

GROUND SCIENCE EAST PTY LTD

ABN: 39 622 731 186

Factory 2, 11 – 17 Cyber Loop

Dandenong, Vic, 3175

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GroundScience

LEVEL 1 INSPECTION & TESTING BEACONSFIELD WATTLE - ESTATE STAGE 3, BEACONSFIELD

Prepared for Sandridge Roads Pty Ltd Pty Ltd

GROUND SCIENCE EAST PTY LTD**ABN: 39 622 731 186**

Factory 2, 11 – 17 Cyber Loop

Dandenong, Vic, 3175

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**PROJECT DETAILS**

Project Reference	GSE773.1	Rev	AA
Project Title	Beaconsfield Wattle Estate Stage 3		
Project Location	Beaconsfield	State	VIC
Date	1 March 2023		

CLIENT DETAILS

Prepared For (Client)	Sandridge Roads Pty Ltd
Client Address	410 Tooradin Station Rd, Tooradin VIC 3980

DISTRIBUTION

Original Held By	Ground Science Pty Ltd
One (1) Electronic Copy	Sandridge Roads Pty Ltd

This document presents the results of the Level 1 Inspection and Testing performed by Ground Science East Pty Ltd for the project, as the nominated project Geotechnical Inspection & Testing Authority (GITA). This report is detailed for the sole use of the intended recipient(s). Should you have any questions related to this report please do not hesitate to contact the undersigned.

Troy Carnovale(P): 0450 925 137 (E): troy@groundscience.com.au**Senior Geotechnical Engineer****Ground Science East Pty Ltd**

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1. INTRODUCTION

This report presents the results of the inspection activities, compaction control and laboratory testing services performed by Ground Science East Pty Ltd for the Beaconsfield Wattle Estate Stage 3, located in Beaconsfield, Victoria (the site).

2. PROJECT UNDERSTANDING

It is understood that the project involves the placement of controlled fill for the construction of residential subdivision. Ground Science East was engaged to provide Level 1 Inspection and Testing services for these components of the project. Authorisation to proceed was provided by Sandridge Roads Pty Ltd (the 'Client'). Dalton Consulting Engineers prepared the civil drawings for the project.

Level 1 Inspection & Testing, as defined in AS3798 (2007) 'Guidelines on Earthworks for Commercial and Residential Developments' provides for full time inspection of the construction of controlled fill and compaction testing in accordance with AS1289 'Methods of Testing Soils for Engineering Purposes' and AS1726 (1993) 'Geotechnical Site Investigations'. Ground Science East performed the role of the project Geotechnical Inspection & Testing Authority (GITA) with all Level 1 Inspection and Testing services described in this report undertaken by an experienced GITA site representative.

3. SCOPE OF WORK

3.1 AREAS OF WORK

Ground Science East provided Level 1 Inspection and Testing services for the controlled fill placed as part of the construction of the residential subdivision. The areas requiring Level 1 Inspection & Testing are shown on the site plan, Figure 1, in Appendix A, which is based on plans prepared by Dalton Consulting Engineers Pty Ltd (Drawing No. 18144.3. PD01, Sheet 5 (Detail Plan) REV 1, Dated 15/07/2021).

This report details the Level 1 earthworks process performed on site which commenced on 10 June 2022 and was completed on 30 January 2022; this comprised of a total of 23 full days and 4 half day of filling operations.

3.2 PLACEMENT METHODOLOGY

The placement of controlled fill on the above-mentioned areas was carried out in accordance with Level 1 fill procedures as detailed in AS3798 (2007) 'Guidelines on Earthworks for Commercial and Residential Developments'. The following fill placement guideline was adopted for the works:

- All existing loose surficial fill, topsoil, soft material, vegetation and materials containing significant organic matter were removed to expose the natural soil subgrade.
- Suitable fill material, sourced by the contractor and approved by Ground Science East, was placed in loose horizontal layers not exceeding 200mm in thickness.
- The controlled fill material was compacted to achieve a target Dry Density Ratio of at least 95% Standard Compaction (AS 1289: 5.1.1, 5.4.1 or 5.7.1), based on our understanding that future building loads would be similar to residential type structures (i.e., non-commercial structural loading).
- The fill was moisture conditioned to within 85% – 115% of the standard optimum moisture content.
- The fill material was sorted and mixed to eliminate particles greater than 20% by volume, particles coarser than 37.5mm and no particle over 100mm in any dimension.
- The frequency of field density testing adopted for the project was generally in line with the requirements for large scale developments (Type 1), as detailed in AS3798 (2007), which nominates a frequency of not less than:

- 1 test per layer or 200mm per 2500m².
- 1 test per 500m³ distributed reasonably evenly throughout the full depth and area: or
- 3 tests per site visit; whichever requires the most tests.

4. INSPECTION AND TESTING

4.1 SUBGRADE PREPARATION

Site stripping was conducted with the use of excavators, graders at the commencement of the project. The stripping process involved the removal of all surface vegetation, topsoil and construction waste, typically requiring between 200mm and 350mm of stripping until a suitable subgrade was achieved.

The above stripped subgrade was visually assessed using tactile methods described in AS1726 (1993) and approved by the GITA representative throughout the project. Typically. The subgrade soils were observed to be dry/Moist and were moisture conditioned with the use of a water cart prior to the placement of subsequent fill layers.

4.2 CONSTRUCTION MATERIALS

Fill for the project is understood to have been sourced from onsite stockpiles and generated from road boxing and Retarding Basin construction works and imported from off various off site locations.

The material was carted to site in trucks and stockpiled. Ground Science East performed an assessment of the fill source to identify the following material characteristics:

- Material suitability as an engineering property.
- Cohesiveness.
- Free of building debris and vegetative matter.
- Free of oversize rock particles.

Visual assessments on the above-mentioned properties were conducted on-site and the fill material used was considered acceptable for use on this project. The nominated fill products were visually assessed to comprise of silty clay, of medium to high plasticity and generally brown/grey, with varying fractions of sands and gravels/boulders within the profile.

Minor gravel and cobble inclusions were observed throughout the fill material. The fill source was assessed to range from dry to wet of the optimum moisture content, depending on the source of the material. Portions of the fill material that were found to be dry were moisture conditioned using a water cart prior to placement. Fill material observed to be wet of the optimum moisture was ripped/tynd and allowed to dry out. All fill materials hauled to the site were however generally considered suitable for use as engineered fill.

4.3 FILL CONSTRUCTION

The contractor had the following plant available on site during the construction period for use in the fill placement.

- Excavator.
- Dozer
- Water Carts.
- Padfoot Rollers.

During fill placement, the weather conditions ranged from sunny and warm with temperatures typically ranging from 20 to 25 degrees Celsius.

The filling process was generally consistent throughout the project and involved the approved fill sources stockpiled adjacent to the fill placement zones. The material was spread using the grader and or excavators into thin loose layers. Each layer was compacted using the Padfoot Roller applying a minimum of 6-10 passes, per layer observed. However, most of the time the roller was observed to be continually rolling each layer. The thin layers of fill were compacted to form a composite layer, measuring 200mm thick, prior to undertaking the field density testing. This process was adopted for the fill placement works. Up to 6 layers were placed and compacted to achieve the required finished surface levels

Throughout the filling process and/or at the completion of the day's production, compaction testing was performed to assess the achieved density ratio of each layer. Figures 1 provide a guide to the fill placement and is limited to the areas described in this report. Any fill placed as part of newly constructed drainage, sewer works or similar does not form part of this Level 1 report.

4.4 RESULTS OF COMPACTION CONTROL TESTING

Level 1 Inspection and Testing was undertaken by experienced technicians from Ground Science who attended the site for the duration of the construction phase and nominated the location of the in-situ density tests. Testing comprised a total of 101 in-situ density tests using a nuclear moisture-density gauge in accordance with Australian Standard (AS1289 5.8.1) together with 101 "Rapid HILF" Compaction tests (AS1289 5.7.1) which included associated re-tests of areas that did not achieve the target density ratio of 95% Standard Compaction.

A summary of the field density tests performed for the project, including failed tests and re-tests, is presented in Appendix B. Field density and compaction control testing report sheets are presented in Appendix C. It should be noted that the tests are a representation of the fill placed and support the visual assessment of the works completed.

During various stages of the project, the compacted fill material was noted to be dry of the optimum moisture content, with the associated moisture ratio results recording values of between -1.0 to - 4.5 below the optimum moisture level (dry). Instructions were provided on site for the placed fill material to be moisture conditioned using the water cart prior to the application of the subsequent fill layers. Where required, these areas were ripped and recompacted, as instructed by the onsite GITA.

