

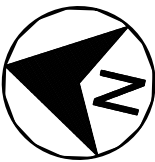


***Attachment 2***  
***Engineering Services Report***

**ATTACHMENT A**  
**Layout Plans**



NOTE:  
EXISTING SITE BOUNDARIES TO  
BE CONFIRMED BY SURVEY



HUME HIGHWAY

ROSEMONT ROAD

BARRETT'S LANE  
EASEMENT

ELECTRICAL

ASH ROAD  
MOUNTAIN

ROAD

MOUNTAIN

OVERHEAD

FUNCTIONAL LAYOUT

SCALE IN METRES  
1:4000 (A1) 0 20 40 80 120 160 200 1:8000 (A3)

|                                                   |          |      |
|---------------------------------------------------|----------|------|
| DRAWN                                             | DESIGNED | DATE |
| SWC                                               |          |      |
| DATE                                              | VERIFIED | DATE |
| SEP '20                                           |          |      |
| SCALE                                             | APPROVED | DATE |
|                                                   |          |      |
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167 Bourke Street, Goulburn NSW 2580  
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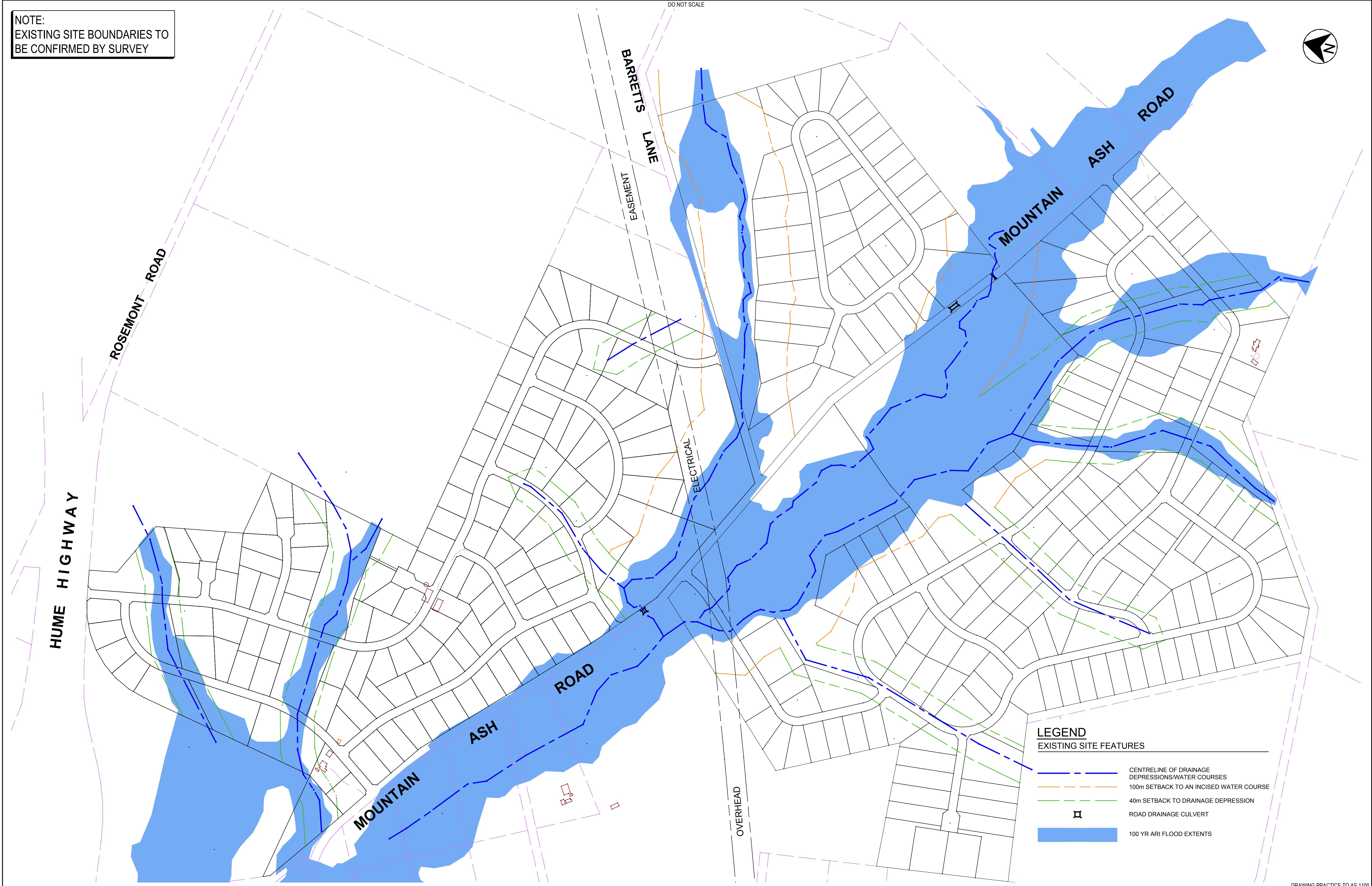
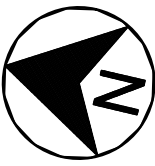
PRJ. Title.  
**THE HUB**  
RURAL SUBDIVISION  
----  
PLANNING PROPOSAL  
FOR  
WINDELLAMA ROAD PTY LTD & GTSMF

|             |              |            |      |
|-------------|--------------|------------|------|
| DRG. Title. |              | LOT LAYOUT |      |
| DRG. No.    | T01405-SK101 | Issue      | Rev. |
|             |              | IFA        | 2    |

|     |        |          |                       |      |
|-----|--------|----------|-----------------------|------|
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| 2   | CES    | 28.10.21 | ISSUED FOR SUBMISSION | G.T. |
| REV | DESIGN | DATE     | AMENDMENT             | APP. |



NOTE:  
EXISTING SITE BOUNDARIES TO  
BE CONFIRMED BY SURVEY



|     |        |          |                       |  |      |
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| 2   | CES    | 28.10.21 | ISSUED FOR SUBMISSION |  | G.T. |
| REV | DESIGN | DATE     | AMENDMENT             |  | APP. |

**FUNCTIONAL LAYOUT**

SCALE IN METRES  
1:4000 (A1) 0 20 40 80 120 160 200 1:8000 (A3)

|                                                   |          |      |
|---------------------------------------------------|----------|------|
| DRAWN                                             | DESIGNED | DATE |
| SWC                                               |          |      |
| DATE                                              | VERIFIED | DATE |
| SEP '20                                           |          |      |
| SCALE                                             | APPROVED | DATE |
|                                                   |          |      |
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PRJ. Title

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RURAL SUBDIVISION  
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PLANNING PROPOSAL  
FOR  
WINDELLAMA ROAD PTY LTD & GTSMF

DRG. Title

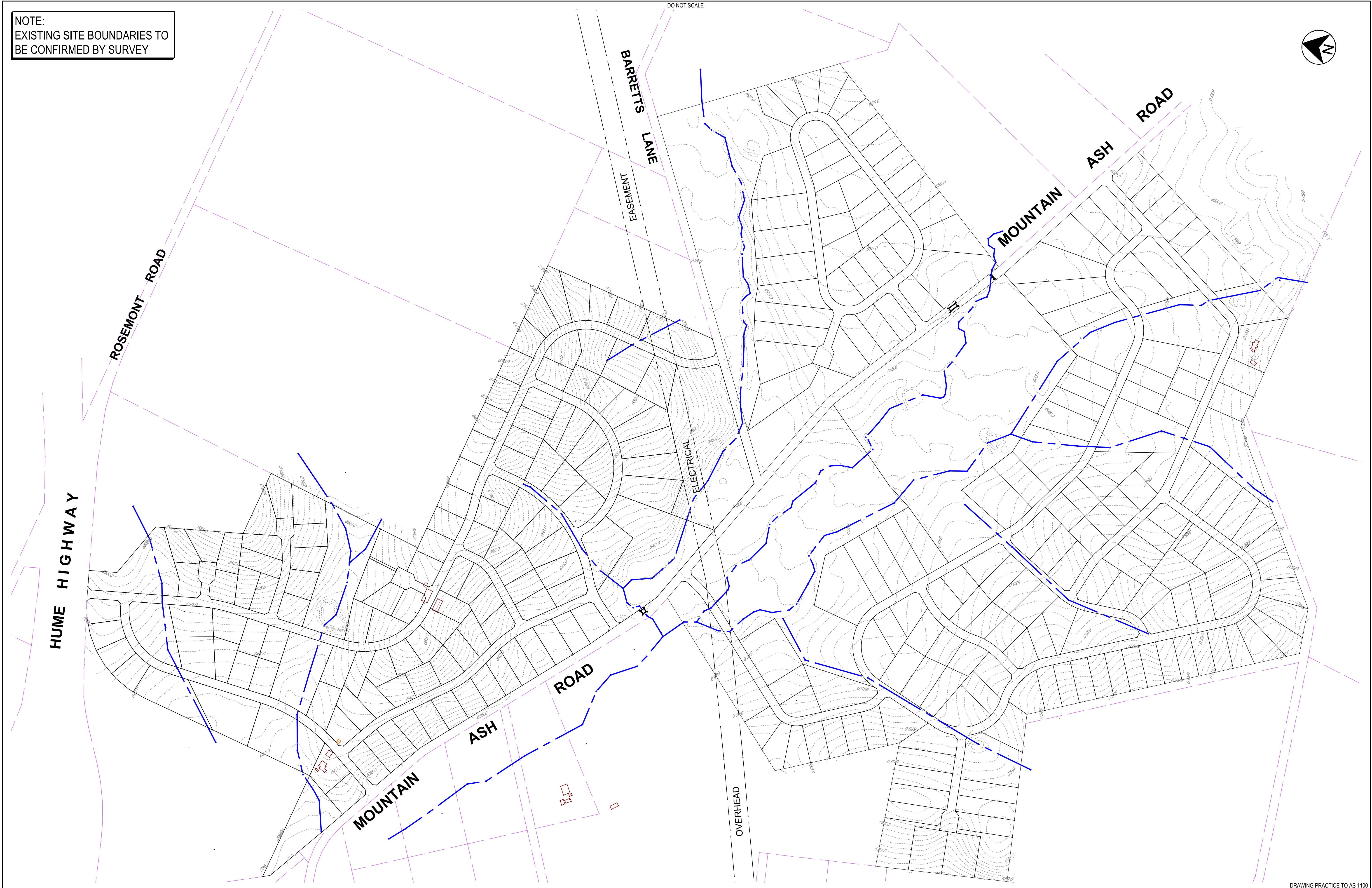
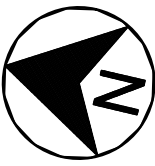
**EXISTING  
SITE FEATURES**

DRG. No. T01405-SK102

Issue IFA Rev. 2



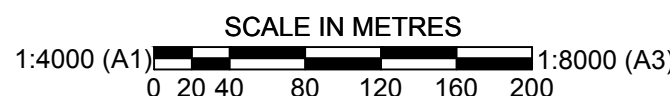
NOTE:  
EXISTING SITE BOUNDARIES TO  
BE CONFIRMED BY SURVEY



DRAWING PRACTICE TO AS 1100

|     |        |          |                       |  |      |
|-----|--------|----------|-----------------------|--|------|
|     |        |          |                       |  |      |
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| 2   | CES    | 28.10.21 | ISSUED FOR SUBMISSION |  | G.T. |
| REV | DESIGN | DATE     | AMENDMENT             |  | APP. |

FUNCTIONAL LAYOUT



|                                                   |          |      |
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| SCALE                                             | APPROVED | DATE |
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PRJ. Title

