

PROVINCIAL GEOTECHNICAL PTY. LTD.

CONSULTING GEOLOGISTS

A.B.N. 88 090 400 114



GEOTECHNICAL SITE INVESTIGATION REPORT



Site Address: 120 Scenic Road,
HIGHTON, VICTORIA

Client: BARWON WATER
PO BOX 659
GEELONG VIC 3220

Proposed
Development: Commercial building

Date: v1. 23rd November 2025
v2. 4th December 2025

File No: 24418J

Author: Andrew P Redman

Contact: admin@pgvic.com.au

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SOUTH MELBOURNE



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1. INTRODUCTION

Provincial Geotechnical Pty Ltd has been commissioned to provide a Geotechnical Site Investigation report for the nominated address. We understand that a 2 storey building is proposed for the site.

The provided Proposed Site Plan for the project is appended (Appendix i).

The site investigation hereby reported has been carried out with regard to the information supplied to us by our client or client's agents at the date of our commission. Should the client or his agent have omitted to supply us with relevant information or make significant changes to the building type, building envelope, or site our report may be irrelevant and/or inappropriate. No responsibility will be accepted by us for the consequences of such action. The client should acknowledge that this is a Geotechnical Site Investigation report specifically prepared for the proposed building development at the identified location and does not extend beyond that brief.

All site works related to the building project must be undertaken to comply with the relevant Codes and Standards and must not potentially adversely impact upon building envelopes.

Provincial Geotechnical Pty Ltd accepts no liability or responsibility for any site works outside of our specific commission.

2. SITE CLASSIFICATION

The scope of AS2870-2011 allows for the classification of sites for some light commercial and institutional building sites. However, the proposed subdivision development appears to fall outside the scope of the code and the design should be based on engineering principles.

The Site Classification of this site is CLASS P (PROBLEM SITE), noting the underlying soil profile is moderately reactive (CLASS M).

Site Classification is based upon Section 2 Clauses 2.2 of AS2870 - 2011. The method adopted for clay sites primarily includes 2.2.1 (a). Clause 2.2.1 (b) can be adopted under instruction from the client.

Classification of the site has taken into account the following:

- Identification of the sub soil profile.
- Field classification of the soil type and plasticity.

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3. SITE SOIL CHARACTERISTICS SUMMARY

SITE FILLING:

Up to 900mm of fill encountered - ENGINEER design required.

UNSUITABLE FOUNDATION CONDITIONS:

The fill present is not considered a suitable foundation material. Depth to satisfactory foundation soils may necessitate localised deepening of footings in excess of standard types.

GROUND WATER:

Not encountered.

PERCHED WATER:

Not encountered but possible during winter/wet periods.

BEDROCK:

Encountered at depth; Refer to Borelogs.

FLOATERS:

Not encountered.

ABNORMAL MOISTURE CONDITIONS:

Existing vegetation and infrastructure on site. Abnormal Moisture Conditions present.

GEOLOGY:

Lower cretaceous sediments (Mapcode Koe)

Identification assisted by reference to appropriate geological survey map. This report contains a geology map obtained from the Department of Natural Resources Geovic website including the site under investigation. It is provided as a guide to mapping of the local geology only and not to be used as a basis for design (Appendix ii).

SOIL TYPES:

NATURAL:

Silty clay topsoils overlying clays, typical of area's geology. Clays of the above sedimentary origin are generally considered moderately reactive.

FILLING:

Silty Clay/Clay mix.

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4. TERRAIN EVALUATION SUMMARY

CLIMATIC ZONE: CZ 2

SITE LOCATION: East side of Scenic Road.

SLOPE: Gentle gradient over site.

DRAINAGE: SURFACE: Fair.
SUB-SURFACE: Fair to Poor. Installation of cut off drains may be required.

EARTHQUAKE CLASS: Australian Standard AS1170.4-2007, 'Minimum Design Loads on Structures, Part 4: 'Site Sub-Soil Class' outlines the methods for assigning the site's Sub-soil Class. Based on the anticipated stratigraphy, Table 4.1 'Maximum Depth Limits for Sub-Soil Class C' and Table 3.2 'Hazard Factor (Z) For Specific Australian Locations' of the standard, we recommend the following Hazard Factor and Sub-Soil Class are adopted:
SUB-SOIL CLASS: Class C_e – Shallow soil site
HAZARD FACTOR (Z): 0.10

PROXIMATE VEGETATION (POTENTIAL ABNORMAL MOISTURE CONDITIONS):

GRASSES: Present on site.

SHRUBS: None present.

TREES: Present on site.

INFRASTRUCTURE WITHIN OR IN PROXIMITY TO SITE: Yes. Single storey Barwon Water building adjacent to site.

NOTE: The designing engineer should review available aerial mapping data and/or available site context information to assess the current or pre-existing conditions in respect to design considerations for Abnormal Moisture Conditions.

This report provides photographic evidence of either existing or pre-existing site context (Refer to Appendix iii).

5. TESTING PROGRAMME

Six (6) test sites were established and excavated using a 100mm direct drive drilling rig at the approximate locations shown on the appended Test Site Location Plan (Appendix iv).

