



File Number: 250794
Date: 08 September 2025
Client: MSM & Associates Pty Ltd
6 Apsley Place
SEAFORD VIC 3198
Distribution: - MSM & Associates Pty Ltd

ADVERTISED PLAN

RE: Geotechnical Site Investigation at 3 Nortons Lane, Wantirna South

A site investigation was conducted by geotechnical engineers at this site on 05 August 2025. The purpose of the investigation was to provide foundation recommendations and pavement design parameters for the proposed construction of a new single storey building, sports field, playground and entry road.

Scope of the Investigation

The site investigation included the drilling of thirteen boreholes conducted with an ATS rotary drill rig using 3½" solid flight augers. One sample was collected for soaked California Bearing Ratio (CBR) testing. The collected sample was sent to a NATA accredited laboratory (Douglas Partners Pty Ltd) for testing in accordance with AS1289.6.1.1. The results of this testing can be found in Appendix A of this report. The subsurface profile was logged, and bulk sampled using visual-tactile methods in accordance with AS2870-2011. Borehole logs and locations are shown on pages 10 to 16 of this report.

Site Description

The site is currently occupied by a double storey brick residence. The site presents a ground cover of grass and concrete paving with some garden bedding. There were small to large sized trees at and on the adjacent properties, near the site boundaries. The site slopes moderately towards the south east, exhibiting moderate natural surface drainage.



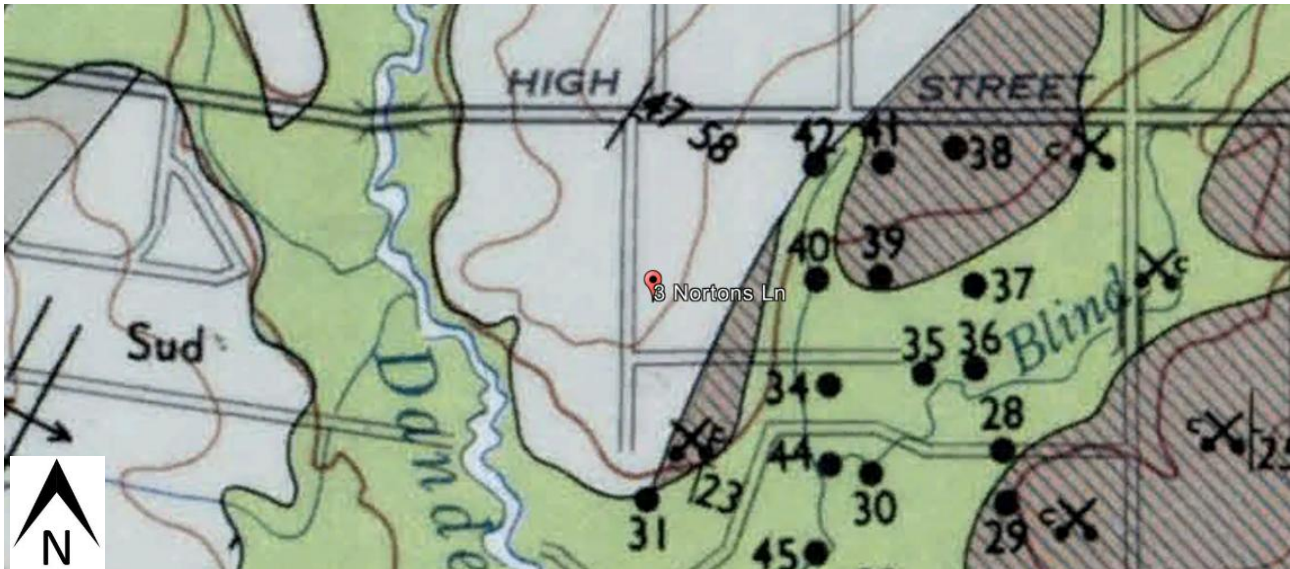
View towards the location of the proposed development, looking north west.



Subsurface Conditions

Regional geology

The site is identified on the 'Geological Survey of Victoria' Ringwood Sheet (1:63,360) as being in the province of the Silurian "Dargile" formation and associated residual soil profiles.



