JOB NO: ML18/060 **DECEMBER 2019**

HALL CONTRACTING PTY LTD

LEVEL ONE COMPLIANCE REPORT

BULK EARTHWORKS FILLING OPERATIONS

STAGE 35 NORTH HARBOUR BURPENGARY

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Sunshine Coast Office
Job No: ML18-060
Ref No: 2962
Author: D. Taylor

2nd December 2019

Hall Contracting Pty Ltd
PO Box 519
Buderim Qld 4556

ATTENTION: MR ADAM WYATT
Email: AdamWyatt@hallcontracting.com.au

Dear Sir,

RE: LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS NORTH HARBOUR – STAGE 35

Table of Contents

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 35 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 August and November 2017.

Picture 1: Aerial Image - North Harbor Stage 35 (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.

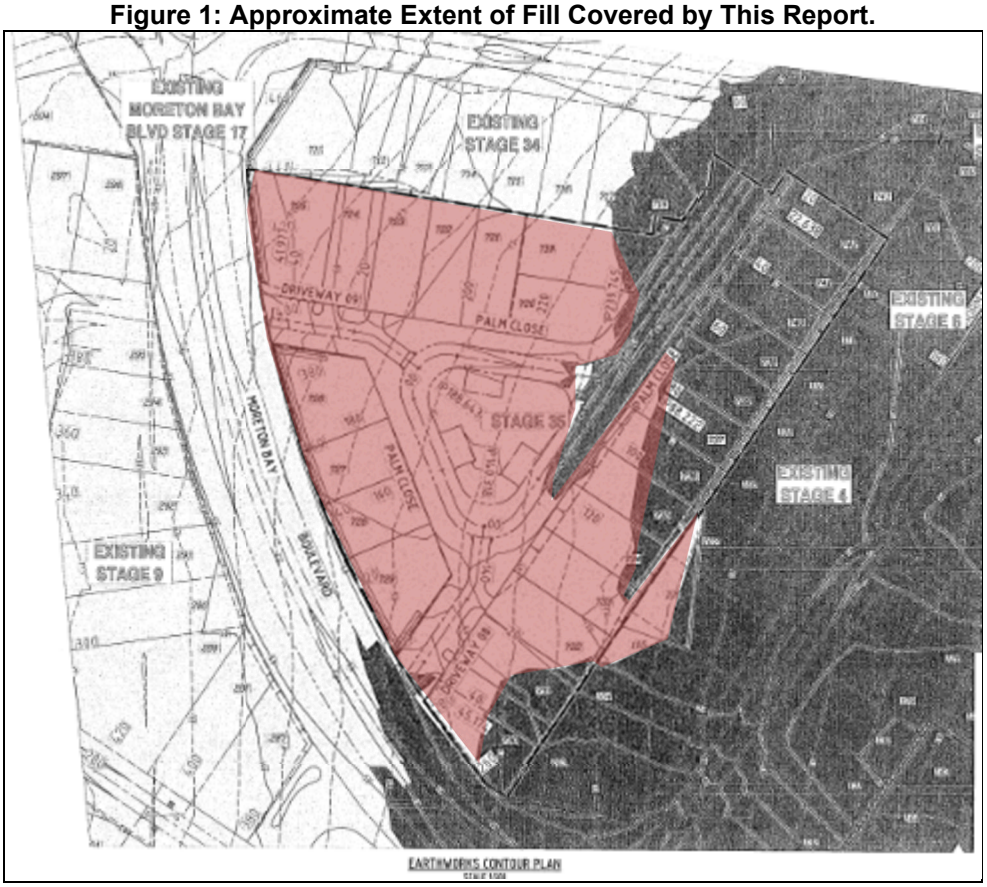
KN Group Earthworks Contour Plan 17-150-04 indicates the extents and approximate depths of fill constructed at the Site.

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 course 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.

Compaction testing was 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 tyned, 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 November 2017.

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 35, **(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.

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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.