**THE HUB**  
RURAL SUBDIVISION  
----  
PLANNING PROPOSAL  
FOR  
WINDELLAMA ROAD PTY LTD & GTSMF

DRG. Title

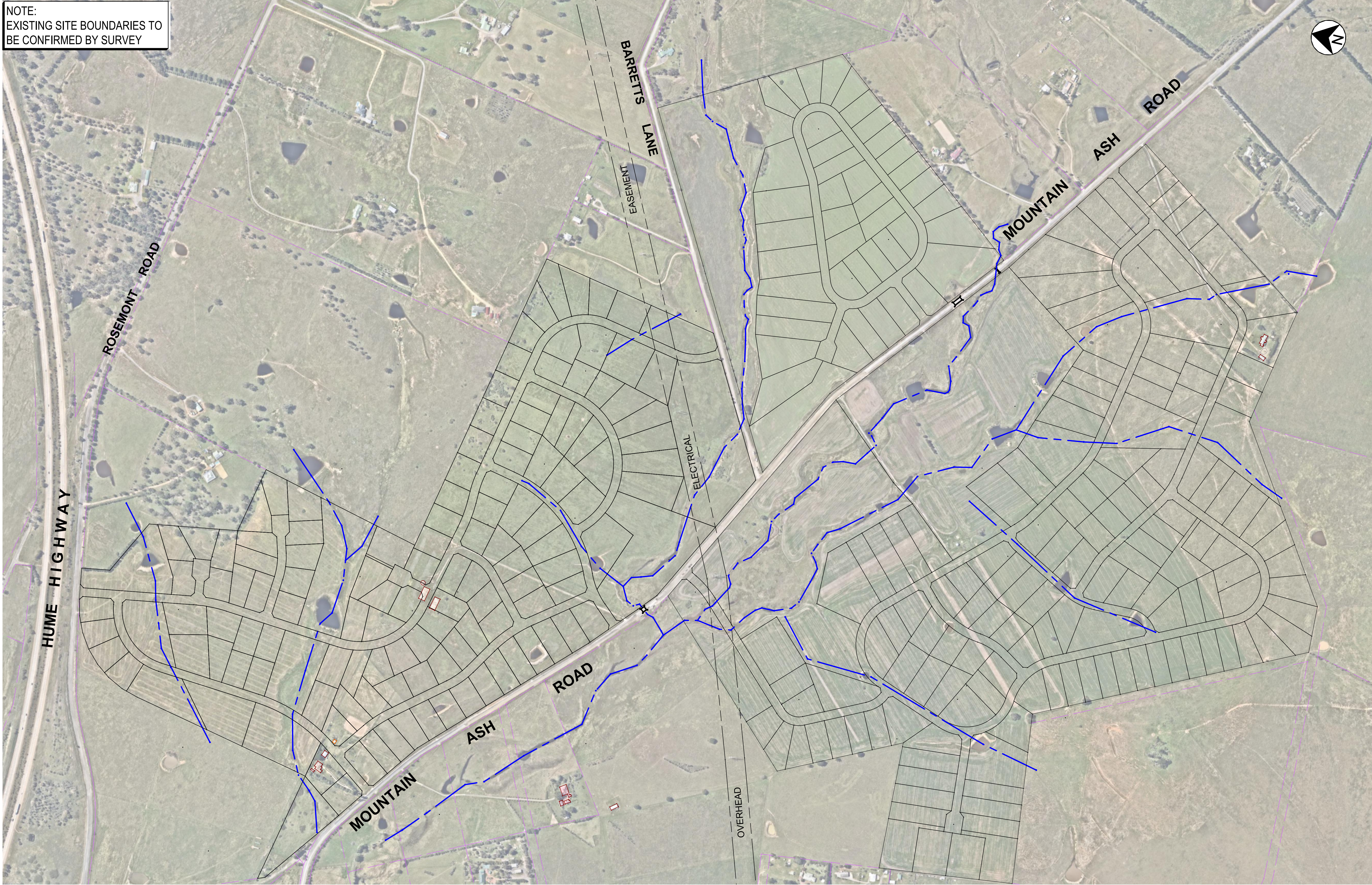
**SITE CONTOURS**

DRG. No. T01405-SK103

Issue IFA Rev. 2



NOTE:  
EXISTING SITE BOUNDARIES TO  
BE CONFIRMED BY SURVEY



DRAWING PRACTICE TO AS 1100

|     |        |          |                       |      |
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|     |        |          |                       |      |
| 2   | CES    | 28.10.21 | ISSUED FOR SUBMISSION | G.T. |
| REV | DESIGN | DATE     | AMENDMENT             | APP. |

FUNCTIONAL LAYOUT

SCALE IN METRES  
1:4000 (A1) 0 20 40 80 120 160 200 1:8000 (A3)

|                                                   |          |      |
|---------------------------------------------------|----------|------|
| DRAWN                                             | DESIGNED | DATE |
| SWC                                               |          |      |
| DATE                                              | VERIFIED | DATE |
| SEP '20                                           |          |      |
| SCALE                                             | APPROVED | DATE |
|                                                   |          |      |
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PRJ. Title:  
**THE HUB**  
RURAL SUBDIVISION  
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PLANNING PROPOSAL  
FOR  
WINDELLAMA ROAD PTY LTD & GTSMF

DRG. Title:  
**SITE AERIAL**  
DRG. No. T01405-SK104  
Issue IFA Rev. 2



**ATTACHMENT B**  
**ACT Geotechnical Engineers Pty Ltd**  
**Report on Effluent Disposal**  
**Site and Soil Evaluation**

5 July 2021

Our ref: KA/C11822

Southern Region Land Engineering

Via email: gregtodd.srle@gmail.com

**Attention: Greg Todd**

**BRISBANE GROVE RURAL SUBDIVISION  
ROSEMONT ROAD & MOUNTAIN ASH ROAD, GOULBURN, NSW  
EFFLUENT DISPOSAL – SITE AND SOIL EVALUATION**

**1 Introduction**

At the request of Southern Region Land Engineering, ACT Geotechnical Engineers Pty. Ltd carried out an effluent disposal assessment to AS1547 "On-Site domestic wastewater management", for the proposed Brisbane Grove Rural Subdivision along Rosemont Road and Mountain Ash Road, in Goulburn, NSW.

The project comprises a new residential subdivision, and the client would like to maximize the yield by having lot sizes of ~4000m<sup>2</sup>. To allow this yield, it must be proved that the land can absorb the wastewater within the desired lot size.

This Site and Soil Evaluation was conducted in general accordance with AS 1547:2012 - "On-site domestic wastewater management", "Designing and Installing On-Site Wastewater Systems: A WaterNSW Current Recommended Practice: 2019", and "The Environment & Protection Guidelines 1998 – On-Site Sewage Management for Single Households" (Silver Book).

The site details and assumptions made to assess the requirements of the effluent disposal system are outlined in Table 1 below.

The details of the site and proposed works are summarized in Table 1 below.

**TABLE 1 – SITE DETAILS**

|                            |                                   |
|----------------------------|-----------------------------------|
| <b>Area of Lots</b>        | Approx. 4000m <sup>2</sup>        |
| <b>Rainfall Station</b>    | 070330 – Goulburn Airport AWS NSW |
| <b>Evaporation Station</b> | 070263 – Goulburn TAFE            |

**2 Effluent Disposal Site and Soil Assessment**

The proposed locations were assessed and the site limitations are addressed below.

The 1:100,000 Goulburn Geology Map documents the area to be covered by Quaternary Age residual and colluvial deposits underlain by Siluro-Devonian aged Mount Fairy Group and Bindook Group bedrock comprising Back Station Ignimbrite, Saltpetre Andesite, and Bullamalita Conglomerate.

## 2.1 Site Limitation Assessment

Table 2 below is a site assessment of the proposed lot locations, and have been assessed using Table 1 from "On-site Sewage Management for Single Households". The table used for this assessment is attached to this report.

**TABLE 2 – SITE ASSESSMENT**

| <b>Borehole / Location</b> | <b>Slope/ Direction</b> | <b>Exposure to sun/wind</b> | <b>Landform / Slope</b>                  | <b>Erosion Potential</b> | <b>Presence of Fill</b> | <b>Rock Outcrops (%)</b> | <b>Groundwater</b> |
|----------------------------|-------------------------|-----------------------------|------------------------------------------|--------------------------|-------------------------|--------------------------|--------------------|
| A01                        | <10% / E                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A02                        | <10% / N                | High                        | Waxing Divergent                         | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A03                        | 10-20% / N              | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A04                        | 10-20% / S              | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A05                        | <10% / S                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A06                        | <10% / S                | High                        | Linear/Waning Planar                     | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A07                        | <10% / S                | High                        | Waxing Divergent                         | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A08                        | <10% / S                | High                        | Waxing Divergent                         | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A09                        | <10% / S                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| A10                        | <10% / S                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| B01                        | 10-20% / S              | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| B02                        | <10% / W & SW           | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| B03                        | <10% / W                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| B04                        | <10% / W                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| C01                        | <10% / S                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| C02                        | <10% / W                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| C03                        | <10% / W                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| C04                        | <10% / E                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D01                        | <10% / N & W            | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D02                        | <10%                    | High                        | Linear Planar – some ponding encountered | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D03                        | <10% / N                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D04                        | <10% / N                | High                        | Linear Planar                            | Low/Not evident          | Not found               | <10%                     | Not encountered    |

| <b>Borehole / Location</b> | <b>Slope/ Direction</b> | <b>Exposure to sun/wind</b> | <b>Landform / Slope</b> | <b>Erosion Potential</b> | <b>Presence of Fill</b> | <b>Rock Outcrops (%)</b> | <b>Groundwater</b> |
|----------------------------|-------------------------|-----------------------------|-------------------------|--------------------------|-------------------------|--------------------------|--------------------|
| D05                        | <10% / N                | High                        | Waxing Divergent        | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D07                        | <10% / SW               | High                        | Linear Planar           | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D08                        | 10-20% / S              | High                        | Linear Planar           | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D09                        | <10% / N                | High                        | Linear Planar           | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D10                        | 10-20% / S              | High                        | Linear Planar           | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| D11                        | 10-20% / S              | High                        | Linear Planar           | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| E01                        | <10%                    | High                        | Linear Planar           | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| E02                        | <10%                    | High                        | Linear Planar           | Low/Not evident          | Not found               | <10%                     | Not encountered    |
| E03                        | <10% / W                | High                        | Linear Planar           | Low/Not evident          | Not found               | <10%                     | Not encountered    |



## 2.2 Sub-surface Conditions

To establish the subsurface conditions, thirty-one (31) test holes were drilled at client-provided locations around the proposed subdivision. Figure 1 shows the site locality, while Figures 2 and 3 are aerial photographs showing the location of the investigation boreholes. The subsurface profiles were logged in terms of the Unified Soil Classification System (USCS). The borehole logs can be found in Appendix B.

### 2.2.1 Site Soil Properties

Based on the soil encountered and in accordance with AS1547:2012 – “Disposal Systems for Effluent From Domestic Premises” (Reference 2), the properties of the most limiting material are summarised in Table 3 below.

**TABLE 3 – SOIL ASSESSMENT**

| Borehole / Location | Depth of Borehole (m) | Depth of Topsoil (m) | Depth of Bedrock (m) | Soil Texture          | Soil Structure            | Approx. Bulk Density (g/cm <sup>3</sup> ) | Indicative Permeability (m/day) |
|---------------------|-----------------------|----------------------|----------------------|-----------------------|---------------------------|-------------------------------------------|---------------------------------|
| A01                 | 1.3                   | 0.15                 | >1.3                 | Medium to Heavy Clays | Massive/weakly-structured | 2.0                                       | <0.06                           |
| A02                 | 1.3                   | 0.10                 | >1.3                 | Light Clays           | Moderately-structured     | 1.8                                       | 0.06 – 0.12                     |
| A03                 | 1.4                   | 0.25                 | >1.4                 | Light Clays           | Moderately-structured     | 1.8                                       | 0.06 – 0.12                     |
| A04                 | 1.4                   | 0.30                 | >1.4                 | Clay Loams            | High/moderate structured  | 1.6                                       | 0.5 – 1.5                       |
| A05                 | 1.3                   | 0.30                 | >1.3                 | Clay Loams            | High/moderate structured  | 1.6                                       | 0.5 – 1.5                       |
| A06                 | 1.4                   | 0.20                 | >1.4                 | Clay Loams            | Weakly-structured         | 1.6                                       | 0.12 – 0.5                      |
| A07                 | 1.4                   | 0.25                 | >1.4                 | Light Clays           | Moderately-structured     | 1.8                                       | 0.06 – 0.12                     |
| A08                 | 1.4                   | 0.15                 | >1.4                 | Medium to Heavy Clays | Massive/weakly-structured | 2.0                                       | <0.06                           |
| A09                 | 1.3                   | 0.2                  | >1.3                 | Sandy Loams           | Weakly-structured         | 1.6                                       | 1.4 – 3.0                       |
| A10                 | 1.2                   | 0.2                  | >1.2                 | Clay Loams            | Weakly-structured         | 1.6                                       | 0.12 – 0.5                      |
| B01                 | 1.1                   | 0.2                  | 1.0                  | Clay Loams            | High/moderate structured  | 1.6                                       | 0.5 – 1.5                       |
| B02                 | 1.4                   | 0.2                  | >1.4                 | Light Clays           | Moderately-structured     | 1.8                                       | 0.06 – 0.12                     |
| B03                 | 1.2                   | 0.2                  | >1.2                 | Clay Loams            | High/moderate structured  | 1.6                                       | 0.5 – 1.5                       |
| B04                 | 1.4                   | 0.2                  | >1.4                 | Clay Loams            | High/moderate structured  | 1.6                                       | 0.5 – 1.5                       |
| C01                 | 0.9                   | 0.2                  | 0.9                  | Medium to Heavy Clays | Massive/weakly-structured | 2.0                                       | <0.06                           |
| C02                 | 1.3                   | 0.15                 | >1.3                 | Medium to Heavy Clays | Moderately-structured     | 2.0                                       | <0.06                           |
| C03                 | 1.4                   | 0.2                  | >1.4                 | Light Clays           | Moderately-structured     | 1.8                                       | 0.06 – 0.12                     |