Extract from 'Geological Survey of Victoria' Ringwood Sheet (1:63,360) showing site in the Silurian "Dargile" formation

Subsurface profile

See borehole logs on pages 10 to 15. Boreholes 1, 3 to 13 intersected:

- Natural very loose to medium dense clayey SILT of low plasticity to depths between 0.30m and 0.80m, underlain by,
- Stiff silty CLAY of medium plasticity to depths between 1.00m and 1.50m, underlain by,
- Distinctly weathered (DW) siltstone ROCK to borehole termination depths between 1.50m and 3.00m.

Borehole 2 intersected:

- Natural loose to medium dense clayey SILT of low plasticity to a depth of 0.50m, underlain by,
- Stiff silty CLAY of medium plasticity to a depth of 1.00m, underlain by,
- Extremely weathered (XW) siltstone rock to a depth of 1.60m, underlain by,
- Distinctly weathered (DW) siltstone ROCK to a borehole termination depth of 3.00m.

Soil moisture & groundwater

Borehole 13 intersected slow groundwater ingress and wet clayey SILT above the clay contact. This groundwater forms a shallow perched water table within the clayey SILT topsoils immediately above the clay interface. This water table may not be permanent and will be variable in depth depending on the intensity and duration of recharge. Filling and natural soils were otherwise in a dry to moist condition, with moisture content increasing with depth.

Site Classification

The site is classified as **CLASS P** in accordance with AS2870-2011 Clause 1.3.3 due to the presence of nearby trees and abnormal soil moisture conditions.



Identification of the soil profile

The natural reactive CLAY profile is classified as moderately reactive (CLASS M, nom.) with reference to AS2870-2011, corresponding to a characteristic surface movement (y_s) between 20mm to 40mm under normal conditions.

Sub-Soil Classification

The sub-soil is classified as **Class B_e – Rock** in accordance with AS1170.4-2007.

Laboratory Determined California Bearing Ratio (CBR) Results

Laboratory CBR testing was conducted on one bulk sample of the natural silty CLAY profile. The testing was undertaken by Douglas Partners Pty Ltd NATA accredited laboratory in accordance with AS1289.6.1.1. A summary of the results is presented below.

Sample Location	Depth	Optimum Moisture Content (%)	Swell (%)	CBR (%)
BH1	0.35m – 0.60m	27.0	2.0	3.0

The complete results for the laboratory testing are presented in Appendix A of this report.

Foundation Recommendations

The scope of AS2870-2011 (Clause 1.1) allows for the classification of sites for some light commercial structures and institutional buildings. Should the proposed development fall outside the scope of the code then, the design should be based on engineering principles.

Continuous strip & isolated pad/stump footings

Footings should be proportioned in accordance with a **CLASS M** classification, and:

- Penetrate through any surface fill and natural clayey SILT topsoils and be founded a minimum of 100mm into the natural stiff silty CLAY; and
- Minimum founding depths for strip and pad footings should not be reduced to less than 600mm and 500mm respectively, below finished ground level.

An allowable bearing pressure of 200kPa may be adopted beneath footings founding in natural stiff silty CLAY. This pressure may be reviewed once design loads have been determined.

Isolated pad footings used for masonry support must be additionally deepened to 1.80m or founded onto distinctly weathered (DW) siltstone ROCK.

Alternatively: Slab-on-ground

Site preparation

The site shall be prepared in accordance with Section 6 of AS2870-2011, where applicable. Particular attention should be given to the stripping of all vegetation and root zone material. In addition, any soft or loose material that does not respond to compaction should be excavated to achieve a firm working base.

It should be noted that where fill depths on site exceed the limit specified in clause 6.4.2 AS 2870-2011, slab panels will need to be suspended to an engineer design, in accordance with AS2870-2011. However, this can substantially increase the cost of the raft slab foundation.



Where site cutting is proposed on some filled sites, fill depths may be reduced to less than that specified in AS2870-2011, thus eliminating the need to suspend panels. It may therefore be prudent to verify the depth of filling after any site clearing (or demolition) is conducted, as substantial cost savings may be made.

