.0				
Notes: <ul style="list-style-type: none"> Refer to attached site plan for location. Based on Stockwell, M.J. , 1997: Determination of allowable bearing pressure under small structures, New Zealand Engineering (32:6), dated 15 June 1977, using a factor of safety of three to back calculate the UBC. The allowable bearing pressure has been calculated using a factor of safety = 3. 100 kPa allowable bearing pressure corresponds to the NZS 3604:2011 requirements for "Good ground". 65 kPa allowable bearing pressure corresponds to the MBIE Guidelines requirements for use of foundation options 1-4 (TC2). 				

soil investigation record

Project:	LOT 663 RAPERE STREET, FALCONS LANDING, ROLLESTON		No.:	3 OF 5
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By:	CH		Checked	CB

Test Location 3

Depth (m)	Bore Log (Hand Auger)		Scala Penetrometer
	Symbol	Description	(Blows/100mm)
GL			
0.2		End (Drop-weight Bounced)	
0.4			
0.6			
0.8			
1.0			
1.2			
1.4			
1.6			
1.8			
2.0			
2.2			
2.4			
2.6			
2.8			
3.0			
3.2			
3.4			
3.6			
3.8			
4.0			

Notes:

- Refer to attached site plan for location.
- Based on Stockwell, M.J. , 1997: Determination of allowable bearing pressure under small structures, New Zealand Engineering (32:6), dated 15 June 1977, using a factor of safety of three to back calculate the UBC.
- The allowable bearing pressure has been calculated using a factor of safety = 3.
- 100 kPa allowable bearing pressure corresponds to the NZS 3604:2011 requirements for "Good ground".
- 65 kPa allowable bearing pressure corresponds to the MBIE Guidelines requirements for use of foundation options 1-4 (TC2).

DEPTH (m)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

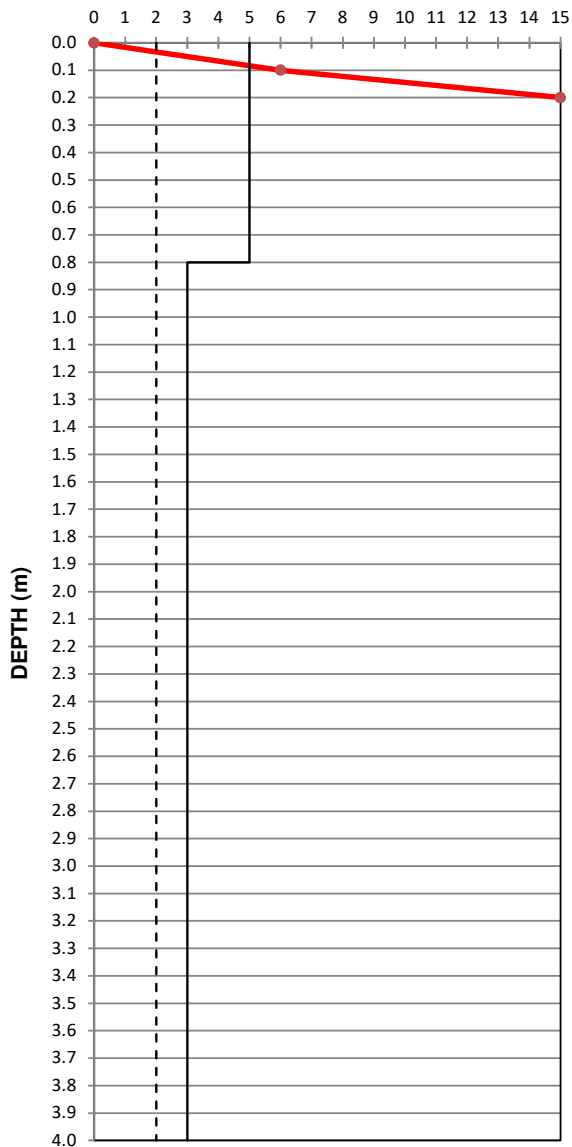
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2.0
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
3.0
3.1
3.2
3.3
3.4
3.5
3.6
3.7
3.8
3.9
4.0

—●— Blows/100mm
— 100 kPa Allowable Bearing Capacity
- - - 65 kPa Allowable Bearing Capacity

soil investigation record

Project:	LOT 663 RAPERE STREET, FALCONS LANDING, ROLLESTON		No.:	4 OF 5
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By:	CH		Checked	CB

Test Location 4

Depth (m)	Bore Log (Hand Auger)		Scala Penetrometer
	Symbol	Description	(Blows/100mm)
GL		Topsoil	
0.2		Stoney Brown Silts	
0.4		End (Drop-weight Bounced) Red & B	
0.6			
0.8			
1.0			
1.2			
1.4			
1.6			
1.8			
2.0			
2.2			
2.4			
2.6			
2.8			
3.0			
3.2			
3.4			
3.6			
3.8			
4.0			

Notes:

- Refer to attached site plan for location.
- Based on Stockwell, M.J. , 1997: Determination of allowable bearing pressure under small structures, New Zealand Engineering (32:6), dated 15 June 1977, using a factor of safety of three to back calculate the UBC.
- The allowable bearing pressure has been calculated using a factor of safety = 3.
- 100 kPa allowable bearing pressure corresponds to the NZS 3604:2011 requirements for "Good ground".
- 65 kPa allowable bearing pressure corresponds to the MBIE Guidelines requirements for use of foundation options 1-4 (TC2).

