78 Mornington Street
PO BOX 5298
NORTH GEELONG VIC 3215
Ph : (03) 52771900
email : geotestcivil@optusnet.com.au

GEOTEST
Civil Services

Material Testing and Laboratory Services for the Construction Industry

Mr Sidney Glenister
Drapers Civil Contracting Pty Ltd
PO Box 287
Belmont VIC 3216

17th October 2024
Ref : 7544

Dear Sid

,RE : SUPERVISION OF FILL PLACEMENT
ESTUARY ESTATE II – STAGE 5
LOTS 1710 – 1721, 1724 – 1730 INCLUSIVE

I write with reference to your request for Geotest Civil Services to provide Level One supervision of the placement of fill to the above project in accordance with the requirements of AS 3798: 2007 – Guidelines for Earthworks on Commercial and Residential Developments..

I confirm that over the period 4th September to 6th September 2024, Geotest Civil Services performed Level One supervision activities by ensuring the cleared area was suitable for subsequent placement of fill and then monitoring the level of compaction achieved during the course of the works for placement of fill to Lots 1710 to 1721 and 1724 – 1730 (inclusive).

The supervision of fill placement involved one of our experienced geotechnicians inspecting the stripped and cleared surface prior to fill placement commencing and then monitoring the placement of the fill within the affected Lots.

The extent of fill required on affected Lots is shown on the attached extract of the construction Drawings.

Fill areas shown on the Construction Drawings for Lots 1724 to Lot 1730 were completed on 30th November 2023 as early works in conjunction with the construction of a retaining wall completed within Stage Three of the development site.

Site Preparation :

All overlying topsoils were removed by excavation to expose the underlying natural sandy Clays. In some instances, the overlying topsoil was found to be up to 500mm thick.

Following completion of the stripping and clearing operation, a visual inspection of the site was made and the fill area proof rolled using a fully laden water cart before approval to commence fill placement was granted.

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Site stripped and cleared of topsoil prior to placing fill

Fill area ripped prior to watering, compaction and placement of fill

Fill Source :

Fill material for these works was sourced from within the development site. Surplus materials from other construction activities within the site had been stockpiled on site close to the area of placement.

Placement Methodology :

All fill was placed by loading material from the site stockpile and transporting to the placement area in Dump trucks where it was dumped as a tipped load. The material was then spread using a compactor in approximately 200mm layers loose before being moisture conditioned and then compacted into place to the required level.

At the completion of each nominal 300mm layer, compaction testing was performed on random Lots to assess the quality of the completed works. Once testing was completed, approval was given to continue with placement in the same manner until the final design level had been achieved.

Verification of compliance of all fill was based on the compaction test results which were undertaken as each layer was completed.

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The Level One supervision does not include placement of topsoil used to complete landscaping of the project.

Compliance Statement :

Based on the results of our testing, and as far as we have been able to determine, we conclude that the filling placed within the filled area on the above Lots meets or exceeds the requirements of the specification, that is, 95% relative Standard compaction in accordance with Australian Standard 3798 – 2007 and the project specification.

Test results from the testing program are attached.

We trust that this information meets your requirements. Should you have any further queries in regards to the above, please do not hesitate to contact me on telephone 0418 525775.

