

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13458 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE:** LOT 508

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 508 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 508 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
508	30	20 <sup>th</sup> July 2017	100.0		
508	36	24 <sup>th</sup> July 2017	99.5		
Note: Laboratory St	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 508 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 508 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. MCDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 – 11, 16

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13458 CCA Winslow



ABN: 51 009 878 899 www.morrisongeo.com.au

# Hilf Density Ratio Report

 Client:
 CCA WINSLOW
 Report Number:
 DL17/134 - 11

 Address:
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date:
 27/07/2017

Project Name: EARTHWORKS SUPERVISION Order Number: 33832
Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.

	EXITETION CONTROL SOLVE ENTRA CONTROL			
Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE 7		Page	1 of 1
Sample Number :	232112	232113	232114	232115
Test Number:	30	31	32	33
Sampling Method :	-	-	-	-
Date Sampled :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Date Tested :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
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 484560.333	E 484527.962	E 484518.844	E 484529.387
	N 6939710.061	N 6939655.204	N 6939646.077	N 6939628.113
	RL 81.345	RL 84.928	RL 85.408	RL 86.083
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 (%) :	22.9	28.0	26.6	27.3
Hilf MDR Number :	232112	232113	232114	232115
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 (%) :	100	99	99.5	91.5
Field Wet Density (t/m³):	1.868	1.836	1.817	1.886
Optimum Moisture Content (%) :	22.9	28.3	26.8	29.9
Moisture Variation :	0.0	0.3	0.1	2.5
Peak Converted Wet Density (t/m³):	1.872	1.781	1.778	1.786
Hilf Density Ratio (%):	100.0	103.0	102.0	105.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-	1	ı	1



APPROVED SIGNATORY
Sich A

Accredited for compliance with ISO/IEC 17025.

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



www.morrisongeo.com.au

# Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 16 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 07/08/2017 EARTHWORKS SUPERVISION Project Name: Order Number : 33832 Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	232220	232221		
Test Number :	35	36		
Sampling Method :	-	-		
Date Sampled :	24/07/2017	24/07/2017		
Date Tested :	24/07/2017	24/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	E 484551.591	E 484550.305		
	N 6939696.161	N 6939709.124		
	RL 83.515	RL 83.056		
Test Depth (mm ) :	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	=	-		
Field Moisture Content (%):	18.6	13.7		
Hilf MDR Number:	232220	232221		
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 (%):	84.5	82		
Field Wet Density (t/m³):	1.996	2.106		
Optimum Moisture Content (%):	22.0	16.7		
Moisture Variation :	3.2	2.9		
Peak Converted Wet Density (t/m³):	2.077	2.120		
Hilf Density Ratio (%):	96.0	99.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

# Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



 $\textbf{Brisbane} \mid \text{Gold Coast} \mid \text{Maroochydore}$  Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076  $\,$  P (07) 3279 0900  $\,$  F (07) 3279 0955

ABN 51 009 878 899 www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13459 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 509** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 509 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 509 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
509	35	24 <sup>th</sup> July 2017	96.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 509 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 509 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Report DL17/134 – 16

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13459 CCA Winslow



www.morrisongeo.com.au

# Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 16 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 07/08/2017 EARTHWORKS SUPERVISION Project Name: Order Number : 33832 Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	232220	232221		
Test Number :	35	36		
Sampling Method :	-	-		
Date Sampled :	24/07/2017	24/07/2017		
Date Tested :	24/07/2017	24/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	E 484551.591	E 484550.305		
	N 6939696.161	N 6939709.124		
	RL 83.515	RL 83.056		
Test Depth (mm ) :	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	=	-		
Field Moisture Content (%):	18.6	13.7		
Hilf MDR Number:	232220	232221		
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 (%):	84.5	82		
Field Wet Density (t/m³):	1.996	2.106		
Optimum Moisture Content (%):	22.0	16.7		
Moisture Variation :	3.2	2.9		
Peak Converted Wet Density (t/m³):	2.077	2.120		
Hilf Density Ratio (%):	96.0	99.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

# Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13460 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 510** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 510 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 510 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
510	21	18 <sup>th</sup> July 2017	95.5		
510	43	25 <sup>th</sup> July 2017	104.0		
Note: Laboratory St	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 510 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 510 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

ncl: Laboratory Test Reports DL17/134 – 8, 18

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13460 CCA Winslow



Report Number:

www.morrisongeo.com.au

DL17/134 - 8

# Hilf Density Ratio Report

Client : CCA WINSLOW Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106

Report Date: 26/07/2017 Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING, STAGE 7 Page 1 of 1

Location.	EDEN 3 CROSSING , STAGE /		r age r or r	
Sample Number :	231957	231958	231959	231960
Test Number :	21	22	23	24
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
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 484555.929	E 484550.225	E 484542.070	E 484534.430
	N 6939683.690	N 6939625.225	N 6939661.105	N 6939645.012
	RL 82.675	RL 82.956	RL 83.423	RL 84.188
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 (%):	14.3	11.7	13.7	15.5
Hilf MDR Number :	231957	231958	231959	231960
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 (%):	84	81.5	83	86
Field Wet Density (t/m³):	1.925	1.941	1.924	1.949
Optimum Moisture Content (%):	17.0	14.4	16.5	18.0
Moisture Variation :	2.7	2.7	2.8	2.5
Peak Converted Wet Density (t/m³):	2.013	2.029	2.025	1.984
Hilf Density Ratio (%):	95.5	95.5	95.0	98.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	=
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL



www.morrisongeo.com.au

# Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 18
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 11/08/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : DL17/134 Test Method : AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	232244	232245	232246	
Test Number:	41	42	43	
Sampling Method :	=	-	-	
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	
Date Tested :	25/07/2017	25/07/2017	25/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number:	-	-	-	
Sample Location :	E 484541.115	E 484537.305	E 484549.389	
	N 6939644.320	N 6939656.919	N 6939684.171	
	RL 86.189	RL 85.569	RL 83.988	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%):	17.1	17.1	15.8	
Hilf MDR Number :	232244	232245	232246	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	84.5	77	83	
Field Wet Density (t/m³):	1.972	1.975	2.144	
Optimum Moisture Content (%):	20.2	22.2	19.1	
Moisture Variation :	3.1	5.0	3.1	
Peak Converted Wet Density (t/m³):	1.974	1.891	2.061	
Hilf Density Ratio (%):	100.0	104.5	104.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-	1	1	



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

# Important Information about Your

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

# Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13461 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 511** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 511 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 511 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
511	52	27 <sup>th</sup> July 2017	97.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 511 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 511 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Report DL17/134 - 21

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13461 CCA Winslow



www.morrisongeo.com.au

# Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 21 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 11/08/2017 Project Name: Order Number : 33832 EARTHWORKS SUPERVISION Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Location:	EDEN'S CROSSING , STAGE 7		Page 1 of 1	
Sample Number :	232474	232475	232476	
Test Number :	50	51	52	
Sampling Method :	-	-	-	
Date Sampled :	27/07/2017	27/07/2017	27/07/2017	
Date Tested :	27/07/2017	27/07/2017	27/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484503.464	E 484538.268	E 484545.391	
	N 6939639.110	N 6939631.798	N 6939669.323	
	RL 87.180	Final Level	Final Level	
Test Depth (mm ):	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	_	_	-	
Oversize Density (t/m³):	-	-	-	
Field Moisture Content (%) :	11.6	23.6	13.1	
Hilf MDR Number :	232474	232475	232476	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	70	111	86.5	
Field Wet Density (t/m³):	2.200	1.978	2.100	
Optimum Moisture Content (%):	16.6	21.2	15.1	
Moisture Variation :	4.7	-2.3	2.0	
Peak Converted Wet Density (t/m³):	2.185	2.056	2.168	
Hilf Density Ratio (%):	100.5	96.0	97.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :				



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

# Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13462 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 512** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 512 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 512 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
512	20	17 <sup>th</sup> July 2017	95.0		
512	23	18 <sup>th</sup> July 2018	95.0		
512	31	20 <sup>th</sup> July 2017	103.0		
512	42	25 <sup>th</sup> July 2017	104.5		
Note: Laboratory Sta	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 512 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 512 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL

For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 – 7, 8, 11, 18

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13462 CCA Winslow



www.morrisongeo.com.au

# Hilf Density Ratio Report

 Client :
 CCA WINSLOW
 Report Number:
 DL17/134 - 7

 Address :
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date :
 24/07/2017

Project Name: EARTHWORKS SUPERVISION Order Number: 33832
Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE 7		Page	1 of 1
Sample Number :	231936	231937	231938	
Test Number :	18	19	20	
Sampling Method :	-	-	-	
Date Sampled :	17/07/2017	17/07/2017	17/07/2017	
Date Tested :	17/07/2017	17/07/2017	17/07/2017	
Material Type :	General Fill	General Fill	General Fill	
Material Source :	On Site	On Site	On Site	
Lot Number :	-	-	-	
Sample Location :	E 0484543	E 0484541	E 0484544	
,	N 6939630	N 6939643	N 6939663	
	11 0939030	11 0939043	N 0939003	
	RL 84.150	RL 83.225	RL 82.495	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%):	16.6	15.8	25.3	
Hilf MDR Number :	231936	231937	231938	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	99	89	99	
Field Wet Density (t/m³):	1.960	1.953	1.750	
Optimum Moisture Content (%) :	16.8	17.7	25.6	
Moisture Variation :	0.2	1.9	0.3	
Peak Converted Wet Density (t/m <sup>3</sup> ):	2.029	2.038	1.839	
Hilf Density Ratio (%):	96.5	96.0	95.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-	•	•	•



APPROVED SIGNATORY



Report Number:

www.morrisongeo.com.au

DL17/134 - 8

# Hilf Density Ratio Report

Client : CCA WINSLOW Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106

Report Date: 26/07/2017 Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING, STAGE 7 Page 1 of 1

Location.	EDEN 3 CRUSSING , STAGE 7		. ago	1 01 1
Sample Number :	231957	231958	231959	231960
Test Number :	21	22	23	24
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
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 484555.929	E 484550.225	E 484542.070	E 484534.430
	N 6939683.690	N 6939625.225	N 6939661.105	N 6939645.012
	RL 82.675	RL 82.956	RL 83.423	RL 84.188
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 (%):	14.3	11.7	13.7	15.5
Hilf MDR Number :	231957	231958	231959	231960
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 (%):	84	81.5	83	86
Field Wet Density (t/m³):	1.925	1.941	1.924	1.949
Optimum Moisture Content (%):	17.0	14.4	16.5	18.0
Moisture Variation :	2.7	2.7	2.8	2.5
Peak Converted Wet Density (t/m³):	2.013	2.029	2.025	1.984
Hilf Density Ratio (%):	95.5	95.5	95.0	98.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	=
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL



ABN: 51 009 878 899 www.morrisongeo.com.au

# Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 11
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 27/07/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : DL17/134 Test Method : AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING , STAGE 7		Page 1 of 1		
Sample Number :	232112	232113	232114	232115	
Test Number:	30	31	32	33	
Sampling Method :	-	-	-	-	
Date Sampled :	20/07/2017	20/07/2017	20/07/2017	20/07/2017	
Date Tested :	20/07/2017	20/07/2017	20/07/2017	20/07/2017	
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 484560.333	E 484527.962	E 484518.844	E 484529.387	
	N 6939710.061	N 6939655.204	N 6939646.077	N 6939628.113	
	RL 81.345	RL 84.928	RL 85.408	RL 86.083	
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 (%):	22.9	28.0	26.6	27.3	
Hilf MDR Number :	232112	232113	232114	232115	
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 (%):	100	99	99.5	91.5	
Field Wet Density (t/m³):	1.868	1.836	1.817	1.886	
Optimum Moisture Content (%):	22.9	28.3	26.8	29.9	
Moisture Variation :	0.0	0.3	0.1	2.5	
Peak Converted Wet Density (t/m³):	1.872	1.781	1.778	1.786	
Hilf Density Ratio (%):	100.0	103.0	102.0	105.5	
Minimum Specification :	95	95	95	95	
Moisture Specification :	-	-	-	-	
Site Selection :	-	-	-	-	
Soil Description :	-	-	-	-	
Remarks :	-	•	•	•	



APPROVED SIGNATORY
Siem A
MOODEL

Accredited for compliance with ISO/IEC 17025.

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



www.morrisongeo.com.au

# Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 18
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 11/08/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : DL17/134 Test Method : AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING , STAGE 7		Page 1 of 1	
Sample Number :	232244	232245	232246	
Test Number :	41	42	43	
Sampling Method :	=	-	-	
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	
Date Tested :	25/07/2017	25/07/2017	25/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number:	-	-	-	
Sample Location :	E 484541.115	E 484537.305	E 484549.389	
	N 6939644.320	N 6939656.919	N 6939684.171	
	RL 86.189	RL 85.569	RL 83.988	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%):	17.1	17.1	15.8	
Hilf MDR Number :	232244	232245	232246	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	84.5	77	83	
Field Wet Density (t/m³):	1.972	1.975	2.144	
Optimum Moisture Content (%):	20.2	22.2	19.1	
Moisture Variation :	3.1	5.0	3.1	
Peak Converted Wet Density (t/m³):	1.974	1.891	2.061	
Hilf Density Ratio (%):	100.0	104.5	104.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-		•	



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

# Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13463 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 513** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 513 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 513 are presented in Table 1 below.

**Table 1: Summary of Testing** 

rubio ii Guinnary or rooming					
Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
513	19	17 <sup>th</sup> July 2017	96.0		
513	24	18 <sup>th</sup> July 2018	98.0		
513	28	19 <sup>th</sup> July 2017	99.5		
513	41	25 <sup>th</sup> July 2017	100.0		
513	55	23 <sup>rd</sup> January 2018	98.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 513 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 513 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 - 7, 8, 9, 18, 29

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13463 CCA Winslow



www.morrisongeo.com.au

# Hilf Density Ratio Report

 Client :
 CCA WINSLOW
 Report Number:
 DL17/134 - 7

 Address :
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date :
 24/07/2017

Project Name: EARTHWORKS SUPERVISION Order Number: 33832
Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7		Page 1 of 1	
Sample Number :	231936	231937	231938	
Test Number :	18	19	20	
Sampling Method :	-	-	-	
Date Sampled :	17/07/2017	17/07/2017	17/07/2017	
Date Tested :	17/07/2017	17/07/2017	17/07/2017	
Material Type :	General Fill	General Fill	General Fill	
Material Source :	On Site	On Site	On Site	
Lot Number :	-	-	-	
Sample Location :	E 0484543	E 0484541	E 0484544	
,	N 6939630	N 6939643	N 6939663	
	11 0939030	11 0939043	N 0939003	
	RL 84.150	RL 83.225	RL 82.495	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%):	16.6	15.8	25.3	
Hilf MDR Number :	231936	231937	231938	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	99	89	99	
Field Wet Density (t/m³):	1.960	1.953	1.750	
Optimum Moisture Content (%):	16.8	17.7	25.6	
Moisture Variation :	0.2	1.9	0.3	
Peak Converted Wet Density (t/m <sup>3</sup> ):	2.029	2.038	1.839	
Hilf Density Ratio (%):	96.5	96.0	95.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-	•	•	1



APPROVED SIGNATORY



Report Number:

www.morrisongeo.com.au

DL17/134 - 8

# Hilf Density Ratio Report

Client : CCA WINSLOW Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106

Report Date: 26/07/2017 Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING, STAGE 7 Page 1 of 1

