J1501139 007 L Rev0 19 June 2022

KC Traffic and Transport Pty Ltd
7/10 Whipple Street
BALCATTA WA 6021

Attention: Colin Kleyweg

EARTHWORKS VERIFICATION - BULK EARTHWORKS AND CIVIL WORKS
RESIDENTIAL SUBDIVISION - BROOKLANDS STAGE B2
HENLEY BROOK

Dear Colin,

1. INTRODUCTION

This letter presents the outcomes of Galt Geotechnics Pty Ltd's (Galt's) earthworks verification for the Brooklands Stage B2 subdivision off Partridge Street, Henley Brook ("the site").

Stage B2 comprises 57 single residential lots and associated access roads. The extent of Stage B2 is shown on the earthworks drawing KC00334.021-C100 Rev0, presented in Attachment A. Photographs of the site taken during the verification are presented in Attachment B, Site Photographs.

2. BACKGROUND

Galt has conducted preliminary studies for the larger development site that includes Stage B2. These include:

- a due diligence assessment dated July 2015 (referenced: J1501139 001 TM Rev0); and
- a geotechnical study dated September 2019 (referenced: J1501139 004 R Rev0).

The studies found the site was underlain by the following stratigraphy:

- TOPSOIL: Organic SAND/SAND (SP-SM): fine to coarse grained, sub-angular to sub-rounded, dark grey, trace to with fines, with organics (up to 6%) to depth of typically 0.1 m to 0.2 m (up to about 0.3 m); overlying
- SAND (SP): fine to coarse grained, sub-angular to sub-rounded, dark grey/grey/off-white, generally very loose to loose to depths of up to 1.5 m becoming medium dense to dense, to the maximum investigated depth of 6.2 m.

3. EARTHWORKS SPECIFICATION

We understand that the works were carried out under the standard KCTT Technical Specification 2 Earthworks (Revision B dated 10/5/2018).

We note that approved sand fill must be compacted to a dry density ratio (DDR) of 95% Modified Maximum Dry Density (MMDD).

4. BULK EARTHWORKS AND CIVIL WORKS

www.galtgeo.com.au
50 Edward Street OSBORNE PARK WA 6017
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F: +61 (8) 9285-8444

ABN: 64 625 054 729

Bulk earthworks and civil works were carried out by Croker Construction (WA) Pty Ltd (Croker) and comprised:

- Removal of topsoil and vegetation where required;
- Proof compaction of the exposed ground;
- Bulk lot fill – involving placement and compaction of up to 1 m of approved sand fill;
- Construction of retaining walls;
- Placement and compaction of retaining wall backfill; and
- Construction of roads and pavements.

Galt carried out a site inspection during the bulk earthworks to assess the adequacy of topsoil strip and inspect ongoing earthworks across the site. The outcomes were reported in our technical memorandum J1501139 006 TM Rev0 dated 3 March 2022.

5. COMPACTION CONTROL

5.1 Perth Sand Penetrometer (PSP) Correlation

A Perth sand penetrometer (PSP) correlation was undertaken by Structerre for the sand fill used on site. The PSP correlation is included in Attachment C, Perth Sand Penetrometer (PSP) Correlation. The results from the PSP correlation indicates that for the sand fill used on site, 8 blows over the depth interval 0.15 m to 0.45 m correlates to 95% MMDD.

Based on the provided PSP correlation, we consider the following minimum blow counts correlate to 95% MMDD:

- 0 – 150 mm: SET
- 150 – 450 mm: 8 blows
- 450 – 750 mm: 10 blows
- 750 – 1050 mm: 12 blows

5.2 Croker Perth Sand Penetrometer Test Results

Croker undertook compaction control throughout the earthworks using a PSP in accordance with AS1289.6.3.3.

The penetrometer test results are presented in Attachment D, Croker Penetrometer Test Results. The results of the testing indicate that the minimum required PSP blow counts were met or exceeded at all areas tested.

Note: We assume that the provided test data refers to testing carried out at finished pad level and the top 1 m wall backfill for retaining walls. We do not have data for any testing carried out on the subgrade prior to filling nor on intermediate fill layers.

5.3 Galt's Penetrometer Test Results

Galt conducted post earthworks verification testing on 15 June 2022. The testing comprised PSP testing in accordance with AS1289.6.3.3, except to a greater depth than the 0.45 m covered by the standard. Furthermore, blow counts were recorded in 0.15 m intervals. PSP testing was carried out at 34 locations across the site, and the results of the tests are presented in Attachment E, Galt's Penetrometer Test Results.

The results of our testing show the minimum required blow counts were met or exceeded in the upper 0.9 m of fill in most areas tested. There were a few isolated instances where lower than required blows counts were recorded for the depth range of 150 mm - 450 mm. In areas where two blow counts less than required was noted, we requested Croker remediate, re-test and provide us the re-test results. Croker's re-test results (included in Attachment D, Croker Penetrometer Test Results) indicate that following re-compaction, the required blow counts were achieved.

For the case where one blow count less than required was noted, we did not consider this to be a significant geotechnical encumbrance. The low blow counts in the upper zone are common in the type of sand fill (poorly graded, sub-rounded particles and trace non-plastic fines) placed over the site. Constraint by future pavements and buildings should improve the upper layer, along with proof compaction prior to such construction.

6. DISCUSSION

Based on the results of Croker's and our PSP testing, the earthworks have been generally carried out in accordance with the KCTT Specification.

We consider that a site classification of "Class A" is appropriate for the completed earthworks in accordance with AS2870 (2011). On ground slabs and footings may therefore be designed in accordance with the standard for a "Class A" site where appropriate.

Note: Footing and slab details provided in AS2870 (2011) assume a maximum bearing pressure of 100kPa. This must be taken into account by the structural designers.

7. CLOSURE

Galt has been engaged to carry out "Level 2" supervision for the earthworks in accordance with AS3798-2007 "Guidelines on earthworks for commercial and residential developments". Details and definitions regarding "Level 2" earthworks supervision is presented in Attachment F, Level 2 Earthworks Supervision. Primary responsibility for quality assurance (QA) rests with the Contractor for the site.

We draw your attention to Attachment G of this letter, "Understanding your Report". The information provided within is intended to inform you as to what your realistic expectations are of this report should be. Guidance is also provided on how to minimize risks associated with groundworks for this project. This information is provided not to reduce the level of responsibility accepted by Galt, but to ensure that all parties who rely on this report are aware of the responsibilities each assumes in so doing.

