

 $\textbf{Brisbane} \mid \text{Gold Coast} \mid \text{Maroochydore}$  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: DL17/131

Ref No: 12056 Author: L. McDowall

1st August 2017

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 425** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 425 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 9th March 2017 and 25th July 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12217 – DL17/131 – CCA Winslow – Edens Crossing Estate, Stage 1 – Level One Report" Dated 1st August 2017.

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.
- J Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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 1 Development was carried out at a frequency of 1 test per 500m<sup>3</sup> 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: DL17/131

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 425 are representative of the fill constructed on Lot 425. The closest test to Lot 425 was performed on Lot 426. A summary of tests representative of the fill constructed on Lot 425 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
426	20	20 <sup>th</sup> July 2017	100.5	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 425 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 425 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 25<sup>th</sup> July 2017.

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 DL17/131 - 14

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12056 CCA Winslow



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#### Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/131 - 14

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

Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number: DL17/131 Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING , STAGE 1		Page	1 of 1
Sample Number :	232083	232084		
Test Number :	19	20		
Sampling Method :	-	-		
Date Sampled :	20/07/2017	20/07/2017		
Date Tested :	20/07/2017	20/07/2017		
Material Type :	Capping Layer	Capping Layer		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number:	-	-		
Sample Location :	Old Temporary Basin	Old Temporary Basin		
	E 484629.353	E 484646.721		
	N 6939996.499	N 6939993.907		
	RL 74.683	RL 74.474		
Test Depth (mm ):	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%):	17.5	16.5		
Hilf MDR Number :	232083	232084		
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 (%):	93	91		
Field Wet Density (t/m³):	1.936	2.048		
Optimum Moisture Content (%):	18.8	18.1		
Moisture Variation :	1.3	1.6		
Peak Converted Wet Density (t/m³):	1.979	2.039		
Hilf Density Ratio (%):	98.0	100.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-	•	•	•
	•			



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APPROVED SIGNATORY
Siem A

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.

The following information is provided to help you manage your risks.

## **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.

#### 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 Wisinterpretation

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 such risks, 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 geoenvironmental 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.

#### Rely on Your Geotechnical Engineer for Additional Assistance

Membership in ASFE 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 Sliver Spring, MD 20910 Telephone: 301-565-2733 Facsimile: 301-589-2017 email: info@asfe.org www.asfe.org

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**ABN** 51 009 878 899

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Brisbane Office Job Number: DL17/131

Ref No: 12057 Author: L. McDowall

1st August 2017

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 426** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 426 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 9th March 2017 and 25th July 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12217 – DL17/131 – CCA Winslow – Edens Crossing Estate, Stage 1 – Level One Report" Dated 1st August 2017.

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.
- J Ipswich City Council Specifications.
- J ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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 1 Development was carried out at a frequency of 1 test per 500m<sup>3</sup> 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: DL17/131

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 426 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
426	20	20 <sup>th</sup> July 2017	100.5	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 426 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 426 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 25<sup>th</sup> July 2017.

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 DL17/131 - 14

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12057 CCA Winslow



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#### Hilf Density Ratio Report

Client: CCA WINSLOW Report Number: DL17/131 - 14

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

Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Number: DL17/131 Test Method: AS1289.5.8.1 & 5.7.1

Location:	EDEN'S CROSSING , STAGE 1		Page	1 of 1
Sample Number :	232083	232084		
Test Number :	19	20		
Sampling Method :	-	-		
Date Sampled :	20/07/2017	20/07/2017		
Date Tested :	20/07/2017	20/07/2017		
Material Type :	Capping Layer	Capping Layer		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number:	-	-		
Sample Location :	Old Temporary Basin	Old Temporary Basin		
	E 484629.353	E 484646.721		
	N 6939996.499	N 6939993.907		
	RL 74.683	RL 74.474		
Test Depth (mm ):	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%):	17.5	16.5		
Hilf MDR Number :	232083	232084		
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		
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Peak Converted Wet Density (t/m³):	1.979	2.039		
Hilf Density Ratio (%):	98.0	100.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-	•	•	•
	•			



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

Document Code RF89-11

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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,

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Brisbane Office Job Number: DL17/131

Ref No: 12058 Author: L. McDowall

1st August 2017

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 427** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 427 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 9th March 2017 and 25th July 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12217 – DL17/131 – CCA Winslow – Edens Crossing Estate, Stage 1 – Level One Report" Dated 1st August 2017.

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";
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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 1 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







Job No: DL17/131

locations were selected using Random Stratified methods. Compaction testing was carried out at 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 427 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
427	19	20 <sup>th</sup> July 2017	98.0	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 427 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 427 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 25<sup>th</sup> July 2017.

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 DL17/131 - 14

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12058 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

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#### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 14 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 24/07/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832 Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Page 1 of 1

Location:	EDEN'S CROSSING, STAGE 1		Page	1 of 1
Sample Number :	232083	232084		
Test Number :	19	20		
Sampling Method :	-	-		
Date Sampled :	20/07/2017	20/07/2017		
Date Tested :	20/07/2017	20/07/2017		
Material Type :	Capping Layer	Capping Layer		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	=	-		
Sample Location :	Old Temporary Basin	Old Temporary Basin		
	E 484629.353	E 484646.721		
	N 6939996.499	N 6939993.907		
	RL 74.683	RL 74.474		
Test Depth (mm ) :	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	=	=		
Oversize Density (t/m³):	-	-		
Field Moisture Content (%):	17.5	16.5		
Hilf MDR Number :	232083	232084		
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 (%):	93	91		
Field Wet Density (t/m³):	1.936	2.048		
Optimum Moisture Content (%) :	18.8	18.1		
Moisture Variation :	1.3	1.6		
Peak Converted Wet Density (t/m³):	1.979	2.039		
Hilf Density Ratio (%):	98.0	100.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			



APPROVED SIGNATORY

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.

The following information is provided to help you manage your risks.

## **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.

#### 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 Wisinterpretation

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 such risks, 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 geoenvironmental 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.

#### Rely on Your Geotechnical Engineer for Additional Assistance

Membership in ASFE 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 Sliver Spring, MD 20910 Telephone: 301-565-2733 Facsimile: 301-589-2017 email: info@asfe.org www.asfe.org

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Brisbane Office Job Number: DL17/131

Ref No: 12059 Author: L. McDowall

1st August 2017

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 428** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 428 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 9th March 2017 and 25th July 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12217 – DL17/131 – CCA Winslow – Edens Crossing Estate, Stage 1 – Level One Report" Dated 1st August 2017.

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.
- J Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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 1 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







Job No: DL17/131

locations were selected using Random Stratified methods. Compaction testing was carried out at 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 428 are representative of the fill constructed on Lot 428. The closest test to Lot 428 was performed on Lot 427. A summary of tests representative of the fill constructed on Lot 428 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
427	19	20 <sup>th</sup> July 2017	98.0	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 428 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 428 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 25<sup>th</sup> July 2017.

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 DL17/131 - 14

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12059 CCA Winslow



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#### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 14 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 24/07/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832 Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Page 1 of 1

Location:	EDEN'S CROSSING, STAGE 1		Page	1 of 1
Sample Number :	232083	232084		
Test Number :	19	20		
Sampling Method :	-	-		
Date Sampled :	20/07/2017	20/07/2017		
Date Tested :	20/07/2017	20/07/2017		
Material Type :	Capping Layer	Capping Layer		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	=	-		
Sample Location :	Old Temporary Basin	Old Temporary Basin		
	E 484629.353	E 484646.721		
	N 6939996.499	N 6939993.907		
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Test Depth (mm ) :	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	=	=		
Oversize Density (t/m³):	-	-		
Field Moisture Content (%):	17.5	16.5		
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Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			



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Brisbane Office Job Number: DL17/131

Ref No: 12060 Author: L. McDowall

20th June 2017

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 429** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 429 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

Tests performed on filling operations near Lot 429 are representative of the fill constructed on Lot 429. The closest test to Lot 429 was performed on Lot 431. A summary of tests representative of the fill constructed on Lot 429 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
Road 1	10	29 <sup>th</sup> April 2007	106.0		
431	431 8 28 <sup>th</sup> April 2017 100.0				
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 429 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 429 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 4<sup>th</sup> May 2017.