4.5 FINAL SURFACE LEVELS

Observations were made by a Ground Science East staff member that filling had been complete up to the nominated finished levels as per confirmation provided from the contractor's site foreman. The observed final levels are the constructed finished surface levels of the controlled fill. It should be noted that the overall fill depths are estimated using onsite visual tactile methods and may not be a true representation of fill depths given that conditions on site may change over time. True fill depths should be obtained from the contractor's survey data.

5. COMPLIANCE

Ground Science Staff have undertaken Level 1 Inspection and Testing services of the construction of the controlled fill in the areas designated on Figures 1. Ground Science East field staff have also observed that the prepared subgrade provided an adequate base for the subsequent placement of controlled fill.

Based on observations made by Ground Science East staff and the results of density tests, we consider that the controlled fill placed has been constructed in accordance with the guidelines provided by AS3798 (2007).

It should be noted that the final fill layers may be subjected to adverse weather conditions resulting in either surface softening or drying and cracking over time; regardless of the compactive efforts and moisture conditioning applied during the works. The integrity of the top 200mm to 300mm of the fill will deteriorate with time and should be taken into account by the foundation engineer prior to the construction of dwellings or buildings. The levels nominated in this report are a guide to amounts of fill placed and do not necessarily reflect an accurate survey of the fill levels.

6. UNDERSTANDING LEVEL 1 INSPECTION & TESTING

The purpose of performing Level 1 Inspection and Testing is to ensure compliance of the fill with the specification. The engagement of a Geotechnical Inspection Testing Authority (GITA) allows the contractor to perform their role in the construction of the filling operation while the GITA monitors the quality control process of the fill placement. The visual observations of thorough processes and work practices by the contractor allows the GITA to approve the subsequent placement of fill without having to wait for the completion of testing and the extended time it takes to get a test result back. The GITA will, however, carry out random spot checks of the filling operations throughout the day's production as confirmation that the placement procedures and the fill moisture content is appropriate. At the end of a day's production the GITA will sign off the completed works as satisfactory. Any failed tests will result in that area of operation requiring rectification in the following mornings activities. This may be as simple as extra rolling with compaction plant if moisture conditioning is suitable. Sometimes these areas may be retested if the GITA feels it is necessary.

While AS3798 (2007) is a guideline on the minimum requirements of filling on commercial and residential developments, some projects require a more detailed project specification to deal with site specific issues. While moisture conditioning of fill sources aids in the ease with which compaction is achieved, it is not necessarily a physical characteristic that determines if the placed fill is acceptable. In some situations, the moisture requirement is an extremely important function of the final constructed product. In these situations, a specific project specification should apply to the project as detailed by the designing geotechnical engineer. These are typical of clay liners for wetlands, dams, landfill liners and caps and an array of other engineering situations. Creating a consolidated platform of which is similar to equivalent surrounding natural conditions is the primary aim of level one processes, preventing the occurrence of differential ground movements to footing structures.

Level 1 Inspection & Testing requires full time inspection and testing of the fill placement undertaken on a site. Ground Science (project GITA) are notified daily (or at the completion of each day's work) by the project foreman where subsequent days of fill placement under Level 1 is to occur. On projects that rely upon the importation of a fill source, there can be delays in the receipt of sufficient materials to warrant fill placement works which may result in periods of time where a GITA representative is not required on site. It is the contractor's responsibility to notify the GITA when works proceed and their attendance on site is required again. A GITA relies upon the integrity of the contractor to advise when site attendance is required and makes all reasonable visual attempts to assess if the works are the same as the previous day's attendance.



For & on behalf of
Ground Science East Pty Ltd

Troy Carnovale
Senior Geotechnical Engineer

7. LIMITATIONS

This type of investigation (as per our commission) is not designed or capable of locating all soil conditions, (which can vary even over short distances). The advice given in this report is based on the assumption that the test results are representative of the overall soil conditions. However, it should be noted that actual conditions in some parts of the Site might differ from those found. If further sampling reveals soil conditions significantly different from those shown in our findings, Ground Science must be consulted. Maintenance and upkeep of finished fill placement must be regularly monitored as exposure to extended weather periods/other elements may cause surface drying which may lead to cracking. Conversely, excessive exposure to moisture may cause heaving/softening in the soils.

It is recognised that the passage of time affects the information and assessment provided in this document. Ground Science's assessment is based on information that existed at the time of the preparation of this document. It is understood that the services provided allowed Ground Science to form no more than an opinion of the actual site conditions observed during sampling and observations of the site visit and cannot be used to assess the effects of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

The scope and the period of Ground Science services are described in the proposal and are subject to restrictions and limitations. Ground Science did not perform a complete assessment of all possible conditions or circumstances that may exist at the Site. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Ground Science in regard to it.

Where data has been supplied by the client or a third party, it is assumed that the information is correct unless otherwise stated. No responsibility is accepted by Ground Science for incomplete or inaccurate data supplied by others.

Any drawings or figures presented in this report should be considered only as pictorial evidence of our work. Therefore, unless otherwise stated, any dimensions should not be used for accurate calculations or dimensioning.

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8. REFERENCES

- AS3798 (2007) Guidelines on Earthworks for Residential and Commercial Developments.
- AS1289 Methods of Testing Soils for Engineering Purposes.
- AS1726 (1993): Geotechnical Site Investigations