GALT GEOTECHNICS PTY LTD

Fred Davenport MIE Aust
Geotechnical Engineer

Attachments:
A – Earthworks Drawing
B – Site Photographs
C – Perth Sand Penetrometer Correlation
D – Croker Penetrometer Test Results
E – Galt's Penetrometer Test Results
F – 'Level 2' Earthworks Supervision
G – Understanding Your Report

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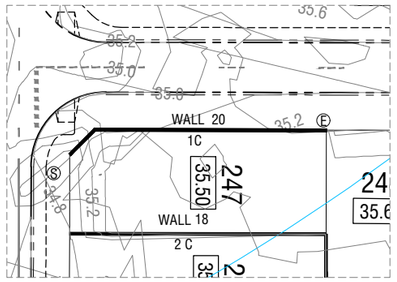
ATTACHMENT A

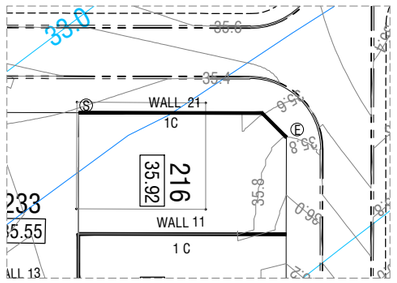
Earthworks Drawing

www.galtgeo.com.au
4/15 Walters Drive OSBORNE PARK WA 6017

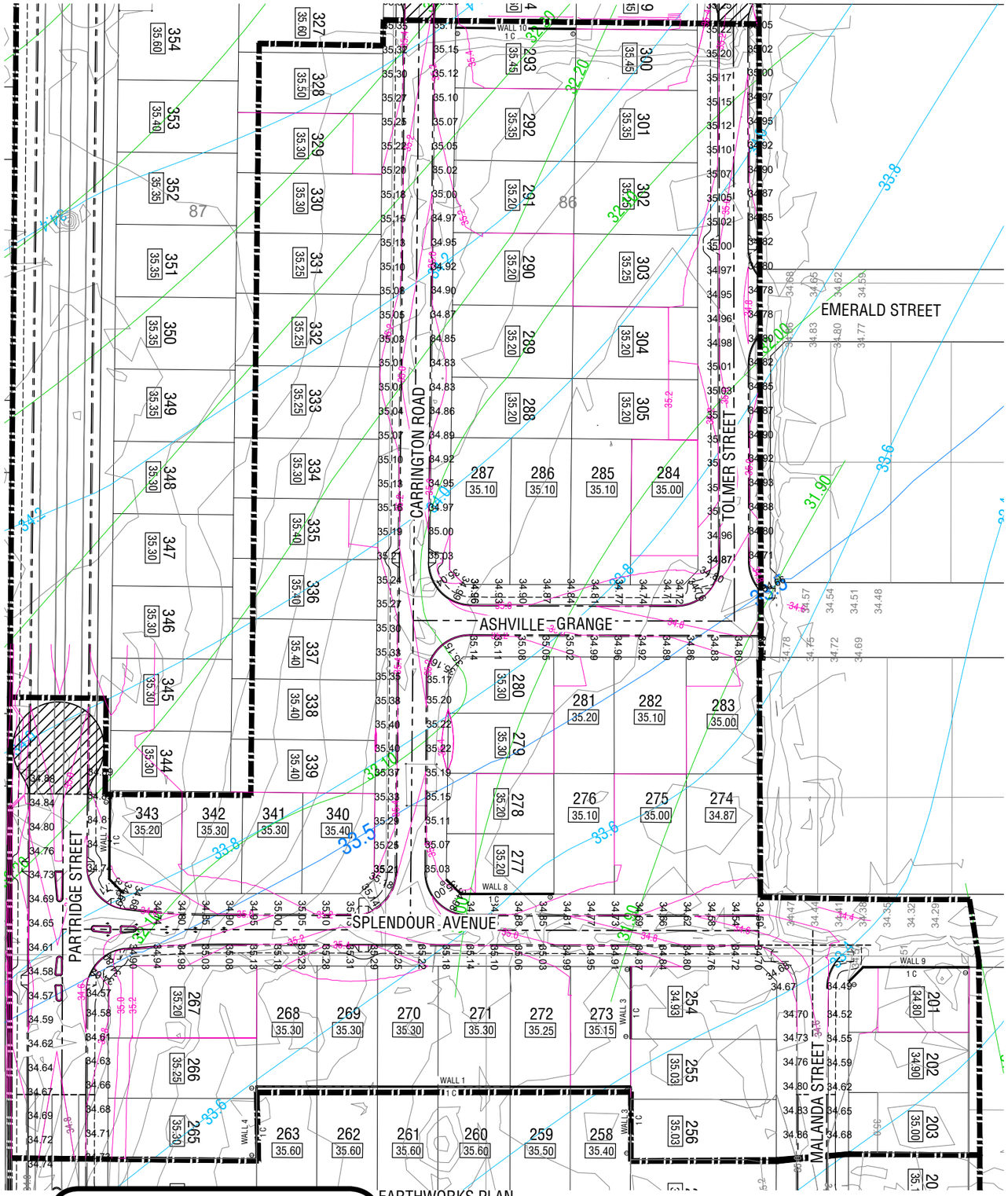
ABN: 64 625 054 729



LOT 247 FROM STAGE B1



LOT 216 FROM STAGE B1



EARTHWORKS PLAN
SCALE 1:500

VOLUMES		
CUT	FILL	BALANCE
-889.1m³	17373.7m³	16484.6m³

THE CONTRACTOR SHALL CONFIRM THERE ARE APPROXIMATELY 2,000m3 OF EXCESS TOPSOIL FROM STAGE B1. THIS MATERIAL IS TO BE SIEVED AND BLENDED WITH IMPORT FILL MATERIAL AS PART OF THE BALANCE MATERIAL ABOVE. TOPSOIL SHALL BE BLENDED 1 PART TOP SOIL TO 3 PARTS IMPORT FILL AND LAID AT THE IN-SITU SURFACE AFTER COMPACTION OF IN-SITU MATERIALS.

LEGEND

- STAGE BOUNDARY
- EXISTING ROAD CENTRE LINE
- EXISTING ROAD EDGE
- 23.2 DESIGN CONTOURS (0.2m INTERVAL)
- 23.2 EXISTING CONTOURS (0.2m INTERVAL)
- 15.5 EXISTING AAMGL CONTOURS
- 11.0 CGL CONTOURS
- 16.0 MGL CONTOURS
- PROPOSED LOTS
- 98 EXISTING LOTS
- EXISTING TREE TO BE PROTECTED AND RETAINED
- EXISTING TREE TO BE REMOVED
- EXISTING ROAD SIGN
- PROPOSED RETAINING WALLS
- 51.95 SPOT LEVEL
- TEMPORARY BASIN

NOTES:

