Geotechnical Site Investigation

Report No: 8971

Location: 28 St Clems Road, Doncaster East

Client: Prestigious Millennium

Date: 14/10/2021

PO Box 233, Koo Wee Rup, VIC 3981
Phone: (03) 59971192 **Email:** admin@soiltestexpress.com.au

1. Construction Proposal:

Residential.

2. Geology:

The site is situated within a geological area of Silurian, Lower, Anderson Creek Formation. The site investigation confirmed this.

3. Site Description:

The site is located in an established residential area, has a slight slope to the rear and right-hand side and is currently occupied by a single storey residence which is to be removed.

4. Site Investigation:

Three (3) boreholes were drilled by hand auger at the proposed residential location. The attached borehole log shows layer descriptions and depths.

5. Soil Profile:

The boreholes revealed a soil profile consisting of the following:

Borehole 1:
- 300mm of Grey Clayey Silt FILL *overlying*
- 150mm of Brown/Grey Clayey SILT *overlying*
- 550mm of Brown/Grey Silty CLAY.

Note: There was an auger refusal at 1m due to Extremely Weathered ROCK.

Borehole 2:
- 250mm of Grey Clayey Silt FILL *overlying*
- 150mm of Brown/Grey Clayey SILT *overlying*
- 400mm of Brown/Grey Silty CLAY.

Note: There was an auger refusal at 0.8m due to Extremely Weathered ROCK.

Borehole 3:
- 200mm of Grey Clayey Silt FILL *overlying*
- 200mm of Brown/Grey Clayey SILT *overlying*
- 400mm of Brown/Grey Silty CLAY.

Note: There was an auger refusal at 0.8m due to Extremely Weathered ROCK.

Note: If at any stage during construction the soil profile encountered varies from what has been given in this report then we need to be contacted to conduct another site investigation and if required, this report will need to be reviewed and/or amended.

6. Site Drainage:

No perched water table or ground water was encountered in the boreholes. Surface drainage must be considered in the design of footing systems in accordance with Clause 5.6.3 of AS 2870-2011.

7. Site Classification:

a. **Classification:** The site is classified in accordance with Section 2 from 'AS 2870-2011 Residential Slabs and Footings – Construction' as a **Class P** (problem site). This classification was determined after taking into account the soil profile encountered, the geology of the site and the climatic zone of the area.

Note: Class P due to proposed removal of the existing residence.

Another site investigation is recommended once the existing dwelling has been removed.

b. **Earthworks:** Note this classification may change if the site is subject to earthworks. As a guide, no uncontrolled fill greater than 600mm for Sand and 300mm for other material should be placed. Soil Test Express should be notified if this occurs and the site should be reassessed, and this report possibly reviewed and amended. If a site cut in excess of 400mm is undertaken, this report may need to be reviewed and amended.

Note: Load bearing edge beams and any load bearing internal beams are to be founded through any new material and into the soil layers recommended in this report.

c. **Movement**: It should be noted that the classification assumes a potential differential surface soil seasonal movement of up to 40mm, which needs to be considered when designing the footings. Where trees or the removal of buildings influence the site, the movement will be increased.

d. **Abnormal moisture conditions:** The site could be subject to abnormal moisture conditions. Refer Section 8 on trees.

e. **Articulation Joints:** For articulation joint spacing's, refer to 'Cement, Concrete and Aggregates Association - Technical Note 61 - Table 2'.

8. Trees:

There were some trees found at the time of the investigation that could cause abnormal moisture conditions to the proposed construction location. Any trees from within or around the building envelope should be removed as soon as possible to allow time for the subsoils to regain their equilibrium moisture content. **Ideally, a summer/winter cycle.**

Alternatively, the proposed structure should be isolated from the drying effect of the trees, e.g. root barriers or deepen effected footings founding depth to 2000mm or Rock.

Note: Minimum distance between tree and proposed building = 0.75 x Mature Tree Height.

The footings may also be designed in accordance with AS2870-2011 Appendix H.

9. Recommended Foundation Depths for Slab Floor Construction:

9.1 Although the site has been classified as Class P, a Class M slab is recommended with the edge beams to be founded a minimum of 100mm into the natural Brown/Grey Silty CLAY. The bearing capacity of this Silty CLAY can be assumed to be 100kPa at this depth.

NOTE: Internal/stiffening beams may be founded on soil with 50kPa bearing capacity e.g. rolled fill.

9.2 Any organic matter or rubbish should be removed from under the proposed slab to a depth of not less than 100mm and replaced with levelling fill if required.

9.3 Where any footings are to be constructed next to existing underground services (e.g. stormwater, sewers), then these footings should be founded at a depth below the invert of the service at an angle of repose of 45° for Clay and 30° for Sands.