Where soil conditions dictated, investigation was assisted by the use of a penetrometer to confirm profile depth and condition. Where penetrometer testing is not undertaken the soil profile depths and conditions may be extrapolated from our knowledge of the geology and soils in this area.

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5. TESTING PROGRAMME CONTINUED

Disturbed samples were collected and hand classified.

A vane shear apparatus was used to determine the strength of all cohesive soils in conjunction with tactile assessment.

Site history: The client is advised that site classification can be altered by past activities on this site not known at the time of our site investigation and report preparation. The client is advised that failure to investigate and report past history may invalidate the report.

6. FINDINGS

The soil profiles encountered are shown on the appended borelog sheet (Appendix v).

The cohesion value obtained is quoted on the log sheet.

The sedimentary nature of the Lower Cretaceous aged soils indicates a moderate soil reactivity and seasonal heave potential.

The client should recognise that the soil profiles encountered during our testing are deemed representative of the building envelope for the purpose of classifications. The client should be aware however that in some cases soil conditions can change dramatically over short distances and although all effort is made to determine possible soil profile variations, no responsibility is taken for any undetected variations. The most careful exploration programme may not locate all soil profile variations due to time and economic restraints.

If footing excavations reveal soil conditions differing from those shown on the log sheet in this report, we recommend that Provincial Geotechnical be contacted immediately to carry out further testing to confirm or revise our conclusions and recommendations.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 STRUCTURAL RECOMMENDATIONS:

7.1.1 RESIDENTIAL STYLE STRUCTURES

The use of stiffened raft slab construction is recommended for residential proportioned buildings constructed on a residual clay profile. An Allowable Bearing Pressure of 100kPa may be considered for preliminary proportioning of stiffened raft slab edge beams and internal load bearing ribs a minimum of 100mm into stiff clay.

Minimum dimensions and reinforcement of footings will need to meet the minimum requirements of Australian Standard AS2870-2011, 'Residential Slabs and Footings – Construction' for a CLASS M site classification.

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7.1.1 RESIDENTIAL STYLE STRUCTURES CONTINUED

Where the depth of fill exceeds 0.3 metres, as is predominantly the case on this site, it will be necessary to adopt suspended raft slab construction. All edge beams and internal ribs will need to be founded in stiff clay at the base of any fill and silty topsoils, and the slab panels will need to be designed as fully suspended.

Considerable attention to site drainage and trees, both existing and proposed, will be required to ensure adequate performance of structures. Failure to take into account these factors will result in poor footing performance.

7.1.2 LOW RISE STRUCTURES

Strip and pad footings founded within residual clay are routinely adopted for flexible commercial style structures constructed on a clay foundation. The use of pad and strip footings founded on clay may be considered for any proposed low rise structures subject to:

- The superstructures being flexible and well-articulated. Steel portal framed construction and precast concrete panel construction normally satisfies this criteria.
- The superstructures not being sensitive to footing movements associated with seasonal volume changes within the clay.
- The moisture content regime of the clay beneath the structures being maintained as uniform as possible. The clays must not be subject to extremes in moisture conditions resulting from poor site drainage and/or the drying effects of trees.

If the proposed structures are not flexible and/or well-articulated, or the structures are sensitive to footing movements associated with seasonal volume changes within the highly plastic residual clay, it will be necessary to deepen the footings to a depth of negligible seasonal soil moisture variation.

Minimum dimensions and reinforcement of footings founded on clay will need to meet the minimum requirements of Australian Standard AS2870-2011, 'Residential Slabs and Footings – Construction' for a CLASS M site classification.

An Allowable Bearing Pressure of 200kPa may be considered for preliminary proportioning of strip and pad footings where founded a minimum of 200mm into stiff clay, subject to a minimum founding depth of 800mm.

Note: Where weathered bedrock is encountered, foundation depths may be reduced to that level.

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7.1.2 LOW RISE STRUCTURES CONTINUED

During our investigation suitable foundation levels were found at the following depths:

SITE	FOUNDATION DEPTH	FOUNDATION MATERIAL	ALLOWABLE BEARING PRESSURE
1	900mm	Natural stiff clay	200kPa
2	1300mm	Natural stiff clay	200kPa
3	500mm	Natural extremely weathered sandstone	200kPa
4	600mm	Natural stiff clay	200kPa
5	800mm	Natural stiff clay	200kPa
6	800mm	Natural stiff clay	200kPa

An increased Allowable Bearing Pressures of 250kPa is likely to be available for strip and pad footings where founded deeper into the stiff clay or on sandstone bedrock. It is recommended that a uniform founding stratum be provided throughout any structure to minimize differential movements.

If any trees are proposed they must be placed outside 1.5 times their mature height of any proposed footings we recommend to deepen (pile) the footings to the region's Hs which is 1.8 metres below natural ground level.

7.1.3 BORED PILES:

Pile footings for any new construction should be founded a minimum of 300mm into the natural stiff clay or the weathered sandstone bedrock which are the recommended foundation materials on this site or a minimum of 1500mm below finished surface level - **WHICHEVER IS DEEPER.**

These footings should be designed by a suitably qualified Engineer for low to moderate soil reactivity and a maximum Allowable Bearing Pressure of 300kPa may be used.