1. THE CONTRACTOR SHALL PROTECT ALL EXISTING KERBS, ROAD PAVEMENTS AND EXISTING INFRASTRUCTURE SERVICES IN PARK STREET AS PART OF THIS CONTRACT.
2. IT IS RECOMMENDED THE CONTRACTOR UNDERTAKES A ROAD DILAPIDATION SURVEY AND REPORT PRIOR TO THE COMMENCEMENT OF WORKS AND PROVIDES A COPY OF THIS TO THE SUPERINTENDENT AND THE CITY OF SWAN.
3. THE CONTRACTOR SHALL PROTECT ALL EXISTING TREES IN THE PARK STREET ROAD RESERVATION, INCLUDING THE PROPOSED ROAD RESERVATION WIDENING. THE CONTRACTOR SHALL DLINEATE THESE TREES WITH GREEN RIBBONS TO ENSURE THE TREES ARE PROTECTED DURING ALL WORKS.
4. WHERE EXISTING TREES ARE TO BE PROTECTED, THE CONTRACTOR SHALL LOCALLY PROTECT ALL EXISTING EARTHWORKS NATURAL SURFACE LEVELS UNDER THE FOLIAGE DRIP LINE OF THAT TREE. WHERE THESE LEVELS VARY FROM THOSE SHOWN IN THESE DRAWINGS, THE CONTRACTOR SHALL LOCALLY BATTER DOWN TO SURFACE OUSTIDE OF THE DRIP LINE AT A BATTER OF 1 IN 3.
5. RETAINING WALLS ARE SHOWN ON THIS PLAN FOR INFORMATION PURPOSES ONLY. WHERE REATINING WALLS ARE SHOWN, THE CONTRACTOR SHALL BATTER DOWN AT 1 IN 3 TYPICALLY BETWEEN THE LEVELS ENSURING THE BATTER IS OFFSET WITH THE TOP AND BOTTOM OF THE BATTER EQUIDISTANT FROM THE CENTRE OF THE WALL.
6. THE INTENT OF THESE EARTHWORKS ARE THAT THEY ARE COMMENCED AT THE SAME TIME AS PROPOSED EARTHWORKS FOR MIRVAC'S DEVELOPMENT ON THE EASTERN BOUNDARY OF THE SUBJECT SITE. THE CONTRACTOR SHALL BE REQUIRED TO COORDINATE ALL EARTHWORKS WITH MIRVAC'S EARTHWORKING CONTRACTOR, ENSURING ALL CUT AND FILL SHOWN ON THESE PLANS ARE MAINTAINED WITHIN OUR SUBJECT LANDHOLDINGS.
7. THE CONTRACTOR SHALL STRIP THE FIRST 100MM OF TOPSOIL AND STOCKPILE.
8. THE CONTRACTOR SHALL SIEVE ALL TOPSOIL AND BLEND THE SIEVED TOPSOIL AT 1 PART TO 3 WITH THE PROPOSED CUT TO FILL. THE REMAINING ORGANIC MATERIAL SHALL BE STOCKPILED ON LAND DIRECTLY TO THE NORTH OF THE AREA B EARTHWORKS EXTENTS SHOWN IN DRAWING KC00334.021 C101.

WARNING

BEWARE OF UNDERGROUND SERVICES

DIAL1100 BEFORE YOU DIG

The location of underground cables are approximate only and their exact position should be checked on site. No guarantee is given that all existing cables and services are shown. Locate all underground cables and services before commencement of work. Refer to Worksafe Regulation 3.21.

ISSUED FOR CONSTRUCTION

1:500

0 5m 10 15 20 25 30 35 40 45 50 55 60 65 70 75

DRAWING ISSUE

By dperks at 2:50:11 PM, 28/02/2022

REV No.	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
3	24/02/22	CK	CK			ISSUED FOR CONSTRUCTION
2	03/02/22	CK	CK			ISSUED FOR CONSTRUCTION
1	20/12/21	CK	CK			ISSUED FOR CONSTRUCTION
0	04/10/21	CK	CK			ISSUED FOR CONSTRUCTION

KC Traffic and Transport Pty Ltd
ABN 35 148 970 727
7/10 Whipple Street, Balcatta WA 6021
Phone: 08 9441 2700
Website: www.kctt.com.au

CLIENT: PROGRESS DEVELOPMENTS PTY LTD

PROJECT: BROOKLANDS STAGE B2 HENLEY BROOK

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
M.SATEV	C.KLEYWEG		
DESIGNED	DESIGN REVIEW		
F.BOROVIC	C. KLEYWEG		

TITLE: BROOKLANDS ESTATE AREA B STAGE 2
EARTHWORKS PLAN

SHEET	DATUM	WAPC No. 160183	PROJECT No	DRAWING No	REVISION
A1		SCALE 1:500	KC00334.021	C100	3

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ATTACHMENT B

Site Photographs

www.galtgeo.com.au
4/15 Walters Drive OSBORNE PARK WA 6017

ABN: 64 625 054 729

Photograph 1: Looking east at Lot 340.

Photograph 2: Looking north from Lot 284.

Photograph 3: Looking south from near Lot 330.

Photograph 4: Looking east from Lot 343.

ATTACHMENT C

Perth Sand Penetrometer (PSP) Correlation

www.galtgeo.com.au
4/15 Walters Drive OSBORNE PARK WA 6017

ABN: 64 625 054 729

Material Test Certificate

Correlation of Field Density and Perth Sand Penetrometer Blows

Client:	CROKER CONSTRUCTION	**Job Number:**	S1058179
Project:	Brooklands Estate Area B - Stage 2 - PARK ST BRABHAM	**Issue Number:**	1
Report Number:	S1058179-A	**Page:**	1 of 2

Laboratory testing carried out at Malaga Laboratory 44 Crocker Dr Malaga 6090

Sample ID:	PSP Correlation	**Date Tested:**	18 Jan 2022
Proposed Use:	Fill	**Depth of Test:**	300 mm
Material Type:	Blended Material	**Layer Thickness:**	- mm
Sampling Method :	AS 1289.1.2.1	**Site Selection Method:**	Client
Sample Preparation Method:	AS 1289.1.1		

AS 1289.5.8.1 Determination of field density and field moisture content of a soil using a nuclear surface moisture density gauge - Direct transmission mode

Test Number	S1058179-A	-1	-2	-3	-4	-5					
Chainage	m										
Offset	m										
Elevation	m										
Wet Density	t/m^3	1.71	1.81	1.81	1.82	1.94					
Dry Density	t/m^3	1.54	1.63	1.61	1.65	1.74					
Moisture Content	%	11.0	10.5	12.3	10.3	11.1					

AS 1289.5.2.1 Determination of the dry density/moisture content relation of a soil using modified compactive effort

Maximum Dry Density	t/m^3	1.78									
Optimum Moisture Content	%	11.0									

AS 1289.5.4.1 Dry density ratio, moisture variation and moisture ratio

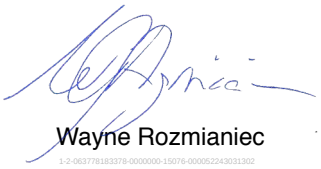
Dry Density Ratio	%	86.5	92.0	90.5	92.5	98.0					
Moisture Ratio	%	98.0	94.0	110.0	91.5	99.5					
Moisture Content Variation	%	0.0	0.5	-1.0	1.0	0.0					
Wet / Dry of Optimum		DRY	DRY	WET	DRY	DRY					

Correlation of Field Density and PSP Blows

Number of Blows		4	6	6	7	9					

Notes:

