

File No: 34300

7 December 2018

Suburban Estates  
26 Peterborough Street  
**CHRISTCHURCH 8013**

Dear Sir/Madam,

**SAMPLE GEOTECHNICAL REPORT FOR A TC1 LOT, OAKBRIDGE SUBDIVISION, PRESTONS ROAD, CHRISTCHURCH**

**1. Introduction**

Davis Ogilvie & Partners Ltd. (Davis Ogilvie) has been commissioned by Suburban Estates Limited to determine the ground bearing capacity at the aforementioned address.

The published site geology is identified as being “dominantly grey river alluvium beneath plains or low-level terraces” (Q1a)<sup>1</sup>. Monitoring during development confirmed the natural soil profile as consisting of topsoil overlying natural alluvial silt, sand and gravels which corresponds to the published geology.

Technical categorisation and reporting for the Oakbridge Subdivision Development, carried out by Davis Ogilvie (August 2017<sup>2</sup>) recommended a Technical Category of TC2 be assigned to the subject site.

Davis Ogilvie has undertaken engineering design and supervision throughout subdivision construction. Engineered fill has been placed on site in accordance with NZS 4431:1989. According to As Built Plan (FP1A) appended to this report, a maximum of 0.4 m of engineered fill has been placed on the lot.

**2. Soil Testing and Results**

Two Dynamic Cone Penetrometer (DCP) tests were undertaken at the aforementioned address to a maximum depth of 3.0 m below Existing Ground Level (EGL). One Hand Auger (HA) was undertaken at the site, advanced to the target depth of 3.0 m below EGL.

Results from shallow testing prior and following placement of engineered fill indicate approximately 0.3 m of topsoil underlain by engineered fill, then natural silt and sand soils.

<sup>1</sup> Forsyth, P.J., Barrell, D.J.A., Jongens, R. (2008) (compilers), Geology of the Christchurch Area, Institute of Geological and Nuclear Sciences 1:250 000 geological map 16. 1 sheet. Lower Hutt, New Zealand. GNS Science. ISBN 987-0-478-19649-8.

<sup>2</sup> Davis Ogilvie & Partners Ltd. (22 August 2017), 203 Prestons Road, Oakbridge Subdivision. Job No. 34300

The indicative soil profile across the site is presented in Table 1. Test locations are presented in attached Geotechnical Site Plan G01A.

Table 1: Summarised Soil Profile				
Summary of Soil Type	DCP (blows/ 100 mm)	Relative Density	Depth Below EGL (m)	
			DCP1+HA	DCP2**
TOPSOIL	3 – 5	*	0.0 – 0.3	0.0 – 0.3
ENGINEERED FILL (SAND)	4 – 8	Medium dense to dense	0.3 – 0.5	0.3 – 0.6
Natural SILT/SAND	2 - 7	Loose to medium dense/firm to stiff	0.5 – 3.0	0.6 – 3.0
* Relative density not assigned to topsoil or non-engineered fill due to the propensity for settlement				
** Soil type inferred from DCP results and nearby testing				

### 3. Foundation Recommendation

Due to the loose near surface soils, specific engineering design, observation and certification will be required for the development of the lot.

Shallow geotechnical testing has revealed shallow topsoil overlying engineered fill (placed in accordance with NZS 4431:1989), underlain by natural silt and sand soils. Based on DCP testing on the site, a static ultimate bearing capacity of 200 kPa has been achieved below the topsoil unit. Topsoil on the site was encountered to 0.3 m below EGL and should be removed from beneath the building footprint along with any other unsuitable material.

Prior to any fill placement or foundation construction, all excavations on site should be examined by a suitably qualified and experienced Engineer or Engineering Geologist. The Engineer must be competent to judge whether the exposed subsoils are compatible with the inferred conditions on which the report has been based. Should soft, suspect or unsuitable conditions differing to those outlined in this report be encountered, the builder should contact Davis Ogilvie or a suitably qualified and experienced Engineer to confirm foundation requirements.

If you have any queries or wish to discuss the report further please feel free to contact the undersigned.