Yours Sincerely

Rod Bennett
Geotest Civil Services

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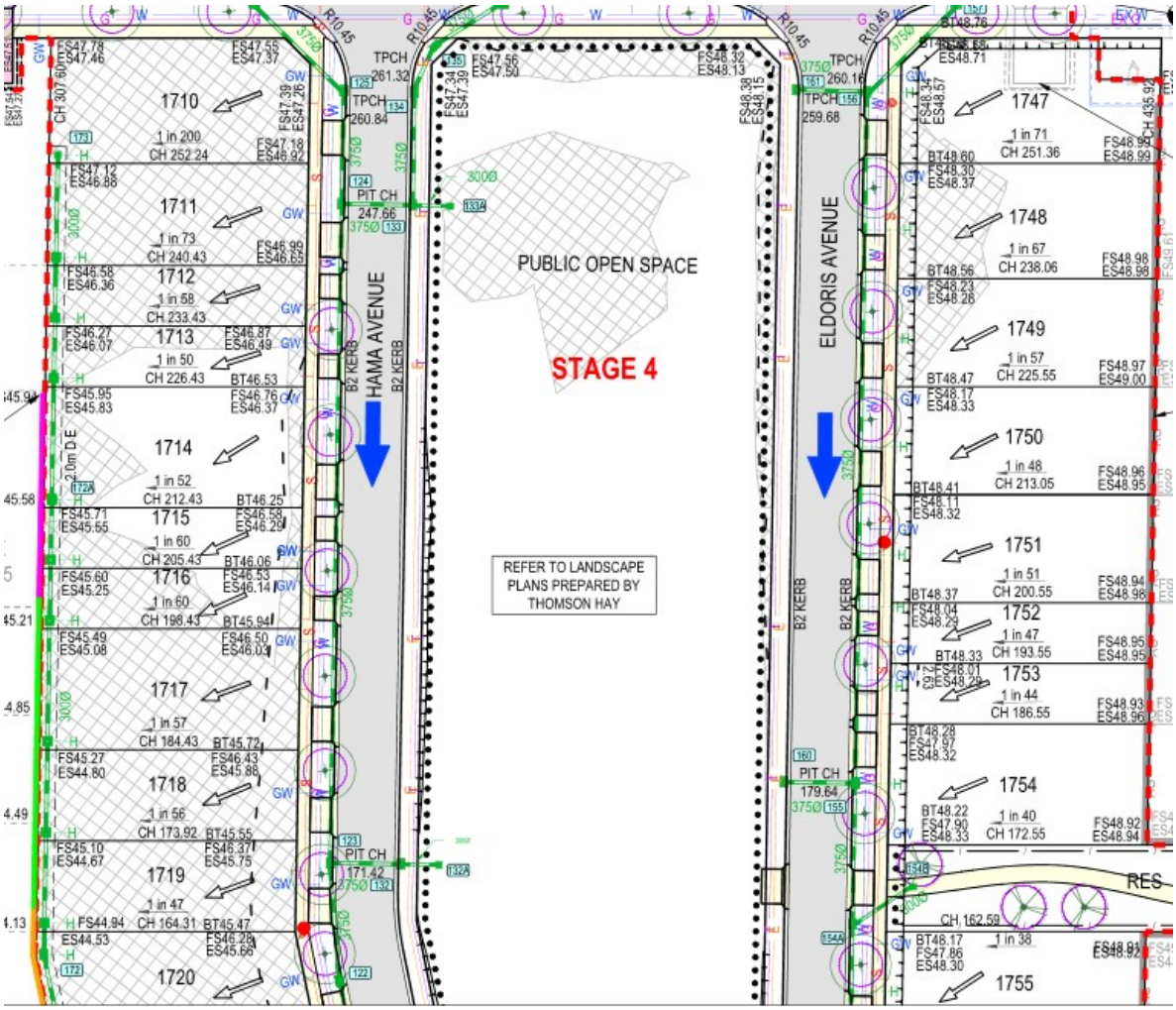

Extract Drawing A4041D-04 – RD200 Rev A (preliminary) showing extent of fill required on Lots