Approved Signatory:
Laboratory Manager



Wayne Rozmianiec Date: 19 Jan 2022

WA | QLD | NSW | VIC
1 Erindale Road, Balcatta, Western Australia 6021 | PO Box 792, Balcatta, Western Australia 6914
Phone (+618) 9205 4500 | Fax (+618) 9205 4501 | Email wageotechlab@structerre.com.au | Web www.structerre.com.au
ABN 71 349 772 837 Zemla Pty Ltd ACN 008 966 283 as trustee for the Young Purich and Higham Unit Trust trading as Structerre Consulting Engineers

Material Test Certificate

Correlation of Field Density and Perth Sand Penetrometer Blows

Client:	CROKER CONSTRUCTION	**Job Number:**	S1058179
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Report Number:	S1058179-A	**Page:**	2 of 2

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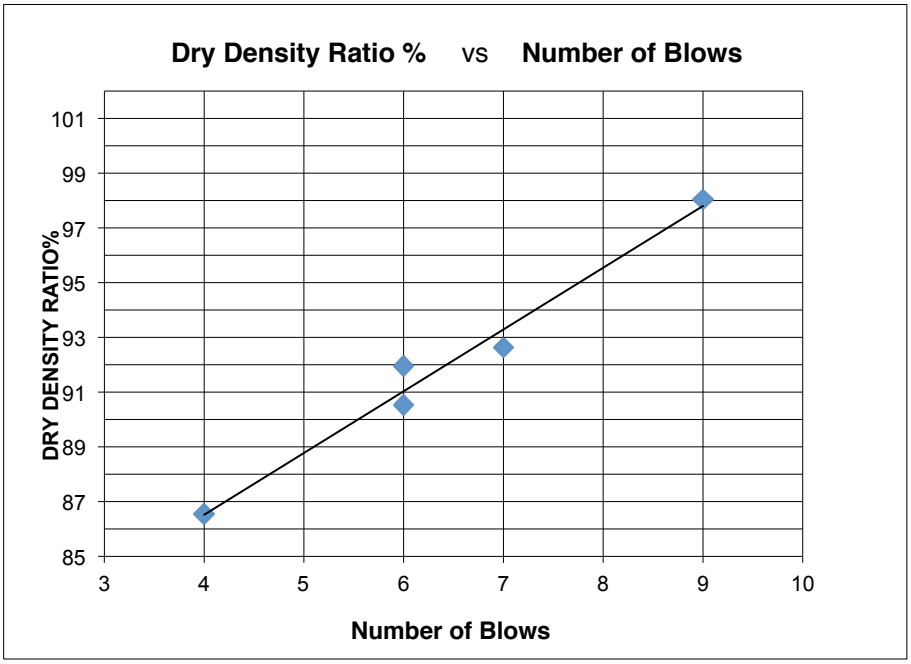
Proposed Use:	Fill	**Depth of Test:**	300 mm
Material Type:	Blended Material	**Layer Thickness:**	- mm
Sampling Method :	AS 1289.1.2.1	**Site Selection Method:**	Client
Sample Preparation Method:	AS 1289.1.1		



The results indicate that 8 Blows would be required to obtain a Dry Density Ratio of 95%.

The number of blows is calculated from the average line shown in the chart rounded up to the nearest whole number.

Notes:

Approved Signatory:
Laboratory Manager Wayne Rozmianiec Date: 19 Jan 2022

WA | QLD | NSW | VIC
1 Erindale Road, Balcatta, Western Australia 6021 | PO Box 792, Balcatta, Western Australia 6914
Phone (+618) 9205 4500 | Fax (+618) 9205 4501 | Email wageotechlab@structerre.com.au | Web www.structerre.com.au
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ATTACHMENT D

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www.galtgeo.com.au
4/15 Walters Drive OSBORNE PARK WA 6017

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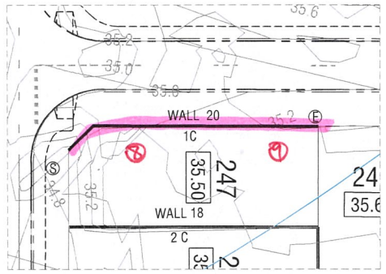
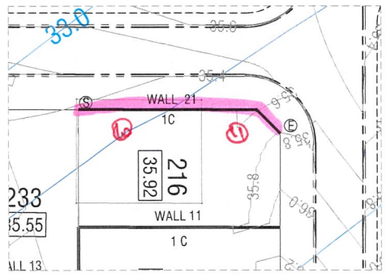
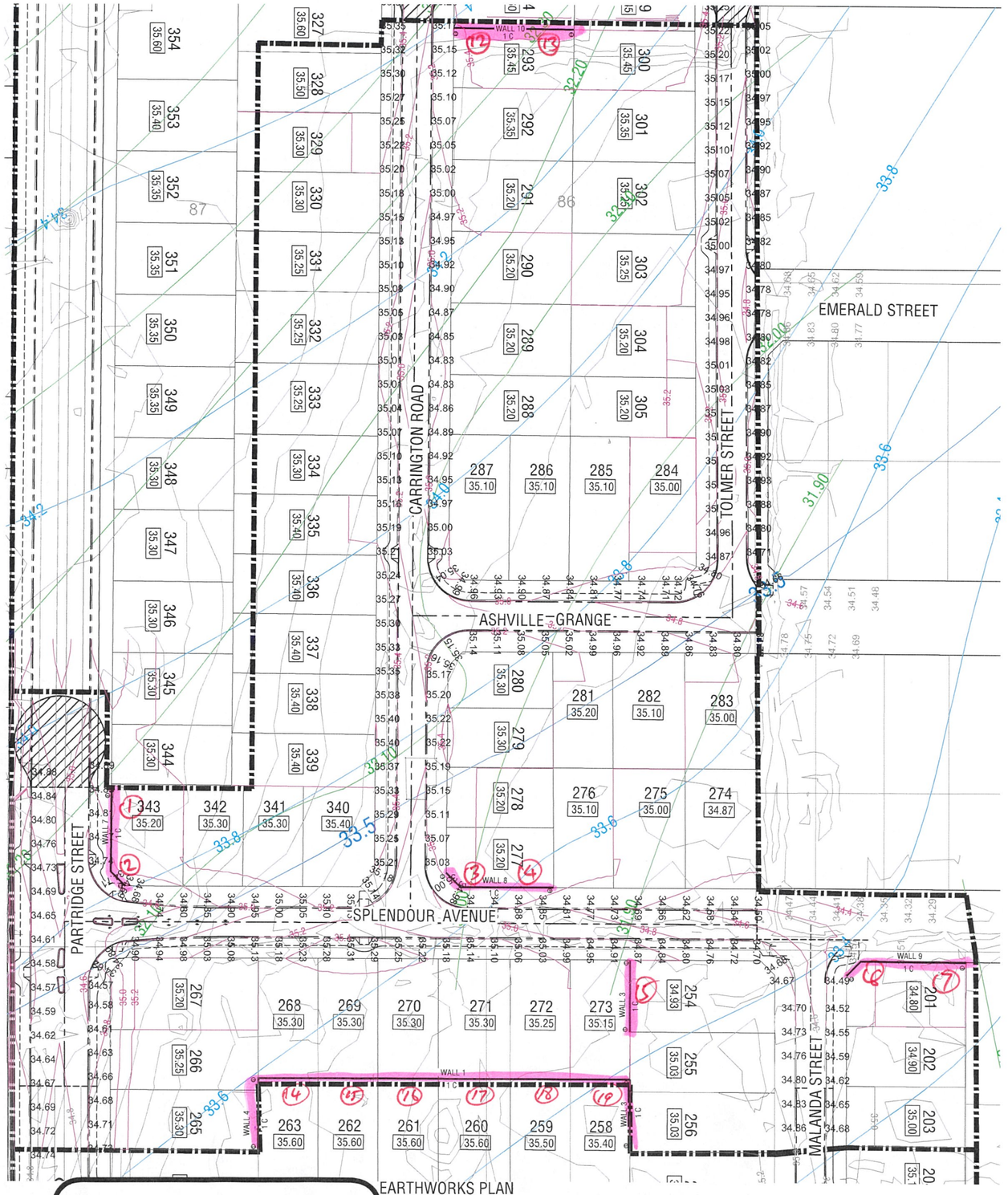


