

Chris Nathan
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14 April 2021
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Job No: 21-0048



Dear Chris,

Prepurchase Geotechnical Summary for
4 Lort Point Lane Road, Reotahi (Lot 9 DP 534968)

As requested, Core Engineering Solutions Ltd has undertaken a pre purchase geotechnical assessment of the above section to provide guidance for a future dwelling designed in general accordance with NZS3604 (Importance Level 2 – NZS1170).



Figure 1: Extract from WDC Property Maps, indicative contours

Geotechnical Summary

On 1 March 2021, a site walkover and subsoil testing were undertaken to confirm the ground conditions and general site topography. From a walkover inspection of the site, the identified building site is located in an area with moderate topography (~11 degrees) exhibiting a linear convergent aspect. The site is zoned as being within predominately a high instability hazard as zoned by the WDC GIS maps. This zoning is due to the hummocky/undulating nature of the general site topography that is common within the Northland Allochthon geology. Typically in this geology, it is expected that foundations will be well keyed into the moderately weathered mudstone rock.

A machine augered borehole was undertaken at the centre of the site to confirm the consistency of the underlying material. In-situ Pilcon Shear Vane readings indicated adjusted shear strength readings of generally greater than 100kPa down to 2.7m. The underlying weathered mudstone (Northland Allochthon) initially decreased in strength to 94kPa at 2.3m then began to increase in strength as depth increased and eventually resulting in near refusal from the machine auger. From the recovered material, the near refusal suggested that moderately weathered mudstone is present at a depth of 2.7m below existing ground level. This is consistent with the subsoil investigation encountered downslope of the property on the neighbouring property. No groundwater was encountered during the subsoil investigations.

Results were similar to conditions encountered by Wilton Joubert Ltd on the lower section (Lot 8 DP 534968, 6 Lort Point Lane).

From the subsoil test and review of the surrounding properties engineer report, Core Engineering Solutions Ltd summarise the following in regards to this property:

- Natural Ground Conditions (no fill encountered during subsoil testing)
- No Groundwater encountered
- Residual or completely weathered Melange of Northland Allocthon materials, comprised of stiff plastic silty CLAY to a depth of ~1.8m bgl overlying moderately weathered MUDSTONE with some to minor clay.
- Upper layers unsuitable for shallow footings, requiring loads to be transferred to underlying (mudstone) layers.
- Conditions, including both soil and slope conditions, suggest a foundation of either bored piles embedding a minimum of 350mm into the mudstone and/or soldier piles and appropriate retaining to suit the proposed construction to confirmed once conceptual plans are available.
- Conditions encountered do not meet the definition of good ground under NZS 3604:2011, and any proposed development will require the supervision of a Chartered Geotechnical Engineer. Further input can be provided at the site-specific stage.
- All cuts will need to be reviewed where in excess of 0.5m in height.
- It should be anticipated that batter slopes of 1 V to 3 H will be appropriate for the site.

From the site investigations and assessment above, we recommend that consultation with CES Ltd at an early stage would benefit any future development of the site to ensure that foundations and retaining structures can be optimised to suit the site topography.

Conclusion

From our assessment above, it is the opinion of Core Engineering Solutions Ltd that the site is suitable for residential development and that risk of instability can be managed to be low. The recommendations of this report are to provide guidance to support the development of working drawings for residential development.

Yours faithfully,

Core Engineering Solutions Limited.

