

**JOB NO: ML18/060**

**DECEMBER 2019**

**HALL CONTRACTING PTY LTD**

**LEVEL ONE COMPLIANCE REPORT**

**BULK EARTHWORKS FILLING OPERATIONS**

**STAGE 36 NORTH HARBOUR BURPENGARY**



**MORRISON  
GEOTECHNIC**  
Solid thinking. Grounded results.

Sunshine Coast Office  
Job No: ML18-060  
Ref No: 2963  
Author: D. Taylor

2<sup>nd</sup> December 2019

Hall Contracting Pty Ltd  
PO Box 519  
Buderim Qld 4556

**ATTENTION: MR ADAM WYATT**  
Email: [AdamWyatt@hallcontracting.com.au](mailto:AdamWyatt@hallcontracting.com.au)

Dear Sir,

**RE: LEVEL ONE COMPLIANCE REPORT FOR  
BULK EARTHWORKS FILLING OPERATIONS  
NORTH HARBOUR – STAGE 36**

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## 1.0 INTRODUCTION

### 1.1 General

This report presents results of Level One Earthworks Inspections and associated Compaction Compliance testing carried out on Earthworks Fill constructed to form Residential Lots and embankments below at the North Harbour Stage 36 development (The Site).

The work was commissioned by Mr. N. Riddle representing Hall Contracting Pty Ltd (The Client).

Earthworks were carried out by The Client.

Earthworks filling operations were carried out between November 2017 and February 2019.

**Picture 1: Aerial Image - North Harbor Stage 36 (Nearmap 8 November 2019)**





### 1.2 Previous Earthworks

As far as could be determined on site, no previous earthworks have been carried out at The Site.

### 1.3 The Project

Earthworks filling operations at The Site were required to form building platforms supporting residential buildings, filled embankments supporting proposed pavements and associated underground services.

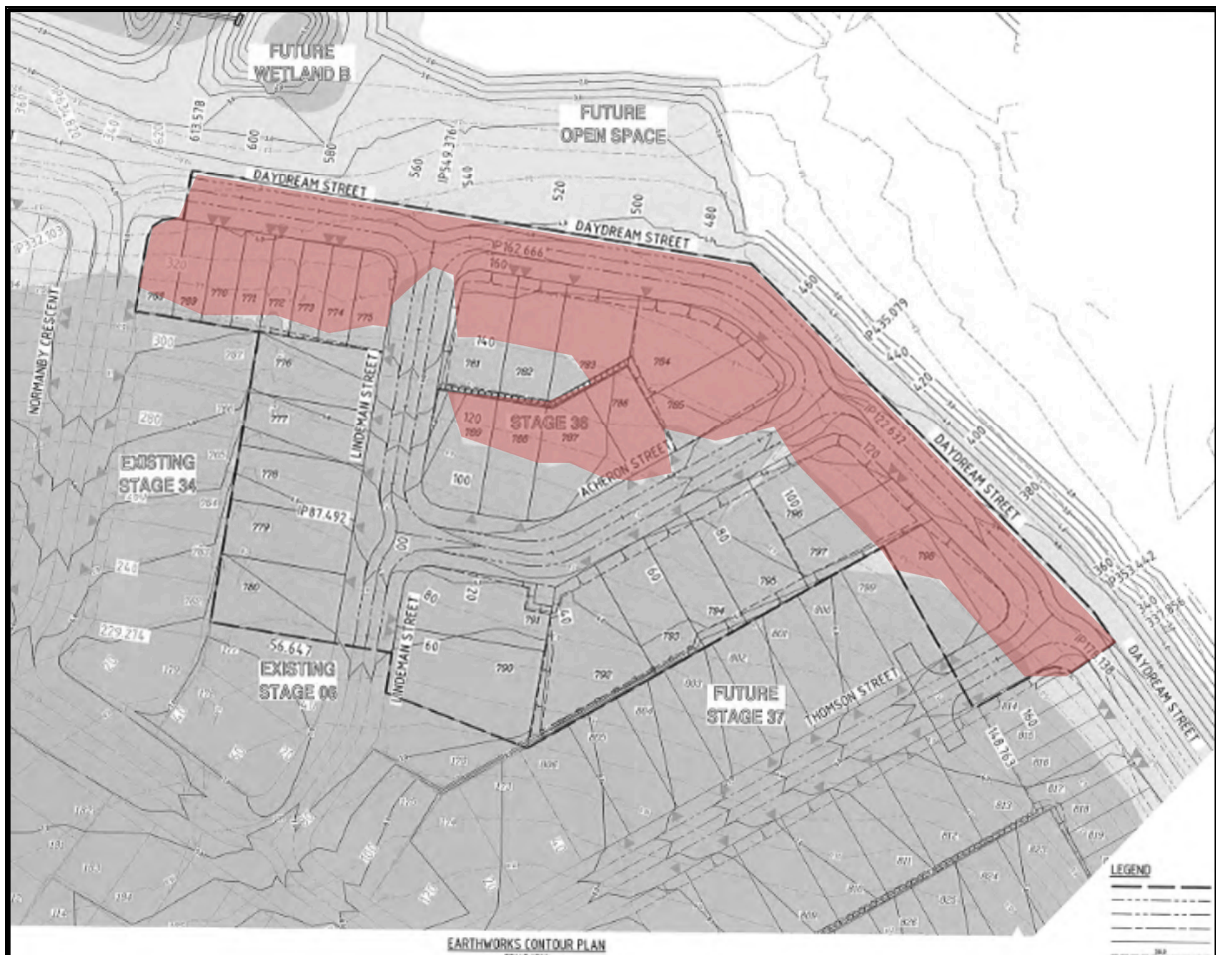
KN Group Earthworks Contour Plan 17-157-04 indicates the extents and approximate depths of fill constructed at the Site.