LOT 247 FROM STAGE B1



LOT 216 FROM STAGE B1



EARTHWORKS PLAN

SCALE 1:500

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DIAL 1100 BEFORE YOU DIG

ISSUED FOR CONSTRUCTION

1:500 0 5m 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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0	04/10/21	CK	CK			ISSUED FOR CONSTRUCTION

DRAWING ISSUE

By dperks at 2:50:11 PM, 28/02/2022

KC Traffic and Transport Pty Ltd
ABN 35 148 970 727
7/10 Whipple Street, Balcatta WA 6021
Phone: 08 9441 2700
Website: www.kctt.com.au

CLIENT: PROGRESS DEVELOPMENTS PTY LTD

PROJECT: BROOKLANDS STAGE B2 HENLEY BROOK

DRAFTER	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
M.SATEV	C.KLEYWEG		
DESIGNED	DESIGN REVIEW		
F.BOROVIC	C. KLEYWEG		

TITLE: BROOKLANDS ESTATE AREA B STAGE 2 EARTHWORKS PLAN

SHEET	DATUM		PROJECT No.	DRAWING No.	REVISION
A1		WAPC No. 160183	KC00334.021	C100	3
		SCALE 1:500			

C:\Users\colin\Box\KCTT Projects\KC00000 Current Projects\KC00334.001 Brooklands Concept Design (Al Stayers)\Designing\Drawings\KC00334.021 Stage B2 Drawings\KC00334.021 C100 28/02/2022 9:06:11 AM Colin Kleyweg

CROKER CONSTRUCTION (WA) Pty Ltd

COMPACTION TESTING - PENETROMETER

15 Da Vinci Way
FORRESTDALE, W.A 6112
TEL: 9399 8002
FAX: 9399 9924
ABN 50 148 85 635

Job: Brookland B2

Compactions: 8 blows / 300mm

Compaction results: LOT Compactions

Reference	Location (LOT)	(150-450mm)	(450 - 750mm)	(750-1050mm)						
	201	8	13	20+						
	202	8	15	20+						
	203	9	16	20+						
	254	8	14							
	255	10	15	20+						
	256	8	16	20+						
	265	9	15	20+						
	266	8	17	20+						
	267	8	16	20+						
	268	8	15	20+						
	269	8	14	20+						
	270	9	14	20+						
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	291	8	14	20+						
	292	8	15	20+						
	293	8	16	20+						
	300	8	15	20+						
	301	8	16	20+						
	302	9	15	20+						
	303	8	17	20+						
	304	9	16	20+						
	305	9	15	20+						
	328	10	15	20+						
	329	10	16	20+						
	330	8	15	20+						
	331	9	14	20+						
	332	10	14	20+						
	333	9	15	20+						
	334	8	16	20+						
	335	10	15	20+						
	336	10	17	20+						
	337	8	16	20+						
	338	8	15	20+						
	339	8	14	20+						
	340	10	18	20+						
	341	10	18	20+						
	342	10	17	20+						
	343	10	16	20+						