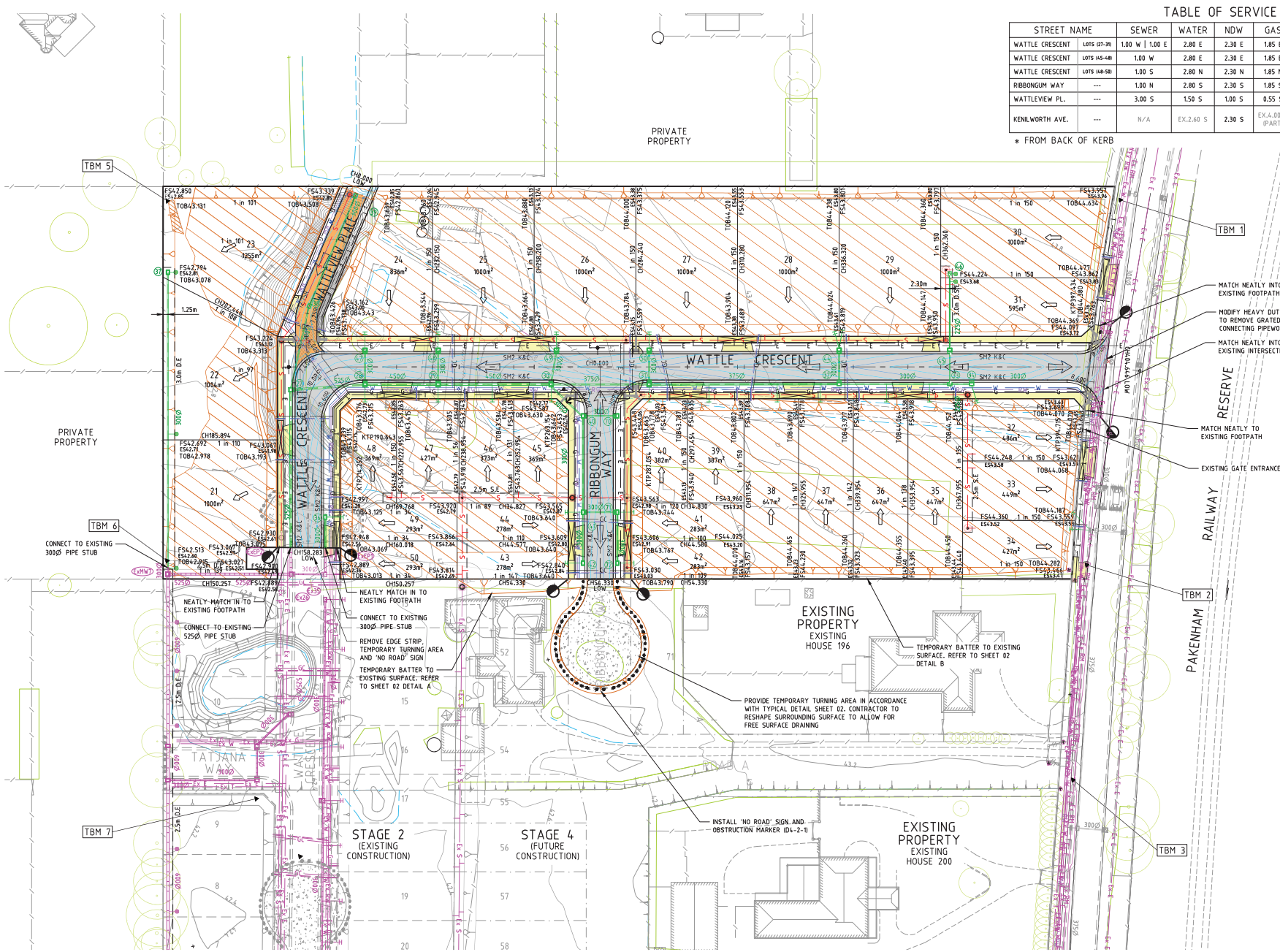
APPENDIX A

Figure 1: Site Layout Plan

STREET NAME	SEWER	WATER	NDW	GAS	COMMS	ELEC	*POLES	BOK
WATTLE CRESCENT	L015 (27-39)	1.00 W 1.00 E	2.80 E	2.30 E	1.85 E	1.775 W	2.40 W	1.00 W 4.20 E / 3.90 W
WATTLE CRESCENT	L015 (45-48)	1.00 W 2.80 E	2.30 E	1.85 E	1.00 E	2.40 W	1.00 W	4.20 E / 3.90 W
WATTLE CRESCENT	L015 (49-51)	1.00 S 2.80 N	2.30 N	1.85 N	1.00 N	2.40 N	1.00 S	4.20 N / 3.90 S
RIBBINGUM WAY	---	1.00 N	2.30 S	1.85 S	1.775 N	1.60 N	1.00 N	4.20 S / 3.90 N
WATTLEVIEW PL.	---	3.00 S	1.50 S	1.00 S	0.55 S	0.45 N	1.25 N	1.00 N -
KENILWORTH AVE.	---	N/A	EX.2.60 S	2.30 S	EX.0.00 N (PART) EX.5.60 N EXIST. S 1.00 S	EX.5.00 N	EX.VARIES S	EX. 7.55 N / 3.60 S

I.D.	TYPE	EASTING	NORTHING	LEVEL
TBM 1	SPIKE	358001.801	5786203.706	43.75
TBM 2	SPIKE	358092.820	5786180.665	43.38
TBM 3	SPIKE	358146.664	5786168.642	43.10
TBM 5	STEEL ROD	357964.123	5785962.520	42.69
TBM 6	STEEL ROD	358055.160	5785948.114	42.35
TBM 7	STEEL ROD	358118.940	5785961.211	42.26

WARNING!
THE LOCATION OF EXISTING SERVICES SHOWN ON THESE PLANS MUST BE PROVEN ON SITE, THE APPROPRIATE AUTHORITY MUST BE CONTACTED AND THE SERVICES LOCATED PRIOR TO COMMENCEMENT OF ANY WORKS.



1	DRAINAGE DESIGN AMENDED ON WATTLE CRESCENT	30/08/21	CB	TL		
0	CONSTRUCTION ISSUE	15/07/21	CB/PN	TL		
REV	DESCRIPTION	DATE	AMEND	APP'D		

Drawn	H.MINA
Date	25/03/21
AN	3581036
Designed	C.BLISSETT
Date	01/04/21
AN	2771030
Checked	J.BURNS
Date	21/04/21
AN	1631663
Approved	T.LIAKOPOULOS
Date	15/07/21
AN	889105

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LEGEND

	EX. WATER MAIN
	EX. GAS MAIN
	EX. ELECTRICAL CABLE
	EX. SEWER MAIN & MH
	EX. COMM. CABLE & PIT
	EX. DRAIN & PIT
	SHRAGGE
	PSM THH

—E— ELECTRICITY
 —T— TELECOMMUNICATIONS
 —G— GAS
 —W— WATER
 —RW— RECYCLED WATER
 —GC— DW/NW/GAS CONDUITS
 ● LIMIT OF WORKS
 ↶ OVERLAND FLOW PATH

EX. TREE TO REMAIN
FILLING OVER 200mm
ASPHALT PAVEMENT
CONCRETE PATH | D'WAY
HEAVY DUTY CONCRETE S/W

BANF
INVEST

0m 5m 10m

Scale @ A1/A3

RIAR
MENTS

20m 30m

1:500 / 1:1000

BEACONSFIELD WATTLE ESTATE
STAGE 3
190 KENILWORTH AVENUE, BEACONSFIELD
CARDINIA SHIRE COUNCIL
DETAIL PLAN

Drawing No. 18144.3DP01 Rev 1
Sheet No. 05 of 27



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CONSTRUCTION

APPENDIX B

Field Density Test Summary

Project Summary Report



Report Date: 21/02/2023
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Specification: 95% Standard Compaction
Test Methods: AS 1289 5.7.1 STD & 5.8.1 & 2.1.1

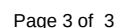
Lot #	Sample #	Date Sampled	Location	Location		Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	773.1-S1	15/06/2022	LOT 30	**	**	CENTRE	LAYER 1	101.5	-1.0	21.2	2.06
**	773.1-S2	15/06/2022	LOT 30	**	**	REAR	LAYER 1	100.5	-0.5	19.6	2.07
**	773.1-S3	15/06/2022	LOT 30	**	**	CENTRE	LAYER 2	100.0	-0.5	20.0	2.06
**	773.1-S4	20/06/2022	LOT 30	**	**	**	LAYER 3	102.0	-1.5	16.9	2.12
**	773.1-S5	20/06/2022	LOT 30	**	**	**	LAYER 3	101.0	-1.5	17.4	2.10
**	773.1-S6	20/06/2022	LOT 30	**	**	**	LAYER 4	102.0	-1.0	21.9	2.11
**	773.1-S7	20/06/2022	LOT 30	**	**	**	LAYER 4	101.0	-0.5	16.4	2.11
**	773.1-S8	20/06/2022	LOT 30	**	**	**	LAYER 5	101.5	-0.5	16.3	2.11
**	773.1-S9	20/06/2022	LOT 30	**	**	**	LAYER 5	101.5	-0.5	16.5	2.12
**	773.1-S10	30/06/2022	Lot 49	**	Refer to Mark Up Plan	**	1	93.5	-1.0	15.3	1.97
**	773.1-S11	30/06/2022	Lot 50	**	Refer to Mark Up Plan	**	2	96.5	-1.0	20.0	2.02
**	773.1-S12	30/06/2022	Wattle Cres	**	Refer to Mark Up Plan	**	-600MM FSL	95.0	-1.0	16.6	1.99
**	773.1-S13	30/06/2022	Wattle Cres	**	Refer to Mark Up Plan	**	-400MM FSL	97.5	-1.0	16.4	2.04
**	773.1-S14	30/06/2022	Wattle Cres	**	Refer to Mark Up Plan	**	-200MM FSL	94.0	0.5	19.0	1.93
**	773.1-S15	30/06/2022	Wattle Cres	**	Refer to Mark Up Plan	**	FSL	93.5	0.0	20.3	1.96
**	773.1-S16	15/07/2022	WATTLE CRESCENT	**	**	**	BELOW SUBGRADE	97.0	-3.5	23.0	1.98
**	773.1-S17	15/07/2022	WATTLE CRESCENT	**	**	**	BELOW SUBGRADE	98.0	-1.0	18.7	1.98
**	773.1-S18	15/07/2022	WATTLE CRESCENT	**	**	**	BELOW SUBGRADE	96.0	-2.5	18.7	1.99
**	773.1-S19	15/07/2022	LOT 29	**	**	**	LAYER 1	101.5	-2.5	23.2	2.08
**	773.1-S20	15/07/2022	LOT 29	**	**	**	LAYER 1	100.5	-3.0	18.6	2.08
**	773.1-S21	25/07/2022	LOT 29	CENTRE	**	**	2	97.5	-3.0	20.8	2.04
**	773.1-S22	25/07/2022	LOT 29	CENTRE	**	**	5	99.5	-3.0	22.0	2.05
**	773.1-S23	25/07/2022	LOT 28	CENTRE	**	**	3	105.0	-1.0	22.4	2.12
**	773.1-S24	25/07/2022	LOT 28	CENTRE	**	**	6	102.5	-3.0	21.5	2.12
**	773.1-S25	02/08/2022	LOT 27	REAR END	**	**	LAYER 1	95.5	-3.0	20.9	1.97
**	773.1-S26	02/08/2022	LOT 27	REAR END	**	**	LAYER 2	96.0	-2.5	22.9	1.98
**	773.1-S27	02/08/2022	LOT 27	FRONT END	**	**	LAYER 3	98.5	-2.5	21.7	2.02
**	773.1-S28	02/08/2022	LOT 27	FRONT END	**	**	LAYER 4	97.5	-2.5	20.8	2.02
**	773.1-S29	03/08/2022	Lot 27	REAR END	**	**	LAYER 5	98.5	-2.5	17.5	2.08
**	773.1-S30	03/08/2022	Lot 27	FRONT END	**	**	LAYER 6	97.5	-3.0	20.5	2.06
**	773.1-S31	03/08/2022	ROAD	REFER MARKED UP PLAN	**	**	LAYER 1	99.5	-1.5	20.6	2.07
**	773.1-S32	03/08/2022	ROAD	REFER MARKED UP PLAN	**	**	LAYER 2	98.0	-1.0	19.1	2.07
**	773.1-S33	09/08/2022	LOT 26	**	FRONT END	**	LAYER 1	101.5	-1.0	18.8	2.11
**	773.1-S34	09/08/2022	LOT 26	**	FRONT END	**	LAYER 2	98.5	-1.0	16.4	2.10
**	773.1-S35	09/08/2022	LOT 26	**	FRONT END	**	LAYER 3	96.5	-0.5	14.5	2.10
**	773.1-S36	10/08/2022	ROAD	**	REFER TO MARK UP PLAN	**	LAYER 1	101.0	-0.5	18.5	2.07
**	773.1-S37	10/08/2022	ROAD	**	REFER TO MARK UP PLAN	**	LAYER 2	97.5	0.0	11.6	2.06
**	773.1-S38	10/08/2022	LOT 26	**	REAR SIDE	**	LAYER 4	98.0	-1.0	17.6	2.04
**	773.1-S39	10/08/2022	LOT 26	**	REAR SIDE	**	LAYER 5	99.0	-2.5	18.3	2.05
**	773.1-S40	31/08/2022	WATTLE CRESCENT	380.0	0.7	**	SUBGRADE	103.5	0.0	17.4	2.08
**	773.1-S41	31/08/2022	WATTLE CRESCENT	280.0	5.0	**	SUBGRADE	102.0	0.0	18.0	2.08
**	773.1-S42	31/08/2022	WATTLE CRESCENT	180.0	1.0	**	SUBGRADE	101.5	0.0	14.7	2.08
**	773.1-S43	31/08/2022	RIBBONGUM WAY	30.0	5.5	**	SUBGRADE	103.0	-0.5	18.9	2.05
**	773.1-S44	16/09/2022	BACKFILLING OF DAM	**	EAST END	**	LAYER 1	100.0	-0.5	16.8	2.06
**	773.1-S45	16/09/2022	BACKFILLING OF DAM	**	EAST END	**	LAYER 2	100.0	-0.5	17.9	2.05
**	773.1-S46	16/09/2022	BACKFILLING OF DAM	**	EAST END	**	LAYER 3	100.0	-0.5	17.9	2.05
**	773.1-S47	16/09/2022	BACKFILLING OF DAM	**	EAST END	**	LAYER 4	100.5	-0.5	17.8	2.04