This plan is considered to be a reasonable indication of the actual fill constructed at The Site

The actual thickness of fill on an individual Lot can be obtained from the Developer as a Lot Disclosure Plan.

The Site is bounded by an existing and future residential development to the East and South, Future Stages to the North and wetlands to the West.

**Figure 1: Approximate Extent of Fill Covered by This Report.**



## **2.0 THE BRIEF**

The Brief from the Client was limited to:

- Level One Inspection and Testing of the placement and compaction of fill materials in accordance with AS3798 2007 – “Guidelines on Earthworks for Commercial and Residential Developments”,
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.1.
- Moreton Bay Regional Council Specifications
- Notes on KN Group Earthworks Drawings.

All other design requirements such as CBR and Quality of Materials, site classification, material, settlement assessments and existing filling were not included in the Brief and are therefore excluded from this Report.

## **3.0 METHODOLOGY**

Earthworks Inspection and Testing was carried out on the stripped and exposed ground surfaces and during the placement and compaction of fill materials.

Field and laboratory testing included a walk over assessments of the existing ground conditions, observations of filling and compaction activities and compaction testing.

### **3.1 Stripped Surface Assessment**

The fill areas at The Site were observed to be stripped and cleared of all visible organic matter, deleterious, loose and unsuitable materials to depths exposing a natural foundation suitable for the support of fill construction

Materials forming the natural foundation exposed after the stripping and clearing can be summarised as:

- Silty Sand (SM) – At least stiff, fine to course grained sand, light brown – grey, moist.
- Clayey Sand (SC) – Dense, fine to course grained sand, low to medium plasticity, light brown - pale yellow, moist.
- Sandy Clay (CI) – At least Stiff, medium plasticity, fine to course grained sand, brown – light brown, moist.

Following the stripped surface assessment of the fill areas, the fill foundation was approved for filling using the following process:

- Walk over assessments confirming that the competent ground was exposed.
- Proof roll testing using loaded dump trucks carrying out multiple passes confirming no movement of the exposed natural foundation.

### **3.2 Filling Operations**

Fill materials were sourced from onsite cuts, road box excavations, trench excavations and imported fill from Borrow area 3-2

Materials used as fill at The Site can be summarised as:

- Clayey Sand (SC) – fine to course grained sand, low to medium plasticity, light brown - pale yellow, moist.

- Sandy Clay (CI) – medium plasticity, fine to coarse grained sand, red grey brown, moist.

Placement and compaction of the fill materials was carried out using the following plant:

- Skid Steer Loader
- Pad Foot Rollers
- Excavators
- Grader
- Articulated Water Truck
- Scrapers
- Front End Loader
- Tractors
- Dozer
- 825 Compactor
- Articulated Dump Trucks

The fill materials were moisture conditioned during placement to moisture contents suitable for compaction. Deleterious materials such as organics, sticks, roots and over size particles were sorted and removed during placement or were rejected for use. Occasional cobble sized particles may remain in the fill however are not considered to affect the fill as a mass.

Placement of the fill materials was carried in layers appropriate for the above plant and compacted carrying out multiple passes.

Our representative observed the filling process as described above and was assessed to be consistent for the entire thickness of fill.

Field density tests and laboratory compactions were carried out on the fill materials in accordance with Table 5.1 and 8.1 of AS3798 2007 (Guidelines on Earthworks for Commercial and Residential Developments) and tested to AS1289 test methods (Testing of Soils for Engineering Purposes). Testing achieved the required specification of 95% of the Hilf Density.

