# Australian Geotechnical Testing

## Level One Inspection and Testing

**Project No: AGTE21552**
**Project: Wattle View Estate Stage 1**
**Suburb: Beaconsfield**

**Client: Sandridge Roads**

**Date: 7 March 2022**

| Geotechnical | Pavement | Environmental | Residential | Design |
| Slope Stability Assessment | Land Capability Assessments | Erosion and Sediment Control Plan |
| Retaining Walls | Level 1 Supervision | Earthworks Specification's | Percolation |

**Adelaide | Brisbane | Ballarat | Melbourne | Warrnambool**

# Contents

# 1 Introduction

Australian Geotechnical Testing (AGT) has been engaged by Sandridge Roads to provide Level 1 Geotechnical Supervision for the Wattle Bank Stage 3 project. The Estate is located at Beaconsfield VIC.

This Level 1 report presents the results of supervision activities, compaction and moisture control, material placement and laboratory testing for ground works undertaken for the project. This report covers construction activities carried out from **17th December 2021 to 12th February 2022.**

# 2 Scope of Works

The scope of works involved the placement of on-site General Fill. Fill Material was placed in Level one fill areas, in accordance with ***AS 3798-2007***, ***Guidelines on earthworks for commercial and residential developments and project specifications***. The level of FILL to be placed is less than 5m as per AS3798 Section 1.1.

The fill material is required as per AS3798 and the project specification to achieve:

- **95% Standard Maximum Dry Density (Compaction)**

General fill material used for the construction was locally sourced and predominantly comprising of **Sandy Gravelly CLAY and Clayey SAND.**

# 3 Inspections / Supervision

Full-time Level 1 supervision and inspection was undertaken including the supervision and inspections regarding the stripping and removal as per AS3798 Section 3 shall have removed:

- Organic soils, such as topsoils, severely root affected subsoils and peat;
- Contaminated soils are part of the brief;
- Materials which undergo volume change or loss of strength when disturbed and exposed to moisture;
- Silts, or materials that have deleterious engineering properties of silt;
- Other materials with properties that are unsuitable for the forming of structural fill;
- Fill that contains wood, metal plastic, boulders or other deleterious material, in sufficient proportions to affect the required performance of the fill.
- The maximum particle size of any rocks or other lumps, within the layer, has not exceeded two-thirds ($^2/_3$) of the compacted layer thickness.

The lots inspected were essentially homogeneous in relation to material type and moisture condition, rolling response and compaction technique and which has been used for the assessment of relative compaction of an area of work (AS3798 Section 1.2.8).
Prior to placement any existing filled ground, for which the conditions of the placement are not adequately documented have not been assumed to have been of either standard compaction or of the composition adequate to support fill or any loads has been removed (AS3798 Section 2).

# 4 Testing

The project was classified as **Residential**, thereby requiring a minimum compaction result of ***95%*** density ratio Standard Compaction for the ***cohesive soils (***AS 1289 5.7.1 & 5.1.1)

throughout the Level 1 Fill and in accordance with AS 3798-2007 – Table 5.2. The test was performed using a Nuclear Density Gauge for field density determination *AS 1289.5.8.1.*

As a minimum testing was undertaken either 3 tests per lot, 1 test per 2,500m$^2$ per layer, or 1 test per 500m$^3$ throughout the placement of fill as per AS3798 Table 8.1.

The material was imported **Sandy Gravelly Clay and Clayey SAND.** The material was placed in approximately 400 mm loose layers, rolling effort with on-site Compactor (to seal of each layer of placed General Fill material) to a compacted 300mm layer that achieved 95% Standard Compaction which met Australian Standards specifications. This was considered the best method to achieve compaction using the plant and machinery available.

The NATA compaction reports verify the achievement of the minimum density requirement of 95% Standard Compaction throughout the full depth area, with each layer tested accordingly. All test results were provided to our client: Sandridge Roads for inclusion within their internal quality system.

