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

9th March 2018

Our Reference: 17691:NB155

Winslow Constructors Pty Ltd
50 Barry Road
CAMPBELLFIELD VIC 3061

Dear Sirs/Madams,

RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING
GRACE – STAGE 1 (TARNEIT)

Please find attached our Report No's 17691/R001 to 17691/R003 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 was performed in November 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).

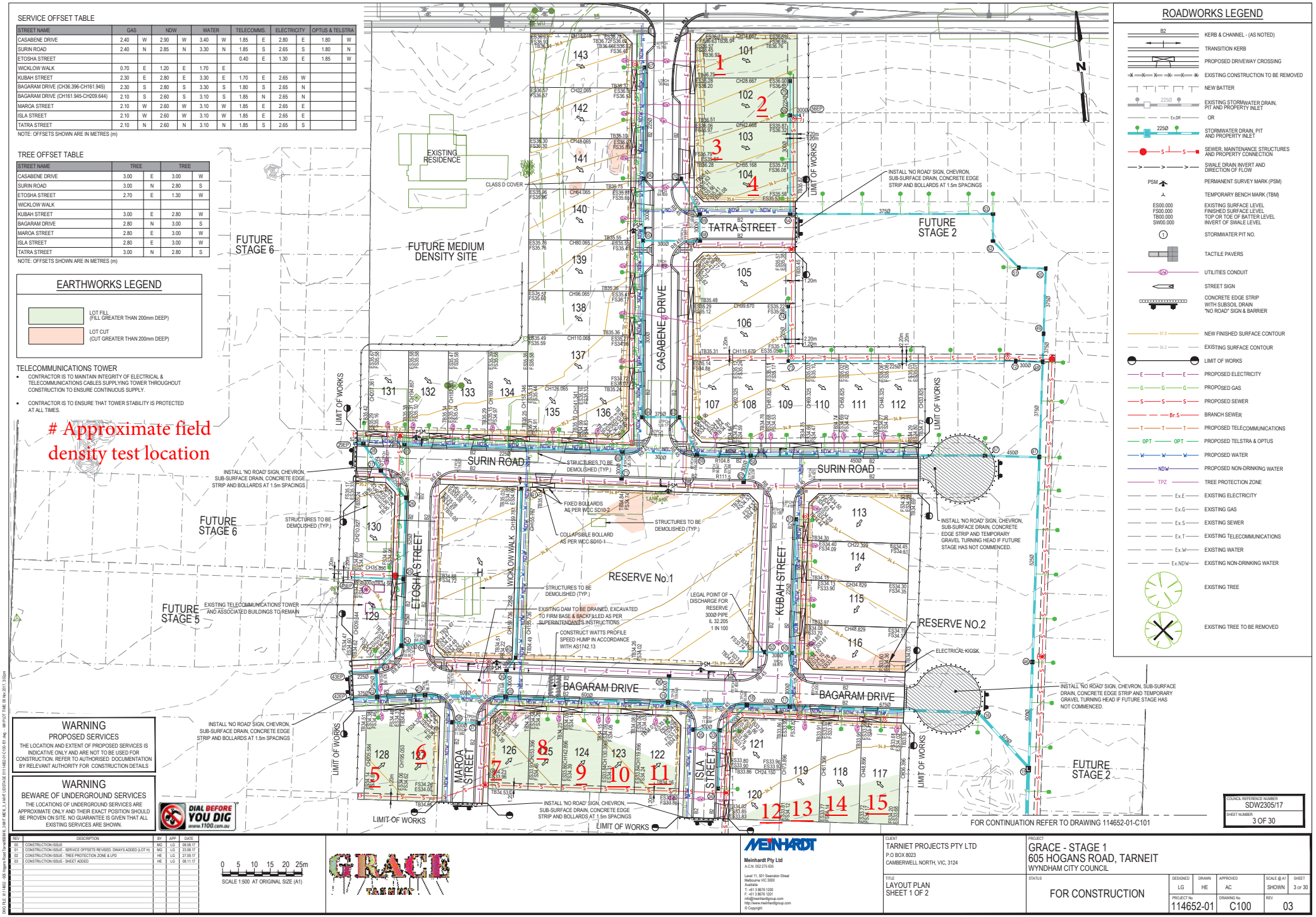
We are of the view that the bulk fill materials that have been placed across the reported allotments by Winslow Constructors during the aforementioned period can be considered as having been placed in a controlled manner to a minimum density ratio of 95% (standard compactive effort).

Please contact the undersigned if you require any additional information.