Location.	EDEN 3 CRUSSING , STAGE 7		. ago	1 01 1
Sample Number :	231957	231958	231959	231960
Test Number :	21	22	23	24
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
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 484555.929	E 484550.225	E 484542.070	E 484534.430
	N 6939683.690	N 6939625.225	N 6939661.105	N 6939645.012
	RL 82.675	RL 82.956	RL 83.423	RL 84.188
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 (%):	14.3	11.7	13.7	15.5
Hilf MDR Number :	231957	231958	231959	231960
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 (%):	84	81.5	83	86
Field Wet Density (t/m³):	1.925	1.941	1.924	1.949
Optimum Moisture Content (%):	17.0	14.4	16.5	18.0
Moisture Variation :	2.7	2.7	2.8	2.5
Peak Converted Wet Density (t/m³):	2.013	2.029	2.025	1.984
Hilf Density Ratio (%):	95.5	95.5	95.0	98.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	=
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL



www.morrisongeo.com.au

# Hilf Density Ratio Report

 Client:
 CCA WINSLOW
 Report Number:
 DL17/134 - 9

 Address:
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date:
 26/07/2017

Project Name : EARTHWORKS SUPERVISION Order Number : 33832

roject Name .	LAKTIWOKKS SUFERVISION		order Namber .	33032	
Project Number :	DL17/134		Test Method:	AS1289.5.8.1 & 5.7.1	
Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1		
Sample Number :	232107	232108	232109	232110	
Test Number :	25	26	27	28	
Sampling Method:	-	-	-	-	
Date Sampled :	19/07/2017	19/07/2017	19/07/2017	19/07/2017	
Date Tested :	19/07/2017	19/07/2017	19/07/2017	19/07/2017	
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 484493.812	E 484498.318	E 484502.926	E 484548.391	
	N 6939647.952	N 6939657.342	N 6939637.758	N 6939641.892	
	RL 85.409	RL 85.260	RL 85.403	RL 84.534	
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 (%):	38.3	35.5	20.1	17.5	
Hilf MDR Number :	232107	232108	232109	232110	
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 (%):	101	98	95	92.5	
Field Wet Density (t/m³):	1.877	1.747	1.985	2.003	
Optimum Moisture Content (%):	38.0	36.3	21.2	19.0	
Moisture Variation :	-0.3	0.8	1.0	1.4	
Peak Converted Wet Density (t/m³):	1.839	1.822	1.968	2.017	
Hilf Density Ratio (%):	102.0	96.0	101.0	99.5	
Minimum Specification :	95	95	95	95	
Moisture Specification :	-	-	-	-	
Site Selection :	-	-	-	-	
Soil Description :	-	-	-	-	
·					



APPROVED SIGNATORY
Siem A
MOCOCOL



www.morrisongeo.com.au

# Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 18
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 11/08/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : DL17/134 Test Method : AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING , STAGE 7		Page 1 of 1	
Sample Number :	232244	232245	232246	
Test Number :	41	42	43	
Sampling Method :	=	-	-	
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	
Date Tested :	25/07/2017	25/07/2017	25/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number:	-	-	-	
Sample Location :	E 484541.115	E 484537.305	E 484549.389	
	N 6939644.320	N 6939656.919	N 6939684.171	
	RL 86.189	RL 85.569	RL 83.988	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%):	17.1	17.1	15.8	
Hilf MDR Number :	232244	232245	232246	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	84.5	77	83	
Field Wet Density (t/m³):	1.972	1.975	2.144	
Optimum Moisture Content (%):	20.2	22.2	19.1	
Moisture Variation :	3.1	5.0	3.1	
Peak Converted Wet Density (t/m³):	1.974	1.891	2.061	
Hilf Density Ratio (%):	100.0	104.5	104.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-		•	



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Client: **CCA WINSLOW** 

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106

**EARTHWORKS SUPERVISION** Project Name:

Report Number: DL17/134 - 29 Report Date: 05/02/2018

Order Number : 33832

Froject Name .	EARTHWORKS SUPERVISION		Order Number .	33632
Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE 7		Page	1 of 1
Sample Number :	240840	240841	240842	240843
Test Number :	55	56	57	58
Sampling Method :	-	-	-	-
Date Sampled :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Date Tested :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Material Type :	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Material Source :	On Site (Crushed Basalt)			
Lot Number :	513	515	514	-
Sample Location :	Lot 513	Lot 515	Lot 514	E 484542.006
	E 484552.829	E 484547.140	E 484554.692	N 6939608.599
	N 6939640.594	N 6939620.310	N 6939655.004	RL 87.704
	RL 85.270	RL 86.425	RL 85.644 / Final Level	Final Level
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 (%):	12.1	14.1	11.0	15.1
Hilf MDR Number :	240840	240841	240842	240843
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 (%):	87	82.5	73.5	91.5
Field Wet Density (t/m³):	2.113	2.070	2.026	2.148
Optimum Moisture Content (%):	13.9	17.1	14.9	16.5
Moisture Variation :	1.8	2.9	3.8	1.3
Peak Converted Wet Density (t/m³):	2.155	2.025	2.082	2.128
Hilf Density Ratio (%):	98.0	102.0	97.5	101.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-	L	l .	l .



APPROVED SIGNATORY MO Owo Ol

## **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

## A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



**Brisbane** | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 **P** (07) 3279 0900 **F** (07) 3279 0955 **ABN** 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13464 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 514** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 514 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 514 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
514	18	17 <sup>th</sup> July 2017	96.5		
514	22	18 <sup>th</sup> July 2018	95.5		
514	33	20 <sup>th</sup> July 2017	105.5		
514	40	25 <sup>th</sup> July 2017	102.5		
514	56	23 <sup>rd</sup> January 2018	102.0		
Note: Laboratory St	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 514 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 514 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 - 7, 8, 11, 17, 29

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13464 CCA Winslow



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN: 51 009 878 899

www.morrisongeo.com.au

## Hilf Density Ratio Report

 Client :
 CCA WINSLOW
 Report Number:
 DL17/134 - 7

 Address :
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date :
 24/07/2017

Project Name: EARTHWORKS SUPERVISION Order Number: 33832
Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE 7		Page	1 of 1
Sample Number :	231936	231937	231938	
Test Number :	18	19	20	
Sampling Method :	-	-	-	
Date Sampled :	17/07/2017	17/07/2017	17/07/2017	
Date Tested :	17/07/2017	17/07/2017	17/07/2017	
Material Type :	General Fill	General Fill	General Fill	
Material Source :	On Site	On Site	On Site	
Lot Number :	-	-	-	
Sample Location :	E 0484543	E 0484541	E 0484544	
,	N 6939630	N 6939643	N 6939663	
	11 0939030	11 0939043	N 0939003	
	RL 84.150	RL 83.225	RL 82.495	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%):	16.6	15.8	25.3	
Hilf MDR Number :	231936	231937	231938	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	99	89	99	
Field Wet Density (t/m³):	1.960	1.953	1.750	
Optimum Moisture Content (%) :	16.8	17.7	25.6	
Moisture Variation :	0.2	1.9	0.3	
Peak Converted Wet Density (t/m <sup>3</sup> ):	2.029	2.038	1.839	
Hilf Density Ratio (%):	96.5	96.0	95.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-	•	•	•



APPROVED SIGNATORY



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN: 51 009 878 899

Report Number:

www.morrisongeo.com.au

DL17/134 - 8

## Hilf Density Ratio Report

Client : CCA WINSLOW Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106

Report Date: 26/07/2017 Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING, STAGE 7 Page 1 of 1

Location.	EDEN 3 CRUSSING , STAGE 7		. ago	1 01 1
Sample Number :	231957	231958	231959	231960
Test Number :	21	22	23	24
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
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 484555.929	E 484550.225	E 484542.070	E 484534.430
	N 6939683.690	N 6939625.225	N 6939661.105	N 6939645.012
	RL 82.675	RL 82.956	RL 83.423	RL 84.188
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 (%):	14.3	11.7	13.7	15.5
Hilf MDR Number :	231957	231958	231959	231960
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 (%):	84	81.5	83	86
Field Wet Density (t/m³):	1.925	1.941	1.924	1.949
Optimum Moisture Content (%):	17.0	14.4	16.5	18.0
Moisture Variation :	2.7	2.7	2.8	2.5
Peak Converted Wet Density (t/m³):	2.013	2.029	2.025	1.984
Hilf Density Ratio (%):	95.5	95.5	95.0	98.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	=
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## Hilf Density Ratio Report

 Client:
 CCA WINSLOW
 Report Number:
 DL17/134 - 11

 Address:
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date:
 27/07/2017

Project Name: EARTHWORKS SUPERVISION Order Number: 33832
Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.

	EXITETION CONTROL SOLVE ENVIOLEN				
Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1	
Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1		
Sample Number :	232112	232113	232114	232115	
Test Number:	30	31	32	33	
Sampling Method :	-	-	-	-	
Date Sampled :	20/07/2017	20/07/2017	20/07/2017	20/07/2017	
Date Tested :	20/07/2017	20/07/2017	20/07/2017	20/07/2017	
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 484560.333	E 484527.962	E 484518.844	E 484529.387	
	N 6939710.061	N 6939655.204	N 6939646.077	N 6939628.113	
	RL 81.345	RL 84.928	RL 85.408	RL 86.083	
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 (%) :	22.9	28.0	26.6	27.3	
Hilf MDR Number :	232112	232113	232114	232115	
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 (%) :	100	99	99.5	91.5	
Field Wet Density (t/m³):	1.868	1.836	1.817	1.886	
Optimum Moisture Content (%) :	22.9	28.3	26.8	29.9	
Moisture Variation :	0.0	0.3	0.1	2.5	
Peak Converted Wet Density (t/m³):	1.872	1.781	1.778	1.786	
Hilf Density Ratio (%):	100.0	103.0	102.0	105.5	
Minimum Specification :	95	95	95	95	
Moisture Specification :	-	-	-	-	
Site Selection :	-	-	-	-	
Soil Description :	-	-	-	-	
Remarks :	-	1	ı	1	



APPROVED SIGNATORY
Sich A

Accredited for compliance with ISO/IEC 17025.

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

Document Code RF89-11



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN: 51 009 878 899

Test Method:

www.morrisongeo.com.au

AS1289.5.8.1 & 5.7.1

## Hilf Density Ratio Report

 Client:
 CCA WINSLOW
 Report Number:
 DL17/134 - 17

 Address:
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date:
 11/08/2017

Project Name : EARTHWORKS SUPERVISION Order Number : 33832

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	232240	232241	232242	232243
Test Number :	37	38	39	40
Sampling Method :	-	-	-	-
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Date Tested :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site (Crushed Basalt)			
Lot Number :	-	-	-	-
Sample Location :	E 484536.593	E 484526.232	E 484530.272	E 484538.570
	N 6939602.637	N 6939609.665	N 6939622.855	N 6939629.983
	RL 87.575	RL 87.883	RL 87.676	RL 87.112
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 (%):	16.8	15.5	16.6	23.9
Hilf MDR Number :	232240	232241	232242	232243
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 (%):	83.5	86.5	89.5	89.5
Field Wet Density (t/m³):	2.174	2.176	2.190	2.054
Optimum Moisture Content (%) :	20.1	17.9	18.5	26.7
Moisture Variation :	3.1	2.3	1.8	2.6
Peak Converted Wet Density (t/m³):	2.076	2.084	2.131	2.008
Hilf Density Ratio (%):	104.5	104.5	103.0	102.5
Minimum Specification:	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



Project Number :

DL17/134

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

Document Code RF89-11



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Client: **CCA WINSLOW** 

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106

**EARTHWORKS SUPERVISION** Project Name:

Report Number: DL17/134 - 29 Report Date: 05/02/2018

Order Number : 33832

Froject Name .	EARTHWORKS SUPERVISION		Order Number .	33632
Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE 7		Page	1 of 1
Sample Number :	240840	240841	240842	240843
Test Number :	55	56	57	58
Sampling Method :	-	-	-	-
Date Sampled :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Date Tested :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Material Type :	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Material Source :	On Site (Crushed Basalt)			
Lot Number :	513	515	514	-
Sample Location :	Lot 513	Lot 515	Lot 514	E 484542.006
	E 484552.829	E 484547.140	E 484554.692	N 6939608.599
	N 6939640.594	N 6939620.310	N 6939655.004	RL 87.704
	RL 85.270	RL 86.425	RL 85.644 / Final Level	Final Level
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 (%):	12.1	14.1	11.0	15.1
Hilf MDR Number :	240840	240841	240842	240843
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 (%):	87	82.5	73.5	91.5
Field Wet Density (t/m³):	2.113	2.070	2.026	2.148
Optimum Moisture Content (%):	13.9	17.1	14.9	16.5
Moisture Variation :	1.8	2.9	3.8	1.3
Peak Converted Wet Density (t/m³):	2.155	2.025	2.082	2.128
Hilf Density Ratio (%):	98.0	102.0	97.5	101.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-	L	l .	l .



APPROVED SIGNATORY MO Owo Ol

## **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

## A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



**Brisbane** | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 **P** (07) 3279 0900 **F** (07) 3279 0955 **ABN** 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13465 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 515** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 515 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 515 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
515	32	20 <sup>th</sup> July 2017	102.0		
515	39	25 <sup>th</sup> July 2018	103.0		
515	51	27 <sup>th</sup> July 2017	96.0		
515	56	23 <sup>rd</sup> January 2018	102.0		
515	57	23 <sup>rd</sup> January 2018	97.5		
515	58	23 <sup>rd</sup> January 2018	101.0		
Note: Laboratory St	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 515 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 515 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 -11, 17, 21, 29

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13465 CCA Winslow



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 11
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 27/07/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : DL17/134 Test Method : AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	232112	232113	232114	232115
Test Number:	30	31	32	33
Sampling Method :	-	-	-	-
Date Sampled :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Date Tested :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
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 484560.333	E 484527.962	E 484518.844	E 484529.387
	N 6939710.061	N 6939655.204	N 6939646.077	N 6939628.113
	RL 81.345	RL 84.928	RL 85.408	RL 86.083
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 (%):	22.9	28.0	26.6	27.3
Hilf MDR Number :	232112	232113	232114	232115
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 (%):	100	99	99.5	91.5
Field Wet Density (t/m³):	1.868	1.836	1.817	1.886
Optimum Moisture Content (%):	22.9	28.3	26.8	29.9
Moisture Variation :	0.0	0.3	0.1	2.5
Peak Converted Wet Density (t/m³):	1.872	1.781	1.778	1.786
Hilf Density Ratio (%):	100.0	103.0	102.0	105.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-	•	•	•



APPROVED SIGNATORY
Siem A
MOODEL

Accredited for compliance with ISO/IEC 17025.