For filled sites, and for sites where additional filling is placed, fill depths may exceed the requirements of AS2870-2011. However, slab panels and non-loaded beams need not be suspended where the filling either:

- Meets the requirements of clause 6.4.2 AS 2870-2011, or
- Is **verified** to be of 98% or greater dry density ratio as measured by standard compaction (AS1289 5.1.1).

Compaction of existing filling to a specified density or to improve the fill density from a "Rolled" to a "Controlled" category as per AS2870-2011 may be an economic option. Verification of fill density would require either certified documentation or further field work once the site has been cleared and proof rolled.

Slab-on-ground

The slab should be designed in accordance with a **CLASS M** classification, and:

- Slab edge beams and heavily loaded internal beams should penetrate through any FILL material and natural clayey SILT topsoils, and be founded a minimum of 100mm into the natural stiff silty CLAY profile; and
- Founding depths for slab edge beams should not be reduced to less than 300mm below finished ground level.

An allowable bearing pressure of 200kPa may be adopted beneath slab edge beams founding in the natural stiff silty CLAY. This pressure may be reviewed once design loads have been determined.

Any isolated strip and pad footings incorporated in the design should be proportioned in accordance with a CLASS M site classification as out lined above. Designs incorporating multiple footing types should be avoided.

Trees

Geotechnical engineers are not suitably qualified to comment on the likely mature heights of the trees on, or nearby, the site. It is recommended that an arborist or other suitably qualified person make an assessment on the mature heights of all existing or any proposed trees.

Where any proposed footings are located within 0.75 times the mature height of any individual trees (existing and proposed) or 1.5 times the mature height of any trees within a group planting it will be necessary to adopt one of the following:

- Remove the tree(s) several months prior to the commencement of construction.
- Additionally deepen the footings/edge beams to distinctly weathered (DW) siltstone ROCK.

Trees/shrubs can induce 'drying' of foundation zone soils, resulting in shrinkage and consequent foundation movement and cracking. Conversely, trees/shrubs can also block or crack service pipes, resulting in leaking and wetting of foundation zone soils, with similar undesirable consequences.

Tree roots are attracted to moist ground conditions. If a relatively low and constant ground moisture condition can be maintained in the vicinity of the foundations, tree roots, which may cause volumetric changes in the foundation zone soils and/or cracking in later dry periods, will be attracted to other areas.

Trees should therefore be prohibited a minimum distance equal to $\frac{3}{4}$ of the mature height of the tree from structures for sites of moderate reactivity, with reference to AS2870-2011 B2.3 (c) tree restrictions. There generally must be a compromise between the presence of trees and foundation movement and associated cracking.



There are some significant trees close to the proposed building envelope. The location of these trees may adversely affect the performance of conventional footings. To ensure the performance of the foundations, we recommend that once clearing and demolition are complete, any trees and shrubs remaining are identified and the Structural Engineer is informed to modify the structural design accordingly.

The risk of differential movement between shallow and deepened foundations is high. Potential differential movements of between 20mm and 40mm may occur, or greater if good foundation maintenance is not practiced. It is therefore recommended that the proposed structure is well articulated, and that sound engineering judgement is used in the design, particularly in relation to the use of different foundation systems. Consideration should be given to adopting a deepened foundation system above the minimum required should the structure not be flexible.

Piles/ piers

Collapse of the upper FILLING/ clayey SILT topsoils and water ingress may occur. Casing should be anticipated for bored piles/piers.

Bored piers/screw piles should penetrate through any filling and natural soils and be founded onto distinctly weathered (DW) siltstone ROCK. Piles founding on DW siltstone ROCK can adopt an allowable end bearing pressure of 700kPa.

Bored piers must be clean of any fallen debris and saturated material. The piling contractor must provide means to ensure that a clean base to the pile is maintained.

Pavements

Sub-Grade Preparation

Periods of wet weather will make subgrade preparation and fill placement difficult if not impossible when trying to achieve optimum moisture contents and compaction. It is highly recommended that construction is undertaken in the drier months.

