LEVEL 1 INSPECTION & TESTING SERVICES

ACACIA ESTATE, STAGE 2

BOTANIC RIDGE, VICTORIA

Prepared for PEET Botanic Village c/- GPR Consulting

30 August 2016
GS3711.2 AA

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PROJECT DETAILS

Project Reference	GS3711.2	**Rev**	AA
Project Title	Acacia Estate - Stage 2		
Project Location	Botanic Ridge	**State**	VIC
Date	30/08/2016		

CLIENT DETAILS

Prepared For (Client)	GPR Consulting		
Project Principal	PEET Botanic Village		
Client Address	Suite 217, 202 Jells Road	**Suburb**	Wheelers Hill

DISTRIBUTION

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This document presents our report on the Level 1 Inspection & Testing services associated with the construction of controlled fill at the above project. The contents of this document are detailed for the sole use of the intended recipient. Should you have any questions related to this report please do not hesitate to contact the undersigned.

AUTHOR:

Jason Menzies
Engineering Geologist

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1. INTRODUCTION

This report presents the results of inspection activities, compaction control and laboratory testing services performed by Ground Science Pty Ltd (Ground Science) at the project identified as the Acacia Estate – Stage 2 located in Botanic Ridge, Victoria (herein referred to as the 'site'). Ground Science was engaged to provide Level 1 Inspection and Testing services for this component of the project. Authorisation to proceed was provided by GPR Consulting on behalf of PEET Botanic Village (herein referred to as the "Client"). Level 1 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". The Level 1 Inspection and Testing was undertaken by experienced geotechnicians from Ground Science.

2. SCOPE OF WORK

2.1 AREAS OF WORK

Ground Science provided Level 1 Inspection and Testing for the controlled fill placed as part of the construction of the residential estate. The areas on which controlled fill was placed is shown on site plan Figure 1 & 2 (presented in Appendix A), which is based on drawings prepared by GPR Consulting. It is understood that the controlled fill was placed and compacted to approximately 100mm below the required finished level, to allow for up to 100mm of topsoil placement. The placement of the fill under Level 1 Inspection and Testing commenced on 8th April 2016 and was completed on 25th July 2016 which included 4 full days and 1 half day of filling operations, which were observed on a fulltime basis by Ground Science technicians.

2.2 PLACEMENT METHOD

A technical specification for fill placement was not available for this project. The placement of controlled fill on the above mentioned areas was carried out in general accordance with AS3798 (2007) "Guidelines on Earthworks for Commercial and Residential Developments". It should be noted that the method of fill placement, compactive effort and target density ratios varied between the type of fill material used. In general, the fill material comprised of both cohesive (clays/silty clays/sandy clays) and non-cohesive (sands) soils.

Where non-cohesive fill was used, several method placements were trialled by the contractor and inspected by Ground Science. In general, non-cohesive fill material was placed and compacted as follows:

- Placement of layers preferably between 300mm to 400mm thick;
- Control of moisture regulated on site and sand fill material suitably moisture conditioned to achieve acceptable compaction;
- Compaction to be carried out using a smooth drum static roller;
- The use of both field density testing and Perth Sand Penetrometer (PSP) tests carried out to confirm the achieved compaction on site. The results of the Perth Sand Penetrometer (PSP) tests were preferred over density testing given the granular nature of the fill.

Where cohesive (clays/silty clays/sandy clays) were used as fill, the following process, as described in AS2870 (2011) was adopted:

- Placement of layers not exceeding 250mm in thickness;
- Control of moisture regulated on site and suitably moisture conditioned to within close to optimum moisture content;
- Compaction to be carried out using a Padfoot Roller or 815 Compactor.

The target density ratio for the project varied between cohesive and non-cohesive fill material.

Cohesive fill material required to achieve a minimum target density ratio of 95% (AS 1289: 5.1.1, 5.4.1 or 5.7.1) as per the project specification requirements and moisture conditioned to a moisture ratio of 85% – 115% of standard compaction (AS 1289 5.1.1, 5.4.1, or 5.7.1).