At the completion of the structural layers and material within 150mm of permanent subgrade level in cuttings, test rolling was undertaken and the layers withstood test rolling without visible deformation or springing (AS 3798 Section 5.5).
The area covered by this Level 1 Supervision report is shown in the Site Plan (Refer to Appendix A). The results of the laboratory Testing are indicated in Appendix B.

# 5 Conclusion

On the completion of the earthworks and after analysing the materials used, it has been concluded that the filling procedure conducted by **our client Sandridge Roads satisfied** the general requirements of AS 3798 regards to the placement of fill materials on a project under Level 1 Supervision and in accordance with the project specification as provided to AGT.

The fill meets the requirements for “structural fill for residential applications” in accordance with AS3798. The fill has been placed, compacted and tested in accordance with AS3798 and the fill meets the requirements for controlled fill in accordance with AS2870 (2011) “Residential Slabs and Footings”.

This report has been prepared for the benefit of our client with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement. No responsibility for this report will be taken by AGT if it is altered in any way, or not reproduced in full.

# 6 Applicability

The findings and conclusions contained in this Report are made based on site conditions that existed at the time this work was conducted. The conclusions presented in this report are relevant to the conditions of the site and the state of legislation currently enacted as at the date of this report.

Findings and conclusions are made assuming that the soil, groundwater, geological and chemical conditions detailed within this report are accurate and remain applicable to the site at the time of writing. The conclusions of this report may become invalid if filling or

excavation occurs after the boreholes and test pits referred to in this report were drilled or excavated. No other warranties are made or intended.

AGT has used a degree of skill and care ordinarily exercised by reputable members of our profession practicing in the same or similar locality.

AGT does not make any representation or warranty that the conclusions in this report will be applicable in the future as there may be changes in the condition of the site, applicable legislation or other factors that would affect the conclusions contained in this report.
This report has been prepared exclusively for use by our Client. This report cannot be reproduced without the written authorisation of AGT and then can only be reproduced in its entirety.

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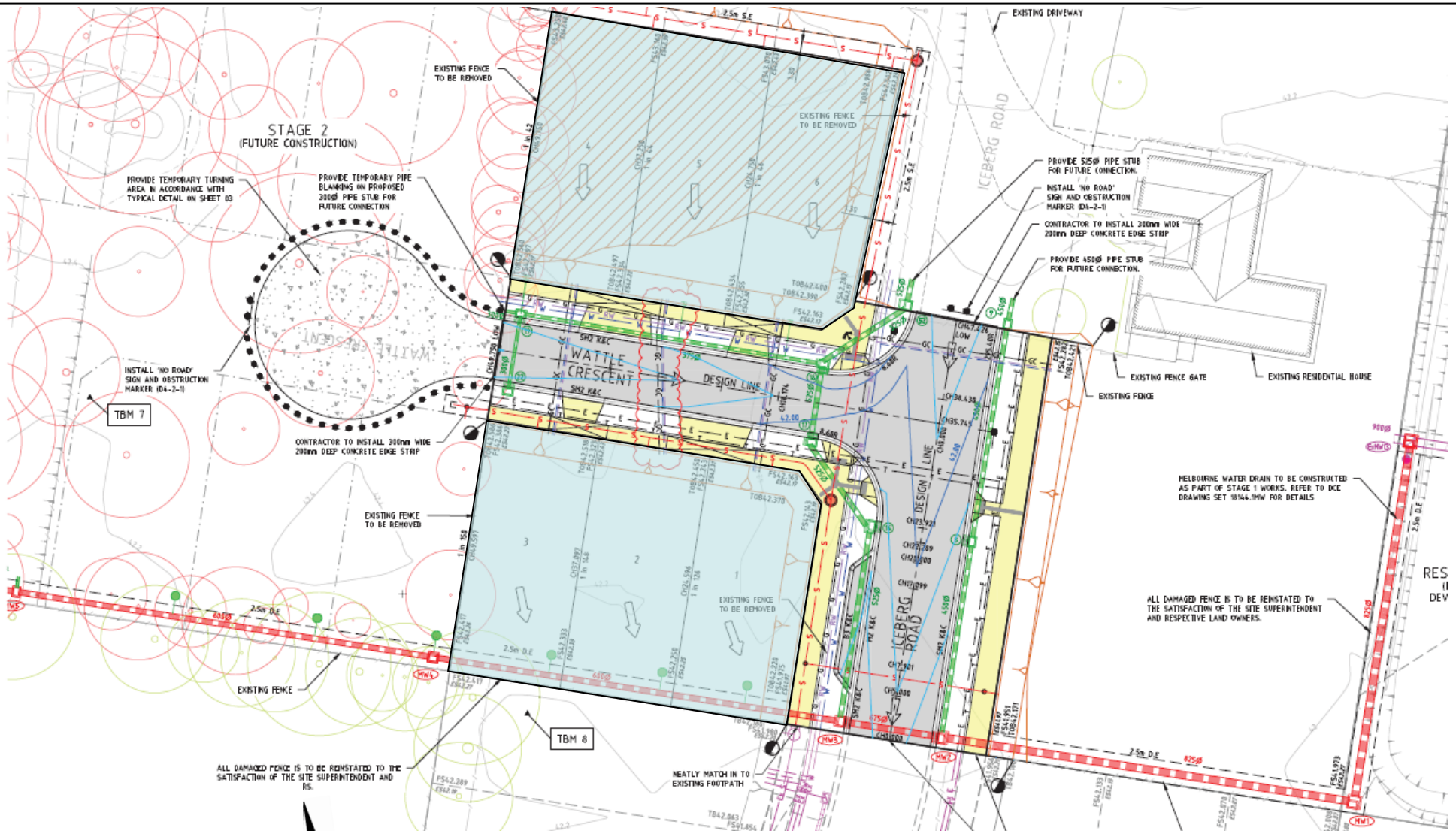
# Appendix A – Site Plan