Fill placed and compacted at measured density ratios less than 95% were tined, moisture conditioned and recompacted until the required specification was achieved. Retesting was carried out using Random Stratified Location methods.

The Location of the field density tests are shown on the Site Plan contained in Appendix A. These test locations and levels were not obtained by survey and therefore should only be considered as approximate.

#### **4.0 STATEMENT OF COMPLIANCE**

Our representatives observed the relevant earthworks operations including the stripped surface, fill placement and compaction operations and carried out field density tests and laboratory compaction tests in accordance with the required standard (AS3798, AS1289) and Specification.

It is confirmed that Level One Inspection and Testing has been carried out on the earthworks fill to form the residential Lots and embankments below subgrade. Based on the observations made by our Geotechnicians and the results of the field and laboratory tests, the placed and compacted fill at the above project has, as far as we have been able to assess, been constructed in general accordance with the intent of AS3798 and the Specifications.

The fill can be deemed to be “controlled in accordance with AS2870.

#### **5.0 EXCLUSIONS**

This statement does not include any top soil which may be placed for use as dressing, trench backfill, pavement construction or any other subsequent earthworks after February 2019.

Assessments of material quality such as soaked CBR and site classifications are excluded from this commission.

Our on-site attendance specifically excludes assessments of fill material quality and engineering properties that are outside the requirements of AS3798 - 2007, including soil or fill reactivity and soaked CBR values. We note that the fill materials used may result in unfavourable site classifications and low subgrade design strengths.

Footings and ground slabs for any structures constructed over natural soils or controlled fill should be designed to accommodate the characteristic ground surface movements and settlement potential. Assessments of these design parameters are beyond the scope of this Report.

## **6.0 LIMITATIONS**

This Report has been prepared by Morrison Geotechnic Pty Ltd (**Morrison Geotechnic**), and may include contributions from Morrison Geotechnic's officers and employees, sub-contractors, sub-consultants or agents (**Contributors**).

This Report is for the sole benefit and use of Hall Contracting Pty Ltd (**Client**), its designers, clients and relevant statutory authorities for the sole purpose of providing Level One Inspections and Testing in respect of the North Harbour Stage 36, (**Project**). The Report is only intended to address those issues expressly described in the Brief/ Work Instructions in this Report.

This Report should not be used or relied upon for any other purpose without Morrison Geotechnic's prior written consent. Morrison Geotechnic and the Contributors do not accept any responsibility or liability in any way whatsoever for the use or reliance of this Report by anyone other than the **Client**, its designers, its clients and relevant statutory authorities or by anyone else for any purpose other than that for which it has been prepared.

Except with Morrison Geotechnic's prior written consent, this Report may not be:

- (a) released to any other party, whether in whole or in part (other than to the Client's officers, employees, advisers, designers, clients and relevant statutory authorities);
- (b) used or relied upon by any other party.

Morrison Geotechnic and the Contributors, do not accept any liability or responsibility whatsoever for, or in respect of, any use or reliance upon this Report by any other party. Morrison Geotechnic is not obliged to enter into discussions with any third party in respect of this Report.

The information (including technical information and information obtained through discussions) on which this report is based has been provided by the Client and third parties. Morrison Geotechnic and the Contributors:

- (a) have relied upon and presumed the accuracy of this information;
- (b) have not verified the accuracy or reliability of this information (other than as expressly stated in this Report);
- (c) have not made any independent investigations or enquiries in respect of those matters of which it has no actual knowledge at the time of giving this Report to the Client; and
- (d) make no warranty or guarantee, expressed or implied, as to the accuracy or reliability of this information.

Morrison Geotechnic and the Contributors do not accept responsibility or liability for any incorrect assumptions related to this Report. For the avoidance of doubt, this Report:

- (a) is not an environmental, contamination or hazardous materials assessment; may be invalid, incomplete or inaccurate (including errors in the scope of work, investigation methodology, observations, opinions and advice) where the information provided to Morrison Geotechnic was invalid, incomplete or inaccurate;
- (b) is limited to observations of those parts of the site described in Section 1.0.

No warranty or guarantee, whether express or implied, is made in respect of the geotechnical data, information, advice, opinions and recommendations present in this Report.

If further information becomes available, or additional assumptions need to be made, Morrison Geotechnic reserves its right to amend this Report.

If you have any queries regarding the above, please contact our Brisbane office.

