MORRISON GEOTECHNIC

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: DL17/135
Ref No: 13561
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 526
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 526 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 526 are representative of the fill constructed on Lot 526. The closest tests to Lot 526 were performed on Lot 527. A summary of tests representative of the fill constructed on Lot 526 are presented in Table 1 below.

Table 1: Summary of Testing

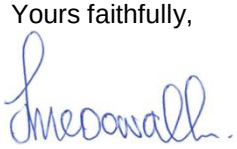
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
527	51	5th March 2018	102.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 526 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 526 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 22
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 22**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**13/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243409	243410		
Test Number :	50	51		
Sampling Method :	-	-		
Date Sampled :	05/04/2018	05/04/2018		
Date Tested :	05/04/2018	05/04/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**528**	**527**		
Sample Location :	Lot 528 E 484426.556 N 6939608.624 Final Level	Lot 527 E 484436.904 N 6939617.101 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	16.6	15.4		
Hilf MDR Number :	243409	243410		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	100	92.5		
Field Wet Density (t/m³) :	2.189	2.190		
Optimum Moisture Content (%) :	16.6	16.7		
Moisture Variation :	0.0	1.2		
Peak Converted Wet Density (t/m³) :	2.150	2.145		
Hilf Density Ratio (%) :	**102.0**	**102.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

Liam A McDowall

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *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.*

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.

ASFE
THE BEST PEOPLE ON EARTH

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: DL17/135
Ref No: 13562
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 527
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 527 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 527 are presented in Table 1 below.

Table 1: Summary of Testing

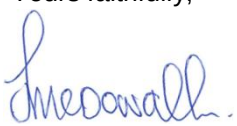
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
527	51	5th March 2018	102.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 527 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 527 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 22
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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 22**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**13/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243409	243410		
Test Number :	50	51		
Sampling Method :	-	-		
Date Sampled :	05/04/2018	05/04/2018		
Date Tested :	05/04/2018	05/04/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**528**	**527**		
Sample Location :	Lot 528 E 484426.556 N 6939608.624 Final Level	Lot 527 E 484436.904 N 6939617.101 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	16.6	15.4		
Hilf MDR Number :	243409	243410		
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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Moisture Ratio (%) :	100	92.5		
Field Wet Density (t/m³) :	2.189	2.190		
Optimum Moisture Content (%) :	16.6	16.7		
Moisture Variation :	0.0	1.2		
Peak Converted Wet Density (t/m³) :	2.150	2.145		
Hilf Density Ratio (%) :	**102.0**	**102.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

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ASFE
THE BEST PEOPLE ON EARTH

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

IIGER06085.0MRP

MORRISON GEOTECHNIC

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: DL17/135
Ref No: 13563
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 528
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 528 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 528 are presented in Table 1 below.

Table 1: Summary of Testing

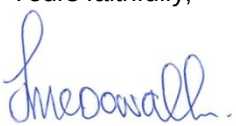
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
528	50	5th March 2018	102.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 527 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 527 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 22
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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

Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 22**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**13/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243409	243410		
Test Number :	50	51		
Sampling Method :	-	-		
Date Sampled :	05/04/2018	05/04/2018		
Date Tested :	05/04/2018	05/04/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**528**	**527**		
Sample Location :	Lot 528 E 484426.556 N 6939608.624 Final Level	Lot 527 E 484436.904 N 6939617.101 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	16.6	15.4		
Hilf MDR Number :	243409	243410		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	100	92.5		
Field Wet Density (t/m³) :	2.189	2.190		
Optimum Moisture Content (%) :	16.6	16.7		
Moisture Variation :	0.0	1.2		
Peak Converted Wet Density (t/m³) :	2.150	2.145		
Hilf Density Ratio (%) :	**102.0**	**102.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

Liam A McDowall

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

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Geotechnical e of unique, project-specific fac- their clients. A Typical factors include: the neer may not f ment preferences; the general civil engineer. d configuration; the location of geotechnical e or existing site improvements, one except yo derground utilities. Unless the first conferring tudy specifically indicates oth- — *not even yo* eering report that was: except the one

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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 *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.*

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.

ASFE
THE BEST PEOPLE ON EARTH

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: DL17/135
Ref No: 13564
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 583
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 583 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 583 are representative of the fill constructed on Lot 583. The closest tests to Lot 583 were performed on Lot 536. A summary of tests representative of the fill constructed on Lot 583 are presented in Table 1 below.

Table 1: Summary of Testing

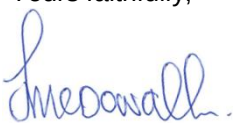
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
536	4	21st April 2017	101.0
536	37	29th July 2017	105.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 526 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 526 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 1, DL17/135 – 12.
Brochure: Important Information About Your Geotechnical Engineering Report

