



CIVIL GEOTECHNICAL SERVICES
ABN 26 474 013 724
PO Box 678 Croydon Vic 3136
Telephone: 9723 0744 Facsimile: 9723 0799

19th October 2017

Our Reference: 17493:NB049

Winslow Constructors Pty Ltd
50 Barry Road
CAMPBELLFIELD VIC 3061

Dear Sirs/Madams,

**RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING
NEWHAVEN – STAGE 2 (TARNEIT)**

Please find attached our Report No's 17493/R001 to 17493/R010 which relate to the field density testing that was conducted within the filled allotments at the above subdivision. The level 1 inspections and associated field density testing commenced in late August 2017 and was completed in mid-September 2017.

The inspections and testing of the earthworks was undertaken in general accordance with the Level 1 requirements of AS 3798 - Guidelines on Earthworks for Commercial and Residential Developments.

The site inspection and testing was performed by experienced geotechnicians from this office. Any areas that were deemed unsatisfactory were reworked and retested under their supervision. The testing was performed to the relevant Australian Standards and the accompanying test reports carry NATA endorsement. The attached compaction results, which were located randomly throughout the fill profile, are considered to be representative of the bulk fill materials that were placed across the reported allotments by Winslow Constructors during the aforementioned period. The approximate locations of the field density tests can be seen on the attached plan (Figure 1).

We are of the view that the bulk fill materials that have been placed across the reported allotments by Winslow Constructors during the aforementioned period can be considered as having been placed in a controlled manner to a minimum density ratio of 95% (standard compactive effort).

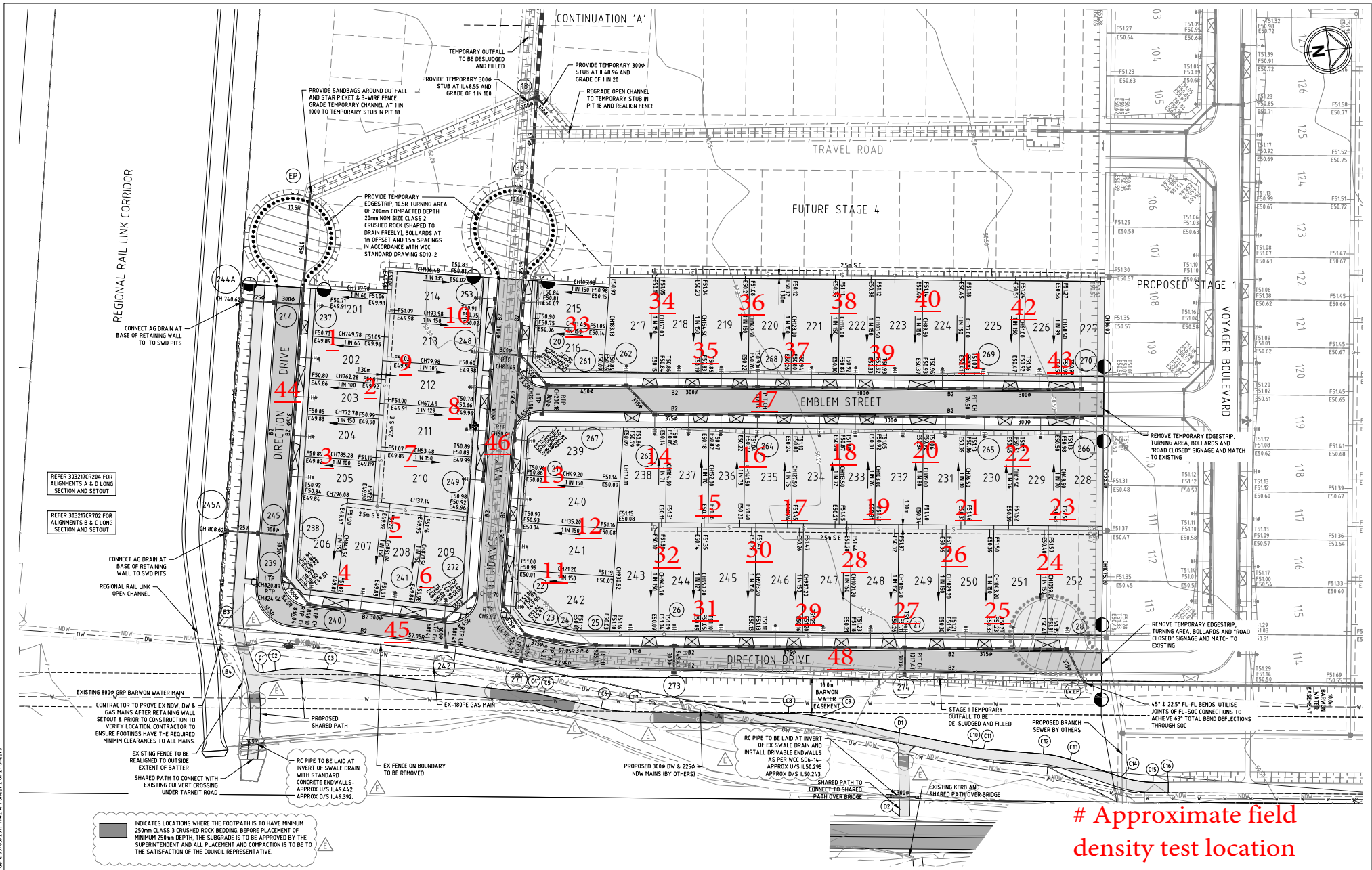
Please contact the undersigned if you require any additional information.