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 DL17/131 – 3 and 4

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12060 CCA Winslow



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#### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 3 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017 EARTHWORKS SUPERVISION Project Name: Order Number : 33832 Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Test Number : 8 Sampling Method :	Location:	EDEN'S CROSSING, STAGE 1	Page	1 of 1
Sampling Method:	Sample Number :	228106		
Date Sampled: 28/04/2017 Date Tested: 28/04/2017 Date Tested: 28/04/2017 Material Source: On Site Cut Lot Number:	Test Number :	8		
Date Tested: 28/04/2017  Material Type: Bulk Fill (Capping Layer)  Material Source: On Site Cut  Lot Number:	Sampling Method :	-		
Material Type: Bulk Fill (Capping Layer) Material Source: On Site Cut  Lot Number:	Date Sampled :	28/04/2017		
Material Source : On Site Cut  Lot Number : -  Sample Location : E 484569.413  N 6940009.567  RL 76.500  Test Depth (mm ) : 150  Layer Depth (mm) : -  Maximum Size (mm) : 19  Oversize (%) : -  Oversize Density (t/m³) : -  Field Moisture Content (%) : 21.8  Hilf MDR Number : 228106  Hilf MDR Number : 228106  Hilf MDR Number : Standard  Field Density Method : AS1289.51.1 & 5.7.1  Compactive Effort : Standard  Field Density Method : AS1289.5.1.8 & 5.7.1  Moisture Method : AS1289.2.1.1  Moisture Ratio (%) : 89.5  Field Wate Density (t/m³) : 1.964  Optimum Moisture Content (%) : 24.4  Moisture Variation : 2.4  Pepti Operated Wet Density (t/m³) : 1.965  Minimum Specification : 95  Moisture Specification : 95  Moisture Specification : -  Site Selection : -	Date Tested :	28/04/2017		
Lot Number:  Sample Location:  E 484569.413 N 6940009.567 RL 76.500  Test Depth (mm):  Layer Depth (mm):  - Maximum Size (mm):  19 Oversize Wet (%):  Oversize Dry (%):  Oversize Dry (%):  Oversize Drsity (t/m³):  Field Moisture Content (%):  21.8 Hilf MDR Number:  228106 Hilf MDR Method:  A51289.5.1.1 & 5.7.1 Compactive Effort:  Standard Field Density Method:  A51289.5.1.1 & 5.7.1 Moisture Method:  A51289.5.1.1 Moisture Ratio (%):  89.5 Field Wet Density (t/m³):  1.964 Optimum Moisture Content (%):  2.4 Moisture Variation:  2.4 Moisture Variation:  2.4 Moisture Variation:  2.4 Moisture Variation:  2.5 Moisture Specification:  95 Moisture Specification:  - Soil Description:  - Soil Description:  - Soil Description:  - Soil Description:  -	Material Type :	Bulk Fill (Capping Layer)		
Sample Location: E 484569.413 N 6940009.567 RL 76.500  Test Depth (mm ): 150 Layer Depth (mm):	Material Source :	On Site Cut		
N 6940009.567   RL 76.500	Lot Number :	-		
RL 76.500   RL 7	Sample Location :	E 484569.413		
Test Depth (mm): 150 Layer Depth (mm): - Maximum Size (mm): 19 Oversize Wet (%): - Oversize Dry (%): - Oversize Dry (%): - Oversize Density (t/m³): - Field Moisture Content (%): 21.8 Hilf MDR Number: 228106 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 (%): 89.5 Field Wet Density (t/m³): 1.964 Optimum Moisture Content (%): 24.4 Moisture Variation: 2.4 Peak Converted Wet Density (t/m³): 1.965 Hilf Density Ratio (%): 95 Moisture Specification: 95 Moisture Specification: - Silte Selection: - Soil Description: -		N 6940009.567		
Test Depth (mm): 150 Layer Depth (mm): - Maximum Size (mm): 19 Oversize Wet (%): - Oversize Dry (%): - Oversize Dry (%): - Oversize Density (t/m³): - Field Moisture Content (%): 21.8 Hilf MDR Number: 228106 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 (%): 89.5 Field Wet Density (t/m³): 1.964 Optimum Moisture Content (%): 24.4 Moisture Variation: 2.4 Peak Converted Wet Density (t/m³): 1.965 Hilf Density Ratio (%): 95 Moisture Specification: 95 Moisture Specification: - Silte Selection: - Soil Description: -		RL 76 500		
Layer Depth (mm):		NE 70.300		
Layer Depth (mm):				
Maximum Size (mm): 19 Oversize Wet (%): - Oversize Dry (%): - Oversize Density (t/m³): - Field Molsture Content (%): 21.8 Hilf MDR Number: 228106 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: AS1289.5.1.1 & 5.7.1 Moisture Ratio (%): 89.5 Field Wet Density (t/m³): 1.964 Optimum Moisture Content (%): 24.4 Moisture Variation: 2.4 Peak Converted Wet Density (t/m³): 1.965 Hilf Density Ratio (%): 100.0 Minimum Specification: 95 Moisture Specification: - Site Selection: - Soil Description: -	Test Depth (mm ):	150		
Oversize Wet (%): Oversize Dry (%): Oversize Density (t/m³): Field Moisture Content (%): 21.8 Hilf MDR Number: 228106 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 (%): 89.5 Field Wet Density (t/m³): 1.964 Optimum Moisture Content (%): 24.4 Moisture Variation: Peak Converted Wet Density (t/m³): 1.965 Hilf Density Ratio (%): 1.965 Minimum Specification: 95 Moisture Specification: - Site Selection: - Soil Description: -	Layer Depth (mm):	-		
Oversize Dry (%):       -         Oversize Density (t/m³):       -         Field Moisture Content (%):       21.8         Hilf MDR Number:       228106         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 (%):       89.5         Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Maximum Size (mm):	19		
Oversize Density (t/m³):         -           Field Moisture Content (%):         21.8           Hilf MDR Number:         228106           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 (%):         89.5           Field Wet Density (t/m³):         1.964           Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Oversize Wet (%):	-		
Field Moisture Content (%):  21.8  Hilf MDR Number:  228106  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 (%):  89.5  Field Wet Density (t/m³):  1.964  Optimum Moisture Content (%):  24.4  Moisture Variation:  2.4  Peak Converted Wet Density (t/m³):  Hilf Density Ratio (%):  100.0  Minimum Specification:  95  Moisture Specification:  -  Site Selection:  -  Soil Description:  -  -  -  -  -  -  -  -  -  -  -  -  -	Oversize Dry (%):	-		
Hilf MDR Number: 228106 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 (%): 89.5 Field Wet Density (t/m³): 1.964 Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4 Peak Converted Wet Density (t/m³): 1.965 Hilf Density Ratio (%): 100.0  Minimum Specification: 95 Moisture Specification: - Site Selection: - 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 (%): 89.5  Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  Soil Description: -	Field Moisture Content (%):	21.8		
Compactive Effort: Standard Field Density Method: AS1289.5.8.1 & 5.7.1  Moisture Method: AS1289.2.1.1  Moisture Ratio (%): 89.5  Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  Soil Description: -	Hilf MDR Number :	228106		
Field Density Method: AS1289.5.8.1 & 5.7.1  Moisture Method: AS1289.2.1.1  Moisture Ratio (%): 89.5  Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -	Hilf MDR Method :	AS1289.5.1.1 & 5.7.1		
Moisture Method: AS1289.2.1.1  Moisture Ratio (%): 89.5  Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  Soil Description: -	Compactive Effort :	Standard		
Moisture Ratio (%):  89.5  Field Wet Density (t/m³):  1.964  Optimum Moisture Content (%):  24.4  Moisture Variation:  2.4  Peak Converted Wet Density (t/m³):  1.965  Hilf Density Ratio (%):  100.0  Minimum Specification:  95  Moisture Specification:  -  Soil Description:  -  Soil Description:  -  -  -  -  -  -  -  -  -  -  -  -  -	Field Density Method:	AS1289.5.8.1 & 5.7.1		
Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  Soil Description: -	Moisture Method :	AS1289.2.1.1		
Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Moisture Ratio (%):	89.5		
Moisture Variation :         2.4           Peak Converted Wet Density (t/m³) :         1.965           Hilf Density Ratio (%) :         100.0           Minimum Specification :         95           Moisture Specification :         -           Site Selection :         -           Soil Description :         -	Field Wet Density (t/m³):	1.964		
Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Optimum Moisture Content (%) :	24.4		
(t/m³):     1.763       Hilf Density Ratio (%):     100.0       Minimum Specification:     95       Moisture Specification:     -       Site Selection:     -       Soil Description:     -	Moisture Variation :	2.4		
Hilf Density Ratio (%):  100.0  Minimum Specification:  95  Moisture Specification:  -  Site Selection:  -  Soil Description:  -	Peak Converted Wet Density (t/m³):	1.965		
Moisture Specification:  Site Selection:  Soil Description:  -  Soil Description:	Hilf Density Ratio (%):	100.0		
Site Selection : - Soil Description : -	Minimum Specification :	95		
Soil Description : -	Moisture Specification :	-		
	Site Selection :			
Remarks : -	Soil Description :	-		
	Remarks :	-		