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

Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228073	228074	228075	228076
Test Number :	1	2	3	4
Sampling Method :	-	-	-	-
Date Sampled :	21/04/2017	21/04/2017	21/04/2017	21/04/2017
Date Tested :	21/04/2017	21/04/2017	21/04/2017	21/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484438.444 N 6939706.207 RL 86.251	E 484433.361 N 6939694.107 RL 86.383	E 484427.527 N 6939682.995 RL 86.627	E 484476.903 N 6939722.202 RL 84.697
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 (%) :	31.8	31.2	16.3	17.1
Hilf MDR Number :	228073	228074	228075	228076
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	96.5	89	91.5
Field Wet Density (t/m³) :	1.805	1.815	2.061	2.064
Optimum Moisture Content (%) :	34.8	32.3	18.3	18.7
Moisture Variation :	2.9	1.2	1.9	1.5
Peak Converted Wet Density (t/m³) :	1.751	1.779	2.027	2.041
Hilf Density Ratio (%) :	103.0	102.0	101.5	101.0
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 12
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232571	232572		
Test Number :	36	37		
Sampling Method :	-	-		
Date Sampled :	29/07/2017	29/07/2017		
Date Tested :	29/07/2017	29/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site	On Site		
Lot Number :	-	-		
Sample Location :	E 0484502 N 6939658 Final Level	E 0484508 N 6939704 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	19.1	15.3		
Hilf MDR Number :	232571	232572		
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	93		
Field Wet Density (t/m³) :	2.063	2.074		
Optimum Moisture Content (%) :	21.9	16.4		
Moisture Variation :	2.6	1.2		
Peak Converted Wet Density (t/m³) :	1.976	1.971		
Hilf Density Ratio (%) :	104.5	105.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

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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.

ASFE
THE BEST PEOPLE ON EARTH

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e-mail: info@asfe.org www.asfe.org

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/135
Ref No: 13565
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 536
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 536 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 536 are presented in Table 1 below.

Table 1: Summary of Testing

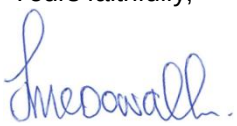
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
536	4	21st April 2017	101.0
536	37	29th July 2017	105.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 536 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 536 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 1, DL17/135 – 12.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228073	228074	228075	228076
Test Number :	1	2	3	4
Sampling Method :	-	-	-	-
Date Sampled :	21/04/2017	21/04/2017	21/04/2017	21/04/2017
Date Tested :	21/04/2017	21/04/2017	21/04/2017	21/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484438.444 N 6939706.207 RL 86.251	E 484433.361 N 6939694.107 RL 86.383	E 484427.527 N 6939682.995 RL 86.627	E 484476.903 N 6939722.202 RL 84.697
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 (%) :	31.8	31.2	16.3	17.1
Hilf MDR Number :	228073	228074	228075	228076
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	96.5	89	91.5
Field Wet Density (t/m³) :	1.805	1.815	2.061	2.064
Optimum Moisture Content (%) :	34.8	32.3	18.3	18.7
Moisture Variation :	2.9	1.2	1.9	1.5
Peak Converted Wet Density (t/m³) :	1.751	1.779	2.027	2.041
Hilf Density Ratio (%) :	103.0	102.0	101.5	101.0
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 12
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232571	232572		
Test Number :	36	37		
Sampling Method :	-	-		
Date Sampled :	29/07/2017	29/07/2017		
Date Tested :	29/07/2017	29/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site	On Site		
Lot Number :	-	-		
Sample Location :	E 0484502 N 6939658 Final Level	E 0484508 N 6939704 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	19.1	15.3		
Hilf MDR Number :	232571	232572		
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	93		
Field Wet Density (t/m³) :	2.063	2.074		
Optimum Moisture Content (%) :	21.9	16.4		
Moisture Variation :	2.6	1.2		
Peak Converted Wet Density (t/m³) :	1.976	1.971		
Hilf Density Ratio (%) :	104.5	105.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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APPROVED SIGNATORY

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *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.*

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Brisbane Office
Job Number: DL17/135
Ref No: 13566
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 537
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 537 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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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 8 Development was carried out at a frequency of 1 test per 500m^3 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 537 are presented in Table 1 below.

Table 1: Summary of Testing

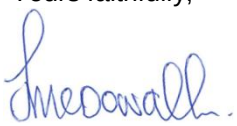
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
537	5	21st April 2018	100.5
537	63	29th July 2018	96.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 537 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 537 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 2, DL17/135 – 30.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228077	228078	228079	
Test Number :	5	6	7	
Sampling Method :	-	-	-	
Date Sampled :	21/04/2017	21/04/2017	21/04/2017	
Date Tested :	21/04/2017	21/04/2017	21/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484484.244 N 6939707.329 RL 84.331	E 484484 N 6939688 RL 83.170	E 484478 N 6939694 RL 83.800	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	27.2	28.5	24.5	
Hilf MDR Number :	228077	228078	228079	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	98	101	92	
Field Wet Density (t/m³) :	1.899	1.816	1.798	
Optimum Moisture Content (%) :	27.7	28.3	26.6	
Moisture Variation :	0.5	-0.2	2.0	
Peak Converted Wet Density (t/m³) :	1.888	1.897	1.858	
Hilf Density Ratio (%) :	100.5	95.5	97.0	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

NATA
MUTUAL RECOGNITION ARRANGEMENT
ACCREDITATION

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APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 30**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**28/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243656			
Test Number :	63			
Sampling Method :	-			
Date Sampled :	11/04/2018			
Date Tested :	11/04/2018			
Material Type :	**Allotment Fill (Capping Layer)**			
Material Source :	**On Site Stockpile**			
Lot Number :	**537**			
Sample Location :	Lot 537 E 484477.329 N 6939714.036 RL 85.605			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	12.6			
Hilf MDR Number :	243656			
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 (%) :	87			
Field Wet Density (t/m³) :	2.131			
Optimum Moisture Content (%) :	14.5			
Moisture Variation :	1.9			
Peak Converted Wet Density (t/m³) :	2.207			
Hilf Density Ratio (%) :	**96.5**			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	Crushed BASALT			
Remarks :	-			

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APPROVED SIGNATORY

Liam A McDowall

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *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.*

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.