Civil Geotechnical Services

A handwritten signature in blue ink, appearing to be 'Nick Brock', is written over a light blue circular stamp.

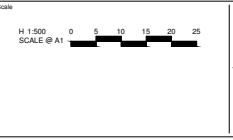
Nick Brock

FIGURE 1



Approximate field density test location

Rev	Amendments	Approved	Date
E	RC PIPE DETAILS ADDED & FOR UNDER SHPPATH OVER EX SERVICES ADDED	JS	09-05-17
D	ISSUED FOR APPROVAL - NOTES, OUTFALL, PIPE SIZE & DRIVEWAY AMENDMENTS	JS	28-03-17
C	ISSUED TO CLIENT	JS	27-03-17
B	ISSUED FOR INFORMATION	JS	02-03-17
A	ISSUED FOR TENDER	JS	06-12-16



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PEET

Designed _____
Checked _____
Authorised _____
Date _____

NEWHAVEN STAGE 2
ROAD & DRAINAGE LAYOUT PLAN
DETAIL PLAN 1 OF 2
WYNDHAM CITY COUNCIL
PEET 1895 PTY LTD

PRELIMINARY 303217CR200 E



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R001
 Date Issued 26/09/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Tested by JB
 Date tested 29/08/17
 Checked by JHF

Client WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)
 Project NEW HAVEN - STAGE 2
 Location TARNEIT

Feature EARTHWORKS **Layer thickness** 200 mm **Time:** 08:03

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		1	2	3	-	-	-
Location		REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1			
Approximate depth below FSL							
Measurement depth	mm	175	175	175	-	-	-
Field wet density	t/m ³	1.92	1.89	1.91	-	-	-
Field moisture content	%	23.4	22.4	20.8	-	-	-

Test procedure AS 1289.5.7.1

Test No		1	2	3	-	-	-
Compactive effort		Standard					
Oversize rock retained on sieve	mm	19.0	19.0	19.0	-	-	-
Percent of oversize material	wet	0	0	0	-	-	-
Peak Converted Wet Density	t/m ³	1.90	1.89	1.92	-	-	-
Adjusted Peak Converted Wet Density	t/m ³	-	-	-	-	-	-
Optimum Moisture Content	%	26.0	24.5	22.0	-	-	-

Moisture Variation From Optimum Moisture Content	2.5% dry	2.0% dry	1.0% dry	-	-	-
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Density Ratio (R_{HD})	%	101.0	100.0	99.5	-	-	-
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Material description

No 1 - 3 Clay Fill



The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/National standards. Accredited for compliance to ISO/IEC 17025. Accreditation No 9909

Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R002
 Date Issued 22/09/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JB
Project	NEW HAVEN - STAGE 2	Date tested	30/08/17
Location	TARNEIT	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time:	09:30
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No		4	5	6	7	8	9
Location		REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1
Approximate depth below FSL							
Measurement depth	mm	175	175	175	175	175	175
Field wet density	t/m ³	1.85	1.90	1.91	1.88	1.86	1.85
Field moisture content	%	23.8	23.6	24.2	25.0	26.1	25.2

Test procedure AS 1289.5.7.1

Test No		4	5	6	7	8	9
Compactive effort		Standard					
Oversize rock retained on sieve	mm	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material	wet	0	0	0	0	0	0
Peak Converted Wet Density	t/m ³	1.89	1.90	1.89	1.90	1.87	1.87
Adjusted Peak Converted Wet Density	t/m ³	-	-	-	-	-	-
Optimum Moisture Content	%	26.0	26.0	26.5	26.0	28.0	28.0