During our investigation a suitable foundation level was found at the following depths:

SITE	FOUNDATION DEPTH	FOUNDATION MATERIAL	ALLOWABLE BEARING PRESSURE
1	1500mm	Natural stiff clay/Sandstone	300kPa
2	1500mm	Natural stiff clay/Sandstone	300kPa
3	1500mm	Natural stiff clay/Sandstone	300kPa
4	1500mm	Natural stiff clay/Sandstone	300kPa
5	1500mm	Natural stiff clay/Sandstone	300kPa
6	1500mm	Natural stiff clay/Sandstone	300kPa
7	1500mm	Natural stiff clay/Sandstone	300kPa
8	1500mm	Natural stiff clay/Sandstone	300kPa

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NOTES:

1. Where a deep pile footing is proposed the structural design specifications must be given precedence over the recommendations provided in this report.
2. Skin friction has not been computed for a pile footing and should not be considered at depths less than 1500mm. A skin friction component of 25kPa may be used at depths greater than 1500mm and a minimum of 500mm into natural stiff clay – whichever is deeper.
3. Lateral resistance should not be computed for the fill soils.

7.1.4 RETENTION OF SITE EXCAVATIONS

a. Retention Systems

Should a basement level be proposed and safe batters can be accommodated behind the proposed retention systems, the use of conventional precast concrete panel or reinforced blockwork retaining walls will be suitable. Safe batters of approximately 30° in fill and silty topsoils and 40° in stiff clay are anticipated under favourably dry conditions.

Where safe batters cannot be accommodated or are not preferred, the use of a soldier pile retention system with infill panels is recommended. A soldier pile retention system is recommended where bulk excavation is proposed adjacent to an existing structure.

If a retained height of more than approximately 3.0 metres is proposed it may be necessary to progressively prop or anchor retention systems as excavation proceeds.

In any case, walls should be designed for the minimum requirements of the appropriate Codes of Practice, e.g. Civil Engineering Code of Practice No. 2, Earth Retaining Structures. The effects of surcharge behind the wall should be calculated using the methods presented in the Code of Practice CP2.

b. Lateral Earth Pressures

Permanently cantilevered retaining walls may be considered where deformation and movement behind the walls can be tolerated, such as for garden or grassed areas. A triangular lateral earth pressure distribution and an active earth pressure coefficient (K_a) of approximately 0.3 could be adopted for preliminary design. The active earth pressure coefficient should be used to calculate lateral earth pressures generated by surcharge loads.

For minimal deflection of progressively propped walls where there are movement sensitive structures or buried services within the zone of influence of the excavation, a uniform earth pressure distribution of $8HkPa$, where H is the total retained height in metres, could be adopted for preliminary design. An at rest earth pressure coefficient (K_0) of 0.6 could be used to calculate lateral earth pressures generated by surcharge loads.

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b. Lateral Earth Pressures Continued

A preliminary unit weight of 19 kN/m^3 may be adopted for clay soil.

Sloping backfill should be incorporated as surcharge loading. Any temporary or permanent surcharge loads such as nearby high level footings, traffic loading and compaction stresses, will also need to be included in the design of retention structures.

Retention structures must be designed such that the soil behind the wall is completely and permanently drained. If this cannot be ensured, then hydrostatic pressure must be superimposed on the lateral earth pressure distributions.

Conservatively, the ultimate lateral toe resistance of retaining walls in clay may be estimated based on the following soil parameters:

Angle of internal friction:	$\emptyset = 0^\circ$ (short term)
Undrained cohesion:	Very stiff clay $C_u = 80\text{kPa}$ (short term)
Effective angle of internal friction:	$\emptyset' = 23^\circ$ (long term)
Effective cohesion:	$C' = 0\text{kPa}$ (long term)

Construction of pavements is likely to be problematic during the wetter months of the year. Both the clay fill and native clay materials are highly susceptible to softening and instability under wet conditions. Pavement construction should be undertaken during the drier months of the year to avoid the need for additional subgrade improvement and delays in construction.

NOTE:

The site derived clays are not recommended for use as structural fill. High plasticity clays are generally extremely difficult to compact and are potentially subject to appreciable volume changes if they are not properly moisture conditioned. Use of a suitable imported granular or low plasticity clay fill will assist in assuring efficient placement and present less risk with respect to long term performance of structures and pavements based on soil reactivity.

Structural fill must be placed in uniform layers no exceeding a loose thickness of 200mm and compacted to at least 98% of the standard maximum dry density value as determined in accordance with Australian Standard AS1289 5.1.1-1993.

Australian Standard AS3798, 'Guidelines on Earthworks for Commercial and Residential Developments' provides guidance on the specification, execution and control of earthworks relevant to the subject site. Level 1 supervision in accordance with Australian Standard AS3798 is recommended for all proposed earthworks at the site.

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7.2 CIVIL RECOMMENDATIONS:

7.2.1 NATURAL SUBGRADE

Pavement design can be based on the C.B.R. value of **3.5%** for the insitu natural stiff clay which was determined by site soil identification.

This value assume that drainage is suitably detailed to prevent any saturation of subgrade or pavement materials.