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

Document Code RF89-11



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN: 51 009 878 899

www.morrisongeo.com.au

## Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 17 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 11/08/2017

Project Name: EARTHWORKS SUPERVISION Order Number : 33832

Project Number : Test Method: AS1289.5.8.1 & 5.7.1

DL17/134

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	232240	232241	232242	232243
Test Number :	37	38	39	40
Sampling Method :	-	-	-	-
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Date Tested :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site (Crushed Basalt)			
Lot Number :	-	-	-	-
Sample Location :	E 484536.593	E 484526.232	E 484530.272	E 484538.570
	N 6939602.637	N 6939609.665	N 6939622.855	N 6939629.983
	RL 87.575	RL 87.883	RL 87.676	RL 87.112
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 (%):	16.8	15.5	16.6	23.9
Hilf MDR Number :	232240	232241	232242	232243
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 (%):	83.5	86.5	89.5	89.5
Field Wet Density (t/m³):	2.174	2.176	2.190	2.054
Optimum Moisture Content (%) :	20.1	17.9	18.5	26.7
Moisture Variation :	3.1	2.3	1.8	2.6
Peak Converted Wet Density (t/m³):	2.076	2.084	2.131	2.008
Hilf Density Ratio (%):	104.5	104.5	103.0	102.5
Minimum Specification:	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN: 51 009 878 899

www.morrisongeo.com.au

## Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 21 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 11/08/2017 Project Name: Order Number : 33832 EARTHWORKS SUPERVISION Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	232474	232475	232476	
Test Number :	50	51	52	
Sampling Method :	-	-	-	
Date Sampled :	27/07/2017	27/07/2017	27/07/2017	
Date Tested :	27/07/2017	27/07/2017	27/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484503.464	E 484538.268	E 484545.391	
	N 6939639.110	N 6939631.798	N 6939669.323	
	RL 87.180	Final Level	Final Level	
Test Depth (mm ):	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	_	_	-	
Oversize Density (t/m³):	-	-	-	
Field Moisture Content (%) :	11.6	23.6	13.1	
Hilf MDR Number :	232474	232475	232476	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	70	111	86.5	
Field Wet Density (t/m³):	2.200	1.978	2.100	
Optimum Moisture Content (%):	16.6	21.2	15.1	
Moisture Variation :	4.7	-2.3	2.0	
Peak Converted Wet Density (t/m³):	2.185	2.056	2.168	
Hilf Density Ratio (%):	100.5	96.0	97.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :				



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

Document Code RF89-11



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899

Report Number:

www.morrisongeo.com.au

DL17/134 - 29

## **Hilf Density Ratio Report**

**CCA WINSLOW** Client:

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/02/2018 **EARTHWORKS SUPERVISION** Order Number : Project Name: 33832

Location: EDER  Sample Number : Test Number : Sampling Method : Date Sampled : Date Tested : Material Type : Material Source : On Lot Number :	7/134 N'S CROSSING , STAGE 7  240840 55 - 23/01/2018 23/01/2018 Allotment Fill Site (Crushed Basalt) 513  513  34552.829 939640.594	240841  56  - 23/01/2018  23/01/2018  Allotment Fill  On Site (Crushed Basalt)  515  Lot 515	240842 57 - 23/01/2018 23/01/2018 Allotment Fill On Site (Crushed Basalt) 514	AS1289.5.8.1 & 5.7.1 1 of 1  240843 58 - 23/01/2018 23/01/2018 Allotment Fill On Site (Crushed Basalt)
Test Number : Sampling Method : Date Sampled : Date Tested : Material Type : Material Source : On Lot Number :	55  - 23/01/2018 23/01/2018 Allotment Fill Site (Crushed Basalt) 513 513 34552.829	56 - 23/01/2018 23/01/2018 Allotment Fill On Site (Crushed Basalt) 515 Lot 515	57  - 23/01/2018 23/01/2018 Allotment Fill On Site (Crushed Basalt) 514	58 - 23/01/2018 23/01/2018 Allotment Fill
Test Number : Sampling Method : Date Sampled : Date Tested : Material Type : Material Source : On Lot Number :	55  - 23/01/2018 23/01/2018 Allotment Fill Site (Crushed Basalt) 513 513 34552.829	56 - 23/01/2018 23/01/2018 Allotment Fill On Site (Crushed Basalt) 515 Lot 515	57  - 23/01/2018 23/01/2018 Allotment Fill On Site (Crushed Basalt) 514	58 - 23/01/2018 23/01/2018 Allotment Fill
Sampling Method:  Date Sampled:  Date Tested:  Material Type:  Material Source:  Lot Number:	- 23/01/2018 23/01/2018 Allotment Fill Site (Crushed Basalt) 513 513	- 23/01/2018 23/01/2018 Allotment Fill On Site (Crushed Basalt) 515	- 23/01/2018 23/01/2018 Allotment Fill On Site (Crushed Basalt) 514	- 23/01/2018 23/01/2018 Allotment Fill
Date Sampled : Date Tested : Material Type : Material Source : On Lot Number :	23/01/2018  Allotment Fill  Site (Crushed Basalt)  513  513  34552.829	23/01/2018  Allotment Fill  On Site (Crushed Basalt)  515  Lot 515	23/01/2018 Allotment Fill On Site (Crushed Basalt) 514	23/01/2018  Allotment Fill
Date Tested :  Material Type :  Material Source :  On  Lot Number :	23/01/2018  Allotment Fill  Site (Crushed Basalt)  513  513  34552.829	23/01/2018  Allotment Fill  On Site (Crushed Basalt)  515  Lot 515	23/01/2018 Allotment Fill On Site (Crushed Basalt) 514	23/01/2018  Allotment Fill
Material Type :  Material Source : On  Lot Number :	Allotment Fill Site (Crushed Basalt) 513 513 84552.829	Allotment Fill On Site (Crushed Basalt) 515 Lot 515	Allotment Fill On Site (Crushed Basalt) 514	Allotment Fill
Material Source : On Lot Number :	513 513 513 84552.829	On Site (Crushed Basalt) 515 Lot 515	On Site (Crushed Basalt) 514	
Lot Number :	513 513 34552.829	515 Lot 515	514	On Site (Crushed Basalt)
	513 84552.829	Lot 515		-
Sample Location :	84552.829			<del> </del>
Sample Location :			Lot 514	E 484542.006
E 48	030640 504	E 484547.140	E 484554.692	N 6939608.599
N 69	JJJU4U.JJ4	N 6939620.310	N 6939655.004	RL 87.704
RL 8	35.270	RL 86.425	RL 85.644 / Final Level	Final Level
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 (%):	12.1	14.1	11.0	15.1
Hilf MDR Number :	240840	240841	240842	240843
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 (%):	87	82.5	73.5	91.5
Field Wet Density (t/m³) :	2.113	2.070	2.026	2.148
Optimum Moisture Content (%):	13.9	17.1	14.9	16.5
Moisture Variation :	1.8	2.9	3.8	1.3
Peak Converted Wet Density (t/m³):	2.155	2.025	2.082	2.128
Hilf Density Ratio (%):	98.0	102.0	97.5	101.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-			-
Soil Description :	-	-	-	-
Remarks : -				



APPROVED SIGNATORY MOODE

Accredited for compliance with ISO/IEC 17025.

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

Document Code RF89-11

## **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

## A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



**Brisbane** | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 **P** (07) 3279 0900 **F** (07) 3279 0955 **ABN** 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13466 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 516** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 516 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 516 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
516	37	25 <sup>th</sup> July 2017	104.5
516	38	25 <sup>th</sup> July 2018	104.5
516	60	21st March 2018	102.0
516	62	26 <sup>th</sup> March 2018	98.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 516 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 516 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL

For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 –17, 30, 32

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13466 CCA Winslow



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN: 51 009 878 899

www.morrisongeo.com.au

## Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 17 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 11/08/2017

Project Name: EARTHWORKS SUPERVISION Order Number : 33832

Project Number : Test Method: AS1289.5.8.1 & 5.7.1

DL17/134

Location:	EDEN'S CROSSING , STAGE 7		Page 1 of 1	
Sample Number :	232240	232241	232242	232243
Test Number :	37	38	39	40
Sampling Method :	-	-	-	-
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Date Tested :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site (Crushed Basalt)			
Lot Number :	-	=	-	-
Sample Location :	E 484536.593	E 484526.232	E 484530.272	E 484538.570
	N 6939602.637	N 6939609.665	N 6939622.855	N 6939629.983
	RL 87.575	RL 87.883	RL 87.676	RL 87.112
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 (%) :	16.8	15.5	16.6	23.9
Hilf MDR Number :	232240	232241	232242	232243
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 (%):	83.5	86.5	89.5	89.5
Field Wet Density (t/m³):	2.174	2.176	2.190	2.054
Optimum Moisture Content (%) :	20.1	17.9	18.5	26.7
Moisture Variation :	3.1	2.3	1.8	2.6
Peak Converted Wet Density (t/m³):	2.076	2.084	2.131	2.008
Hilf Density Ratio (%):	104.5	104.5	103.0	102.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-		<u> </u>	



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Client: Report Number: DL17/134 - 30 **CCA WINSLOW** Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/04/2018 37618 Project Name: Order Number: **EARTHWORKS SUPERVISION** Project Number: Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Sample Number :	243036	243037		
Test Number :	59	60		
Sampling Method :	-	-		
Date Sampled :	21/03/2018	21/03/2018		
Date Tested :	21/03/2018	21/03/2018		
Material Type :	Cut Replacement (Capping Layer)	Cut Replacement (Capping Layer)		
Material Source :	On Site Stockpile	On Site Stockpile		
Lot Number :	-	516		
Sample Location :	Verge	Lot 516		
	E 484496.417	E 484521.840		
	N 6939624.908	N 6939613.231		
	RL 87.126	RL 86.617		
Test Depth (mm ) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%):	13	16		
Oversize Dry (%):	-	-		
Oversize Density (t/m³):	2.492	2.554		
Field Moisture Content (%):	17.1	15.3		
Hilf MDR Number :	243036	243037		
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 (%):	99	99		
Field Wet Density (t/m³):	2.182	2.284		
Optimum Moisture Content (%) :	17.3	15.4		
Moisture Variation :	0.2	0.1		
Peak Converted Wet Density (t/m³):	2.184*	2.234*		
Hilf Density Ratio (%):	100.0	102.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-	•	-	

Accredited for compliance with ISO/IEC 17025 - Testing.

st - denotes adjusted for oversize



APPROVED SIGNATORY

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

Document Code RF89-11

MOODED



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899

www.morrisongeo.com.au

### **Hilf Density Ratio Report**

Client: CCA WINSLOW

1587 IPSWICH ROAD, ROCKLEA, QLD, 4106

Accredited for compliance with ISO/IEC 17025 - Testing.

Project Name : **EARTHWORKS SUPERVISION** 

Project Number: DL17/134

Address:

Report Number: Report Date : Order Number : DL17/134 - 32 05/04/2018

37618

Test Method : AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING , STAGE 7		Page 1 of 1	
Sample Number :	243089	243090	243091	
Test Number :	62	63	64	
Sampling Method :	-	-	-	
Date Sampled :	26/03/2018	26/03/2018	26/03/2018	
Date Tested :	26/03/2018	26/03/2018	26/03/2018	
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	
Material Source :	On Site Stockpile	On Site Stockpile	On Site Stockpile	
Lot Number :	516	517	519	
Sample Location :	Lot 516	Lot 517	Lot 517	
	E 484527.724	E 484525.350	E 484515.250	
	N 6939612.500	N 6939601.735	N 6939577.902	
	Final Level	Final Level	Final Level	
Test Depth (mm ):	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	13	11	-	
Oversize Dry (%):	=	=	-	
Oversize Density (t/m³):	2.527	2.505	-	
Field Moisture Content (%):	14.3	16.6	14.4	
Hilf MDR Number :	243089	243090	243091	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	98.5	97.5	99.5	
Field Wet Density (t/m³) :	2.196	2.298	2.185	
Optimum Moisture Content (%):	14.5	17.0	14.5	
Moisture Variation :	0.2	0.4	0.1	
Peak Converted Wet Density (t/m³):	2.229*	2.215*	2.197	
Hilf Density Ratio (%) :	98.5	103.5	99.5	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

 $<sup>\ ^{*}</sup>$  - denotes adjusted for oversize



APPROVED SIGNATORY

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

Document Code RF89-11

## **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

## A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



**Brisbane** | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 **P** (07) 3279 0900 **F** (07) 3279 0955 **ABN** 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13467 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 517** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 517 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 517 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
517	63	26th March 2018	103.5	
517 64 26 <sup>th</sup> March 2018 99.5				
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 517 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 517 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Incl: Laboratory Test Report DL17/134 –32

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13467 CCA Winslow



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899

www.morrisongeo.com.au

### **Hilf Density Ratio Report**

Client: CCA WINSLOW

1587 IPSWICH ROAD, ROCKLEA, QLD, 4106

Accredited for compliance with ISO/IEC 17025 - Testing.

Project Name : **EARTHWORKS SUPERVISION** 

Project Number: DL17/134

Address:

Report Number: Report Date : Order Number : DL17/134 - 32 05/04/2018

37618

Test Method : AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING , STAGE 7		Page 1 of 1	
Sample Number :	243089	243090	243091	
Test Number :	62	63	64	
Sampling Method :	-	-	-	
Date Sampled :	26/03/2018	26/03/2018	26/03/2018	
Date Tested :	26/03/2018	26/03/2018	26/03/2018	
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	
Material Source :	On Site Stockpile	On Site Stockpile	On Site Stockpile	
Lot Number :	516	517	519	
Sample Location :	Lot 516	Lot 517	Lot 517	
	E 484527.724	E 484525.350	E 484515.250	
	N 6939612.500	N 6939601.735	N 6939577.902	
	Final Level	Final Level	Final Level	
Test Depth (mm ):	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	13	11	-	
Oversize Dry (%):	-	=	-	
Oversize Density (t/m³):	2.527	2.505	-	
Field Moisture Content (%):	14.3	16.6	14.4	
Hilf MDR Number :	243089	243090	243091	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	98.5	97.5	99.5	
Field Wet Density (t/m³) :	2.196	2.298	2.185	
Optimum Moisture Content (%):	14.5	17.0	14.5	
Moisture Variation :	0.2	0.4	0.1	
Peak Converted Wet Density (t/m³):	2.229*	2.215*	2.197	
Hilf Density Ratio (%) :	98.5	103.5	99.5	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

 $<sup>\ ^{*}</sup>$  - denotes adjusted for oversize



APPROVED SIGNATORY

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

Document Code RF89-11

## **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

## A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

#### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

#### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

#### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



**Brisbane** | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 **P** (07) 3279 0900 **F** (07) 3279 0955 **ABN** 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13468 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 518** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 518 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

A summary of tests representative of the fill constructed on Lot 518 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
518	61	22 <sup>nd</sup> March 2018	99.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 518 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 518 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

Encl:

MORRISON GEOTECHNIC PTY LIMITED

Laboratory Test Report DL17/134 -31

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13468 CCA Winslow



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

#### **Hilf Density Ratio Report**

Report Number: Client: CCA WINSLOW DL17/134 - 31 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/04/2018 Project Name: **EARTHWORKS SUPERVISION** Order Number: 37618 Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1 Page 1 of 1

**EDEN'S CROSSING, STAGE 7** 

Sample Number: 243055 Test Number: 61 Sampling Method : Date Sampled: 22/03/2018 Date Tested : 22/03/2018 **Allotment Fill (Capping** Material Type: Layer) Material Source: On Site Stockpile Lot Number : 518 Sample Location: Lot 518 E 484522.945 N 6939587.400 RL 88.591 Test Depth (mm ): 150 Layer Depth (mm): Maximum Size (mm): 19 Oversize Wet (%): \_ Oversize Dry (%): Oversize Density (t/m³): \_ Field Moisture Content (%): 14.2 Hilf MDR Number: 243055 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 : AS1289.2.1.1 Moisture Ratio (%): 101 2.160 Field Wet Density (t/m3): Optimum Moisture Content (%): 14.0 -0.1 Moisture Variation: Peak Converted Wet Density 2.185  $(t/m^3)$ : Hilf Density Ratio (%): 99.0 95 Minimum Specification: Moisture Specification:



Site Selection: Soil Description:

Remarks:

Location:

APPROVED SIGNATORY Jian A MC Devoca OD

CRUSHED BASALT

## **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

#### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

#### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

## **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

## Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13469 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 519** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 519 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27th Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

Tests performed on filling operations near Lot 519 are representative of the fill constructed on Lot 519. The closest tests to Lot 519 were preformed on Lot 518 and Lot 520 A summary of tests representative of the fill constructed on Lot 519 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
518	61	22 <sup>nd</sup> March 2018	99.0	
520	70	28th March 2018	96.0	
520 71 29 <sup>th</sup> March 2018 98.5				
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 519 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 519 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16th May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