Moisture Variation From Optimum Moisture Content	2.0% dry	2.5% dry	2.0% dry	1.0% dry	2.0% dry	2.5% dry
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Density Ratio (R _{HD})	%	98.0	100.0	101.5	99.0	100.0	98.5
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Material description

No 4 - 9 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R003
 Date Issued 14/09/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	Jeff B Burns
Project	NEW HAVEN - STAGE 2	Date tested	31/08/17
Location	TARNEIT	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time:	09:30
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No		10	11	12	13	14	15
Location		REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1
Approximate depth below FSL							
Measurement depth	mm	175	175	175	175	175	175
Field wet density	t/m ³	1.92	1.97	1.83	1.85	1.81	1.82
Field moisture content	%	19.1	19.3	26.7	26.0	25.6	25.8

Test procedure AS 1289.5.7.1

Test No		10	11	12	13	14	15
Compactive effort		Standard					
Oversize rock retained on sieve	mm	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material	wet	0	1	0	0	0	0
Peak Converted Wet Density	t/m ³	2.02	2.02	1.84	1.84	1.82	1.81
Adjusted Peak Converted Wet Density	t/m ³	-	2.04	-	-	-	-
Optimum Moisture Content	%	20.0	20.0	28.5	28.0	28.0	28.5

Moisture Variation From Optimum Moisture Content	1.0% dry	1.0% dry	2.0% dry	2.0% dry	2.5% dry	2.5% dry
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Density Ratio (R _{HD})	%	95.0	96.5	99.5	100.5	99.5	100.5
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Material description

No 10 - 15 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R004
 Date Issued 18/09/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JB
Project	NEW HAVEN - STAGE 2	Date tested	01/09/17
Location	TARNEIT	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 11:28
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	16	17	18	19	20	21
Location	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1
Approximate depth below FSL						
Measurement depth <i>mm</i>	175	175	175	175	175	175
Field wet density <i>t/m³</i>	2.00	1.86	1.84	1.91	1.88	1.88
Field moisture content %	17.1	23.2	24.9	23.1	25.2	23.1

Test procedure AS 1289.5.7.1

Test No	16	17	18	19	20	21
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material <i>wet</i>	2	2	1	0	2	0
Peak Converted Wet Density <i>t/m³</i>	1.98	1.86	1.89	1.92	1.86	1.89
Adjusted Peak Converted Wet Density <i>t/m³</i>	2.02	1.90	1.90	-	1.91	-
Optimum Moisture Content %	20.0	25.0	27.0	24.0	27.0	25.0

Moisture Variation From Optimum Moisture Content	2.5% dry	1.5% dry	2.0% dry	1.0% dry	1.5% dry	2.0% dry
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Density Ratio (R_{HD})	%	99.5	98.0	97.0	99.5	99.0	99.5
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Material description

No 16 - 21 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R005
 Date Issued 12/10/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JB
Project	NEW HAVEN - STAGE 2	Date tested	04/09/17
Location	TARNEIT	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 13:00
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	22	23	24	25	26	27
Location	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1
Approximate depth below FSL						
Measurement depth <i>mm</i>	175	175	175	175	175	175
Field wet density <i>t/m³</i>	1.79	1.79	1.84	2.01	1.99	1.82
Field moisture content %	23.8	24.0	20.8	17.9	25.0	21.5

Test procedure AS 1289.5.7.1

Test No	22	23	24	25	26	27
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material <i>wet</i>	1	0	0	3	5	0
Peak Converted Wet Density <i>t/m³</i>	1.79	1.80	1.87	1.92	1.93	1.81
Adjusted Peak Converted Wet Density <i>t/m³</i>	1.81	-	-	1.98	2.03	-
Optimum Moisture Content %	26.0	26.0	23.0	20.5	27.5	24.0

Moisture Variation From Optimum Moisture Content	2.0% dry	2.0% dry	3.0% dry	2.5% dry	2.5% dry	2.5% dry
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Density Ratio (R_{HD}) %	99.0	99.5	98.0	101.5	98.0	100.5
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Material description

No 22 - 27 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R007
 Date Issued 22/09/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JB
Project	NEW HAVEN - STAGE 2	Date tested	08/09/17
Location	TARNEIT	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 11:30
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	32	33	34	-	-	-
Location	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1			
Approximate depth below FSL						
Measurement depth <i>mm</i>	175	175	175	-	-	-
Field wet density <i>t/m³</i>	1.91	1.89	1.87	-	-	-
Field moisture content %	25.2	23.9	23.3	-	-	-