CROKER CONSTRUCTION (WA) Pty Ltd

CROKER CONSTRUCTION

COMPACTION TESTING - PENETROMETER

15 Da Vinci Way
FORRESTDALE, W.A 6112
TEL: 9399 8002
FAX: 9399 9924
ABN 50 148 85 635

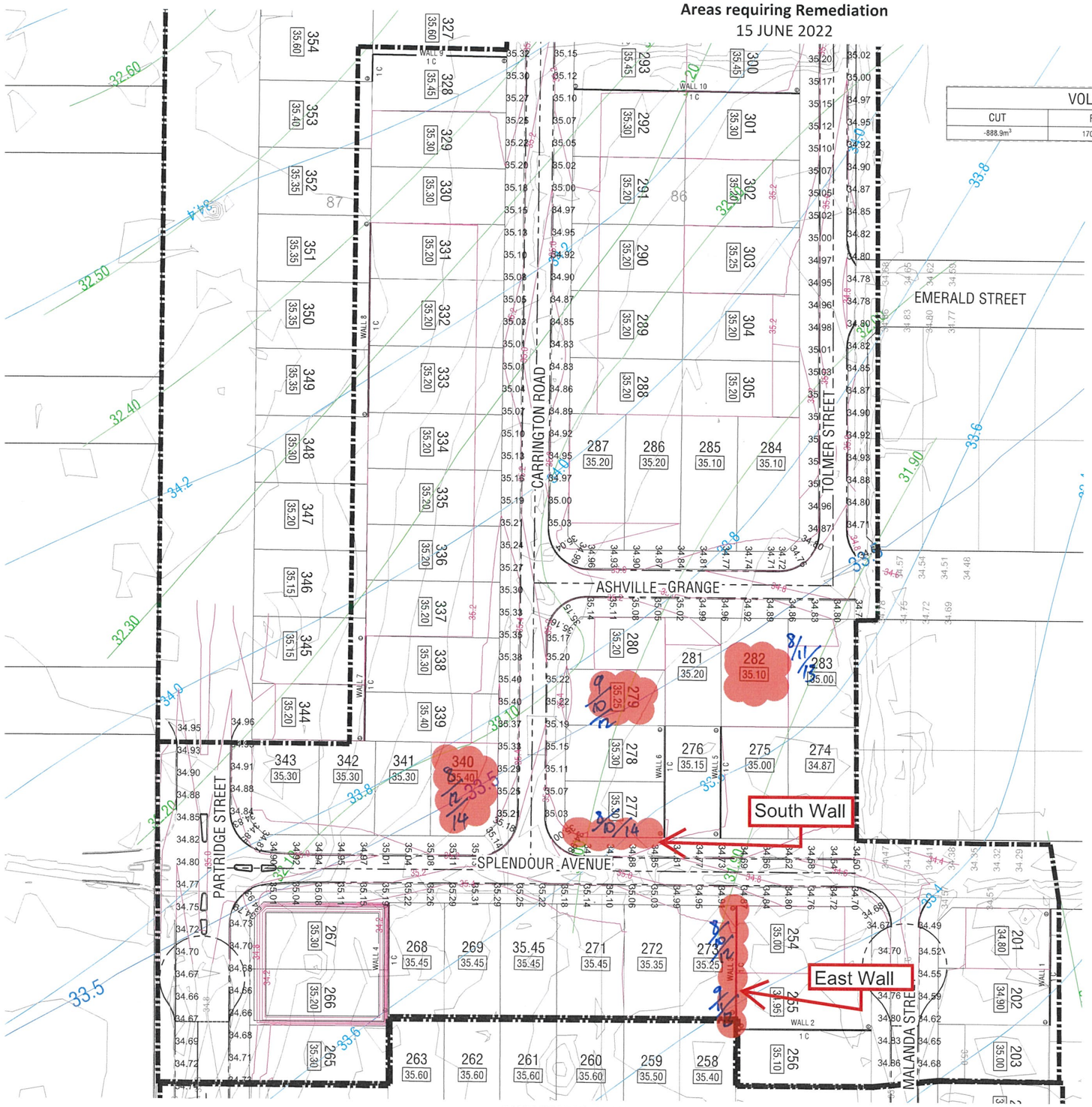
Job: Stage Brookland B2

Compactions: 8 blows / 300mm

Compaction results: Wall Compactions

			Top 1m backfill			Top 2m backfill			Top 3m backfill		
Reference	Location (LOT)	Footings	(150-450mm)	(450 - 750mm)	(750-1050mm)	(1050 - 1350mm)	(1350-1650mm)	(1650 -1950mm)	(1950 - 2250mm)	(2250 - 2550mm)	(2550 - 2850mm)
1		8	8	10	14						
2		8	9	11	15						
3		8	9	13	16						
4		9	9	10	14						
5		10	8	10	14						
6		8	8	11	12						
7		9	8	10	12						
8		8	8	10	15						
9		10	8	10	14						
10		9	8	11	14						
11		9	8	12	15						
12		9	9	12	14						
13		8	8	10	14						
14		8	8	11	15						
15		8	8	12	16						
16		8	9	10	18						
17		8	9	12	14						
18		7	8	12	15						
19		9	8	12	16						

GALT GEOTECHNICS PTY LTD
Stage B2 Final Earthworks
Areas requiring Remediation
15 JUNE 2022



EARTHWORKS PLAN
SCALE 1:500

VOLUMES		
CUT	FILL	BALANCE
-888.9m³	17001.4m³	16112.5m³

LEGEND

- STAGE BOUNDARY
- EXISTING ROAD CENTRE LINE
- EXISTING ROAD EDGE
- 23.2 DESIGN CONTOURS (0.2m INTERVAL)
- 23.2 EXISTING CONTOURS (0.2m INTERVAL)
- 15.5 EXISTING AAMGL CONTOURS
- 11.0 CGL CONTOURS
- 16.0 MGL CONTOURS
- PROPOSED LOTS
- 98 EXISTING LOTS
- EXISTING TREE TO BE PROTECTED AND RETAINED
- EXISTING TREE TO BE REMOVED
- EXISTING ROAD SIGN
- PROPOSED RETAINING WALLS
- 51.95 SPOT LEVEL
- TEMPORARY BASIN

Areas that did not meet the required blow counts for the top 450 mm

NOTE: Croker Re-Test Results supplied to Galt - noted in **blue**

PAVEMENTS AND EXISTING INFRASTRUCTURE SERVICES IN PARK STREET AS PART OF THIS CONTRACT.
2. IT IS RECOMMENDED THE CONTRACTOR UNDERTAKES A ROAD DILAPIDATION SURVEY AND REPORT PRIOR TO THE COMMENCEMENT OF WORKS AND PROVIDES A COPY OF THIS TO THE SUPERINTENDENT AND THE CITY OF SWAN.
3. THE CONTRACTOR SHALL PROTECT ALL EXISTING TREES IN THE PARK STREET ROAD RESERVATION, INCLUDING THE PROPOSED ROAD RESERVATION WIDENING. THE CONTRACTOR SHALL DLINEATE THESE TREES WITH GREEN RIBBONS TO ENSURE THE TREES ARE PROTECTED DURING ALL WORKS.
4. WHERE EXISTING TREES ARE TO BE PROTECTED, THE CONTRACTOR SHALL LOCALLY PROTECT ALL EXISTING EARTHWORKS NATURAL SURFACE LEVELS UNDER THE FOLIAGE DRIP LINE OF THAT TREE. WHERE THESE LEVELS VARY FROM THOSE SHOWN IN THESE DRAWINGS, THE CONTRACTOR SHALL LOCALLY BATTER DOWN TO SURFACE OUSTIDE OF THE DRIP LINE AT A BATTER OF 1 IN 3.
5. RETAINING WALLS ARE SHOWN ON THIS PLAN FOR INFORMATION PURPOSES ONLY. WHERE REATINING WALLS ARE SHOWN, THE CONTRACTOR SHALL BATTER DOWN AT 1 IN 3 TYPICALLY BETWEEN THE LEVELS ENSURING THE BATTER IS OFFSET WITH THE TOP AND BOTTOM OF THE BATTER EQUIDISTANT FROM THE CENTRE OF THE WALL.
6. THE INTENT OF THESE EARTHWORKS ARE THAT THEY ARE COMMENCED AT THE SAME TIME AS PROPOSED EARTHWORKS FOR MIRVAC'S DEVELOPMENT ON THE EASTERN BOUNDARY OF THE SUBJECT SITE. THE CONTRACTOR SHALL BE REQUIRED TO COORDINATE ALL EARTHWORKS WITH MIRVAC'S EARTHWORKING CONTRACTOR, ENSURING ALL CUT AND FILL SHOWN ON THESE PLANS ARE MAINTAINED WITHIN OUR SUBJECT LANDHOLDINGS.
7. THE CONTRACTOR SHALL STRIP THE FIRST 100MM OF TOPSOIL AND STOCKPILE.
8. THE CONTRACTOR SHALL SIEVE ALL TOPSOIL AND BLEND THE SIEVED TOPSOIL AT 1 PART TO 3 WITH THE PROPOSED CUT TO FILL. THE REMAINING ORGANIC MATERIAL SHALL BE STOCKPILED ON LAND DIRECTLY TO THE NORTH OF THE AREA B EARTHWORKS EXTENTS SHOWN IN DRAWING KC00334.021 C101.