E. MCDOWALL

For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 –35, 36

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13469 CCA Winslow



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Report Number: Client: **CCA WINSLOW** DL17/134 - 35 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 06/04/2018 **EARTHWORKS SUPERVISION** Order Number : Project Name: 37618 Project Number : DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE	7	Page 1 of 1	
Sample Number :	243202	243203		
Test Number :	69	70		
Sampling Method :	-	-		
Date Sampled :	28/03/2018	28/03/2018		
Date Tested :	28/03/2018	28/03/2018		
Material Type :	Allotment Fill	Allotment Fill		
Material Source :	On Site Stockpile	On Site Stockpile		
Lot Number :	521	520		
Sample Location :	Lot 521	Lot 520		
	E 484496.428	E 484506.433		
	N 6939548.568	N 6939565.417		
	RL 91.137	RL 90.350		
Test Depth (mm ) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%):	15	11		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	2.445	2.440		
Field Moisture Content (%):	17.9	16.7		
Hilf MDR Number :	243202	243203		
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 (%):	107.5	111		
Field Wet Density (t/m³):	2.245	2.147		
Optimum Moisture Content (%):	16.6	15.1		
Moisture Variation :	-1.2	-1.6		
Peak Converted Wet Density (t/m³):	2.245*	2.233*		
Hilf Density Ratio (%):	100.0	96.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-	•	•	•
	•			

st - denotes adjusted for oversize



Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY
Siem A
MOODER

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

Document Code RF89-11



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

DL17/134 - 36 Client: Report Number: **CCA WINSLOW** Report Date : Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 06/04/2018 Project Name: **EARTHWORKS SUPERVISION** Order Number: 37618 Project Number: Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Location.	EDEN 5 CROSSING, STAGE 7		- 0
Sample Number :	243219		
Test Number :	71		
Sampling Method :	-		
Date Sampled :	29/03/2018		
Date Tested :	29/03/2018		
Material Type :	Allotment Fill (Capping Layer)		
Material Source :	On Site Stockpile		
Lot Number :	520		
Sample Location :	Lot 520		
	E 484508.692		
	N 6939564.674		
	Final Level		
Test Depth (mm ) :	150		
Layer Depth (mm) :	-		
Maximum Size (mm) :	19		
Oversize Wet (%):	-		
Oversize Dry (%):	-		
Oversize Density (t/m³) :	-		
Field Moisture Content (%):	15.2		
Hilf MDR Number :	243219		
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 :	AS1289.2.1.1		
Moisture Ratio (%):	96		
Field Wet Density (t/m³):	2.141		
Optimum Moisture Content (%):	15.8		
Moisture Variation :	0.6		
Peak Converted Wet Density (t/m³):	2.173		
Hilf Density Ratio (%):	98.5		
Minimum Specification :	95		
Moisture Specification :	-		
Site Selection :	-		
Soil Description :	Crushed BASALT		
Remarks :	-		
	<u> </u>		



APPROVED SIGNATORY
Siem A
MOORPOOL

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

## **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

## **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

## Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13470 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 520** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 520 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 520 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
520	70	28 <sup>th</sup> March 2018	96.0		
520	71	29th March 2018	98.5		
Note: Laboratory St	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 520 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 520 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

ncl: Laboratory Test Reports DL17/134 –35, 36

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13470 CCA Winslow



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Report Number: Client: **CCA WINSLOW** DL17/134 - 35 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 06/04/2018 **EARTHWORKS SUPERVISION** Order Number : Project Name: 37618 Project Number : DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE	7	Page 1 of 1	
Sample Number :	243202	243203		
Test Number :	69	70		
Sampling Method :	-	-		
Date Sampled :	28/03/2018	28/03/2018		
Date Tested :	28/03/2018	28/03/2018		
Material Type :	Allotment Fill	Allotment Fill		
Material Source :	On Site Stockpile	On Site Stockpile		
Lot Number :	521	520		
Sample Location :	Lot 521	Lot 520		
	E 484496.428	E 484506.433		
	N 6939548.568	N 6939565.417		
	RL 91.137	RL 90.350		
Test Depth (mm ) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%):	15	11		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	2.445	2.440		
Field Moisture Content (%):	17.9	16.7		
Hilf MDR Number :	243202	243203		
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 (%):	107.5	111		
Field Wet Density (t/m³):	2.245	2.147		
Optimum Moisture Content (%):	16.6	15.1		
Moisture Variation :	-1.2	-1.6		
Peak Converted Wet Density (t/m³):	2.245*	2.233*		
Hilf Density Ratio (%):	100.0	96.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-	•	•	•
	•			

st - denotes adjusted for oversize



Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY
Siem A
MOODER

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

Document Code RF89-11



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

DL17/134 - 36 Client: Report Number: **CCA WINSLOW** Report Date : Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 06/04/2018 Project Name: **EARTHWORKS SUPERVISION** Order Number: 37618 Project Number: Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Location.	EDEN 5 CROSSING, STAGE 7		- 0
Sample Number :	243219		
Test Number :	71		
Sampling Method :	-		
Date Sampled :	29/03/2018		
Date Tested :	29/03/2018		
Material Type :	Allotment Fill (Capping Layer)		
Material Source :	On Site Stockpile		
Lot Number :	520		
Sample Location :	Lot 520		
	E 484508.692		
	N 6939564.674		
	Final Level		
Test Depth (mm ) :	150		
Layer Depth (mm) :	-		
Maximum Size (mm) :	19		
Oversize Wet (%):	-		
Oversize Dry (%):	-		
Oversize Density (t/m³) :	-		
Field Moisture Content (%):	15.2		
Hilf MDR Number :	243219		
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 :	AS1289.2.1.1		
Moisture Ratio (%):	96		
Field Wet Density (t/m³):	2.141		
Optimum Moisture Content (%):	15.8		
Moisture Variation :	0.6		
Peak Converted Wet Density (t/m³):	2.173		
Hilf Density Ratio (%):	98.5		
Minimum Specification :	95		
Moisture Specification :	-		
Site Selection :	-		
Soil Description :	Crushed BASALT		
Remarks :	-		
	<u> </u>		



APPROVED SIGNATORY
Siem A
MOORPOOL

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

## **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

## **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

## Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13471 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 521** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 521 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 521 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
521	69	28th March 2018	100.0	
521	73	3 <sup>rd</sup> April 2018	101.0	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 521 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 521 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 –35, 38

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13471 CCA Winslow



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899

www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Report Number: Client: **CCA WINSLOW** DL17/134 - 35 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 06/04/2018 **EARTHWORKS SUPERVISION** Order Number : Project Name: 37618 Project Number : DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE	7	Page 1 of 1	
Sample Number :	243202	243203		
Test Number :	69	70		
Sampling Method :	-	-		
Date Sampled :	28/03/2018	28/03/2018		
Date Tested :	28/03/2018	28/03/2018		
Material Type :	Allotment Fill	Allotment Fill		
Material Source :	On Site Stockpile	On Site Stockpile		
Lot Number :	521	520		
Sample Location :	Lot 521	Lot 520		
	E 484496.428	E 484506.433		
	N 6939548.568	N 6939565.417		
	RL 91.137	RL 90.350		
Test Depth (mm ) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%):	15	11		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	2.445	2.440		
Field Moisture Content (%):	17.9	16.7		
Hilf MDR Number :	243202	243203		
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 (%):	107.5	111		
Field Wet Density (t/m³):	2.245	2.147		
Optimum Moisture Content (%):	16.6	15.1		
Moisture Variation :	-1.2	-1.6		
Peak Converted Wet Density (t/m³):	2.245*	2.233*		
Hilf Density Ratio (%):	100.0	96.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-	•	•	•
	•			

st - denotes adjusted for oversize



Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY
Siem A
MOODER

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

Document Code RF89-11



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Report Number: Client: **CCA WINSLOW** DL17/134 - 38 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 10/04/2018 Project Name: **EARTHWORKS SUPERVISION** Order Number: 37618 Project Number: Test Method: AS1289.5.8.1 & 5.7.1 DL17/134

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Sample Number :	243281	243282	243283	
Test Number :	73	74	75	
Sampling Method :	-	-	-	
Date Sampled :	03/04/2018	03/04/2018	03/04/2018	
Date Tested :	03/04/2018	03/04/2018	03/04/2018	
Material Type :	Allotment Fill (Capping	Allotment Fill (Capping	Allotment Fill (Capping	
Material Source :	Layer) On Site Stockpile	Layer) On Site Stockpile	Layer) On Site Stockpile	
Lot Number :	521	523	522	
	_		_	
Sample Location :	Lot 521	Lot 523	Lot 522	
	E 484498.521	E 484457.304	E 484451.870	
	N 6939553.507	N 6939599.511	N 6939583.430	
	Final Level	RL 90.857	RL 91.281	
Test Depth (mm ):	150	150	150	
Layer Depth (mm) :	-	=	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³):	-	-	-	
Field Moisture Content (%):	12.0	12.5	17.4	
Hilf MDR Number :	243281	243282	243283	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	83.5	87	103.5	
Field Wet Density (t/m³):	2.173	2.067	2.106	
Optimum Moisture Content (%) :	14.3	14.4	16.8	
Moisture Variation :	2.3	1.9	-0.6	
Peak Converted Wet Density (t/m³):	2.152	2.154	2.197	
Hilf Density Ratio (%):	101.0	96.0	96.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-	•	,	
	•			



APPROVED SIGNATORY

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

## **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

## **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

## Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



 $\textbf{Brisbane} \mid \text{Gold Coast} \mid \text{Maroochydore} \\ \textbf{Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076} \quad \textbf{P} (07) \ 3279 \ 0900} \quad \textbf{F} (07) \ 3279 \ 0955}$ 

ABN 51 009 878 899 www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13472 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 522** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 522 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27th Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 522 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
522	75	3 <sup>rd</sup> April 2018	96.0		
522	76	5 <sup>th</sup> April 2018	95.0		
Note: Laboratory St	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 522 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 522 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 –38, 39

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13472 CCA Winslow



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Report Number: Client: **CCA WINSLOW** DL17/134 - 38 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 10/04/2018 Project Name: **EARTHWORKS SUPERVISION** Order Number: 37618 Project Number: Test Method: AS1289.5.8.1 & 5.7.1 DL17/134

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Sample Number :	243281	243282	243283	
Test Number :	73	74	75	
Sampling Method :	-	-	-	
Date Sampled :	03/04/2018	03/04/2018	03/04/2018	
Date Tested :	03/04/2018	03/04/2018	03/04/2018	
Material Type :	Allotment Fill (Capping	Allotment Fill (Capping	Allotment Fill (Capping	
Material Source :	Layer) On Site Stockpile	Layer) On Site Stockpile	Layer) On Site Stockpile	
Lot Number :	521	523	522	
	_		_	
Sample Location :	Lot 521	Lot 523	Lot 522	
	E 484498.521	E 484457.304	E 484451.870	
	N 6939553.507	N 6939599.511	N 6939583.430	
	Final Level	RL 90.857	RL 91.281	
Test Depth (mm ):	150	150	150	
Layer Depth (mm) :	-	=	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³):	-	-	-	
Field Moisture Content (%):	12.0	12.5	17.4	
Hilf MDR Number :	243281	243282	243283	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	83.5	87	103.5	
Field Wet Density (t/m³):	2.173	2.067	2.106	
Optimum Moisture Content (%) :	14.3	14.4	16.8	
Moisture Variation :	2.3	1.9	-0.6	
Peak Converted Wet Density (t/m³):	2.152	2.154	2.197	
Hilf Density Ratio (%):	101.0	96.0	96.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-	•	,	
	•			



APPROVED SIGNATORY



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Client:CCA WINSLOWReport Number:DL17/134 - 39Address:1587 IPSWICH ROAD, ROCKLEA, QLD, 4106Report Date:13/04/2018Project Name:EARTHWORKS SUPERVISIONOrder Number:37618

Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1
Location: EDEN'S CROSSING, STAGE 7 Page 1 of 1

T		Page 1 of 1	
Sample Number: 243407	243408		
Test Number: 76	77		
Sampling Method : -	-		
Date Sampled : 05/04/2018	05/04/2018		
Date Tested : 05/04/2018	05/04/2018		
Material Type : Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)		
Material Source : On Site Stockpile	On Site Stockpile		
Lot Number : 522	523		
Sample Location: Lot 522	Lot 523		
E 484454.953	E 484461.523		
N 6939586.967	N 6939598.739		
Final Level	Final Level		
Test Depth (mm ): 150	150		
Layer Depth (mm) : -	-		
Maximum Size (mm): 19	19		
Oversize Wet (%):	-		
Oversize Dry (%):	-		
Oversize Density (t/m³) : -	-		
Field Moisture Content (%): 15.9	15.4		
Hilf MDR Number: 243407	243408		
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 (%): 101.5	101		
Field Wet Density (t/m³): 2.127	2.266		
Optimum Moisture Content (%): 15.7	15.2		
Moisture Variation : -0.2	-0.2		
Peak Converted Wet Density (t/m³): 2.238	2.236		
Hilf Density Ratio (%) : 95.0	101.5		
Minimum Specification : 95	95		
Moisture Specification : -	-		
Site Selection : -	-		
Soil Description : Crushed BASALT	Crushed BASALT		
Remarks : -			



APPROVED SIGNATORY
Sich A
MOONDEL

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

## **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

## **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

## Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



Brisbane | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13473 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 523** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 523 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 523 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
523	74	3 <sup>rd</sup> April 2018	96.0	
523	77	5 <sup>th</sup> April 2018	101.5	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 523 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 523 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 –38, 39

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13473 CCA Winslow



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Report Number: Client: **CCA WINSLOW** DL17/134 - 38 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 10/04/2018 Project Name: **EARTHWORKS SUPERVISION** Order Number: 37618 Project Number: Test Method: AS1289.5.8.1 & 5.7.1 DL17/134

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Sample Number :	243281	243282	243283	
Test Number :	73	74	75	
Sampling Method :	-	-	-	
Date Sampled :	03/04/2018	03/04/2018	03/04/2018	
Date Tested :	03/04/2018	03/04/2018	03/04/2018	
Material Type :	Allotment Fill (Capping	Allotment Fill (Capping	Allotment Fill (Capping	
Material Source :	Layer) On Site Stockpile	Layer) On Site Stockpile	Layer) On Site Stockpile	
Lot Number :	521	523	522	
	_		_	
Sample Location :	Lot 521	Lot 523	Lot 522	
	E 484498.521	E 484457.304	E 484451.870	
	N 6939553.507	N 6939599.511	N 6939583.430	
	Final Level	RL 90.857	RL 91.281	
Test Depth (mm ):	150	150	150	
Layer Depth (mm) :	-	=	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³):	-	-	-	
Field Moisture Content (%):	12.0	12.5	17.4	
Hilf MDR Number :	243281	243282	243283	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	83.5	87	103.5	
Field Wet Density (t/m³):	2.173	2.067	2.106	
Optimum Moisture Content (%) :	14.3	14.4	16.8	
Moisture Variation :	2.3	1.9	-0.6	
Peak Converted Wet Density (t/m³):	2.152	2.154	2.197	
Hilf Density Ratio (%):	101.0	96.0	96.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-	•	,	
	•			



APPROVED SIGNATORY



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Client:CCA WINSLOWReport Number:DL17/134 - 39Address:1587 IPSWICH ROAD, ROCKLEA, QLD, 4106Report Date:13/04/2018Project Name:EARTHWORKS SUPERVISIONOrder Number:37618

Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1
Location: EDEN'S CROSSING, STAGE 7 Page 1 of 1