Test procedure AS 1289.5.7.1

Test No	32	33	34	-	-	-
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	19.0	-	-	-
Percent of oversize material <i>wet</i>	0	1	0	-	-	-
Peak Converted Wet Density <i>t/m³</i>	1.87	1.90	1.91	-	-	-
Adjusted Peak Converted Wet Density <i>t/m³</i>	1.88	1.92	1.92	-	-	-
Optimum Moisture Content %	27.0	26.0	25.0	-	-	-

Moisture Variation From Optimum Moisture Content	2.0% dry	2.0% dry	2.0% dry	-	-	-
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Density Ratio (R_{HD})	%	101.5	98.5	97.5	-	-	-
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Material description

No 32 - 34 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R008
 Date Issued 26/09/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	WS
Project	NEW HAVEN - STAGE 2	Date tested	12/09/17
Location	TARNEIT	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time:	08:00
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No		35	36	37	38	-	-
Location		REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1		
Approximate depth below FSL							
Measurement depth	mm	175	175	175	175	-	-
Field wet density	t/m ³	1.90	1.97	1.98	1.94	-	-
Field moisture content	%	15.1	17.0	16.6	18.1	-	-

Test procedure AS 1289.5.7.1

Test No		35	36	37	38	-	-
Compactive effort		Standard					
Oversize rock retained on sieve	mm	37.5	37.5	19.0	19.0	-	-
Percent of oversize material	wet	16	14	6	0	-	-
Peak Converted Wet Density	t/m ³	2.01	1.92	1.91	1.91	-	-
Adjusted Peak Converted Wet Density	t/m ³	-	1.98	2.04	-	-	-
Optimum Moisture Content	%	17.0	19.0	19.0	21.0	-	-

Moisture Variation From Optimum Moisture Content		2.0% dry	2.0% dry	2.5% dry	2.5% dry	-	-
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Density Ratio (R _{HD})	%	95.0	99.5	97.0	101.5	-	-
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Material description

No 35 - 38 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R009
 Date Issued 10/10/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JB
Project	NEW HAVEN - STAGE 2	Date tested	14/09/17
Location	TARNEIT	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 12:00
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	39	40	41	42	43	44
Location	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1
Approximate depth below FSL						
Measurement depth <i>mm</i>	175	175	175	175	175	175
Field wet density <i>t/m³</i>	1.88	1.91	1.87	1.94	1.97	1.97
Field moisture content <i>%</i>	19.3	19.3	18.0	20.3	19.2	21.9

Test procedure AS 1289.5.7.1

Test No	39	40	41	42	43	44
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material <i>wet</i>	0	2	2	1	1	1
Peak Converted Wet Density <i>t/m³</i>	1.95	1.91	1.92	1.92	1.91	1.92
Adjusted Peak Converted Wet Density <i>t/m³</i>	-	1.95	1.96	1.93	1.93	1.94
Optimum Moisture Content <i>%</i>	21.5	21.0	20.5	23.0	22.0	24.0

Moisture Variation From Optimum Moisture Content	2.0% dry	2.0% dry	2.5% dry	2.5% dry	2.5% dry	2.0% dry
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Density Ratio (R_{HD})	96.5	97.5	95.0	100.0	102.5	101.5
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Material description

No 39 - 44 Clay Fill



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 Accreditation No 9909

Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17493
 Report No 17493/R010
 Date Issued 26/09/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	WS
Project	NEW HAVEN - STAGE 2	Date tested	15/09/17
Location	TARNEIT	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 08:30
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	45	46	47	48	-	-
Location	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1		
Approximate depth below FSL						
Measurement depth <i>mm</i>	175	175	175	175	-	-
Field wet density <i>t/m³</i>	1.94	2.00	1.96	1.97	-	-
Field moisture content %	19.1	19.3	15.1	15.3	-	-

Test procedure AS 1289.5.7.1

Test No	45	46	47	48	-	-
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	19.0	19.0	-	-
Percent of oversize material <i>wet</i>	4	2	3	3	-	-
Peak Converted Wet Density <i>t/m³</i>	1.88	1.94	1.94	1.89	-	-
Adjusted Peak Converted Wet Density <i>t/m³</i>	1.95	1.98	2.00	1.95	-	-
Optimum Moisture Content %	21.0	20.5	17.5	18.0	-	-

Moisture Variation From Optimum Moisture Content	2.0% dry	1.0% dry	2.0% dry	2.5% dry	-	-
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Density Ratio (R_{HD})	%	99.5	101.0	98.0	101.0	-	-
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Material description

No 45 - 48 Clay Fill



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 Accreditation No 9909

Approved Signatory : Justin Fry