**Key**

**Level 1 Site Area**

**SITE PLAN - NOT TO SCALE**

Report No

AGTE21552

# 190 Kenilworth Avenue

## Beaconsfield

Sandridge Roads

# Appendix B – Laboratory Testing

# Material Test Report

**Report Number:** **AGT51303-4**
**Issue Number:** 1
**Date Issued:** 23/12/2021
**Client:** Sandridge Roads
PO Box 69, Tooradin VIC 3981
**Project Number:** AGT51303
**Project Name:** Beaconsfield Wattle Estate - Stage 1
**Work Request:** 1426
**Date Sampled:** 17/12/2021
**Dates Tested:** 21/12/2021 - 22/12/2021
**Sampling Method:** AS 1289.1.2.1 6.4 (a) - Sampling from layers in earthworks or pavement - uncompacted
**Specification:** 95% Standard
**Site Selection:** Selected by Client
**Location:** Beaconsfield

Australian Geotechnical Testing
Ballarat Laboratory
2/55 Heinz Road Delacombe VIC 3356
Phone: 1300 026 583
Email: PaulF@ausgeotest.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Paul Francis
Laboratory Manager - Ballarat
NATA Accredited Laboratory Number: 20457

| Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1 | | | |
|---|---|---|---|
| Sample Number | 51303-14 | | |
| Date Tested | 17/12/2021 | | |
| Time Tested | 11:15 | | |
| Test Request #/Location | Lot 4 | | |
| Layer / Reduced Level | 2 | | |
| Thickness of Layer (mm) | 300 | | |
| Soil Description | Clayey Sand | | |
| Test Depth (mm) | 275 | | |
| Sieve used to determine oversize (mm) | 19.0 | | |
| Percentage of Wet Oversize (%) | ** | | |
| Field Wet Density (FWD) t/m$^3$ | 1.92 | | |
| Field Moisture Content % | 10.9 | | |
| Field Dry Density (FDD) t/m$^3$ | 1.73 | | |
| Peak Converted Wet Density t/m$^3$ | 1.98 | | |
| Adjusted Peak Converted Wet Density t/m$^3$ | ** | | |
| Moisture Variation (Wv) % | 5.0 | | |
| Adjusted Moisture Variation % | ** | | |
| Hilf Density Ratio (%) | **97.0** | | |
| Compaction Method | **Standard** | | |
| Report Remarks | ** | | |