		Page 1 of 1	
Sample Number: 243407	243408		
Test Number: 76	77		
Sampling Method : -	-		
Date Sampled : 05/04/2018	8 05/04/2018		
Date Tested : 05/04/2018	8 05/04/2018		
Material Type : Allotment Fill (C	apping Allotment Fill (Capping Layer)		
Material Source : On Site Stock	pile On Site Stockpile		
Lot Number : 522	523		
Sample Location: Lot 522	Lot 523		
E 484454.953	E 484461.523		
N 6939586.967	N 6939598.739		
Final Level	Final Level		
Test Depth (mm ): 150	150		
Layer Depth (mm) : -	-		
Maximum Size (mm) : 19	19		
Oversize Wet (%):	-		
Oversize Dry (%):	-		
Oversize Density (t/m³) : -	-		
Field Moisture Content (%): 15.9	15.4		
Hilf MDR Number: 243407	243408		
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 (%): 101.5	101		
Field Wet Density (t/m³): 2.127	2.266		
Optimum Moisture Content (%): 15.7	15.2		
Moisture Variation : -0.2	-0.2		
Peak Converted Wet Density (t/m³): 2.238	2.236		
Hilf Density Ratio (%) : 95.0	101.5		
Minimum Specification : 95	95		
Moisture Specification : -	-		
Site Selection : -	-		
Soil Description : Crushed BASAI	LT Crushed BASALT		
Remarks : -			



APPROVED SIGNATORY
Sich A
MOONDEL

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

## **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

## **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

## Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



**Brisbane** | Gold Coast | Maroochydore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 **P** (07) 3279 0900 **F** (07) 3279 0955 **ABN** 51 009 878 899

www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13474 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 524** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 524 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 524 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
524	78	16 <sup>th</sup> May 2018	95.5	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 524 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 524 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Report DL17/134 -43

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13474 CCA Winslow



Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899

www.morrisongeo.com.au

## **Hilf Density Ratio Report**

Client :CCA WINSLOWReport Number:DL17/134 - 43Address :1587 IPSWICH ROAD, ROCKLEA, QLD, 4106Report Date :05/06/2018

Project Name : EARTHWORKS SUPERVISION Order Number : 37618
Project Number : DL17/134 Test Method : AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Sample Number :	245465	245466	245467	
Test Number :	78	79	80	
Sampling Method :	-	-	-	
Date Sampled :	16/05/2018	16/05/2018	16/05/2018	
Date Tested :	16/05/2018	16/05/2018	16/05/2018	
Material Type :	Allotment Replacement (Capping Layer)	Allotment Replacement (Capping Layer)	Allotment Replacement (Capping Layer)	
Material Source :	On Site	On Site	On Site	
Lot Number :	-	-	-	
Sample Location :	E 484531	E 484533	E 484537	
	N 6939628	N 6939615	N 6939648	
	0.5m Below Final Level	Final Level	Final Level	
Test Depth (mm ):	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	10	7	11	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³) :	2.338	2.430	2.437	
Field Moisture Content (%) :	13.8	14.5	14.0	
Hilf MDR Number :	245465	245466	245467	
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 :	AS1289.2.1.4	AS1289.2.1.4	AS1289.2.1.4	
Moisture Ratio (%):	88.5	88.5	88	
Field Wet Density (t/m³):	2.060	2.110	2.171	
Optimum Moisture Content (%):	15.6	16.4	15.9	
Moisture Variation :	1.8	1.8	1.9	
Peak Converted Wet Density (t/m³):	2.158*	2.201*	2.22*	
Hilf Density Ratio (%):	95.5	96.0	98.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-	•	•	

<sup>\* -</sup> denotes adjusted for oversize



APPROVED SIGNATORY
Sian A
MOONTELL

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

## Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

## A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

## **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

## A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

## **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

## Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13475 Author: L. McDowall

2<sup>nd</sup> July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 525** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 525 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 525 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
525	11	26 <sup>th</sup> April 2017	98.0
525	12	26 <sup>th</sup> April 2017	99.0
525	13	26 <sup>th</sup> April 2017	98.5
525	34	21 <sup>st</sup> July 2017	98.5
525	46	27 <sup>th</sup> July 2017	102.5
525	47	27 <sup>th</sup> July 2017	102.0
525	65	26 <sup>th</sup> March 2018	97.5
525	67	27 <sup>th</sup> March 2018	99.5
525	79	16 <sup>th</sup> May 2018	96.0
525	80	16 <sup>th</sup> May 2018	98.0
Note: Laboratory Sta	andard Test Methods	Used: AS1289.5.8.1, 5.7.1,	2.1.1.

Fill constructed on Lot 525 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 525 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 – 5, 12, 19, 33, 34, 43

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13475 CCA Winslow



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 5 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 15/05/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832

Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Sample Number :         228096           Test Number :         11           Sampling Method :         -           Date Sampled :         26/04/2017           Date Tested :         26/04/2017           Material Type :         Bulk Fill           Material Source :         On Site Cut           Lot Number :         -           Sample Location :         E 484486.684           N 6939620.848         RL 87.237           Test Depth (mm) :         -           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Wet (%) :         -           Oversize Density (t/m³) :         -           Oversize Density (t/m³) :         -           Field Moisture Content (%) :         33.7           Hilf MDR Number :         228096           Hilf MDR Method :         AS1289.5.1.1 & 5.7.1           Compactive Effort :         Standard           Field Density Method :         AS1289.5.8.1 & 5.7.1           Moisture Ratio (%) :         110           Field Wet Density (t/m³) :         1.842           Optimum Moisture Content (%) :         30.6           Moisture Variation :         -3.0           Peak Converted Wet Density (t	228097  12  - 26/04/2017  26/04/2017  Bulk Fill  On Site Cut  - E 484470.715  N 6939635.331  RL 87.721	228098 13 - 26/04/2017 26/04/2017 Bulk Fill On Site Cut - E 484476.115 N 6939625.172 RL 87.412	
Sampling Method :         -           Date Sampled :         26/04/2017           Date Tested :         26/04/2017           Material Type :         Bulk Fill           Material Source :         On Site Cut           Lot Number :         -           Sample Location :         E 484486.684           N 6939620.848         RL 87.237           Test Depth (mm) :         -           Layer Depth (mm) :         -           Oversize Wet (%) :         -           Oversize Dry (%) :         -           Oversize Density (t/m³) :         -           Field Moisture Content (%) :         33.7           Hilf MDR Number :         228096           Hilf MDR Method :         AS1289.5.1.1 & 5.7.1           Compactive Effort :         Standard           Field Density Method :         AS1289.5.8.1 & 5.7.1           Moisture Natio (%) :         110           Field Wet Density (t/m³) :         1.842           Optimum Moisture Content (%) :         30.6           Moisture Variation :         -3.0           Peak Converted Wet Density (t/m³) :         1.876           Hilf Density Ratio (%) :         98.0	- 26/04/2017 26/04/2017 Bulk Fill On Site Cut - E 484470.715 N 6939635.331 RL 87.721	- 26/04/2017 26/04/2017 Bulk Fill On Site Cut - E 484476.115 N 6939625.172	
Date Sampled :         26/04/2017           Date Tested :         26/04/2017           Material Type :         Bulk Fill           Material Source :         On Site Cut           Lot Number :         -           Sample Location :         E 484486.684           N 6939620.848         RL 87.237           Test Depth (mm) :         -           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Wet (%) :         -           Oversize Dry (%) :         -           Oversize Density (t/m³) :         -           Field Moisture Content (%) :         33.7           Hilf MDR Number :         228096           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 :         AS1289.5.8.1 & 5.7.1           Moisture Ratio (%) :         110           Field Wet Density (t/m³) :         1.842           Optimum Moisture Content (%) :         30.6           Moisture Variation :         -3.0           Peak Converted Wet Density (t/m³) :         1.876           Hilf Density Ratio (%) :         98.0 <td>26/04/2017 26/04/2017 Bulk Fill On Site Cut - E 484470.715 N 6939635.331 RL 87.721</td> <td>26/04/2017  Bulk Fill  On Site Cut  -  E 484476.115  N 6939625.172</td> <td></td>	26/04/2017 26/04/2017 Bulk Fill On Site Cut - E 484470.715 N 6939635.331 RL 87.721	26/04/2017  Bulk Fill  On Site Cut  -  E 484476.115  N 6939625.172	
Date Tested :         26/04/2017           Material Type :         Bulk Fill           Material Source :         On Site Cut           Lot Number :         -           Sample Location :         E 484486.684           N 6939620.848         RL 87.237           Test Depth (mm) :         -           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Wet (%) :         -           Oversize Density (t/m³) :         -           Field Moisture Content (%) :         33.7           Hilf MDR Number :         228096           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 :         AS1289.2.1.1           Moisture Ratio (%) :         110           Field Wet Density (t/m³) :         1.842           Optimum Moisture Content (%) :         30.6           Moisture Variation :         -3.0           Peak Converted Wet Density (t/m³) :         1.876           Hilf Density Ratio (%) :         98.0	26/04/2017  Bulk Fill  On Site Cut  -  E 484470.715  N 6939635.331  RL 87.721	26/04/2017  Bulk Fill  On Site Cut  -  E 484476.115  N 6939625.172	
Material Type :         Bulk Fill           Material Source :         On Site Cut           Lot Number :         -           Sample Location :         E 484486.684           N 6939620.848         RL 87.237           Test Depth (mm) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Wet (%) :         -           Oversize Dry (%) :         -           Oversize Density (t/m³) :         -           Field Moisture Content (%) :         33.7           Hilf MDR Number :         228096           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 :         AS1289.2.1.1           Moisture Ratio (%) :         110           Field Wet Density (t/m³) :         1.842           Optimum Moisture Content (%) :         30.6           Moisture Variation :         -3.0           Peak Converted Wet Density (t/m³) :         1.876           Hilf Density Ratio (%) :         98.0	Bulk Fill On Site Cut  - E 484470.715 N 6939635.331 RL 87.721	Bulk Fill On Site Cut  - E 484476.115 N 6939625.172	
Material Source :         On Site Cut           Lot Number :         -           Sample Location :         E 484486.684           N 6939620.848           RL 87.237           Test Depth (mm) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Wet (%) :         -           Oversize Dry (%) :         -           Oversize Density (t/m³) :         -           Field Moisture Content (%) :         33.7           Hilf MDR Number :         228096           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 :         AS1289.2.1.1           Moisture Ratio (%) :         110           Field Wet Density (t/m³) :         1.842           Optimum Moisture Content (%) :         30.6           Moisture Variation :         -3.0           Peak Converted Wet Density (t/m³) :         1.876           Hilf Density Ratio (%) :         98.0	On Site Cut  - E 484470.715 N 6939635.331 RL 87.721	On Site Cut  - E 484476.115 N 6939625.172	
Lot Number:  Sample Location:  E 484486.684  N 6939620.848  RL 87.237  Test Depth (mm):  Layer Depth (mm):  Maximum Size (mm):  Oversize Wet (%):  Oversize Dry (%):  Oversize Density (t/m³):  Field Moisture Content (%):  AS1289.5.1.1 & 5.7.1  Compactive Effort:  Field Density Method:  AS1289.5.8.1 & 5.7.1  Moisture Method:  AS1289.5.1.1  Moisture Ratio (%):  Tield Wet Density (t/m³):  Deak Converted Wet Density (t/m³):  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  Peak Onverted Wet Density (t/m³):  Hilf Density Ratio (%):  Page Converted Wet Density (t/m³):  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  Peak Onverted Wet Density (t/m³):  Peak Page Converted Wet Density (t/m³):  Peak Page Page Page Page Page Page Page Page	- E 484470.715 N 6939635.331 RL 87.721	E 484476.115 N 6939625.172	
Sample Location :       E 484486.684         N 6939620.848         RL 87.237         Test Depth (mm) :       150         Layer Depth (mm) :       -         Maximum Size (mm) :       19         Oversize Wet (%) :       -         Oversize Dry (%) :       -         Oversize Density (t/m³) :       -         Field Moisture Content (%) :       33.7         Hilf MDR Number :       228096         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 :       AS1289.2.1.1         Moisture Ratio (%) :       110         Field Wet Density (t/m³) :       1.842         Optimum Moisture Content (%) :       30.6         Moisture Variation :       -3.0         Peak Converted Wet Density (t/m³) :       1.876         Hilf Density Ratio (%) :       98.0	E 484470.715 N 6939635.331 RL 87.721	E 484476.115 N 6939625.172	
N 6939620.848   RL 87.237   RL 87.237   RL 87.237   Test Depth (mm):	N 6939635.331 RL 87.721	N 6939625.172	
RL 87.237	RL 87.721		
Test Depth (mm ): 150  Layer Depth (mm): -  Maximum Size (mm): 19  Oversize Wet (%): -  Oversize Dry (%): -  Oversize Density (t/m³): -  Field Moisture Content (%): 33.7  Hilf MDR Number: 228096  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: AS1289.5.8.1 & 5.7.1  Moisture Ratio (%): 110  Field Wet Density (t/m³): 1.842  Optimum Moisture Content (%): 30.6  Moisture Variation: -3.0  Peak Converted Wet Density (t/m³): 1.876  Hilf Density Ratio (%): 98.0		RL 87.412	
Layer Depth (mm):  Maximum Size (mm):  Oversize Wet (%):  Oversize Dry (%):  Field Moisture Content (%):  Hilf MDR Number:  Compactive Effort:  Standard  Field Density Method:  Moisture Method:  AS1289.5.1.1 & 5.7.1  Moisture Method:  AS1289.5.8.1 & 5.7.1  Moisture Method:  AS1289.2.1.1  Moisture Ratio (%):  Tield Wet Density (t/m³):  Optimum Moisture Content (%):  Optimum Moisture Content (%):  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  98.0	150		
Layer Depth (mm):  Maximum Size (mm):  Oversize Wet (%):  Oversize Dry (%):  Field Moisture Content (%):  Hilf MDR Number:  Compactive Effort:  Standard  Field Density Method:  Moisture Method:  AS1289.5.1.1 & 5.7.1  Moisture Method:  AS1289.5.8.1 & 5.7.1  Moisture Method:  AS1289.2.1.1  Moisture Ratio (%):  Tield Wet Density (t/m³):  Optimum Moisture Content (%):  AS1289.2.1.1  Moisture Variation:  -3.0  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  98.0		150	
Maximum Size (mm) :       19         Oversize Wet (%) :       -         Oversize Dry (%) :       -         Oversize Density (t/m³) :       -         Field Moisture Content (%) :       33.7         Hilf MDR Number :       228096         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 :       AS1289.2.1.1         Moisture Ratio (%) :       110         Field Wet Density (t/m³) :       1.842         Optimum Moisture Content (%) :       30.6         Moisture Variation :       -3.0         Peak Converted Wet Density (t/m³) :       1.876         Hilf Density Ratio (%) :       98.0	_	-	
Oversize Wet (%):  Oversize Dry (%):  Oversize Density (t/m³):  Field Moisture Content (%):  Hilf MDR Number:  Compactive Effort:  Standard  Field Density Method:  AS1289.5.1.1 & 5.7.1  Moisture Method:  AS1289.5.8.1 & 5.7.1  Moisture Ratio (%):  Field Wet Density (t/m³):  Optimum Moisture Content (%):  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  98.0	19	19	
Oversize Dry (%):         -           Oversize Density (t/m³):         -           Field Moisture Content (%):         33.7           Hilf MDR Number:         228096           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:         AS1289.2.1.1           Moisture Ratio (%):         110           Field Wet Density (t/m³):         1.842           Optimum Moisture Content (%):         30.6           Moisture Variation:         -3.0           Peak Converted Wet Density (t/m³):         1.876           Hilf Density Ratio (%):         98.0	-	-	
Oversize Density (t/m³): Field Moisture Content (%): 33.7  Hilf MDR Number: 228096  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: Moisture Ratio (%): 110  Field Wet Density (t/m³): 1.842  Optimum Moisture Content (%): 30.6  Moisture Variation: Peak Converted Wet Density (t/m³): 1.876  Hilf Density Ratio (%): 98.0	-	-	
Field Moisture Content (%):  Hilf MDR Number:  228096  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:  Moisture Ratio (%):  110  Field Wet Density (t/m³):  1.842  Optimum Moisture Content (%):  Moisture Variation:  -3.0  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  98.0	-	_	
Hilf MDR Number : 228096  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 : AS1289.2.1.1  Moisture Ratio (%) : 110  Field Wet Density (t/m³) : 1.842  Optimum Moisture Content (%) : 30.6  Moisture Variation : -3.0  Peak Converted Wet Density (t/m³) : 1.876  Hilf Density Ratio (%) : 98.0	34.9	32.8	
Compactive Effort: Standard Field Density Method: AS1289.5.8.1 & 5.7.1 Moisture Method: AS1289.2.1.1 Moisture Ratio (%): 110 Field Wet Density (t/m³): 1.842 Optimum Moisture Content (%): 30.6 Moisture Variation: -3.0 Peak Converted Wet Density (t/m³): 1.876 Hilf Density Ratio (%): 98.0	228097	228098	
Field Density Method:  Moisture Method:  Moisture Ratio (%):  Field Wet Density (t/m³):  Optimum Moisture Content (%):  Moisture Variation:  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  AS1289.5.8.1 & 5.7.1  AS1289.5.8.1 & 5.7.1  In 0  In	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Moisture Method:  Moisture Ratio (%):  Field Wet Density (t/m³):  Optimum Moisture Content (%):  Moisture Variation:  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  AS1289.2.1.1  1.876	Standard	Standard	
Moisture Ratio (%):       110         Field Wet Density (t/m³):       1.842         Optimum Moisture Content (%):       30.6         Moisture Variation:       -3.0         Peak Converted Wet Density (t/m³):       1.876         Hilf Density Ratio (%):       98.0	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Field Wet Density (t/m³):       1.842         Optimum Moisture Content (%):       30.6         Moisture Variation:       -3.0         Peak Converted Wet Density (t/m³):       1.876         Hilf Density Ratio (%):       98.0	AS1289.2.1.1	AS1289.2.1.1	
Optimum Moisture Content (%):         30.6           Moisture Variation:         -3.0           Peak Converted Wet Density (t/m³):         1.876           Hilf Density Ratio (%):         98.0	110	110.5	
Moisture Variation :         -3.0           Peak Converted Wet Density (t/m³) :         1.876           Hilf Density Ratio (%) :         98.0	1.866	1.856	
Peak Converted Wet Density (t/m³): 1.876 Hilf Density Ratio (%): 98.0	31.7	29.7	
(t/m³): 1.876 Hilf Density Ratio (%): 98.0	-3.1	-3.0	
Hilf Density Ratio (%): 98.0	1.889	1.883	
Minimum Consideration	99.0	98.5	
Minimum Specification: 95		95	
Moisture Specification : + or - 2%	95	+ or - 2%	
Site Selection : -	95 + or - 2%	-	
Soil Description :			
Remarks: -	+ or - 2%	-	