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(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	01.12.17	KW

NorthEast BUSINESS PARK

North Harbour feel right at home

RESIDENTIAL WEST STAGE 35

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Ph: 5443 9522

Email: maroochydorelab@mgeo.com.au

Client :	Hall Contracting Pty Ltd		
Project :	Residential West - Stage 35 - North Harbour Burpengary		
Job No :	ML18/060	Drawing No:	ML18/060 – Stage 35
Legend	Approx. Lot Fill Test Location		Date: 2nd December 2019
	⊗		**Drawing Not To Scale**

APPENDIX B

Test Certificates

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Hilf Density Ratio Report

Client :	HALL CONTRACTING PTY LTD	Report Number:	DL17/006 - 207
Address :	P O BOX 519, BUDERIM, QLD, 4556	Report Date :	02/09/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	NH03
Project Number :	DL17/006	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	NORTH HARBOUR, PHASE 3 , BURPENGARY	Page 1 of 1	

Sample Number :	233857	233858	233859	233860
Test Number :	673	674	675	676
Sampling Method :	-	-	-	-
Date Sampled :	21/08/2017	21/08/2017	21/08/2017	21/08/2017
Date Tested :	21/08/2017	21/08/2017	21/08/2017	21/08/2017
Material Type :	General Fill	General Fill	General Fill	General Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 499438 N 7000492 3m Below Final Level	E 499447 N 7000480 2.7m Below Final Level	E 499459 N 7000489 2.9m Below Final Level Stage 35	E 499463 N 7000504 3m Below Final Level Stage 35
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	14.6	12.7	13.9	11.3
Hilf MDR Number :	233857	233858	233859	233860
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	77	75.5	85.5	80.5
Field Wet Density (t/m³) :	2.121	2.129	2.148	2.104
Optimum Moisture Content (%) :	18.9	16.8	16.2	14.0
Moisture Variation :	4.1	3.9	2.3	2.7
Peak Converted Wet Density (t/m³) :	2.071	2.085	2.097	2.088
Hilf Density Ratio (%) :	102.5	102.0	102.5	101.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
NATA Accreditation Number
1162 / 1169

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Hilf Density Ratio Report

Client :	HALL CONTRACTING PTY LTD	Report Number:	DL17/006 - 218
Address :	P O BOX 519, BUDERIM, QLD, 4556	Report Date :	13/09/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	NH03
Project Number :	DL17/006	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	NORTH HARBOUR, PHASE 3 , BURPENGARY		

Sample Number :	234941	234942		
Test Number :	715	716		
Sampling Method :	-	-		
Date Sampled :	04/09/2017	04/09/2017		
Date Tested :	04/09/2017	04/09/2017		
Material Type :	General Fill	General Fill		
Material Source :	On Site	On Site		
Lot Number :	-	-		
Sample Location :	E 499447 N 7000506 1.5m Below Final Level Stage 35	E 499420 N 7000516 2m Below Final Level Stage 35		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	9.4	11.3		
Hilf MDR Number :	234941	234942		
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 :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	80.5	81.5		
Field Wet Density (t/m³) :	2.054	2.091		
Optimum Moisture Content (%) :	11.6	13.8		
Moisture Variation :	2.3	2.5		
Peak Converted Wet Density (t/m³) :	2.134	2.103		
Hilf Density Ratio (%) :	96.0	99.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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Hilf Density Ratio Report

Client :	HALL CONTRACTING PTY LTD	Report Number:	DL17/006 - 224
Address :	P O BOX 519, BUDERIM, QLD, 4556	Report Date :	21/09/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	NH03
Project Number :	DL17/006	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	NORTH HARBOUR, PHASE 3 , BURPENGARY	Page 1 of 1	