The target density ratio of non-cohesive fill material was assessed using Perth Sand Penetrometer (PSP) tests or a nuclear density gauge. The use PSP tests were preferred given the nature of the fill material. The assessment of fill placement was assessed by assessing the number of blows over a 300mm penetration depth with the top 150mm ignored.

Prior to filling, the nominated placement areas were stripped of topsoil, subsoil, soft material and vegetation to a firm base approved by the superintendent.

3. INSPECTION AND TESTING

3.1 SUBGRADE PREPARATION

Site stripping was conducted with the use of excavators, graders and scrapers. Observations of the stripped base indicated all surface soils and vegetation/topsoil was removed resulting in stripping of between 100mm and 300mm required. The exposed subgrade was generally observed to be natural soils, ranging from silty clay to clay.

The moisture at subgrade level was assessed to range from dry to damp throughout the project. At the commencement of each fill placement area, the subgrade was test rolled. Where deflections and/or soft spots were not observed, these areas were deemed suitable for subsequent fill placement. In some areas, soft spots were observed and remediated prior to being deemed suitable for subsequent fill placement. Where required, a water cart was used to moisture condition the subgrade.

3.2 CONSTRUCTION MATERIALS

Fill for the project is understood to have been sourced from onsite stockpiles. The material was visually assessed to consist of sands, silty/sandy clays or a mixture of both. The fill material used in this project was nominated by the on-site contractor. Ground Science performed an assessment of the fill source to identify the following material characteristics:

- Material suitability as an engineering property;
- Cohesiveness;

- Free from building debris and vegetative matter;
- Oversize rock particles.

The use of sand (non-cohesive) fill was proposed by the contractor. Ground Science assessed the proposed sand fill material and approved its use. Where cohesive (clays/sandy clays/silty clays) were used, this material was visually assessed and considered acceptable for use on this project. It should be noted that no chemical analysis was conducted on the fill materials. The maximum oversize particles within the fill matrix were observed to be 150mm and where encountered, removed from fill prior to placement. The fill source was assessed to range from dry to wet of optimum moisture content. A water cart was used to moisture condition the fill prior to and during placement where required.

3.3 FILL CONSTRUCTION

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

- Excavator;
- Water cart;
- Padfoot roller;
- Smooth Drum Roller;
- Grader;
- Dump trucks;
- Scrapers.

During fill placement the weather conditions were generally sunny, with a maximum temperature of 25 degrees Celsius noted.

The filling process generally involved the grader and excavator spreading the nominated fill material into thin loose layers. Compaction was provided using a Smooth Drum Roller (non-cohesive fill) and Padfoot Roller (cohesive), applying a minimum of 6 - 10 passes performed per layer observed. The thin layers were placed to form a composite layer measuring between 150mm and 300mm.

At the commencement of the project, it was noted that difficulty in achieving compaction was experienced within the sand fill. Thicker layers were placed in the north east of the stage, moisture conditioned and compacted and satisfactory test results were generally achieved. Generally, the placement of sand fill requires carefully monitored operations which include filling at a thicker layer and control of moisture application.

Generally, between 1 and 2 layers of fill were required to achieve the finished surface levels. It should be noted that where 800mm or less of sand fill was required, placement under Level 1 Inspection & Testing is not mandatory as detailed in AS2870 (2011). Ground Science however witnessed the process adopted on site and were satisfied with the day's production.

Figure 1 & 2 provides a guide to the fill placement and is limited to the areas described in this report. It should be noted that a further topsoil layer of approximately 100mm is expected to complete the finished levels of the fill and does not form part of the controlled fill. This layer is placed to provide a growing medium for grass and gardens. Any fill placed as part of drainage, sewer works or similar also does not form part of this Level 1 report.

3.4 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 and PSP tests.

Testing for the project comprised of 18 in-situ density tests using a nuclear moisture-density gauge in accordance with Australian Standard (AS1289 5.8.1) together with 18 "Rapid HILF" Compaction tests (AS1289 5.7.1) including re-tests of failed specifications, where deemed necessary.