WARNING
BEWARE OF UNDERGROUND SERVICES
The location of underground cables are approximate only and their exact position should be checked on site. No guarantee is given that all existing cables and services are shown. Locate all underground cables and services before commencement of work. Refer to Worksafe Regulation 3.21.
DIAL 1100 BEFORE YOU DIG

ISSUED FOR CONSTRUCTION

1:500 0 5m 10 15 20 25 30 35 40 45 50 55 60 65 70 75

REV No.	DATE	DRAFTING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DIR	AMENDMENT
0	04/10/21	CK	CK			ISSUED FOR CONSTRUCTION

KC Traffic and Transport Pty Ltd
ABN 35 148 970 727
7/10 Whipple Street, Balcatta WA 6021
Phone: 08 9441 2700
Website: www.kctt.com.au

CLIENT: PROGRESS DEVELOPMENTS PTY LTD
PROJECT: BROOKLANDS STAGE B2 HENLEY BROOK

DRAFTER	DRAFTING CHECK	REVIEWED	APPROVED
D. D. ARNOLD	C.KLEYWEG	PROJECT MANAGER	PROJECT DIRECTOR
DESIGNED	DESIGN REVIEW		
F.BOROVIC	C. KLEYWEG		

TITLE: BROOKLANDS ESTATE AREA B STAGE 2
EARTHWORKS PLAN

SHEET	DATUM	WAPC No. 160183	PROJECT No.	DRAWING No.	REVISION
A1		SCALE 1:500	KC00334.021	C100	0

C:\Users\calc\Box\KCTT Projects\KC00000 Current Projects\KC00334.001 Brooklands Concept Design (All Stages)\Outgoing\Drawings\KC00334.021 Stage B2 Drawings\KC00334.021-C100 10/8/2021 5:12:23 PM Milan Calic

ATTACHMENT E

Galt's Penetrometer Test Results

www.galtgeo.com.au
4/15 Walters Drive OSBORNE PARK WA 6017

ABN: 64 625 054 729

PERTH SAND PENETROMETER FIELD TEST DATA (Standard Depth 900mm)
(AS1289.6.3.3)

Client: Croker Construction
Project: Brooklands - Stage B2
Location: Brooklands Estate, Henley Brook
PSP Correlation: 8 blows per 300 mm

Job No: J1501139
Date: 15-Jun-22
Engineer: AM

					No of Penetrometer Blows per 150 mm Depth Interval							
LOT NUMBER	**TEST No.**	**DATE**	**LOCATION**	Depth (mm)	**0-150**	**150-300**	**300-450**	**450-600**	**600-750**	**750-900**	**900-1050**	**Pass (Y/N)**
Lot 265			Centre		SET	3	5	8	11	13	13	
Lot 267			Centre		SET	3	4	10	12	14	14	
Lot 269			Centre		SET	3	4	11	15+ R			
Lot 271			Centre		SET	2	5	10	15+ R			
Lot 273			Centre		SET	2	5	9	15+ R			
Lot 273			East Wall		SET	2	4	4	9	9	9	N
					See Croker's remediation test results (Attachment D)							
Lot 255			Centre		SET	2	5	9	15+ R			
Lot 203			Centre		SET	2	5	5	6	7	9	
Lot 201			Centre		SET	3	5	6	11	12	11	
Lot 201			North Wall		SET	2	5	6	11	8	6	
Lot 274			Centre		SET	2	5	10	11	12	9	
Lot 276			Centre		SET	2	5	7	9	10	12	
Lot 277			South Wall		SET	2	4	7	6	6	6	N
					See Croker's remediation test results (Attachment D)							
Lot 277			Centre		SET	1	6	8	12	15+ R		
Lot 279			Centre		SET	1	5	9	15+ R			N
					See Croker's remediation test results (Attachment D)							
Lot 282			Centre		SET	1	5	9	11	13	15+ R	N
					See Croker's remediation test results (Attachment D)							
Lot 284			Centre		SET	2	5	10	14	15+ R		
Lot 286			Centre		SET	1	6	9	11	15+ R		
Lot 288			Centre		SET	1	7	12	15+ R			
Lot 304			Centre		SET	1	6	8	11	10	11	
Lot 290			Centre		SET	1	6	8	12	10	14	
Lot 302			Centre		SET	2	5	7	11	12	12	
Lot 292			Centre		SET	2	6	9	13	15+ R		
Lot 293			South Wall		SET	2	5	5	4	6	4	

Perth Sand Penetrometerer tests done in accordance with AS 1289.6.3.3 (except blow counts are reported per 150 mm, rather than 300 mm)
HB: Hammer bounce (refusal) 0 = Penetration due to hammer weight only R: Refusal

PERTH SAND PENETROMETER FIELD TEST DATA (Standard Depth 900mm)
(AS1289.6.3.3)

Client: Croker Construction
Project: Brooklands - Stage B2
Location: Brooklands Estate, Henley Brook
PSP Correlation: 8 blows per 300 mm

Job No: J1501139
Date: 15-Jun-22
Engineer: AM

				No of Penetrometer Blows per 150 mm Depth Interval							
LOT NUMBER	**TEST No.**	**DATE**	**LOCATION**	**0-150**	**150-300**	**300-450**	**450-600**	**600-750**	**750-900**	**900-1050**	**Pass (Y/N)**
Lot 300			Centre	SET	2	7	9	15+ R			
Lot 328			Centre	SET	1	7	12	15+ R			
Lot 330			Centre	SET	1	8	14	15+ R			
Lot 332			Centre	SET	1	8	10	15+ R			
Lot 334			Centre	SET	1	7	8	10	15+ R		
Lot 336			Centre	SET	1	7	8	12	15+ R		
Lot 338			Centre	SET	1	7	10	12	15+ R		
Lot 340			Centre	SET	3	3	9	12	15+ R		N
				See Croker's remediation test results (Attachment D)							
Lot 342			Centre	SET	2	5	8	12	15+ R		
Lot 343			West Wall	SET	2	5	5	5	7	4	

Perth Sand Penetrometerer tests done in accordance with AS 1289.6.3.3 (except blow counts are reported per 150 mm, rather than 300 mm)
HB: Hammer bounce (refusal) 0 = Penetration due to hammer weight only R: Refusal

ATTACHMENT F

‘Level 2’ Earthworks Supervision

www.galtgeo.com.au
4/15 Walters Drive OSBORNE PARK WA 6017

ABN: 64 625 054 729

"LEVEL 2" EARTHWORKS SUPERVISION

GALT FORM PMP31 Rev0

1. AS3798-2007

Galt provides earthworks verification services based on AS3798-2007, "Guidelines on earthworks for commercial and residential developments" ("the Standard").