Sample Number :	235704	235705	235706	235707
Test Number :	732	733	734	735
Sampling Method :	-	-	-	-
Date Sampled :	14/09/2017	14/09/2017	14/09/2017	14/09/2017
Date Tested :	14/09/2017	14/09/2017	14/09/2017	14/09/2017
Material Type :	General Fill	General Fill	General Fill	General Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 499451 N 700543 0.2m Below Final Level	E 499458 N 700522 1m Below Final Level	E 499438 N 700505 0.8m Below Final Level Stage 35	E 499410 N 700530 0.8m Below Final Level Stage 35
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	17.0	13.6	14.5	12.5
Hilf MDR Number :	235704	235705	235706	235707
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	90.5	91	89	91
Field Wet Density (t/m³) :	2.151	2.142	2.145	2.036
Optimum Moisture Content (%) :	18.8	14.9	16.3	13.7
Moisture Variation :	1.7	1.3	1.7	1.2
Peak Converted Wet Density (t/m³) :	2.145	2.148	2.167	2.099
Hilf Density Ratio (%) :	100.5	99.5	99.0	97.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA ACCREDITATION

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Liam Mcdowall (Brisbane) - Branch Manager
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Hilf Density Ratio Report

Client :	HALL CONTRACTING PTY LTD	Report Number:	ML17/087 - 2
Address :	PO BOX 519, BUDERIM, QLD, 4556	Report Date :	19/10/2017
Project Name :	PHASE 3 -EARTHWORKS SUPERVISION	Order Number :	
Project Number :	ML17/087	Test Method :	AS1289.5.7.1
Location:	NORTH HARBOUR		

Sample Number :	37157	37158	37159	37160
Test Number :	752	753	754	755
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 :	11/10/2017	11/10/2017	11/10/2017	11/10/2017
Date Tested :	11/10/2017	11/10/2017	11/10/2017	11/10/2017
Time Tested :	12.05	12.10	12.15	12.20
Material Type :	BULK FILL	BULK FILL	BULK FILL	BULK FILL
Material Source :	ON-SITE	ON-SITE	ON-SITE	ON-SITE
Lot Number :				
Sample Location :	E 499 616 N 7000 514 FL	E 499 433 N 7000 385 FL	E 499 436 N 7000 429 FL Stage 35	E 499 440 N 7000 455 FL Stage 35
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/m³) :				
Field Moisture Content (%) :	12.0	10.9	9.1	10.9
Hilf MDR Number :	37157	37158	37159	37160
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 (%) :	93.5	90.5	83.5	78
Field Wet Density (t/m³) :	2.059	2.070	2.086	2.095
Optimum Moisture Content (%) :	12.8	12.0	10.9	14.0
Moisture Variation :	1% (dry)	1% (dry)	2% (dry)	3% (dry)
Peak Converted Wet Density (t/m³) :	2.10	2.17	2.11	2.15
Hilf Density Ratio (%) :	98.0	95.5	99.0	97.5
Minimum Specification :	95	95	95	95
Moisture Specification :				
Site Selection :				
Soil Description :				
Remarks :	Liquid Limit Determination (iii) Curing Duration 2 hours			

NATA
MUTUAL RECOGNITION ARRANGEMENT ACCREDITATION

Accredited for compliance with ISO/IEC 17025. Corporate Site No: 17071.

APPROVED SIGNATORY

GINA FLETT -
NATA Accreditation Number
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Hilf Density Ratio Report

Client :	HALL CONTRACTING PTY LTD	Report Number:	ML17/087 - 3
Address :	PO BOX 519, BUDERIM, QLD, 4556	Report Date :	31/10/2017
Project Name :	PHASE 3 -EARTHWORKS SUPERVISION	Order Number :	
Project Number :	ML17/087	Test Method :	AS1289.5.7.1
Location:	NORTH HARBOUR		