Lot #	Sample #	Date Sampled	Location	Location		Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	773.1-S48	26/09/2022	BACKFILLING OF DAM	**	WEST END	**	LAYER 1	98.5	-2.5	19.3	2.09
**	773.1-S49	26/09/2022	BACKFILLING OF DAM	**	WEST END	**	LAYER 2	100.0	-1.0	15.8	2.11
**	773.1-S50	26/09/2022	BACKFILLING OF DAM	**	WEST END	**	LAYER 3	99.0	-2.0	16.7	2.10
**	773.1-S51	26/09/2022	BACKFILLING OF DAM	**	WEST END	**	LAYER 4	100.0	-1.5	16.5	2.11
**	773.1-S52	30/09/2022	LOT 48	**	REFER TO MARKED UP PLAN	**	LAYER 1	100.0	0.0	14.9	2.12
**	773.1-S53	30/09/2022	LOT 48	**	REFER TO MARKED UP PLAN	**	LAYER 2	98.5	0.0	14.0	2.10
**	773.1-S54	30/09/2022	LOT 47	**	REFER TO MARKED UP PLAN	**	LAYER 1	97.0	-2.5	16.2	2.04
**	773.1-S55	30/09/2022	LOT 47	**	REFER TO MARKED UP PLAN	**	LAYER 2	97.0	-3.0	15.7	2.08
**	773.1-S56	05/10/2022	LOT 44	**	**	**	LAYER 1	98.0	-1.5	19.4	1.99
**	773.1-S57	05/10/2022	LOT 44	**	**	**	LAYER 2	98.5	-0.5	19.3	1.98
**	773.1-S58	05/10/2022	LOT 44	**	**	**	LAYER 3	99.0	0.0	19.7	1.98
**	773.1-S59	05/10/2022	LOT 43	**	**	**	LAYER 1	101.5	0.5	18.4	2.02
**	773.1-S60	05/10/2022	LOT 43	**	**	**	LAYER 2	100.5	0.0	17.0	2.03
**	773.1-S61	05/10/2022	LOT 43	**	**	**	LAYER 3	97.5	-2.5	17.9	2.03
**	773.1-S62	05/10/2022	LOT 46	**	**	**	LAYER 1	99.5	-1.0	42.9	2.04
**	773.1-S63	05/10/2022	LOT 46	**	**	**	LAYER 2	99.0	-2.5	19.1	2.05
**	773.1-S64	05/10/2022	LOT 46	**	**	**	LAYER 3	98.0	-3.5	18.1	2.03
**	773.1-S65	05/10/2022	LOT 48	**	**	**	LAYER 3	102.0	-1.0	19.4	2.09
**	773.1-S66	05/10/2022	LOT 47	**	**	**	LAYER 3	95.0	-0.5	15.3	2.01
**	773.1-S67	17/10/2022	LOT 45	**	REFER TO MARKED UP PLAN	**	LAYER 1	96.0	-2.5	16.4	2.05
**	773.1-S68	17/10/2022	LOT 45	**	REFER TO MARKED UP PLAN	**	LAYER 2	98.5	-2.5	20.2	2.05
**	773.1-S69	08/11/2022	LOT 21	CENTRE	**	**	1	96.5	-2.0	20.9	1.97
**	773.1-S70	08/11/2022	LOT 22	CENTRE	**	**	1	94.5	-2.5	20.4	1.97
**	773.1-S71	08/11/2022	LOT 23	CENTRE	**	**	1	96.0	-2.5	20.8	1.96
**	773.1-S72	09/11/2022	LOT 21	CENTRE	**	**	3	94.0	-3.5	17.9	1.98
**	773.1-S73	09/11/2022	LOT 22	CENTRE	**	**	3	96.0	-3.0	21.5	1.98
**	773.1-S74	09/11/2022	LOT 23	CENTRE	**	**	3	95.5	-3.5	19.8	1.98
**	773.1-S75	15/11/2022	LOT 25	FRONT OF LOT	**	**	1	96.5	-1.0	12.1	2.10
**	773.1-S76	15/11/2022	LOT 25	REAR OF LOT	**	**	2	96.0	-1.0	12.7	2.10
**	773.1-S77	18/11/2022	LOT 39	CENTRE	**	**	2	97.5	0.0	12.1	2.11
**	773.1-S78	18/11/2022	LOT 40	FRONT OF LOT	**	**	2	97.5	0.0	12.2	2.12
**	773.1-S79	18/11/2022	LOT 39	FRONT OF LOT	**	**	4	97.5	0.0	12.9	2.12
**	773.1-S80	18/11/2022	LOT 40	CENTRE	**	**	4	97.5	0.0	17.8	2.11
**	773.1-S81	18/11/2022	LOT 24	REAR OF LOT	**	**	3	96.5	2.0	8.7	2.07
**	773.1-S82	18/11/2022	LOT 24	CENTRE	**	**	4	96.0	2.5	10.2	2.08
**	773.1-S83	24/11/2022	LOT 38	CENTRE	**	**	2	98.5	1.0	8.8	2.10
**	773.1-S84	24/11/2022	LOT 37	CENTRE	**	**	2	101.0	2.0	9.3	2.12
**	773.1-S85	24/11/2022	LOT 38	CENTRE	**	**	3	100.0	2.0	11.2	2.11
**	773.1-S86	24/11/2022	LOT 37	CENTRE	**	**	3	98.0	2.0	8.4	2.07
**	773.1-S87	24/11/2022	LOT 41	FRONT OF LOT	**	**	3	98.5	2.0	9.6	2.08
**	773.1-S88	24/11/2022	LOT 42	FRONT OF LOT	**	**	3	99.0	1.5	8.9	2.09
**	773.1-S89	01/12/2022	LOT 37	CENTRE	**	**	4	99.5	3.0	6.5	2.10
**	773.1-S90	01/12/2022	LOT 36	CENTRE	**	**	1	99.5	3.0	6.3	2.11
**	773.1-S91	01/12/2022	LOT 36	FRONT OF LOT	**	**	3	96.5	-1.0	16.8	1.98
**	773.1-S92	06/12/2022	RETEST S-70	CENTRE	**	**	1	98.0	0.0	14.9	2.10
**	773.1-S93	06/12/2022	RETEST S-72	CENTRE	**	**	3	97.0	0.0	14.3	2.09
**	773.1-S94	06/12/2022	LOT 32	CENTRE	**	**	2	101.5	1.5	14.4	2.09
**	773.1-S95	16/12/2022	LOT 31	CENTRE OF LOT	**	**	2	99.5	1.0	14.6	2.06
**	773.1-S96	16/12/2022	LOT 31	REAR OF LOT	**	**	3	100.0	0.5	14.9	2.06
**	773.1-S97	16/12/2022	LOT 35	CENTRE OF LOT	**	**	3	99.0	0.0	15.0	2.06
**	773.1-S98	30/01/2023	LOT 33	FRONT OF LOT	**	**	2	101.0	5.0	7.0	2.04
**	773.1-S99	30/01/2023	LOT 34	FRONT OF LOT	**	**	2	106.0	5.0	8.7	2.10
**	773.1-S100	30/01/2023	LOT 33	CENTRE OF LOT	**	**	4	100.0	5.0	6.8	2.03
**	773.1-S101	30/01/2023	LOT 34	CENTRE OF LOT	**	**	4	105.5	4.5	9.6	2.10