The results of the compaction control testing are presented on the NATA endorsed Field Density Test Reports in Appendix C.

Based on the fill material used over various areas of the site, the quality of the fill, work methods of the contractor and supporting density tests, the fill placed on this site is considered compliant with the intent of the filling works.

3.5 FINAL SURFACE LEVELS

Observations were made by a Ground Science staff member that filling had been complete up to the nominated finished levels. Instructions were also provided from the contractor's site foreman that controlled fill operations were complete. The observed final levels are the constructed finished surface levels of the controlled fill.

4. COMPLIANCE

Ground Science Staff have undertaken Level 1 Inspection and Testing services of the construction of the controlled fill in the areas designated on Figure 1. Ground Science 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 staff and the results of density and PSP tests as well as visual observations, we consider that the controlled fill placed has been constructed in accordance with the stated intent of the project, AS 3798 (2007) as well as AS2870 (2011).

5. UNDERSTANDING LEVEL ONE 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 his 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 particular 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 the code 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 wet lands, 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.

For & on behalf of
Ground Science Pty Ltd

Jason Menzies
Engineering Geologist

6. 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 affects 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 regards to it.

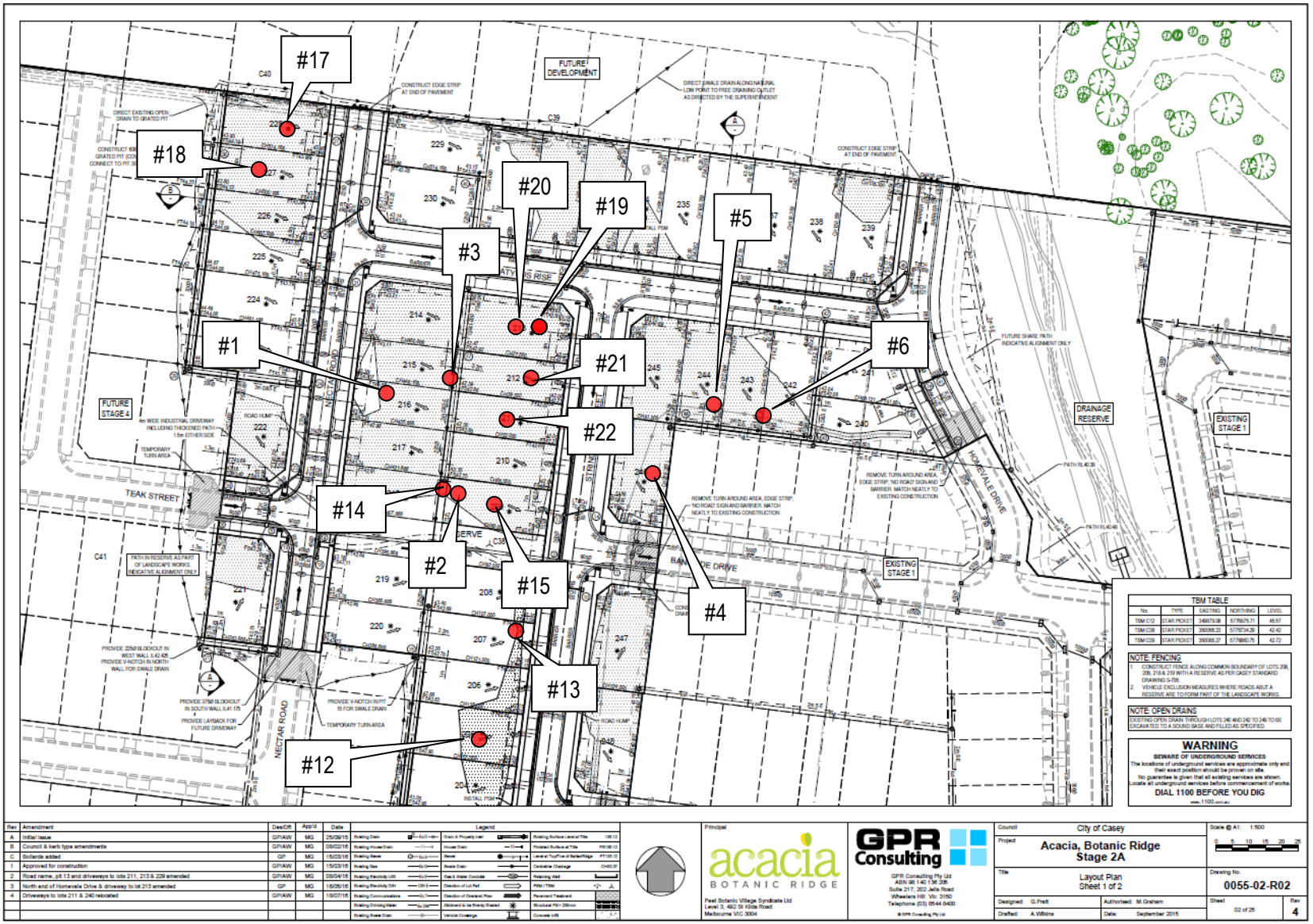
Where data has been supplied by the client or a third party, it is assumed that the information is correct unless otherwise stated. No responsibility is accepted by Ground Science for incomplete or inaccurate data supplied by others.

