# Bartels Run Stage 2 – Lot 56 Jackass Flat

## Geotechnical Investigation for Arbor Estate

Report 25C 0327 Lot 56
May 2025

GTS
GEOTECHNICAL TESTING SERVICES

www.gts.com.au

# Bartels Run Stage 2 – Lot 56
# Jackass Flat

## Geotechnical Investigation
for
## Arbor Estate

**Revision**

| Revision | Authorised | Date |
|---|---|---|
| 25C 0327 Lot 56 | SEH | 27/05/2025 |

**Distribution (this version only)**

| Recipient | Format | Date |
|---|---|---|
| GTS | On file | 27/05/2025 |
| Arbor Estate<br>Attn: Darren Pitson | Email PDF<br>darren@pitson.com.au | 27/05/2025 |

# 1 INTRODUCTION

Arbor Estate commissioned Geotechnical Testing Services (GTS) to conduct a geotechnical investigation for the proposed development at Bartels Run Stage 2 – Lot 56, Jackass Flat.

The investigation has been conducted for the purpose of assessing general subsurface conditions at the site and consequently assigning a Site Classification in accordance with *AS2870 – 2011 Residential Slabs and Footings*.

# 2 INVESTIGATION

The investigation was conducted on the 2nd of May 2025 using a trailer mounted drill rig to drill 3 boreholes to depths of 1.5 to 3.0 metres within the designated area. The soil profiles and borehole locations are presented at the end of this report.

At the time of this investigation, the type of development proposed is understood by GTS to be a new residential building. If the actual construction varies from this, then changes may be necessary to this classification report.

# 3 SITE CONDITION

The site has a slight fall to the front and is currently vacant. At the time of the investigation, the surface of the site was dry with no natural grass. There are no trees within the proximity of the proposed development. There was no visual evidence of surface cracking or surface rock. No groundwater seepage was encountered over the investigated depths.

Full details of the soil conditions are presented in the borehole logs.

# 4 SITE CLASSIFICATION

After allowing due consideration to the site geology, soil conditions, drainage, controlled fill (GTS Report No. 25C 0185), vegetation including trees and known details of the proposed development, the site has been classified as **Class M-D**.

Class M-D sites have an expected characteristic surface movement ($y_s$) of 20 to 40mm.

Foundations designed in accordance with this classification are to be subject to the overriding conditions of Section 5.

## 5 DISCUSSION

Particular attention should be paid to the design of footings as required by *AS2870 – 2011.*

In addition to the normal founding requirements arising from the above classification, particular conditions at the site dictate that the founding medium and minimum depth below existing surface levels for all footings should be as follows:

- **CONTROLLED FILL:** Silty CLAY, medium plasticity, orange/brown, red/brown, very stiff
  At depths below 0.1 metres in the region of BHs 1 and 2 and, at depths below 0.7 metres in the region of BH3.

  *Or*

- SILTSTONE, distinctly weathered, pale brown, pale orange, off-white, low to medium strength rock
  At depths below 0.8 metres in the regions of BH1& BH2 and below 0.9 meters in the region of BH3.

An allowable bearing pressure of 100kPa is available for edge beams, strips and stump footings founded in the natural silty clays, and an allowable bearing pressure of 300kPa is available for edge beams, strips and stump footings founded in the weathered siltstone rock. All foundations should extend a minimum of 100mm into the above foundation material.

Blinding concrete (minimum strength 15MPa) may be used to bring the excavations up to design levels. The base of all footing excavations must be free of tree roots.

The proposed development should be located a minimum distance of 0.75 x the mature height of all trees. This distance should be increased by 50% for groups or lines of trees. If this distance is impeded, then the size and distance from the development of the tree(s) needs to be taken into account when designing the foundation.

## 6 IMPORTANT NOTES ABOUT THIS REPORT

- The site classification presented in Section 4 assumes that the current natural drainage and infiltration conditions at the site will not be markedly affected by the proposed site development work. Care should therefore be taken to ensure that surface water is not permitted to collect adjacent to the structure and that significant changes to seasonal soil moisture equilibria do not develop as a result of service trench construction or tree root action.

- Attention is drawn to Appendix B of AS2870 and CSIRO document *BTF 18 – Foundation Maintenance and Footing Performance: A Homeowner's Guide* as a guide to maintenance requirement for the proposed structure.

- This is not a comprehensive investigation nor is it economic or practical to determine every subsurface feature on the site. Although this investigation indicates that soil conditions are relatively uniform across the site, it is recommended that the base of all footing excavations

be inspected to ensure that the founding medium meets the requirements referenced herein with respect to type and strength of founding materials. If further variations in descriptions in soil types, colour or depths are discovered during construction, this office should be notified immediately so that potential influence on the footings may be assessed.