Preparation of pavements and floor slab subgrades should consist of stripping of grass; root zone material and the surface fill material to expose the natural silty CLAY subgrade.

The exposed surface should be proof rolled with the aim of achieving a dry density ratio of 98% as measured by standard compaction (AS1289 5.1.1). Any soft, wet, or loose material which does not respond to compaction should be additionally excavated to expose a firm working base.

The moisture content of the sub-grade is critical in the pavement design. Depending on the moisture content of the subgrade at the time of construction, it may be necessary to add water or allow the subgrade to dry back to achieve satisfactory compaction.

We recommend that the pavement construction be commenced without delay once the subgrade has been exposed and proof rolled. A minimum compacted lift of 200mm imported filling should be placed immediately once subgrade preparation is completed to protect the subgrade from moisture changes and provide a working platform for vehicles.

Subgrade Drainage

The subgrade should be provided with subsurface drainage to maintain any groundwater table to at least 300mm beneath the underside of the pavements, or a lower CBR value should be used in the design.



Pavements

Results of standard compaction and soaked California Bearing Ratio (C.B.R.) tests can be found in Appendix A of this report. It is recommended that pavements be designed on the:

- Natural silty CLAY soils using an estimated C.B.R value of 3.0% and a long-term Young's modulus E_{sl} of 15MPa and a correlation factor of 0.7 can be adopted as per the Cement and Concrete Association of Australia 'Industrial Floors and pavements' section 3 Design for strength.

Earthworks

The on-site excavated silty CLAY and siltstone ROCK can be stockpiled and used as structural filling. The excavated filling and natural clayey SILT topsoils should be removed to spoil.

Any imported filling used should comprise of clean, **essentially of a granular nature**, non-organic and have a plasticity index of less than 12%. Suitable material may include crushed scoria, non-descript crushed rock, mudstone, or siltstone or equivalent. Fill material should have a nominal particle size of 75mm or less and as a guide, appropriate material would meet the following criteria:

$P.I \times \%pass\ 0.425\ (As\ sieve) < 600$

Any filling should be placed in lifts not exceeding 250mm loose thickness. Each layer should be compacted to a dry density ratio of 98% measured by standard compaction (AS1289 5.1.1) using an appropriate medium weight vibratory roller. The recommended moisture content is within 2% of optimum moisture content under standard compaction.

Construction & Maintenance

Strict adherence to normal foundation maintenance practices is not required for a foundation founded entirely on weathered ROCK.

Site conditions

Excavation within fill material and natural clayey SILT topsoils may experience short-term instability (particularly if undertaken during the wetter months) and shoring and/or over excavation should be anticipated.

Where deeper footings/edge beams are required due to the depth to the required founding material blinding concrete should be poured in the base of the excavation upon which the footing/edge beam can be constructed.

Articulation

Articulation of masonry walls should be provided as per details contained in reference (2) below. Spacing between articulation joints should not exceed a maximum of 6.0m, and should be provided at/or between:

- Different foundation types,
- Footings founding at significantly different founding depths, or founding material; and
- Points of high stress i.e., above door and window openings, changes in storey height, or above large spanning lintels.

Service trenches & easements

The presence of service trenches and easements is a common cause of unsatisfactory performance of foundations through either direct undermining or through the introduction of undesirable levels of soil moisture. For this reason, we recommend:

- Where footings/edge beams/piles are located in close proximity or adjacent to a backfilled service trench or easements, the footing/edge beam/piles must be deepened and founded 500mm below the level of



plane of inclination of 45° (for clay/rock) above horizontal extending outwards from the base of the trench or filling (as illustrated by figure C6.1 AS 2870-2011). This includes service trenches which may be present on adjacent sites or on site prior to the current development (such as abandoned stormwater and sewer trenches),

- Significant additional deepening (greater than nominal depth of 1.50m) may necessitate the footing/edge beam to be suspended to an engineer design, and this office should be contacted for further advice,
- All service trenches should be sloped away from the building as per AS2870-2011 section 5.6.3(b, c and d) and be backfilled with non-permeable material as per AS2870-2011 section 5.6.3 (b).