Yours faithfully



**DAVE TAYLOR**  
For and on Behalf of  
**MORRISON GEOTECHNIC PTY LIMITED**

Reviewed by:



**MICHAEL MORRISON**

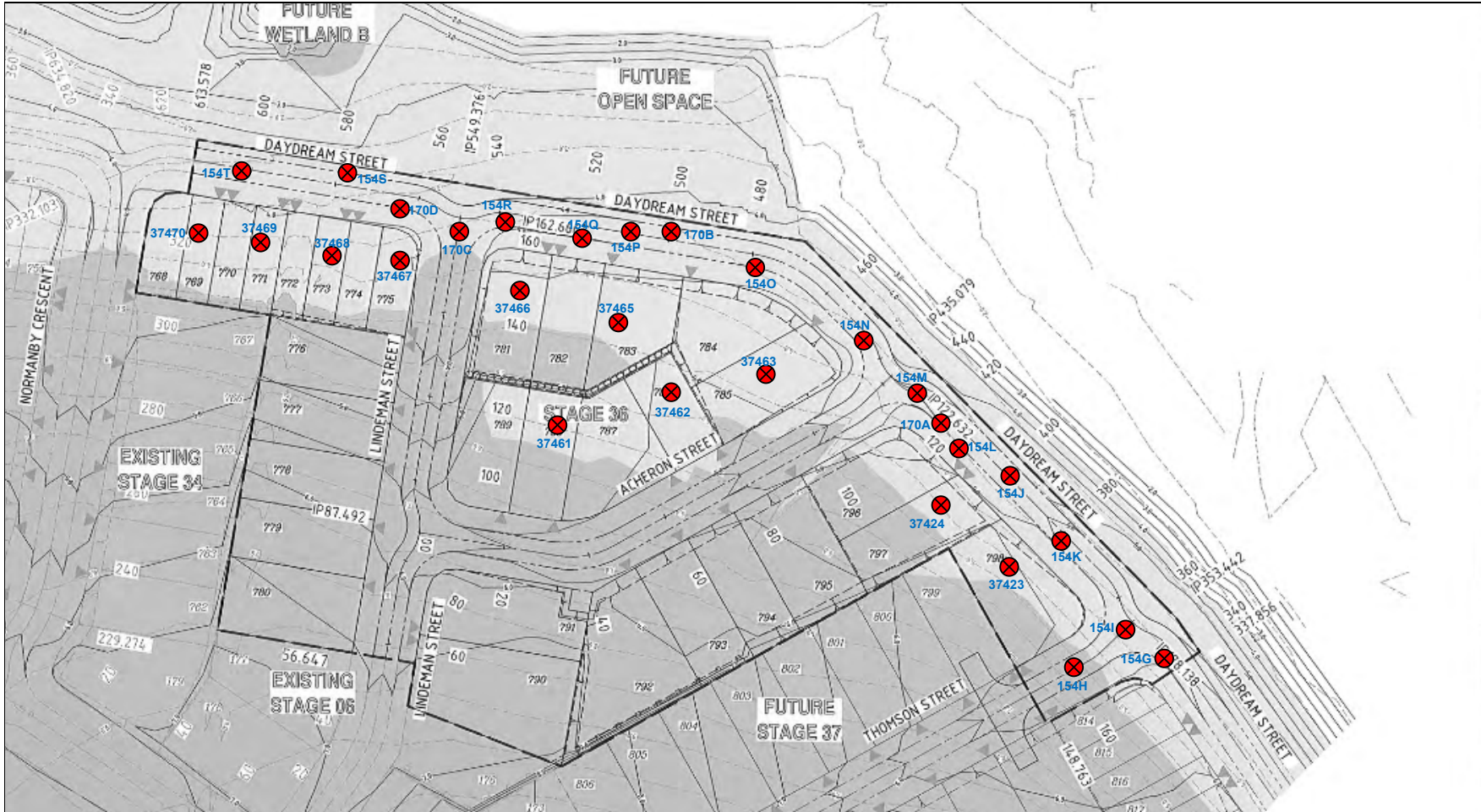
**ATTACHMENTS:**

- Appendix A – Site Plan Showing Test Locations
- Appendix B – Laboratory Test Results Reports



# **APPENDIX A**

Site Plan



REVISIONS			
No.	Description	Date	By
A	FOR APPROVAL	09/12/17	EA



Recorded Consultant

**NorthEast**  
BUSINESS PARK




**North Harbour**  
feel right at home

RESIDENTIAL WEST  
STAGE 36



**MORRISON GEOTECHNIC PTY LTD**  
 ABN: 51 009 878 899  
 Unit 4/81 Wisers Rd, Maroochydore Qld 4558  
 Ph: 5443 9522  
 Email: [maroochydorelab@mgeo.com.au](mailto:maroochydorelab@mgeo.com.au)

Client :	Hall Contracting Pty Ltd		
Project :	Residential West – Stage 36 North Harbour Burpengary		
Job No :	ML18/060	Drawing No:	ML18/060 - Stage 36
Legend	Approx. Lot Fill Test Location		Date: 2 <sup>nd</sup> December 2019
			<b>Drawing Not To Scale</b>