- The soil colours provided in the borehole logs attached may vary with soil moisture content and individual interpretation, therefore colour alone should not be used to identify these soils.

- Strength characteristics of soils often exhibit a large variation between wet and dry conditions. Soil characteristics of a soil profile are given on the soil conditions at the time of the investigation.

- In the event of significant earthworks being undertaken on the site after this investigation, this report may require an amendment if appropriate.

Should you have any further queries concerning these results, please do not hesitate to contact GTS on 03 5441 4881.

**Prepared by**

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**Reviewed by**

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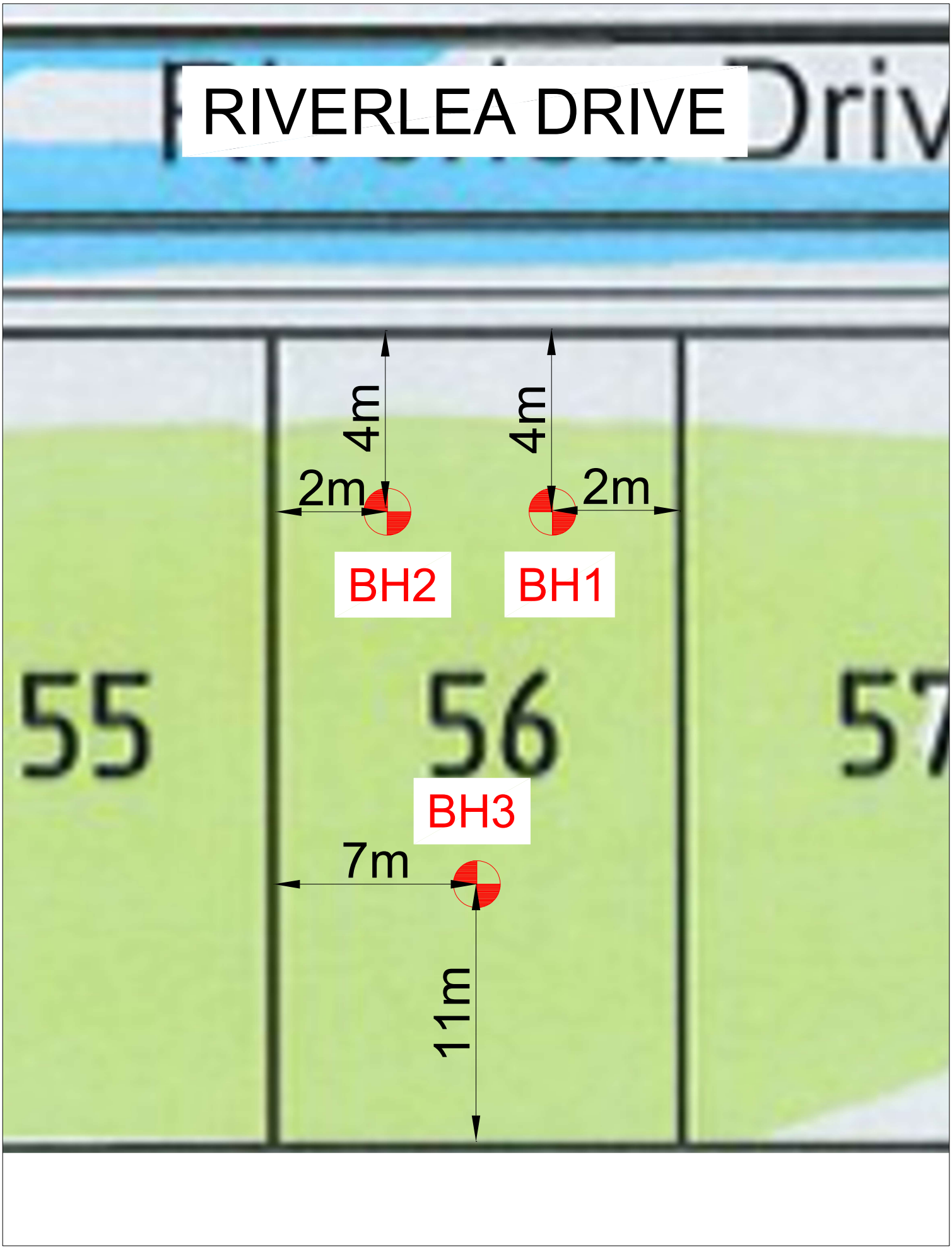
***Principal Geotechnical Engineer***




| | | | |
|---|---|---|---|
| GTS GEOTECHNICAL TESTING SERVICES | **GEOTECHNICAL INVESTIGATION** | **CLIENT:** ARBOR ESTATES<br>**PROJECT:** BARTELS RUN STAGE 2<br>LOT 56 | |
| | APPROXIMATE LOCATIONS<br>NOT TO SCALE | GTS REF: 25C 0327<br>CLIENT REF: | DRAWN BY: CC<br>DATE: 8 MAY 2025 |