Yours faithfully,

**DAVIS OGILVIE & PARTNERS LTD.**

Attachments:

- Standard SAMPLE of TC1, 200 kPa Foundation Option<sup>3</sup>

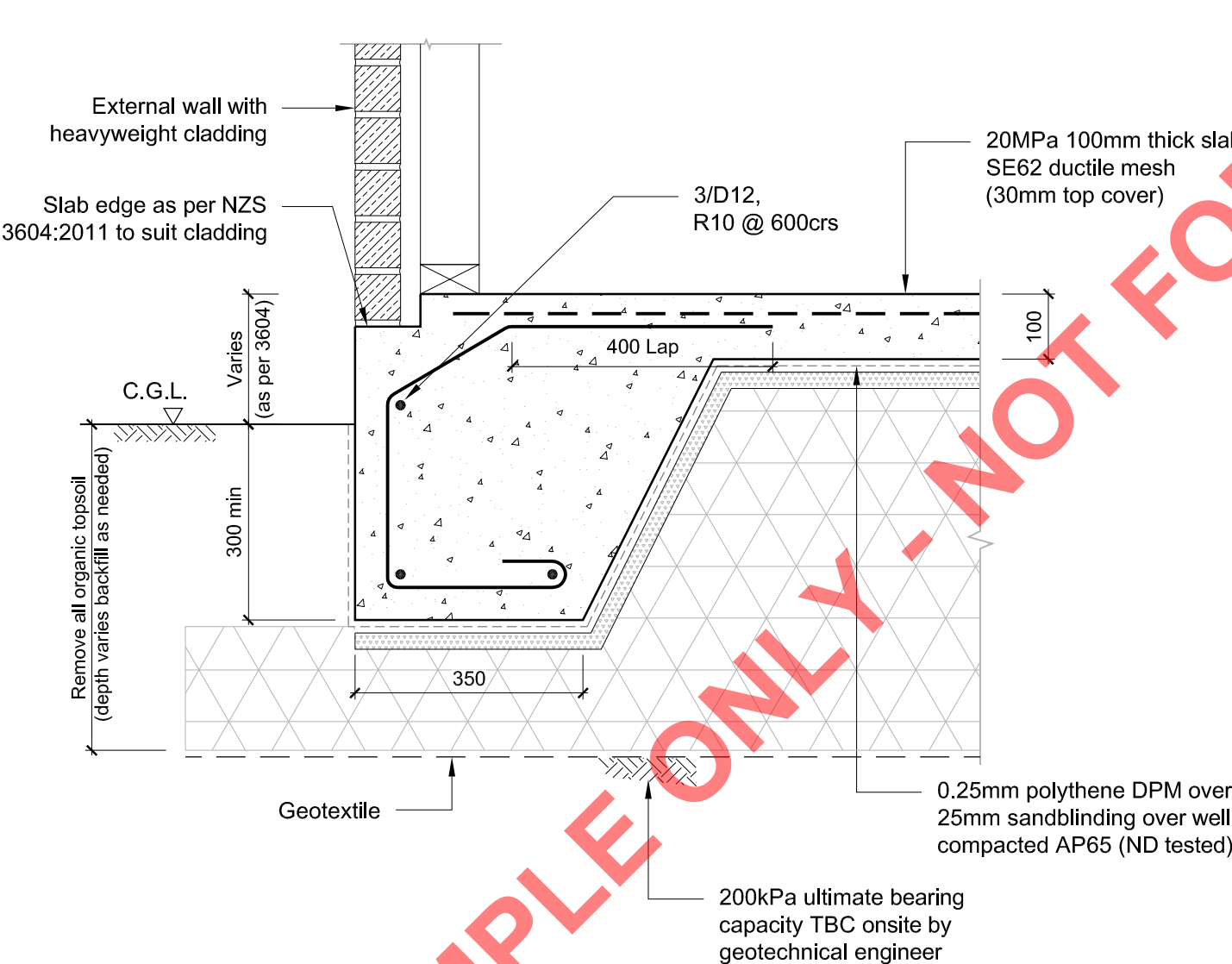
<sup>3</sup> Attachment is provided as a SAMPLE of a specific engineering design foundation for 200 kPa ultimate bearing capacity, TC1 site. Specific engineering design must be undertaken for any structure on a site where 300 kPa "Good Ground" has not been encountered.

NOTES:

- Topsoil to be removed and foundation to bear on native ground. If necessary, compacted AP65 shall be placed to achieve required FFL.
- Density testing required on the AP65 (95% compaction), prior to the sandblinding being placed, in accordance with NZS 4431:1989;
- External service lines will need to be installed beyond the extent of the gravel;
- Reinforcing bend radius as per NZS 3101:2006;
- Reinforcing is required at slab thickening beneath all internal load bearing walls;
- Shrinkage control joints in foundation slab as per NZS 3604:2011;
- All dimensions shown (unless specified) are minimum only;
- Reinforcement cover: 50mm to formwork/DPM, 75mm to ground.