Preparation of Subgrade

Performance of the proposed pavement will be highly dependent on the level of subgrade preparation. The following levels of preparation and associated pavement performance may be considered.

In conjunction with any excavation required to achieve design grade levels, stripping of rubble, vegetation and root zone material should be carried out across areas of the site to be occupied by pavements. The grade surface should be brought to suitable moisture conditions, proof rolled using tracked excavation equipment or roller compactor (minimum 8 tonne static weight). Material responding poorly to compaction should be excavated to achieve a competent base and excavations backfilled using aggregate (i.e. approved NDCR or Class 4:40mm) compacted to at least 98% Standard Compaction Density (per, AS1289, 5.1.1).

Minimum Subgrade Preparation

Proof rolling of the exposed subgrade prior to placement of the pavement subbase course should be closely inspected. Any soft or heaving areas should be stripped and re-instated using structural fill.

If the subgrade has been exposed to significant rainfall it may be unworkable and proof rolling may not be possible. Under such circumstances further advice on subgrade preparation should be sought from this office.

Pavement and Subgrade Drainage

Effective surface and perimeter cut-off drainage must be provided and maintained to ensure that the pavement layers and subgrade cannot become saturated. Premature pavement failure is highly likely where drainage is poor.

It is recommended that pavements be constructed with cross fall in excess of minimum requirements to allow for possible irregular settlement of pavements.

The designing engineer may need to consider the use of stabilization techniques and/or geofabrics in conjunction with site drainage should the fill and/or silty clay topsoil lose form due to inundation.

Reference to C.R.B. Technical Bulletin No. 31 September, 1908 "The Design of Flexible Pavements" and Australian Road Research Board Special Report No. 41 "Into a New Age of Pavement Design" is recommended for design purposes.

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Inspection of Subgrade

The exposed pavement subgrades should be inspected by a qualified engineer during proof rolling to ensure that a suitable level of subgrade preparation has been achieved. The presence of any unusual features or conditions should be brought to the attention of this office before construction proceeds.

7.2.3 SITE MAINTENANCE REQUIREMENTS

It is essential that surface sealing and gradients through pavement areas be detailed so as to minimise moisture ingress into the foundation zone and subgrade soils.

Apart from the inherent risk of constructing a pavement on fill, the influence of any proposed proximate vegetation also poses a substantial risk to pavement failure.

The effect of tree root systems on the proposed pavement in respect to both physical movement and soil moisture influence must also be a major factor in the pavement design. The effect of proximate and future vegetation is a consideration on this site. Future landscaping must also address this.

This report contains a standard Pavement Appendix of which a number of points are applicable to this site (Appendix vi)

7.2.4 SITE CLASSIFICATION (AS2870-2011)

Where the use of a concrete slab similar to a domestic style construction is considered as a pavement the designing engineer should note that the background natural classification of this site is CLASS M (Moderately Reactive Clay).

CLASS M classifications assume a maximum characteristic surface movement of 40mm.

8. SITE CONSTRAINTS

EXCAVATION/CONSTRUCTION DIFFICULTIES

SITE VEHICLE ACCESS: Good.

SITE VEHICLE MANEUVERABILITY: Fair. Site may become boggy and/or slippery. During summer and early autumn when evaporation rates are typically high and rainfall levels low, the trafficability of the stripped ground surface is anticipated to be quite good. Other than dust suppression, no significant difficulties are anticipated. During winter and spring it is probably that only tracked machinery will be able to access the site once the surface has been stripped and is exposed to rain.

EXCAVATION CONDITIONS: The topsoils and clays should be readily excavated using a 20 tonne capacity hydraulic excavator.

If site access is to be provided for trucks once the ground surface is saturated it will be necessary to construct access tracks formed using non-descript crushed rock (75mm minus), recycled brick and concrete rubble or equivalent. Under extreme conditions, it will be necessary to incorporate a layer of geogrid or geotextile fabric at the base of the crushed rock.



EXCAVATION/CONSTRUCTION DIFFICULTIES CONTINUED

EXISTING STRUCTURES AROUND CONSTRUCTION AREA: Yes.

VEGETATION AROUND CONSTRUCTION AREA: Yes.

WET WEATHER IMPACT: Possible.

Sites without good natural or installed drainage can be adversely impacted upon during construction. The client should be aware that the following impacts can occur after wet weather.

- * Site may become slippery and boggy.
- * Foundation soils may become inundated and unworkable.
- * Site drainage may need to be installed.
- * Site may need to be abandoned for a period.
- * Deeper footings or additional earthworks may be required.

9. CONSTRUCTION REQUIREMENTS

1. CONSTRUCTION ADJACENT TO EASEMENTS, EXCAVATIONS AND SERVICE PIPE TRENCHES

Buried services should be located adjacent to footings. Where this cannot be avoided, the trench should be backfilled in such a way as to prevent moisture ingress. Any footings located adjacent to easements, excavations or backfilled service trenches should be founded below a line drawn up at 40° above horizontal from the base of the easement or excavation. If the angle of repose is to be intersected, a piled footing will be required.

