



Client: BMD Urban
Project Name: Brentwood Estate
Site Address: Raniga Drive, Bellbird Park
Date: 16/02/2022

Attention: Kody O’Hea
Email: Kody.OHea@bmd.com.au

1.0 Introduction

Quality Control Testing Services (QCTS) was engaged by BMD Urban Pty Ltd between the 29th of July 2021 and the 2nd of August 2021 to provide “Level 1” earthworks inspection and testing services for bulk earthworks, as per Section 8.0 of AS3798-2007- “Guidelines for Earthworks for Commercial and Residential Developments”.

Supervision and compaction control testing were carried out during the placement of material to the lot as indicated in the attached drawings. Fill material was placed and compacted between 0.2m and 1.0m depths across the site. The volume of fill material places across the site was approximately 3500m³ throughout stage 10.

A total number of seven (7) compaction control tests were carried out in line with the requirements of AS3798 Table 5.1 (Item 2) and Table 8.1 (Type 1). Site drawings showing the extent of the fill placement is attached at the end of this report.

2.0 Stripping

Stripping of any vegetation and organic material was carried out by Scrapers and was utilised to remove any deleterious materials. Once the site was cleared, the surface was then compacted using an 825 compactor until No deflection was noted. A fully loaded water truck with greater than 14t capacity was utilised to proof roll the treated surface to ascertain if any “soft spots” or unsuitable material was present.

3.0 Earthworks

The filling process involved transporting cut to fill material into the fill zones. The fill material was conditioned and placed in layers not exceeding 300mm loose. An 825 compactor and scrapers were used to spread and compact the fill material. A water truck was on hand to moisture condition the fill material to assist the roller until the required density specification was achieved.

The specification requirements were that all fill materials were to be placed, conditioned and compacted in layers to a density ratio of not less than 95% (AS 1289 5.8.1, 5.7.1 & 2.1.1) with the moisture content suitable to achieve the desired compaction levels.

4.0 Material

The material consisted of a Red/Brown Sandy Clay/Clayey Sand, being in-situ site won. The site material consisted of cut material from works. Any existing unsuitable material was removed and replaced with suitable fill. Material was conditioned with water from the water cart to provide compaction above the required minimum standard.

5.0 Compliance Testing Programme

Test locations were randomly selected by QCTS, and compaction control tests were carried out throughout the filling process, spread evenly through each layer, until finished level was achieved. The fill placement was in accordance with the minimum test frequency requirements detailed in AS3798-2007.

Proof rolling was carried out using a fully loaded water truck with greater than 14t capacity. Any deflections were noted and reworked with good engineering practice to achieve appropriate compaction.

All field density reports have been previously issued to the client. A copy of such reports has been attached at the end of this report.

6.0 Conclusion

Based on the results obtained from compaction control tests along with observations made during earthworks operation indicate that all fill material placed in the filled lots within “Brentwood Estate Stages 8 & 9” would be considered to have met the requirements of AS3798-2007 and good engineering practice.

This report does not include any other geotechnical issues, road works, backfill behind any retaining structures or trench services, any topsoil placed, slope stability and site drainage.

This report has been reasonably reviewed in order to eliminate potential human errors, inappropriateness, and omissions.

On behalf of QCTS Pty Ltd,



Mark Jackman
Director
QCTS Pty Ltd

Attachments:

- Site Drawings showing the extent of fill placement and cut material.
- Site Drawings showing locations of tests
- Compaction control test reports.

Material Test Report

Report Number: B21071-2
Issue Number: 1
Date Issued: 20/05/2021
Client: BMD Urban
 1 Sandpiper Ave, Port of Brisbane QLD 4178
Contact: Kody O'Hea
Project Number: B21071
Project Name: 4836 Brentwood Estate Stages 8 & 9
Project Location: Level 1 Earthworks 17/05/2021
Work Request: 1162
Date Sampled: 17/05/2021
Dates Tested: 17/05/2021 - 18/05/2021
Specification: Minimum 95% Standard Compaction
Site Selection: Selected By QCTS Technician
Material: General Fill
Material Source: On Site



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 Brisbane Laboratory
 23/8 Riverland Drive Loganholme QLD 4129
 Phone: (07) 4633 0816
 Email: geoff@qcts.net.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Geoff Turley
 Area Manager