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC



APPENDIX C

Field Density Test Report Sheets

Material Test Report



Report Number: GSE773.1-1
Issue Number: 1
Date Issued: 17/06/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 4924
Date Sampled: 15/06/2022
Dates Tested: 16/06/2022 - 16/06/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium plasticity, brown/YELLOW
Material Source: ON-SITE

Email: grant@groundscience.com.au
 Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	773.1-S1	773.1-S2	773.1-S3
Date Tested	15/06/2022	15/06/2022	15/06/2022
Time Tested	**	**	**
Test Request #/Location	LOT 30	LOT 30	LOT 30
Elevation (m)	CENTRE	REAR	CENTRE
Layer / Reduced Level	LAYER 1	LAYER 1	LAYER 2
Thickness of Layer (mm)	200	200	200
Soil Description	silty CLAY, medium plasticity, brown/yellow	silty CLAY, medium plasticity, brown/yellow	silty CLAY, medium plasticity, brown/yellow
Test Depth (mm)	175	175	175
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	2.06	2.07	2.06
Field Moisture Content %	21.2	19.6	20.0
Field Dry Density (FDD) t/m ³	1.70	1.73	1.72
Peak Converted Wet Density t/m ³	2.03	2.07	2.06
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	-1.0	-0.5	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	101.5	100.5	100.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report



Report Number: GSE773.1-2
Issue Number: 1
Date Issued: 27/06/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 4943
Date Sampled: 20/06/2022
Dates Tested: 20/06/2022 - 21/06/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium plasticity, brown/yellow
Material Source: off-site



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	773.1-S4	773.1-S5	773.1-S6	773.1-S7	773.1-S8	773.1-S9
Date Tested	20/06/2022	20/06/2022	20/06/2022	20/06/2022	20/06/2022	20/06/2022
Time Tested	**	**	**	**	**	**
Test Request #/Location	LOT 30	LOT 30	LOT 30	LOT 30	LOT 30	LOT 30
Layer / Reduced Level	LAYER 3	LAYER 3	LAYER 4	LAYER 4	LAYER 5	LAYER 5
Thickness of Layer (mm)	200	200	200	200	200	200
Soil Description	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown
Test Depth (mm)	175	175	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0	0	0
Field Wet Density (FWD) t/m ³	2.12	2.10	2.11	2.11	2.11	2.12
Field Moisture Content %	16.9	17.4	21.9	16.4	16.3	16.5
Field Dry Density (FDD) t/m ³	1.82	1.79	1.73	1.81	1.81	1.82
Peak Converted Wet Density t/m ³	2.08	2.07	2.07	2.09	2.07	2.08
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	**
Moisture Variation (Wv) %	-1.5	-1.5	-1.0	-0.5	-0.5	-0.5
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	102.0	101.0	102.0	101.0	101.5	101.5
Compaction Method	Standard	Standard	Standard	Standard	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: GSE773.1-3
Issue Number: 1
Date Issued: 18/07/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEAconsfield
Work Request: 5008
Date Sampled: 30/06/2022
Dates Tested: 30/06/2022 - 02/07/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: Beaconsfield
Material: silty CLAY, medium - high plasticity, brown
Material Source: On Site



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	773.1-S10	773.1-S11	773.1-S12	773.1-S13	773.1-S14	773.1-S15
Date Tested	30/06/2022	30/06/2022	30/06/2022	30/06/2022	30/06/2022	30/06/2022
Time Tested	**	**	**	**	**	**
Test Request #/Location	Lot 49	Lot 50	Wattle Cres	Wattle Cres	Wattle Cres	Wattle Cres
Chainage (m)	**	**	**	**	**	**
Location Offset (m)	Refer to Mark Up Plan	Refer to Mark Up Plan	Refer to Mark Up Plan	Refer to Mark Up Plan	Refer to Mark Up Plan	Refer to Mark Up Plan
Layer / Reduced Level	1	2	-600MM FSL	-400MM FSL	-200MM FSL	FSL
Thickness of Layer (mm)	200	200	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	0	0	0	0	0
Field Wet Density (FWD) t/m ³	1.97	2.02	1.99	2.04	1.93	1.96
Field Moisture Content %	15.3	20.0	16.6	16.4	19.0	20.3
Field Dry Density (FDD) t/m ³	1.71	1.68	1.71	1.75	1.62	1.63
Peak Converted Wet Density t/m ³	2.11	2.09	2.10	2.09	2.05	2.09
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	**
Moisture Variation (Wv) %	-1.0	-1.0	-1.0	-1.0	0.5	0.0
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	93.5	96.5	95.0	97.5	94.0	93.5
Compaction Method	Standard	Standard	Standard	Standard	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: GSE773.1-4
Issue Number: 1
Date Issued: 28/07/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5102
Date Sampled: 15/07/2022
Dates Tested: 15/07/2022 - 21/07/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium plasticity, brown
Material Source: OF-SITE