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.

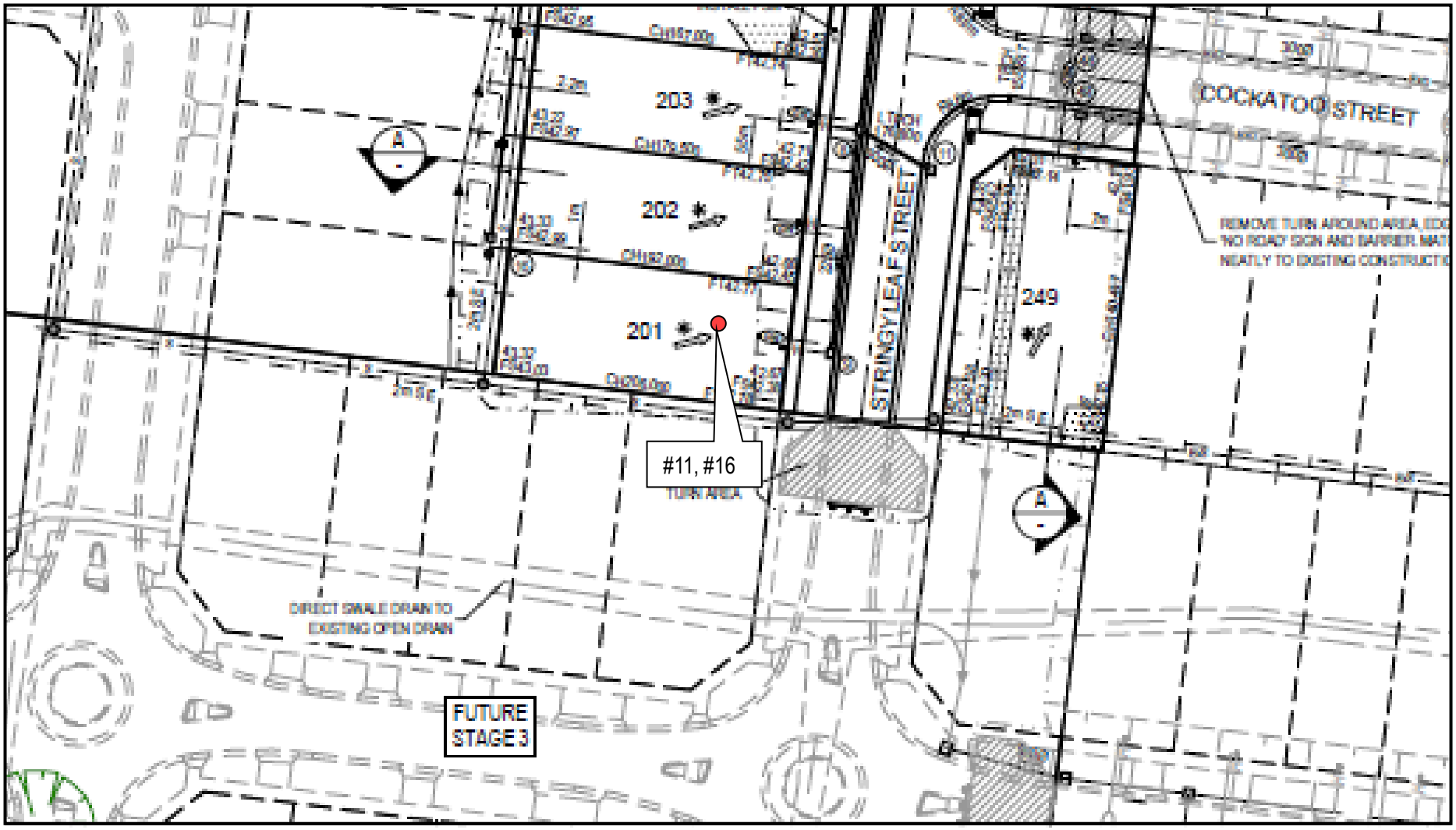
Appendix A

figures

Figure 1-2: Site Locality



Ground Science	Project: ACACIA ESTATE, STAGE 1, BOTANIC RIDGE	Details: TEST LOCATIONS
	Project: GS3711.2 AA	Drawing No: Figure 1
	Drawn: JM	Checked: GS
	Scale: Not to Scale	Date: 30 August 2016



Ground Science	Project: ACACIA ESTATE, STAGE 1, BOTANIC RIDGE	Details: TEST LOCATIONS	Project: GS3711.2 AA	Drawing No: Figure 2	Scale: Not to Scale
			Drawn: GS	Checked: JM	Date: 30 August 2016

Appendix B

field density summary

LEVEL 1 - COMPACTION TEST SUMMARY

Client:	**PEET BOTANIC VILLAGE**	**Job No:**	**GS3711.2**
Project:	**ACACIA RIDGE - STAGE 2**	**Tech:**	**AR/JM**
Location:	**BOTANIC RIDGE**		

Date	Test No.	Location	Lot No.	Layer No.	Density Ratio (%)	Moisture Ratio (%)	Moisture variation	(P) Pass (F) Fail	Comments
8/04/2016	1	N.W corner of lot ,10m East	216	1	95.5	108	1.5	P	
8/04/2016	2	S.E corner of lot, 23m West	209	1	93.0	104	0.5	F	