# **APPENDIX B**

Test Certificates

## Hilf Density Ratio Report

Client : HALL CONTRACTING PTY LTD	Report Number: ML17/087 - 7
Address : PO BOX 519, BUDERIM, QLD, 4556	Report Date : 13/11/2017
Project Name : PHASE 3 -EARTHWORKS SUPERVISION	Order Number :
Project Number : ML17/087	Test Method : AS1289.5.7.1
Location: NORTH HARBOUR	Page 1 of 1


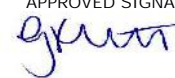
Sample Number :	37423	37424		
Test Number :	770	771		
Sampling Method :	AS 1289 1.2.1 (Cl 6.4,b)	AS 1289 1.2.1 (Cl 6.4,b)		
Date Sampled :	3/11/2017	3/11/2017		
Date Tested :	3/11/2017	3/11/2017		
Time Tested :	9.00	9.10		
Material Type :	FILL	FILL		
Material Source :	ON-SITE	ON-SITE		
Lot Number :				
Sample Location :	E 499660 N 7000513 FL Stage 36	E 499670 N 7000518 FL Stage 36		
Test Depth (mm) :	150	150		
Layer Depth (mm) :				
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	0	0		
Oversize Dry (%) :				
Oversize Density (t/m <sup>3</sup> ) :				
Field Moisture Content (%) :	9.0	8.5		
Hilf MDR Number :	37423	37424		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS 1289.2.1.1	AS 1289.2.1.1		
Moisture Ratio (%) :	84	82.5		
Field Wet Density (t/m <sup>3</sup> ) :	2.127	2.138		
Optimum Moisture Content (%) :	10.7	10.3		
Moisture Variation :	2% (dry)	2% (dry)		
Peak Converted Wet Density (t/m <sup>3</sup> ) :	2.17	2.16		
Hilf Density Ratio (%) :	98.0	99.0		
Minimum Specification :	95	95		
Moisture Specification :				
Site Selection :				
Soil Description :				
Remarks :	Liquid Limit Determination (iii)			

 <p>Accredited for compliance with ISO/IEC 17025. Corporate Site No. 24234 North Harbour Annex Facility. 17071 Base Lab.</p>	<p>APPROVED SIGNATORY</p>  <p>GINA FLETT - NATA Accreditation Number 1169</p>
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## Hilf Density Ratio Report

Client : HALL CONTRACTING PTY LTD Address : PO BOX 519, BUDERIM, QLD, 4556 Project Name : PHASE 3 -EARTHWORKS SUPERVISION Project Number : ML17/087 Location: NORTH HARBOUR	Report Number: ML17/087 - 9 Report Date : 6/12/2017 Order Number : Test Method : AS1289.5.7.1 Page 1 of 3
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Sample Number :	37461	37462	37463	37465
Test Number :	777	778	779	781
Sampling Method :	AS 1289 1.2.1 (CI 6.4,b)	AS 1289 1.2.1 (CI 6.4,b)	AS 1289 1.2.1 (CI 6.4,b)	AS 1289 1.2.1 (CI 6.4,b)
Date Sampled :	11/11/2017	11/11/2017	11/11/2017	11/11/2017
Date Tested :	11/11/2017	11/11/2017	11/11/2017	11/11/2017
Time Tested :	6.10	6.20	6.30	6.50
Material Type :	FILL	FILL	FILL	FILL
Material Source :	ON-SITE	ON-SITE	ON-SITE	ON-SITE
Lot Number :				
Sample Location :	E 499654 N 7000524 FL Stage 36	E 499660 N 7000521 FL Stage 36	E 499711 N 7000493 FL Stage 36	E 499752 N 7000490 FL Stage 36
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :				
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	0	0	0	0
Oversize Dry (%) :				
Oversize Density (t/m <sup>3</sup> ) :				
Field Moisture Content (%) :	16.5	15.5	16.1	9.8
Hilf MDR Number :	37461	37462	37463	37465
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Moisture Ratio (%) :	88.5	78.5	89	77.5
Field Wet Density (t/m <sup>3</sup> ) :	1.999	1.983	1.930	1.951
Optimum Moisture Content (%) :	18.7	19.8	18.1	12.7
Moisture Variation :	2% (dry)	4% (dry)	2% (dry)	3% (dry)
Peak Converted Wet Density (t/m <sup>3</sup> ) :	2.10	2.05	1.99	2.03
Hilf Density Ratio (%) :	95.5	96.5	97.0	96.0
Minimum Specification :	95	95	95	95
Moisture Specification :				
Site Selection :				
Soil Description :				
Remarks :	Liquid Limit Determination (iii)			