**Moisture Variation Note:**
Positive values = test is dry of OMC
Negative values = test is wet of OMC

# Material Test Report

**Report Number:** **AGT51303-7a**
**Issue Number:** 1
**Date Issued:** 02/03/2022
**Client:** Sandridge Roads
PO Box 69, Tooradin VIC 3981
**Project Number:** AGT51303
**Project Name:** Beaconsfield Wattle Estate - Stage 1
**Project Location:** Beaconsfield
**Work Request:** 1438
**Date Sampled:** 23/02/2022
**Dates Tested:** 24/02/2022 - 24/02/2022
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
**Specification:** 95% Standard
**Site Selection:** Selected by Client
**Location:** Beaconsfield

Australian Geotechnical Testing
Melbourne Laboratory
66 Abbotts Road Dandenong South VIC 3175
Phone: 1300 026 583
Email: RachelS@ausgeotest.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Rachel Sproal
Operations Manager
NATA Accredited Laboratory Number: 20245

| Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1 | | | |
|---|---|---|---|
| Sample Number | 51303-21 | 51303-22 | |
| Date Tested | 23/02/2022 | 23/02/2022 | |
| Time Tested | 14:15 | 14:30 | |
| Test Request #/Location | Lot 5 | Lot 6 | |
| Layer / Reduced Level | 1 | 1 | |
| Thickness of Layer (mm) | 300 | 300 | |
| Soil Description | Sandy Gravelly Clay | Sandy Gravelly Clay | |
| Test Depth (mm) | 275 | 275 | |
| Sieve used to determine oversize (mm) | 19.0 | 19.0 | |
| Percentage of Wet Oversize (%) | ** | ** | |
| Field Wet Density (FWD) t/m$^3$ | 2.11 | 2.18 | |
| Field Moisture Content % | ** | ** | |
| Field Dry Density (FDD) t/m$^3$ | ** | ** | |
| Peak Converted Wet Density t/m$^3$ | 1.95 | 1.99 | |
| Adjusted Peak Converted Wet Density t/m$^3$ | ** | ** | |
| Moisture Variation (Wv) % | 8.5 | 4.5 | |
| Adjusted Moisture Variation % | ** | ** | |
| Hilf Density Ratio (%) | **108.0** | **109.5** | |
| Compaction Method | **Standard** | **Standard** | |
| Report Remarks | ** | ** | |

**Moisture Variation Note:**
Positive values = test is dry of OMC
Negative values = test is wet of OMC

# Material Test Report

**Report Number:** **AGT51303-9**
**Issue Number:** 1
**Date Issued:** 04/03/2022
**Client:** Sandridge Roads
PO Box 69, Tooradin VIC 3981
**Project Number:** AGT51303
**Project Name:** Beaconsfield Wattle Estate - Stage 1
**Project Location:** Beaconsfield
**Work Request:** 1442
**Date Sampled:** 03/03/2022
**Dates Tested:** 04/03/2022 - 04/03/2022
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
**Specification:** 95% Standard
**Site Selection:** Selected by Client
**Location:** Beaconsfield