Civil Geotechnical Services

Nick Brock

# FIGURE 1




| STREET NAME | GAS | | NDW | | WATER | | TELECOMMS. | | ELECTRICITY | | OPTUS & TELSTRA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CASABENE DRIVE | 2.40 | W | 2.90 | W | 3.40 | W | 1.85 | E | 2.80 | E | 1.80 | W |
| SURIN ROAD | 2.40 | N | 2.85 | N | 3.30 | N | 1.85 | S | 2.65 | S | 1.80 | N |
| ETOSHA STREET | | | | | | | 0.40 | E | 1.30 | E | 1.85 | W |
| WICKLOW WALK | 0.70 | E | 1.20 | E | 1.70 | E | | | | | | |
| KUBAH STREET | 2.30 | E | 2.80 | E | 3.30 | E | 1.70 | E | 2.65 | W | | |
| BAGARAM DRIVE (CH36.396-CH161.945) | 2.30 | S | 2.80 | S | 3.30 | S | 1.80 | S | 2.65 | N | | |
| BAGARAM DRIVE (CH161.945-CH209.644) | 2.10 | S | 2.60 | S | 3.10 | S | 1.85 | N | 2.65 | N | | |
| MAROA STREET | 2.10 | W | 2.60 | W | 3.10 | W | 1.85 | E | 2.65 | E | | |
| ISLA STREET | 2.10 | W | 2.60 | W | 3.10 | W | 1.85 | E | 2.65 | E | | |
| TATRA STREET | 2.10 | N | 2.60 | N | 3.10 | N | 1.85 | S | 2.65 | S | | |

NOTE: OFFSETS SHOWN ARE IN METRES (m)

| STREET NAME | TREE | | TREE | |
|---|---|---|---|---|
| CASABENE DRIVE | 3.00 | E | 3.00 | W |
| SURIN ROAD | 3.00 | N | 2.80 | S |
| ETOSHA STREET | 2.70 | E | 1.30 | W |
| WICKLOW WALK | | | | |
| KUBAH STREET | 3.00 | E | 2.80 | W |
| BAGARAM DRIVE | 2.80 | N | 3.00 | S |
| MAROA STREET | 2.80 | E | 3.00 | W |
| ISLA STREET | 2.80 | E | 3.00 | W |
| TATRA STREET | 3.00 | N | 2.80 | S |

NOTE: OFFSETS SHOWN ARE IN METRES (m)

| REV | DESCRIPTION | BY | APP | DATE |
|---|---|---|---|---|
| 00 | CONSTRUCTION ISSUE | MG | LG | 08.08.17 |
| 01 | CONSTRUCTION ISSUE - SERVICE OFFSETS REVISED. DWAYS ADDED (LOT H) | MG | LG | 23.08.17 |
| 02 | CONSTRUCTION ISSUE - TREE PROTECTION ZONE & LPO | HE | LG | 27.09.17 |
| 03 | CONSTRUCTION ISSUE - SHEET ADDED | HE | LG | 08.11.17 |

# COMPACTION ASSESSMENT


***CIVIL GEOTECHNICAL SERVICES***

*6 - 8 Rose Avenue, Croydon 3136*


| | | | |
|---|---|---|---|
| | | *Job No* | 17691 |
| | | *Report No* | 17691/R001 |
| | | *Date Issued* | 19/12/2017 |
| *Client* | WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD) | *Tested by* | JB |
| *Project* | GRACE - STAGE 1 | *Date tested* | 22/11/17 |
| *Location* | TARNEIT | *Checked by* | JHF |

***Feature*** **EARTHWORKS** *Layer thickness* 200 mm *Time:* 10:38

*Test procedure AS 1289.2.1.1 & 5.8.1*

| ***Test No*** | | **1** | **2** | **3** | **4** | **5** | **6** |
|---|---|---|---|---|---|---|---|
| *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/m³* | 1.84 | 1.81 | 1.85 | 1.85 | 1.82 | 1.81 |
| *Field moisture content* | *%* | 26.6 | 28.9 | 32.7 | 30.9 | 29.8 | 30.3 |