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APPROVED SIGNATORY MOODOL

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#### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 4 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Sample Number :         9         10           Sampling Method :         -         -           Date Sampled :         29/04/2017         29/04/2017           Date Tested :         29/04/2017         29/04/2017           Material Type :         Embankment         Embankment           Material Source :         On Site Cut         On Site Cut           Lol Number :         -         -           Sample Location :         Road 1         Road 1           E 484550.841         F 484586.940           N 6939985.154         N 6939979.621           RL 76.494         RL 75.545           Test Depth (mm) :         -         -           All Sylver Depth (mm) :         -         -           All Sylver Depth (mm) :         -         -           Oversize Dry (%) :         -         -           Oversize Dry (%) :	Location:	EDEN'S CROSSING, STAGE 1		Page	1 of 1
Sampling Method: Date Sampled: Date Sampled: 29/04/2017 29/04/2017 39/04/2017  Material Type: Embankment Embankment  Embankment  Material Source: On Site Cut On Site Cut Lot Number:  E484550.841 E484586.940 N 693995.154 R 76.494 RL 75.545  Test Depth (mm): 150 150 12ayer Depth (mm): 19 19 19 0versize Dry (%): 0versize Dry (%): 19 18.5 17.9 Hilf MDR Number: 278107 18.159.7.1 281084 St.1.1 & 5.7.1 281084 St.1.2 28108  Moisture Ratio (%): AS1289.5.1.1 & 5.7.1 AS1289.5.1.1 Moisture Method: AS1289.5.1.1 & 5.7.1 AS1289.5.1.1 Moisture Method: AS1289.5.1.1 AS1289.5.	Sample Number :	228107	228108		
Date Sampled   29/04/2017   2	Test Number :	9	10		
Date Tested :	Sampling Method :	-	-		
Material Type :         Embankment         Embankment           Material Source :         On Site Cut         On Site Cut           Lot Number :         -         -           Sample Location :         Road 1         Road 1           E 484550.841         E 484586.940         Road 1           N 6939979.621         RL 76.494         RL 75.545           Test Depth (mm) :         150         150           Layer Depth (mm) :         -         -           Maximum Size (mm) :         19         19           Oversize Welfw :         -         -           Oversize Dry (%) :         -         -           Oversize Density (/m²) :         -         -           Oversize Dry (%) :         -         -           Oversize Density (/m²) :         -         -           Oversize Density (/m²) :         -         -           Hilf MDR Number :         228107         228108           Hilf MDR Number :         228107         228108           Hilf MDR Welthod :         A51289.5.1.1 & 5.7.1         A51289.5.1.1 & 5.7.1           Moisture Welthod :         A51289.5.1.1 & 5.7.1         A51289.5.8.1 & 5.7.1           Moisture Ratio (%) :         87.5         87.5	Date Sampled :	29/04/2017	29/04/2017		
Material Source :         On Site Cut         On Site Cut           Lot Number :         -         -           Sample Location :         Road 1         Road 1           E 484550.841         E 484566.940           N 6939985.154         N 6939979.621           RL 76.494         RL 75.545           Test Depth (mm) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Dry (%) :         -           Oversize Dry (%) :         -           Oversize Density (r/m³) :         -           Field Moisture Content (%) :         18.5           Hilf MDR Number :         228107           228108         -           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 :         AS1289.5.1.1 & 5.7.1           Moisture Nation (%) :         87.5           Field Wet Density (r/m²) :         2.050           Optimum Moisture Variation :         2.5           2.5         2.4           Moisture Variation :         2.5           2.5         2.4	Date Tested :	29/04/2017	29/04/2017		
Lot Number:	Material Type :	Embankment	Embankment		
Sample Location : Road 1	Material Source :	On Site Cut	On Site Cut		
E 484550.841	Lot Number :	-	-		
N 6939985.154   N 6939979.621   RL 75.494   RL 75.545   RL 75.545   RL 76.494   RL 75.545   RL 75.545   RL 76.494   RL 75.545   RL 75.545   RL 76.494   RL 75.545   RL 76.494   RL 75.545   RL 76.494   RL 76.545   RL 76.494   RL 76.545   RL 76.494   RL 76.545   RL 76.494   RL 76.49	Sample Location :	Road 1	Road 1		
RL 76.494   RL 75.545   RL 7		E 484550.841	E 484586.940		
Test Depth (mm ) : 150 150 150		N 6939985.154	N 6939979.621		
Layer Depth (mm):		RL 76.494	RL 75.545		
Maximum Size (mm) :       19       19       19         Oversize Wet (%) :       -       -       -         Oversize Dry (%) :       -       -       -         Oversize Density (t/m³) :       -       -       -         Field Moisture Content (%) :       18.5       17.9       -         Hilf MDR Number :       228107       228108       -         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 :       AS1289.5.8.1 & 5.7.1       AS1289.5.8.1 & 5.7.1       -         Moisture Ratio (%) :       87.5       87.5       87.5       -         Field Wet Density (t/m³) :       2.050       2.087       -       -         Optimum Moisture Content (%) :       21.2       20.4       -       -         Moisture Variation :       2.5       2.4       -       -         Peak Converted Wet Density (t/m³) :       1.987       1.971       -       -         Hilf Density Ratio (%) :       10.3.0       106.0       -       -       -	Test Depth (mm ) :	150	150		
Oversize Wet (%):         -         -         -           Oversize Dry (%):         -         -         -           Oversize Density (t/m³):         -         -         -           Field Moisture Content (%):         18.5         17.9         -           Hilf MDR Number:         228107         228108         -           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 (%):         87.5         87.5         -           Field Wet Density (t/m³):         2.050         2.087         -           Optimum Moisture Content (%):         21.2         20.4         -           Moisture Variation:         2.5         2.4         -           Peak Converted Wet Density (t/m³):         1.987         1.971         -           Hilf Density Ratio (%):         103.0         106.0         -         -           Moisture Specification:         -         -         -         -	Layer Depth (mm):	-	-		
Oversize Dry (%):         -         -         -           Oversize Density (t/m³):         -         -         -           Field Moisture Content (%):         18.5         17.9         -           Hilf MDR Number:         228107         228108         -           Hilf MDR Method:         A\$1289.5.1.1 & 5.7.1         A\$1289.5.1.1 & 5.7.1         -           Compactive Effort:         Standard         Standard         -           Field Density Method:         A\$1289.5.8.1 & 5.7.1         A\$1289.5.8.1 & 5.7.1         -           Moisture Method:         A\$1289.2.1.1         A\$1289.2.1.1         -           Moisture Ratio (%):         87.5         87.5         -           Field Wet Density (t/m³):         2.050         2.087         -           Optimum Moisture Content (%):         21.2         20.4         -           Moisture Variation:         2.5         2.4         -           Peak Converted Wet Density (t/m³):         1.987         1.971         -           Hilf Density Ratio (%):         103.0         106.0         -         -           Minimum Specification:         -         -         -         -           Site Selection:         -         -         -	Maximum Size (mm):	19	19		
Oversize Density (t/m³):         -         -           Field Moisture Content (%):         18.5         17.9           Hilf MDR Number:         228107         228108           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 (%):         87.5         87.5           Field Wet Density (t/m³):         2.050         2.087           Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m²):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soil Description:         -         -	Oversize Wet (%):	-	-		
Field Moisture Content (%):         18.5         17.9            Hilf MDR Number:         228107         228108            Hilf MDR Method:         AS1289.5.1.1 & 5.7.1         AS1289.5.1.1 & 5.7.1            Compactive Effort:         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 (%):         87.5         87.5            Field Wet Density (t/m³):         2.050         2.087            Optimum Moisture Content (%):         21.2         20.4            Moisture Variation:         2.5         2.4            Peak Converted Wet Density (t/m²):         1.987         1.971            Hilf Density Ratio (%):         103.0         106.0            Minimum Specification:         -         -            Site Selection:         -         -            Soil Description:         -         -	Oversize Dry (%):	-	-		
Hilf MDR Number: 228107 228108 Hilf MDR Method: AS1289.5.1.1 & 5.7.1 AS1289.5.1.1 & 5.7.1 Compactive Effort: Standard Standard Standard Standard AS1289.5.8.1 & 5.7.1 AS1289.5.8.1 & 5.7.1 Moisture Method: AS1289.5.8.1 & 5.7.1 AS1289.2.1.1 AS1289.2.1.1 Moisture Ratio (%): 87.5 87.5 87.5 Sild Selection: Soil Description:	Oversize Density (t/m³) :	-	-		
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 (%):         87.5         87.5           Field Wet Density (t/m³):         2.050         2.087           Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m³):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soil Description:         -         -	Field Moisture Content (%):	18.5	17.9		
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 (%):         87.5         87.5           Field Wet Density (t/m³):         2.050         2.087           Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m³):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soil Description:         -         -	Hilf MDR Number :	228107	228108		
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 (%) :         87.5         87.5           Field Wet Density (t/m³) :         2.050         2.087           Optimum Moisture Content (%) :         21.2         20.4           Moisture Variation :         2.5         2.4           Peak Converted Wet Density (t/m³) :         1.987         1.971           Hilf Density Ratio (%) :         103.0         106.0           Minimum Specification :         95         95           Moisture Specification :         -         -           Site Selection :         -         -           Soil Description :         -         -	Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Moisture Method :         AS1289.2.1.1         AS1289.2.1.1           Moisture Ratio (%) :         87.5         87.5           Field Wet Density (t/m³) :         2.050         2.087           Optimum Moisture Content (%) :         21.2         20.4           Moisture Variation :         2.5         2.4           Peak Converted Wet Density (t/m³) :         1.987         1.971           Hilf Density Ratio (%) :         103.0         106.0           Minimum Specification :         95         95           Moisture Specification :         -         -           Site Selection :         -         -           Soil Description :         -         -	Compactive Effort :	Standard	Standard		
Moisture Ratio (%):       87.5       87.5       87.5         Field Wet Density (t/m³):       2.050       2.087          Optimum Moisture Content (%):       21.2       20.4          Moisture Variation:       2.5       2.4          Peak Converted Wet Density (t/m³):       1.987       1.971          Hilf Density Ratio (%):       103.0       106.0          Minimum Specification:       95       95          Moisture Specification:       -       -          Site Selection:       -       -          Soil Description:       -       -	Field Density Method:	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Field Wet Density (t/m³):         2.050         2.087           Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m³):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soil Description:         -         -	Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Optimum Moisture Content (%):         21.2         20.4	Moisture Ratio (%):	87.5	87.5		
Moisture Variation :         2.5         2.4	Field Wet Density (t/m³):	2.050	2.087		
Peak Converted Wet Density (t/m³):         1.987         1.971	Optimum Moisture Content (%) :	21.2	20.4		
(t/m³):         1.987         1.971         <		2.5	2.4		
Hilf Density Ratio (%):         103.0         106.0         95		1.987	1.971		
Moisture Specification: Site Selection: Soil Description:		103.0	106.0		
Site Selection : Soil Description :	Minimum Specification :	95	95		
Soil Description :	Moisture Specification :	-	-		
	Site Selection :	=	=		
Remarks: -	Soil Description :	-	-		
	Remarks :	-	•	<u> </u>	•



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## **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. Geolechnical 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

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www.morrisongeo.com.au

Brisbane Office Job Number: DL17/131

Ref No: 12061 Author: L. McDowall

20th June 2017

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 430** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 430 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

Tests performed on filling operations near Lot 430 are representative of the fill constructed on Lot 430. The closest test to Lot 430 was performed on Lot 431. A summary of tests representative of the fill constructed on Lot 430 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number Date Tested Density Ratio Achieved				
431	431 8 28 <sup>th</sup> April 2017 100.0				
Road 1 10 29 <sup>th</sup> April 2017 106.0					
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 430 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 430 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 4<sup>th</sup> May 2017.

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 DL17/131 – 3 and 4

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12061 CCA Winslow



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#### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 3 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017 EARTHWORKS SUPERVISION Project Name: Order Number : 33832 Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Sample Number   228106	Location:	DEN'S CROSSING , STAGE 1 Page 1 of 1		1 of 1	
Sampling Method :	Sample Number :	228106			
Date Sampled: 28/04/2017 Date Tested: 28/04/2017 Date Tested: 28/04/2017 Material Type: Bulk Fill (Capping Layer) Material Source: On Site Cut Lot Number:	Test Number :	8			
Date Tested :	Sampling Method :	-			
Material Type :         Bulk FIII (Capping Layer)           Material Source :         On Site Cut           Lot Number :         -           Sample Location :         £ 484569.413           N 6940009.567         RL 76.500           Test Depth (mm ) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Dry (%) :         -           Oversize Dry (%) :         -           Oversize Density (t/m³) :         -           Field Molsture Content (%) :         21.8           Hilf MDR Number :         228106           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 Nation (%) :         89.5           Poptimum Moisture Content (%) :         24.4           Moisture Variation :         2.4           Peak Converted Wet Density (t/m³) :         1.965           Hilf Density Ratio (%) :         1.905           Minimum Specification :         -           Site Selection :         -           Soil Description :         -	Date Sampled :	28/04/2017			
Material Source :         On Site Cut           Lot Number :         -           Sample Location :         £ 484569,413           N 6940009,567         RL 76,500           Test Depth (mm) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Wet (%) :         -           Oversize Dry (%) :         -           Oversize Dry (%) :         -           Oversize Drassity (/m³) :         -           Field Moisture Content (%) :         21.8           Hilf MDR Number :         228106           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 Nothod :         AS1289.2.1.1           Moisture Variation :         2.4           Peak Cancerted Wet Density (f/m³) :         1.964           Optimum Moisture Variation :         2.4           Peak Cancerted Wet Density (f/m²) :         1.965           Hilf Density Ratio (%) :         100.0           Minimum Specification :         -           Site Selection :         -	Date Tested :	28/04/2017			
Lot Number:	Material Type :	Bulk Fill (Capping Layer)			
Sample Location: E 484569.413 N 6940009.567 RL 76.500  Test Depth (mm ): 150 Layer Depth (mm): -	Material Source :	On Site Cut			
N 6940009.567   RL 76.500	Lot Number :	-			
RL 76.500  Test Depth (mm):	Sample Location :	E 484569.413			
Test Depth (mm):		N 6940009.567			
Test Depth (mm):		RL 76 500			
Layer Depth (mm):  Maximum Size (mm):  19  Oversize Wet (%6):  Oversize Dry (%):  Oversize Density (t/m³):  Field Moisture Content (%):  Hilf MDR Number:  228106  Hilf MDR Number:  228106  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 (%):  89.5  Field Wet Density (t/m³):  1.964  Optimum Moisture Content (%):  24.4  Moisture Variation:  2.4  Peak Converted Wet Density (t/m³):  1.965  Hilf Density Ratio (%):  Minimum Specification:  95  Moisture Specification:  -  Soil Description:  -  Soil Description:		70,000			
Layer Depth (mm):  Maximum Size (mm):  19  Oversize Wet (%6):  Oversize Dry (%):  Oversize Density (t/m³):  Field Moisture Content (%):  Hilf MDR Number:  228106  Hilf MDR Number:  228106  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 (%):  89.5  Field Wet Density (t/m³):  1.964  Optimum Moisture Content (%):  24.4  Moisture Variation:  2.4  Peak Converted Wet Density (t/m³):  1.965  Hilf Density Ratio (%):  Minimum Specification:  95  Moisture Specification:  -  Soil Description:  -  Soil Description:					
Maximum Size (mm):       19         Oversize Wet (%):       -         Oversize Density (t/m³):       -         Field Moisture Content (%):       21.8         Hilf MDR Number:       228106         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:       AS1289.5.1.1 & 5.7.1         Moisture Ratio (%):       89.5         Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -		150			
Oversize Wet (%):         -           Oversize Dry (%):         -           Oversize Density (t/m³):         -           Field Moisture Content (%):         21.8           Hilf MDR Number:         228106           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 (%):         89.5           Field Wet Density (t/m³):         1.964           Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Layer Depth (mm):	-			
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Oversize Density (t/m³):         -           Field Moisture Content (%):         21.8           Hilf MDR Number:         228106           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 (%):         89.5           Field Wet Density (t/m³):         1.964           Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Oversize Wet (%):	-			
Field Moisture Content (%):       21.8         Hilf MDR Number:       228106         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 (%):       89.5         Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Oversize Dry (%):	-			
Hilf MDR Number: 228106 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 (%): 89.5  Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  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 (%): 89.5  Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  Soil Description: -	Field Moisture Content (%):	21.8			
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Field Density Method :         AS1289.5.8.1 & 5.7.1           Moisture Method :         AS1289.2.1.1           Moisture Ratio (%) :         89.5           Field Wet Density (t/m³) :         1.964           Optimum Moisture Content (%) :         24.4           Moisture Variation :         2.4           Peak Converted Wet Density (t/m³) :         1.965           Hilf Density Ratio (%) :         100.0           Minimum Specification :         95           Moisture Specification :         -           Site Selection :         -           Soil Description :         -	Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Moisture Method :       AS1289.2.1.1         Moisture Ratio (%) :       89.5         Field Wet Density (t/m³) :       1.964         Optimum Moisture Content (%) :       24.4         Moisture Variation :       2.4         Peak Converted Wet Density (t/m³) :       1.965         Hilf Density Ratio (%) :       100.0         Minimum Specification :       95         Moisture Specification :       -         Site Selection :       -         Soil Description :       -	Compactive Effort :	Standard			
Moisture Ratio (%):       89.5         Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Field Density Method:	AS1289.5.8.1 & 5.7.1			
Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Moisture Method :	AS1289.2.1.1			
Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Moisture Ratio (%):	89.5			
Moisture Variation :         2.4           Peak Converted Wet Density (t/m²) :         1.965           Hilf Density Ratio (%) :         100.0           Minimum Specification :         95           Moisture Specification :         -           Site Selection :         -           Soil Description :         -	Field Wet Density (t/m³):	1.964			
Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Optimum Moisture Content (%) :	24.4			
(t/m³):     1:703       Hilf Density Ratio (%):     100.0       Minimum Specification:     95       Moisture Specification:     -       Site Selection:     -       Soil Description:     -		2.4			
Hilf Density Ratio (%):  Minimum Specification:  95  Moisture Specification:  -  Site Selection:  -  Soil Description:  -  100.0	Peak Converted Wet Density	1.965			
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Site Selection : - Soil Description : -	Minimum Specification :	95			
Site Selection : - Soil Description : -	Moisture Specification :	-			
	Site Selection :	-			
Remarks : -	Soil Description :	-			
	Remarks :	-		•	