APPROVED SIGNATORY MOODOL

Accredited for compliance with ISO/IEC 17025.

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



www.morrisongeo.com.au

Page 1 of 1

### Hilf Density Ratio Report

Report Number: Client: CCA WINSLOW DL17/134 - 12 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 27/07/2017 Order Number: Project Name: EARTHWORKS SUPERVISION 33832 Project Number : Test Method: AS1289.5.8.1 & 5.7.1 DL17/134

 Sample Number :
 232164

 Test Number :
 34

 Sampling Method :

 Date Sampled :
 21/07/2017

 Date Tested :
 21/07/2017

 Material Type :
 Bulk Fill (Capping Layer)

Material Source : On Site (Crushed Basalt)

Lot Number : 
Sample Location : E 484486.855

RL 87.715

N 6939618.940

150

AS1289.5.1.1 & 5.7.1

EDEN'S CROSSING, STAGE 7

 Layer Depth (mm) :

 Maximum Size (mm) :
 19

 Oversize Wet (%) :

 Oversize Dry (%) :

 Oversize Density (t/m³) :

 Field Moisture Content (%) :
 13.8

 Hilf MDR Number :
 232164

Compactive Effort: Standard

Field Density Method: AS1289.5.8.1 & 5.7.1

Moisture Method: AS1289.2.1.1

Moisture Ratio (%): 78.5

Field Wet Density (t/m³): 2.034

Optimum Moisture Content (%): 17.6

Moisture Variation: 3.6

Soil Description : -

Remarks:

Location:

Test Depth (mm)

Hilf MDR Method:

NATA

VACUE ILLUGUISHEU

ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 19
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 11/08/2017

Project Name :EARTHWORKS SUPERVISIONOrder Number :33832Project Number :DL17/134Test Method :AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	232468	232469	232470	232471
Test Number :	44	45	46	47
Sampling Method :	=	-	-	-
Date Sampled :	27/07/2017	27/07/2017	27/07/2017	27/07/2017
Date Tested :	27/07/2017	27/07/2017	27/07/2017	27/07/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site (Crushed Basalt)			
Lot Number:	=	-	-	-
Sample Location :	E 484501.072	E 484496.471	E 484490.038	E 484494.582
	N 6939720.406	N 6939694.973	N 6939657.134	N 6939621.488
	RL 83.861	RL 84.992	RL 86.083	RL 87.454
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 (%) :	14.8	12.7	14.4	20.3
Hilf MDR Number :	232468	232469	232470	232471
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 (%):	93.5	85	75	85.5
Field Wet Density (t/m³):	1.998	1.994	2.093	1.855
Optimum Moisture Content (%):	15.8	15.0	19.2	23.7
Moisture Variation :	1.0	2.2	4.6	3.4
Peak Converted Wet Density (t/m³):	2.092	2.103	2.043	1.822
Hilf Density Ratio (%):	95.5	95.0	102.5	102.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899

www.morrisongeo.com.au

### **Hilf Density Ratio Report**

Report Number: Client: **CCA WINSLOW** DL17/134 - 33 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/04/2018 Project Name: **EARTHWORKS SUPERVISION** Order Number: 37618 Project Number : DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1
Sample Number :	243092	243093	
Test Number :	65	66	
Sampling Method :	-	-	
Date Sampled :	26/03/2018	26/03/2018	
Date Tested :	26/03/2018	26/03/2018	
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	
Material Source :	On Site Stockpile	On Site Stockpile	
Lot Number :	525	526	
Sample Location :	Lot 525	Lot 526	
	E 484481.220	E 484457.491	
	N 6939618.957	N 6939631.837	
	RL 88.645	RL 89.385	
Test Depth (mm ):	150	150	
Layer Depth (mm) :	-	-	
Maximum Size (mm) :	19	19	
Oversize Wet (%):	15	12	
Oversize Dry (%):	-	-	
Oversize Density (t/m³) :	2.544	2.486	
Field Moisture Content (%):	16.4	14.9	
Hilf MDR Number :	243092	243093	
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 (%):	98	99	
Field Wet Density (t/m³):	2.178	2.189	
Optimum Moisture Content (%):	16.7	15.0	
Moisture Variation :	0.3	0.1	
Peak Converted Wet Density (t/m³):	2.232*	2.253*	
Hilf Density Ratio (%):	97.5	97.0	
Minimum Specification :	95	95	
Moisture Specification :	-	-	
Site Selection :	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	
Remarks :	-	L	

<sup>\* -</sup> denotes adjusted for oversize



Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY ian A

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

Document Code RF89-11

MOODED



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899 www.morrisongeo.com.au

### **Hilf Density Ratio Report**

 Client :
 CCA WINSLOW
 Report Number:
 DL17/134 - 34

 Address :
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date :
 05/04/2018

 Project Name :
 EARTHWORKS SUPERVISION
 Order Number :
 37618

 Project Number :
 DL17/134
 Test Method :
 AS1289.5.8.1 & 5.7.1

Project Number: DL17/134 Test Method: AS
Location: EDEN'S CROSSING, STAGE 7 Page 1 of 1

Sample Number :	243112	243113		
Test Number :	67	68		
Sampling Method :	07	00		
	27/02/2010	27/02/2010		
Date Sampled :	27/03/2018	27/03/2018		
Date Tested :	27/03/2018	27/03/2018		
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)		
Material Source :	On Site Stockpile	On Site Stockpile		
Lot Number :	-	-		
Sample Location :	E 484473.900	E 484438.900		
	N 6939625.485	N 6939619.120		
	RL 89.428	RL 90.44		
Test Depth (mm ):	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%):	11	12		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	2.474	2.500		
Field Moisture Content (%):	15.9	16.0		
Hilf MDR Number :	243112	243113		
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 (%):	101	101.5		
Field Wet Density (t/m³):	2.213	2.168		
Optimum Moisture Content (%):	15.8	15.8		
Moisture Variation :	-0.1	-0.2		
Peak Converted Wet Density (t/m³):	2.225*	2.216*		_
Hilf Density Ratio (%):	99.5	98.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-	•	•	•

Accredited for compliance with ISO/IEC 17025 - Testing.

 $<sup>\ ^{*}</sup>$  - denotes adjusted for oversize



APPROVED SIGNATORY
Sian A
MOONOR

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



Brisbane | Gold Coast | Maroochydore

Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955

ABN: 51 009 878 899

www.morrisongeo.com.au

### **Hilf Density Ratio Report**

Client :CCA WINSLOWReport Number:DL17/134 - 43Address :1587 IPSWICH ROAD, ROCKLEA, QLD, 4106Report Date :05/06/2018

Project Name : EARTHWORKS SUPERVISION Order Number : 37618
Project Number : DL17/134 Test Method : AS1289.5.8.1 & 5.7.1

Location: EDEN'S CROSSING , STAGE 7 Page 1 of 1

Sample Number :	245465	245466	245467	
Test Number :	78	79	80	
Sampling Method :	-	-	-	
Date Sampled :	16/05/2018	16/05/2018	16/05/2018	
Date Tested :	16/05/2018	16/05/2018	16/05/2018	
Material Type :	Allotment Replacement (Capping Layer)	Allotment Replacement (Capping Layer)	Allotment Replacement (Capping Layer)	
Material Source :	On Site	On Site	On Site	
Lot Number :	-	-	-	
Sample Location :	E 484531	E 484533	E 484537	
	N 6939628	N 6939615	N 6939648	
	0.5m Below Final Level	Final Level	Final Level	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%):	10	7	11	
Oversize Dry (%):	-	-	-	
Oversize Density (t/m³) :	2.338	2.430	2.437	
Field Moisture Content (%):	13.8	14.5	14.0	
Hilf MDR Number :	245465	245466	245467	
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 :	AS1289.2.1.4	AS1289.2.1.4	AS1289.2.1.4	
Moisture Ratio (%):	88.5	88.5	88	
Field Wet Density (t/m³):	2.060	2.110	2.171	
Optimum Moisture Content (%):	15.6	16.4	15.9	
Moisture Variation :	1.8	1.8	1.9	
Peak Converted Wet Density (t/m³):	2.158*	2.201*	2.22*	
Hilf Density Ratio (%):	95.5	96.0	98.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-	•	•	

<sup>\* -</sup> denotes adjusted for oversize



APPROVED SIGNATORY
Sian A
MOONTELL

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13476 Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 529** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 529 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 529 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
529	26	19 <sup>th</sup> July 2017	96.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 529 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 529 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 - 9

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13476 CCA Winslow



www.morrisongeo.com.au

### Hilf Density Ratio Report

 Client:
 CCA WINSLOW
 Report Number:
 DL17/134 - 9

 Address:
 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106
 Report Date:
 26/07/2017

Project Name : EARTHWORKS SUPERVISION Order Number : 33832

Description:   EDEN'S CROSSING , STAGE 7   Page 1 of 1	rroject Name .	LAKTIWOKKS SUPERVISION		order Namber .	33032
Sample Number : 232107 232108 232109 232110 Test Number : 25 26 26 27 28 Sampling Method :	Project Number :	DL17/134		Test Method:	AS1289.5.8.1 & 5.7.1
Test Number : 25	Location:	EDEN'S CROSSING , STAGE 7		Page	1 of 1
Sampling Method:	Sample Number :	232107	232108	232109	232110
Date Sampled : 19/07/2017	Test Number :	25	26	27	28
Date Tested :	Sampling Method :	-	-	-	-
Material Type :         Bulk Fill         Material Source :         On Site         Description         Description         Description         Site All Sites         Description         Site All Sites	Date Sampled :	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Material Source :         On Site         On Site         On Site         On Site           Lot Number :         -	Date Tested :	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Lot Number:  Sample Location:  E 484493.812  E 484498.318  E 484502.926  E 484548.391  N 6939647.952  RL 85.409  RL 85.260  RL 85.403  RL 85.403  RL 84.534  Test Depth (mm):  150  150  150  150  150  150  150  15	Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Sample Location:  E 484493.812  N 6939647.952  N 6939657.342  N 6939637.758  N 6939641.892  RL 85.409  RL 85.260  RL 85.403  RL 84.534  Test Depth (mm):  150  150  150  150  150  150  150  15	Material Source :	On Site	On Site	On Site	On Site
N 6939647.952   N 6939657.342   N 6939637.758   N 6939641.892	Lot Number:	-	-	-	-
RL 85.409  RL 85.260  RL 85.403  RL 84.534  RL 84.534  RL 84.534  RL 84.534  RL 85.409  RL 85.409  RL 85.403  RL 84.534  RL 85.409  RL 85.400  RL 85.403  RL 84.534  RL 85.403  RL 84.534  RL 84.534  RL 85.403  RL 84.534  RL 84.534  RL 84.534  RL 84.534  RL 84.534  RL 85.403  RL 84.534  RL 85.403  RL 84.534  RL 85.403  RL 84.534  RL 84.534  RL 84.534  RL 85.403  RL 84.534  RL 84.534  RL 85.403  RL 84.534  RL 84.534  RL 85.403  RL 84.534  RL 85.403  RL 84.534  RL 85.403  RL 84.534  RL 84.534  RL 85.403  RL 84.534  RL 85.403  RL 84.534  RL 85.403  RL 84.534  RL 84.534  RL 85.403  RL 84.534  RL 84.534  RL 85.403  RL 84.534  RL 85.403  RL 84.524  RL 85.403  RL 84.534  RL 84.534  RL 84.534  RL 84.534  RL 84.534  RL 84.534	Sample Location :	E 484493.812	E 484498.318	E 484502.926	E 484548.391
Test Depth (mm): 150 150 150 150 150 150 150 Layer Depth (mm):		N 6939647.952	N 6939657.342	N 6939637.758	N 6939641.892
Layer Depth (mm):		RL 85.409	RL 85.260	RL 85.403	RL 84.534
Layer Depth (mm):	Test Depth (mm ):	150	150	150	150
Maximum Size (mm):         19         19         19         19         19           Oversize Wet (%):         -		-	_	-	-
Oversize Wet (%):         -		19	19	19	19
Oversize Dry (%):         -		-	_	-	-
Field Moisture Content (%):         38.3         35.5         20.1         17.5           Hilf MDR Number:         232107         232108         232109         232110           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           Moisture Method:         AS1289.2.1.1         AS1289.2.1.1         AS1289.2.1.1         AS1289.2.1.1           Moisture Ratio (%):         101         98         95         92.5           Field Wet Density (t/m³):         1.877         1.747         1.985         2.003           Optimum Moisture Content (%):         38.0         36.3         21.2         19.0           Moisture Variation:         -0.3         0.8         1.0         1.4           Peak Converted Wet Density (t/m³):         1.839         1.822         1.968         2.017           Hilf Density Ratio (%):         102.0         96.0         101.0         99.5           Moisture Specification:         -         -         -         - <td></td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>		-	-	-	-
Hilf MDR Number: 232107 232108 232109 232110 Hilf MDR Method: AS1289.5.1.1 & 5.7.1 AS1289.5.8.1 & 5.7.1 AS1289.5.8	Oversize Density (t/m³) :	-	-	-	-
Hilf MDR Method: AS1289.5.1.1 & 5.7.1 AS1289.5.8.1	Field Moisture Content (%) :	38.3	35.5	20.1	17.5
Compactive Effort :         Standard         Standard         Standard         Standard         Standard           Field Density Method :         AS1289.5.8.1 & 5.7.1         AS1289.5.1.1         AS1289.5.1.1         AS1289.5.1.1         <	Hilf MDR Number :	232107	232108	232109	232110
Field Density Method :         AS1289.5.8.1 & 5.7.1         AS1289.5.1.1         AS1289.5.1.1         AS1289.5.1.1         AS1289.5.1.1         A	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
Moisture Method :         AS1289.2.1.1         AS1289.2	Compactive Effort :	Standard	Standard	Standard	Standard
Moisture Ratio (%):         101         98         95         92.5           Field Wet Density (t/m³):         1.877         1.747         1.985         2.003           Optimum Moisture Content (%):         38.0         36.3         21.2         19.0           Moisture Variation:         -0.3         0.8         1.0         1.4           Peak Converted Wet Density (t/m³):         1.839         1.822         1.968         2.017           Hilf Density Ratio (%):         102.0         96.0         101.0         99.5           Minimum Specification:         95         95         95         95           Moisture Specification:         -         -         -         -           Site Selection:         -         -         -         -	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
Field Wet Density (t/m³):         1.877         1.747         1.985         2.003           Optimum Moisture Content (%):         38.0         36.3         21.2         19.0           Moisture Variation:         -0.3         0.8         1.0         1.4           Peak Converted Wet Density (t/m³):         1.839         1.822         1.968         2.017           Hilf Density Ratio (%):         102.0         96.0         101.0         99.5           Minimum Specification:         95         95         95         95           Moisture Specification:         -         -         -         -           Site Selection:         -         -         -         -	Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Optimum Moisture Content (%):         38.0         36.3         21.2         19.0           Moisture Variation:         -0.3         0.8         1.0         1.4           Peak Converted Wet Density (t/m³):         1.839         1.822         1.968         2.017           Hilf Density Ratio (%):         102.0         96.0         101.0         99.5           Minimum Specification:         95         95         95         95           Moisture Specification:         -         -         -         -           Site Selection:         -         -         -         -         -	Moisture Ratio (%):	101	98	95	92.5
Moisture Variation :         -0.3         0.8         1.0         1.4           Peak Converted Wet Density (t/m³) :         1.839         1.822         1.968         2.017           Hilf Density Ratio (%) :         102.0         96.0         101.0         99.5           Minimum Specification :         95         95         95         95           Moisture Specification :         -         -         -         -           Site Selection :         -         -         -         -	Field Wet Density (t/m³):	1.877	1.747	1.985	2.003
Peak Converted Wet Density (t/m³):         1.839         1.822         1.968         2.017           Hilf Density Ratio (%):         102.0         96.0         101.0         99.5           Minimum Specification:         95         95         95         95           Moisture Specification:         -         -         -         -         -           Site Selection:         -         -         -         -         -         -	Optimum Moisture Content (%) :	38.0	36.3	21.2	19.0
(t/m³):     1.839       Hilf Density Ratio (%):     102.0       Minimum Specification:     95       95     95       Moisture Specification:     -       5ite Selection:     -	Moisture Variation :	-0.3	0.8	1.0	1.4
Hilf Density Ratio (%):       102.0       96.0       101.0       99.5         Minimum Specification:       95       95       95       95         Moisture Specification:       -       -       -       -         Site Selection:       -       -       -       -		1.839	1.822	1.968	2.017
Moisture Specification :         - <td></td> <td>102.0</td> <td>96.0</td> <td>101.0</td> <td>99.5</td>		102.0	96.0	101.0	99.5
Site Selection :	Minimum Specification :	95	95	95	95
	Moisture Specification :	-	-	-	-
Soil Description :	Site Selection :	-	-	-	-
	Soil Description :	-	-	-	-
Remarks : -	Remarks :	-	-		