2. SITE DRAINAGE AND MAINTENANCE OF FOOTINGS

Effective drainage of the site should be maintained at all times. Water run-off should be collected and diverted away from all structures during construction. Water should not be allowed to pond against footings during or after construction. The ground adjacent to footings should be graded to provide a permanent fall of 1(V):50(H) away from the footings over the first two metres. Water supply and drainage infrastructure should be maintained so that no leakage occurs.

3. ARTICULATION OF STRUCTURE

Adequate articulation should be provided in accordance with The Cement and Concrete Association of Australia – Technical Note TN61. In addition to the requirements of TN61, a full height articulation joint should be provided at the following locations:

- At the junction where two different footing types intersect.
- Where new structures adjoin existing structures.

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4. INSPECTION OF FOOTING EXCAVATIONS

All footing excavations should be inspected by a suitably qualified geotechnical consultant to ensure that the required founding stratum has been achieved. The presence of any unusual features or conditions should be brought to the attention of this office before construction proceeds.

For shallow footing and trench excavations, based on the ground conditions information obtained, it appears excavations will be predominantly in natural clays. Personnel should not be permitted to enter confined excavations in excess of 1.5 metres deep unless such excavations are appropriately battered or shored. Shallower excavations, particularly in loosely compacted fill, may also need to be battered or shored and will need to be assessed at the time of construction.

5. BATTER SLOPES

It is recommended that temporary batter slopes should be steeper than 1H:1V, but flatter slopes may need to be considered within fill materials. Permanent batter slopes should not be steeper than 2H:1V and should be protected from erosion by vegetation or proprietary protection systems. Drainage should be provided at the top of batter slopes to divert run-off away from the slope face. The above recommendations are provided for batter slopes up to 3 metres in height; further geotechnical advice should be sought where higher batter slopes are proposed.

10. REPORT LIMITATIONS

This report is for the use of the party to whom it is addressed only and has been produced for consideration of a proposed subdivision development as described by the client and for no other purpose. It has been assumed that the conditions encountered by the limited number of boreholes are representative of the site in general. Some variation from the conditions encountered by the boreholes is expected over the site.

It is beyond the scope of this report to comment on any possible contamination of the site.

ANDREW REDMAN BSc.
GEOLOGIST.
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APPENDICES

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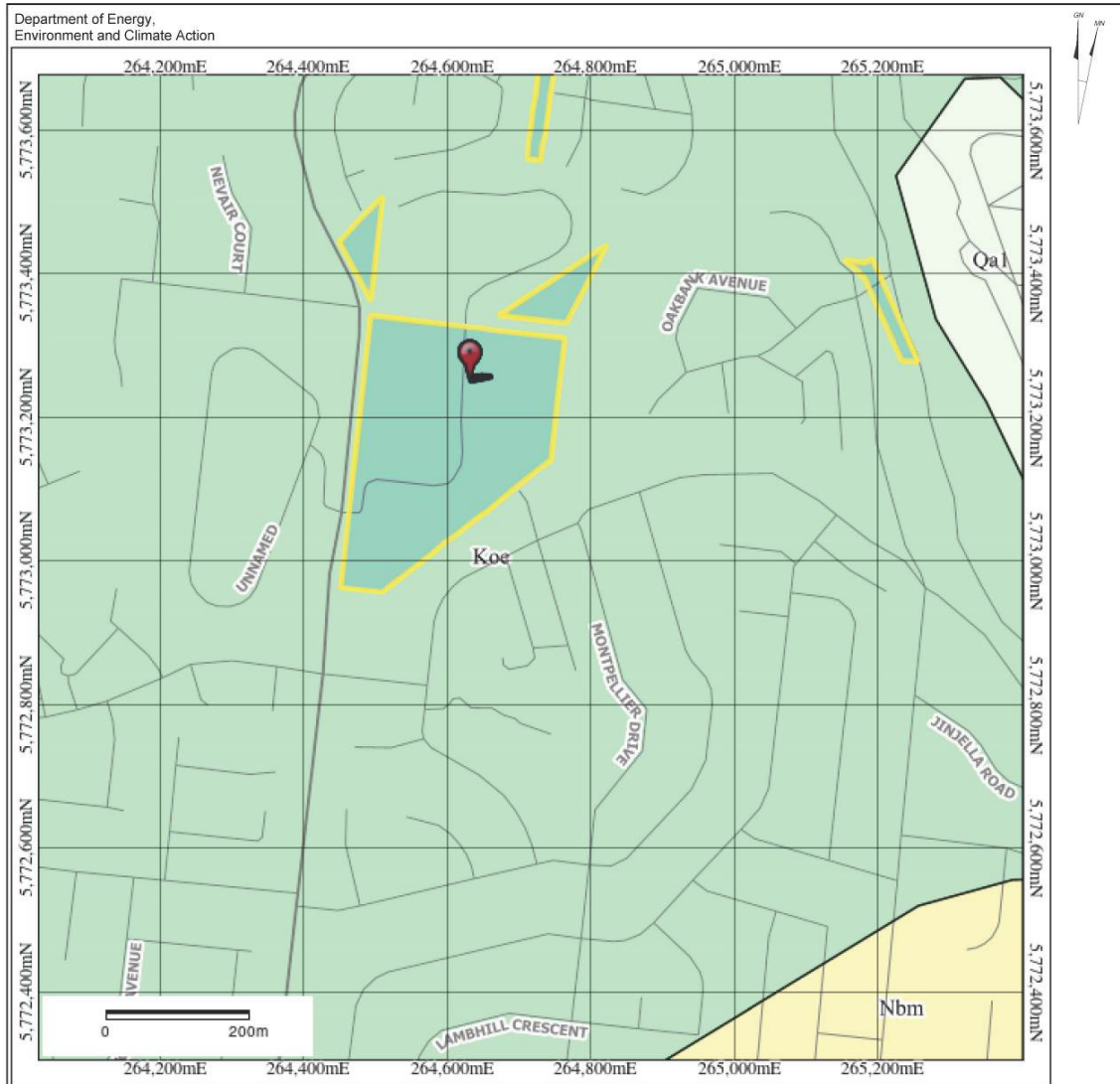