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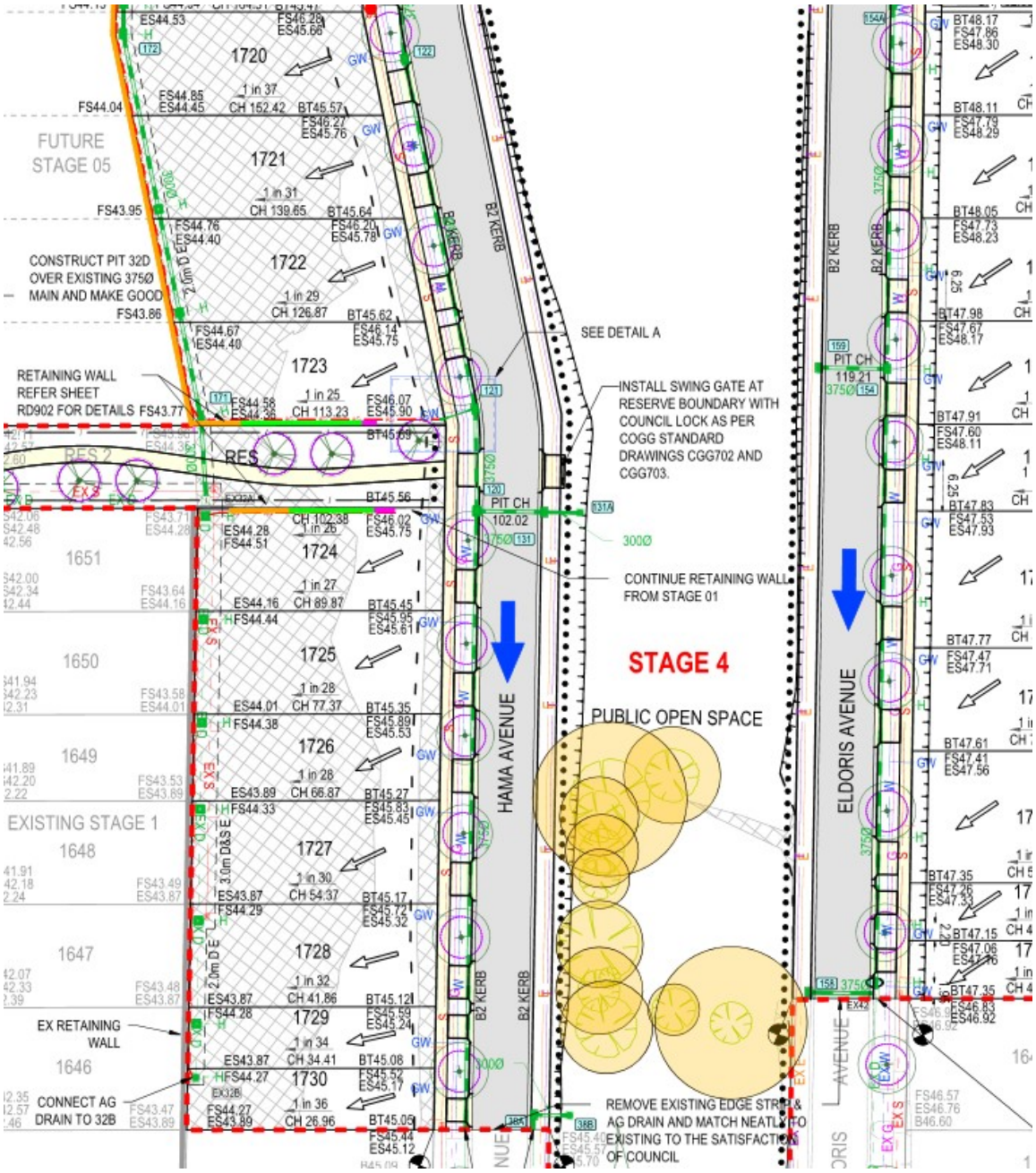

Extract Drawing A4041D-04 – RD200 Rev A (preliminary) showing extent of fill required on Lots

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REPORT OF COMPACTION CONTROL (HILF RAPID METHOD)

Job No.: 7336/23/1101

AS 1289 2.1.1, 5.7.1, 5.8.1 RC 316.00			Using Humboldt: 8639	Date field tested :	30/11/23
Compaction Report Ref. No.	7336/23/1101		K Value : 0	Time :	11:45:00
Project: Estuary II estate Lot Fill					
Client : Drapers Civil Contracting Pty Ltd PO Box 287 Belmont VIC 3216					
Material:	Clay ex Site		Compactive effort:	Standard	
Sand used:	no	Standard count:	DS: 2727	MS:	338
Layer depth of	250 / 300	mm	Test depth of 225 / 275	mm	for 60 secs
Test Lot Bounds	NA	to NA	Client Ref:		