Backfill material should ideally comprise weak mix concrete, mortar or (preferably) cement stabilised soil, or clean adequately tamped/compacted clay placed marginally wet of optimum. Permeable or granular material such as sand, gravel, ¼ minus, or building rubble, should not be used to backfill service trenches in proximity to building foundations.

Construction

To ensure the satisfactory long-term performance of foundations, it is imperative that:

- No water shall be allowed to pond or pool at the base of the foundation excavations,
- The stormwater be connected as soon as the roof is sealed. This will normally require the installation of a temporary system 'above ground' until permanent drainage is connected and operational, and
- The ground surface and pavements adjacent to the building be graded away from the building, as per the drainage requirements C5.2 AS2870-2011.

The recommendations contained in:

- AS2870-2011 Section 5.6 and 6.6 'Additional requirements for classes M, H1, H2 and E sites'; and
- Appendix B (Performance requirements and foundation maintenance), Section C5 AS2870-2011 (Detailing requirements),

should be adopted, where applicable for this site.

The recommendations contained in Appendix B (Performance requirements and foundation maintenance) and Section C5 AS2870-2011 (Detailing requirements) should be adopted where applicable for this site.

All contractors must be well **briefed** as to the requirements and specifications in this report. To minimise the likelihood of misinterpretation, this report must not be reproduced unless in full and contractors given ready access to the complete report.

This report is based on the assumptions that conditions revealed through selective sampling are indicative of the actual conditions throughout the site, i.e., correlation between boreholes. Variations between boreholes may exist due to previous land use or natural geologic processes. Additional deepening of the foundations, deeper than the minimum specified founding depths in this report, may be required. The actual subsurface conditions can be discerned only during earthworks when the subsurface profile can be directly observed.

For further information regarding geotechnical site investigation reports, refer to reference (5) below.

Inspection of all foundation excavations, site works, and compaction must be conducted by a suitably qualified, experienced engineer, engineering geologist, and/or building surveyor or similar to ensure that the founding material and site works are in accordance with this report. Should there be any doubt, this office should be immediately contacted.



Maintenance

The clay soils at this site are moderately reactive and may experience appreciable volumetric changes with changes in moisture content (i.e., shrink upon drying and swell upon wetting).

Conventional foundations are designed to accommodate normal reactivity induced seasonal surface movements but require that a good foundation maintenance program be implemented.

A good foundation maintenance program should be aimed at keeping foundation zone soils at a low and constant moisture content. To this end we recommend that the notes contained in AS2870-2011 Appendix B and the CSIRO Information Sheet BTF 18 (references 1 and 3) be implemented, and that particular attention be given to the points discussed below.

Site drainage

The site should be graded or drained to prevent water from ponding against or near the building. Monitoring of surface drainage paths should be ongoing. In any areas where ponding or pooling of water does occur, the surface should be regraded to direct water away from the building or to stormwater discharge points.

Garden restrictions

Garden beds should not compromise site drainage or be located directly adjacent to the building and should not be over-watered where they are near the building foundations.

Maintenance of plumbing, services, and stormwater system

All services and plumbing must be well maintained and periodically checked for leaks. Guttering must always be kept clean, and downpipes discharge all roof water into the storm water system (or rainwater tank).

Foundation performance

It should be noted that the conventional foundations specified in AS2870-2011 may still experience some minor (non-structural) foundation movement and cracking, even where good foundation maintenance practices are undertaken, depending on environmental factors and local conditions (refer to AS2870-2011 Section 1.3.1 and Table C1 and C2 Appendix C). This reflects the necessity of achieving a balance between cost, safety, and serviceability.

Alternatives to conventional foundations can be 'tailored' to suit the desired level of performance of the foundation system. Should minor foundation movements be intolerable or on-going maintenance be undesirable, the foundation may be engineered accordingly. This will be a matter for the proponent to decide based on the required level of serviceability and desired performance criteria, and cost. Further advice regarding an alternative foundation design may be obtained from this office, if required.

Please do not hesitate to contact this office, should there be any further queries.