JAM>architects		Documentation	
Not for Construction		Dwg Title Ground Floor Plan Overlay	
Dwg No. CD!		Revision CD!	
Project No. 2442		Date	
Revision		Scale 1:100 @ A1	
Project Proposed Development of a New Building		Address 120 Somers Road Hillston NSW 2820	
Client Burren Water		Notes	

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- Legend
- Towns (25K)
 - Locality
 - Small Town
 - Town
 - Large Town
 - Major Town
 - Regional Centre
 - City

Geological Lines & Faults 250K

Map Scale: 1:7,918
Projection: MGA94 55
The map contains zonal grid lines that extends beyond their zone boundary.

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Disclaimer: This map is a snapshot generated from Victoria Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.

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Map Created Wed Oct 29 2025 10:22:49 GMT+1100 (AEDT)



AERIAL PHOTOGRAPH

(Approximate Location)

Client: BARWON WATER
Ref. Number: 24418J
Date: 18/11/2025
Site: 120 Scenic Road, HIGHTON

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SUBJECT SITE

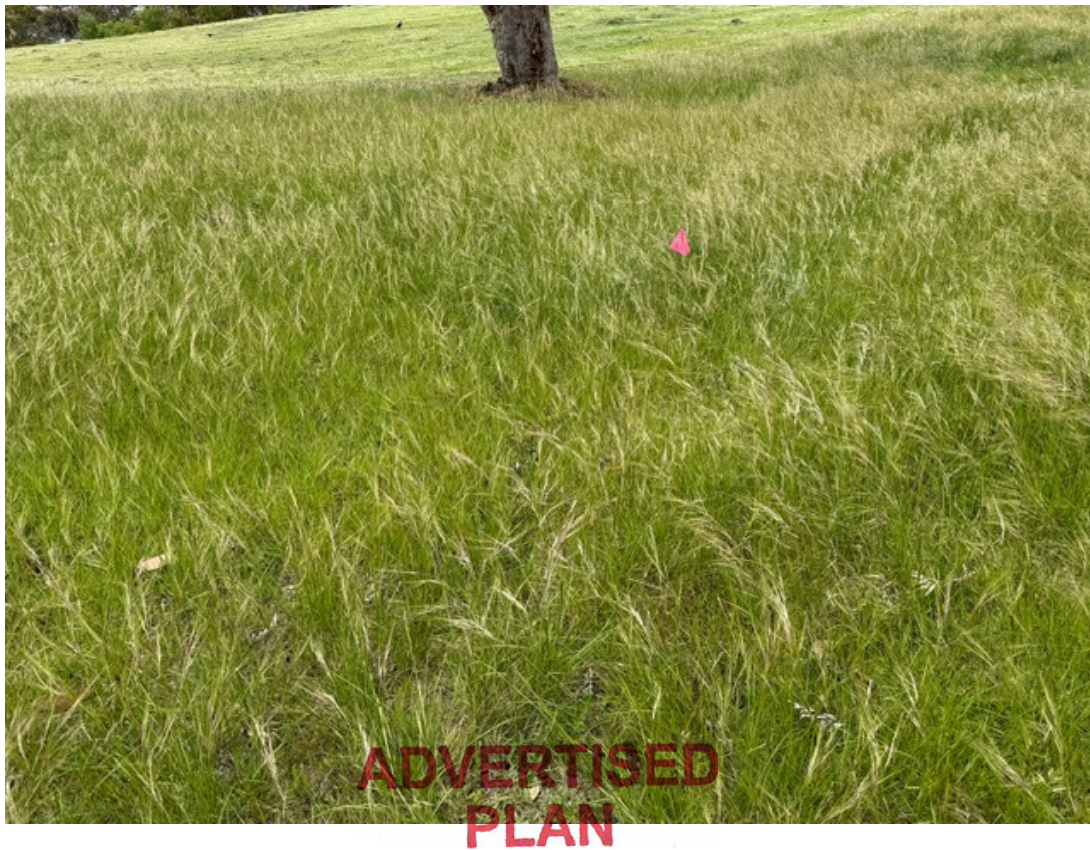




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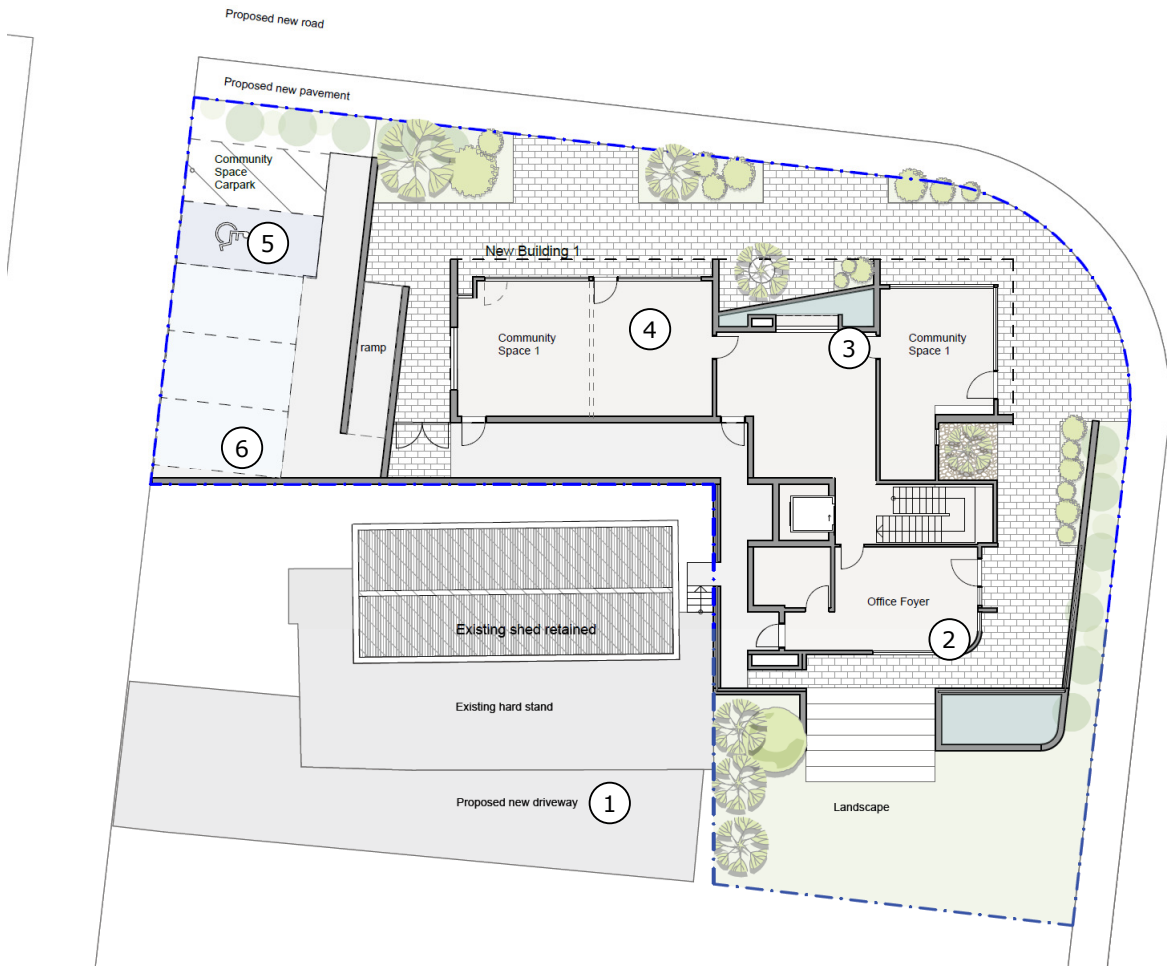
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TEST SITE LOCATION PLAN

○ - Approximate borehole locations

Client: BARWON WATER
Ref. Number: 24418J
Date: 18/11/2025
Site: 120 Scenic Road, HIGHTON



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BORELOG DESCRIPTIONS

APPENDIX v

CLIENT: BARWON WATER	REFERENCE NUMBER: 24418J
PROJECT ADDRESS: 120 Scenic Road, HIGHTON	DATE: 18/11/2025 GEOLOGIST: Andrew Redman

TEST SITE 1 EXCAVATION METHOD: HYDRAULIC DRILLING RIG					TEST SITE 2 EXCAVATION METHOD: HYDRAULIC DRILLING RIG					TEST SITE 3 EXCAVATION METHOD: HYDRAULIC DRILLING RIG					