**GTS - Bendigo**
13 Alstonvale Court East Bendigo VIC 3550
Phone: 03 5441 4881

# Geotechnical Log - Borehole

## 56-1

| | | | | | |
|---|---|---|---|---|---|
| UTM | : 55H | Drill Rig | : Gemco HS7 - Trailer Mount | Job Number | : 25C 0327 |
| Easting (m) | : 257189.77 | Driller Supplier | : Geotechnical Testing Services | Client | : Arbor Estate |
| Northing (m) | : 5933376.48 | Logged By | : Corey Clarke | Project | : Bartels Run Stage 2 |
| Ground Elevation | : 205.75 (m) | Reviewed By | : | Location | : Brooklands Drive, Jackass Flat VIC, Australia |
| Total Depth | : 3 m BGL | Date | : 02/05/2025 | Loc Comment | : |

| Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Weathering | Consistency | Testing: DCP (blows/100mm) | Testing: PP (kPa) | Testing: SPT (N) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Controlled Fill | | CI | Silty CLAY (CI): very stiff, medium plasticity, pale red brown, moist to dry. | M-D | | VSt | | | | |
| | 0.4 | Natural | | CI | Silty CLAY (CI): very stiff, medium plasticity, red brown and orange brown, moist. | M | | VSt | | | | |
| | 0.8 | Rock | | SLT | SILTSTONE: distinctly weathered, low to medium strength, pale brown, pale orange and off-white, fine grained, dry. | D | DW | LS-MS | | | | |
| | 1 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | | | | | **56-1 Terminated at 3m** | | | | | | | |

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# Geotechnical Log - Borehole

## 56-2

| | | | | | |
|---|---|---|---|---|---|
| UTM | : 55H | Drill Rig | : Gemco HS7 - Trailer Mount | Job Number | : 25C 0327 |
| Easting (m) | : 257189.77 | Driller Supplier | : Geotechnical Testing Services | Client | : Arbor Estate |
| Northing (m) | : 5933376.48 | Logged By | : Corey Clarke | Project | : Bartels Run Stage 2 |
| Ground Elevation | : 205.75 (m) | Reviewed By | : | Location | : Brooklands Drive, Jackass Flat VIC, Australia |
| Total Depth | : 1.5 m BGL | Date | : 02/05/2025 | Loc Comment | : |

| Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Weathering | Consistency | Testing: DCP (blows/100mm) | Testing: PP (kPa) | Testing: SPT (N) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.3 | Controlled Fill | | CI | Silty CLAY (CI): very stiff, medium plasticity, pale red brown, moist to dry. | M-D | | VSt | | | | |
| | 0.8 | Natural | | CI | Silty CLAY (CI): very stiff, medium plasticity, red brown and orange brown, moist. | M | | VSt | | | | |
| | 1 | Rock | | SLT | SILTSTONE: distinctly weathered, low to medium strength, pale brown, pale orange and off-white, fine grained, dry. | D | DW | LS-MS | | | | |
| | | | | | **56-2 Terminated at 1.5m** | | | | | | | |

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# Geotechnical Log - Borehole

## 56-3

| | | | | | |
|---|---|---|---|---|---|
| UTM | : 55H | Drill Rig | : Gemco HS7 - Trailer Mount | Job Number | : 25C 0327 |
| Easting (m) | : 257189.77 | Driller Supplier | : Geotechnical Testing Services | Client | : Arbor Estate |
| Northing (m) | : 5933376.48 | Logged By | : Corey Clarke | Project | : Bartels Run Stage 2 |
| Ground Elevation | : 205.75 (m) | Reviewed By | : | Location | : Brooklands Drive, Jackass Flat VIC, Australia |
| Total Depth | : 1.5 m BGL | Date | : 29/04/2025 | Loc Comment | : |