Sample Number :	37292	37293	37294	37295
Test Number :	760	761	762	763
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 :	25/10/2017	25/10/2017	25/10/2017	25/10/2017
Date Tested :	25/10/2017	25/10/2017	25/10/2017	25/10/2017
Time Tested :	11.41	11.47	11.53	12.00
Material Type :	BULK FILL	BULK FILL	BULK FILL	BULK FILL
Material Source :	ON-SITE	ON-SITE	ON-SITE	ON-SITE
Lot Number :				
Sample Location :	E: 499439 N: 7000423 FL	E: 499443 N: 7000432 FL	E: 499440 N: 7000444 FL Stage 35	E: 499456 N: 7000454 FL Stage 35
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/m³) :				
Field Moisture Content (%) :	13.8	12.4	12.8	13.6
Hilf MDR Number :	37292	37293	37294	37295
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	103.5	99	103.5
Field Wet Density (t/m³) :	2.115	2.079	2.085	2.067
Optimum Moisture Content (%) :	15.6	12.0	12.9	13.2
Moisture Variation :	2% (dry)	0.5% (wet)	0% (dry)	0.5% (wet)
Peak Converted Wet Density (t/m³) :	2.09	2.14	2.10	2.12
Hilf Density Ratio (%) :	101.0	97.0	99.0	97.5
Minimum Specification :	95	95	95	95
Moisture Specification :				
Site Selection :				
Soil Description :				
Remarks :	Liquid Limit Determination (iii) Curing Duration 2 hours			

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GINA FLETT -
NATA Accreditation Number
1169

MORRISON GEOTECHNIC

Brisbane | Gold Coast | Brendale | Maroochydore
Unit 4, 81 Wises Road, Maroochydore Q 4558 P (07) 5443 9522 F (07) 5479 1633
ABN 51 009 878 899
www.morrisongeo.com.au

Hilf Density Ratio Report

Client :	HALL CONTRACTING PTY LTD	Report Number:	ML17/087 - 3
Address :	PO BOX 519, BUDERIM, QLD, 4556	Report Date :	31/10/2017
Project Name :	PHASE 3 -EARTHWORKS SUPERVISION	Order Number :	
Project Number :	ML17/087	Test Method :	AS1289.5.7.1
Location:	NORTH HARBOUR		

Sample Number :	37296	37297		
Test Number :	764	765		
Sampling Method :	AS 1289 1.2.1 (Cl 6.4,b)	AS 1289 1.2.1 (Cl 6.4,b)		
Date Sampled :	25/10/2017	25/10/2017		
Date Tested :	25/10/2017	25/10/2017		
Time Tested :	12.10	12.15		
Material Type :	BULK FILL	BULK FILL		
Material Source :	ON-SITE	ON-SITE		
Lot Number :				
Sample Location :	E: 499474 N: 7000445 FL Stage 35	E: 499463 N: 7000419 FL Stage 35		
Test Depth (mm) :	150	150		
Layer Depth (mm) :				
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	0	0		
Oversize Dry (%) :				
Oversize Density (t/m³) :				
Field Moisture Content (%) :	15.6	14.8		
Hilf MDR Number :	37296	37297		
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 (%) :	100	96		
Field Wet Density (t/m³) :	2.064	2.041		
Optimum Moisture Content (%) :	15.6	15.5		
Moisture Variation :	0% (dry)	0.5% (dry)		
Peak Converted Wet Density (t/m³) :	2.10	2.08		
Hilf Density Ratio (%) :	98.5	98.0		
Minimum Specification :	95	95		
Moisture Specification :				
Site Selection :				
Soil Description :				
Remarks :	Liquid Limit Determination (iii) Curing Duration 2 hours			