ASFE
THE BEST PEOPLE ON EARTH

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: DL17/135
Ref No: 13567
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 538
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 538 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 538 are presented in Table 1 below.

Table 1: Summary of Testing

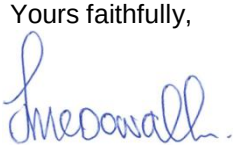
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
538/539	7	21st April 2017	97.0
538	28	18th July 2017	102.5
538	31	21st July 2017	99.0
538	34	28th July 2017	101.0
538	35	28th July 2017	99.0
538	48	17th March 2018	97.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 538 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 538 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 - 2, DL17/135 - 9, DL17/135 – 10, DL17/135 – 11, DL17/135 – 20.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228077	228078	228079	
Test Number :	5	6	7	
Sampling Method :	-	-	-	
Date Sampled :	21/04/2017	21/04/2017	21/04/2017	
Date Tested :	21/04/2017	21/04/2017	21/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484484.244 N 6939707.329 RL 84.331	E 484484 N 6939688 RL 83.170	E 484478 N 6939694 RL 83.800	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	27.2	28.5	24.5	
Hilf MDR Number :	228077	228078	228079	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	98	101	92	
Field Wet Density (t/m³) :	1.899	1.816	1.798	
Optimum Moisture Content (%) :	27.7	28.3	26.6	
Moisture Variation :	0.5	-0.2	2.0	
Peak Converted Wet Density (t/m³) :	1.888	1.897	1.858	
Hilf Density Ratio (%) :	100.5	95.5	97.0	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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APPROVED SIGNATORY

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

Client :	CCA WINSLOW	Report Number:	DL17/135 - 9
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	231961	231962	231963	231964
Test Number :	25	26	27	28
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484474.780 N 6939665.136 RL 87.750	E 484471.549 N 6939677.728 RL 87.593	E 484467.797 N 6939690.599 RL 87.016	E 484480.095 N 6939699.401 RL 86.264
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	16.6	19.9	17.4	19.8
Hilf MDR Number :	231961	231962	231963	231964
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	93.5	93	89.5	93
Field Wet Density (t/m³) :	2.050	2.007	2.111	2.059
Optimum Moisture Content (%) :	17.8	21.4	19.5	21.2
Moisture Variation :	1.1	1.5	2.0	1.4
Peak Converted Wet Density (t/m³) :	2.125	2.062	2.087	2.005
Hilf Density Ratio (%) :	96.5	97.5	101.0	102.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 10
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	27/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232161	232162	232163	
Test Number :	29	30	31	
Sampling Method :	-	-	-	
Date Sampled :	21/07/2017	21/07/2017	21/07/2017	
Date Tested :	21/07/2017	21/07/2017	21/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484473.570 N 6939690.310 RL 87.565	E 484471.485 N 6939674.980 RL 88.085	E 484475.105 N 6939698.460 RL 87.075	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	15.5	17.0	15.8	
Hilf MDR Number :	232161	232162	232163	
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 (%) :	90	82.5	90	
Field Wet Density (t/m³) :	2.055	2.040	2.074	
Optimum Moisture Content (%) :	17.2	20.6	17.6	
Moisture Variation :	1.7	3.3	1.7	
Peak Converted Wet Density (t/m³) :	2.099	2.102	2.090	
Hilf Density Ratio (%) :	98.0	97.0	99.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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

Client :	CCA WINSLOW	Report Number:	DL17/135 - 11
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232564	232565	232566	232567
Test Number :	32	33	34	35
Sampling Method :	-	-	-	-
Date Sampled :	28/07/2017	28/07/2017	28/07/2017	28/07/2017
Date Tested :	28/07/2017	28/07/2017	28/07/2017	28/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484462.730 N 6939674.230 RL 87.161	E 484475.282 N 6939686.441 RL 87.255	E 484469.290 N 6939701.344 RL 87.033	E 484483.769 N 6939702.315 RL 86.133
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 (%) :	15.2	15.9	12.3	23.6
Hilf MDR Number :	232564	232565	232566	232567
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 (%) :	82.5	97	80.5	103
Field Wet Density (t/m³) :	2.133	2.059	2.202	1.995
Optimum Moisture Content (%) :	18.4	16.4	15.3	22.9
Moisture Variation :	3.1	0.5	2.8	-0.6
Peak Converted Wet Density (t/m³) :	2.060	2.076	2.175	2.013
Hilf Density Ratio (%) :	103.5	99.0	101.0	99.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager
NATA Accreditation Number
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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 20**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**26/03/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	242820			
Test Number :	48			
Sampling Method :	-			
Date Sampled :	17/03/2018			
Date Tested :	17/03/2018			
Material Type :	**Allotment Fill (Capping Layer)**			
Material Source :	**On Site Stockpile**			
Lot Number :	**536**			
Sample Location :	Lot 536 E 484473.985 N 6939725 Final Level			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	13.0			
Hilf MDR Number :	242820			
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 (%) :	87			
Field Wet Density (t/m³) :	2.115			
Optimum Moisture Content (%) :	14.9			
Moisture Variation :	1.9			
Peak Converted Wet Density (t/m³) :	2.169			
Hilf Density Ratio (%) :	**97.5**			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	WEATHERED BASALT			
Remarks :	-			