Yours faithfully,

Melbourne Geotechnics Pty Ltd



References

1. AS2870-2011. "Residential slabs and footings".
2. The Cement and Concrete Association of Australia. Technical Note: TN61.
3. CSIRO Information Sheet BTF 18: "Foundation Maintenance and Footing Performance: A Homeowners Guide".
4. Institution of Engineers, Australia. 1987. "Guidelines for the Provision of Geotechnical Information in Construction Contracts".
5. AS1726-2017. "Geotechnical Site Investigations".
6. AS2159-2009. "Piling – Design and Installation".
7. AS 3798-2007 "Guidelines on Earthworks for commercial and residential developments".
8. AS1170.4-2007 "Earthquake Actions in Australia".

Melbourne Geotechnics Pty Ltd Consulting Geotechnical Engineers	File: 250794 Date: 05/08/2025 Supervisor: SF WL
Borehole Logs	

Client: MSM & Associates P/L

Project: 3 Nortons Lane, Wantirna South

Borehole No.		Drilling Method: A		Location: see Figure 1	
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:
0.35	SP	clayey SILT (ML), low plasticity, brown/ grey	L	D/M	CBR @ 0.35m – 0.60m
1.20		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
3.00	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
		Borehole terminated at 3.00m			

Borehole No.		Drilling Method: A		Location: see Figure 1	
0.60	SP	clayey SILT (ML), low plasticity, brown/ grey	L/MD	D/M	
1.00		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
1.60		extremely weathered (XW) siltstone rock	VST	M	
3.00	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
		Borehole terminated at 3.00m			

Legend:

Density	Cohesion	Moisture	HA - Hand Auger A - Flight Auger Drill Rig
VL - Very Loose	S - Soft	W - Wet	Unified Soil Classification Symbols: CL, SM, SW
L - Loose	F - Firm	VM - Very Moist	SP - Soil Profile
MD - Medium Dense	ST - Stiff	M - Moist	Some < 15%
D - Dense	VST - Very Stiff	D - Dry	Trace < 5%

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Borehole No.		Drilling Method: A	Location: see Figure 1		
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:
0.50	SP	clayey SILT (ML), low plasticity, brown/ grey	L	D/M	
1.20		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
1.50	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
		Borehole terminated at 1.50m			

Borehole No.		Drilling Method: A	Location: see Figure 1		
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:
0.55	SP	clayey SILT (ML), low plasticity, brown/ grey	L/MD	M	
1.30		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
1.50	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
		Borehole terminated at 1.50m			

Legend:

Density VL - Very Loose L - Loose MD - Medium Dense D - Dense	Cohesion S - Soft F - Firm ST - Stiff VST - Very Stiff	Moisture W - Wet VM - Very Moist M - Moist D - Dry	HA - Hand Auger A - Flight Auger Drill Rig Unified Soil Classification Symbols: CL, SM, SW SP - Soil Profile Some < 15% Trace < 5%
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Borehole Logs	

Client: MSM & Associates P/L

Project: 3 Nortons Lane, Wantirna South

Borehole No.		Drilling Method: A		Location: see Figure 1	
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:
0.50	SP	clayey SILT (ML), low plasticity, brown/ grey	L/MD	M	
1.00		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
3.00	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
Borehole terminated at 3.00m					

Borehole No.		Drilling Method: A		Location: see Figure 1	
0.80	SP	clayey SILT (ML), low plasticity, brown/ grey	L/MD	D/M	
1.30		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
1.50	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
Borehole terminated at 1.50m					

Legend:

Density	Cohesion	Moisture	HA - Hand Auger A - Flight Auger Drill Rig
VL - Very Loose	S - Soft	W - Wet	Unified Soil Classification Symbols: CL, SM, SW
L - Loose	F - Firm	VM - Very Moist	SP - Soil Profile
MD - Medium Dense	ST - Stiff	M - Moist	Some < 15%
D - Dense	VST - Very Stiff	D - Dry	Trace < 5%

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Project: 3 Nortons Lane, Wantirna South

Borehole No.		7	Drilling Method: A	Location: see Figure 1		
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:	
0.35	SP	clayey SILT (ML), low plasticity, brown/ grey	L/MD	M		
1.30		silty CLAY (CI), medium plasticity, brown/ grey	ST	M		
1.50	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M		
		Borehole terminated at 1.50m				