Australian Geotechnical Testing
Melbourne Laboratory
66 Abbotts Road Dandenong South VIC 3175
Phone: 1300 026 583
Email: RachelS@ausgeotest.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Rachel Sproal
Operations Manager
NATA Accredited Laboratory Number: 20245

| Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1 | | | |
|---|---|---|---|
| Sample Number | 51303-27 | 51303-28 | 51303-29 |
| Date Tested | 03/03/2022 | 03/03/2022 | 03/03/2022 |
| Time Tested | 16:15 | 16:35 | 17:00 |
| Test Request #/Location | Lot 2 | Lot 1 | Lot 3 |
| Layer / Reduced Level | 2 | 2 | 2 |
| Thickness of Layer (mm) | 300 | 300 | 300 |
| Soil Description | Silty Sandy Clay | Silty Sandy Clay | Silty Sandy Clay |
| Test Depth (mm) | 275 | 275 | 275 |
| Sieve used to determine oversize (mm) | 19.0 | 19.0 | 19.0 |
| Percentage of Wet Oversize (%) | 0 | 0 | 0 |
| Field Wet Density (FWD) t/m$^3$ | 2.08 | 2.08 | 2.08 |
| Field Moisture Content % | 10.9 | 9.4 | 14.9 |
| Field Dry Density (FDD) t/m$^3$ | 1.88 | 1.90 | 1.82 |
| Peak Converted Wet Density t/m$^3$ | 2.19 | 2.15 | 2.15 |
| Adjusted Peak Converted Wet Density t/m$^3$ | ** | ** | ** |
| Moisture Variation (Wv) % | -0.5 | 0.5 | -1.0 |
| Adjusted Moisture Variation % | ** | ** | ** |
| Hilf Density Ratio (%) | **95.0** | **97.0** | **97.0** |
| Compaction Method | **Standard** | **Standard** | **Standard** |
| Report Remarks | ** | ** | ** |

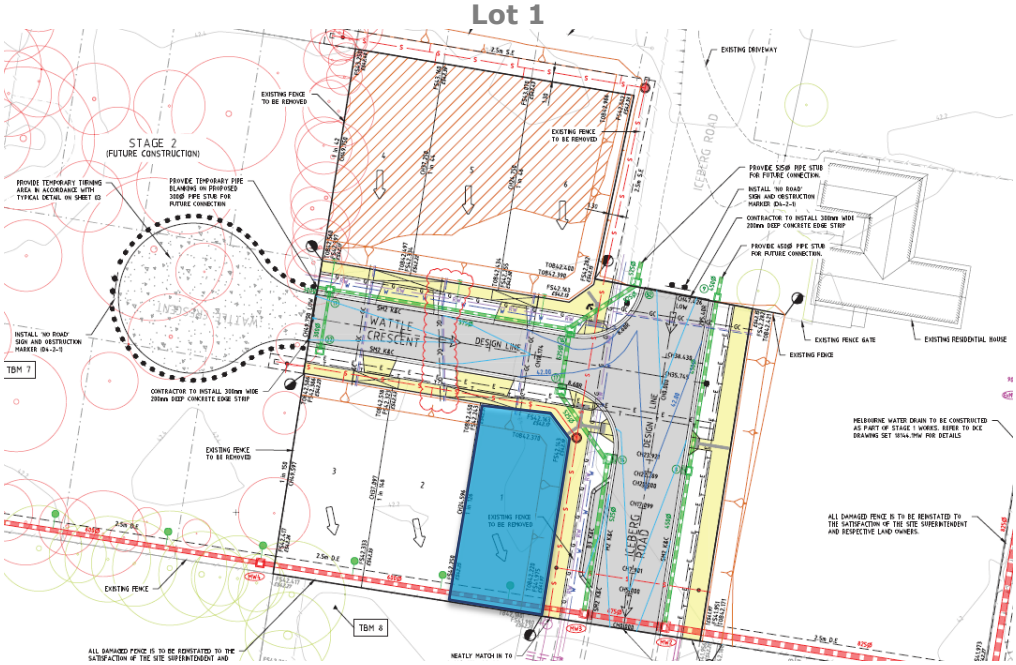
**Moisture Variation Note:**
Positive values = test is dry of OMC
Negative values = test is wet of OMC

# Appendix C – Level 1 Fill Certificates

# Controlled Fill Certificate

07-Mar-22

**Certificate of Controlled Filling**
**Earthworks Operations (AS3798 – Level 1 Inspection & Testing)**
**AGTE21552 Wattle View Estate Stage 1, Beaconsfield**
**Lot 1**




Level 1 Site Area

The filling in the areas as defined above and in the Level 1 Report pertaining to the above-mentioned project meets the requirements for “structural fill for residential applications” in accordance with AS3798. The fill has been placed, compacted and tested in accordance with AS3798 and the fill meets the requirements for controlled fill in accordance with AS2870 (2011) “Residential Slabs and Footings”.