8/04/2016	3	N.E corner of lot, 12mS 22mW	212	1	95.0	100	0.0	P	
11/04/2016	4	5mW 10mS	246	1	100.5	88	-1.5	P	
11/04/2016	5	3mE 4mN	244	1	100.5	54	-5.5	P	
11/04/2016	6	20mE 3mN	243	1	103.5	68	-4.0	P	
23/05/2016	7	CBS 36-3 to 36-7			83.0	86	-3.0		Not level 1 testing
23/05/2016	8	CBS 36-3 to 36-4			86.5	148	4.5		Not level 1 testing
23/05/2016	9	CBS 36-3 to 36-2			83.0	103	0.5		Not level 1 testing
23/05/2016	10	CBS 36-4 to 36-5			91.0	100	0.0		Not level 1 testing
25/07/2016	11	5mS 10mW	201	1	89.5	120	4.0	F	
25/07/2016	12	15mW 8mS	205	1	98.0	117	3.5	P	
25/07/2016	13	5mW 15mS	208	1	96.0	120	5.0	P	
25/07/2016	14	Re-test of #2	209	1	99.0	104	1.0	P	Retest of #2
25/07/2016	15	4mW 2mS	209	2	99.0	111	2.5	P	
17/08/2016	16	Retest of #11	201	1	96.0	100	0.0	P	Retest of #11
17/08/2016	17	2mS 15mW	227	1	104.5	100	0.0	P	
17/08/2016	18	12mS 15mW	228	1	103.5	93	-1.5	P	
19/08/2016	19	10mS 9mW	213	1	97.0	100	0.0	P	
19/08/2016	20	12mS 25mW	213	1	95.5	103	0.5	P	
19/08/2016	21	7mS 12mW	212	1	97.0	100	0.0	P	
19/08/2016	22	6mS 24mW	211	1	98.5	92	-1.5	P	