Site No.	1	2	3			
Location	Retaining Wall Backfill - Lot D E277860 N5768963 TD 225	Retaining Wall Backfill - Lot D E277860 N5768935 TD 225	Retaining Wall Backfill - Lot D E277854 N5768904 TD 225	Lot 1918 E277983 N5768975 TD 275	Lot 1936 E277979 N5768944 TD 275	Lot 1937 E277980 N5768963 TD 275
wet density (t/m³)	2.08	1.83	2.05	1.90	1.95	1.92
field mc%	21.3	19.7	14.1	24.2	15.7	19.7
dry density (t/m³)	1.71	1.53	1.80	1.53	1.69	1.60
pcwd (t/m³)	1.97	1.94	2.13	1.87	2.03	2.00
omc (%)	24.0	22.0	16.0	27.0	18.0	21.0
Oversize material retained on sieve…(mm)	19.0	19.0	19.0	19.0	19.0	19.0
% wet oversize	0	0	0	0	0	0
% dry oversize	0	0	0	0	0	0
adjusted pcwd	1.97	1.94	2.13	1.87	2.03	2.00
adjusted omc	23.5	22.5	15.8	26.7	17.9	20.8
moisture variation (+ wet / - dry of omc)	-2.0	-3.0	-1.5	-2.5	-2.0	-1.0
moisture ratio (%)	90.7	87.5	89.3	90.6	87.7	94.7
density ratio (%)	**105.5**	**94.0**	**96.5**	**101.5**	**96.0**	**96.0**

Tested over period : 30/11/2023 to 06/12/2023

mean moisture ratio	90.1
mean density ratio	98.3

Sampling Method Used :

AS1289.1.2.1 Clause 6.4 – from layers in pavement or earthworks

Notes:

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Testing Facility : Accreditation Number : No 10664
Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory:

R.Bennett

Date: 6/12/2023

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REPORT OF COMPACTION CONTROL (HILF RAPID METHOD)

Job No.: 7544/24/721

AS 1289 2.1.1, 5.7.1, 5.8.1 RC 316.00			Using Humboldt: 8639	Date field tested :	4/09/24
Compaction Report Ref. No.	7544/24/721		K Value : 0	Time :	9:20:00
Project: Estuary II estate Stage 5 - Lot Fill					
Client : Drapers Civil Contracting Pty Ltd PO Box 287 Belmont VIC 3216					
Material:	Clay ex Site		Compactive effort:	Standard	
Sand used:	no	Standard count:	DS: 2672.1	MS:	338
Layer depth of	300 mm		Test depth of 275	mm	for 60 secs
Test Lot Bounds	NA	to NA		Client Ref:	

Site No.	1	2	3	4	5	6
Location	Lot 1713 Layer 1	Lot 1715 Layer 1	Lot 1718 Layer 1	Lot 1716 Layer 2	Lot 1719 Layer 2	Lot 1711 Layer 2
wet density (t/m³)	1.95	1.99	2.01	2.09	2.01	2.13
field mc%	23.1	21.4	18.6	17.3	18.6	18.3
dry density (t/m³)	1.58	1.64	1.70	1.78	1.69	1.80
pcwd (t/m³)	2.00	1.97	2.00	2.01	2.03	2.03
omc (%)	23.0	23.0	21.0	20.0	19.0	20.0
Oversize material retained on sieve...(mm)	19.0	19.0	19.0	19.0	19.0	19.0
% wet oversize	0	1	1	0	0	1
% dry oversize	0	1	2	0	0	1
adjusted pcwd	2.00	1.97	2.01	2.01	2.03	2.03
adjusted omc	23.1	23.1	20.8	19.7	19.2	20.0
moisture variation (+ wet / - dry of omc)	0.0	-1.5	-2.5	-2.5	-0.5	-2.0
moisture ratio (%)	100.0	92.5	89.2	87.8	96.9	91.3
density ratio (%)	**97.0**	**101.0**	**100.5**	**104.0**	**99.5**	**105.0**

Tested over period : 04/09/2024 to 09/09/2024

mean moisture ratio	92.9
mean density ratio	101.2

Sampling Method Used :

AS1289.1.2.1 Clause 6.4 – from layers in pavement or earthworks

Notes:

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Testing Facility : Accreditation Number : No 10664
Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: R.Bennett