Prepared by:



Stuart Gemmell
Engineering Technician

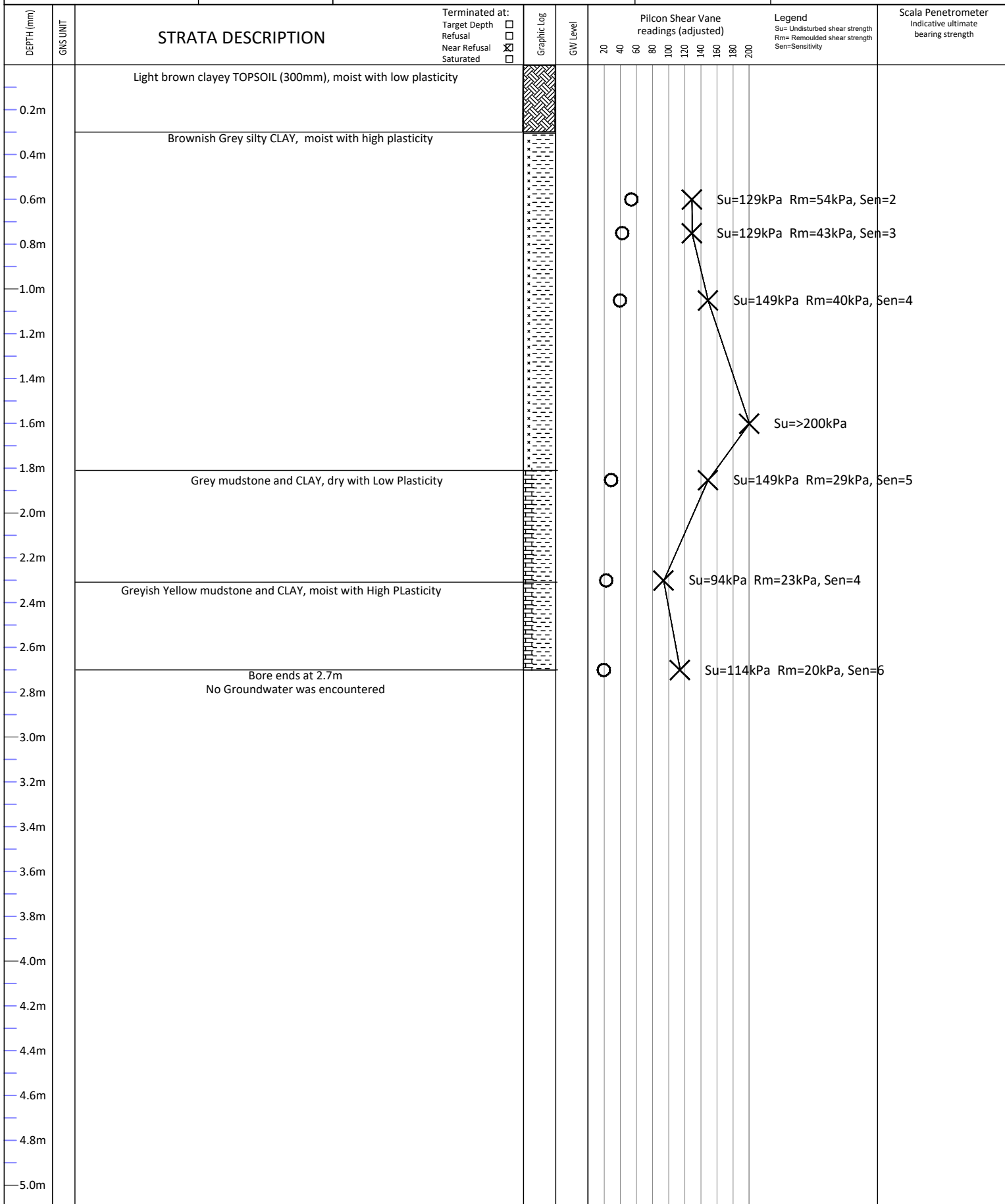
Reviewed by:



David Leslie
BEng (Civil), MEMgt (Hons),
DipEng(Civil)
CPEng (Geotechnical / Structural)

Appendices:

Appendix 1 – Borehole Test Results



LEGEND

 No Bore

 Organic(peat)

 Fill

 Sand

 Clay

 Rock

 Topsoil

 Gravel

 Silt

Shear Vane Legend

 In situ shear vane reading

 Remoulded shear vane reading