Appendix C

field density test reports

A C N 105 704 078
13 Brock Street Thomastown VIC, **P** 03 9464 4617 **F** 03 9464 4618

field density test results

client : **PEET BOTANIC VILLAGE LIMITED C/- GPR CONSULTING** job No: **GS3711/2**

project : **ACACIA- STAGE 2** report No. **AA**

location : **BOTANIC RIDGE** test date: **8-Apr-16**

Test Number		1	2	3			
Test location from		N.W Corner of #216	From #209 S.E Corner	N.E Coner of #212			
Offset (m)		10 East -	23m West -	12m South 22m West			
Layer Number		1	1	1			
Time of tests		-	-	-			
Depth of Test	mm	175	175	175			
Field Wet Density	t/m^3	1.961	1.907	1.986			
*Field Moisture Content	%	21.5	14.5	17.5			
Oversize Material	Wet %	0	0	0			
Sieve Size	mm	19.0	19.0	19.0			
Peak Converted Wet Density	t/m^3	2.058	2.054	2.088			
*Optimum Moisture Content	%	20.0	14.0	17.5			
Compactive Effort Used	std / mod	STD	STD	STD			
Moisture Ratio	%	**108**	**104**	**100**			
Moisture Variation	%	**1.5**	**0.5**	**0.0**			
Moisture Variation		**WET**	**WET**	**-**			
Density Ratio	%	**95.5**	**93.0**	**95.0**			

Specification Requirements 95% Standard compaction

Notes: Moisture Variation: (-) indicates dry; (+) indicates wet

Material description CLAY fill

Test Methods AS1289 5.8.1 5.7.1 2.1.1 1.2.1 (6.4)

ACCREDITED FOR TECHNICAL COMPETENCE

NATA Accredited Laboratory No. 15055
Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements in this document are traceable to Australian/National Standards

Chris Senserrick
Approved Signatory
Date 23-Aug-16

A C N 105 704 078
13 Brock Street Thomastown VIC, **P** 03 9464 4617 **F** 03 9464 4618

field density test results

client :	**PEET BOTANIC VILLAGE LIMITED C/- GPR CONSULTING**	job No:	**GS3711/2**
project :	**ACACIA- STAGE 2**	report No.	**AB**
location :	**BOTANIC RIDGE**	test date:	**11-Apr-16**

Test Number		4	5	6			
Test location from Pit #44 Offset (m)		5m West 10m South	3m East 4m North	20m East 3m North			
Time of tests		-	-	-			
Depth of Test	mm	250	250	250			
Field Wet Density	t/m^3	1.999	1.901	1.950			
*Field Moisture Content	%	11.0	6.5	8.5			
Oversize Material	Wet %	0	0	0			
Sieve Size	mm	19.0	19.0	19.0			
Peak Converted Wet Density	t/m^3	1.986	1.891	1.885			
*Optimum Moisture Content	%	12.5	12.0	12.5			
Compactive Effort Used	std / mod	STD	STD	STD			
Moisture Ratio	%	**88**	**54**	**68**			
Moisture Variation	%	**-1.5**	**-5.5**	**-4.0**			
Moisture Variation		**DRY**	**DRY**	**DRY**			
Density Ratio	%	**100.5**	**100.5**	**103.5**			

Specification Requirements 95% Standard compaction

Notes: Moisture Variation: (-) indicates dry; (+) indicates wet

Material description clayey SAND

Test Methods AS1289 5.8.1 5.7.1 2.1.1 1.2.1 (6.4)