APPROVED SIGNATORY
Siem A
MOCOCOL

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



 $\textbf{Brisbane} \mid \text{Gold Coast} \mid \text{Maroochydore}$  Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076  $\,$  P (07) 3279 0900  $\,$  F (07) 3279 0955

ABN 51 009 878 899 www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13477 Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 582** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 582 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 582 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
582 5 24 <sup>th</sup> April 2017 96.0					
582	10	24 <sup>th</sup> April 2017	106.5		
582 53 29 <sup>th</sup> July 2017 102.5					
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 582 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 582 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 – 3, 4, 22

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13477 CCA Winslow



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client : CCA WINSLOW Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date :

Project Name: EARTHWORKS SUPERVISION

Project Number : DL17/134 Report Number: DL17/134 - 3 15/05/2017

Order Number : 33832

Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	228089	228090	228091	228092
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Date Tested :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484507.492	E 484495.074	E 484505.440	E 484518.264
	N 6939703.907	N 6939673.079	N 6939684.950	N 6939694.307
	RL 82.460	RL 83.665	RL 83.110	RL 82.400
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 (%):	42.0	45.0	37.4	39.9
Hilf MDR Number :	228089	228090	228091	228092
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 (%):	95	107.5	103	99
Field Wet Density (t/m³):	1.792	1.612	1.838	1.708
Optimum Moisture Content (%) :	44.2	41.9	36.4	40.2
Moisture Variation :	2.7	-3.7	-1.0	0.3
Peak Converted Wet Density (t/m³):	1.616	1.677	1.726	1.679
Hilf Density Ratio (%):	111.0	96.0	106.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL

Accredited for compliance with ISO/IEC 17025.

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



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 4
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 15/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	228093	228094	228095	
Test Number :	8	9	10	
Sampling Method :	-	-	-	
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	
Date Tested :	24/04/2017	24/04/2017	24/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number:	-	-	-	
Sample Location :	E 484503.544	E 484499.819	E 484494.770	
	N 6939707.115	N 6939635.630	N 6939670.599	
	RL 83.225	RL 83.672	RL 84.835	
Test Depth (mm):	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-		-	
Oversize Dry (%):	_	_	_	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	29.8	29.8	27.6	
Hilf MDR Number :	228093	228094	228095	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	111.5	107	100	
Field Wet Density (t/m³):	1.917	1.846	2.013	
Optimum Moisture Content (%) :	26.7	27.9	27.6	
Moisture Variation :	-3.1	-2.0	0.0	
Peak Converted Wet Density (t/m³):	1.901	1.823	1.888	
Hilf Density Ratio (%):	101.0	101.5	106.5	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-	1	1	<u>I</u>
	ı			



APPROVED SIGNATORY

Accredited for compliance with ISO/IEC 17025.

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



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 22 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 11/08/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832 Project Number : Test Method: AS1289.5.8.1 & 5.7.1 DL17/134

Project Number :	DL17/134		rest Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE 7		Page	1 of 1
Sample Number :	232568	232569		
Test Number :	53	54		
Sampling Method :	-	-		
Date Sampled :	29/07/2017	29/07/2017		
Date Tested :	29/07/2017	29/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site	On Site		
Lot Number:	-	-		
Sample Location :	E 0484474	E 0484486		
	N 6939669	N 6939701		
	Final Level	Final Level		
Test Depth (mm ) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%):	15.6	16.9		
Hilf MDR Number :	232568	232569		
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 (%):	88	99.5		
Field Wet Density (t/m³):	2.176	2.192		
Optimum Moisture Content (%) :	17.7	17.0		
Moisture Variation :	2.0	0.1		
Peak Converted Wet Density (t/m³):	2.124	2.223		
Hilf Density Ratio (%):	102.5	98.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	=	_	
Soil Description :	-	-		
Remarks :	-		•	



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize* that separating logs from the report can elevate risk.

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13478 Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 530** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 530 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 530 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
530	1	21st April 2017	98.0		
530	2	21st April 2017	95.0		
530	3	22 <sup>nd</sup> April 2017	100.5		
530 6 24 <sup>th</sup> April 2017 106.5					
Note: Laboratory St	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 530 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 530 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL

For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 – 1, 2, 3

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13478 CCA Winslow



Brisbane | Gold Coast | Brendale | Maroochy dore
Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955
ABN 51 009 878 899
www.morrisongeo.com.au

### Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 1
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 08/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number : DL17/134 Test Method : AS1289.5.8.1 & 5.7.1

Project Number :	DL17/134		Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE 7		Page	1 of 1
Sample Number :	228080	228081		
Test Number :	1	2		
Sampling Method :	-	-		
Date Sampled :	21/04/2017	21/04/2017		
Date Tested :	21/04/2017	21/04/2017		
Material Type :	Bulk Fill	Bulk Fill		
Material Source :	On Site Cut	On Site Cut		
Lot Number:	-	-		
Sample Location :	E 484490	E 484496		
	N 6939686	N 6939690		
	RL 82.900	RL 83.50		
Test Depth (mm ):	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%):	26.8	26.4		
Hilf MDR Number :	228080	228081		
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 (%):	100	101.5		
Field Wet Density (t/m³):	1.890	1.799		
Optimum Moisture Content (%) :	26.8	26.1		
Moisture Variation :	0.0	-0.4		
Peak Converted Wet Density (t/m³):	1.927	1.898		
Hilf Density Ratio (%):	98.0	95.0		
Minimum Specification :	95	95		
Moisture Specification :	+ or - 2%	+ or - 2%		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-	<b>.</b>	•	
	•			



APPROVED SIGNATORY

Accredited for compliance with ISO/IEC 17025.

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



Brisbane | Gold Coast | Brendale | Maroochy dore Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076 P (07) 3279 0900 F (07) 3279 0955 ABN 51 009 878 899 www.morrisongeo.com.au

### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 2 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 08/05/2017 EARTHWORKS SUPERVISION Project Name: Order Number : 33832 Project Number : Test Method: DL17/134 AS1289.5.8.1 & 5.7.1