Borehole No.		8	Drilling Method: A	Location: see Figure 1		
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:	
0.45	SP	clayey SILT (ML), low plasticity, brown/ grey	L/MD	M		
1.40		silty CLAY (CI), medium plasticity, brown/ grey	ST	M		
3.00	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M		
		Borehole terminated at 3.00m				

Legend:

Density VL - Very Loose L - Loose MD - Medium Dense D - Dense	Cohesion S - Soft F - Firm ST - Stiff VST - Very Stiff	Moisture W - Wet VM - Very Moist M - Moist D - Dry	HA - Hand Auger A - Flight Auger Drill Rig Unified Soil Classification Symbols: CL, SM, SW SP - Soil Profile Some < 15% Trace < 5%
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Borehole No.		Drilling Method: A		Location: see Figure 1	
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:
0.70	SP	clayey SILT (ML), low plasticity, brown/ grey	L/MD	M	
1.20		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
3.00	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
Borehole terminated at 3.00m					

Borehole No.		Drilling Method: A		Location: see Figure 1	
0.50	SP	clayey SILT (ML), low plasticity, brown/ grey	L/MD	M	
1.30		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
1.50	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
Borehole terminated at 1.50m					

Legend:

Density	Cohesion	Moisture	HA - Hand Auger A - Flight Auger Drill Rig
VL - Very Loose	S - Soft	W - Wet	Unified Soil Classification Symbols: CL, SM, SW
L - Loose	F - Firm	VM - Very Moist	SP - Soil Profile
MD - Medium Dense	ST - Stiff	M - Moist	Some < 15%
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Borehole No. 11		Drilling Method: A	Location: see Figure 1		
Depth (m)	Structure	Description	Cohesion/ density	Soil moisture/ groundwater	Testing:
0.55	SP	clayey SILT (ML), low plasticity, brown/ grey	L L	M VM	
1.20		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
1.50	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
		Borehole terminated at 1.50m			

Borehole No. 12		Drilling Method: A	Location: see Figure 1		
0.45	SP	clayey SILT (ML), low plasticity, brown/ grey	L	M	
1.50		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
3.00	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
		Borehole terminated at 3.00m			

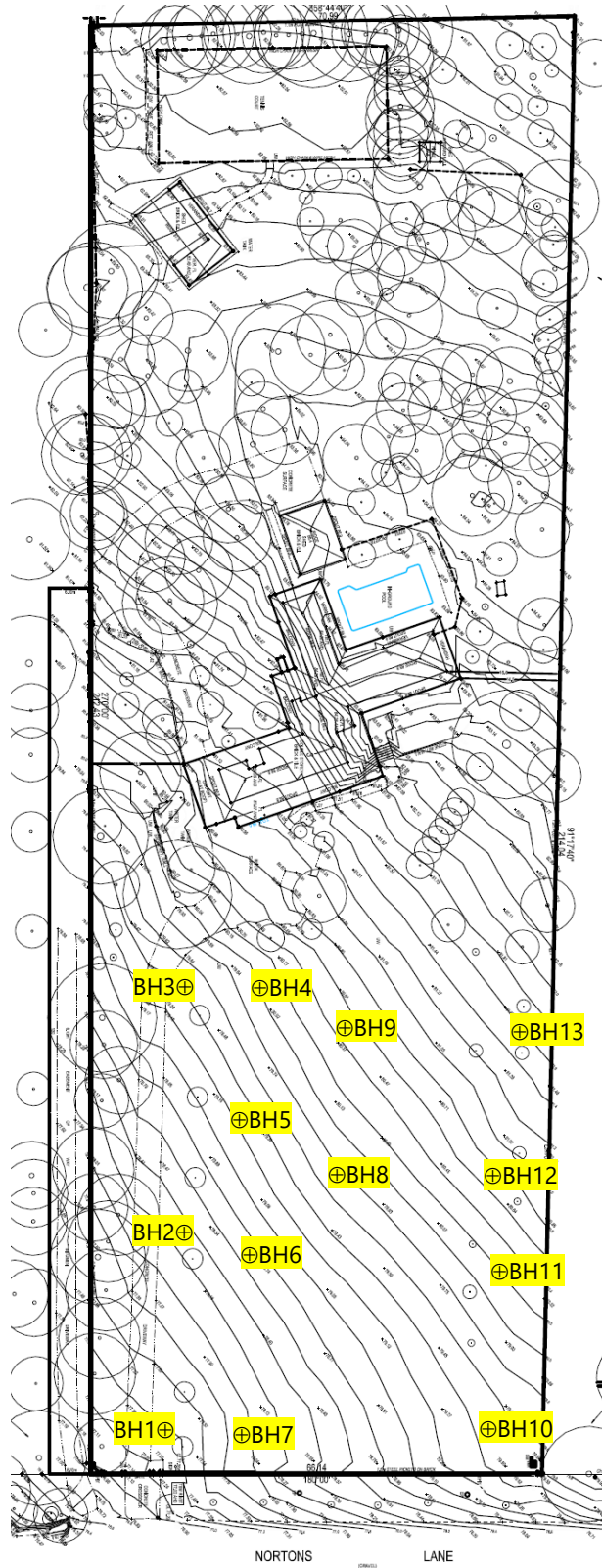
Borehole No. 13		Drilling Method: A	Location: see Figure 1		
0.30	SP	clayey SILT (ML), low plasticity, brown/ grey	VL	W	
1.50		silty CLAY (CI), medium plasticity, brown/ grey	ST	M	
3.00	Weathered ROCK	distinctly weathered (DW) siltstone ROCK	D	M	
		Borehole terminated at 3.00m			