NATA Accredited Laboratory No. 15055
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Chris Senserrick
Approved Signatory
Date 23-Aug-16

A C N 105 704 078
13 Brock Street Thomastown VIC, **P** 03 9464 4617 **F** 03 9464 4618

field density test results

client : **PEET BOTANIC VILLAGE LIMITED C/- GPR CONSULTING** job No: **GS3711/2**

project : **ACACIA ESTATE - SEWER LINES** report No. **AC**

location : **CRANBOURNE** test date: **23-May-16**

Test Number		7	8	9	10		
Test location from							
Pit Number		CBS 36-3 To 36-7	CBS 36-3 to 36-4	CBS 36-3 to 36-2	CBS 36-4 to 36-5		
		95% STD (Clay)	85% STD (Sand)	95% STD (Clay)	85% STD (Sand)		
Level (m) below F.S.		0.4m	0.7m	0.3m	0.9m		
Time of tests		-	-	-	-		
Depth of Test	mm	250	275	275	275		
Field Wet Density	t/m^3	1.607	1.918	1.715	1.963		
*Field Moisture Content	%	18.0	14.0	21.0	19.5		
Oversize Material	Wet %	0	0	0	0		
Sieve Size	mm	19.0	19.0	19.0	19.0		
Peak Converted Wet Density	t/m^3	1.932	2.217	2.069	2.154		
*Optimum Moisture Content	%	21.0	9.5	20.5	19.5		
Compactive Effort Used	std / mod	STD	STD	STD	STD		
Moisture Ratio	%	**86**	**148**	**103**	**100**		
Moisture Variation	%	**-3.0**	**4.5**	**0.5**	**0.0**		
Moisture Variation		**DRY**	**WET**	**WET**	**-**		
Density Ratio	%	**83.0**	**86.5**	**83.0**	**91.0**		

Specification Requirements 85-95% Standard compaction

Notes: Moisture Variation: (-) indicates dry; (+) indicates wet

Material description CLAY & SAND

Test Methods AS1289 5.8.1 5.7.1 2.1.1 1.2.1 (6.4)

NATA Accredited Laboratory No. 15055
Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements in this document are traceable to Australian/National Standards

Chris Senserrick
Approved Signatory
Date 24-May-16

A C N 105 704 078
13 Brock Street Thomastown VIC, **P** 03 9464 4617 **F** 03 9464 4618

field density test results

client : **PEET BOTANIC VILLAGE LIMITED C/- GPR CONSULTING** job No: **GS3711/2**

project : **ACACIA- STAGE 2** report No. **AD**

location : **BOTANIC RIDGE** test date: **25-Jul-16**

Test Number		11	12	13	14	15	
Test location from							
North East Corner of Lot No.		5m South	15m West	5m West	Re-test of #2	4m West	
Offset (m)		10m West	8m South	15m South		2m South	
Lot Number		201	205	208	209	209	
Layer Number		1	1	1	1	2	
Time of tests		-	-	-	-	-	
Depth of Test	mm	175	175	175	175	175	
Field Wet Density	t/m^3	1.926	1.959	1.929	1.952	1.964	
*Field Moisture Content	%	24.0	24.5	30.0	26.0	25.0	
Oversize Material	Wet %	0	0	0	0	0	
Sieve Size	mm	19.0	19.0	19.0	19.0	19.0	
Peak Converted Wet Density	t/m^3	2.146	2.000	2.010	1.973	1.982	
*Optimum Moisture Content	%	20.0	21.0	25.0	25.0	22.5	
Compactive Effort Used	std / mod	STD	STD	STD	STD	STD	
Moisture Ratio	%	**120**	**117**	**120**	**104**	**111**	
Moisture Variation	%	**4.0**	**3.5**	**5.0**	**1.0**	**2.5**	
Moisture Variation		**WET**	**WET**	**WET**	**WET**	**WET**	
Density Ratio	%	**89.5**	**98.0**	**96.0**	**99.0**	**99.0**	