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY MOODOL

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

Document Code RF89-11



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#### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 4 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Material Source :         On Site Cut         On Site Cut           Lot Number :         -         -           Sample Location :         Road 1         Road 1           E 484550.841         E 484566.940           N 6939985.154         N 6939979.621           RL 76.494         RL 75.545           Test Depth (mm) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Dry (%) :         -           Oversi	Location:	EDEN'S CROSSING , STAGE 1		Page 1 of 1	
Sampling Method:	Sample Number :	228107	228108		
Date Sampled   29/04/2017   2	Test Number :	9	10		
Date Tested :	Sampling Method :	-	-		
Material Type :         Embankment         Embankment           Material Source :         On Site Cut         On Site Cut           Lot Number :         -         -           Sample Location :         Road 1         Road 1           E 484550.841         E 484566.940         N 6939995.154         N 6939979.621           RL 76.494         RL 75.545         RL 75.545           Test Depth (mm) :         150         150           Layer Depth (mm) :         -         -           Maximum Size (mm) :         19         19           Oversize Dry (%) :         -         -	Date Sampled :	29/04/2017	29/04/2017		
Material Source :         On Site Cut         On Site Cut           Lot Number :         -         -           Sample Location :         Road 1         Road 1           E 484550.841         E 484566.940           N 6939985.154         N 6939979.621           RL 76.494         RL 75.545           Test Depth (mm) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Dry (%) :         -           Oversi	Date Tested :	29/04/2017	29/04/2017		
Lot Number:	Material Type :	Embankment	Embankment		
Sample Location:  Road 1 E 484550.841 R 484550.841 R 6939979.621 RL 76.494 RL 75.545  Test Depth (mm ): Layer Depth (mm): Layer Depth (mm)	Material Source :	On Site Cut	On Site Cut		
E 484550.841	Lot Number :	-	-		
N 6939985.154   N 6939979.621   RL 76.494   RL 75.545   RL 75.545   RL 76.494   RL 75.545   RL 75.545   RL 76.494   RL 75.545   RL 75.545   RL 76.494   RL 75.545   RL 76.494   RL 75.545   RL 76.494   RL 76.545   RL 76.494   RL 76.49	Sample Location :	Road 1	Road 1		
Rt 76.494 Rt 75.545  Test Depth (mm ): 150 150 150 150 150 150 150 150 150 150		E 484550.841	E 484586.940		
Test Depth (mm): 150 150 150		N 6939985.154	N 6939979.621		
Layer Depth (mm):		RL 76.494	RL 75.545		
Maximum Size (mm) :       19       19         Oversize Wet (%) :       -       -         Oversize Dry (%) :       -       -         Oversize Density (t/m³) :       -       -         Field Moisture Content (%) :       18.5       17.9         Hilf MDR Number :       228107       228108         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 :       AS1289.5.1.1 & 5.7.1       AS1289.5.8.1 & 5.7.1         Moisture Ratio (%) :       87.5       87.5         Field Wet Density (t/m³) :       2.050       2.087         Optimum Moisture Content (%) :       21.2       20.4         Moisture Variation :       2.5       2.4         Peak Converted Wet Density (t/m²) :       1.987       1.971         Hilf Density Ratio (%) :       103.0       106.0         Minimum Specification :       95       95         Moisture Specification :       -       -         Site Selection :       -       -	Test Depth (mm ) :	150	150		
Oversize Wet (%):         -	Layer Depth (mm):	-	-		
Oversize Dry (%):         -         -           Oversize Density (t/m³):         -         -           Field Moisture Content (%):         18.5         17.9           Hilf MDR Number:         228107         228108           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 (%):         87.5         87.5           Field Wet Density (t/m³):         2.050         2.087           Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m³):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -	Maximum Size (mm):	19	19		
Oversize Density (t/m³):         -         -           Field Moisture Content (%):         18.5         17.9           Hilf MDR Number:         228107         228108           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 (%):         87.5         87.5           Field Wet Density (t/m³):         2.050         2.087           Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m²):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soll Description:         -         -	Oversize Wet (%):	-	-		
Field Moisture Content (%):  Hilf MDR Number:  228107  228108  Hilf MDR Method:  AS1289.5.1.1 & 5.7.1  Compactive Effort:  Standard  Standard  Field Density Method:  AS1289.5.8.1 & 5.7.1  Moisture Method:  AS1289.5.8.1 & 5.7.1  Moisture Ratio (%):  87.5  Field Wet Density (t/m³):  2050  2087  Optimum Moisture Content (%):  21.2  20.4  Moisture Variation:  2.5  2.4  Peak Converted Wet Density (t/m³):  1.987  1.971  Hilf Density Ratio (%):  103.0  Minimum Specification:  95  95  Moisture Specification:  -  Site Selection:  -  Soil Description:  -  -  -  -  -  -  -  -  -  -  -  -  -	Oversize Dry (%):	-	-		
Hilf MDR Number: 228107 228108 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 (%): 87.5 87.5  Field Wet Density (t/m³): 2.050 2.087  Optimum Moisture Content (%): 21.2 20.4  Moisture Variation: 2.5 2.4  Peak Converted Wet Density (t/m³): 1.987 1.971  Hilf Density Ratio (%): 103.0 106.0  Minimum Specification: 95 95  Moisture Specification:	Oversize Density (t/m³) :	-	-		
Hilf MDR Method: 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 AS1289.2.1.1 AS128	Field Moisture Content (%):	18.5	17.9		
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 (%):         87.5         87.5           Field Wet Density (t/m³):         2.050         2.087           Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m³):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soil Description:         -         -	Hilf MDR Number :	228107	228108		
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 (%):         87.5         87.5           Field Wet Density (t/m³):         2.050         2.087           Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m³):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soil Description:         -         -	Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Moisture Method :         AS1289.2.1.1         AS1289.2.1.1           Moisture Ratio (%) :         87.5         87.5           Field Wet Density (t/m³) :         2.050         2.087           Optimum Moisture Content (%) :         21.2         20.4           Moisture Variation :         2.5         2.4           Peak Converted Wet Density (t/m³) :         1.987         1.971           Hilf Density Ratio (%) :         103.0         106.0           Minimum Specification :         95         95           Moisture Specification :         -         -           Site Selection :         -         -           Soil Description :         -         -	Compactive Effort :	Standard	Standard		
Moisture Ratio (%):       87.5       87.5         Field Wet Density (t/m³):       2.050       2.087         Optimum Moisture Content (%):       21.2       20.4         Moisture Variation:       2.5       2.4         Peak Converted Wet Density (t/m³):       1.987       1.971         Hilf Density Ratio (%):       103.0       106.0         Minimum Specification:       95       95         Moisture Specification:       -       -         Site Selection:       -       -         Soil Description:       -       -	Field Density Method:	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Field Wet Density (t/m³):       2.050       2.087         Optimum Moisture Content (%):       21.2       20.4         Moisture Variation:       2.5       2.4         Peak Converted Wet Density (t/m³):       1.987       1.971         Hilf Density Ratio (%):       103.0       106.0         Minimum Specification:       95       95         Moisture Specification:       -       -         Site Selection:       -       -         Soil Description:       -       -	Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Optimum Moisture Content (%):         21.2         20.4           Moisture Variation:         2.5         2.4           Peak Converted Wet Density (t/m³):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soil Description:         -         -	Moisture Ratio (%):	87.5	87.5		
Moisture Variation :         2.5         2.4           Peak Converted Wet Density (t/m³) :         1.987         1.971           Hilf Density Ratio (%) :         103.0         106.0           Minimum Specification :         95         95           Moisture Specification :         -         -           Site Selection :         -         -           Soil Description :         -         -	Field Wet Density (t/m³):	2.050	2.087		
Peak Converted Wet Density (t/m³):         1.987         1.971           Hilf Density Ratio (%):         103.0         106.0           Minimum Specification:         95         95           Moisture Specification:         -         -           Site Selection:         -         -           Soil Description:         -         -	Optimum Moisture Content (%):	21.2	20.4		
(t/m³):     1.987       Hilf Density Ratio (%):     103.0       Minimum Specification:     95       Moisture Specification:     -       Site Selection:     -       Soil Description:     -	Moisture Variation :	2.5	2.4		
Hilf Density Ratio (%):     103.0     106.0       Minimum Specification:     95     95       Moisture Specification:     -     -       Site Selection:     -     -       Soil Description:     -     -		1.987	1.971		
Moisture Specification :         - <td></td> <td>103.0</td> <td>106.0</td> <td></td> <td></td>		103.0	106.0		
Site Selection : Soil Description :	Minimum Specification :	95	95		
Soil Description :	Moisture Specification :	-	-		
	Site Selection :	-	-		
Remarks: -	Soil Description :	-	-		
	Remarks :	-	•	•	•



APPROVED SIGNATORY MOODOL

## **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. Geolechnical 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.



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www.morrisongeo.com.au

Brisbane Office Job Number: DL17/131

Ref No: 12062 Author: L. McDowall

20th June 2017

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 431** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 431 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 431 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
431	8	28 <sup>th</sup> April 2017	100.0	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 431 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 431 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 4<sup>th</sup> May 2017.