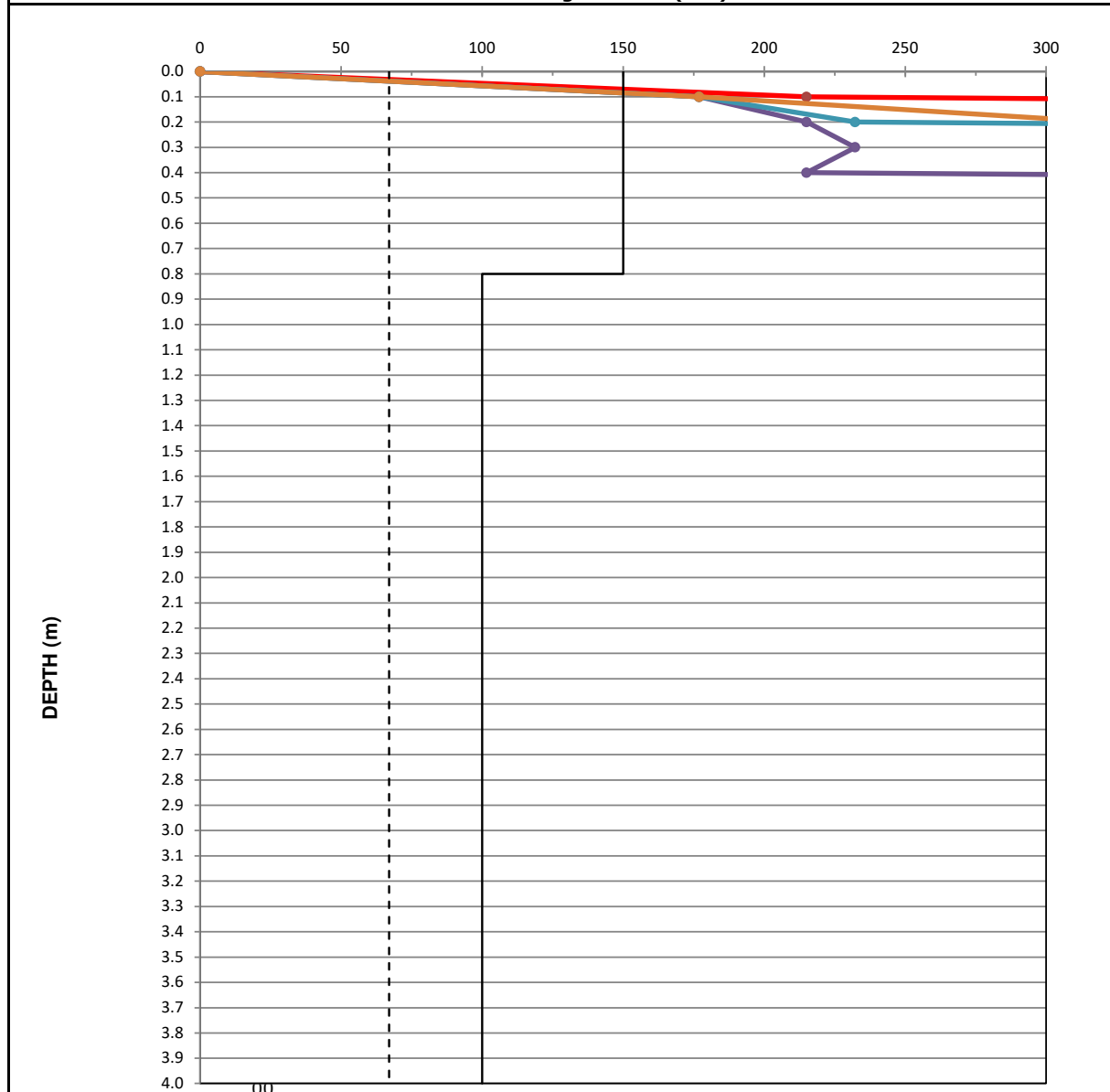
—●— Blows/100mm
—— 100 kPa Allowable Bearing Capacity
---- 65 kPa Allowable Bearing Capacity

soil investigation record

Project:	LOT 663 RAPERE STREET, FALCONS LANDING, ROLLESTON	no.	5 OF 5
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By:	CH	checked	CB

Scala Penetrometer

Allowable Bearing Pressure (kPa)



Notes:

- Based on Stockwell, M.J. , 1997: Determination of allowable bearing pressure under small structures, New Zealand Engineering (32:6), dated 15 June 1977, using a factor of safety of three to back calculate the UBC.
- The allowable bearing pressure has been calculated using a factor of safety = 3.
- 100 kPa allowable bearing pressure corresponds to the NZS 3604:2011 requirements for "Good ground".
- 65 kPa allowable bearing pressure corresponds to the MBIE Guidelines requirements for use of foundation options 1-4 (TC2).

- Test Location 1
- Test Location 2
- Test Location 3
- Test Location 4
- 100 kPa Allowable Bearing Capacity
- 65 kPa Allowable Bearing Capacity