*Test procedure AS 1289.5.7.1*

| *Test No* | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| *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* | 3 | 2 | 5 | 6 | 4 | 1 |
| *Peak Converted Wet Density* | *t/m³* | 1.79 | 1.74 | 1.82 | 1.81 | 1.79 | 1.78 |
| *Adjusted Peak Converted Wet Density* | *t/m³* | 1.84 | 1.79 | 1.91 | 1.93 | 1.87 | 1.79 |
| *Optimum Moisture Content* | *%* | 29.0 | 31.0 | 31.0 | 30.0 | 31.5 | 31.0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Moisture Variation From Optimum Moisture Content* | | 2.0% dry | 2.0% dry | 2.0% wet | 1.0% wet | 2.0% dry | 1.0% dry |
| ***Density Ratio ( $R_{HD}$ )*** | *%* | **100.0** | **101.5** | **97.0** | **96.0** | **97.5** | **101.5** |

*Material description*

No 1 - 6 Clay Fill




NATA ACCREDITED FOR TECHNICAL COMPETENCE

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


***CIVIL GEOTECHNICAL SERVICES***

*6 - 8 Rose Avenue, Croydon 3136*


| | | | |
|---|---|---|---|
| | | *Job No* | 17691 |
| | | *Report No* | 17691/R002 |
| | | *Date Issued* | 09/01/2018 |
| *Client* | WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD) | *Tested by* | JB |
| *Project* | GRACE - STAGE 1 | *Date tested* | 29/11/17 |
| *Location* | TARNEIT | *Checked by* | JHF |

***Feature*** **EARTHWORKS** *Layer thickness* 200 mm *Time:* 12:00

*Test procedure AS 1289.2.1.1 & 5.8.1*

| ***Test No*** | | **7** | **8** | **9** | **10** | **11** | **12** |
|---|---|---|---|---|---|---|---|
| *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/m³* | 1.81 | 1.82 | 1.82 | 1.80 | 1.83 | 1.80 |
| *Field moisture content* | *%* | 23.7 | 23.7 | 30.8 | 33.9 | 29.0 | 31.5 |

*Test procedure AS 1289.5.7.1*

| *Test No* | | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|
| *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/m³* | 1.87 | 1.84 | 1.87 | 1.87 | 1.82 | 1.83 |
| *Adjusted Peak Converted Wet Density* | *t/m³* | - | - | - | - | - | - |
| *Optimum Moisture Content* | *%* | 26.0 | 26.5 | 30.0 | 31.0 | 30.5 | 31.5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Moisture Variation From Optimum Moisture Content* | | 2.0% dry | 2.5% dry | 1.0% wet | 2.5% wet | 1.5% dry | 0.5% dry |

| ***Density Ratio ( $R_{HD}$ )*** | ***%*** | **97.0** | **99.0** | **97.5** | **96.5** | **100.5** | **98.5** |
|---|---|---|---|---|---|---|---|

*Material description*

No 7 - 12 Clay Fill




NATA ACCREDITED FOR TECHNICAL COMPETENCE

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


***CIVIL GEOTECHNICAL SERVICES***

*6 - 8 Rose Avenue, Croydon 3136*


| | | | |
|---|---|---|---|
| | | *Job No* | 17691 |
| | | *Report No* | 17691/R003 |
| | | *Date Issued* | 19/12/2017 |
| *Client* | WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD) | *Tested by* | JB |
| *Project* | GRACE - STAGE 1 | *Date tested* | 29/11/17 |
| *Location* | TARNEIT | *Checked by* | JHF |

***Feature*** **EARTHWORKS** *Layer thickness* 200 mm *Time:* 13:30

*Test procedure AS 1289.2.1.1 & 5.8.1*

| ***Test No*** | | **13** | **14** | **15** | **-** | **-** | **-** |
|---|---|---|---|---|---|---|---|
| *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/m³* | 1.85 | 1.83 | 1.83 | - | - | - |
| *Field moisture content* | *%* | 28.9 | 27.2 | 27.3 | - | - | - |

*Test procedure AS 1289.5.7.1*

| *Test No* | | 13 | 14 | 15 | - | - | - |
|---|---|---|---|---|---|---|---|
| *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/m³* | 1.81 | 1.81 | 1.81 | - | - | - |
| *Adjusted Peak Converted Wet Density* | *t/m³* | - | - | - | - | - | - |
| *Optimum Moisture Content* | *%* | 28.0 | 26.0 | 28.5 | - | - | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Moisture Variation From Optimum Moisture Content* | | 1.0% wet | 1.0% wet | 1.5% dry | - | - | - |

| ***Density Ratio ( $R_{HD}$ )*** | ***%*** | **101.5** | **101.5** | **101.5** | **-** | **-** | **-** |
|---|---|---|---|---|---|---|---|

*Material description*

No 13 - 15 Clay Fill




NATA ACCREDITED FOR TECHNICAL COMPETENCE

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