NATA Accredited Laboratory Number: 20024

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	B21-1162A	B21-1162B	B21-1162C	B21-1162D	B21-1162E
Date Tested	17/05/2021	17/05/2021	17/05/2021	17/05/2021	17/05/2021
Time Tested	10:58	11:04	11:11	11:17	11:22
Test Request #/Location	**	**	**	**	**
Easting	489120.696	489117.297	488938.188	488919.075	488902.203
Northing	6942912.331	6942933.546	6942843.140	6942823.844	6942811.512
Elevation (m)	55.348	53.341	58.558	58.584	58.160
Layer / Reduced Level	FL	0.2m below FL	FL	0.3m below FL	FL
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Sandy Clay, Brown	Sandy Clay, Brown	Sandy Clay, Brown	Sandy Clay, Brown	Sandy Clay, Brown
Test Depth (mm)	275	275	275	275	275
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	2.17	2.10	2.12	2.06	2.21
Field Moisture Content %	8.4	14.0	18.1	14.2	12.8
Field Dry Density (FDD) t/m ³	2.00	1.84	1.79	1.80	1.96
Peak Converted Wet Density t/m ³	2.14	2.13	2.16	2.11	2.16
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**
Moisture Variation (Wv) %	0.0	0.5	-0.5	0.5	0.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	101.5	98.5	98.0	97.5	102.5
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: B21071-3
Issue Number: 1
Date Issued: 20/05/2021
Client: BMD Urban
 1 Sandpiper Ave, Port of Brisbane QLD 4178
Contact: Kody O'Hea
Project Number: B21071
Project Name: 4836 Brentwood Estate Stages 8 & 9
Project Location: Level One Earthworks 19/05/2021
Work Request: 1182
Date Sampled: 19/05/2021
Dates Tested: 19/05/2021 - 19/05/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Specification: Minimum 95% Standard Compaction
Site Selection: Selected by Client
Material: General Fill
Material Source: On Site



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 Area Manager

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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

	B21-1182A	B21-1182B	B21-1182C
Sample Number	B21-1182A	B21-1182B	B21-1182C
Date Tested	19/05/2021	19/05/2021	19/05/2021
Time Tested	14:33	14:38	14:43
Test Request #/Location	**	**	**
Easting	488898.979	488862.012	488878.660
Northing	6942946.206	6942934.526	6942958.657
Layer / Reduced Level	FSL	FSL	FSL
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Gravelly Clay, Brown	Sandy Gravelly Clay, Red/Brown	Sandy Gravelly Clay, Red/Brown
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Field Wet Density (FWD) t/m ³	2.13	2.05	2.07
Field Moisture Content %	12.7	14.4	13.9
Field Dry Density (FDD) t/m ³	1.89	1.79	1.82
Peak Converted Wet Density t/m ³	2.12	2.11	2.05
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	2.0	0.5	2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	100.5	97.0	101.0
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: B21071-4
Issue Number: 1
Date Issued: 24/05/2021
Client: BMD Urban
 1 Sandpiper Ave, Port of Brisbane QLD 4178
Contact: Kody O'Hea
Project Number: B21071
Project Name: 4836 Brentwood Estate Stages 8 & 9
Project Location: Level One Earthworks 20/05/2021
Work Request: 1189
Date Sampled: 20/05/2021
Dates Tested: 20/05/2021 - 20/05/2021
Specification: Minimum 95% Standard Compaction
Site Selection: Selected By QCTS Technician
Material: General Fill
Material Source: On Site



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

	B21-1189A	B21-1189B	B21-1189C
Sample Number	B21-1189A	B21-1189B	B21-1189C
Date Tested	20/05/2021	20/05/2021	20/05/2021
Time Tested	13:26	13:32	13:37
Test Request #/Location	Lot 18	Lot 32	Lot 33
Easting	488917.216	488879.556	488870.283
Northing	6942893.742	6942882.394	6942895.217
Layer / Reduced Level	FL	FL	FL
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy clay, brown	Sandy clay, brown	Sandy clay, brown
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Field Wet Density (FWD) t/m ³	2.08	2.11	2.10
Field Moisture Content %	12.9	13.0	13.2
Field Dry Density (FDD) t/m ³	1.84	1.87	1.86
Peak Converted Wet Density t/m ³	2.14	2.11	2.11
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	0.5	-0.5	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	97.0	100.0	99.5
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: B21071-35
Issue Number: 1
Date Issued: 18/08/2021
Client: BMD Urban
 1 Sandpiper Ave, Port of Brisbane QLD 4178
Contact: Kody O'Hea
Project Number: B21071
Project Name: 4836 Brentwood Estate Stages 8 & 9
Project Location: Brentwood Estate Stage 10A Level 1
Work Request: 1591
Date Sampled: 30/07/2021
Dates Tested: 30/07/2021 - 04/08/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Preparation Method: AS 1289.1.1 - Sampling and preparation of soils
Specification: Minimum 95% Standard Compaction
Site Selection: Selected By QCTS Technician
Material: General Fill
Material Source: On Site