Depth mm	FILL	SOIL PROFILE	"C"	ABP	Depth mm	FILL	SOIL PROFILE	"C"	ABP	Depth mm	FILL	SOIL PROFILE	"C"	ABP	
100		FILL: SILTY CLAY/ CLAY MIX grey brown moist; moderately compacted			100		FILL: SILTY CLAY/ CLAY MIX grey brown moist; moderately compacted			100		SILTY CLAY dark brown moist; firm +weathered rock fragments		100	
200			600		200			600		200			SANDSTONE yellow highly weathered		
300			700	100	300			700		300					
400			800		400			800		400					
500			900		500			900		500					
600		SILTY CLAY grey brown moist; firm			600		SILTY CLAY grey brown moist; firm		100	600		slightly weathered (hard) yellow grey			
700		CLAY grey-grey brown moist; stiff	130+		700		CLAY grey-grey brown moist; stiff			700					
800				1000		800			1000		800				
900				1100		900			1100		900				
1000				1200		1000			1200		1000				
1100				1300		1100			1300		1100				
1200		yellow brown slightly silty			1200		SANDSTONE yellow grey slightly weathered (hard)			1200		slightly weathered (hard) yellow grey			
1300			1400		1300		1400		1300						
1400			1500		1400		1500		1400						
1500			1600		1500		1600		1500						
1600			1700		1600		1700		1600						
1700		END BORE HOLE UNABLE TO PENETRATE SANDSTONE			1700		END BORE HOLE UNABLE TO PENETRATE SANDSTONE			1700		slightly weathered (hard) yellow grey			
1800			1800		1800		1800		1800						
1900			1900		1900		1900		1900						
2000			2000		2000		2000		2000						
2100			2100		2100		2100		2100						
2200		END BORE HOLE UNABLE TO PENETRATE SANDSTONE			2200		END BORE HOLE UNABLE TO PENETRATE SANDSTONE			2200		slightly weathered (hard) yellow grey			
2300			2300		2300		2300		2300						
2400			2400		2400		2400		2400						
2500			2500		2500		2500		2500						