Document No: AGT.REP.307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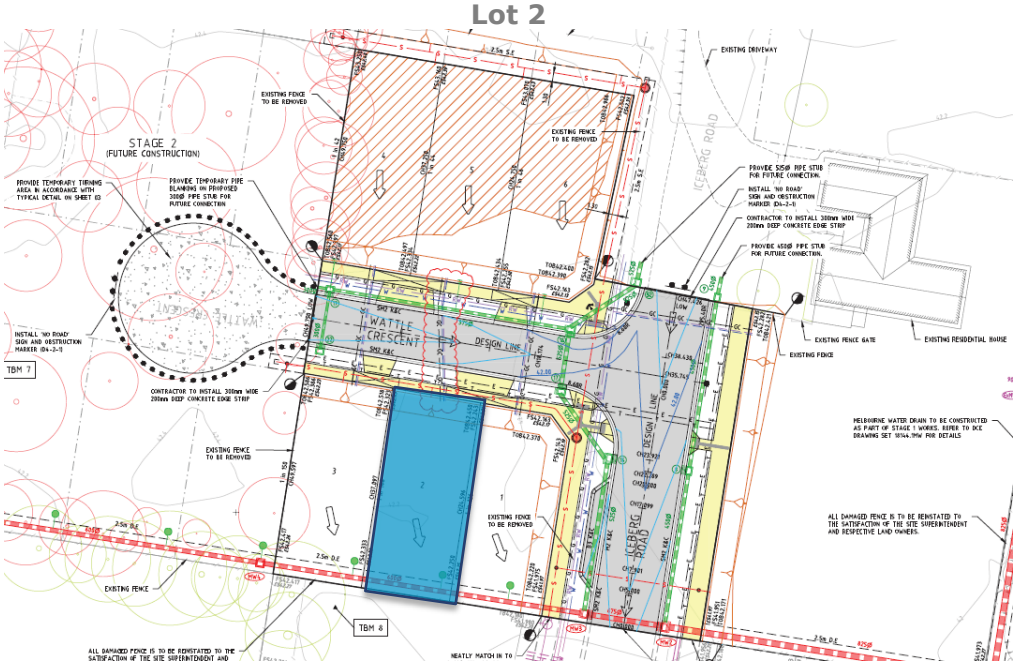
**Lot 2**

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07-Mar-22

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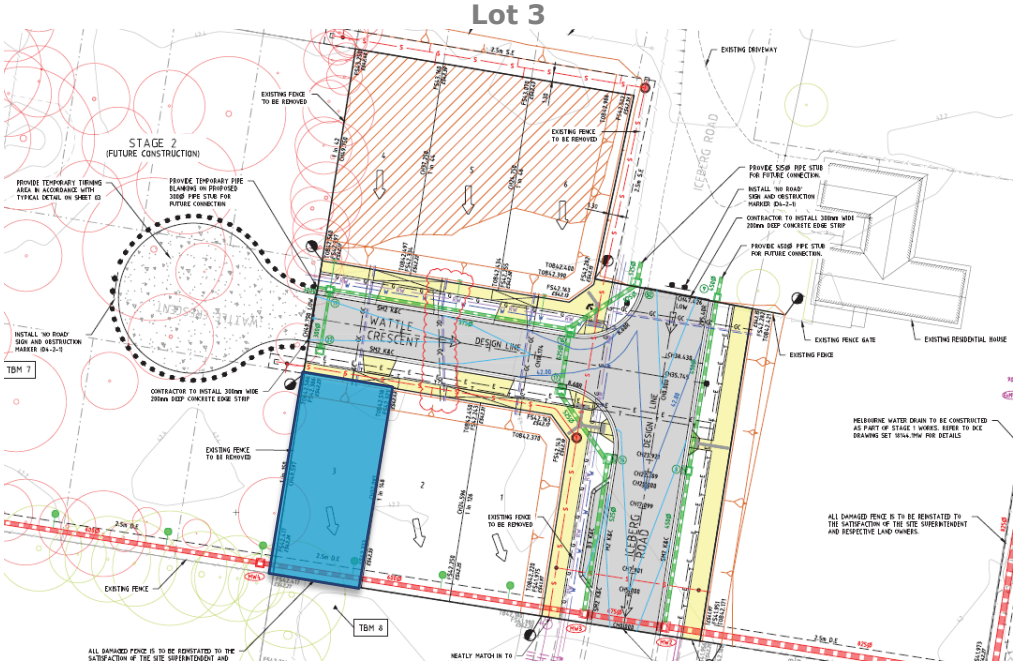
**Lot 3**