Section 8.3 of The Standard defines Level 2 inspection and testing as follows:

> *A geotechnical testing authority (GTA) will be appointed to carry out sampling and testing as required or specified. The GTA is responsible for selecting the location of sampling and testing operations within each visit made to the site. The superintendent is responsible for advice as to when such visits are required and is responsible for ensuring that sufficient samples and tests are taken over the project.*
>
> *On completion of the earthworks, the GTA may be required to provide a report, setting out the sampling and testing it has carried out, and the locations and results thereof. The GTA will not be in a position to express any opinion beyond this as to the compliance of the works with the specification or their suitability for any particular purpose.*

2. ROLES AND RESPONSIBILITIES

2.1. DESIGNER

Galt is not the designer of the earthworks and no assumption should be made that we have had any opportunity to carry out a review of the design or confirm the design assumptions.

By undertaking work on site including testing and advice, Galt is not accepting the design as suitable or appropriate to achieve the design objectives.

2.2. SUPERINTENDENT

The Superintendent is required, by the Standard, to specify when tests are required and that sufficient samples and tests are undertaken over the course of the project, including sufficient testing to conform with the Specification. Galt's testing and any commentary may not be assumed to supersede the Specification unless specifically recommended by Galt in writing and accepted by the Superintendent and designer.

2.3. CONTRACTOR

The Contractor is responsible for construction and quality assurance on the works, including the earthworks methodology and required test methods as per the Specification to achieve the required outcomes.

The Contractor is responsible for all testing as per the Specification and no testing by Galt can be deemed to remove the Contractor's responsibility to conform to the requirements of the Specification, including routine compaction and other testing as required by the Specification.

2.4. GALT

Galt's role is to attend site periodically, as required by the Superintendent or Specification, and as directed by the Contractor. Given that the timing of our visits is not regular during the progress of earthworks, Galt is not responsible for ensuring that visits occur at appropriate intervals. This is the responsibility of the Superintendent or the Contractor to ensure that Galt is provided appropriate notice to carry out inspections at appropriate intervals to achieve the desired outcomes as per the Specification.

Galt's commentary on the works does not obviate the Contractor's responsibility for quality assurance. In accordance with the Standard, no risk transfers to Galt by considering that the earthworks appear acceptable based on test results provided by the Contractor and any of our own testing.

3. SITE CLASSIFICATION TO AS2870

Where we are required by the Specification to offer an opinion as to site class to AS2870-2011, "Residential slabs and footings", we will do so on the basis of:

- The Contractor's QA results, which we will assume to be complete, accurate and fit for purpose;
- The provided geotechnical report; and
- The design, which we will assume to be suitable and based on appropriate engineering to achieve the required outcome.

We note that the site classification for earthworked sites is a function of:

1. The underlying substrate/foundation materials, their strength, reactivity and propensity to settle under applied load;
2. The reactivity and strength of placed fill; and
3. The degree of compaction of placed fill.

Galt is not always in a position to verify Items 1 and 2 above and we rely on information provided by the Designer and Contractor to form an opinion on this. Item 3 relies on the Contractor's QA results.

ATTACHMENT G

Understanding Your Report

www.galtgeo.com.au
4/15 Walters Drive OSBORNE PARK WA 6017

ABN: 64 625 054 729

UNDERSTANDING YOUR REPORT

GALT FORM PMP11 Rev3

1. EXPECTATIONS OF THE REPORT

This document has been prepared to clarify what is and is not provided in your report. It is intended to inform you of what your realistic expectations of this report should be and how to manage your risks associated with the conditions on site.

Geotechnical engineering and environmental science are less exact than other engineering and scientific disciplines. We include this information to help you understand where our responsibilities begin and end. You should read and understand this information. Please contact us if you do not understand the report or this explanation. We have extensive experience in a wide variety of projects and we can help you to manage your risk.

2. THIS REPORT RELATES TO PROJECT-SPECIFIC CONDITIONS

This report was developed for a unique set of project-specific conditions to meet the needs of the nominated client. It took into account the following:

- the project objectives as we understood them and as described in this report;
- the specific site mentioned in this report; and
- the current and proposed development at the site.

It should not be used for any purpose other than that indicated in the report. You should not rely on this report if any of the following conditions apply:

- the report was not written for you;
- the report was not written for the site specific to your development;
- the report was not written for your project (including a development at the correct site but other than that listed in the report); or
- the report was written before significant changes occurred at the site (such as a development or a change in ground conditions).

You should always inform us of changes in the proposed project (including minor changes) and request an assessment of their impact.

Where we are not informed of developments relevant to your report, we cannot be held responsible or liable for problems that may arise as a consequence.

Where design is to be carried out by others using information provided by us, we recommend that we be involved in the design process by being engaged for consultation with other members of the project team. Furthermore, we recommend that we be able to review work produced by other members of the project team that relies on information provided in our report.

3. SOIL LOGS

Our reports often include logs of intrusive and non-intrusive investigation techniques. These logs are based on our interpretation of field data and laboratory results. The logs should only be read in conjunction with the report they were issued with and should not be re-drawn for inclusion in other documents not prepared by us.

4. THIRD PARTY RELIANCE

We have prepared this report for use by the client. This report must be regarded as confidential to the client and the client's professional advisors. We do not accept any responsibility for contents of this document from any party other than the nominated client. We take no responsibility for any damages suffered by a third party because of any decisions or actions they may make based on this report. Any reliance or decisions made by a third party based on this report are the responsibility of the third party and not of us.

5. CHANGE IN SUBSURFACE CONDITIONS

The recommendations in this report are based on the ground conditions that existed at the time when the study was undertaken. Changes in ground conditions can occur in numerous ways including anthropogenic events (such as construction or contaminating activities on or adjacent to the site) or natural events (such as floods, groundwater fluctuations or earthquakes). We should be consulted prior to use of this report so that we can comment on its reliability. It is important to note that where ground conditions have changed, additional sampling, testing or analysis may be required to fully assess the changed conditions.

6. SUBSURFACE CONDITIONS DURING CONSTRUCTION

Practical constraints mean that we cannot know every minute detail about the subsurface conditions at a particular site. We use professional judgement to form an opinion about the subsurface conditions at the site. Some variation to our evaluated conditions is likely and significant variation is possible. Accordingly, our report should not be considered as final as it is developed from professional judgement and opinion.

The most effective means of dealing with unanticipated ground conditions is to engage us for construction support. We can only finalise our recommendations by observing actual subsurface conditions encountered during construction. We cannot accept liability for a report's recommendations if we cannot observe construction.

7. ENVIRONMENTAL AND GEOTECHNICAL ISSUES

Unless specifically mentioned otherwise in our report, environmental considerations are not addressed in geotechnical reports. Similarly, geotechnical issues are not addressed in environmental reports. The investigation techniques used for geotechnical investigations can differ from those used for environmental investigations. It is the client's responsibility to satisfy themselves that geotechnical and environmental considerations have been taken into account for the site.

Geotechnical advice presented in a Galt Environmental report has been provided by Galt Geotechnics under a sub-contract agreement. Similarly, environmental advice presented in a Galt Geotechnics report has been provided by Galt Environmental under a sub-contract agreement.

Unless specifically noted otherwise, no parties shall draw any inferences about the applicability of the Western Australian state government landfill levy from the contents of this document.