| <b>Borehole / Location</b> | <b>Depth of Borehole (m)</b> | <b>Depth of Topsoil (m)</b> | <b>Depth of Bedrock (m)</b> | <b>Soil Texture</b>   | <b>Soil Structure</b>     | <b>Approx. Bulk Density (g/cm<sup>3</sup>)</b> | <b>Indicative Permeability (m/day)</b> |
|----------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------|---------------------------|------------------------------------------------|----------------------------------------|
| C04                        | 1.3                          | 0.3                         | >1.3                        | Clay Loams            | Weakly-structured         | 1.6                                            | 0.12 – 0.5                             |
| D01                        | 1.3                          | 0.2                         | >1.3                        | Loams                 | Massive/weakly-structured | 1.5                                            | 0.5 – 1.5                              |
| D02                        | 1.3                          | 0.3                         | >1.3                        | Sandy Loams           | Weakly-structured         | 1.6                                            | 1.4 – 3.0                              |
| D03                        | 1.3                          | 0.15                        | >1.3                        | Light Clays           | Moderately-structured     | 1.8                                            | 0.06 – 0.12                            |
| D04                        | 1.3                          | 0.2                         | >1.3                        | Light Clays           | Moderately-structured     | 1.8                                            | 0.06 – 0.12                            |
| D05                        | 1.3                          | 0.2                         | >1.3                        | Loams                 | Massive/weakly-structured | 1.5                                            | 0.5 – 1.5                              |
| D07                        | 1.3                          | 0.2                         | >1.3                        | Clay Loams            | Weakly-structured         | 1.6                                            | 0.12 – 0.5                             |
| D08                        | 1.3                          | 0.2                         | 1.2                         | Light Clays           | Moderately-structured     | 1.8                                            | 0.06 – 0.12                            |
| D09                        | 1.3                          | 0.2                         | >1.3                        | Clay Loams            | High/moderate structured  | 1.6                                            | 0.5 – 1.5                              |
| D10                        | 1.4                          | 0.2                         | >1.4                        | Medium to Heavy Clays | Massive/weakly-structured | 2.0                                            | <0.06                                  |
| D11                        | 1.4                          | 0.3                         | >1.4                        | Light Clays           | Moderately-structured     | 1.8                                            | 0.06 – 0.12                            |
| E01                        | 1.3                          | 0.3                         | >1.3                        | Loams                 | Massive/weakly-structured | 1.5                                            | 0.5 – 1.5                              |
| E02                        | 1.3                          | 0.2                         | >1.3                        | Clay Loams            | High/moderate structured  | 1.6                                            | 0.5 – 1.5                              |
| E03                        | 1.3                          | 0.15                        | >1.3                        | Light Clays           | Moderately-structured     | 1.8                                            | 0.06 – 0.12                            |



### 2.2.2 Permeability Testing

Soil percolation (falling head) tests were conducted on three areas within the proposed subdivision in order to assess the permeability of the soils in the area. The percolation tests were conducted in general accordance with the falling head test method described in AS1547-1994 "Disposal Systems for Effluent From Domestic Premises".

Three (3) ~0.45m-0.5m deep test holes were excavated using a 100mm diameter hand auger at locations which were considered to be representative of typical soil conditions within the site. 100mm diameter PVC pipes were then placed inside of the test holes to ensure the stability of the walls, and a 50mm thick layer of gravel was placed over the bottom of the test hole to prevent scouring of the bottom when water is added. The holes were filled with water and left for an initial saturation of the ground. Once the falling rate of the water has stabilized, depth and time measurements were taken to calculate the permeability of the soil. The calculated permeability values are summarised in Table 4.

**TABLE 4 – PERCOLATION TESTING RESULTS**

| Test Number | Location | Soil Category                       | Calculated Permeability (m/day) | Indicative Permeability – from AS1547:2012 (m/day) |
|-------------|----------|-------------------------------------|---------------------------------|----------------------------------------------------|
| P1          | Near A2  | Light Clays – moderately structured | 1.309 m/day                     | 0.06 - 0.12                                        |
| P2          | Near C3  | Light Clays – moderately structured | 1.019 m/day                     | 0.06 - 0.12                                        |
| P3          | Near D4  | Light Clays – moderately structured | 1.440 m/day                     | 0.06 - 0.12                                        |

### 2.2.3 Laboratory Results

Five (5) representative samples were sent to a NATA accredited environmental testing laboratory for pH, electrical conductivity, Emerson testing, and phosphorus sorption capacity. The results of these tests are summarized in Table 5. The Laboratory Certificates of Analysis are included in Appendix C.

**TABLE 5 – LABORATORY TEST RESULTS ON SOIL PROPERTIES**

| Soil Test                            | Borehole / Sample Depth |                      |                     |                      |                    |
|--------------------------------------|-------------------------|----------------------|---------------------|----------------------|--------------------|
|                                      | A7<br>(0.1m – 0.4m)     | A10<br>(0.0m – 0.3m) | B2<br>(0.3m – 0.6m) | D3<br>(0.15m – 0.4m) | D11<br>(0.3m-0.5m) |
| pH                                   | 6.5                     | 5.3                  | 5.5                 | 5.8                  | 6.8                |
| Electrical Conductivity (µS/cm)      | 36                      | 52                   | 34                  | 46                   | 52                 |
| Emerson Class No.                    | 5.0                     | 5.0                  | 5.0                 | 5.0                  | 5.0                |
| Phosphorus Sorption Capacity (mg/kg) | 510                     | 380                  | 590                 | 940                  | 770                |



Five (5) samples from client-specified locations were also sent to a NATA accredited environmental testing laboratory to test for the presence of organochlorine pesticides (OCP) and organophosphorus pesticides (OPP). The results of these tests, including assessment against the National Environmental Protection Measure (NEPM) 1999, (as amended 2013) human health guideline values for commercial and industrial land uses, are shown in Table 6.

**TABLE 6 – LABORATORY TEST RESULTS ON SOILS FOR PESTICIDES**

| Contaminant  | Borehole / Sample Depth |                     |                     |                     |                     | Required health-based investigation levels (HIL) (mg/kg) |                            |
|--------------|-------------------------|---------------------|---------------------|---------------------|---------------------|----------------------------------------------------------|----------------------------|
|              | A6<br>(0.0m – 0.2m)     | B4<br>(0.0m – 0.2m) | C2<br>(0.0m – 0.4m) | D2<br>(0.0m – 0.2m) | D4<br>(0.0m – 0.2m) | Residential A <sup>1</sup>                               | Residential B <sup>2</sup> |
| OCPs (mg/kg) | <0.1                    | <0.1                | <0.1                | <0.1                | <0.1                | <6 <sup>(i)</sup>                                        | <10 <sup>(i)</sup>         |
| OPPs (mg/kg) | <0.1                    | <0.1                | <0.1                | <0.1                | <0.1                | <6 <sup>(i)</sup>                                        | <10 <sup>(i)</sup>         |

**Notes:**

<sup>1</sup> HIL A – Residential with garden/accessible soil (home grown produce)

<sup>2</sup> HIL B – Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments

<sup>(i)</sup> Lowest OCP/OPP specified guideline value

#### 4 Effluent Disposal Recommendations

The local council should be consulted regarding its on-site sewage management policy and required minimum buffer distances (depending on the proposed effluent disposal system).

A fence should be placed around the effluent disposal areas if there is a risk of children, animals or vehicles coming into the area. Signage, complying with AS1319 shall be placed in at least two places at the boundary of the application area, clearly visible to property uses, with wording such as “Recycled Water – Avoid Contact – DO NOT DRINK”.

The treated effluent is not suitable for vegetable gardens or areas where people can come in contact with the effluent.

The areas should not be used for any purposes that compromise the effectiveness of the system or access for future maintenance purposes.

Should you require any further information regarding this report, please do not hesitate to contact our office.

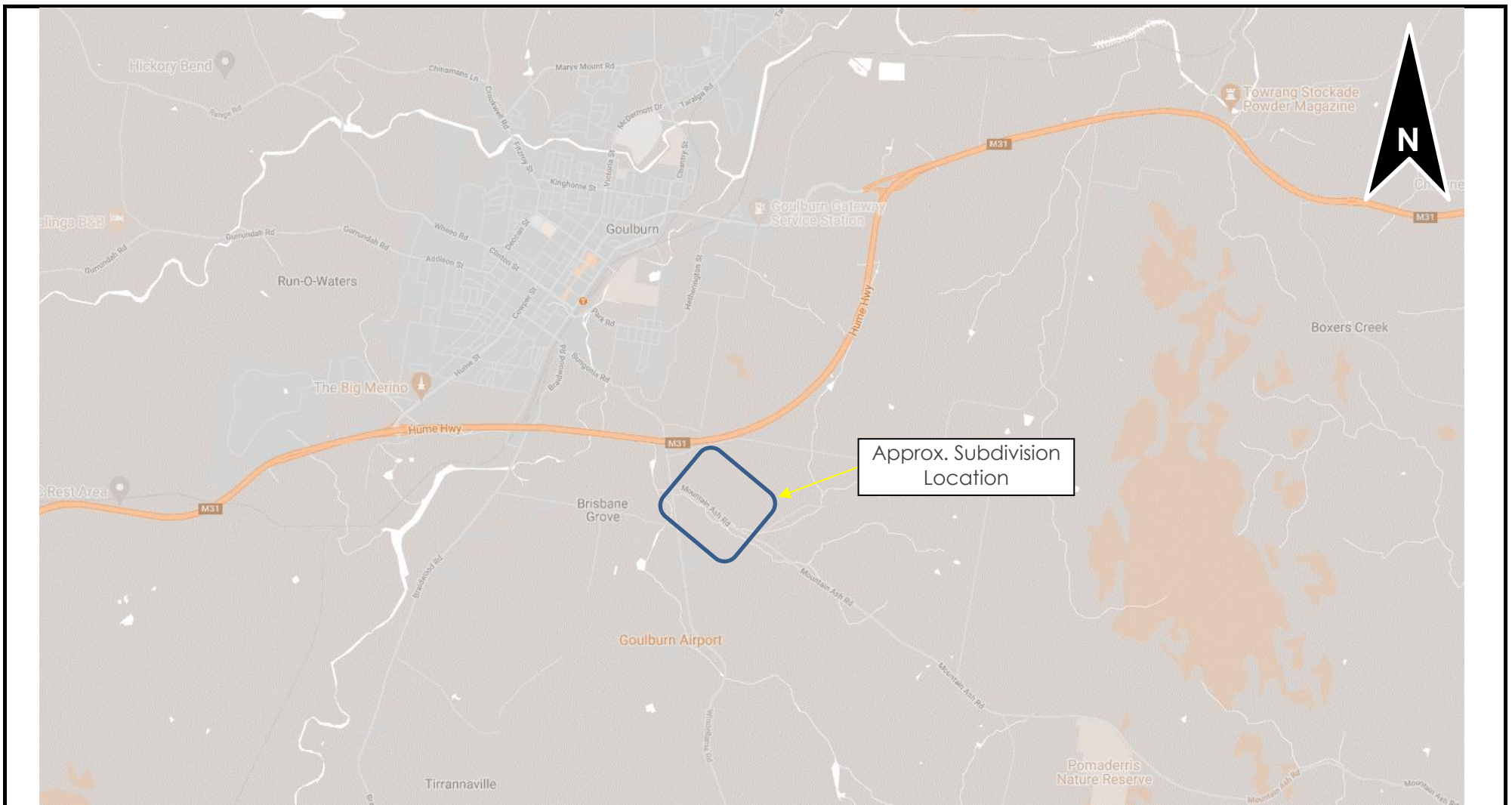
Yours faithfully

**ACT Geotechnical Engineers Pty. Ltd.**



Jeremy Murray  
Director  
Senior Geotechnical Engineer  
Attachments: Figures 1 to 3, Appendix A to D





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
SITE LOCALITY**

ACT Geotechnical Engineers Pty Ltd

C11822

FIGURE 1





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
AERIAL PHOTOGRAPH AND BOREHOLE LOCATIONS**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
AERIAL PHOTOGRAPH AND BOREHOLE LOCATIONS**



**APPENDIX A**  
**Location and Soil Core Photos**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A1)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A2)**