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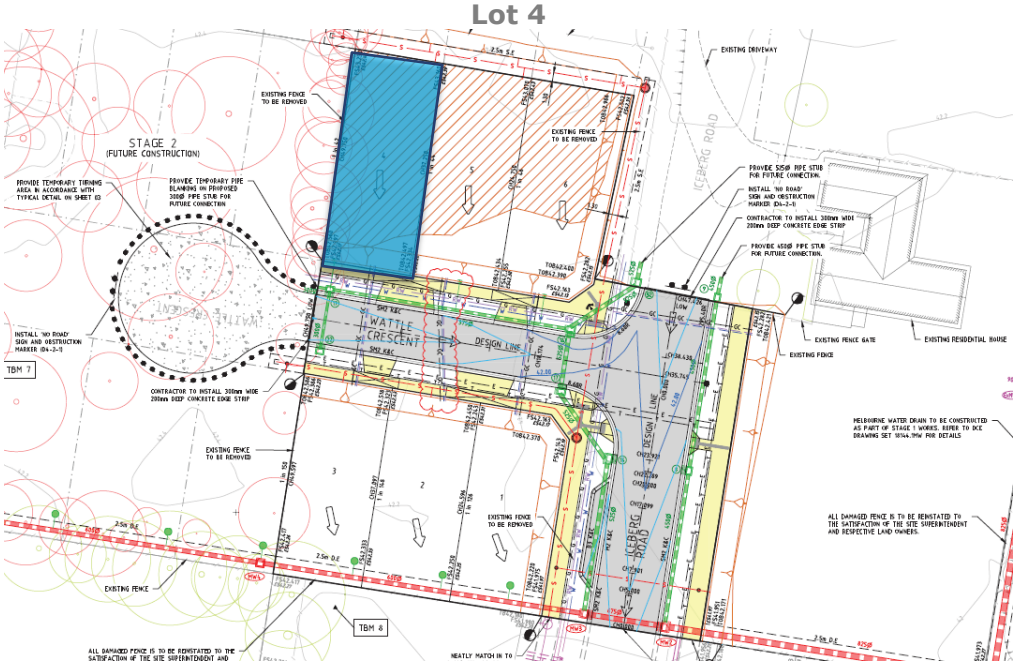
**Lot 4**