Specification Requirements 95% Standard compaction

Notes: Moisture Variation: (-) indicates dry; (+) indicates wet

Material description CLAY fill

Test Methods AS1289 5.8.1 5.7.1 2.1.1 1.2.1 (6.4)

ACCREDITED FOR TECHNICAL COMPETENCE

NATA Accredited Laboratory No. 15055
Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements in this document are traceable to Australian/National Standards

Chris Senserrick
Approved Signatory
Date 23-Aug-16

A C N 105 704 078
13 Brock Street Thomastown VIC, **P** 03 9464 4617 **F** 03 9464 4618

field density test results

client : **PEET BOTANIC VILLAGE LIMITED C/- GPR CONSULTING** job No: **GS3711/1**

project : **ACACIA- STAGE 1** report No. **AE**

location : **BOTANIC RIDGE** test date: **17-Aug-16**

Test Number	16	17	18			
Test location from	Re Test #11					
North East Corner of Lot No.	5m South	2m South	12m South			
Offset (m)	10m West	15m West	15m West			
Lot Number	201	227	228			
Layer Number	1	1	1			
Time of tests	-	-	-			
Depth of Test mm	175	175	175			
Field Wet Density t/m^3	1.996	2.072	2.090			
*Field Moisture Content %	17.5	24.5	19.0			
Oversize Material Wet %	2	0	0			
Sieve Size mm	19.0	19.0	19.0			
Peak Converted Wet Density t/m^3	2.074	1.987	2.020			
*Optimum Moisture Content %	17.5	24.5	20.5			
Compactive Effort Used std / mod	STD	STD	STD			
Moisture Ratio %	**100**	**100**	**93**			
Moisture Variation %	**0.0**	**0.0**	**-1.5**			
Moisture Variation	**-**	**-**	**DRY**			
Density Ratio %	**96.0**	**104.5**	**103.5**			

Specification Requirements 95% Standard compaction

Notes: Moisture Variation: (-) indicates dry; (+) indicates wet

Material description CLAY fill

Test Methods AS1289 5.8.1 5.7.1 2.1.1 1.2.1 (6.4)

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Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements in this document are traceable to Australian/National Standards

Chris Senserrick
Approved Signatory
Date 23-Aug-16

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field density test results

client : **PEET BOTANIC VILLAGE LIMITED C/- GPR CONSULTING** job No: **GS3711/2**

project : **ACACIA- STAGE 2** report No. **AF**

location : **BOTANIC RIDGE** test date: **19-Aug-16**

Test Number	19	20	21	22		
Test location from North East Corner of Lots	10m South 9m West	12m South 25m West	7m South 12m West	6m South 24m West		
Lot Number	213	213	212	211		
Time of tests	-	-	-	-		
Depth of Test mm	225	225	225	225		
Field Wet Density t/m^3	1.935	1.953	1.960	1.915		
*Field Moisture Content %	19.5	16.5	17.5	16.0		
Oversize Material Wet %	0	0	0	0		
Sieve Size mm	19.0	19.0	19.0	19.0		
Peak Converted Wet Density t/m^3	1.994	2.042	2.025	1.940		
*Optimum Moisture Content %	19.5	16.0	17.5	17.5		
Compactive Effort Used std / mod	STD	STD	STD	STD		
Moisture Ratio %	**100**	**103**	**100**	**92**		
Moisture Variation %	**0.0**	**0.5**	**0.0**	**-1.5**		
Moisture Variation	**-**	**WET**	**-**	**DRY**		
Density Ratio %	**97.0**	**95.5**	**97.0**	**98.5**		

Specification Requirements 95% Standard compaction

Notes: Moisture Variation: (-) indicates dry; (+) indicates wet

Material description Sandy CLAY fill

Test Methods AS1289 5.8.1 5.7.1 2.1.1 1.2.1 (6.4)

ACCREDITED FOR TECHNICAL COMPETENCE

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Chris Senserrick
Approved Signatory
Date 24-Aug-16

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