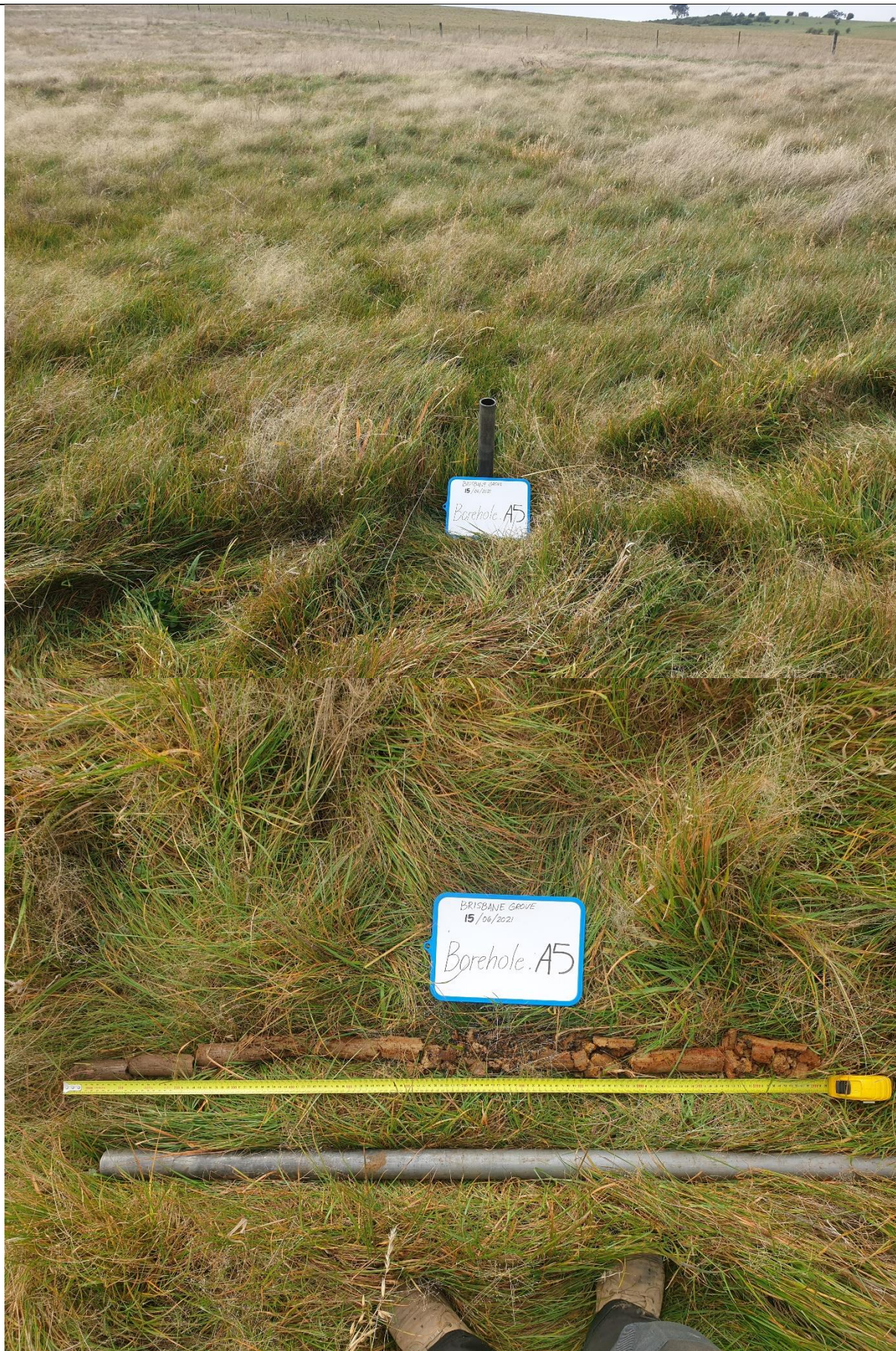
**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A3)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A4)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A5)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A6)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A7)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A8)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A9)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (A10)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (B1)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (B2)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (B3)**





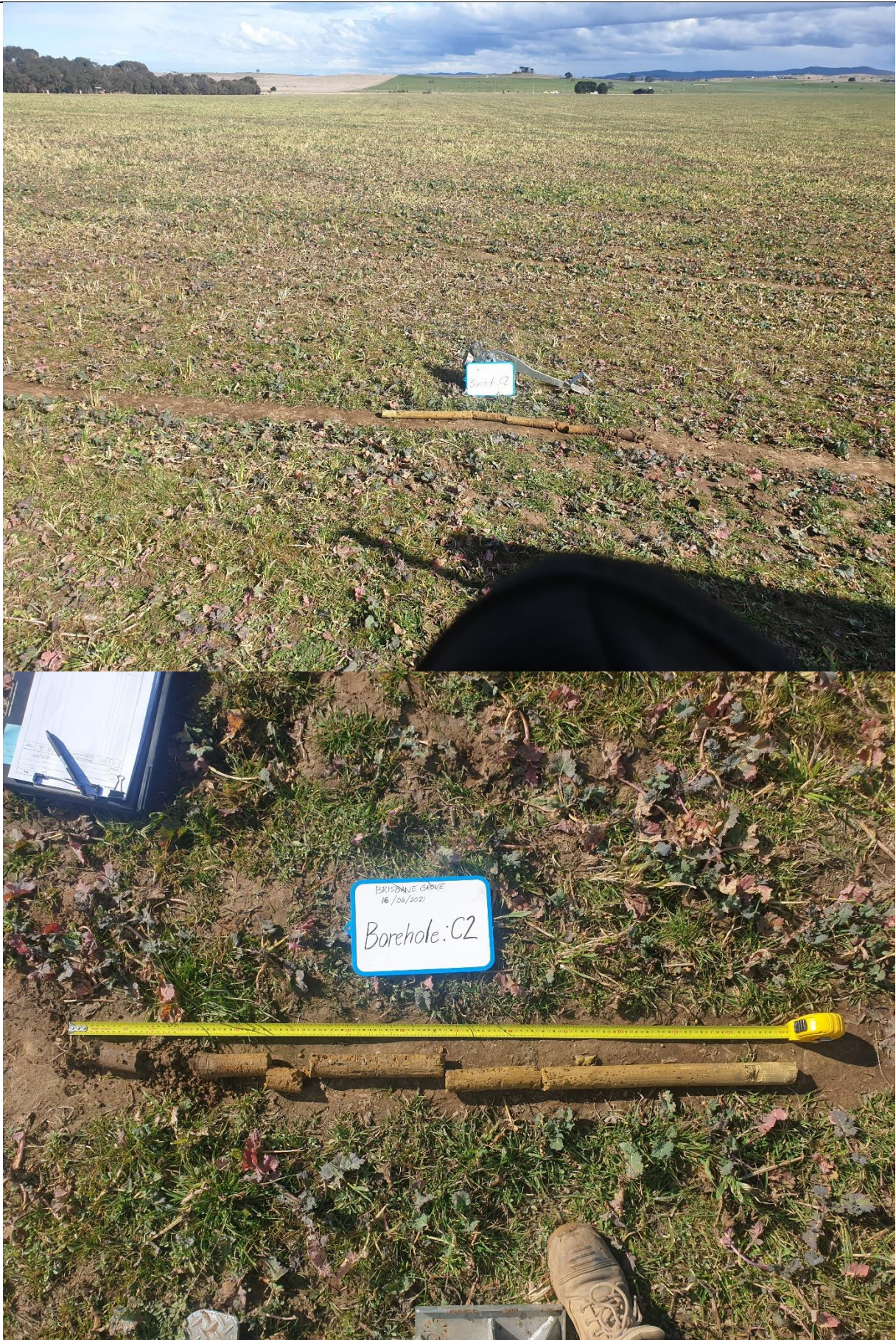
**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (B4)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (C1)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (C2)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (C3)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (C4)**





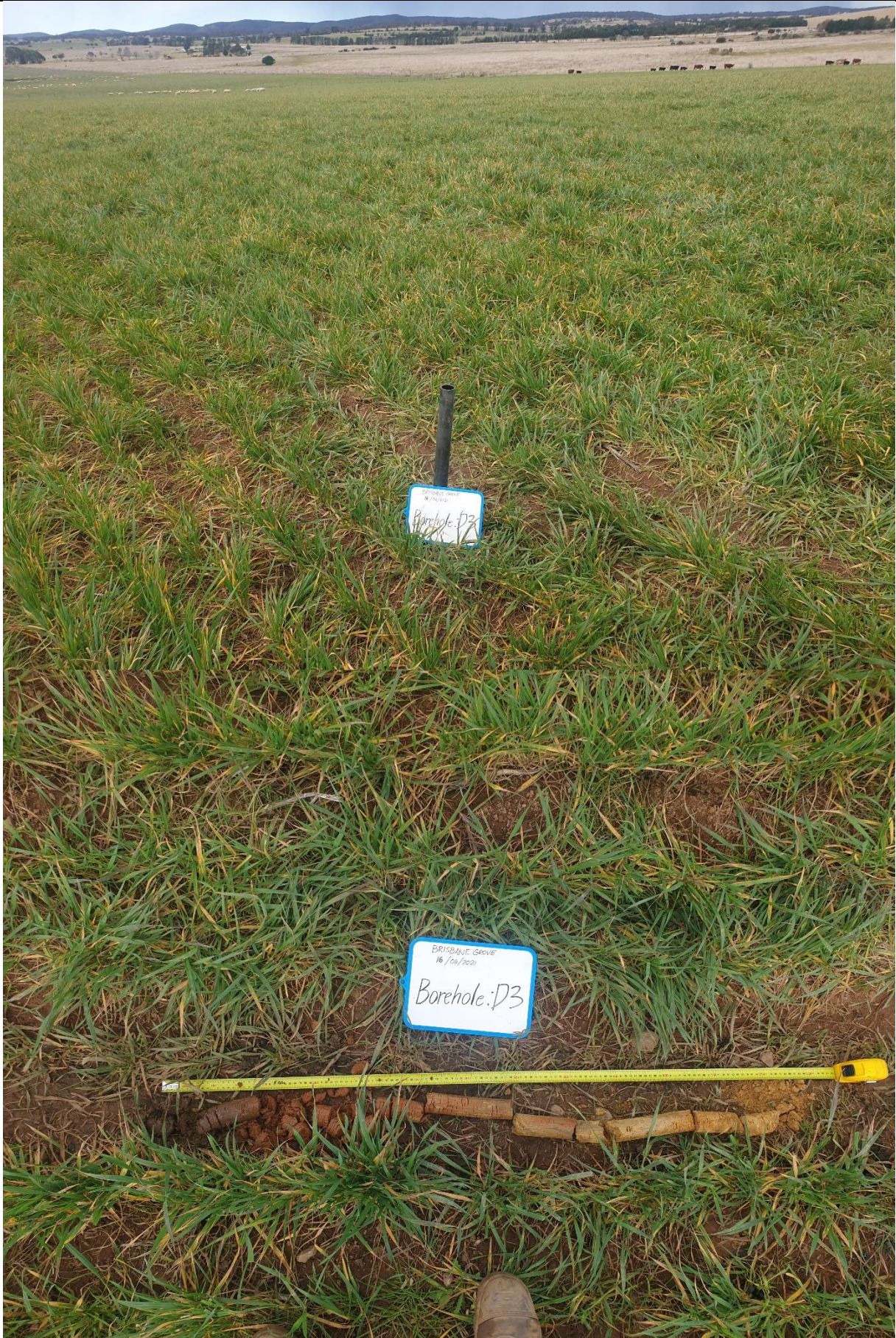
**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D1)**