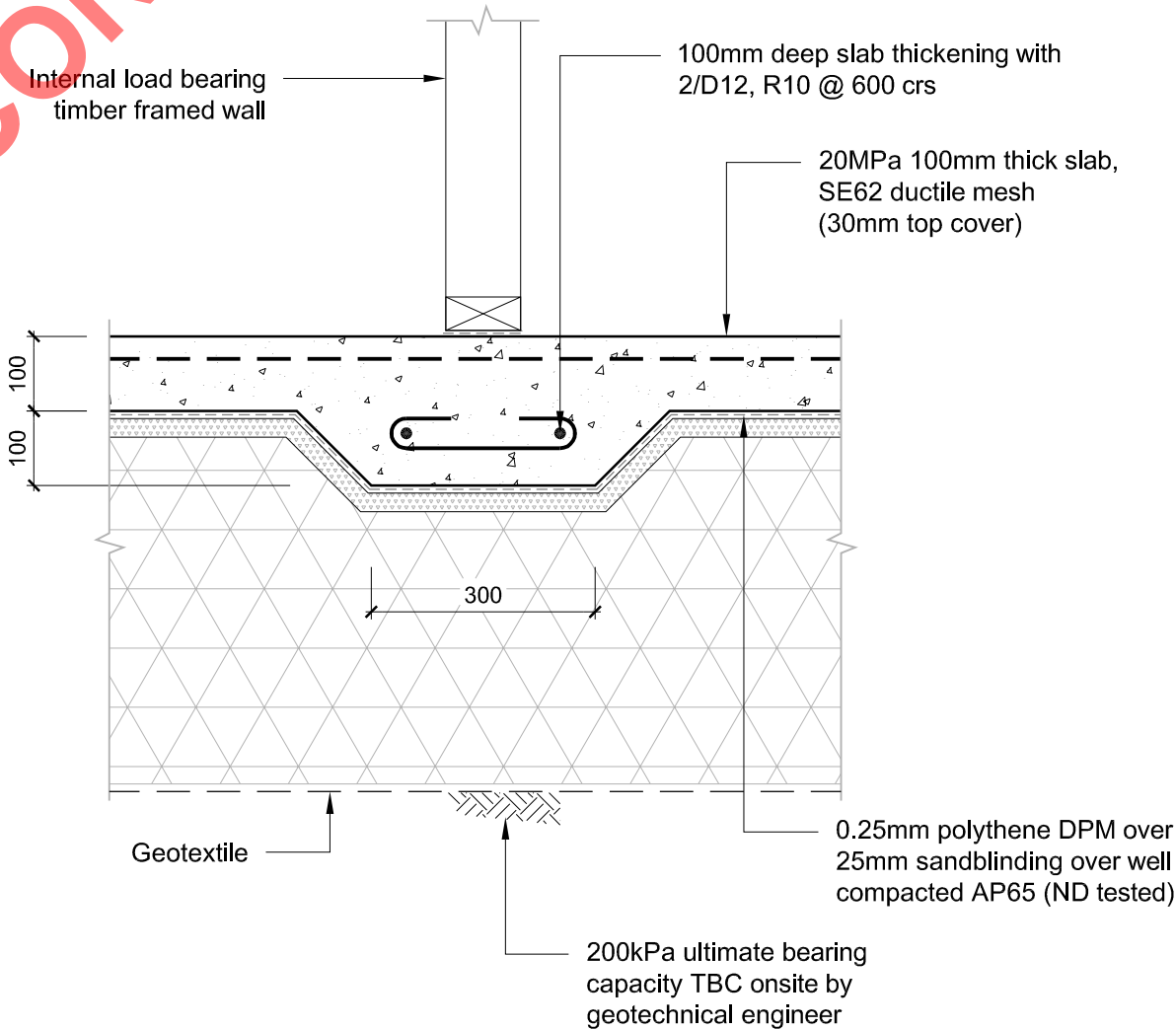
DESIGN CONSIDERATIONS:

- This foundation is designed for TC1 land only;
- 200kPa Ultimate Bearing Capacity to be achieved at base of foundation;
- Lightweight roof;
- Heavyweight cladding;
- 2.7m stud height;
- Max. truss span of 12m;
- Single storey building.



TYPICAL SLAB EDGE DETAIL

SCALE 1:10



TYPICAL SLAB THICKENING

SCALE 1:10

CAD ref:



Davis Ogilvie & Partners Ltd  
Engineers - Surveyors - Planners  
Addington  
P.O. Box 589 Christchurch, NZ  
Ph. 03 366-1653 - 0800 999 333  
Also - Nelson, Timaru, Greymouth

OAKBRIDGE SUBDIVISION - SAMPLE TC1 FOUNDATION OPTION - NOT FOR CONSTRUCTION

HEAVY WEIGHT CLADDING OPTION

design	drawn	QA check	dwg	issue
scale @ A3	date	file		