Legend:

Density	Cohesion	Moisture	HA - Hand Auger A - Flight Auger Drill Rig
VL - Very Loose	S - Soft	W - Wet	Unified Soil Classification Symbols: CL, SM, SW
L - Loose	F- Firm	VM - Very Moist	SP - Soil Profile
MD - Medium Dense	ST - Stiff	M - Moist	Some < 15%
D - Dense	VST- Very Stiff	D - Dry	Trace < 5%

LOCATION PLAN

Figure 1



Project:
3 Nortons Lane, Wantirna South
Scale:
Not to Scale (sketch for borehole locations)

Legend:
⊕ Borehole
□ Footing inspection



**Melbourne
Geotechnics**

ABN 12 639 952 524

Appendix A

Laboratory Testing Results

Material Test Report

Report Number: 237515.00-1
Issue Number: 1
Date Issued: 05/09/2025
Client: Melbourne Geotechnics Pty Ltd
 223 Coppin Street, Richmond VIC
Contact: Admin
Project Number: 237515.00
Project Name: (250794) 3 Nortons Lane, Wantirna South
Project Location: VIC
Work Request: 8098
Sample Number: ME-8098A
Date Sampled: 05/08/2025
Dates Tested: 06/08/2025 - 05/09/2025
Sampling Method: Sampled by Client
The results apply to the sample as received
Sample Location: BH1, Depth: 0.35-0.60(m)
Material: Silty CLAY trace gravel



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 Melbourne Laboratory
 231 Normanby Road South Melbourne Vic 3205
 Phone: (03) 9673 3500
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Scott Benbow
 Laboratory Manager
 Laboratory Accreditation Number: 828

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	3.0		
Method of Compactive Effort	Standard		
Method used to Determine MDD	AS 1289 5.1.1 & 2.1.1		
Method used to Determine Plasticity	Visual Assessment		
Maximum Dry Density (t/m ³)	1.51		
Optimum Moisture Content (%)	27.0		
Laboratory Density Ratio (%)	98.0		
Laboratory Moisture Ratio (%)	101.5		
Dry Density after Soaking (t/m ³)	1.46		
Field Moisture Content (%)	25.3		
Moisture Content at Placement (%)	27.3		
Moisture Content Top 30mm (%)	33.7		
Moisture Content Rest of Sample (%)	30.9		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours (h)	160.9		
Swell (%)	2.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	0.0		