| Water | Depth (m) | Soil Origin | Graphic Log | Classification Code | Material Description | Moisture | Weathering | Consistency | Testing: DCP (blows/100mm) | Testing: PP (kPa) | Testing: SPT (N) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Controlled Fill | | CI | Silty CLAY (CI): very stiff, medium plasticity, pale brown grey, dry. | D | | VSt | | | | |
| | 0.5 | Natural | | ML | Sandy SILT (ML): very stiff, low plasticity, black and brown, fine grained sand, dry. | D | | VSt | | | | |
| | 0.7 | Natural | | CI | Silty CLAY (CI): very stiff, medium plasticity, red brown and orange brown, moist. | M | | VSt | | | | |
| | 0.9 | Rock | | SLT | SILTSTONE: distinctly weathered, low to medium strength, pale brown, pale orange and off-white, fine grained, dry. | D | DW | LS-MS | | | | |
| | 1 | | | | **56-3 Terminated at 1.5m** | | | | | | | |

# DESCRIPTIVE TERMS
# BOREHOLE/EXCAVATION LOG

### Classification Symbol & Soil Name

Classification of material and its description is based on the Unified Classification System as referenced in AS1726 – 1993 Geotechnical Site Investigations, Appendix A. A summary of the more common terms is included within.

### Particle Size Descriptive Terms

| Name | Subdivision | Size |
|---|---|---|
| Boulders | | >200mm |
| Cobbles | | 63 – 200mm |
| Gravel | Coarse | 20 – 63mm |
| | Medium | 6 – 20mm |
| | Fine | 2.36 – 6mm |
| Sand | Coarse | 0.6 – 2.36mm |
| | Medium | 200 – 600 micron |
| | Fine | 75 – 200 micron |
| Silt | | 2 – 75 micron |
| Clay | | < 2 micron |

### Consistency of Cohesive Soils

| Term | Undrained shear strength, $s_u$ (kPa) | Field Guide |
|---|---|---|
| Very Soft (VS) | <12 | A finger can be pushed well into the soil with little effort |
| Soft (S) | 12 – 25 | A finger can be pushed into the soil to about 25mm depth |
| Firm (F) | 25 – 50 | The soil can be indented about 5mm with the thumb |
| Stiff (St) | 50 – 100 | The surface of the soil can be indented with the thumb |
| Very Stiff (VSt) | 100 – 200 | The surface of the soil can be indented by thumb nail |
| Hard (H) | >200 | The surface of the soil can be marked only with the thumbnail |
| Friable (F) | - | Crumbles or powders when scraped by thumbnail |

### Density of Granular Soils

| Term | Density Index (%) |
|---|---|
| Very Loose (VL) | < 15 |
| Loose (L) | 15 – 35 |
| Medium Dense (MD) | 35 – 65 |
| Dense (D) | 65 – 85 |
| Very Dense (VD) | > 85 |

### Minor Components

| Term | Field Guide | Proportion of Minor Component In: |
|---|---|---|
| Trace of | Presence just detectable by feel or eye | Coarse grained soils: <5%<br>Fine grained soils: <15% |
| Some | Presence easily detectable by feel or eye | Coarse grained soils: 5-12%<br>Fine grained soils: 15-30% |

### Moisture Condition

| | |
|---|---|
| Dry (D) | Looks & feels dry. Cohesive soils are usually hard, powdery or friable. Granular soils run freely through the hand. |
| Moist (M) | Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere. Free water does not form. |
| Wet (W) | As for moist, but with free water forming on hands when remoulded. |

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### Method

| | | | | | |
|---|---|---|---|---|---|
| **S** | Auger Screwing | **W** | Washboring | **B** | Blade/bucket |
| **D** | Auger Drilling | **N** | Natural Exposure | **C** | Coring |
| **R** | Roller/tricone | **E** | Existing Excavation | **H** | Hammer Drill |

### Support

| | |
|---|---|
| ***** | Nil |
| **C** | Casing |
| **M** | Mud/polymer |

### Water

| | |
|---|---|
| * | Not observed |
| ▽ | Observed water level (date shown) |
| ▶ | Observed water inflow |
| ◀ | Observed water outflow |
| R | Refer to report for details |

### Notes, Samples, Tests

| | |
|---|---|
| **U63** | Undisturbed sample, 63mm diameter |
| **D** | Disturbed sample |
| **N*** | Standard Penetration Test, (*) Sample Figure = results |

### Structures, Additional Observations

| | |
|---|---|
| **PP** | Pocket Penetrometer test (kPa) |
| **DCP** | Dynamic Cone Penetrometer test (blows/100mm) |

### Surface

| | |
|---|---|
| _____ | Known boundary |
| - - - - - - - - - - | Probably boundary |
| -?-?-?-?-?-?- | Possible boundary |