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 DL17/131 – 3

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12062 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: DL17/131 - 3 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017 EARTHWORKS SUPERVISION Project Name: Order Number : 33832 Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Sample Number   228106	Location:	DEN'S CROSSING , STAGE 1 Page 1 of 1		1 of 1	
Sampling Method :	Sample Number :	228106			
Date Sampled: 28/04/2017 Date Tested: 28/04/2017 Date Tested: 28/04/2017 Material Type: Bulk Fill (Capping Layer) Material Source: On Site Cut Lot Number:	Test Number :	8			
Date Tested :	Sampling Method :	-			
Material Type :         Bulk FIII (Capping Layer)           Material Source :         On Site Cut           Lot Number :         -           Sample Location :         £ 484569.413           N 6940009.567         RL 76.500           Test Depth (mm ) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Dry (%) :         -           Oversize Dry (%) :         -           Oversize Density (t/m³) :         -           Field Molsture Content (%) :         21.8           Hilf MDR Number :         228106           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 Nation (%) :         89.5           Poptimum Moisture Content (%) :         24.4           Moisture Variation :         2.4           Peak Converted Wet Density (t/m³) :         1.965           Hilf Density Ratio (%) :         1.905           Minimum Specification :         -           Site Selection :         -           Soil Description :         -	Date Sampled :	28/04/2017			
Material Source :         On Site Cut           Lot Number :         -           Sample Location :         £ 484569,413           N 6940009,567         RL 76,500           Test Depth (mm) :         150           Layer Depth (mm) :         -           Maximum Size (mm) :         19           Oversize Wet (%) :         -           Oversize Dry (%) :         -           Oversize Dry (%) :         -           Oversize Drassity (/m³) :         -           Field Moisture Content (%) :         21.8           Hilf MDR Number :         228106           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 Nothod :         AS1289.2.1.1           Moisture Variation :         2.4           Peak Cancerted Wet Density (f/m³) :         1.964           Optimum Moisture Variation :         2.4           Peak Cancerted Wet Density (f/m²) :         1.965           Hilf Density Ratio (%) :         100.0           Minimum Specification :         -           Site Selection :         -	Date Tested :	28/04/2017			
Lot Number:	Material Type :	Bulk Fill (Capping Layer)			
Sample Location: E 484569.413 N 6940009.567 RL 76.500  Test Depth (mm ): 150 Layer Depth (mm): -	Material Source :	On Site Cut			
N 6940009.567   RL 76.500	Lot Number :	-			
RL 76.500  Test Depth (mm):	Sample Location :	E 484569.413			
Test Depth (mm):		N 6940009.567			
Test Depth (mm):		RL 76 500			
Layer Depth (mm):  Maximum Size (mm):  19  Oversize Wet (%6):  Oversize Dry (%):  Oversize Density (t/m³):  Field Moisture Content (%):  Hilf MDR Number:  228106  Hilf MDR Number:  228106  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 (%):  89.5  Field Wet Density (t/m³):  1.964  Optimum Moisture Content (%):  24.4  Moisture Variation:  2.4  Peak Converted Wet Density (t/m³):  1.965  Hilf Density Ratio (%):  Minimum Specification:  95  Moisture Specification:  -  Soil Description:  -  Soil Description:		70,000			
Layer Depth (mm):  Maximum Size (mm):  19  Oversize Wet (%6):  Oversize Dry (%):  Oversize Density (t/m³):  Field Moisture Content (%):  Hilf MDR Number:  228106  Hilf MDR Number:  228106  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 (%):  89.5  Field Wet Density (t/m³):  1.964  Optimum Moisture Content (%):  24.4  Moisture Variation:  2.4  Peak Converted Wet Density (t/m³):  1.965  Hilf Density Ratio (%):  Minimum Specification:  95  Moisture Specification:  -  Soil Description:  -  Soil Description:					
Maximum Size (mm):       19         Oversize Wet (%):       -         Oversize Density (t/m³):       -         Field Moisture Content (%):       21.8         Hilf MDR Number:       228106         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:       AS1289.5.1.1 & 5.7.1         Moisture Ratio (%):       89.5         Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -		150			
Oversize Wet (%):         -           Oversize Dry (%):         -           Oversize Density (t/m³):         -           Field Moisture Content (%):         21.8           Hilf MDR Number:         228106           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 (%):         89.5           Field Wet Density (t/m³):         1.964           Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Layer Depth (mm):	-			
Oversize Dry (%):         -           Oversize Density (t/m³):         -           FleId Moisture Content (%):         21.8           Hilf MDR Number:         228106           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 (%):         89.5           Field Wet Density (t/m³):         1.964           Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -	Maximum Size (mm):	19			
Oversize Density (t/m³):         -           Field Moisture Content (%):         21.8           Hilf MDR Number:         228106           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 (%):         89.5           Field Wet Density (t/m³):         1.964           Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Oversize Wet (%):	-			
Field Moisture Content (%):       21.8         Hilf MDR Number:       228106         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 (%):       89.5         Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Oversize Dry (%):	-			
Hilf MDR Number: 228106 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 (%): 89.5  Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  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 (%): 89.5  Field Wet Density (t/m³): 1.964  Optimum Moisture Content (%): 24.4  Moisture Variation: 2.4  Peak Converted Wet Density (t/m³): 1.965  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  Soil Description: -	Field Moisture Content (%):	21.8			
Compactive Effort:         Standard           Field Density Method:         AS1289.5.8.1 & 5.7.1           Moisture Method:         AS1289.2.1.1           Moisture Ratio (%):         89.5           Field Wet Density (t/m³):         1.964           Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Hilf MDR Number :	228106			
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Moisture Method :       AS1289.2.1.1         Moisture Ratio (%) :       89.5         Field Wet Density (t/m³) :       1.964         Optimum Moisture Content (%) :       24.4         Moisture Variation :       2.4         Peak Converted Wet Density (t/m³) :       1.965         Hilf Density Ratio (%) :       100.0         Minimum Specification :       95         Moisture Specification :       -         Site Selection :       -         Soil Description :       -	Compactive Effort :	Standard			
Moisture Ratio (%):       89.5         Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Field Density Method:	AS1289.5.8.1 & 5.7.1			
Field Wet Density (t/m³):       1.964         Optimum Moisture Content (%):       24.4         Moisture Variation:       2.4         Peak Converted Wet Density (t/m³):       1.965         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Moisture Method :	AS1289.2.1.1			
Optimum Moisture Content (%):         24.4           Moisture Variation:         2.4           Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Moisture Ratio (%):	89.5			
Moisture Variation :         2.4           Peak Converted Wet Density (t/m²) :         1.965           Hilf Density Ratio (%) :         100.0           Minimum Specification :         95           Moisture Specification :         -           Site Selection :         -           Soil Description :         -	Field Wet Density (t/m³):	1.964			
Peak Converted Wet Density (t/m³):         1.965           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Optimum Moisture Content (%) :	24.4			
(t/m³):     1:703       Hilf Density Ratio (%):     100.0       Minimum Specification:     95       Moisture Specification:     -       Site Selection:     -       Soil Description:     -		2.4			
Hilf Density Ratio (%):  Minimum Specification:  95  Moisture Specification:  -  Site Selection:  -  Soil Description:  -  100.0	Peak Converted Wet Density	1.965			
Moisture Specification : - Site Selection : - Soil Description : - Soil	` '	100.0			
Site Selection : - Soil Description : -	Minimum Specification :	95			
Site Selection : - Soil Description : -	Moisture Specification :	-			
	Site Selection :	-			
Remarks : -	Soil Description :	-			
	Remarks :	-		•	



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

Document Code RF89-11

## **Important Information about Your**

## **Geotechnical Engineering Report**

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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. Geolechnical 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

# 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



**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: DL17/131

Ref No: 12063 Author: L. McDowall

20th June 2017

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 432** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 432 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 432 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
432	7	28 <sup>th</sup> April 2017	106.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 432 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 432 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 4<sup>th</sup> May 2017.

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 DL17/131 – 2

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12063 CCA Winslow



DL17/131 - 2

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

Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW Address:

1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017 Order Number: 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1 Location: Page 1 of 1 EDEN'S CROSSING, STAGE 1

Eddation:	EBEN S GROSSING , STAGE 1		1 3 1	
Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number:	-	-	-	-
Sample Location :	E 484514.964	E 484527.927	E 484542.200	E 484555.166
	N 6940016.926	N 6940019.169	N 6940006.621	N 6940008.777
	RL 78.351	RL 77.814	RL 77.331	RL 77.067
Test Death (com)	450	450	450	450
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 (%):	18.1	20.5	15.6	18.9
Hilf MDR Number:	228102	228103	228104	228105
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 (%):	79	82.5	87	89.5
Field Wet Density (t/m³):	2.068	2.026	2.138	2.133
Optimum Moisture Content (%) :	22.9	24.8	18.0	21.2
Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³):	1.942	1.927	2.094	2.016
Hilf Density Ratio (%):	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-		·	
•				



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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

# 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.



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Brisbane Office Job Number: DL17/131

Ref No: 12064 Author: L. McDowall

20th June 2017

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 433** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 433 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 433 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
433	6	28 <sup>th</sup> April 2017	102.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 433 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 433 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 4<sup>th</sup> May 2017.

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 DL17/131 – 2

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12064 CCA Winslow



DL17/131 - 2

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Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW Address:

1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017 Order Number: 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1 Location: Page 1 of 1 EDEN'S CROSSING, STAGE 1

Eddation:	EBEN S GROSSING , STAGE 1		1 3 1	
Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number:	-	-	-	-
Sample Location :	E 484514.964	E 484527.927	E 484542.200	E 484555.166
	N 6940016.926	N 6940019.169	N 6940006.621	N 6940008.777
	RL 78.351	RL 77.814	RL 77.331	RL 77.067
Test Death (com)	450	450	450	450
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 (%):	18.1	20.5	15.6	18.9
Hilf MDR Number:	228102	228103	228104	228105
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 (%):	79	82.5	87	89.5
Field Wet Density (t/m³):	2.068	2.026	2.138	2.133
Optimum Moisture Content (%) :	22.9	24.8	18.0	21.2
Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³):	1.942	1.927	2.094	2.016
Hilf Density Ratio (%):	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-		·	
•				



APPROVED SIGNATORY MOODOL

# **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. Geolechnical 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.

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

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Brisbane Office
Job Number: DL17/131

Ref No: 12065 Author: L. McDowall

20th June 2017

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 434** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 434 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 434 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
434	5	28 <sup>th</sup> April 2017	105.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 434 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 434 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 4<sup>th</sup> May 2017.

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 DL17/131 – 2

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12065 CCA Winslow



DL17/131 - 2

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Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW Address:

1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017 Order Number: 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1 Location: Page 1 of 1 EDEN'S CROSSING, STAGE 1

Eddation:	EBEN S GROSSING , STAGE 1		1 3 1	
Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number:	-	-	-	-
Sample Location :	E 484514.964	E 484527.927	E 484542.200	E 484555.166
	N 6940016.926	N 6940019.169	N 6940006.621	N 6940008.777
	RL 78.351	RL 77.814	RL 77.331	RL 77.067
Test Death (com)	450	450	450	450
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 (%):	18.1	20.5	15.6	18.9
Hilf MDR Number:	228102	228103	228104	228105
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
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Peak Converted Wet Density (t/m³):	1.942	1.927	2.094	2.016
Hilf Density Ratio (%):	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-		·	
•				



APPROVED SIGNATORY MOODOL

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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.



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Brisbane Office
Job Number: DL17/131

Ref No: 12066 Author: L. McDowall

20th June 2017

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 435** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 435 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 435 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
435	4	28 <sup>th</sup> April 2017	106.5		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 435 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 435 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 4<sup>th</sup> May 2017.