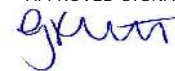
 <p>Accredited for compliance with ISO/IEC 17025. Corporate Site No. 24234 North Harbour Annex Facility. 17071 Base Lab.</p>	APPROVED SIGNATORY  GINA FLETT - NATA Accreditation Number 1169
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## Hilf Density Ratio Report

Client : HALL CONTRACTING PTY LTD	Report Number: ML17/087 - 9
Address : PO BOX 519, BUDERIM, QLD, 4556	Report Date : 6/12/2017
Project Name : PHASE 3 -EARTHWORKS SUPERVISION	Order Number :
Project Number : ML17/087	Test Method : AS1289.5.7.1
Location: NORTH HARBOUR	Page 2 of 3


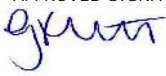
Sample Number :	37466	37467	37468	37469
Test Number :	782	783	784	785
Sampling Method :	AS 1289 1.2.1 (Cl 6.4,b)	AS 1289 1.2.1 (Cl 6.4,b)	AS 1289 1.2.1 (Cl 6.4,b)	AS 1289 1.2.1 (Cl 6.4,b)
Date Sampled :	11/11/2017	11/11/2017	11/11/2017	11/11/2017
Date Tested :	11/11/2017	11/11/2017	11/11/2017	11/11/2017
Time Tested :	7.00	7.10	7.20	7.30
Material Type :	FILL	FILL	FILL	FILL
Material Source :	ON-SITE	ON-SITE	ON-SITE	ON-SITE
Lot Number :				
Sample Location :	E 499781 N 7000473 FL Stage 36	E 499787 N 7000473 0.2m BFL Stage 36	E 499809 N 7000458 0.4m BFL Stage 36	E 499817 N 7000453 0.6m BFL Stage 36
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :				
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	0	0	0	0
Oversize Dry (%) :				
Oversize Density (t/m <sup>3</sup> ) :				
Field Moisture Content (%) :	7.8	12.3	9.0	11.0
Hilf MDR Number :	37466	37467	37468	37469
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Moisture Ratio (%) :	82	104	85.5	102
Field Wet Density (t/m <sup>3</sup> ) :	2.154	1.955	2.123	1.935
Optimum Moisture Content (%) :	9.5	11.8	10.6	10.8
Moisture Variation :	2% (dry)	0.5% (wet)	1.5% (dry)	0% (wet)
Peak Converted Wet Density (t/m <sup>3</sup> ) :	2.11	2.02	2.13	2.02
Hilf Density Ratio (%) :	102.0	97.0	99.5	95.5
Minimum Specification :	95	95	95	95
Moisture Specification :				
Site Selection :				
Soil Description :				
Remarks :	Liquid Limit Determination (iii)			

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## Hilf Density Ratio Report

Client : HALL CONTRACTING PTY LTD Address : PO BOX 519, BUDERIM, QLD, 4556 Project Name : PHASE 3 -EARTHWORKS SUPERVISION Project Number : ML17/087 Location: NORTH HARBOUR	Report Number: ML17/087 - 9 Report Date : 6/12/2017 Order Number : Test Method : AS1289.5.7.1 <div style="text-align: right;">Page 3 of 3</div>
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Sample Number :	37470			
Test Number :	786			
Sampling Method :	AS 1289 1.2.1 (Cl 6.4,b)			
Date Sampled :	11/11/2017			
Date Tested :	11/11/2017			
Time Tested :	7.40			
Material Type :	FILL			
Material Source :	ON-SITE			
Lot Number :				
Sample Location :	E 499846  N 7000413 0.7m BFL  Stage 36			
Test Depth (mm) :	150			
Layer Depth (mm) :				
Maximum Size (mm) :	19			
Oversize Wet (%) :	0			
Oversize Dry (%) :				
Oversize Density (t/m <sup>3</sup> ) :				
Field Moisture Content (%) :	9.0			
Hilf MDR Number :	37470			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS 1289.2.1.1			
Moisture Ratio (%) :	84			
Field Wet Density (t/m <sup>3</sup> ) :	2.122			
Optimum Moisture Content (%) :	10.7			
Moisture Variation :	2% (dry)			
Peak Converted Wet Density (t/m <sup>3</sup> ) :	2.15			
Hilf Density Ratio (%) :	99.0			
Minimum Specification :	95			
Moisture Specification :				
Site Selection :				
Soil Description :				
Remarks :	Liquid Limit Determination (iii)			

 <p style="text-align: center; font-size: small;">Accredited for compliance with ISO/IEC 17025. Corporate Site No. 24234 North Harbour Annex Facility. 17071 Base Lab.</p>	<p>APPROVED SIGNATORY</p>  <p>GINA FLETT - NATA Accreditation Number 1169</p>
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# Material Test Report