NATA WORLD RECOGNISED ACCREDITATION

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APPROVED SIGNATORY

Liam A McDowall

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *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.*

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.

ASFE
THE BEST PEOPLE ON EARTH

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: DL17/135
Ref No: 13568
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 539
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 539 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 539 are presented in Table 1 below.

Table 1: Summary of Testing

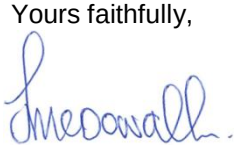
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
539	6	21st April 2017	95.5
538/539	7	21st April 2017	97.0
539	10	22nd Aprl 2017	101.5
539	12	22nd April 2017	102.5
539	27	18th July 2017	101.0
539	29	21st July 2017	98.0
539	33	28th July 2017	99.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 539 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 539 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 - 2, DL17/135 - 3, DL17/135 – 4, DL17/135 – 9, DL17/135 – 10, DL17/135 - 11.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228077	228078	228079	
Test Number :	5	6	7	
Sampling Method :	-	-	-	
Date Sampled :	21/04/2017	21/04/2017	21/04/2017	
Date Tested :	21/04/2017	21/04/2017	21/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484484.244 N 6939707.329 RL 84.331	E 484484 N 6939688 RL 83.170	E 484478 N 6939694 RL 83.800	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	27.2	28.5	24.5	
Hilf MDR Number :	228077	228078	228079	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	98	101	92	
Field Wet Density (t/m³) :	1.899	1.816	1.798	
Optimum Moisture Content (%) :	27.7	28.3	26.6	
Moisture Variation :	0.5	-0.2	2.0	
Peak Converted Wet Density (t/m³) :	1.888	1.897	1.858	
Hilf Density Ratio (%) :	100.5	95.5	97.0	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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MUTUAL RECOGNITION ARRANGEMENT
ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 3
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228083	228084	228085	228086
Test Number :	8	9	10	11
Sampling Method :	-	-	-	-
Date Sampled :	22/04/2017	22/04/2017	22/04/2017	22/04/2017
Date Tested :	22/04/2017	22/04/2017	22/04/2017	22/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484444.285 N 6939687.524 RL 85.770	E 484451.405 N 6939676.265 RL 85.989	E 484463.660 N 6939692.129 RL 85.544	E 484464.138 N 6939671.710 RL 85.834
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 (%) :	33.3	30.2	27.0	26.7
Hilf MDR Number :	228083	228084	228085	228086
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 (%) :	99.5	99	100	98.5
Field Wet Density (t/m³) :	1.832	1.800	1.890	1.898
Optimum Moisture Content (%) :	33.4	30.6	27.0	27.0
Moisture Variation :	0.1	0.4	0.0	0.4
Peak Converted Wet Density (t/m³) :	1.813	1.798	1.860	1.894
Hilf Density Ratio (%) :	101.0	100.0	101.5	100.0
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 4
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228087			
Test Number :	12			
Sampling Method :	-			
Date Sampled :	22/04/2017			
Date Tested :	22/04/2017			
Material Type :	Bulk Fill			
Material Source :	On Site Cut			
Lot Number :	-			
Sample Location :	E 484474.558 N 6939690.225 RL 85.249			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	34.3			
Hilf MDR Number :	228087			
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 (%) :	98.5			
Field Wet Density (t/m³) :	1.796			
Optimum Moisture Content (%) :	34.8			
Moisture Variation :	0.4			
Peak Converted Wet Density (t/m³) :	1.752			
Hilf Density Ratio (%) :	102.5			
Minimum Specification :	95			
Moisture Specification :	+ or - 2%			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 9
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	231961	231962	231963	231964
Test Number :	25	26	27	28
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484474.780 N 6939665.136 RL 87.750	E 484471.549 N 6939677.728 RL 87.593	E 484467.797 N 6939690.599 RL 87.016	E 484480.095 N 6939699.401 RL 86.264
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	16.6	19.9	17.4	19.8
Hilf MDR Number :	231961	231962	231963	231964
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	93.5	93	89.5	93
Field Wet Density (t/m³) :	2.050	2.007	2.111	2.059
Optimum Moisture Content (%) :	17.8	21.4	19.5	21.2
Moisture Variation :	1.1	1.5	2.0	1.4
Peak Converted Wet Density (t/m³) :	2.125	2.062	2.087	2.005
Hilf Density Ratio (%) :	96.5	97.5	101.0	102.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 10
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	27/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232161	232162	232163	
Test Number :	29	30	31	
Sampling Method :	-	-	-	
Date Sampled :	21/07/2017	21/07/2017	21/07/2017	
Date Tested :	21/07/2017	21/07/2017	21/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484473.570 N 6939690.310 RL 87.565	E 484471.485 N 6939674.980 RL 88.085	E 484475.105 N 6939698.460 RL 87.075	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	15.5	17.0	15.8	
Hilf MDR Number :	232161	232162	232163	
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 (%) :	90	82.5	90	
Field Wet Density (t/m³) :	2.055	2.040	2.074	
Optimum Moisture Content (%) :	17.2	20.6	17.6	
Moisture Variation :	1.7	3.3	1.7	
Peak Converted Wet Density (t/m³) :	2.099	2.102	2.090	
Hilf Density Ratio (%) :	98.0	97.0	99.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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APPROVED SIGNATORY