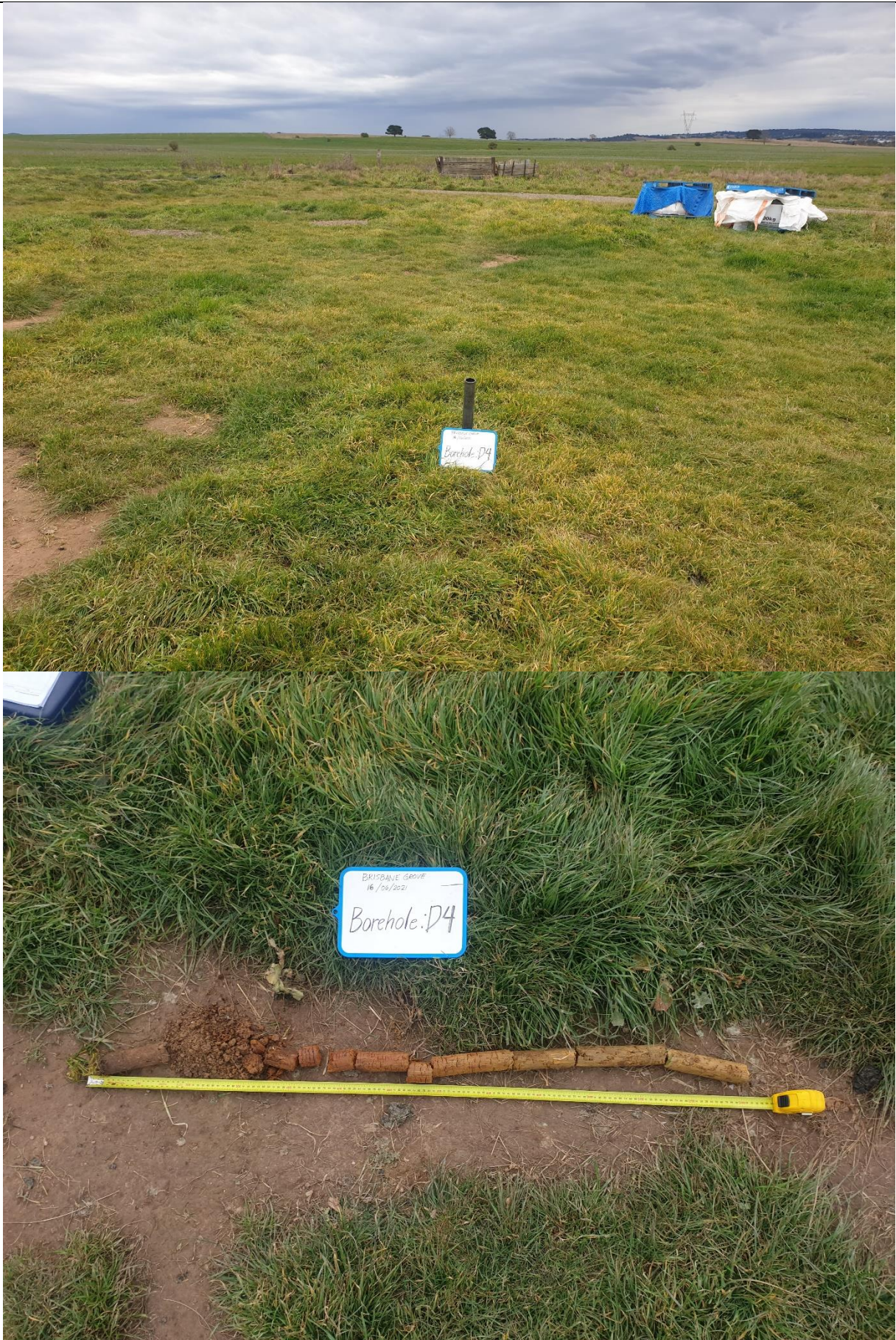
**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D2)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D3)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D4)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D5)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D7)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D8)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D9)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D10)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (D11)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (E1)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (E2)**





**SOUTHERN REGION LAND ENGINEERING  
BRISBANE GROVE RURAL SUBDIVISION  
LOCATION AND SOIL CORE PHOTOS (E3)**



**APPENDIX B**  
**Borehole Logs A01 to E03**



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>A01</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.15            |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.4             |                | ML       | Sandy SILT; low plasticity silt, fine to medium grained sand, light brown, light grey, moist.                                                                            | FIRM                                     |                          | SLOPEWASH             |
|         |        | 0.8             |                | CH       | CLAY; medium to high plasticity clay, orange-grey mottled, dry to moist.                                                                                                 | STIFF TO VERY STIFF                      |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                | CH       | CLAY; high plasticity clay, orange-grey mottled, dry.                                                                                                                    | VERY STIFF                               |                          |                       |
|         |        | 1.3             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 15/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>A02</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.1             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.3             |                | ML       | Silty Gravelly SAND; fine to medium grained sand, low plasticity silt, fine to medium grained sedimentary gravel, brown, dry to moist.                                   | LOOSE TO MEDIUM DENSE                    |                          | ALLUVIUM              |
|         |        | 0.6             |                | CL       | Sandy Gravelly CLAY; low to medium plasticity clay, fine to coarse sand, fine to medium grained sedimentary gravel, orange-brown, dry.                                   | STIFF                                    |                          |                       |
|         |        | 1.0             |                | SC       | Sandy CLAY / Clayey SAND; fine to coarse sand, low to medium plasticity clay, yellow-brown, orange-brown, dry.                                                           | STIFF / MEDIUM DENSE                     |                          | RESIDUAL SOIL         |
|         |        | 1.3             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, yellow-brown mottled orange-brown, dry.                                                                 | STIFF TO VERY STIFF                      |                          |                       |
|         |        |                 |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

Logged By : KA

Date : 15/06/21

Checked By : JM

Date : 17/06/21



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>A03</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.25            |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.5             |                | CL       | Silty Sandy CLAY; low to medium plasticity fines, fine to medium grained sand, orange-brown, moist.                                                                      | FIRM TO STIFF                            |                          | ALLUVIUM              |
|         |        | 1.0             |                | CL-CH    | Sandy CLAY; medium plasticity clay, fine to coarse sand, light brown, moist to wet.                                                                                      | FIRM TO STIFF                            |                          |                       |
|         |        | 1.1             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, fine gravel and ferruginous nodules, light brown, brown, dry.                                           | VERY STIFF                               |                          |                       |
|         |        | 1.4             |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 01/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>A04</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.3             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.8             |                | CL       | Silty CLAY; low to medium plasticity clay, some fine to medium grained sand, yellow-brown, light brown, trace fine gravel and ferruginous nodules to 5mm, dry to moist.  | STIFF                                    |                          | ALLUVIUM              |
|         |        | 1.0             |                | SC       | Clayey Gravelly SAND; fine to coarse sand, fine to medium grained sedimentary gravel, low plasticity clay, red-brown, brown, dry.                                        | MEDIUM<br>DENSE<br>TO<br>DENSE           |                          | RESIDUAL SOIL         |
|         |        | 1.4             |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 15/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>A05</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.3             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.6             |                | CL       | Silty Sandy CLAY; low plasticity fines, fine to medium grained sand, light brown, moist.                                                                                 | FIRM TO STIFF                            |                          | ALLUVIUM              |
|         |        | 1.0             |                | SC       | Clayey Gravelly SAND; fine to coarse sand, fine gravel and ferruginous nodules, low plasticity clay, orange-brown, some grey, dry.                                       | MEDIUM DENSE TO DENSE                    |                          | RESIDUAL SOIL         |
|         |        | 1.3             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 15/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>A06</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small>  | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                          | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |                | ML       | Sandy SILT; low plasticity silt, fine to medium grained sand, light brown, moist.                                                                                         | FIRM                                     |                          | ALLUVIUM              |
|         |        | 0.4             |                | CL       | Silty Gravelly CLAY; low to medium plasticity fines, fine to medium grained sedimentary gravel, light brown, some red-brown, moist.                                       | STIFF                                    |                          |                       |
|         |        | 0.6             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to medium grained sand, light brown, moist.                                                                              | STIFF TO<br>VERY<br>STIFF                |                          | RESIDUAL SOIL         |
|         |        | 0.9             |                | SC       | Clayey Gravelly SAND; fine to coarse sand, fine to medium grained gravel and ferruginous nodules, low to medium plasticity clay, light brown, orange-brown, dry to moist. | DENSE                                    |                          |                       |
|         |        | 1.0             |                |          |                                                                                                                                                                           |                                          |                          |                       |
|         |        | 1.4             |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                               |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                           |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 15/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>A07</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.25            |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.5             |                | ML       | Sandy Gravelly SILT; low plasticity silt, fine to coarse sand, low plasticity silt, brown, orange-brown, dry.                                                            | LOOSE TO MEDIUM DENSE                    |                          | ALLUVIUM              |
|         |        | 1.0             |                | SC       | Clayey Gravelly SAND; fine to coarse sand, fine to medium grained sedimentary gravel, low plasticity clay, orange-brown, red-brown, dry.                                 | MEDIUM DENSE TO DENSE                    |                          | RESIDUAL SOIL         |
|         |        | 1.4             |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

Logged By : KA

Date : 15/06/21

Checked By : JM

Date : 17/06/21



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>A08</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.15            |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.7             |                | CL       | Sandy Silty CLAY; low to medium plasticity fines, fine to medium grained sand, red-brown, dry.                                                                           | FIRM                                     |                          | ALLUVIUM              |
|         |        | 1.0             |                | CL       | Sandy CLAY; low to medium plasticity clay, fine to coarse sand, yellow-brown mottled orange-brown, dry.                                                                  | STIFF                                    |                          | RESIDUAL SOIL         |
|         |        | 1.4             |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

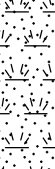
|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 15/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>A09</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                                  |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| CLIENT:                                                  | <b>Southern Region Land Engineering</b>                                                          |
| PROJECT                                                  | <b>Brisbane Grove Rural Subdivision<br/>Rosemont Road &amp; Mountain Ash Road, Goulburn, NSW</b> |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                                  |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log                                                                      | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |    | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |   | SM       | Silty Gravelly SAND; fine to coarse sand, low plasticity silt, fine gravel and ferruginous nodules, grey, dry.                                                           | LOOSE TO MEDIUM DENSE                    |                          | ALLUVIUM              |
|         |        | 0.8             |  | CL       | Silty Gravelly CLAY; low plasticity fines, fine gravel and ferruginous nodules, grey/black, dry.                                                                         | STIFF                                    |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.2             |  | CL-CH    | Sandy CLAY; fine to medium grained sand, medium plasticity clay, orange-grey mottled, dry.                                                                               | VERY STIFF                               |                          |                       |
|         |        | 1.3             |                                                                                     |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 15/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>A10</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.2             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.7             |                | CL       | Sandy Silty CLAY; low plasticity fines, fine to medium grained sand, light brown, moist to wet.                                                                          | FIRM                                     |                          | ALLUVIUM              |
|         |        | 1.0             |                | CL-CH    | Sandy CLAY; medium plasticity clay, fine to medium grained sand, trace ferruginous nodules to 5mm, orange-grey mottled, dry.                                             | STIFF                                    |                          | RESIDUAL SOIL         |
|         |        | 1.2             |                | SC       | Clayey Gravelly SAND; fine to coarse sand, low plasticity clay, fine to coarse gravel and quartz, orange-grey, dry.                                                      | DENSE                                    |                          |                       |
|         |        | 1.6             |                |          | BOREHOLE TERMINATED AT 1.2m refusal                                                                                                                                      |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 15/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>B01</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.                                                                    | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |                | SC       | Clayey Gravelly SAND; fine to coarse sand, low plasticity clay, fine to medium grained sedimentary gravel, brown, red-brown, moist.                                      | MEDIUM DENSE                             |                          | COLLUVIUM             |
|         |        | 0.6             |                | CL       | Sandy CLAY; low to medium plasticity clay, fine to coarse sand, brown, dry.                                                                                              | STIFF TO VERY STIFF                      |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                |          | Extremely Weathered (EW) SANDSTONE; fine to medium grained, light brown, dry.                                                                                            | EXTREMELY WEAK                           |                          |                       |
|         |        | 1.1             |                |          | BOREHOLE TERMINATED AT 1.1m refusal                                                                                                                                      |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 15/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>B02</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |                | CL       | Silty Sandy CLAY; low plasticity fines, fine sand, light brown, moist.                                                                                                   | FIRM                                     |                          | ALLUVIUM              |
|         |        | 0.5             |                | CL       | Sandy CLAY; low to medium plasticity clay, fine to coarse sand, trace fine gravel and ferruginous nodules, red-brown, light brown, some orange, dry to moist.            | STIFF                                    |                          |                       |
|         |        | 1.0             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.4             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.6             |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 01/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>B03</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.2             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.6             |                | CL       | Silty Sandy CLAY; low plasticity fines, fine to medium grained sand, light brown, moist to wet.                                                                          | SOFT TO FIRM                             |                          | ALLUVIUM              |
|         |        | 0.8             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, orange-brown, dry.                                                                                      | STIFF TO VERY STIFF                      |                          |                       |
|         |        | 1.0             |                | CL-CH    | Sandy CLAY; medium plasticity clay, fine to coarse sand, orange-brown, light brown, dry.                                                                                 | VERY STIFF TO HARD                       |                          |                       |
|         |        | 1.2             |                |          | BOREHOLE TERMINATED AT 1.2m<br>very slow progress                                                                                                                        |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 01/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>B04</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |                | SC-SM    | Silty Clayey SAND; fine to medium grained sand, low plasticity silt, light brown, dry to moist.                                                                          | LOOSE                                    |                          | SLOPEWASH             |
|         |        | 0.3             |                | CL       | Sandy Gravelly CLAY; low to medium plasticity clay, fine sand, fine grained gravel and ferruginous nodules, light grey, moist.                                           | FIRM TO STIFF                            |                          | ALLUVIUM              |
|         |        | 0.8             |                | CL-CH    | Sandy CLAY; medium plasticity clay, fine to medium grained sand, orange-grey mottled, some red-brown, dry.                                                               | STIFF TO VERY STIFF                      |                          |                       |
|         |        | 1.0             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.4             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        |                 |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