Date: 9/09/2024

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REPORT OF COMPACTION CONTROL (HILF RAPID METHOD)

Job No.: 7544/24/733

AS 1289 2.1.1, 5.7.1, 5.8.1 RC 316.00			Using Humboldt: 8639	Date field tested :	5/09/24
Compaction Report Ref. No.	7544/24/733		K Value : 0	Time :	9:30:00
Project:	Estuary II estate Stage 5 - Lot Fill				
Client :	Drapers Civil Contracting Pty Ltd PO Box 287 Belmont VIC 3216				
Material:	Clay ex Site		Compactive effort:	Standard	
Sand used:	no	Standard count:	DS: 2676.5	MS:	339.1
Layer depth of	300 mm		Test depth of 275 mm		for 60 secs
Test Lot Bounds	NA	to	NA	Client Ref:	

Site No.	1	2	3			
Location	Lot 1719 Layer 3	Lot 1721 Layer 3	Lot 1716 Layer 3			
wet density (t/m³)	2.00	2.00	2.08			
field mc%	20.6	18.6	18.2			
dry density (t/m³)	1.66	1.69	1.76			
pcwd (t/m³)	1.95	1.97	1.97			
omc (%)	23.0	21.0	19.0			
Oversize material retained on sieve…(mm)	19.0	19.0	19.0			
% wet oversize	0	0	0			
% dry oversize	0	0	0			
adjusted pcwd	1.95	1.97	1.97			
adjusted omc	22.9	21.2	19.0			
moisture variation (+ wet / - dry of omc)	-2.5	-2.5	-1.0			
moisture ratio (%)	90.0	87.7	95.6			
density ratio (%)	**102.5**	**101.5**	**105.5**			

Tested over period : 05/09/2024 to 11/09/2024

mean moisture ratio	91.1
mean density ratio	103.2

Sampling Method Used :

AS1289.1.2.1 Clause 6.4 – from layers in pavement or earthworks

Notes:

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Testing Facility : Accreditation Number : No 10664
Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: R.Bennett

Date: 11/09/2024

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REPORT OF COMPACTION CONTROL (HILF RAPID METHOD)

Job No.: 7544/24/738

AS 1289 2.1.1, 5.7.1, 5.8.1 RC 316.00			Using Humboldt: 8639		Date field tested : 6/09/24	
Compaction Report Ref. No.	7544/24/738		K Value : 0		Time : 13:00:00	
Project: Estuary II estate Stage 5 - Lot Fill						
Client : Drapers Civil Contracting Pty Ltd PO Box 287 Belmont VIC 3216						
Material:	Clay ex Site		Compactive effort:		Standard	
Sand used:	no	Standard count:	DS:	2676.5	MS:	339.1
Layer depth of	300	mm	Test depth of	275	mm	for 60 secs
Test Lot Bounds	NA	to	NA	Client Ref:		
Site No.	1	2	3			
Location	Lot 1716 / 1717 Layer 3	Lot 1712 / 1713 Layer 3	Lot 1714 / 1715 Layer 3			
wet density (t/m³)	2.12	1.98	2.04			
field mc%	18.2	20.5	21.5			
dry density (t/m³)	1.79	1.64	1.68			
pcwd (t/m³)	2.02	2.06	2.06			
omc (%)	20.0	20.0	21.0			
Oversize material retained on sieve…(mm)	19.0	19.0	19.0			
% wet oversize	0	0	1			
% dry oversize	0	0	1			
adjusted pcwd	2.02	2.07	2.06			
adjusted omc	20.0	20.3	21.1			
moisture variation (+ wet / - dry of omc)	-2.0	0.0	0.5			
moisture ratio (%)	90.8	101.2	101.5			
density ratio (%)	**105.0**	**96.0**	**99.0**			

Tested over period : 06/09/2024 to 11/09/2024

mean moisture ratio	97.8
mean density ratio	100.0

Sampling Method Used :

AS1289.1.2.1 Clause 6.4 – from layers in pavement or earthworks

Notes:

NATA WORLD RECOGNISED ACCREDITATION

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Approved Signatory: RBennett

R.Bennett

Date: 11/09/2024

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