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

Client :	CCA WINSLOW	Report Number:	DL17/135 - 11
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232564	232565	232566	232567
Test Number :	32	33	34	35
Sampling Method :	-	-	-	-
Date Sampled :	28/07/2017	28/07/2017	28/07/2017	28/07/2017
Date Tested :	28/07/2017	28/07/2017	28/07/2017	28/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484462.730 N 6939674.230 RL 87.161	E 484475.282 N 6939686.441 RL 87.255	E 484469.290 N 6939701.344 RL 87.033	E 484483.769 N 6939702.315 RL 86.133
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 (%) :	15.2	15.9	12.3	23.6
Hilf MDR Number :	232564	232565	232566	232567
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 (%) :	82.5	97	80.5	103
Field Wet Density (t/m³) :	2.133	2.059	2.202	1.995
Optimum Moisture Content (%) :	18.4	16.4	15.3	22.9
Moisture Variation :	3.1	0.5	2.8	-0.6
Peak Converted Wet Density (t/m³) :	2.060	2.076	2.175	2.013
Hilf Density Ratio (%) :	103.5	99.0	101.0	99.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *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.*

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.

ASFE
THE BEST PEOPLE ON EARTH

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e-mail: info@asfe.org www.asfe.org

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Brisbane Office
Job Number: DL17/135
Ref No: 13569
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 540
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 540 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 540 are presented in Table 1 below.

Table 1: Summary of Testing

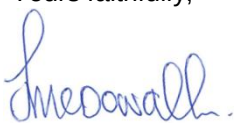
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
540	11	22nd April 2017	100.0
540	26	18th July 2017	97.5
540	30	21st July 2017	97.0
540	32	22nd April 2017	102.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 540 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 540 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 - 3, DL17/135 - 9, DL17/135 – 10, DL17/135 – 11.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 3
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228083	228084	228085	228086
Test Number :	8	9	10	11
Sampling Method :	-	-	-	-
Date Sampled :	22/04/2017	22/04/2017	22/04/2017	22/04/2017
Date Tested :	22/04/2017	22/04/2017	22/04/2017	22/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484444.285 N 6939687.524 RL 85.770	E 484451.405 N 6939676.265 RL 85.989	E 484463.660 N 6939692.129 RL 85.544	E 484464.138 N 6939671.710 RL 85.834
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 (%) :	33.3	30.2	27.0	26.7
Hilf MDR Number :	228083	228084	228085	228086
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 (%) :	99.5	99	100	98.5
Field Wet Density (t/m³) :	1.832	1.800	1.890	1.898
Optimum Moisture Content (%) :	33.4	30.6	27.0	27.0
Moisture Variation :	0.1	0.4	0.0	0.4
Peak Converted Wet Density (t/m³) :	1.813	1.798	1.860	1.894
Hilf Density Ratio (%) :	101.0	100.0	101.5	100.0
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 9
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	231961	231962	231963	231964
Test Number :	25	26	27	28
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484474.780 N 6939665.136 RL 87.750	E 484471.549 N 6939677.728 RL 87.593	E 484467.797 N 6939690.599 RL 87.016	E 484480.095 N 6939699.401 RL 86.264
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	16.6	19.9	17.4	19.8
Hilf MDR Number :	231961	231962	231963	231964
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	93.5	93	89.5	93
Field Wet Density (t/m³) :	2.050	2.007	2.111	2.059
Optimum Moisture Content (%) :	17.8	21.4	19.5	21.2
Moisture Variation :	1.1	1.5	2.0	1.4
Peak Converted Wet Density (t/m³) :	2.125	2.062	2.087	2.005
Hilf Density Ratio (%) :	96.5	97.5	101.0	102.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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