Morrison Geotechnic Pty Ltd

Base Facility No:17071

North Harbour Annex Facility No:24234

Unit 4 / 81 Wisers Road Maroochydore QLD 4558

Phone: (07) 5443 9522

Email: maroochydorelab@morrisongeo.com.au

**Report Number:** ML18/060-13  
**Issue Number:** 1  
**Date Issued:** 02/02/2019  
**Client:** HALL CONTRACTING PTY LTD  
 PO BOX 519, BUDERIM QLD 4556  
**Contact:** Nelson Riddle  
**Project Number:** ML18/060  
**Project Name:** PHASE 4 BULK EARTHWORKS  
**Project Location:** NORTH HARBOUR, BURPENGARY  
**Work Request:** 154  
**Date Sampled:** 17/01/2019 8:00  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% STD  
**Site Selection:** AS 1289.1.4.1  
**Material:** Clayey Sand. Brown  
**Material Source:** Onsite



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: David Taylor  
 Senior Technician

NATA Accredited Laboratory Number: 1169

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	N19-154F	N19-154G	N19-154H	N19-154I	N19-154J
Test Number	34	35	36	37	38
Date Tested	17/01/2019	17/01/2019	17/01/2019	17/01/2019	17/01/2019
Time Tested	10:10	10:20	10:25	10:30	10:38
Test Request #/Location	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street
Chainage (m)	320	330	355	364	375
Location Offset (m)	1m R of C/L	C/L	2m L of C/L	.5m L of C/L	1m R of C/L
Layer / Reduced Level	1m BFL	.8m BFL	2.0m BFL	1.8m BFL	.9m BFL
Soil Description	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown
Test Depth (mm)	150	150	150	150	150
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**	**	**
Field Wet Density (FWD) t/m <sup>3</sup>	2.18	2.14	2.16	2.12	2.09
Field Moisture Content %	7.7	8.1	8.3	5.5	6.7
Field Dry Density (FDD) t/m <sup>3</sup>	2.02	1.98	1.99	2.01	1.96
Peak Converted Wet Density t/m <sup>3</sup>	2.16	2.19	2.18	2.14	2.19
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	2.0	2.0	2.5	4.0	2.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	<b>101.0</b>	<b>98.0</b>	<b>99.0</b>	<b>99.0</b>	<b>95.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Material Test Report



Morrison Geotechnic Pty Ltd

Base Facility No:17071

North Harbour Annex Facility No:24234

Unit 4 / 81 Wisers Road Maroochydore QLD 4558

Phone: (07) 5443 9522

Email: maroochydorelab@morrisongeo.com.au

**Report Number:** ML18/060-13  
**Issue Number:** 1  
**Date Issued:** 02/02/2019  
**Client:** HALL CONTRACTING PTY LTD  
 PO BOX 519, BUDERIM QLD 4556  
**Contact:** Nelson Riddle  
**Project Number:** ML18/060  
**Project Name:** PHASE 4 BULK EARTHWORKS  
**Project Location:** NORTH HARBOUR, BURPENGARY  
**Work Request:** 154  
**Date Sampled:** 17/01/2019 8:00  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% STD  
**Site Selection:** AS 1289.1.4.1  
**Material:** Clayey Sand. Brown  
**Material Source:** Onsite



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: David Taylor  
 Senior Technician

NATA Accredited Laboratory Number: 1169

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	N19-154K	N19-154L	N19-154M	N19-154N	N19-154O
Test Number	39	40	41	42	43
Date Tested	17/01/2019	17/01/2019	17/01/2019	17/01/2019	17/01/2019
Time Tested	10:45	10:50	10:55	11:00	11:10
Test Request #/Location	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street
Chainage (m)	385	400	420	445	480
Location Offset (m)	C/L	.5m L of C/L	1m R of C/L	C/L	.5m L of C/L
Layer / Reduced Level	1.4m BFL	.8m BFL	2.1m BFL	1.5m BFL	1m BFL
Soil Description	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown
Test Depth (mm)	150	150	150	150	150
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**	**	**
Field Wet Density (FWD) t/m <sup>3</sup>	2.11	2.09	2.11	2.13	2.11
Field Moisture Content %	8.4	8.8	7.9	8.2	7.2
Field Dry Density (FDD) t/m <sup>3</sup>	1.94	1.92	1.96	1.96	1.97
Peak Converted Wet Density t/m <sup>3</sup>	2.20	2.22	2.22	2.20	2.21
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	2.0	1.5	1.5	1.0	2.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	95.5	94.0	95.0	96.5	95.5
Compaction Method	Standard	Standard	Standard	Standard	Standard