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ENGINEERS AUSTRALIA


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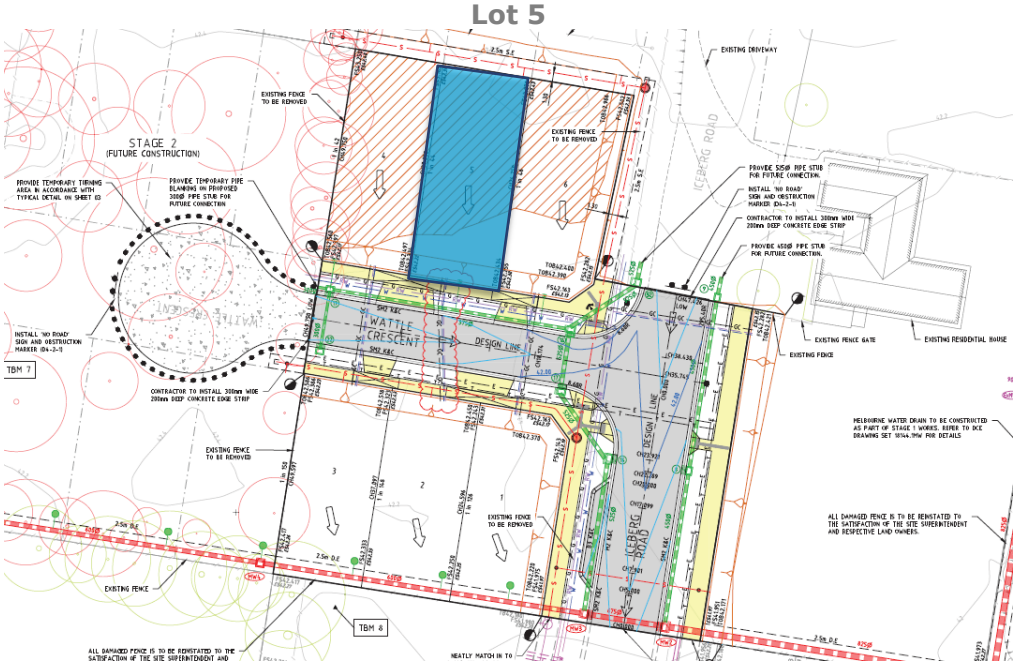
**Lot 5**

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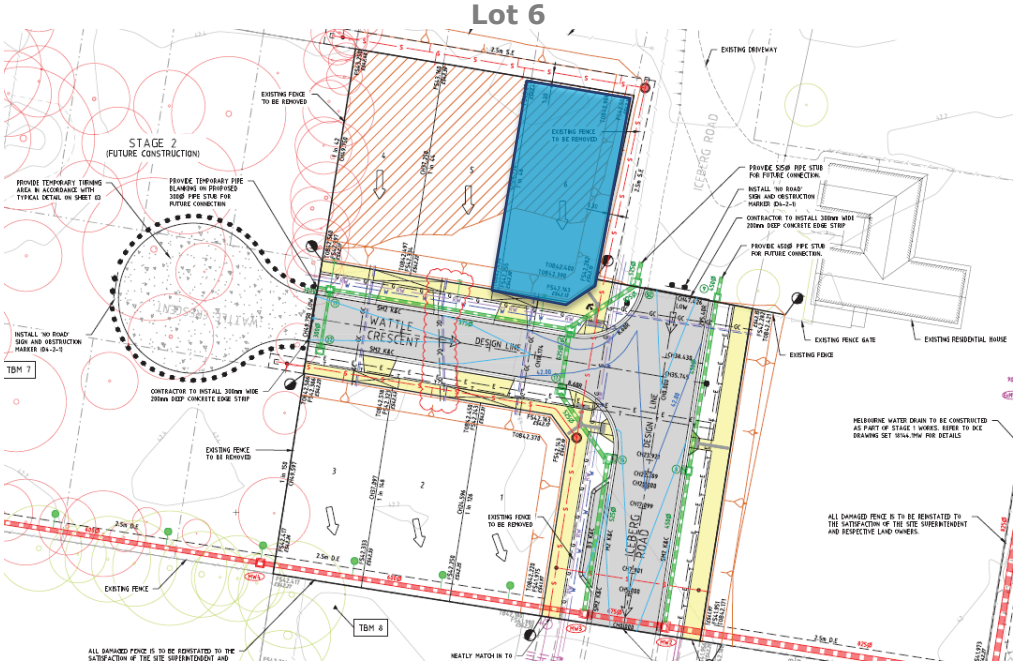
**Lot 6**

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