10. Recommended Foundation Depths for Waffle Pod Slab Construction:

10.1 Although the site has been classified as Class P, it is recommended that a Class M slab be used with the edge beams to be founded directly on the Brown/Grey Silty CLAY. The allowable bearing capacity of the Silty CLAY can be assumed to be 80kPa at the surface.

10.2 Any organic matter or rubbish should be removed from under the proposed slab to a depth of not less than 100mm and replaced with levelling fill if required.

10.3 Where any footings are to be constructed next to existing underground services (e.g. stormwater, sewers), then these footings should be founded at a depth below the invert of the service at an angle of repose of 45° for Clay and 30° for Sands.

11. Recommended Foundation Depths for a Strip and Stump Footing System:

Although the site has been classified as Class P, it is recommended Class M strips and stumps be founded down a minimum of 525mm and 500mm below finished ground level respectively. The footings must also be founded a minimum of 100mm into the Brown/Grey Silty CLAY.

The allowable bearing capacity of the Silty CLAY can be assumed to be 100kPa at this depth.

12. Recommended Foundation Depths for Pier/Pile Footings:

It is recommended that all pier/pile footings be founded a minimum of 500mm into the Extremely Weathered ROCK.

The allowable end bearing capacity of the XW ROCK can be assumed to be 250kPa with an allowable skin friction of 20kPa.

13. Conditions of Report and Limitations:

13.1 The maintenance of the building foundations is the owner's responsibility and their attention should be drawn to the CSIRO information sheet named 'Guide to homeowners on foundation maintenance and footing performance'.

13.2 The descriptions of the soils found follows those listed in AS1726-2017 (Geotechnical Site Investigations) although colour descriptions can vary with soil moisture content and/or individual interpretation.

13.3 Any earthworks conducted on the site will change the recommended founding depths. If the site is levelled by cut, then the founding depths are the minimum specified. If levelling fill is placed then the recommended founding depths will increase accordingly unless the fill depths are greater than those listed in Clause 7b, if this is the case, another site assessment is required.

13.4 Where fill is to be placed the footing founding depths recommended will need to be increased accordingly by the depth of fill unless one of the following occurs:

13.4.1 The base of the footing is founded in the natural undisturbed Brown/Grey Silty CLAY.

13.4.2 The Fill has been placed under controlled conditions and compacted to a minimum of 95% of AS1289 5.1.1 (Standard Compaction). If this is the case, then Soil Test Express should be called for an additional site inspection after filling and a revision of this report may be required.

13.5 It should be noted that this company has only been commissioned to undertake limited boreholes, variations in the soil profile may exist. As such, it is recommended that the information given in this report be used as an 'approximate guide only' in determining costs associated with footing construction.

13.6 Any variations in the soil profile that are encountered at the time of construction, which may involve significant alterations to the footings, must be notified to this company as soon as possible with all construction work being stopped immediately. If this situation arises or any significant earthworks are proposed or undertaken, then this report will need to be reviewed and, if appropriate, amended.