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 DL17/131 – 2

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12066 CCA Winslow



DL17/131 - 2

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Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW Address:

1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017 Order Number: 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1 Location: Page 1 of 1 EDEN'S CROSSING, STAGE 1

Eddation:	EBEN S GROSSING , STAGE 1		1 3 1	
Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number:	-	-	-	-
Sample Location :	E 484514.964	E 484527.927	E 484542.200	E 484555.166
	N 6940016.926	N 6940019.169	N 6940006.621	N 6940008.777
	RL 78.351	RL 77.814	RL 77.331	RL 77.067
Test Death (com)	450	450	450	450
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 (%):	18.1	20.5	15.6	18.9
Hilf MDR Number:	228102	228103	228104	228105
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 (%):	79	82.5	87	89.5
Field Wet Density (t/m³):	2.068	2.026	2.138	2.133
Optimum Moisture Content (%) :	22.9	24.8	18.0	21.2
Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³):	1.942	1.927	2.094	2.016
Hilf Density Ratio (%):	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-		·	
•				



APPROVED SIGNATORY MOODOL

# **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. Geolechnical 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

# 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.

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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.

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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

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Brisbane Office Job Number: DL17/131

Ref No: 12067 Author: L. McDowall

20th June 2017

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 436** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 436 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

Tests performed on filling operations near Lot 436 are representative of the fill constructed on Lot 436. The closest test to Lot 436 was performed on Lot 435. A summary of tests representative of the fill constructed on Lot 436 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
435	4	28 <sup>th</sup> April 2017	106.5		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 436 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 436 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 4<sup>th</sup> May 2017.

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 DL17/131 – 2

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12067 CCA Winslow



DL17/131 - 2

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Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW Address:

1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017 Order Number: 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1 Location: Page 1 of 1 EDEN'S CROSSING, STAGE 1

Eddation:	EBEN S GROSSING , STAGE 1		1 3 1	
Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number:	-	-	-	-
Sample Location :	E 484514.964	E 484527.927	E 484542.200	E 484555.166
	N 6940016.926	N 6940019.169	N 6940006.621	N 6940008.777
	RL 78.351	RL 77.814	RL 77.331	RL 77.067
Test Death (com)	450	450	450	450
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 (%):	18.1	20.5	15.6	18.9
Hilf MDR Number:	228102	228103	228104	228105
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
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Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³):	1.942	1.927	2.094	2.016
Hilf Density Ratio (%):	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-		·	
•				



APPROVED SIGNATORY MOODOL

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

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- · not prepared for the specific site explored, or
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 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,

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

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#### 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

# 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.



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Brisbane Office Job Number: DL17/131

Ref No: 12068 Author: L. McDowall

20th June 2017

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 437** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 437 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

Tests performed on filling operations near Lot 437 are representative of the fill constructed on Lot 437. The closest test to Lot 437 was performed on Lot 438. A summary of tests representative of the fill constructed on Lot 437 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
438	1	27 <sup>th</sup> April 2017	104.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 437 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 437 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 4<sup>th</sup> May 2017.

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 DL17/131 – 1

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12068 CCA Winslow



DL17/131 - 1

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Report Number:

### Hilf Density Ratio Report

Client: CCA WINSLOW
Address: 1587 IPSWICH ROAD ROCKLEA OLD 4106

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Name: EARTHWORKS SUPERVISION
Project Number: DL17/131

Project Number: DL17/131 Test Method: AS1289.5.8.1 & 5.7.1 Location: EDEN'S CROSSING , STAGE 1 Page 1 of 1

Location.	EDEN 3 CROSSING , STAGE I		rage	
Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602	E 484455.472	E 484420.595	
	N 6940018.677	N 6940021.843	N 6940032.744	
	RL 80.936	RL 81.942	RL 82.556	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):			_	
Oversize Dry (76):  Oversize Density (t/m³):		-	_	
Field Moisture Content (%):	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
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 (%):	89.5	89.5	84.5	
Field Wet Density (t/m³):	1.963	1.918	1.911	
Optimum Moisture Content (%) :	27.6	24.4	22.8	
Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³):	1.888	1.875	1.891	
Hilf Density Ratio (%):	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	=	=	-	
Soil Description :	-	-	-	
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. Geolechnical 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

# 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

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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

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/131

Ref No: 12069 Author: L. McDowall

20th June 2017

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 438** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 438 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 438 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %			
438	1	27 <sup>th</sup> April 2017	104.0			
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.						

Fill constructed on Lot 438 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 438 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 4<sup>th</sup> May 2017.

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 DL17/131 – 1

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12069 CCA Winslow



DL17/131 - 1

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Report Number:

### Hilf Density Ratio Report

Client: CCA WINSLOW
Address: 1587 IPSWICH ROAD ROCKLEA OLD 4106

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Name: EARTHWORKS SUPERVISION
Project Number: DL17/131

Project Number: DL17/131 Test Method: AS1289.5.8.1 & 5.7.1 Location: EDEN'S CROSSING , STAGE 1 Page 1 of 1

Location.	EDEN 3 CROSSING , STAGE I		rage	
Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602	E 484455.472	E 484420.595	
	N 6940018.677	N 6940021.843	N 6940032.744	
	RL 80.936	RL 81.942	RL 82.556	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):			_	
Oversize Dry (76):  Oversize Density (t/m³):		-	_	
Field Moisture Content (%):	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
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	
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Peak Converted Wet Density (t/m³):	1.888	1.875	1.891	
Hilf Density Ratio (%):	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			
	•			



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#### **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.



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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/131

Ref No: 12070 Author: L. McDowall

20<sup>th</sup> June 2017

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 439** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 439 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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.







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 439 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
439	2	27 <sup>th</sup> April 2017	102.5	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 439 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 439 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 4<sup>th</sup> May 2017.

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 DL17/131 – 1

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12070 CCA Winslow



DL17/131 - 1

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
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Report Number:

### Hilf Density Ratio Report

Client: CCA WINSLOW
Address: 1587 IPSWICH ROAD ROCKLEA OLD 4106

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Name: EARTHWORKS SUPERVISION
Project Number: DL17/131

Project Number: DL17/131 Test Method: AS1289.5.8.1 & 5.7.1 Location: EDEN'S CROSSING , STAGE 1 Page 1 of 1

Location.	EDEN 3 CROSSING , STAGE I		rage	
Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602	E 484455.472	E 484420.595	
	N 6940018.677	N 6940021.843	N 6940032.744	
	RL 80.936	RL 81.942	RL 82.556	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):			_	
Oversize Dry (76):  Oversize Density (t/m³):		-	_	
Field Moisture Content (%):	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
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 (%):	89.5	89.5	84.5	
Field Wet Density (t/m³):	1.963	1.918	1.911	
Optimum Moisture Content (%) :	27.6	24.4	22.8	
Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³):	1.888	1.875	1.891	
Hilf Density Ratio (%):	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	=	=	-	
Soil Description :	-	-	-	
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. Geolechnical 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.

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

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Brisbane Office
Job Number: DL17/131

Ref No: 12071 Author: L. McDowall

20th June 2017

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 440** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 440 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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.







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 440 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number Test Number Date Tested Density Ratio Achieved				
440	3	27 <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 440 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 440 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 4<sup>th</sup> May 2017.

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 Report DL17/131 – 1

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12071 CCA Winslow



DL17/131 - 1

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

Report Number:

### Hilf Density Ratio Report

Client: CCA WINSLOW
Address: 1587 IPSWICH ROAD ROCKLEA OLD 4106

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Name: EARTHWORKS SUPERVISION
Project Number: DL17/131

Project Number: DL17/131 Test Method: AS1289.5.8.1 & 5.7.1 Location: EDEN'S CROSSING , STAGE 1 Page 1 of 1

Location.	EDEN 3 CROSSING , STAGE I		rage	
Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602	E 484455.472	E 484420.595	
	N 6940018.677	N 6940021.843	N 6940032.744	
	RL 80.936	RL 81.942	RL 82.556	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):			_	
Oversize Dry (76):  Oversize Density (t/m³):		-	_	
Field Moisture Content (%):	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
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	
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Hilf Density Ratio (%):	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	=	=	-	
Soil Description :	-	-	-	
Remarks :	-			
	•			



APPROVED SIGNATORY

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#### 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.



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Brisbane Office
Job Number: DL17/131

Ref No: 12072 Author: L. McDowall

20th June 2017

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 441** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 441 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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.







Job No: DL17/131

Tests performed on filling operations near Lot 441 are representative of the fill constructed on Lot 441. The closest test to Lot 441 was performed on Lot 440. A summary of tests representative of the fill constructed on Lot 441 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
440	3	27 <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 441 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 441 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 4<sup>th</sup> May 2017.

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 DL17/131 - 1

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12072 CCA Winslow



DL17/131 - 1

Brisbane | Gold Coast | Brendale | Maroochy dore
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ABN 51 009 878 899
www.morrisongeo.com.au

Report Number:

### Hilf Density Ratio Report

Client: CCA WINSLOW
Address: 1587 IPSWICH ROAD ROCKLEA OLD 4106

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Name: EARTHWORKS SUPERVISION
Project Number: DL17/131

Project Number: DL17/131 Test Method: AS1289.5.8.1 & 5.7.1 Location: EDEN'S CROSSING , STAGE 1 Page 1 of 1

Location.	EDEN 3 CROSSING , STAGE I		rage	
Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602	E 484455.472	E 484420.595	
	N 6940018.677	N 6940021.843	N 6940032.744	
	RL 80.936	RL 81.942	RL 82.556	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):			_	
Oversize Dry (76):  Oversize Density (t/m³):		-	_	
Field Moisture Content (%):	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
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 (%):	89.5	89.5	84.5	
Field Wet Density (t/m³):	1.963	1.918	1.911	
Optimum Moisture Content (%) :	27.6	24.4	22.8	
Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³):	1.888	1.875	1.891	
Hilf Density Ratio (%):	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	=	=	-	
Soil Description :	-	-	-	
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. Geolechnical 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.

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Brisbane Office Job Number: DL17/131 Ref No: 12073

Author: L. McDowall

20th June 2017

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 442** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 442 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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.







Job No: DL17/131

Tests performed on filling operations near Lot 442 are representative of the fill constructed on Lot 442. The closest test to Lot 442 was performed on Lot 440. A summary of tests representative of the fill constructed on Lot 442 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
440	3	27 <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 442 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 442 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 4<sup>th</sup> May 2017.

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 DL17/131 – 1

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12073 CCA Winslow



DL17/131 - 1

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

Report Number:

### Hilf Density Ratio Report

Client: CCA WINSLOW
Address: 1587 IPSWICH ROAD ROCKLEA OLD 4106

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 05/05/2017
Project Name: EARTHWORKS SUPERVISION Order Number: 33832

Project Name: EARTHWORKS SUPERVISION
Project Number: DL17/131

Project Number: DL17/131 Test Method: AS1289.5.8.1 & 5.7.1 Location: EDEN'S CROSSING , STAGE 1 Page 1 of 1

Location.	EDEN 3 CROSSING , STAGE I		rage	
Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602	E 484455.472	E 484420.595	
	N 6940018.677	N 6940021.843	N 6940032.744	
	RL 80.936	RL 81.942	RL 82.556	
Test Depth (mm ) :	150	150	150	
Layer Depth (mm):	-	-	-	
Maximum Size (mm):	19	19	19	
Oversize Wet (%):	-	-	-	
Oversize Dry (%):			_	
Oversize Dry (76):  Oversize Density (t/m³):		-	_	
Field Moisture Content (%):	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
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Moisture Specification :	-	-	-	
Site Selection :	=	=	-	
Soil Description :	-	-	-	
Remarks :	-			
	•			



APPROVED SIGNATORY

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#### 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.



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Brisbane Office Job Number: DL17/131 Ref No: 12074

Author: L. McDowall

20th June 2017

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 444** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 444 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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.