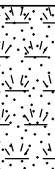
|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 01/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>C01</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log                                                                      | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |    | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |    | SM       | Silty Gravelly SAND; fine to coarse sand, low plasticity silt, fine to medium grained sedimentary gravel, grey/brown, dry to moist.                                      | MEDIUM DENSE                             |                          | ALLUVIUM              |
|         |        | 0.3             |   | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, yellow-brown mottled red-brown, dry.                                                                    | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 0.5             |  | SC       | Clayey Gravelly SAND; fine to coarse sand, low to medium plasticity clay, fine to medium grained sedimentary gravel, yellow-brown, dry.                                  | DENSE                                    |                          |                       |
|         |        | 0.9             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.0             |                                                                                     |          | BOREHOLE TERMINATED AT 0.9m refusal                                                                                                                                      |                                          |                          |                       |
|         |        | 1.6             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 16/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>C02</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.15            |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.3             |                | SM       | Silty Gravelly SAND; fine to coarse sand, fine gravel and ferruginous nodules, low plasticity silt, grey, moist.                                                         | LOOSE TO MEDIUM DENSE                    |                          | ALLUVIUM              |
|         |        | 0.85            |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, light brown, some orange-brown, dry to moist.                                                           | STIFF TO VERY STIFF                      |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                | CH       | Sandy CLAY; high plasticity clay, fine to coarse sand, trace sedimentary gravel to 20mm, light brown, dry to moist.                                                      | VERY STIFF TO HARD                       |                          |                       |
|         |        | 1.3             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.6             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

Logged By : KA

Date : 16/06/21

Checked By : JM

Date : 17/06/21



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>C03</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log                                                                      | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |    | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |   | SM       | Silty Gravelly SAND; fine to medium grained sand, low plasticity silt, fine gravel and ferruginous nodules, dark brown, dry to moist.                                    | LOOSE                                    |                          | ALLUVIUM              |
|         |        | 0.5             |  | CL-CH    | Sandy CLAY; medium plasticity clay, fine to coarse sand, orange-brown, some red, dry to moist.                                                                           | STIFF                                    |                          |                       |
|         |        | 1.0             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.1             |  | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, grey-orange mottled, dry.                                                                               | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 1.4             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        |                 |                                                                                     |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 16/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>C04</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.3             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.6             |                | ML       | Clayey Sandy SILT; low to medium plasticity fines, fine to medium grained sand, fine gravel and ferruginous nodules, light brown, moist to wet.                          | FIRM                                     |                          | ALLUVIUM              |
|         |        | 1.0             |                | CH       | Silty CLAY; medium to high plasticity fines, orange-grey mottled, dry to moist.                                                                                          | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 1.3             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

Logged By : KA

Date : 16/06/21

Checked By : JM

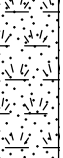
Date : 17/06/21



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>D01</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log                                                                      | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |    | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |    | ML       | Clayey Sandy SILT; low plasticity fines, fine to medium grained sand, brown, moist to wet.                                                                               | FIRM                                     |                          | ALLUVIUM              |
|         |        | 0.5             |  | CL       | Silty Gravelly CLAY; low to medium plasticity fines, fine gravel and ferruginous nodules, light brown, moist.                                                            | FIRM TO STIFF                            |                          |                       |
|         |        | 0.7             |  | CH       | Sandy CLAY; medium to high plasticity clay, fine to medium grained sand, orange-brown, orange-grey, dry to moist.                                                        | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.3             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        |                 |                                                                                     |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |

Logged By : KA

Date : 17/06/21

Checked By : JM

Date : 17/06/21

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>D02</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.2             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.7             |                | SM       | Silty Gravelly SAND; fine to medium grained sand, low plasticity silt, fine gravel and ferruginous nodules, light brown, moist.                                          | LOOSE                                    |                          | ALLUVIUM              |
|         |        | 1.0             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, some fine gravel and ferruginous nodules, orange-grey mottled, dry to moist.                            | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 1.3             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.6             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 17/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>D03</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.15            |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.5             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, red-brown, dry to moist.                                                                                | STIFF TO VERY STIFF                      |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                | CH       | Silty CLAY; medium to high plasticity fines, some fine to medium grained sand, yellow-brown/grey, dry to moist.                                                          | VERY STIFF                               |                          |                       |
|         |        | 1.3             |                | CL-CH    | Sandy Gravelly CLAY; medium plasticity clay, fine to coarse sand, fine to medium grained sedimentary gravel, yellow-brown, dry.                                          | VERY STIFF TO HARD                       |                          |                       |
|         |        | 1.6             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 16/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>D04</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |                | SM       | Silty Gravelly SAND; fine to medium grained sand, fine gravel and ferruginous nodules, low plasticity silt, light brown, brown, dry.                                     | LOOSE TO MEDIUM DENSE                    |                          | ALLUVIUM              |
|         |        | 0.3             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine sand, orange-brown, dry to moist.                                                                                       | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 0.7             |                | CH       | CLAY; high plasticity clay, trace fine gravel and ferruginous nodules, light brown, dry.                                                                                 | VERY STIFF TO HARD                       |                          |                       |
|         |        | 1.0             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.3             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        |                 |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

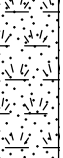
|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 16/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>D05</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log                                                                      | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |    | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |   | ML       | Gravelly Sandy SILT; low plasticity silt, fine to medium grained sand, fine gravel & ferruginous nodules, light brown, yellow-brown, dry.                                | LOOSE TO MEDIUM DENSE                    |                          | ALLUVIUM              |
|         |        | 0.6             |  | SC       | Gravelly Clayey SAND; fine to coarse sand, fine to medium grained gravel and ferruginous nodules, low plasticity clay, orange-grey, orange-brown, dry.                   | MEDIUM DENSE                             |                          |                       |
|         |        | 1.0             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.1             |  | CH       | Sandy CLAY; medium to high plasticity clay, fine to medium grained sand, orange-grey mottled, dry to moist.                                                              | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 1.3             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        |                 |                                                                                     |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

Logged By : KA

Date : 16/06/21

Checked By : JM

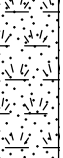
Date : 17/06/21



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>D07</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log                                                                      | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |    | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |    | CL       | Silty Sandy CLAY; low plasticity fines, fine to medium grained sand, light brown, moist.                                                                                 | FIRM                                     |                          | ALLUVIUM              |
|         |        | 0.4             |   | SM       | Silty Gravelly SAND; fine to medium grained sand, low plasticity silt, fine gravel & ferruginous nodules, light brown, orange-brown, dry to moist.                       | MEDIUM DENSE                             |                          |                       |
|         |        | 0.6             |  | CH       | Sandy CLAY; high plasticity clay, fine to medium grained sand, orange-brown, light brown, dry to moist.                                                                  | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.3             |                                                                                     |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 16/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                       |               |
|-----------------------|---------------|
| Borehole No.          | <b>D08</b>    |
| Sheet                 | 1 of 1        |
| Job No.               | <b>C11822</b> |
| Location :            | SEE REPORT    |
| Collar Level :        | Not Known     |
| Angle From Vertical : | 0°            |
| Bearing :             | N.A.          |

|                  |                                                                                      |
|------------------|--------------------------------------------------------------------------------------|
| CLIENT:          | Southern Region Land Engineering                                                     |
| PROJECT          | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : | PUSH TUBE DRILL                                                                      |
| Hole Diameter :  | 50mm                                                                                 |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |                | SC-SM    | Silty Clayey SAND; fine to coarse sand, low plasticity fines, dark brown, red-brown, dry to moist.                                                                       | LOOSE TO MEDIUM DENSE                    |                          | ALLUVIUM              |
|         |        | 0.8             |                | SC       | Clayey Gravelly SAND; fine to coarse sand, medium plasticity clay, fine to medium grained sedimentary gravel, brown, light brown, dry.                                   | DENSE                                    |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.2             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.3             |                |          | Extremely Weathered (EW) SILTSTONE; fine to medium grained, light brown, dry.                                                                                            | EXTREMELY WEAK                           |                          | BEDROCK               |
|         |        | 1.6             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

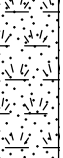
|             |    |        |          |              |    |        |          |
|-------------|----|--------|----------|--------------|----|--------|----------|
| Logged By : | KA | Date : | 17/06/21 | Checked By : | JM | Date : | 17/06/21 |
|-------------|----|--------|----------|--------------|----|--------|----------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>D09</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log                                                                      | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |    | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |    | SM       | Silty Gravelly SAND; fine to medium grained sand, low plasticity silt, fine gravel and ferruginous nodules, light brown, moist.                                          | LOOSE                                    |                          | ALLUVIUM              |
|         |        | 0.4             |   | CL       | Sandy Gravelly CLAY; low to medium plasticity clay, fine to coarse sand, fine gravel and ferruginous nodules, orange-brown, light brown, moist.                          | STIFF TO<br>VERY<br>STIFF                |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.2             |  | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, orange-grey, dry.                                                                                       | VERY<br>STIFF                            |                          |                       |
|         |        | 1.3             |                                                                                     |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 17/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>D10</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.2             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.8             |                | CH       | Silty CLAY; high plasticity fines, light brown, dry.                                                                                                                     | VERY STIFF                               |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                | CH       | Silty CLAY; high plasticity fines, orange-brown, dry.                                                                                                                    | VERY STIFF TO HARD                       |                          |                       |
|         |        | 1.4             |                |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.6             |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 16/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>D11</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.3             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, with grass rootlets, moist.                                                                         | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.5             |                | CL       | Silty CLAY; low to medium plasticity fines, light brown, moist.                                                                                                          | FIRM                                     |                          | ALLUVIUM              |
|         |        | 0.7             |                | CL       | Silty Gravelly CLAY; low plasticity fines, fine gravel and ferruginous nodules, orange-brown, dry to moist.                                                              | FIRM                                     |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, orange-grey mottled, dry.                                                                               | VERY STIFF                               |                          |                       |
|         |        | 1.4             |                |          | BOREHOLE TERMINATED AT 1.4m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 16/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>E01</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.3             |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, dark brown, with grass rootlets, moist.                                                             | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.5             |                | CL       | Silty Sandy CLAY; low plasticity fines, fine to coarse sand, trace fine gravel and ferruginous nodules, light brown, moist.                                              | FIRM                                     |                          | ALLUVIUM              |
|         |        | 0.7             |                | CL-CH    | Sandy Gravelly CLAY; medium plasticity clay, fine to coarse sand, fine to coarse sedimentary gravel, yellow-brown, dry to moist.                                         | STIFF TO VERY STIFF                      |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, orange-grey mottled, brown, dry.                                                                        | VERY STIFF                               |                          |                       |
|         |        | 1.3             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

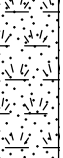
|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 17/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                                                                        |               |
|------------------------------------------------------------------------|---------------|
| Borehole No.                                                           | <b>E02</b>    |
| Sheet                                                                  | 1 of 1        |
| Job No.                                                                | <b>C11822</b> |
| Location : SEE REPORT                                                  |               |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |               |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log                                                                      | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|-------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        |                 |    | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, dark brown, with grass rootlets, moist.                                                             | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.2             |    | CL       | Silty Sandy CLAY; low plasticity fines, fine to medium grained sand, brown, light brown, moist.                                                                          | FIRM                                     |                          | ALLUVIUM              |
|         |        | 0.5             |  | CL       | Silty Gravelly CLAY; low to medium plasticity fines, fine gravel and ferruginous nodules, light brown, moist to wet.                                                     | FIRM                                     |                          |                       |
|         |        | 0.9             |  | CH       | Sandy CLAY; medium to high plasticity clay, fine to coarse sand, trace fine sedimentary gravel and ferruginous nodules, orange-grey mottled, dry to moist.               | STIFF TO<br>VERY<br>STIFF                |                          | RESIDUAL              |
|         |        | 1.0             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        | 1.3             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |
|         |        |                 |                                                                                     |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                                                                                     |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

|                |                 |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| Logged By : KA | Date : 17/06/21 | Checked By : JM | Date : 17/06/21 |
|----------------|-----------------|-----------------|-----------------|