Client :	CCA WINSLOW	Report Number:	DL17/135 - 10
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	27/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232161	232162	232163	
Test Number :	29	30	31	
Sampling Method :	-	-	-	
Date Sampled :	21/07/2017	21/07/2017	21/07/2017	
Date Tested :	21/07/2017	21/07/2017	21/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484473.570 N 6939690.310 RL 87.565	E 484471.485 N 6939674.980 RL 88.085	E 484475.105 N 6939698.460 RL 87.075	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	15.5	17.0	15.8	
Hilf MDR Number :	232161	232162	232163	
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 (%) :	90	82.5	90	
Field Wet Density (t/m³) :	2.055	2.040	2.074	
Optimum Moisture Content (%) :	17.2	20.6	17.6	
Moisture Variation :	1.7	3.3	1.7	
Peak Converted Wet Density (t/m³) :	2.099	2.102	2.090	
Hilf Density Ratio (%) :	98.0	97.0	99.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 11
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232564	232565	232566	232567
Test Number :	32	33	34	35
Sampling Method :	-	-	-	-
Date Sampled :	28/07/2017	28/07/2017	28/07/2017	28/07/2017
Date Tested :	28/07/2017	28/07/2017	28/07/2017	28/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484462.730 N 6939674.230 RL 87.161	E 484475.282 N 6939686.441 RL 87.255	E 484469.290 N 6939701.344 RL 87.033	E 484483.769 N 6939702.315 RL 86.133
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 (%) :	15.2	15.9	12.3	23.6
Hilf MDR Number :	232564	232565	232566	232567
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 (%) :	82.5	97	80.5	103
Field Wet Density (t/m³) :	2.133	2.059	2.202	1.995
Optimum Moisture Content (%) :	18.4	16.4	15.3	22.9
Moisture Variation :	3.1	0.5	2.8	-0.6
Peak Converted Wet Density (t/m³) :	2.060	2.076	2.175	2.013
Hilf Density Ratio (%) :	103.5	99.0	101.0	99.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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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.

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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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- not prepared for your project,
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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.

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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

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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.

ASFE
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Brisbane Office
Job Number: DL17/135
Ref No: 13570
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 541
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 541 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 541 are presented in Table 1 below.

Table 1: Summary of Testing

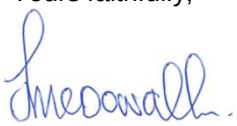
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
541	25	18th July 2017	96.5
541	36	29th July 2017	104.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 541 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 541 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 - 9, DL17/135 – 12.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 9
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	231961	231962	231963	231964
Test Number :	25	26	27	28
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484474.780 N 6939665.136 RL 87.750	E 484471.549 N 6939677.728 RL 87.593	E 484467.797 N 6939690.599 RL 87.016	E 484480.095 N 6939699.401 RL 86.264
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	16.6	19.9	17.4	19.8
Hilf MDR Number :	231961	231962	231963	231964
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	93.5	93	89.5	93
Field Wet Density (t/m³) :	2.050	2.007	2.111	2.059
Optimum Moisture Content (%) :	17.8	21.4	19.5	21.2
Moisture Variation :	1.1	1.5	2.0	1.4
Peak Converted Wet Density (t/m³) :	2.125	2.062	2.087	2.005
Hilf Density Ratio (%) :	96.5	97.5	101.0	102.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

Client :	CCA WINSLOW	Report Number:	DL17/135 - 12
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	232571	232572		
Test Number :	36	37		
Sampling Method :	-	-		
Date Sampled :	29/07/2017	29/07/2017		
Date Tested :	29/07/2017	29/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site	On Site		
Lot Number :	-	-		
Sample Location :	E 0484502 N 6939658 Final Level	E 0484508 N 6939704 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	19.1	15.3		
Hilf MDR Number :	232571	232572		
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	93		
Field Wet Density (t/m³) :	2.063	2.074		
Optimum Moisture Content (%) :	21.9	16.4		
Moisture Variation :	2.6	1.2		
Peak Converted Wet Density (t/m³) :	1.976	1.971		
Hilf Density Ratio (%) :	104.5	105.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
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Brisbane Office
Job Number: DL17/135
Ref No: 13571
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 542
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 542 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 542 are presented in Table 1 below.

Table 1: Summary of Testing

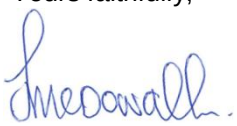
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
542	1	21st April 2017	103.0
542	44	29th July 2017	101.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 542 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 542 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 - 1, DL17/135 – 15.
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

Brisbane | Gold Coast | Brendale | Maroochydore
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www.morrisongeo.com.au

Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	09/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	228073	228074	228075	228076
Test Number :	1	2	3	4
Sampling Method :	-	-	-	-
Date Sampled :	21/04/2017	21/04/2017	21/04/2017	21/04/2017
Date Tested :	21/04/2017	21/04/2017	21/04/2017	21/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484438.444 N 6939706.207 RL 86.251	E 484433.361 N 6939694.107 RL 86.383	E 484427.527 N 6939682.995 RL 86.627	E 484476.903 N 6939722.202 RL 84.697
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 (%) :	31.8	31.2	16.3	17.1
Hilf MDR Number :	228073	228074	228075	228076
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	96.5	89	91.5
Field Wet Density (t/m³) :	1.805	1.815	2.061	2.064
Optimum Moisture Content (%) :	34.8	32.3	18.3	18.7
Moisture Variation :	2.9	1.2	1.9	1.5
Peak Converted Wet Density (t/m³) :	1.751	1.779	2.027	2.041
Hilf Density Ratio (%) :	103.0	102.0	101.5	101.0
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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Hilf Density Ratio Report

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Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	233102	233103		
Test Number :	44	45		
Sampling Method :	-	-		
Date Sampled :	08/08/2017	08/08/2017		
Date Tested :	08/08/2017	08/08/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	542	543		
Sample Location :	Lot 542 E 484420.900 N 6939712.250 Final Level	Lot 543 E 484431.770 N 6939723.915 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	10.4	13.4		
Hilf MDR Number :	233102	233103		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
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Moisture Ratio (%) :	81	82.5		
Field Wet Density (t/m³) :	2.196	2.212		
Optimum Moisture Content (%) :	12.8	16.3		
Moisture Variation :	2.4	2.7		
Peak Converted Wet Density (t/m³) :	2.168	2.147		
Hilf Density Ratio (%) :	101.5	103.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *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.*

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.