Job No: DL17/131

Tests performed on filling operations near Lot 444 are representative of the fill constructed on Lot 444. The closest test to Lot 444 was performed on Lot 445. A summary of tests representative of the fill constructed on Lot 444 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
445	18	4 <sup>th</sup> May 2017	100.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 444 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 444 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 4<sup>th</sup> May 2017.

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 DL17/131 – 8

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12074 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: DL17/131 - 8 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 08/05/2017 EARTHWORKS SUPERVISION Project Name: Order Number : 33832 Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Test Number : 18 Sampling Method :	Location:	EDEN'S CROSSING, STAGE 1	Page	1 of 1
Sampling Method:  Date Sampled:  O4/05/2017  Material Type:  Allotment Fill (Cut)  Material Source:  On Site Cut  Lot Number:  Sample Location:  Unsuitable Replacement  £ 484411.735  N 6939969.019  RL 83.499  Test Depth (mm):  Layer Depth (mm):  Oversize Wet (%):  Oversize Dry (%):  Oversize Dry (%):  Oversize Dry (%):  Seried Moisture Content (%):  Hilf MDR Method:  AS1289.5.11.8 5.7.1  Moisture Method:  AS1289.5.81.8 5.7.1  Moisture Method:  Moisture Method:  AS1289.5.81.8 5.7.1  Moisture Method:  Moisture Method:  AS1289.5.81.8 5.7.1  Moisture Method:  Moisture Content (%):  1.3  Peak Converted Wet Density (t/m):  2.146  Deptimum Moisture Content (%):  1.3  Peak Converted Wet Density (t/m):  2.145  Hill Density Method:  1.3  Peak Converted Wet Density (t/m):  2.145  Hill Density Ratio (%):  Hill Compactive Effort:  1.3  Peak Converted Wet Density (t/m):  2.145  Hill Density Ratio (%):  Hill Completive Effortion:  5 Site Selection:  - Soil Description:	Sample Number :	228396		
Date Sampled: 04/05/2017 Date Tested: 04/05/2017 Date Tested: 04/05/2017 Material Type: Allotment Fill (Cut) Material Source: On Site Cut LOI Number:	Test Number :	18		
Date Tested: 04/05/2017 Material Type: Allotment FIII (Cut) Material Source: On Site Cut Lot Number: - Sample Location: Unsuitable Replacement E 484411.735 N 693996.019 RL 83.499 Test Depth (mm ): - Layer Depth (mm): - Maximum Size (mm): 19 Oversize Dnestly (Vm³): - Oversize Dnestly (Vm³): - Field Molsture Content (%): 14.2 Hilf MDR Method: AS1289.5.1.1 & 5.7.1 Compactive Effort: Standard Field Density Method: AS1289.5.1.1 & 5.7.1 Molisture Ratio (%): 91 Molisture Ratio (%): 92 Molisture Content (%): 13.8 Pield Molisture Content (%): 15.6 Molisture Ratio (%): 15.6 Molisture Ratio (%): 15.6 Molisture Variation: 13.8 Peak Converted Wet Density (Vm³): 2.145 Hilf MDR Mythod: 13.8 Peak Converted Wet Density (Wm³): 2.145 Minimum Specification: 95 Molisture Specification: 95 Molistu	Sampling Method :	-		
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Sample Location:  Unsuitable Replacement E 484411.735 N 6939969.019 RL 83.499  Test Depth (mm):  150 Layer Depth (mm):	Material Source :	On Site Cut		
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RL 83.499   RL 8		E 484411.735		
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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. Geolechnical 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

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Brisbane Office
Job Number: DL17/131

Ref No: 12075 Author: L. McDowall

20<sup>th</sup> June 2017

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 445** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 445 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 5<sup>th</sup> April 2017 and 4<sup>th</sup> May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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.







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 445 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %	
445	18	4 <sup>th</sup> May 2017	100.0	
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.				

Fill constructed on Lot 445 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 445 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 4<sup>th</sup> May 2017.

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 DL17/131 – 8

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12075 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: DL17/131 - 8 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date: 08/05/2017 EARTHWORKS SUPERVISION Project Name: Order Number : 33832 Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

Test Number : 18 Sampling Method :	Location:	EDEN'S CROSSING, STAGE 1	Page	1 of 1
Sampling Method:  Date Sampled:  O4/05/2017  Material Type:  Allotment Fill (Cut)  Material Source:  On Site Cut  Lot Number:  Sample Location:  Unsuitable Replacement  £ 484411.735  N 6939969.019  RL 83.499  Test Depth (mm):  Layer Depth (mm):  Oversize Wet (%):  Oversize Dry (%):  Oversize Dry (%):  Oversize Dry (%):  Seried Moisture Content (%):  Hilf MDR Method:  AS1289.5.11.8 5.7.1  Moisture Method:  AS1289.5.81.8 5.7.1  Moisture Method:  Moisture Method:  AS1289.5.81.8 5.7.1  Moisture Method:  Moisture Method:  AS1289.5.81.8 5.7.1  Moisture Method:  Moisture Content (%):  1.3  Peak Converted Wet Density (t/m):  2.146  Deptimum Moisture Content (%):  1.3  Peak Converted Wet Density (t/m):  2.145  Hill Density Method:  1.3  Peak Converted Wet Density (t/m):  2.145  Hill Density Ratio (%):  Hill Compactive Effort:  1.3  Peak Converted Wet Density (t/m):  2.145  Hill Density Ratio (%):  Hill Completive Effortion:  5 Site Selection:  - Soil Description:	Sample Number :	228396		
Date Sampled: 04/05/2017 Date Tested: 04/05/2017 Date Tested: 04/05/2017 Material Type: Allotment Fill (Cut) Material Source: On Site Cut LOI Number:	Test Number :	18		
Date Tested: 04/05/2017 Material Type: Allotment FIII (Cut) Material Source: On Site Cut Lot Number: - Sample Location: Unsuitable Replacement E 484411.735 N 693996.019 RL 83.499 Test Depth (mm ): - Layer Depth (mm): - Maximum Size (mm): 19 Oversize Dnestly (Vm³): - Oversize Dnestly (Vm³): - Field Molsture Content (%): 14.2 Hilf MDR Method: AS1289.5.1.1 & 5.7.1 Compactive Effort: Standard Field Density Method: AS1289.5.1.1 & 5.7.1 Molisture Ratio (%): 91 Molisture Ratio (%): 92 Molisture Content (%): 13.8 Pield Molisture Content (%): 15.6 Molisture Ratio (%): 15.6 Molisture Ratio (%): 15.6 Molisture Variation: 13.8 Peak Converted Wet Density (Vm³): 2.145 Hilf MDR Mythod: 13.8 Peak Converted Wet Density (Wm³): 2.145 Minimum Specification: 95 Molisture Specification: 95 Molistu	Sampling Method :	-		
Material Type: Allotment Fill (Cut)  Material Source: On Site Cut  Lot Number:	Date Sampled :	04/05/2017		
Material Source : On Site Cut  Lot Number : - Sample Location : Unsuitable Replacement E 484411.735 N 6939969.019 RL 83.499  Test Depth (mm ) : 150 Layer Depth (mm) : - Maximum Size (mm) : 19 Oversize (%) : - Oversize Density (fm²) : - Field Moisture Content (%) : 14.2 Hilf MDR Number : 228396 Hilf MDR Number : 228396 Hilf MDR Number : Standard Field Density Method : AS1289.58.1 & 5.7.1 Moisture Method : AS1289.58.1 & 5.7.1 Moisture Method : AS1289.21.1 Moisture Nation (%) : 91 Field Web Density (fm²) : 2.146 Deptimum Moisture Content (%) : 15.6 Moisture Variation : 1.3 Peak Converted Web Density (fm²) : 2.145 Moisture Variation : 95 Moisture Specification : 95 Moisture Specification : 95 Moisture Specification : - Site Selection : -	Date Tested :	04/05/2017		
Lot Number:  Sample Location:  Unsuitable Replacement E 484411.735 N 6939969.019 RL 83.499  Test Depth (mm):  150 Layer Depth (mm):	Material Type :	Allotment Fill (Cut)		
Sample Location:  Unsuitable Replacement E 484411.735 N 6939969.019 RL 83.499  Test Depth (mm):  150 Layer Depth (mm):	Material Source :	On Site Cut		
E 484411.735 N 6939969.019 RL 83.499  Test Depth (mm):	Lot Number :	-		
N 6939969.019   RL 83.499	Sample Location :	Unsuitable Replacement		
RL 83.499   RL 8		E 484411.735		
Test Depth (mm): 150 Layer Depth (mm): -  Maximum Size (mm): 19  Oversize Wet (%): -  Oversize Density (t/m³): -  Field Molsture Content (%): 14.2  Hilf MDR Number: 228396  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 (%): 91  Field Web Density (t/m³): 2.146  Optimum Molsture Content (%): 15.6  Moisture Variation: 1.3  Peak Converted Wet Density (t/m³): 2.145  Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Soil Description: -		N 6939969.019		
Layer Depth (mm):		RL 83.499		
Maximum Size (mm): 19 Oversize Wet (%): - Oversize Dry (%): - Oversize Density (t/m³): - Field Moisture Content (%): 14.2 Hilf MDR Number: 228396 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: AS1289.5.1.1 & 5.7.1 Moisture Ratio (%): 91 Field Wet Density (t/m³): 2.146 Optimum Moisture Content (%): 15.6 Moisture Variation: 1.3 Peak Converted Wet Density (t/m³): 2.145 Hilf Density Ratio (%): 95 Moisture Specification: 95 Moisture Specification: 95 Moisture Specification: - Silte Selection: - Soll Description: -	Test Depth (mm ) :	150		
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Hilf MDR Number: 228396 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 (%): 91 Field Wet Density (t/m³): 2.146 Optimum Moisture Content (%): 15.6  Moisture Variation: 1.3 Peak Converted Wet Density (t/m³): 2.145 Hilf Density Ratio (%): 100.0  Minimum Specification: 95  Moisture Specification: -  Site Selection: -  Soil Description: -	Oversize Density (t/m³) :	-		
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Optimum Moisture Content (%):       15.6         Moisture Variation:       1.3         Peak Converted Wet Density (t/m³):       2.145         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Moisture Ratio (%):	91		
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Peak Converted Wet Density (t/m³):         2.145           Hilf Density Ratio (%):         100.0           Minimum Specification:         95           Moisture Specification:         -           Site Selection:         -           Soil Description:         -	Optimum Moisture Content (%) :	15.6		
(t/m³):       2.143         Hilf Density Ratio (%):       100.0         Minimum Specification:       95         Moisture Specification:       -         Site Selection:       -         Soil Description:       -	Moisture Variation :	1.3		
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Moisture Specification: - Site Selection: - Soil Description:	Hilf Density Ratio (%):	100.0		
Site Selection:  - Soil Description:	Minimum Specification :	95		
Soil Description : -	Moisture Specification :	-		
	Site Selection :	-		
Remarks : -	Soil Description :	-		
	Remarks :			



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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. Geolechnical 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

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Brisbane Office Job Number: DL17/131 Ref No: 12076

Author: L. McDowall

20th June 2017

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 453** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 453 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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.







Job No: DL17/131

A summary of tests representative of the fill constructed on Lot 453 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %			
453	11	29 <sup>th</sup> April 2017	106.0			
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.						

Fill constructed on Lot 453 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 453 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 4<sup>th</sup> May 2017.