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	773.1-S16	773.1-S17	773.1-S18	773.1-S19	773.1-S20
Date Tested	15/07/2022	15/07/2022	15/07/2022	15/07/2022	15/07/2022
Time Tested	**	**	**	**	**
Test Request #/Location	WATTLE CRESCENT	WATTLE CRESCENT	WATTLE CRESCENT	LOT 29	LOT 29
Layer / Reduced Level	BELOW SUBGRADE	BELOW SUBGRADE	BELOW SUBGRADE	LAYER 1	LAYER 1
Thickness of Layer (mm)	200	200	200	200	200
Soil Description	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown	silty CLAY, medium plasticity, brown
Test Depth (mm)	175	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	6	5	9	6	8
Field Wet Density (FWD) t/m ³	1.98	1.98	1.99	2.08	2.08
Field Moisture Content %	23.0	18.7	18.7	23.2	18.6
Field Dry Density (FDD) t/m ³	1.61	1.67	1.67	1.69	1.76
Peak Converted Wet Density t/m ³	**	**	**	**	**
Adjusted Peak Converted Wet Density t/m ³	2.04	2.02	2.06	2.04	2.07
Moisture Variation (Wv) %	**	**	**	**	**
Adjusted Moisture Variation %	-3.5	-1.0	-2.5	-2.5	-3.0
Hilf Density Ratio (%)	97.0	98.0	96.0	101.5	100.5
Compaction Method	Standard	Standard	Standard	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: GSE773.1-5
Issue Number: 1
Date Issued: 28/07/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5156
Date Sampled: 25/07/2022
Dates Tested: 25/07/2022 - 27/07/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S21	773.1-S22	773.1-S23	773.1-S24
Date Tested	25/07/2022	25/07/2022	25/07/2022	25/07/2022
Time Tested	**	**	**	**
Test Request #/Location	LOT 29	LOT 29	LOT 28	LOT 28
Chainage (m)	CENTRE	CENTRE	CENTRE	CENTRE
Location Offset (m)	**	**	**	**
Layer / Reduced Level	2	5	3	6
Thickness of Layer (mm)	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	6	7	8	5
Field Wet Density (FWD) t/m ³	2.04	2.05	2.12	2.12
Field Moisture Content %	20.8	22.0	22.4	21.5
Field Dry Density (FDD) t/m ³	1.69	1.68	1.73	1.75
Peak Converted Wet Density t/m ³	**	**	**	**
Adjusted Peak Converted Wet Density t/m ³	2.09	2.06	2.02	2.07
Moisture Variation (Wv) %	**	**	**	**
Adjusted Moisture Variation %	-3.0	-3.0	-1.0	-3.0
Hilf Density Ratio (%)	97.5	99.5	105.0	102.5
Compaction Method	Standard	Standard	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: GSE773.1-6
Issue Number: 1
Date Issued: 10/08/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5226
Date Sampled: 02/08/2022
Dates Tested: 02/08/2022 - 05/08/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S25	773.1-S26	773.1-S27	773.1-S28
Date Tested	02/08/2022	02/08/2022	02/08/2022	02/08/2022
Time Tested	**	**	**	**
Test Request #/Location	LOT 27	LOT 27	LOT 27	LOT 27
Chainage (m)	REAR END	REAR END	FRONT END	FRONT END
Location Offset (m)	**	**	**	**
Layer / Reduced Level	LAYER 1	LAYER 2	LAYER 3	LAYER 4
Thickness of Layer (mm)	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m ³	1.97	1.98	2.02	2.02
Field Moisture Content %	20.9	22.9	21.7	20.8
Field Dry Density (FDD) t/m ³	1.63	1.61	1.66	1.68
Peak Converted Wet Density t/m ³	2.07	2.06	2.05	2.08
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	-3.0	-2.5	-2.5	-2.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	95.5	96.0	98.5	97.5
Compaction Method	Standard	Standard	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: GSE773.1-7
Issue Number: 1
Date Issued: 10/08/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5232
Date Sampled: 03/08/2022
Dates Tested: 03/08/2022 - 06/08/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S29	773.1-S30	773.1-S31	773.1-S32
Date Tested	03/08/2022	03/08/2022	03/08/2022	03/08/2022
Time Tested	**	**	**	**
Test Request #/Location	Lot 27	Lot 27	ROAD	ROAD
Chainage (m)	REAR END	FRONT END	REFER MARKED UP PLAN	REFER MARKED UP PLAN
Location Offset (m)	**	**	**	**
Layer / Reduced Level	LAYER 5	LAYER 6	LAYER 1	LAYER 2
Thickness of Layer (mm)	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m ³	2.08	2.06	2.07	2.07
Field Moisture Content %	17.5	20.5	20.6	19.1
Field Dry Density (FDD) t/m ³	1.77	1.71	1.71	1.74
Peak Converted Wet Density t/m ³	2.11	2.11	2.08	2.11
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	-2.5	-3.0	-1.5	-1.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	98.5	97.5	99.5	98.0
Compaction Method	Standard	Standard	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: GSE773.1-9
Issue Number: 1
Date Issued: 29/08/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5281
Date Sampled: 10/08/2022
Dates Tested: 10/08/2022 - 24/08/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: Gravelly Clay



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S36	773.1-S37	773.1-S38	773.1-S39
Date Tested	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Time Tested	**	**	**	**
Test Request #/Location	ROAD	ROAD	LOT 26	LOT 26
Chainage (m)	**	**	**	**
Location Offset (m)	REFER TO MARK UP PLAN	REFER TO MARK UP PLAN	REAR SIDE	REAR SIDE
Layer / Reduced Level	LAYER 1	LAYER 2	LAYER 4	LAYER 5
Thickness of Layer (mm)	200	200	200	200
Soil Description	Gravelly Clay	Gravelly Clay	Gravelly Clay	Gravelly Clay
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m ³	2.07	2.06	2.04	2.05
Field Moisture Content %	18.5	11.6	17.6	18.3
Field Dry Density (FDD) t/m ³	1.74	1.85	1.73	1.73
Peak Converted Wet Density t/m ³	2.04	2.12	2.08	2.07
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	-0.5	0.0	-1.0	-2.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	101.0	97.5	98.0	99.0
Compaction Method	Standard	Standard	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: GSE773.1-10
Issue Number: 1
Date Issued: 05/09/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5466
Date Sampled: 24/08/2022
Dates Tested: 31/08/2022 - 31/08/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: SANDY SILTY CLAY + 3% CEMENT + 4% LIME
Material Source: IN SITU



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S40	773.1-S41	773.1-S42	773.1-S43
Date Tested	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Time Tested	**	**	**	**
Test Request #/Location	WATTLE CRESCENT	WATTLE CRESCENT	WATTLE CRESCENT	RIBBONGUM WAY
Chainage (m)	380.0	280.0	180.0	30.0
Location Offset (m)	0.7	5.0	1.0	5.5
Layer / Reduced Level	SUBGRADE	SUBGRADE	SUBGRADE	SUBGRADE
Thickness of Layer (mm)	450	450	450	450
Soil Description	Sandy Silty Clay	Sandy Silty Clay	Sandy Silty Clay	Sandy Silty Clay
Test Depth (mm)	300	300	300	300
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m ³	2.08	2.08	2.08	2.05
Field Moisture Content %	17.4	18.0	14.7	18.9
Field Dry Density (FDD) t/m ³	1.77	1.76	1.81	1.73
Peak Converted Wet Density t/m ³	2.00	2.04	2.05	1.99
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	0.0	0.0	0.0	-0.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	103.5	102.0	101.5	103.0
Compaction Method	Standard	Standard	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: GSE773.1-11
Issue Number: 1
Date Issued: 27/09/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5607
Date Sampled: 16/09/2022
Dates Tested: 16/09/2022 - 19/09/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BACONSFIELD
Material: silty CLAY, medium - high plasticity, brown



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S44	773.1-S45	773.1-S46	773.1-S47
Date Tested	16/09/2022	16/09/2022	16/09/2022	16/09/2022
Time Tested	**	**	**	**
Test Request #/Location	BACKFILLING OF DAM	BACKFILLING OF DAM	BACKFILLING OF DAM	BACKFILLING OF DAM
Chainage (m)	**	**	**	**
Location Offset (m)	EAST END	EAST END	EAST END	EAST END
Layer / Reduced Level	LAYER 1	LAYER 2	LAYER 3	LAYER 4
Thickness of Layer (mm)	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m ³	2.06	2.05	2.05	2.04
Field Moisture Content %	16.8	17.9	17.9	17.8
Field Dry Density (FDD) t/m ³	1.76	1.74	1.74	1.74
Peak Converted Wet Density t/m ³	2.06	2.05	2.04	2.04
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	-0.5	-0.5	-0.5	-0.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	100.0	100.0	100.0	100.5
Compaction Method	Standard	Standard	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: GSE773.1-12
Issue Number: 1
Date Issued: 28/09/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5659
Date Sampled: 26/09/2022
Dates Tested: 26/09/2022 - 27/09/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: OFF SITE



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S48	773.1-S49	773.1-S50	773.1-S51
Date Tested	26/09/2022	26/09/2022	26/09/2022	26/09/2022
Time Tested	**	**	**	**
Test Request #/Location	BACKFILLING OF DAM	BACKFILLING OF DAM	BACKFILLING OF DAM	BACKFILLING OF DAM
Chainage (m)	**	**	**	**
Location Offset (m)	WEST END	WEST END	WEST END	WEST END
Layer / Reduced Level	LAYER 1	LAYER 2	LAYER 3	LAYER 4
Thickness of Layer (mm)	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	5	2	0
Field Wet Density (FWD) t/m ³	2.09	2.11	2.10	2.11
Field Moisture Content %	19.3	15.8	16.7	16.5
Field Dry Density (FDD) t/m ³	1.75	1.82	1.80	1.81
Peak Converted Wet Density t/m ³	2.12	**	**	2.11
Adjusted Peak Converted Wet Density t/m ³	**	2.11	2.11	**
Moisture Variation (Wv) %	-2.5	**	**	-1.5
Adjusted Moisture Variation %	**	-1.0	-2.0	**
Hilf Density Ratio (%)	98.5	100.0	99.0	100.0
Compaction Method	Standard	Standard	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: GSE773.1-13
Issue Number: 1
Date Issued: 04/10/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5702
Date Sampled: 30/09/2022
Dates Tested: 30/09/2022 - 03/10/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: OFF SITE