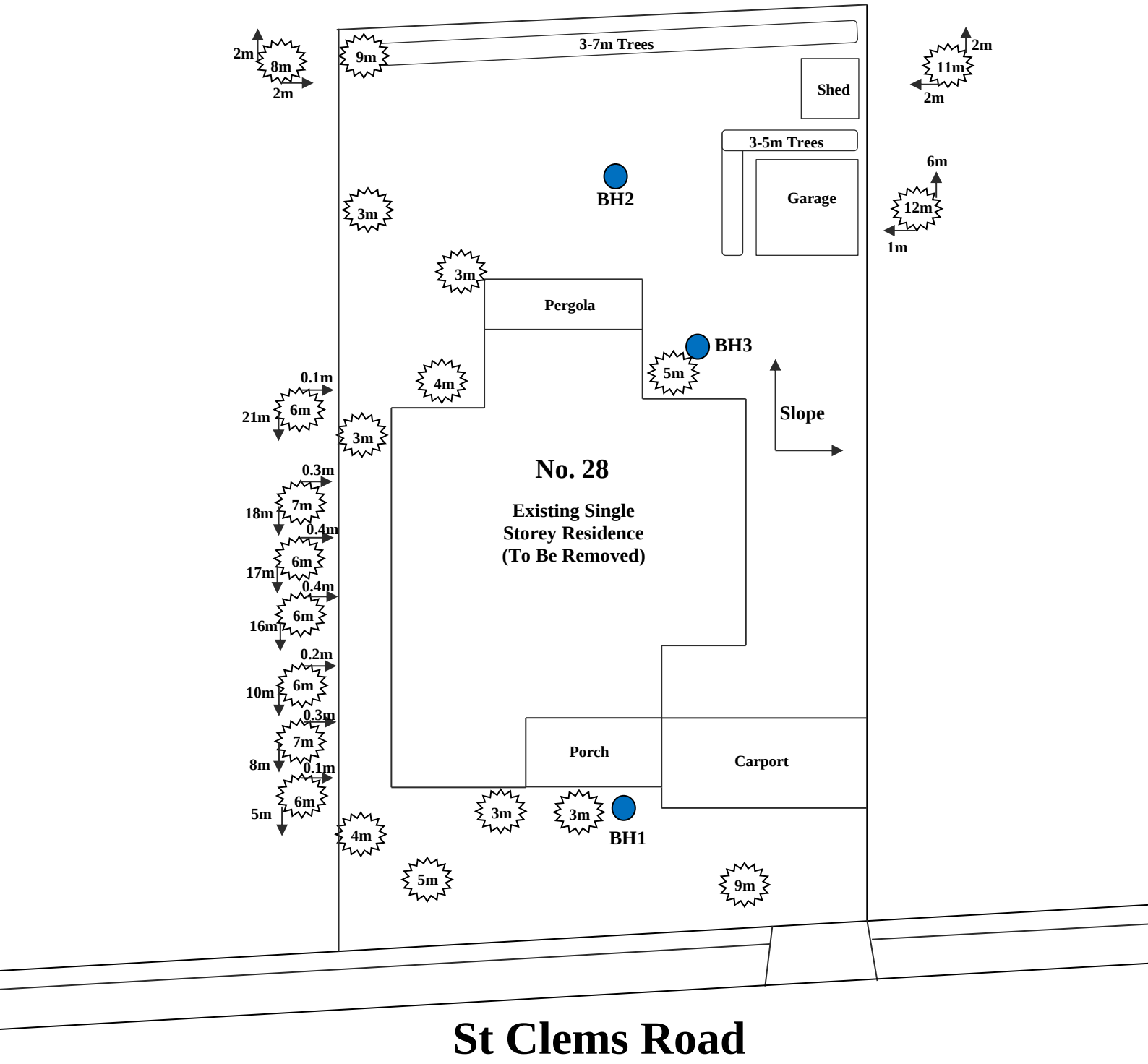
13.7 Soil Test Express expects that any relevant site information (e.g. previous filling, water courses) has been investigated by the client and this information passed on to Soil Test Express. Consequently, Soil Test Express reserves the right to amend this report upon receipt of such information or for any of the reasons listed above. In the event of an amended report for these reasons, Soil Test Express will not accept responsibility for any subsequent financial loss.

13.8 Soil Test Express Pty Ltd retains ownership of this report until the account is paid in full. If the client refuses to pay, then Soil Test Express Pty Ltd has the right to disclaim any recommendation made.

Mr Damien P McGorry BE (Civil), TMIEAust
Geotechnical Engineer
SOIL TEST EXPRESS PTY LTD

14. Site Plan:

Note: Plan not to scale



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GEOTECHNICAL SITE CLASSIFICATION LOGS

Site Location: 28 St Clems Road, Doncaster East

Proposal: Residential

Report No: 8971

Client: Prestigious Millennium

Test Date: 14/10/2021

Topography of the land:

Uneven Surface	☐
Essentially Level	☐
Undulating Surface	☐
Multiple Hills	☐
Slight Slope	☑
Moderate Slope	☐
Steep Slope	☐
Extreme Condition	☐

Soil Drainage:

Good:	☐	*Sandy*
Fair:	☑	*to*
Poor:	☐	Clay

Technicians Comments:

Slope Direction: Rear & Right-Hand Side

Trees ☑ *type:* Various ***Size:*** Small-Large

Water ☐ *type:*

Existing Structures: ☑

Existing Structure Condition: *Good* ☐ *Fair* ☑ *Poor* ☐

Existing Structure Description: Single Storey Residence (To Be Removed)

Layer Description Borehole 1	Depth	Layer Description Borehole 2	Depth	Layer Description Borehole 3	Depth
Clayey Silt Fill Grey Medium Dense Moist	300mm	Clayey Silt Fill Grey Medium Dense Moist	250mm	Clayey Silt Fill Grey Medium Dense Moist	200mm
Clayey Silt Brown/Grey Firm. Moist.	450mm	Clayey Silt Brown/Grey Firm. Moist.	400mm	Clayey Silt Brown/Grey Firm. Moist.	400mm
Silty Clay Brown/Grey Medium to High Plasticity Stiff to Very Stiff Moist	**100kPa** 1000mm	Silty Clay Brown/Grey Medium to High Plasticity Stiff to Very Stiff Moist	**100kPa** 800mm	Silty Clay Brown/Grey Medium to High Plasticity Stiff to Very Stiff Moist	**100kPa** 800mm
Refused at 1.1m due to Extremely Weathered Rock	**250kPa** @1500mm	**Refused at 0.8m due to Extremely Weathered Rock**	**250kPa** @1300mm	**Refused at 0.8m due to Extremely Weathered Rock**	**250kPa** @1300mm

Soil Technician: A. Gade Martin ***Auger Type:*** Hand