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 DL17/131 – 5

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12076 CCA Winslow



DL17/131 - 5

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

Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Order Number : 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

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

LOCATION.	EDEN 3 CRUSSING , STAGE I		rage rorr		
Sample Number :	228109	228110	228111	228112	
Test Number :	11	12	13	14	
Sampling Method :	-	-	-	-	
Date Sampled :	29/04/2017	29/04/2017	29/04/2017	29/04/2017	
Date Tested :	29/04/2017	29/04/2017	29/04/2017	29/04/2017	
Material Type :	Bulk Fill (Capping Layer)				
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut	
Lot Number:	-	-	-	-	
Sample Location :	E 484592.404	E 484575.500	E 484561.676	E 484549.839	
	N 6939952.741	N 6939953.111	N 6939953.024	N 6939954.741	
	RL 76.292	RL 76.597	RL 77.024	RL 77.428	
Took Donath (name )	150	150	150	150	
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 (%) :	20.4	21.4	20.5	21.3	
Hilf MDR Number :	228109	228110	228111	228112	
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 (%):	91.5	94.5	90.5	100.5	
Field Wet Density (t/m³):	2.096	1.955	2.056	1.993	
Optimum Moisture Content (%) :	22.4	22.7	22.6	21.2	
Moisture Variation :	1.8	1.3	2.1	-0.1	
Peak Converted Wet Density (t/m³):	1.978	1.954	1.971	1.959	
Hilf Density Ratio (%):	106.0	100.0	104.5	101.5	
Minimum Specification :	95	95	95	95	
Moisture Specification :	-	-	-	-	
Site Selection :	-	-	-	-	
Soil Description :	-	-	-	-	
Remarks :	-				



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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. Geolechnical 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.



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Brisbane Office
Job Number: DL17/131

Ref No: 12077 Author: L. McDowall

20th June 2017

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 454** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 454 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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.







A summary of tests representative of the fill constructed on Lot 454 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
454	12	29 <sup>th</sup> April 2017	100.0		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 454 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 454 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 4<sup>th</sup> May 2017.

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 DL17/131 – 5

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12077 CCA Winslow



DL17/131 - 5

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Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Order Number : 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

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

Location.	EDEN 3 CRUSSING , STAGE T		. ago	1 01 1
Sample Number :	228109	228110	228111	228112
Test Number :	11	12	13	14
Sampling Method :	-	-	-	-
Date Sampled :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Date Tested :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number:	-	-	-	-
Sample Location :	E 484592.404	E 484575.500	E 484561.676	E 484549.839
	N 6939952.741	N 6939953.111	N 6939953.024	N 6939954.741
	RL 76.292	RL 76.597	RL 77.024	RL 77.428
Test Don'th (mm.)	150	150	150	150
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 (%) :	20.4	21.4	20.5	21.3
Hilf MDR Number :	228109	228110	228111	228112
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 (%):	91.5	94.5	90.5	100.5
Field Wet Density (t/m³):	2.096	1.955	2.056	1.993
Optimum Moisture Content (%) :	22.4	22.7	22.6	21.2
Moisture Variation :	1.8	1.3	2.1	-0.1
Peak Converted Wet Density (t/m³):	1.978	1.954	1.971	1.959
Hilf Density Ratio (%):	106.0	100.0	104.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL

# **Geotechnical Engineering Report**

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#### 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.



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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/131

Ref No: 12078 Author: L. McDowall

20th June 2017

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 455** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 455 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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 1 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 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 455 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
455	13	29 <sup>th</sup> April 2017	104.5		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 455 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 455 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 4<sup>th</sup> May 2017.

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 DL17/131 – 5

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12078 CCA Winslow



DL17/131 - 5

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Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Order Number : 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

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

Location.	EDEN 3 CRUSSING , STAGE T		. ago	1 01 1
Sample Number :	228109	228110	228111	228112
Test Number :	11	12	13	14
Sampling Method :	-	-	-	-
Date Sampled :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Date Tested :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number:	-	-	-	-
Sample Location :	E 484592.404	E 484575.500	E 484561.676	E 484549.839
	N 6939952.741	N 6939953.111	N 6939953.024	N 6939954.741
	RL 76.292	RL 76.597	RL 77.024	RL 77.428
Test Don'th (mm.)	150	150	150	150
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 (%) :	20.4	21.4	20.5	21.3
Hilf MDR Number :	228109	228110	228111	228112
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
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Optimum Moisture Content (%) :	22.4	22.7	22.6	21.2
Moisture Variation :	1.8	1.3	2.1	-0.1
Peak Converted Wet Density (t/m³):	1.978	1.954	1.971	1.959
Hilf Density Ratio (%):	106.0	100.0	104.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL

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#### 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. Geolechnical 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

## 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.



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Brisbane Office
Job Number: DL17/131

Ref No: 12079 Author: L. McDowall

20th June 2017

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 456** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 456 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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 1 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 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 456 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
456	14	29 <sup>th</sup> April 2017	101.5		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 456 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 456 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 4<sup>th</sup> May 2017.

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 DL17/131 – 5

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12079 CCA Winslow



DL17/131 - 5

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Report Number:

### Hilf Density Ratio Report

Client : CCA WINSLOW

Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Order Number : 33832

EARTHWORKS SUPERVISION Project Name:

Project Number : Test Method: DL17/131 AS1289.5.8.1 & 5.7.1

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

Location.	EDEN 3 CRUSSING , STAGE T		. ago	1 01 1
Sample Number :	228109	228110	228111	228112
Test Number :	11	12	13	14
Sampling Method :	-	-	-	-
Date Sampled :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Date Tested :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number:	-	-	-	-
Sample Location :	E 484592.404	E 484575.500	E 484561.676	E 484549.839
	N 6939952.741	N 6939953.111	N 6939953.024	N 6939954.741
	RL 76.292	RL 76.597	RL 77.024	RL 77.428
Test Don'th (mm.)	150	150	150	150
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 (%) :	20.4	21.4	20.5	21.3
Hilf MDR Number :	228109	228110	228111	228112
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 (%):	91.5	94.5	90.5	100.5
Field Wet Density (t/m³):	2.096	1.955	2.056	1.993
Optimum Moisture Content (%) :	22.4	22.7	22.6	21.2
Moisture Variation :	1.8	1.3	2.1	-0.1
Peak Converted Wet Density (t/m³):	1.978	1.954	1.971	1.959
Hilf Density Ratio (%):	106.0	100.0	104.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			



APPROVED SIGNATORY MOODOL

# **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.

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/131

Ref No: 12080 Author: L. McDowall

20th June 2017

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 457** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 457 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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 1 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 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 457 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
457	15	29 <sup>th</sup> April 2017	98.5		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 457 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 457 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 4<sup>th</sup> May 2017.

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 DL17/131 – 6

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12080 CCA Winslow



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### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 6 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832 Test Method:

Project Number : AS1289.5.8.1 & 5.7.1

DL17/131

Location:	EDEN'S CROSSING, STAGE 1		Page	1 of 1
Sample Number :	228113	228114		
Test Number :	15	16		
Sampling Method :	-	-		
Date Sampled :	29/04/2017	29/04/2017		
Date Tested :	29/04/2017	29/04/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	E 484537.253	E 484525.066		
	N 4020042 E44	N 4020072 200		
	N 6939963.564	N 6939972.308		
	RL 77.711	RL 77.991		
Test Depth (mm ) :	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%):	18.1	15.7		
Hilf MDR Number :	228113	228114		
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 (%):	91.5	83.5		
Field Wet Density (t/m³):	1.976	2.043		
Optimum Moisture Content (%) :	19.7	18.8		
Moisture Variation :	1.6	3.1		
Peak Converted Wet Density (t/m³):	2.007	1.954		
Hilf Density Ratio (%):	98.5	104.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY MOODOL

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

Document Code RF89-11

# **Geotechnical Engineering Report**

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

## 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

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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



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www.morrisongeo.com.au

Brisbane Office Job Number: DL17/131

Ref No: 12081 Author: L. McDowall

20th June 2017

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 458** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 458 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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 1 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 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 458 are presented in Table 1 below.

**Table 1: Summary of Testing** 

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
458	16	29 <sup>th</sup> April 2017	104.5		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 458 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 458 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 4<sup>th</sup> May 2017.

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 DL17/131 – 6

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12081 CCA Winslow



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### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 6 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832 Test Method:

Project Number : AS1289.5.8.1 & 5.7.1

DL17/131

Location:	EDEN'S CROSSING, STAGE 1		Page	1 of 1
Sample Number :	228113	228114		
Test Number :	15	16		
Sampling Method :	-	-		
Date Sampled :	29/04/2017	29/04/2017		
Date Tested :	29/04/2017	29/04/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	E 484537.253	E 484525.066		
	N 4020042 E44	N 4020072 200		
	N 6939963.564	N 6939972.308		
	RL 77.711	RL 77.991		
Test Depth (mm ) :	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm):	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%):	18.1	15.7		
Hilf MDR Number :	228113	228114		
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 (%):	91.5	83.5		
Field Wet Density (t/m³):	1.976	2.043		
Optimum Moisture Content (%) :	19.7	18.8		
Moisture Variation :	1.6	3.1		
Peak Converted Wet Density (t/m³):	2.007	1.954		
Hilf Density Ratio (%):	98.5	104.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY MOODOL

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

Document Code RF89-11

# **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. Geolechnical 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

## 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.

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Brisbane Office Job Number: DL17/131

Ref No: 12082 Author: L. McDowall

20th June 2017

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 459** 

LEVEL ONE COMPLIANCE REPORT FOR BULK EARTHWORKS FILLING OPERATIONS EDENS CROSSING ESTATE, STAGE 1 MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 459 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 21st April 2017 and 4th May 2017.

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, Sheet Number C200, Job Code 17BNE-0001, Revision B, dated 18.04.2017

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 1 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 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 459 are representative of the fill constructed on Lot 459. The closest test to Lot 459 was performed on Lot 458. A summary of tests representative of the fill constructed on Lot 459 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %		
458	16	29 <sup>th</sup> April 2017	104.5		
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.					

Fill constructed on Lot 459 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 459 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 4<sup>th</sup> May 2017.

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 DL17/131 – 6

Brochure: Important Information About Your Geotechnical Engineering Report

Ref: 12082 CCA Winslow



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### Hilf Density Ratio Report

Client : CCA WINSLOW Report Number: DL17/131 - 6 Address: 1587 IPSWICH ROAD, ROCKLEA, QLD, 4106 Report Date : 05/05/2017 Project Name: EARTHWORKS SUPERVISION Order Number : 33832 Test Method:

Project Number : AS1289.5.8.1 & 5.7.1

DL17/131

Location:	EDEN'S CROSSING, STAGE 1		Page	1 of 1
Sample Number :	228113	228114		
Test Number :	15	16		
Sampling Method :	-	-		
Date Sampled :	29/04/2017	29/04/2017		
Date Tested :	29/04/2017	29/04/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	E 484537.253	E 484525.066		
	N 4020042 E44	N 4020072 200		
	N 6939963.564	N 6939972.308		
	RL 77.711	RL 77.991		
Test Depth (mm ) :	150	150		
Layer Depth (mm):	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%):	-	-		
Oversize Dry (%):	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%):	18.1	15.7		
Hilf MDR Number :	228113	228114		
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Peak Converted Wet Density (t/m³):	2.007	1.954		
Hilf Density Ratio (%):	98.5	104.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			



Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY MOODOL

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

Document Code RF89-11

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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.



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