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S52	773.1-S53	773.1-S54	773.1-S55
Date Tested	30/09/2022	30/09/2022	30/09/2022	30/09/2022
Time Tested	**	**	**	**
Test Request #/Location	LOT 48	LOT 48	LOT 47	LOT 47
Chainage (m)	**	**	**	**
Location Offset (m)	REFER TO MARKED UP PLAN	REFER TO MARKED UP PLAN	REFER TO MARKED UP PLAN	REFER TO MARKED UP PLAN
Layer / Reduced Level	LAYER 1	LAYER 2	LAYER 1	LAYER 2
Thickness of Layer (mm)	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m ³	2.12	2.10	2.04	2.08
Field Moisture Content %	14.9	14.0	16.2	15.7
Field Dry Density (FDD) t/m ³	1.85	1.85	1.76	1.79
Peak Converted Wet Density t/m ³	2.13	2.13	2.10	2.13
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	0.0	0.0	-2.5	-3.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	100.0	98.5	97.0	97.0
Compaction Method	Standard	Standard	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: GSE773.1-14
Issue Number: 1
Date Issued: 10/10/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5755
Date Sampled: 05/10/2022
Dates Tested: 05/10/2022 - 07/10/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: OFF SITE

Email: troy@groundscience.com.au
 Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	773.1-S56	773.1-S57	773.1-S58	773.1-S59	773.1-S60	773.1-S61
Date Tested	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022
Time Tested	**	**	**	**	**	**
Test Request #/Location	LOT 44	LOT 44	LOT 44	LOT 43	LOT 43	LOT 43
Chainage (m)	**	**	**	**	**	**
Location Offset (m)	**	**	**	**	**	**
Layer / Reduced Level	LAYER 1	LAYER 2	LAYER 3	LAYER 1	LAYER 2	LAYER 3
Thickness of Layer (mm)	200	200	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0	0	0
Field Wet Density (FWD) t/m ³	1.99	1.98	1.98	2.02	2.03	2.03
Field Moisture Content %	19.4	19.3	19.7	18.4	17.0	17.9
Field Dry Density (FDD) t/m ³	1.67	1.66	1.65	1.70	1.74	1.72
Peak Converted Wet Density t/m ³	2.04	2.01	1.99	1.99	2.02	2.08
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	**
Moisture Variation (Wv) %	-1.5	-0.5	0.0	0.5	0.0	-2.5
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	98.0	98.5	99.0	101.5	100.5	97.5
Compaction Method	Standard	Standard	Standard	Standard	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: GSE773.1-14
Issue Number: 1
Date Issued: 10/10/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5755
Date Sampled: 05/10/2022
Dates Tested: 05/10/2022 - 07/10/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: OFF SITE



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	773.1-S62	773.1-S63	773.1-S64	773.1-S65	773.1-S66	
Date Tested	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	
Time Tested	**	**	**	**	**	
Test Request #/Location	LOT 46	LOT 46	LOT 46	LOT 48	LOT 47	
Chainage (m)	**	**	**	**	**	
Location Offset (m)	**	**	**	**	**	
Layer / Reduced Level	LAYER 1	LAYER 2	LAYER 3	LAYER 3	LAYER 3	
Thickness of Layer (mm)	200	200	200	200	200	
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	
Test Depth (mm)	175	175	175	175	175	
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	0	0	0	
Field Wet Density (FWD) t/m ³	2.04	2.05	2.03	2.09	2.01	
Field Moisture Content %	42.9	19.1	18.1	19.4	15.3	
Field Dry Density (FDD) t/m ³	1.43	1.72	1.72	1.75	1.75	
Peak Converted Wet Density t/m ³	2.05	2.07	2.07	2.05	2.12	
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	
Moisture Variation (Wv) %	-1.0	-2.5	-3.5	-1.0	-0.5	
Adjusted Moisture Variation %	**	**	**	**	**	
Hilf Density Ratio (%)	99.5	99.0	98.0	102.0	95.0	
Compaction Method	Standard	Standard	Standard	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: GSE773.1-15
Issue Number: 1
Date Issued: 18/10/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5825
Date Sampled: 17/10/2022
Dates Tested: 17/10/2022 - 17/10/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: OFF SITE



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	773.1-S67	773.1-S68	
Date Tested	17/10/2022	17/10/2022	
Time Tested	**	**	
Test Request #/Location	LOT 45	LOT 45	
Chainage (m)	**	**	
Location Offset (m)	REFER TO MARKED UP PLAN	REFER TO MARKED UP PLAN	
Layer / Reduced Level	LAYER 1	LAYER 2	
Thickness of Layer (mm)	200	200	
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	
Test Depth (mm)	175	175	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	8	0	
Field Wet Density (FWD) t/m ³	2.05	2.05	
Field Moisture Content %	16.4	20.2	
Field Dry Density (FDD) t/m ³	1.76	1.71	
Peak Converted Wet Density t/m ³	**	2.08	
Adjusted Peak Converted Wet Density t/m ³	2.13	**	
Moisture Variation (Wv) %	**	-2.5	
Adjusted Moisture Variation %	-2.5	**	
Hilf Density Ratio (%)	96.0	98.5	
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: GSE773.1-16
Issue Number: 1
Date Issued: 14/11/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5965
Date Sampled: 08/11/2022
Dates Tested: 08/11/2022 - 10/11/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: On Site



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	773.1-S69	773.1-S70	773.1-S71
Date Tested	08/11/2022	08/11/2022	08/11/2022
Time Tested	**	**	**
Test Request #/Location	LOT 21	LOT 22	LOT 23
Chainage (m)	CENTRE	CENTRE	CENTRE
Location Offset (m)	**	**	**
Layer / Reduced Level	1	1	1
Thickness of Layer (mm)	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175
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	1.97	1.97	1.96
Field Moisture Content %	20.9	20.4	20.8
Field Dry Density (FDD) t/m ³	1.63	1.64	1.62
Peak Converted Wet Density t/m ³	2.04	2.09	2.05
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	-2.0	-2.5	-2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	96.5	94.5	96.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report



Report Number: GSE773.1-17
Issue Number: 1
Date Issued: 15/11/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 5982
Date Sampled: 09/11/2022
Dates Tested: 09/11/2022 - 14/11/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	773.1-S72	773.1-S73	773.1-S74
Date Tested	09/11/2022	09/11/2022	09/11/2022
Time Tested	**	**	**
Test Request #/Location	LOT 21	LOT 22	LOT 23
Chainage (m)	CENTRE	CENTRE	CENTRE
Location Offset (m)	**	**	**
Layer / Reduced Level	3	3	3
Thickness of Layer (mm)	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175
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	1.98	1.98	1.98
Field Moisture Content %	17.9	21.5	19.8
Field Dry Density (FDD) t/m ³	1.68	1.63	1.65
Peak Converted Wet Density t/m ³	2.10	2.06	2.06
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	-3.5	-3.0	-3.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	94.0	96.0	95.5
Compaction Method	Standard	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: GSE773.1-18
Issue Number: 1
Date Issued: 21/11/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: BRETT MCINNES
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 6016
Date Sampled: 15/11/2022
Dates Tested: 15/11/2022 - 18/11/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown-red
Material Source: Officer/Kew



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	773.1-S75	773.1-S76	
Date Tested	15/11/2022	15/11/2022	
Time Tested	**	**	
Test Request #/Location	LOT 25	LOT 25	
Chainage (m)	FRONT OF LOT	REAR OF LOT	
Location Offset (m)	**	**	
Layer / Reduced Level	1	2	
Thickness of Layer (mm)	200	200	
Soil Description	silty CLAY, medium - high plasticity, brown-red	silty CLAY, medium - high plasticity, brown-red	
Test Depth (mm)	175	175	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Field Wet Density (FWD) t/m ³	2.10	2.10	
Field Moisture Content %	12.1	12.7	
Field Dry Density (FDD) t/m ³	1.88	1.86	
Peak Converted Wet Density t/m ³	2.18	2.19	
Adjusted Peak Converted Wet Density t/m ³	**	**	
Moisture Variation (Wv) %	-1.0	-1.0	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	96.5	96.0	
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: GSE773.1-19
Issue Number: 1
Date Issued: 25/11/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 6044
Date Sampled: 18/11/2022
Dates Tested: 18/11/2022 - 22/11/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: kew