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Hilf Density Ratio Report

Client :	HALL CONTRACTING PTY LTD	Report Number:	ML17/087 - 4
Address :	PO BOX 519, BUDERIM, QLD, 4556	Report Date :	7/11/2017
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 :	37351	37352		
Test Number :	766	767		
Sampling Method :	AS 1289 1.2.1 (Cl 6.4,b)	AS 1289 1.2.1 (Cl 6.4,b)		
Date Sampled :	31/10/2017	31/10/2017		
Date Tested :	31/10/2017	31/10/2017		
Time Tested :	7.30	7.35		
Material Type :	FILL	FILL		
Material Source :	ON-SITE	ON-SITE		
Lot Number :				
Sample Location :	E: 499409 N: 7000583 0.3m BFL Stage 35	E: 499436 N: 7000577 0.4m BFL Stage 35		
Test Depth (mm) :	150	150		
Layer Depth (mm) :				
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	0	0		
Oversize Dry (%) :				
Oversize Density (t/m³) :				
Field Moisture Content (%) :	23.7	23.1		
Hilf MDR Number :	37351	37352		
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 (%) :	101.5	101.5		
Field Wet Density (t/m³) :	1.997	1.989		
Optimum Moisture Content (%) :	23.3	22.8		
Moisture Variation :	0.5% (wet)	0.5% (wet)		
Peak Converted Wet Density (t/m³) :	2.03	2.04		
Hilf Density Ratio (%) :	98.5	97.5		
Minimum Specification :	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	Report Number:	ML17/087 - 6
Address :	PO BOX 519, BUDERIM, QLD, 4556	Report Date :	10/11/2017
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 :	37453	37454	37455	
Test Number :	774	775	776	
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)	
Date Sampled :	7/11/2017	7/11/2017	7/11/2017	
Date Tested :	7/11/2017	7/11/2017	7/11/2017	
Time Tested :	12.30	12.40	12.50	
Material Type :	FILL	FILL	FILL	
Material Source :	ON-SITE	ON-SITE	ON-SITE	
Lot Number :				
Sample Location :	E: 499428 N: 7000465 FL Stage 35	E: 499415 N: 7000441 FL Stage 35	E: 499413 N: 7000416 FL Stage 35	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :				
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	0	0	0	
Oversize Dry (%) :				
Oversize Density (t/m³) :				
Field Moisture Content (%) :	14.1	17.9	17.2	
Hilf MDR Number :	37453	37454	37455	
Hilf MDR Method :	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	
Field Density Method :	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	
Moisture Ratio (%) :	106	101	102.5	
Field Wet Density (t/m³) :	2.044	2.071	2.060	
Optimum Moisture Content (%) :	13.3	17.7	16.8	
Moisture Variation :	1% (wet)	0% (wet)	0.5% (wet)	
Peak Converted Wet Density (t/m³) :	2.06	2.10	2.08	
Hilf Density Ratio (%) :	99.5	98.5	99.0	
Minimum Specification :	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	Report Number:	ML17/087 - 8
Address :	PO BOX 519, BUDERIM, QLD, 4556	Report Date :	14/11/2017
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 :	37425	37426		
Test Number :	772	773		
Sampling Method :	AS 1289 1.2.1 (Cl 6.4,b)	AS 1289 1.2.1 (Cl 6.4,b)		
Date Sampled :	6/11/2017	6/11/2017		
Date Tested :	6/11/2017	6/11/2017		
Time Tested :	11.00	11.05		
Material Type :	FILL	FILL		
Material Source :	ON-SITE	ON-SITE		
Lot Number :				
Sample Location :	E 499401 N 7000380 FL Stage 35	E 499415 N 7000355 FL Stage 35		
Test Depth (mm) :	150	150		
Layer Depth (mm) :				
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	0	0		
Oversize Dry (%) :				
Oversize Density (t/m³) :				
Field Moisture Content (%) :	27.8	17.5		
Hilf MDR Number :	37425	37426		
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 (%) :	112	102.5		
Field Wet Density (t/m³) :	1.934	2.024		
Optimum Moisture Content (%) :	24.8	17.0		
Moisture Variation :	3% (wet)	0.5% (wet)		
Peak Converted Wet Density (t/m³) :	2.03	2.06		
Hilf Density Ratio (%) :	95.0	98.5		
Minimum Specification :	95	95		
Moisture Specification :				
Site Selection :				
Soil Description :				
Remarks :	Liquid Limit Determination (iii)			

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