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 Area Manager

NATA Accredited Laboratory Number: 20024

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	B21-1591A	B21-1591B	B21-1591C
Date Tested	30/07/2021	30/07/2021	30/07/2021
Time Tested	13:45	13:50	13:55
Test Request #/Location	Lot 81	Lot 79	Lot 77
Easting	489006.120	488988.660	488986.154
Northing	6942859.741	6942856.205	6942848.340
Layer / Reduced Level	0.2m below FL	0.2m below FL	0.2m below FL
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Clay, Brown	Sandy Clay, Brown	Sandy Clay, Brown
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Field Wet Density (FWD) t/m ³	2.08	2.09	2.08
Field Moisture Content %	14.4	15.1	15.4
Field Dry Density (FDD) t/m ³	1.81	1.81	1.80
Peak Converted Wet Density t/m ³	2.07	2.03	2.03
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	0.5	1.0	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	100.5	103.0	102.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

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

LEGEND

PROPOSED SURFACE CONTOURS	EXISTING SURFACE CONTOURS
BUILDING PAD AND LEVEL	NOMINAL BULKLINE
GRAVELL BOLLER WALL BY	BATTER SLOPE 0:0.6m
RETAINING WALL - 0.6-1.5m	RETAINING WALL - 1.5-2.0m
RETAINING WALL - 2.0-3.0m	GRID INDICATION LINE
PROPOSED CATCH DRAIN	TOP OF BANK
10% OFFSET FROM TOP OF BANK	EXISTING SANITARY PIPELINE
EXISTING WATER RETICULATION	EXISTING SEWER RETICULATION
EPIC LINE	STAGE BOUNDARY
EXISTING SEWERAGE	RETICULATION TO BE DISMISSED

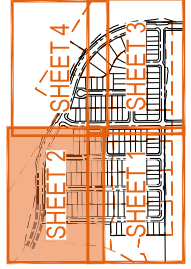
NOTES

- NOTWITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE DRAWINGS, THE ACTUAL LIMITS SHALL BE ADJUSTED BY THE CONTRACTOR TO ACCORDANCE WITH THE DIRECTION OF THE ENGINEER DURING CONSTRUCTION. FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY THE CONTRACTOR TO ACCORDANCE WITH THE DIRECTION OF THE ENGINEER DURING CONSTRUCTION. ALL CUTTING AND FILLING TO BE CARRIED OUT IN ACCORDANCE WITH THE DIRECTION OF THE ENGINEER. ALL AREAS SHALL BE CONSTRUCTED IN LAYERS NOT EXCEEDING 300mm LOOSE DEPTH. THE FILL MATERIAL SHALL BE GRAVELL OR GRAVELL SAND MIXTURE WITH A 10% (MINIMUM) TESTING SHALL BE ACCORDANCE WITH AS 288 (MODIFIED) COMPACTED. THE CONTRACTOR SHALL SUPPLY TO THE ENGINEER CERTIFICATION OF THE COMPACTION ALL EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 288 UNDER LEVEL 1 SUPERVISION.
- DESIGN LEVELS SHALL BE FINISHED SURFACE LEVELS. THE CONTRACTOR SHALL CONSIDER THE LOCATION OF ALL EXISTING SERVICES AND PROTECT THESE SERVICES DURING CONSTRUCTION. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- ALL OF THE SITE SHALL BE KEPT FREE DRAINING DURING ALL PHASES OF THE PROJECT. GRASSES SHALL BE PLANTED IN ALL AREAS WHERE GRASSES ARE NOT SPECIFIED (REFER BULK EARTHWORKS LAYOUT PLAN).
- MINIMUM TOPSOIL THICKNESS 100mm.
- UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT ALL AREAS SHALL BE GRASS SEEDING WITH A MINIMUM 80% PLANTING DENSITY.
- ALL ALLOWMENTS TO BE GRASS SEEDING WITH A MINIMUM 80% PLANTING DENSITY WITHIN 14 DAYS OF COMPLETION OF EARTHWORKS.
- ALL WORKS TO BE CONDUCTED IN ACCORDANCE WITH DMF REQUIREMENTS.