Test Number : 3	Location:	EDEN'S CROSSING, STAGE 7 Page 1 of 1		1 of 1	
Sampling Method:  Date Sampled:  22/04/2017  Bute Tested:  22/04/2017  Bute Fill  Material Type:  Bute Fill  Material Source:  On Site Cut  Lot Number:	Sample Number :	228088			
Date Sampled: 22/04/2017 Date Tested: 22/04/2017 Date Tested: 22/04/2017 Date Tested: 122/04/2017 Date Tested: 22/04/2017 Date Tested: 122/04/2017	Test Number :	3			
Date Tested: 22/04/2017  Material Type: Bulk Fill  Material Source: On Site Cut  Lot Number: -  Sample Location: E 484490.150  N 6939683.931  RL 84 288  Test Depth (mm ): -  Layer Depth (mm): -  Maximum Size (mm): -  Oversize (%): -  Oversize Density (t/m²): -  Field Molsture Content (%): 27.5  Hill MDR Method: AS1289.51.1 & 5.7.1  Compactive Effort: Standard  Field Density Method: AS1289.5.1.1 & 5.7.1  Molisture Ratio (%): -  Molisture Ratio (%): -  Molisture Ratio (%): -  Molisture Variation: -  Documentary (m²): -  Molisture Variation: -  Molisture Variation: -  Documentary (m²): -  Molisture Specification: -  Molisture Specification: -  Documentary (m²): -  Molisture Specification: -  Molisture Specification: -  Site Selection: -  Molisture Specification: -  Site Selection: -  Soil Description: -	Sampling Method :	-			
Material Type: Bulk Fill Material Source: On Site Cut  Lot Number:	Date Sampled :	22/04/2017			
Material Source : On Site Cut  Lot Number : - Sample Location : E 484490,150  N 6939683,931  RL 84.288  Test Depth (mm ) : 150  Layer Depth (mm) : - Maximum Size (mm) : 19  Oversize Density (fm²) : - Oversize Density (fm²) : - Field Moisture Content (%) : 27.5  Hilf MDR Number : 228088  Hilf MDR Number : 228088  Hilf MDR Number : Standard  Field Density Method : AS1289,58.1 & 5.7.1  Moisture Method : AS1289,2.1.1  Moisture Method : AS1289,2.1.1  Moisture Ratio (%) : 99  Field We Density (fm²) : 1.919  Openium Moisture Content (%) : 27.7  Moisture Variation : 0.2  Peak Converted Wet Density (fm²) : 1.919  Optimum Moisture Variation : 0.5  Moisture Variation : 95  Moisture Specification : 95  Moisture Specification : 95  Moisture Specification : 95  Moisture Specification : - Soil Description : -	Date Tested :	22/04/2017			
Lot Number:	Material Type :	Bulk Fill			
Sample Location: E 484490.150 N 6939683.931 RL 84.288  Test Depth (mm): 150 Layer Depth (mm): - Maximum Size (mm): 19 Oversize Wet (%): - Oversize Wet (%): - Oversize Density (t/m³): - Field Moisture Content (%): 227.5 Hillif MDR Moisture Method: AS1289.5.1.1 & 5.7.1 Compactive Effort: Standard Field Density Method: AS1289.5.1.1 & 5.7.1 Moisture Method: AS1289.5.1.1 & 5.7.1 Moisture Method: AS1289.5.1.1 & 5.7.1 Moisture Method: AS1289.5.1.1 Moisture Specification: 99 Moisture Specification: 99 Moisture Specification: 95 Moisture Specification: 95 Moisture Specification: - Soil Description: -	Material Source :	On Site Cut			
N 6939683 931   RL 84.288   RL 84.289	Lot Number:	-			
RL 84.288    Test Depth (mm):	Sample Location :	E 484490.150			
Test Depth (mm): 150 Layer Depth (mm): - Maximum Size (mm): 19 Oversize Wet (%): - Oversize Dry (%): - Oversize Dry (%): - Oversize Dry (%): - Oversize Density (t/m³): - Field Moisture Content (%): 27.5 Hilf MDR Number: 228088 Hilf MDR Number: 431289.5.1.1 & 5.7.1 Compactive Effort: Standard Field Density Method: AS1289.5.1.1 & 5.7.1 Moisture Method: AS1289.2.1.1 Moisture Ratio (%): 99 Field Wet Density (t/m³): 1.919 Optimum Moisture Content (%): 27.7 Moisture Variation: 0.2 Peak Converted Wet Density (t/m³): 1.912 (t/m³): 1.912 (t/m³): 1.912 (t/m³): 1.912 (t/m³): 1.912 (t/m³): 1.915 Minimum Specification: 95 Moisture Specification: - Soil Description: -		N 6939683.931			
Test Depth (mm): 150 Layer Depth (mm): - Maximum Size (mm): 19 Oversize Wet (%): - Oversize Dry (%): - Oversize Dry (%): - Oversize Dry (%): - Oversize Density (t/m³): - Field Moisture Content (%): 27.5 Hilf MDR Number: 228088 Hilf MDR Number: 431289.5.1.1 & 5.7.1 Compactive Effort: Standard Field Density Method: AS1289.5.1.1 & 5.7.1 Moisture Method: AS1289.2.1.1 Moisture Ratio (%): 99 Field Wet Density (t/m³): 1.919 Optimum Moisture Content (%): 27.7 Moisture Variation: 0.2 Peak Converted Wet Density (t/m³): 1.912 (t/m³): 1.912 (t/m³): 1.912 (t/m³): 1.912 (t/m³): 1.912 (t/m³): 1.915 Minimum Specification: 95 Moisture Specification: - Soil Description: -		DI 04 200			
Layer Depth (mm):		KL 04.200			
Layer Depth (mm):					
Maximum Size (mm): 19 Oversize Wet (%): - Oversize Dry (%): - Oversize Density (t/m³): - Field Moisture Content (%): 27.5 Hilf MDR Number: 228088 Hilf MDR Method: AS1289.5.1.1 & 5.7.1 Compactive Effort: Standard Field Density Method: AS1289.5.1.1 & 5.7.1 Moisture Method: AS1289.2.1.1 Moisture Ratio (%): 99 Field Wet Density (t/m³): 1.919 Optimum Moisture Content (%): 27.7 Moisture Variation: 0.2 Peak Converted Wet Density (t/m³): 1.912 Hilf Density Ratio (%): 95 Moisture Specification: 95 Moisture Specification: 95 Moisture Specification: 95 Moisture Specification: - Soil Description: -	Test Depth (mm ):	150			
Oversize Wet (%): Oversize Dry (%): Oversize Dry (%): Oversize Density (t/m³): Field Moisture Content (%): 27.5 Hilf MDR Number: 228088 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: AS1289.2.1.1 Moisture Ratio (%): 99 Field Wet Density (t/m³): 1.919 Optimum Moisture Content (%): 27.7 Moisture Variation: 0.2 Peak Converted Wet Density (t/m³): 1.912 Hilf Density Ratio (%): 1.912 Moisture Specification: 95 Moisture Specification: 95 Moisture Specification: - Soil Description: -	Layer Depth (mm):	-			
Oversize Dry (%): Oversize Density (t/m³): Field Moisture Content (%): Field Moisture Content (%):  27.5 Hilf MDR Number: 228088 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: AS1289.2.1.1 Moisture Ratio (%): 99 Field Wet Density (t/m³): 1.919 Optimum Moisture Content (%): 27.7 Moisture Variation: 0.2 Peak Converted Wet Density (t/m³): 1.912 t/m³): Hilf Density Ratio (%): 100.5 Minimum Specification: 95 Moisture Specification: - Soil Description: -	Maximum Size (mm):	19			
Oversize Density (t/m³):         -           Field Moisture Content (%):         27.5           Hilf MDR Number:         228088           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:         AS1289.2.1.1           Moisture Ratio (%):         99           Field Wet Density (t/m³):         1.919           Optimum Moisture Content (%):         27.7           Moisture Variation:         0.2           Peak Converted Wet Density (t/m³):         1.912           Hilf Density Ratio (%):         100.5           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -	Oversize Wet (%):	=			
Field Moisture Content (%): 27.5  Hilf MDR Number: 228088  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: AS1289.2.1.1  Moisture Ratio (%): 99  Field Wet Density (t/m³): 1.919  Optimum Moisture Content (%): 27.7  Moisture Variation: 0.2  Peak Converted Wet Density (t/m³): 1.912  Hilf Density Ratio (%): 100.5  Minimum Specification: 95  Moisture Specification: Soil Description:	Oversize Dry (%):	-			
Hilf MDR Number: 228088 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: AS1289.2.1.1  Moisture Ratio (%): 99 Field Wet Density (t/m³): 1.919 Optimum Moisture Content (%): 27.7  Moisture Variation: 0.2 Peak Converted Wet Density (t/m³): 1.912 Hilf Density Ratio (%): 100.5 Minimum Specification: 95 Moisture Specification: Soil Description: -	Oversize Density (t/m³) :	-			
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:  AS1289.2.1.1  Moisture Ratio (%):  99  Field Wet Density (t/m³):  1.919  Optimum Moisture Content (%):  27.7  Moisture Variation:  0.2  Peak Converted Wet Density (t/m³):  1.912  Hilf Density Ratio (%):  100.5  Minimum Specification:  95  Moisture Specification:  95  Site Selection:  -  Soil Description:	Field Moisture Content (%):	27.5			
Compactive Effort: Standard  Field Density Method: AS1289.5.8.1 & 5.7.1  Moisture Method: AS1289.2.1.1  Moisture Ratio (%): 99  Field Wet Density (t/m³): 1.919  Optimum Moisture Content (%): 27.7  Moisture Variation: 0.2  Peak Converted Wet Density (t/m³): 1.912  Hilf Density Ratio (%): 100.5  Minimum Specification: 95  Moisture Specification:	Hilf MDR Number :	228088			
Field Density Method: AS1289.5.8.1 & 5.7.1  Moisture Method: AS1289.2.1.1  Moisture Ratio (%): 99  Field Wet Density (t/m³): 1.919  Optimum Moisture Content (%): 27.7  Moisture Variation: 0.2  Peak Converted Wet Density (t/m³): 1.912  Hilf Density Ratio (%): 100.5  Minimum Specification: 95  Moisture Specification:  Soil Description:	Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Moisture Method:  Moisture Ratio (%):  99  Field Wet Density (t/m³):  1.919  Optimum Moisture Content (%):  27.7  Moisture Variation:  0.2  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  100.5  Minimum Specification:  95  Moisture Specification:  -  Soil Description:  -  AS1289.2.1.1   MS1289.2.1.1  1.919  1.919  1.919  1.912  1.912  1.912  1.912  1.912  1.912  1.913  1.915  1.915  1.915  1.916  1.917  1.918  1.918  1.918  1.919  1.919  1.910  1.	Compactive Effort :	Standard			
Moisture Ratio (%):  99  Field Wet Density (t/m³):  1.919  Optimum Moisture Content (%):  27.7  Moisture Variation:  0.2  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  100.5  Minimum Specification:  95  Moisture Specification:  -  Soil Description:  -  1.919  -  99  1.919  1.919  1.912  1.912  1.912  1.912  1.912  1.912  1.913  1.915  1.915  1.915  1.916  1.917  1.918  1.918  1.918  1.919  1.919  1.910	Field Density Method:	AS1289.5.8.1 & 5.7.1			
Field Wet Density (t/m³): 1.919 Optimum Moisture Content (%): 27.7  Moisture Variation: 0.2 Peak Converted Wet Density (t/m³): 1.912 Hilf Density Ratio (%): 100.5  Minimum Specification: 95  Moisture Specification:	Moisture Method :	AS1289.2.1.1			
Optimum Moisture Content (%):       27.7         Moisture Variation:       0.2         Peak Converted Wet Density (t/m³):       1.912         Hilf Density Ratio (%):       100.5         Minimum Specification:       95         Moisture Specification:       + or - 2%         Site Selection:       -         Soil Description:       -	Moisture Ratio (%):	99			
Moisture Variation:  0.2  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  Minimum Specification:  95  Moisture Specification:  -  Soil Description:  -  0.2  1.912  1.912  1.912  1.912  1.912  1.912  1.912  1.912  1.912  1.912  1.912  1.912  1.913  1.912  1.913	Field Wet Density (t/m³):	1.919			
Peak Converted Wet Density (t/m³):         1.912           Hilf Density Ratio (%):         100.5           Minimum Specification:         95           Moisture Specification:         + or - 2%           Site Selection:         -           Soil Description:         -	Optimum Moisture Content (%) :	27.7			
(t/m³):       1.712         Hilf Density Ratio (%):       100.5         Minimum Specification:       95         Moisture Specification:       + or - 2%         Site Selection:       -         Soil Description:       -	Moisture Variation :	0.2			
Hilf Density Ratio (%):  100.5  Minimum Specification:  95  Moisture Specification:  + or - 2%  Site Selection:  -  Soil Description:  -	Peak Converted Wet Density (t/m³):	1.912			
Moisture Specification: + or - 2% Site Selection: - Soil Description: -	Hilf Density Ratio (%):	100.5			
Site Selection : - Soil Description : -	Minimum Specification :	95			
Soil Description:	Moisture Specification :	+ or - 2%			
· · · · · · · · · · · · · · · · · · ·	Site Selection :	-			
Remarks : -	Soil Description :	-			
	Remarks :	-			



APPROVED SIGNATORY MOODOL Accredited for compliance with ISO/IEC 17025.

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



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client : CCA WINSLOW Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date :

Project Name: EARTHWORKS SUPERVISION

Project Number : DL17/134 Report Number: DL17/134 - 3 15/05/2017

Order Number : 33832

Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	228089	228090	228091	228092
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Date Tested :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	=	-	-
Sample Location :	E 484507.492	E 484495.074	E 484505.440	E 484518.264
	N 6939703.907	N 6939673.079	N 6939684.950	N 6939694.307
	RL 82.460	RL 83.665	RL 83.110	RL 82.400
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 (%):	42.0	45.0	37.4	39.9
Hilf MDR Number :	228089	228090	228091	228092
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 (%):	95	107.5	103	99
Field Wet Density (t/m³):	1.792	1.612	1.838	1.708
Optimum Moisture Content (%) :	44.2	41.9	36.4	40.2
Moisture Variation :	2.7	-3.7	-1.0	0.3
Peak Converted Wet Density (t/m³):	1.616	1.677	1.726	1.679
Hilf Density Ratio (%):	111.0	96.0	106.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL

Accredited for compliance with ISO/IEC 17025.

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

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



ABN 51 009 878 899 www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13479 Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 531** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 531 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 531 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %			
531	7	24 <sup>th</sup> April 2017	101.5			
531 54 29 <sup>th</sup> July 2017 98.5						
Note: Laboratory St	Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 531 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 531 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

ncl: Laboratory Test Reports DL17/134 -3, 22

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13479 CCA Winslow



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client : CCA WINSLOW Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date :

Project Name: EARTHWORKS SUPERVISION

Project Number : DL17/134 Report Number: DL17/134 - 3 15/05/2017

Order Number : 33832

Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	228089	228090	228091	228092
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Date Tested :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	=	-	-
Sample Location :	E 484507.492	E 484495.074	E 484505.440	E 484518.264
	N 6939703.907	N 6939673.079	N 6939684.950	N 6939694.307
	RL 82.460	RL 83.665	RL 83.110	RL 82.400
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 (%):	42.0	45.0	37.4	39.9
Hilf MDR Number :	228089	228090	228091	228092
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 (%):	95	107.5	103	99
Field Wet Density (t/m³):	1.792	1.612	1.838	1.708
Optimum Moisture Content (%) :	44.2	41.9	36.4	40.2
Moisture Variation :	2.7	-3.7	-1.0	0.3
Peak Converted Wet Density (t/m³):	1.616	1.677	1.726	1.679
Hilf Density Ratio (%):	111.0	96.0	106.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL

Accredited for compliance with ISO/IEC 17025.

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



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/134 - 22 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 11/08/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832 Project Number : Test Method: AS1289.5.8.1 & 5.7.1 DL17/134

Project Number :	DL17/134		rest Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING, STAGE 7		Page	1 of 1
Sample Number :	232568	232569		
Test Number :	53	54		
Sampling Method :	-	-		
Date Sampled :	29/07/2017	29/07/2017		
Date Tested :	29/07/2017	29/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site	On Site		
Lot Number:	-	-		
Sample Location :	E 0484474	E 0484486		
	N 6939669	N 6939701		
	Final Level	Final Level		
Test Depth (mm ) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%):	15.6	16.9		
Hilf MDR Number :	232568	232569		
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 (%):	88	99.5		
Field Wet Density (t/m³):	2.176	2.192		
Optimum Moisture Content (%):	17.7	17.0		
Moisture Variation :	2.0	0.1		
Peak Converted Wet Density (t/m³):	2.124	2.223		
Hilf Density Ratio (%):	102.5	98.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	=	_	
Soil Description :	-	-		
Remarks :	-		•	



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager NATA Accreditation Number 1162 / 1169

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



 $\textbf{Brisbane} \mid \text{Gold Coast} \mid \text{Maroochydore}$  Unit 1, 35 Limestone Street (PO Box 3063), Darra Q 4076  $\,$  P (07) 3279 0900  $\,$  F (07) 3279 0955

ABN 51 009 878 899 www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13480 Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 532** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 532 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 532 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
532	8	24 <sup>th</sup> April 2017	101.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 532 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 532 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 -4

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13480 CCA Winslow



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 4
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 15/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	228093	228094	228095	
Test Number :	8	9	10	
Sampling Method :	-	-	-	
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	
Date Tested :	24/04/2017	24/04/2017	24/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number:	-	-	-	
Sample Location :	E 484503.544	E 484499.819	E 484494.770	
	N 6939707.115	N 6939635.630	N 6939670.599	
	RL 83.225	RL 83.672	RL 84.835	
Test Depth (mm):	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-		-	
Oversize Dry (%):	_	_	_	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	29.8	29.8	27.6	
Hilf MDR Number :	228093	228094	228095	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	111.5	107	100	
Field Wet Density (t/m³):	1.917	1.846	2.013	
Optimum Moisture Content (%) :	26.7	27.9	27.6	
Moisture Variation :	-3.1	-2.0	0.0	
Peak Converted Wet Density (t/m³):	1.901	1.823	1.888	
Hilf Density Ratio (%):	101.0	101.5	106.5	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-	1	1	<u>I</u>
	ı			



APPROVED SIGNATORY

Accredited for compliance with ISO/IEC 17025.

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

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.



www.morrisongeo.com.au

Brisbane Office Job Number: DL17/134

Ref No: 13481 Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd 1587 Ipswich Road Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO

MR KIERAN HOY

Email: Anthonyrosario@ccawinslow.com.au kieranh@ccawinslow.com.au

Dear Sir,

**RE: LOT 533** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 7 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 533 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 16th May 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13438 – DL17/134 – CCA Winslow – Edens Crossing Estate, Stage 7 – Level One Report" Dated 26<sup>th</sup> June 2018.

The Brief from the Client was limited to:

- Level One Inspection 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.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code 17BNE-0007, Revision A, dated 27<sup>th</sup> Septmeber 2017

Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 500m³ of placed and compacted fill as defined in AS3798 Table 8.1. Test locations were selected using Random Stratified methods. Compaction testing was carried out at







Job No: DL17/134

frequencies representative of the fill volume as a mass. On this basis, compaction testing was not required on each individual Lot.

summary of tests representative of the fill constructed on Lot 533 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
533	45	27 <sup>th</sup> July 2017	95.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 533 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 533 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 16<sup>th</sup> May 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: <a href="mailto:lmcdowall@morrisongeo.com.au">lmcdowall@morrisongeo.com.au</a>

Yours faithfully,

L. McDOWALL
For and on behalf of

MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/134 -4

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 13481 CCA Winslow



www.morrisongeo.com.au

### Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/134 - 4
Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 15/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number: DL17/134 Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING, STAGE 7		Page 1 of 1	
Sample Number :	228093	228094	228095	
Test Number :	8	9	10	
Sampling Method :	-	-	-	
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	
Date Tested :	24/04/2017	24/04/2017	24/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number:	-	-	-	
Sample Location :	E 484503.544	E 484499.819	E 484494.770	
	N 6939707.115	N 6939635.630	N 6939670.599	
	RL 83.225	RL 83.672	RL 84.835	
Test Depth (mm):	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-		-	
Oversize Dry (%):	_	_	_	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	29.8	29.8	27.6	
Hilf MDR Number :	228093	228094	228095	
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 :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%):	111.5	107	100	
Field Wet Density (t/m³):	1.917	1.846	2.013	
Optimum Moisture Content (%) :	26.7	27.9	27.6	
Moisture Variation :	-3.1	-2.0	0.0	
Peak Converted Wet Density (t/m³):	1.901	1.823	1.888	
Hilf Density Ratio (%):	101.0	101.5	106.5	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-	1	1	<u>I</u>
	ı			



APPROVED SIGNATORY

Accredited for compliance with ISO/IEC 17025.

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

# **Important Information about Your**

# Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —*—should apply the report for any purpose or project except the one originally contemplated.

#### **Read the Full Report**

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- · not prepared for you,
- · not prepared for your project,
- · not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

 the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.* 

### **Subsurface Conditions Can Change**

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

## Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

#### A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

# A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

### Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.* 

#### Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenviron-mental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures*. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else* 

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction. operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the express purpose of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant: none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### Rely, on Your ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733 Facsimile: 301/589-2017 e-mail: info@asfe.org www.asfe.org

Copyright 2004 by ASFE, Inc. Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with ASFE's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of ASFE, and only for purposes of scholarly research or book review. Only members of ASFE may use this document as a complement to or as an element of a geotechnical engineering report. Any other firm, individual, or other entity that so uses this document without being an ASFE member could be committing negligent or intentional (fraudulent) misrepresentation.