ABP = Allowable Bearing Pressure

"C" = Cohesion (V.S.T)

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BORELOG DESCRIPTIONS

APPENDIX v

CLIENT: BARWON WATER	REFERENCE NUMBER: 24418J
PROJECT ADDRESS: 120 Scenic Road, HIGHTON	DATE: 18/11/2025 GEOLOGIST: Andrew Redman

TEST SITE 4 EXCAVATION METHOD: HYDRAULIC DRILLING RIG					TEST SITE 5 EXCAVATION METHOD: HYDRAULIC DRILLING RIG					TEST SITE 6 EXCAVATION METHOD: HYDRAULIC DRILLING RIG				
Depth mm	FILL	SOIL PROFILE	"C"	ABP	Depth mm	FILL	SOIL PROFILE	"C"	ABP	Depth mm	FILL	SOIL PROFILE	"C"	ABP
100		SILTY CLAY		100	100		FILL: SILTY CLAY/			100		SILTY CLAY		100
200		grey brown moist; firm			200		CLAY MIX grey brown			200		grey brown		
300		CLAY			300		moist; moderately			300		moist; firm		
400		dark brown			400		compacted			400		CLAY		
500		moist; very stiff	130+		500		SILTY CLAY		100	500		dark brown		
600					600		grey brown			600		moist; very stiff	130+	
700		SANDSTONE			700		moist; firm			700				
800		yellow			800					800				
900		highly weathered			900		SANDSTONE yellow			900		SANDSTONE		
1000					1000		highly weathered			1000		yellow		
1100		slightly weathered			1100					1100		highly weathered		
1200		(hard)			1200		slightly weathered			1200				
1300		yellow grey			1300		(hard) yellow grey			1300		slightly weathered		
1400		END BORE HOLE			1400		END BORE HOLE			1400		(hard)		
1500		UNABLE TO			1500		UNABLE TO			1500		yellow grey		
1600		PENETRATE			1600		PENETRATE			1600				
1700		SANDSTONE			1700		SANDSTONE			1700				
1800					1800					1800		END BORE HOLE		
1900					1900					1900		UNABLE TO		
2000					2000					2000		PENETRATE		
2100					2100					2100		SANDSTONE		
2200					2200					2200				
2300					2300					2300				
2400					2400					2400				
2500					2500					2500				

ABP = Allowable Bearing Pressure

"C" = Cohesion (V.S.T)

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PAVEMENT DESIGN & CONSTRUCTION NOTES

APPENDIX vi

- i. All pavement should be designed by a suitably qualified engineer.
- ii. All works should be undertaken to the designing engineer's specifications and satisfaction.
- iii. Attention should be given to the following:
 - a) Excavation and pavement installation near trees
 - b) Grubbing and clearing where necessary
 - c) Sub-grade compaction and treatment of rock, soft spots and fill where present
 - d) Installation of proper site drainage to ensure the long term integrity of the sub-grade
 - e) The use of approved crushed rock material placed and compacted under proper supervision to the engineer's approval.
- iv. The client should address performance tolerances expected.
- v. Soil conditions: Where soil conditions encountered during preparation are found to differ from those described during our investigation, further immediate investigation is recommended. Any concern by any person involved in the proposed project concerning the soil conditions described and/or report supplied by Provincial Geotechnical Pty. Ltd. should be addressed to ourselves for further consultation.
- vi. Reference has been made to C.R.B. Technical bulletin No. 31 September, 1980 "The Design of Flexible Pavements" and Australian Road Research Board special Report No. 41 "into a New Age of Pavement Design".
- i. As instructed, the C.B.R. evaluation of this site is based upon a site assessment of the soil geology correlated with typical design C.B.R.'s reported in C.R.B. Technical Bulletin No. 31, 1980 and A.R.R.B. Special Report No. 41.

The values supplied are therefore conservative being based upon soil profile correlation only and may yield a standard deviation of + or - 2% C.B.R. value from more accurate laboratory assessments.

The client and designing engineer should recognise the above and, dependent upon other factors, may request more accurate analysis.

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