VOLUMES

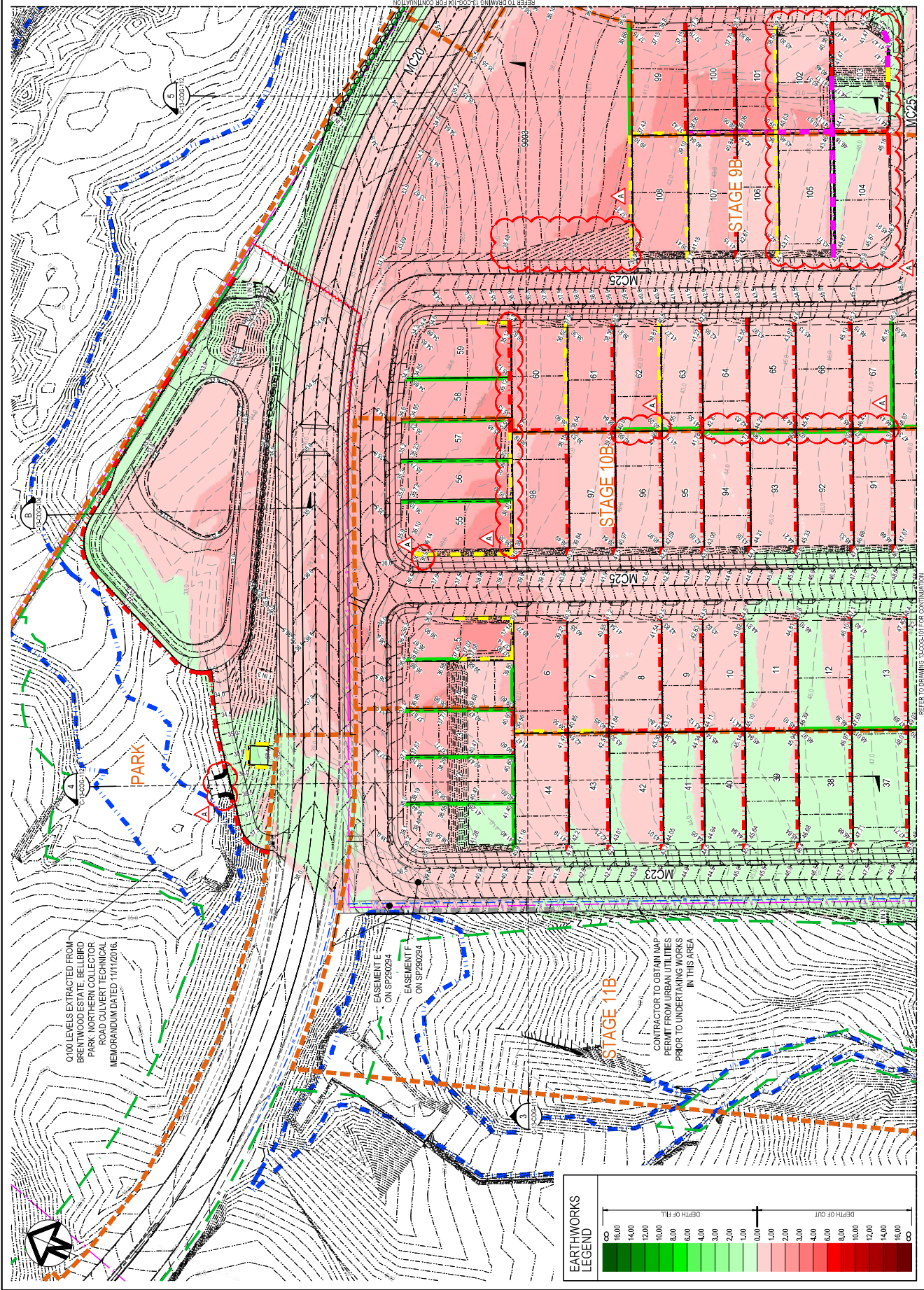
(THESE VOLUMES ARE TAKEN AND HAS BEEN MEASURED FROM EXISTING TO DESIGN WITHOUT TOP SOIL CONSIDERATION.)

TOTAL CUT =	-127,980.17 m ³
TOTAL FILL =	40,586.89 m ³
BALANCE =	-87,393.28 m ³



ARCADIS
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Project: BRENTWOOD FOREST STAGE 8-13
Drawing No: C-13-COCS-102-AA0008817 - A
Issue



AVID Property Group

FOR CONSTRUCTION

Approved: 11.03.21 RPE/lo - 20204
Scale: 1:500
Drawn: O.FENILLA
Designed: A1
Checked: AHD
Project Manager: J. SMITH
Contractor: LOCAL
Status: LOCAL

Client: veris

Surveyor: veris

Architect: veris

Frame: veris

Issue: veris

Revision: veris

Scale: 1:500
0 5 10 20 30 40 50m

01 ORIGINAL ISSUE
02 RESPONSE TO COUNCIL
03 AMENDED DRAWINGS AS PER COUNCIL
04 AMENDED DRAWINGS AS PER COUNCIL
05 ISSUE FOR CONSTRUCTION

DATE: 11/03/21