ASFE
THE BEST PEOPLE ON EARTH

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: DL17/135
Ref No: 13572
Author: L. McDowall

23rd July 2018

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ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 543
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 543 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 543 are presented in Table 1 below.

Table 1: Summary of Testing

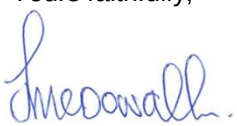
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
543	45	8th August 2017	103.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 543 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 543 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/135 - 15
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	23/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/135	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 8	Page 1 of 1	

Sample Number :	233102	233103		
Test Number :	44	45		
Sampling Method :	-	-		
Date Sampled :	08/08/2017	08/08/2017		
Date Tested :	08/08/2017	08/08/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	542	543		
Sample Location :	Lot 542 E 484420.900 N 6939712.250 Final Level	Lot 543 E 484431.770 N 6939723.915 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	10.4	13.4		
Hilf MDR Number :	233102	233103		
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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Optimum Moisture Content (%) :	12.8	16.3		
Moisture Variation :	2.4	2.7		
Peak Converted Wet Density (t/m³) :	2.168	2.147		
Hilf Density Ratio (%) :	101.5	103.0		
Minimum Specification :	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.

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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: DL17/135
Ref No: 13573
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 544
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 544 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

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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.

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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 544 are presented in Table 1 below.

Table 1: Summary of Testing

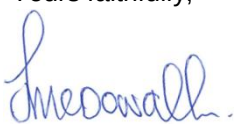
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
544	46	8th August 2017	96.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 544 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 544 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 19.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 19**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**26/03/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	242792	242793		
Test Number :	46	47		
Sampling Method :	-	-		
Date Sampled :	16/03/2018	16/03/2018		
Date Tested :	16/03/2018	16/03/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**544**	**545**		
Sample Location :	Lot 544 E 484427.719 N 6939733.052 RL 86.476	Lot 545 E 484431.691 N 6939745.880 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	20.4	14.5		
Hilf MDR Number :	242792	242793		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	101	100.5		
Field Wet Density (t/m³) :	2.129	2.116		
Optimum Moisture Content (%) :	20.2	14.4		
Moisture Variation :	-0.2	-0.1		
Peak Converted Wet Density (t/m³) :	2.202	2.208		
Hilf Density Ratio (%) :	**96.5**	**96.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed weathered BASALT	Crushed weathered BASALT		
Remarks :	-			

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

Liam A McDowall

Liam Mcdowall (Brisbane) - Branch Manager
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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.

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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

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Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

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Brisbane Office
Job Number: DL17/135
Ref No: 13574
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 545
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 545 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

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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 545 are presented in Table 1 below.

Table 1: Summary of Testing

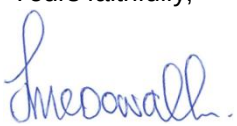
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
545	47	8th August 2017	96.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 545 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 545 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 19**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**26/03/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	242792	242793		
Test Number :	46	47		
Sampling Method :	-	-		
Date Sampled :	16/03/2018	16/03/2018		
Date Tested :	16/03/2018	16/03/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
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Sample Location :	Lot 544 E 484427.719 N 6939733.052 RL 86.476	Lot 545 E 484431.691 N 6939745.880 Final Level		
Test Depth (mm) :	150	150		
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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 *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.*

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: DL17/135
Ref No: 13575
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 567
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 567 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 567 are presented in Table 1 below.

Table 1: Summary of Testing

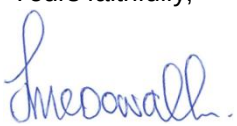
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
567	62	11th April 2018	102.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 567 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 567 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 29.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 29**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**28/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243652	243653	243654	243655
Test Number :	59	60	61	62
Sampling Method :	-	-	-	-
Date Sampled :	11/04/2018	11/04/2018	11/04/2018	11/04/2018
Date Tested :	11/04/2018	11/04/2018	11/04/2018	11/04/2018
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**
Lot Number :	**570**	**569**	**568**	**567**
Sample Location :	Lot 570 E 484393.180 N 6939714.270 Final Level	Lot 569 E 484397.695 N 6939726.709 Final Level	Lot 568 E 484403.905 N 6939738.130 Final Level	Lot 567 E 484405.718 N 6939750.131 Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	13	12
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	2.722	2.716
Field Moisture Content (%) :	13.8	13.7	13.1	15.4
Hilf MDR Number :	243652	243653	243654	243655
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 (%) :	89	89.5	84.5	99.5
Field Wet Density (t/m³) :	2.126	2.168	2.333	2.274
Optimum Moisture Content (%) :	15.6	15.3	15.5	15.4
Moisture Variation :	1.7	1.5	2.4	0.0
Peak Converted Wet Density (t/m³) :	2.143	2.158	2.209*	2.232*
Hilf Density Ratio (%) :	**99.0**	**100.5**	**105.5**	**102.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	Crushed BASALT
Remarks :	-			

* - denotes adjusted for oversize

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

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Brisbane Office
Job Number: DL17/135
Ref No: 13576
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 568
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 568 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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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 8 Development was carried out at a frequency of 1 test per 500m^3 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 568 are presented in Table 1 below.