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	773.1-S77	773.1-S78	773.1-S79	773.1-S80	773.1-S81	773.1-S82
Date Tested	18/11/2022	18/11/2022	18/11/2022	18/11/2022	18/11/2022	18/11/2022
Time Tested	**	**	**	**	**	**
Test Request #/Location	LOT 39	LOT 40	LOT 39	LOT 40	LOT 24	LOT 24
Chainage (m)	CENTRE	FRONT OF LOT	FRONT OF LOT	CENTRE	REAR OF LOT	CENTRE
Location Offset (m)	**	**	**	**	**	**
Layer / Reduced Level	2	2	4	4	3	4
Thickness of Layer (mm)	200	200	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0	0	0
Field Wet Density (FWD) t/m ³	2.11	2.12	2.12	2.11	2.07	2.08
Field Moisture Content %	12.1	12.2	12.9	17.8	8.7	10.2
Field Dry Density (FDD) t/m ³	1.88	1.89	1.87	1.79	1.90	1.88
Peak Converted Wet Density t/m ³	2.17	2.18	2.17	2.16	2.15	2.16
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	**
Moisture Variation (Wv) %	0.0	0.0	0.0	0.0	2.0	2.5
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	97.5	97.5	97.5	97.5	96.5	96.0
Compaction Method	Standard	Standard	Standard	Standard	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: GSE773.1-20
Issue Number: 1
Date Issued: 30/11/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 6080
Date Sampled: 24/11/2022
Dates Tested: 24/11/2022 - 28/11/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: Kew



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	773.1-S83	773.1-S84	773.1-S85	773.1-S86	773.1-S87	773.1-S88
Date Tested	24/11/2022	24/11/2022	24/11/2022	24/11/2022	24/11/2022	24/11/2022
Time Tested	**	**	**	**	**	**
Test Request #/Location	LOT 38	LOT 37	LOT 38	LOT 37	LOT 41	LOT 42
Chainage (m)	CENTRE	CENTRE	CENTRE	CENTRE	FRONT OF LOT	FRONT OF LOT
Location Offset (m)	**	**	**	**	**	**
Layer / Reduced Level	2	2	3	3	3	3
Thickness of Layer (mm)	200	200	200	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0	0	0
Field Wet Density (FWD) t/m ³	2.10	2.12	2.11	2.07	2.08	2.09
Field Moisture Content %	8.8	9.3	11.2	8.4	9.6	8.9
Field Dry Density (FDD) t/m ³	1.93	1.94	1.89	1.91	1.89	1.91
Peak Converted Wet Density t/m ³	2.13	2.09	2.11	2.11	2.10	2.11
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	**
Moisture Variation (Wv) %	1.0	2.0	2.0	2.0	2.0	1.5
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	98.5	101.0	100.0	98.0	98.5	99.0
Compaction Method	Standard	Standard	Standard	Standard	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: GSE773.1-21
Issue Number: 1
Date Issued: 14/12/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 6170
Date Sampled: 01/12/2022
Dates Tested: 01/12/2022 - 13/12/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown/Red
Material Source: Kew/Mentone



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	773.1-S89	773.1-S90	773.1-S91
Date Tested	01/12/2022	01/12/2022	01/12/2022
Time Tested	**	**	**
Test Request #/Location	LOT 37	LOT 36	LOT 36
Chainage (m)	CENTRE	CENTRE	FRONT OF LOT
Location Offset (m)	**	**	**
Layer / Reduced Level	4	1	3
Thickness of Layer (mm)	200	200	200
Soil Description	silty CLAY, medium - high plasticity, red	silty CLAY, medium - high plasticity, red	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175
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	2.10	2.11	1.98
Field Moisture Content %	6.5	6.3	16.8
Field Dry Density (FDD) t/m ³	1.98	1.99	1.70
Peak Converted Wet Density t/m ³	2.12	2.13	2.06
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	3.0	3.0	-1.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.5	99.5	96.5
Compaction Method	Standard	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: GSE773.1-22
Issue Number: 1
Date Issued: 21/12/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 6206
Date Sampled: 06/12/2022
Dates Tested: 06/12/2022 - 20/12/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: Kew/Mentone

Email: grant@groundscience.com.au
 Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	773.1-S92	773.1-S93	773.1-S94
Date Tested	06/12/2022	06/12/2022	06/12/2022
Time Tested	**	**	**
Test Request #/Location	RETEST S-70	RETEST S-72	LOT 32
Chainage (m)	CENTRE	CENTRE	CENTRE
Location Offset (m)	**	**	**
Layer / Reduced Level	1	3	2
Thickness of Layer (mm)	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175
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	2.10	2.09	2.09
Field Moisture Content %	14.9	14.3	14.4
Field Dry Density (FDD) t/m ³	1.82	1.83	1.83
Peak Converted Wet Density t/m ³	2.14	2.15	2.06
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	0.0	0.0	1.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	98.0	97.0	101.5
Compaction Method	Standard	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: GSE773.1-23
Issue Number: 1
Date Issued: 21/12/2022
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: grant@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 6271
Date Sampled: 16/12/2022
Dates Tested: 16/12/2022 - 19/12/2022
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown
Material Source: Mentone



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Grant Sloan
 LABORATORY MANAGER
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	773.1-S95	773.1-S96	773.1-S97
Date Tested	16/12/2022	16/12/2022	16/12/2022
Time Tested	**	**	**
Test Request #/Location	LOT 31	LOT 31	LOT 35
Chainage (m)	CENTRE OF LOT	REAR OF LOT	CENTRE OF LOT
Location Offset (m)	**	**	**
Layer / Reduced Level	2	3	3
Thickness of Layer (mm)	200	200	200
Soil Description	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown	silty CLAY, medium - high plasticity, brown
Test Depth (mm)	175	175	175
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	2.06	2.06	2.06
Field Moisture Content %	14.6	14.9	15.0
Field Dry Density (FDD) t/m ³	1.80	1.79	1.79
Peak Converted Wet Density t/m ³	2.07	2.06	2.08
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	1.0	0.5	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.5	100.0	99.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report



Report Number: GSE773.1-24
Issue Number: 1
Date Issued: 10/02/2023
Client: SANDRIDGE ROADS (TOORADIN)

Ground Science East Pty Ltd
 Ground Science East Laboratory
 Factory 2, 11-17 Cyber Loop Dandenong Victoria 3175
 Phone: 0450 925 137
 Email: troy@groundscience.com.au

Contact: DAMIAN DROZDZ
Project Number: GSE773.1
Project Name: WATTLE ESTATE STAGE 3 (LEVEL 1)
Project Location: BEACONSFIELD
Work Request: 6529
Date Sampled: 30/01/2023
Dates Tested: 30/01/2023 - 10/02/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction
Location: BEACONSFIELD
Material: silty CLAY, medium - high plasticity, brown



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Troy Carnovale
 Laboratory DIRECTOR
 NATA Accredited Laboratory Number: 20436

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	773.1-S98	773.1-S99	773.1-S100	773.1-S101
Date Tested	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Time Tested	**	**	**	**
Test Request #/Location	LOT 33	LOT 34	LOT 33	LOT 34
Chainage (m)	FRONT OF LOT	FRONT OF LOT	CENTRE OF LOT	CENTRE OF LOT
Location Offset (m)	**	**	**	**
Layer / Reduced Level	2	2	4	4
Thickness of Layer (mm)	200	200	200	200
Soil Description	Sandy CLAY - red	Silty CLAY - yellow/brown	Sandy CLAY - Red	Silty CLAY - yellow/brown
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m ³	2.04	2.10	2.03	2.10
Field Moisture Content %	7.0	8.7	6.8	9.6
Field Dry Density (FDD) t/m ³	1.90	1.94	1.90	1.91
Peak Converted Wet Density t/m ³	2.02	1.98	2.04	1.99
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	5.0	5.0	5.0	4.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	101.0	106.0	100.0	105.5
Compaction Method	Standard	Standard	Standard	Standard
Report Remarks	**	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

APPENDIX D

Site Photographs