# Borehole Log

|                                                                        |            |
|------------------------------------------------------------------------|------------|
| Borehole No.                                                           | <b>E03</b> |
| Sheet                                                                  | 1 of 1     |
| Job No.                                                                | C11822     |
| Location : SEE REPORT                                                  |            |
| Collar Level : Not Known<br>Angle From Vertical : 0°<br>Bearing : N.A. |            |

|                                                          |                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------|
| CLIENT:                                                  | Southern Region Land Engineering                                                     |
| PROJECT                                                  | Brisbane Grove Rural Subdivision<br>Rosemont Road & Mountain Ash Road, Goulburn, NSW |
| Equipment Type : PUSH TUBE DRILL<br>Hole Diameter : 50mm |                                                                                      |

| Samples | Casing | Depth<br>Metres | Graphic<br>Log | U.S.C.S. | Material Description, Structure<br><small>Soil Type: Plasticity or Particle Characteristics,<br/>Colour, Secondary and Minor Components,<br/>Moisture, Structure</small> | Consistency<br>or<br>Relative<br>Density | Field<br>Test<br>Results | Geological<br>Profile |
|---------|--------|-----------------|----------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------|-----------------------|
|         |        | 0.15            |                | SM       | Silty SAND; fine to medium grained sand, low plasticity silt, brown, dark brown, with grass rootlets, moist.                                                             | LOOSE                                    |                          | TOPSOIL               |
|         |        | 0.4             |                | CL       | Sandy CLAY; low plasticity clay, fine to medium grained sand, orange-brown, trace gravel to 10mm, moist.                                                                 | FIRM                                     |                          | ALLUVIUM              |
|         |        | 0.8             |                | CL-CH    | Sandy Gravelly CLAY; medium plasticity clay, fine to coarse sand, fine gravel and ferruginous nodules, dry to moist.                                                     | STIFF                                    |                          | RESIDUAL SOIL         |
|         |        | 1.0             |                | SC       | Clayey SAND / Sandy CLAY; low to medium plasticity clay, fine to coarse sand, fine sedimentary gravel, dry.                                                              | VERY<br>STIFF /<br>DENSE                 |                          |                       |
|         |        | 1.3             |                |          | BOREHOLE TERMINATED AT 1.3m                                                                                                                                              |                                          |                          |                       |
|         |        | 1.6             |                |          |                                                                                                                                                                          |                                          |                          |                       |

BOREHOLE/EXCAVATION LOG C11822.GPJ ACT GEO.GDT 04/07/21

Logged By : KA

Date : 16/06/21

Checked By : JM

Date : 17/06/21



**APPENDIX C**  
**Laboratory Test Certificates**



| Organochlorine Pesticides in soil |       |            |            |            |            |            |
|-----------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                     |       | 272356-6   | 272356-7   | 272356-8   | 272356-9   | 272356-10  |
| Your Reference                    | UNITS | A6         | B4         | C2         | D2         | D4         |
| Depth                             |       | 0.0-0.2m   | 0.0-0.2m   | 0.0-0.4m   | 0.0-0.2m   | 0.0-0.2m   |
| Type of sample                    |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                    | -     | 25/06/2021 | 25/06/2021 | 25/06/2021 | 25/06/2021 | 25/06/2021 |
| Date analysed                     | -     | 25/06/2021 | 25/06/2021 | 25/06/2021 | 25/06/2021 | 25/06/2021 |
| alpha-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| HCB                               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| beta-BHC                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor                        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| delta-BHC                         | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Aldrin                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Heptachlor Epoxide                | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| gamma-Chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| alpha-chlordane                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan I                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDE                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dieldrin                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan II                     | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDD                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endrin Aldehyde                   | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| pp-DDT                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Endosulfan Sulphate               | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Methoxychlor                      | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Total +ve DDT+DDD+DDE             | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX                    | %     | 98         | 92         | 94         | 92         | 93         |



| Organophosphorus Pesticides in Soil |       |            |            |            |            |            |
|-------------------------------------|-------|------------|------------|------------|------------|------------|
| Our Reference                       | UNITS | 272356-6   | 272356-7   | 272356-8   | 272356-9   | 272356-10  |
| Your Reference                      |       | A6         | B4         | C2         | D2         | D4         |
| Depth                               |       | 0.0-0.2m   | 0.0-0.2m   | 0.0-0.4m   | 0.0-0.2m   | 0.0-0.2m   |
| Type of sample                      |       | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date extracted                      | -     | 25/06/2021 | 25/06/2021 | 25/06/2021 | 25/06/2021 | 25/06/2021 |
| Date analysed                       | -     | 25/06/2021 | 25/06/2021 | 25/06/2021 | 25/06/2021 | 25/06/2021 |
| Dichlorvos                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Dimethoate                          | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Diazinon                            | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos-methyl                 | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Ronnel                              | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Fenitrothion                        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Malathion                           | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Chlorpyrifos                        | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Parathion                           | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Bromophos-ethyl                     | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Ethion                              | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Azinphos-methyl (Guthion)           | mg/kg | <0.1       | <0.1       | <0.1       | <0.1       | <0.1       |
| Surrogate TCMX                      | %     | 98         | 92         | 94         | 92         | 93         |



| Misc Inorg - Soil                      |          |            |            |            |            |            |
|----------------------------------------|----------|------------|------------|------------|------------|------------|
| Our Reference                          |          | 272356-1   | 272356-2   | 272356-3   | 272356-4   | 272356-5   |
| Your Reference                         | UNITS    | A7         | A10        | B2         | D3         | D11        |
| Depth                                  |          | 0.1-0.4m   | 0.0-0.3m   | 0.3-0.6m   | 0.15-0.4m  | 0.3-0.5m   |
| Type of sample                         |          | Soil       | Soil       | Soil       | Soil       | Soil       |
| Date prepared                          | -        | 29/06/2021 | 29/06/2021 | 29/06/2021 | 29/06/2021 | 29/06/2021 |
| Date analysed                          | -        | 29/06/2021 | 29/06/2021 | 29/06/2021 | 29/06/2021 | 29/06/2021 |
| pH 1:5 soil:water                      | pH Units | 6.5        | 5.3        | 5.5        | 5.8        | 6.8        |
| Electrical Conductivity 1:5 soil:water | µS/cm    | 36         | 52         | 34         | 46         | 52         |
| Emerson Class No.                      | -        | 5.0        | 5.0        | 5.0        | 5.0        | 5.0        |
| Phosphorus Sorption Capacity           | mg/kg    | 510        | 380        | 590        | 940        | 770        |



**APPENDIX D**  
**Limitations of Geotechnical Report**



## **Limitations in the Use and Interpretation of this Geotechnical Report**

Our Professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

The geotechnical report was prepared for the use of the Owner in the design of the subject development and should be made available to potential contractors and/or the Contractor for information on factual data only. This report should not be used for contractual purposes as a warranty of interpreted subsurface conditions such as those indicated by the interpretive borehole and test pit logs, cross- sections, or discussion of subsurface conditions contained herein.

The analyses, conclusions and recommendations contained in the report are based on site conditions as they presently exist and assume that the exploratory bore holes, test pits, and/or probes are representative of the subsurface conditions of the site. If, during construction, subsurface conditions are found which are significantly different from those observed in the exploratory bore holes and test pits, or assumed to exist in the excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between conducting this investigation and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, this report should be reviewed to determine the applicability of the conclusions and the recommendations considering the changed conditions and time lapse.

The summary bore hole and test pit logs are our opinion of the subsurface conditions revealed by periodic sampling of the ground as the test holes progressed. The soil descriptions and interfaces between strata are interpretive and actual changes may be gradual.

The bore hole and test pit logs and related information depict subsurface conditions only at the specific locations and at the particular time designated on the logs. Soil conditions at the other locations may differ from conditions occurring at these bore hole and test pit locations. Also, the passage of time may result in a change in the soil conditions at these test locations.

Groundwater levels often vary seasonally. Groundwater levels reported on the boring logs or in the body of the report are factual data only for the dates shown.

Unanticipated soil conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking soil samples, bore holes or test pits. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. It is recommended that the Owner consider providing a contingency fund to accommodate such potential extra costs.

This firm cannot be responsible for any deviation from the intent of this report including, but not restricted to, any changes to the scheduled time of construction, the nature of the project or the specific construction methods or means indicated in this report: nor can our company be responsible for any construction activity on sites other than the specific site referred to in this report.



**ATTACHMENT C**  
**NorBE Assessment**  
**Wastewater Effluent Model Summaries**



## WEM Summary

version 3

### General Information

|                             |                                          |                      |                                |
|-----------------------------|------------------------------------------|----------------------|--------------------------------|
| WEM model ID                | <b>2334112</b>                           | Associated DA number |                                |
| Model description           |                                          |                      |                                |
| Consultancy                 | <b>Southern Region Land Engineering</b>  | Consultant           | <b>gregtodd.srle@gmail.com</b> |
| Consultant reference number | <b>T01405</b>                            |                      |                                |
| Council                     | <b>Goulburn Mulwaree</b>                 | Assessing officer    |                                |
| Nominated lot               | <b>2//835278</b>                         | Associated lots      |                                |
| Development class           | <b>Subdivision unsewered &gt;=4 lots</b> |                      |                                |

| Lot | Section | Plan   |
|-----|---------|--------|
| 2   |         | 835278 |
| 1   |         | 835278 |
| 1   |         | 731427 |
| 22  |         | 811954 |
| 23  |         | 811954 |
| 24  |         | 811954 |
| 3   |         | 835278 |
| 1   |         | 779194 |
| 103 |         | 70346  |
| 104 |         | 126140 |
| 105 |         | 126140 |
| 1   |         | 853498 |
| 106 |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |



### WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

### WEM Model Inputs

#### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551687.974039</b> | Northing                                                                                         | <b>4326432.862298</b> |
| Slope (m/m) | <b>0.06959</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

#### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

#### Site

|                                                |                         |                             |               |
|------------------------------------------------|-------------------------|-----------------------------|---------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |               |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>2.00</b>   |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>510</b>    |
| Soil depth (to impermeable layer) (m)          | <b>1.30</b>             | Soil structure              | <b>Strong</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>0.06</b>             |                             |               |
| Soil texture                                   | <b>Med-heavy clays</b>  |                             |               |

#### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                                   |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage dpression                       | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

### WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2334111                          | Associated DA number |                         |         |        |
| Model description           |                                  |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 2//835278                        | Associated lots      | Lot                     | Section | Plan   |
| Development class           | Subdivision unsewered >=4 lots   |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             |                                  |                      | 106                     |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |               |                                         |               |
|--------------------------------|---------------|-----------------------------------------|---------------|
| Length (across slope)(m)       | <b>50.0</b>   | Width (up slope)(m)                     | <b>26.0</b>   |
| Proposed area(m <sup>2</sup> ) | <b>1300.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>1187.0</b> |
| Number of trenches             | <b>0</b>      |                                         |               |



## WEM Summary

version 3

|                                    |             |
|------------------------------------|-------------|
| Effluent volume proposed (l/day)   | <b>1300</b> |
| Effluent volume calculated (l/day) | <b>1300</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551687.974039</b> | Northing                                                                                         | <b>4326432.862298</b> |
| Slope (m/m) | <b>0.06959</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>Yes</b>                    |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |               |
|------------------------------------------------|-------------------------|-----------------------------|---------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |               |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>2.00</b>   |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>510</b>    |
| Soil depth (to impermeable layer) (m)          | <b>1.30</b>             | Soil structure              | <b>Strong</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>1.31</b>             |                             |               |
| Soil texture                                   | <b>Med-heavy clays</b>  |                             |               |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                                   |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage depression                      | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2334110                          | Associated DA number |                         |         |        |
| Model description           |                                  |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 2//835278                        | Associated lots      | Lot                     | Section | Plan   |
| Development class           | Subdivision unsewered >=4 lots   |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             |                                  |                      | 106                     |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |



### WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

### WEM Model Inputs

#### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551687.974039</b> | Northing                                                                                         | <b>4326432.862298</b> |
| Slope (m/m) | <b>0.06959</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

#### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

#### Site

|                                                |                         |                             |               |
|------------------------------------------------|-------------------------|-----------------------------|---------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |               |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>2.00</b>   |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>510</b>    |
| Soil depth (to impermeable layer) (m)          | <b>1.30</b>             | Soil structure              | <b>Strong</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>1.31</b>             |                             |               |
| Soil texture                                   | <b>Med-heavy clays</b>  |                             |               |

#### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                                   |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage dpression                       | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

### WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2334818                          | Associated DA number |                         |         |        |
| Model description           |                                  |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 2//835278                        | Associated lots      | Lot                     | Section | Plan   |
| Development class           | Subdivision unsewered >=4 lots   |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             |                                  |                      | 106                     |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |



## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551146.503076</b> | Northing                                                                                         | <b>4326517.820624</b> |
| Slope (m/m) | <b>0.04222</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |                 |
|------------------------------------------------|-------------------------|-----------------------------|-----------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |                 |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>1.80</b>     |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>380</b>      |
| Soil depth (to impermeable layer) (m)          | <b>1.30</b>             | Soil structure              | <b>Moderate</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>1.30</b>             |                             |                 |
| Soil texture                                   | <b>Light clays</b>      |                             |                 |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                                   |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage dpression                       | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2334823                          | Associated DA number |                         |         |        |
| Model description           |                                  |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 2//835278                        | Associated lots      | Lot                     | Section | Plan   |
| Development class           | Subdivision unsewered >=4 lots   |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             |                                  |                      | 106                     |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |



## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551146.503076</b> | Northing                                                                                         | <b>4326517.820624</b> |
| Slope (m/m) | <b>0.04222</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |                 |
|------------------------------------------------|-------------------------|-----------------------------|-----------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |                 |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>1.80</b>     |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>380</b>      |
| Soil depth (to impermeable layer) (m)          | <b>1.30</b>             | Soil structure              | <b>Moderate</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>0.06</b>             |                             |                 |
| Soil texture                                   | <b>Light clays</b>      |                             |                 |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                                   |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage depression                      | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                          |                      |                                |
|-----------------------------|------------------------------------------|----------------------|--------------------------------|
| WEM model ID                | <b>2334824</b>                           | Associated DA number |                                |
| Model description           |                                          |                      |                                |
| Consultancy                 | <b>Southern Region Land Engineering</b>  | Consultant           | <b>gregtodd.srle@gmail.com</b> |
| Consultant reference number | <b>T01405</b>                            |                      |                                |
| Council                     | <b>Goulburn Mulwaree</b>                 | Assessing officer    |                                |
| Nominated lot               | <b>2//835278</b>                         | Associated lots      |                                |
| Development class           | <b>Subdivision unsewered &gt;=4 lots</b> |                      |                                |

| Lot | Section | Plan   |
|-----|---------|--------|
| 2   |         | 835278 |
| 1   |         | 835278 |
| 1   |         | 731427 |
| 22  |         | 811954 |
| 23  |         | 811954 |
| 24  |         | 811954 |
| 3   |         | 835278 |
| 1   |         | 779194 |
| 103 |         | 70346  |
| 104 |         | 126140 |
| 105 |         | 126140 |
| 1   |         | 853498 |
| 106 |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

**Special design criteria, including soil modification and soil permeability testing, will be required**

**Any of the sub-surface plumes reaches:**

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>20.0</b>  | Width (up slope)(m)                     | <b>3.8</b>   |
| Proposed area(m <sup>2</sup> ) | <b>150.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>120.0</b> |
| Number of trenches             | <b>2</b>     |                                         |              |

## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>400</b> |
| Effluent volume calculated (l/day) | <b>600</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551146.503076</b> | Northing                                                                                         | <b>4326517.820624</b> |
| Slope (m/m) | <b>0.04222</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                    |                    |                                             |
|-----------------------|--------------------|--------------------|---------------------------------------------|
| Development type      | <b>Dwellings</b>   | Development detail | <b>3 bedrooms</b>                           |
| Water supply type     | <b>Rainwater</b>   | Spa Bath           | <b>No</b>                                   |
| Continuous system use | <b>Yes</b>         |                    |                                             |
| Treatment system      | <b>Septic tank</b> | Disposal system    | <b>Absorption trench – primary effluent</b> |

### Site

|                                                |                         |                             |                 |
|------------------------------------------------|-------------------------|-----------------------------|-----------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |                 |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>1.80</b>     |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>380</b>      |
| Soil depth (to impermeable layer) (m)          | <b>1.30</b>             | Soil structure              | <b>Moderate</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>0.06</b>             |                             |                 |
| Soil texture                                   | <b>Light clays</b>      |                             |                 |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                                   |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage depression                      | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2334825                          | Associated DA number |                         |         |        |
| Model description           |                                  |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 2//835278                        | Associated lots      | Lot                     | Section | Plan   |
| Development class           | Subdivision unsewered >=4 lots   |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             |                                  |                      | 106                     |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |

## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551253.127413</b> | Northing                                                                                         | <b>4326145.975520</b> |
| Slope (m/m) | <b>0.05111</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |             |
|------------------------------------------------|-------------------------|-----------------------------|-------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |             |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>1.60</b> |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>500</b>  |
| Soil depth (to impermeable layer) (m)          | <b>1.40</b>             | Soil structure              | <b>Weak</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>1.00</b>             |                             |             |
| Soil texture                                   | <b>Clay loams</b>       |                             |             |

### Effluent disposal risk factors

|                                                      |                                            |
|------------------------------------------------------|--------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                            |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>              |
| Landform score                                       | <b>Concave side slopes and foot slopes</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>        |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                             |
| Distance to drainage dpression                       | <b>&gt; 50</b>                             |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                            |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                            |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2334828                          | Associated DA number |                         |         |        |
| Model description           | Concept effluent treatment       |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 1//853498                        | Associated lots      | Lot                     | Section | Plan   |
| Development class           | Subdivision unsewered >=4 lots   |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             |                                  |                      | 106                     |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |

## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9550898.493270</b> | Northing                                                                                         | <b>4326683.866589</b> |
| Slope (m/m) | <b>0.02291</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |             |
|------------------------------------------------|-------------------------|-----------------------------|-------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |             |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>1.60</b> |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>380</b>  |
| Soil depth (to impermeable layer) (m)          | <b>1.20</b>             | Soil structure              | <b>Weak</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>0.20</b>             |                             |             |
| Soil texture                                   | <b>Clay loams</b>       |                             |             |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                                   |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage depression                      | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2335120                          | Associated DA number |                         |         |        |
| Model description           | Concept effluent management      |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 1//853498                        | Associated lots      | Lot                     | Section | Plan   |
| Development class           | Subdivision unsewered >=4 lots   |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             |                                  |                      | 106                     |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |

## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551027.485516</b> | Northing                                                                                         | <b>4326943.138470</b> |
| Slope (m/m) | <b>0.02561</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |                      |
|------------------------------------------------|-------------------------|-----------------------------|----------------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |                      |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>1.60</b>          |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>400</b>           |
| Soil depth (to impermeable layer) (m)          | <b>1.00</b>             | Soil structure              | <b>High/moderate</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>1.00</b>             |                             |                      |
| Soil texture                                   | <b>Clay loams</b>       |                             |                      |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>0.4 - 1.0</b>                                  |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage depression                      | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2335121                          | Associated DA number |                         |         |        |
| Model description           | Concept effluent management      |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 1//853498                        | Associated lots      |                         |         |        |
| Development class           | Subdivision unsewered >=4 lots   |                      | Lot                     | Section | Plan   |
|                             |                                  |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             | 106                              |                      | 126140                  |         |        |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |

## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9550647.406968</b> | Northing                                                                                         | <b>4327243.404693</b> |
| Slope (m/m) | <b>0.01281</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |                 |
|------------------------------------------------|-------------------------|-----------------------------|-----------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |                 |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>1.60</b>     |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>590</b>      |
| Soil depth (to impermeable layer) (m)          | <b>1.00</b>             | Soil structure              | <b>Moderate</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>1.00</b>             |                             |                 |
| Soil texture                                   | <b>Light clays</b>      |                             |                 |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>0.4 - 1.0</b>                                  |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage dpression                       | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2335122                          | Associated DA number |                         |         |        |
| Model description           | Concept effluent management      |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 1//731427                        | Associated lots      |                         |         |        |
| Development class           | Subdivision unsewered >=4 lots   |                      | Lot                     | Section | Plan   |
|                             |                                  |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             | 106                              |                      | 126140                  |         |        |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>30.0</b>  | Width (up slope)(m)                     | <b>28.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>840.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |

## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9552297.015593</b> | Northing                                                                                         | <b>4325911.594827</b> |
| Slope (m/m) | <b>0.01811</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |                     |
|------------------------------------------------|-------------------------|-----------------------------|---------------------|
| Lot size(m2)                                   | <b>4000</b>             |                             |                     |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>2.00</b>         |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>600</b>          |
| Soil depth (to impermeable layer) (m)          | <b>0.90</b>             | Soil structure              | <b>Weak/massive</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>0.06</b>             |                             |                     |
| Soil texture                                   | <b>Med-heavy clays</b>  |                             |                     |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>0.4 - 1.0</b>                                  |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage dpression                       | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.



## WEM Summary

version 3

### General Information

|                             |                                  |                      |                         |         |        |
|-----------------------------|----------------------------------|----------------------|-------------------------|---------|--------|
| WEM model ID                | 2335124                          | Associated DA number |                         |         |        |
| Model description           | Concept effluent management      |                      |                         |         |        |
| Consultancy                 | Southern Region Land Engineering | Consultant           | gregtodd.srle@gmail.com |         |        |
| Consultant reference number | T01405                           |                      |                         |         |        |
| Council                     | Goulburn Mulwaree                | Assessing officer    |                         |         |        |
| Nominated lot               | 1//731427                        | Associated lots      | Lot                     | Section | Plan   |
| Development class           | Subdivision unsewered >=4 lots   |                      | 2                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 731427 |
|                             |                                  |                      | 22                      |         | 811954 |
|                             |                                  |                      | 23                      |         | 811954 |
|                             |                                  |                      | 24                      |         | 811954 |
|                             |                                  |                      | 3                       |         | 835278 |
|                             |                                  |                      | 1                       |         | 779194 |
|                             |                                  |                      | 103                     |         | 70346  |
|                             |                                  |                      | 104                     |         | 126140 |
|                             |                                  |                      | 105                     |         | 126140 |
|                             |                                  |                      | 1                       |         | 853498 |
|                             |                                  |                      | 106                     |         | 126140 |

Date of model run

### WEM Model Run Summary

Model run outcome **Pending**

#### Any of the sub-surface plumes reaches:

|                                                                |            |
|----------------------------------------------------------------|------------|
| Lot boundary                                                   | <b>N/A</b> |
| Drainage depression                                            | <b>N/A</b> |
| Top bank of watercourse                                        | <b>N/A</b> |
| Another disposal field or onsite stormwater management system  | <b>N/A</b> |
| Within 50m, and up gradient of, a licensed drinking water bore | <b>N/A</b> |

### Proposed Front End Design

|                                |              |                                         |              |
|--------------------------------|--------------|-----------------------------------------|--------------|
| Length (across slope)(m)       | <b>40.0</b>  | Width (up slope)(m)                     | <b>20.0</b>  |
| Proposed area(m <sup>2</sup> ) | <b>800.0</b> | Minimum Required area (m <sup>2</sup> ) | <b>730.0</b> |
| Number of trenches             | <b>0</b>     |                                         |              |

## WEM Summary

version 3

|                                    |            |
|------------------------------------|------------|
| Effluent volume proposed (l/day)   | <b>800</b> |
| Effluent volume calculated (l/day) | <b>800</b> |

## WEM Model Inputs

### Location

|             |                       |                                                                                                  |                       |
|-------------|-----------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| Easting     | <b>9551584.606226</b> | Northing                                                                                         | <b>4325773.369124</b> |
| Slope (m/m) | <b>0.02065</b>        | Slope is suitable based on site inspection (Applicable to some disposal systems on steep slopes) | <b>N/A</b>            |

### Development

|                       |                      |                    |                               |
|-----------------------|----------------------|--------------------|-------------------------------|
| Development type      | <b>Dwellings</b>     | Development detail | <b>4 bedrooms</b>             |
| Water supply type     | <b>Rainwater</b>     | Spa Bath           | <b>No</b>                     |
| Continuous system use | <b>Yes</b>           |                    |                               |
| Treatment system      | <b>AWTS standard</b> | Disposal system    | <b>Irrigation sub-surface</b> |

### Site

|                                                |                         |                             |                 |
|------------------------------------------------|-------------------------|-----------------------------|-----------------|
| Lot size(m2)                                   | <b>411741</b>           |                             |                 |
| Subject to severe frost                        | <b>No</b>               | Bulk density(g/cm3)         | <b>1.80</b>     |
| Vegetation for nutrient uptake                 | <b>Lawn - unmanaged</b> | Phosphorus sorption (mg/kg) | <b>500</b>      |
| Soil depth (to impermeable layer) (m)          | <b>1.40</b>             | Soil structure              | <b>Moderate</b> |
| Saturated hydraulic conductivity (Ksat)(m/day) | <b>0.06</b>             |                             |                 |
| Soil texture                                   | <b>Light clays</b>      |                             |                 |

### Effluent disposal risk factors

|                                                      |                                                   |
|------------------------------------------------------|---------------------------------------------------|
| Depth to water table                                 | <b>&gt; 1.0</b>                                   |
| Flood potential of disposal system                   | <b>Above 1 in 50 year ARI</b>                     |
| Landform score                                       | <b>Hill crests, convex side slopes and plains</b> |
| Run-on and upslope seepage                           | <b>None-low, diversion possible</b>               |
| Rock outcrops, scarp and bedrock                     | <b>&lt; 5%</b>                                    |
| Distance to drainage depression                      | <b>&gt; 50</b>                                    |
| Distance to watercourses and water supply reservoirs | <b>&gt; 120</b>                                   |
| Distance to licenced drinking water bores            | <b>&gt; 150</b>                                   |

## WEM Plume Map

No image of the plumes is available. This may be because the model has not yet been run or because no image was generated when the model ran.