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Material Test Report



Morrison Geotechnic Pty Ltd

Base Facility No:17071

North Harbour Annex Facility No:24234

Unit 4 / 81 Wisers Road Maroochydore QLD 4558

Phone: (07) 5443 9522

Email: maroochydorelab@morrisongeo.com.au

**Report Number:** ML18/060-13  
**Issue Number:** 1  
**Date Issued:** 02/02/2019  
**Client:** HALL CONTRACTING PTY LTD  
 PO BOX 519, BUDERIM QLD 4556  
**Contact:** Nelson Riddle  
**Project Number:** ML18/060  
**Project Name:** PHASE 4 BULK EARTHWORKS  
**Project Location:** NORTH HARBOUR, BURPENGARY  
**Work Request:** 154  
**Date Sampled:** 17/01/2019 8:00  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% STD  
**Site Selection:** AS 1289.1.4.1  
**Material:** Clayey Sand. Brown  
**Material Source:** Onsite



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: David Taylor  
 Senior Technician

NATA Accredited Laboratory Number: 1169

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	N19-154P	N19-154Q	N19-154R	N19-154S	N19-154T
Test Number	44	45	46	47	48
Date Tested	17/01/2019	17/01/2019	17/01/2019	17/01/2019	17/01/2019
Time Tested	11:15	11:20	11:25	11:30	11:35
Test Request #/Location	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street	Rd Embankment Daydream Street
Chainage (m)	505	525	550	575	595
Location Offset (m)	1.5m R of C/L	C/L	1.5m R of C/L	1m L of C/L	C/L
Layer / Reduced Level	1m BFL	.9m BFL	1.2m FL	.9m BFL	1.0m BFL
Soil Description	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown
Test Depth (mm)	150	150	150	150	150
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**	**	**
Field Wet Density (FWD) t/m <sup>3</sup>	2.12	2.11	2.14	2.09	2.09
Field Moisture Content %	8.1	9.1	8.8	8.1	8.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.96	1.94	1.96	1.93	1.94
Peak Converted Wet Density t/m <sup>3</sup>	2.21	2.26	2.26	2.24	2.18
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	1.5	0.0	-0.5	0.0	2.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	<b>96.0</b>	<b>93.5</b>	<b>94.5</b>	<b>93.0</b>	<b>96.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC



# Material Test Report



Morrison Geotechnic Pty Ltd

Base Facility No:17071

North Harbour Annex Facility No:24234

Unit 4 / 81 Wises Road Maroochydore QLD 4558

Phone: (07) 5443 9522

Email: maroochydorelab@morrisongeo.com.au

**Report Number:** ML18/060-14  
**Issue Number:** 1  
**Date Issued:** 19/02/2019  
**Client:** HALL CONTRACTING PTY LTD  
 PO BOX 519, BUDERIM QLD 4556  
**Contact:** NATHAN SPANN  
**Project Number:** ML18/060  
**Project Name:** PHASE 4 BULK EARTHWORKS  
**Project Location:** NORTH HARBOUR, BURPENGARY  
**Work Request:** 170  
**Date Sampled:** 11/02/2019 2:10  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% STD  
**Material:** Clayey Sand. Brown  
**Material Source:** Onsite



Accredited for compliance with ISO/IEC 17025 - Testing

*D. Taylor*

Approved Signatory: David Taylor  
 Senior Technician

NATA Accredited Laboratory Number: 1169

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	N19-170A	N19-170B	N19-170C	N19-170D
Test Number	49	50	51	52
Date Tested	11/02/2019	11/02/2019	11/02/2019	11/02/2019
Time Tested	02:20	02:30	02:40	02:50
Test Request #/Location	Rd Embankment	Rd Embankment	Rd Embankment	Rd Embankment
Chainage (m)	400	525	550	575
Location Offset (m)	.5m L of C/L	C/L	1.5m R of C/L	1m L of C/L
Layer / Reduced Level	.8m BFL	.9m BFL	1.2m BFL	1m L of BFL
Soil Description	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown	Clayey Sand. Brown
Test Depth (mm)	150	150	150	150
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**	**
Field Wet Density (FWD) t/m <sup>3</sup>	2.16	2.15	2.22	2.15
Field Moisture Content %	7.4	6.5	6.5	6.6
Field Dry Density (FDD) t/m <sup>3</sup>	2.01	2.02	2.08	2.01
Peak Converted Wet Density t/m <sup>3</sup>	2.12	2.13	2.19	2.16
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	2.0	2.0	2.0	2.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	<b>101.5</b>	<b>101.0</b>	<b>101.5</b>	<b>99.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

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