Table 1: Summary of Testing

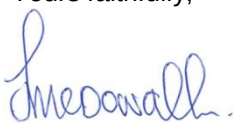
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
568	58	10th April 2018	98.5
568	61	11th April 2018	105.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 568 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 568 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 28, DL17/135 - 29.
Brochure: Important Information About Your Geotechnical Engineering Report

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Shrink Swell Index Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 28**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**28/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.7.1.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243607			
Test Number :	2			
Sampling Method :	-			
Sampled By :	Liam Davidson			
Date Sampled :	10/04/2018			
Date Tested :	13/04/2018			
Material Type :	**Allotment Fill (Capping Layer)**			
Material Source :	**On Site Stockpile**			
Sample Location :	E 484329.215 N 6939694.093 RL 92.316			
Inert Material Estimate (%) :	0			
PP before (kPa) :	-			
PP after (kPa) :	440			
Shrinkage Moisture Content (%) :	15.5			
Shrinkage (%) :	**1.2**			
Swell Moisture Content Before (%) :	15.4			
Swell Moisture Content After (%) :	17.9			
Swell (%) :	**0**			
Unit Weight (t/m³) :	2.15			
Shrink Swell Index Iss (%) :	**0.6**			
Visual Classification :	XW Basalt, (Sandy Clay)			
Cracking :	Yes			
Crumbling :	No			
Remarks :	**Remoulded @ 95% Std of MDD @ OMC.**			

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 29**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**28/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243652	243653	243654	243655
Test Number :	59	60	61	62
Sampling Method :	-	-	-	-
Date Sampled :	11/04/2018	11/04/2018	11/04/2018	11/04/2018
Date Tested :	11/04/2018	11/04/2018	11/04/2018	11/04/2018
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**
Lot Number :	**570**	**569**	**568**	**567**
Sample Location :	Lot 570 E 484393.180 N 6939714.270 Final Level	Lot 569 E 484397.695 N 6939726.709 Final Level	Lot 568 E 484403.905 N 6939738.130 Final Level	Lot 567 E 484405.718 N 6939750.131 Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	13	12
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	2.722	2.716
Field Moisture Content (%) :	13.8	13.7	13.1	15.4
Hilf MDR Number :	243652	243653	243654	243655
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 (%) :	89	89.5	84.5	99.5
Field Wet Density (t/m³) :	2.126	2.168	2.333	2.274
Optimum Moisture Content (%) :	15.6	15.3	15.5	15.4
Moisture Variation :	1.7	1.5	2.4	0.0
Peak Converted Wet Density (t/m³) :	2.143	2.158	2.209*	2.232*
Hilf Density Ratio (%) :	**99.0**	**100.5**	**105.5**	**102.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	Crushed BASALT
Remarks :	-			

* - denotes adjusted for oversize

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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.

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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.

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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,
- elevation, configuration, location, orientation, or weight of the proposed structure,
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- 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

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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.

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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

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.*

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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.

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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

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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: DL17/135
Ref No: 13577
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 569
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 569 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 569 are presented in Table 1 below.

Table 1: Summary of Testing

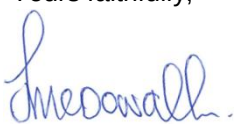
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
569	60	11th April 2018	100.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 569 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 569 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 - 29.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 29**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**28/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243652	243653	243654	243655
Test Number :	59	60	61	62
Sampling Method :	-	-	-	-
Date Sampled :	11/04/2018	11/04/2018	11/04/2018	11/04/2018
Date Tested :	11/04/2018	11/04/2018	11/04/2018	11/04/2018
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**
Lot Number :	**570**	**569**	**568**	**567**
Sample Location :	Lot 570 E 484393.180 N 6939714.270 Final Level	Lot 569 E 484397.695 N 6939726.709 Final Level	Lot 568 E 484403.905 N 6939738.130 Final Level	Lot 567 E 484405.718 N 6939750.131 Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	13	12
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	2.722	2.716
Field Moisture Content (%) :	13.8	13.7	13.1	15.4
Hilf MDR Number :	243652	243653	243654	243655
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 (%) :	89	89.5	84.5	99.5
Field Wet Density (t/m³) :	2.126	2.168	2.333	2.274
Optimum Moisture Content (%) :	15.6	15.3	15.5	15.4
Moisture Variation :	1.7	1.5	2.4	0.0
Peak Converted Wet Density (t/m³) :	2.143	2.158	2.209*	2.232*
Hilf Density Ratio (%) :	**99.0**	**100.5**	**105.5**	**102.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	Crushed BASALT
Remarks :	-			

* - denotes adjusted for oversize

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

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

Important Information about Your

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Brisbane Office
Job Number: DL17/135
Ref No: 13578
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 570
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 570 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 570 are presented in Table 1 below.

Table 1: Summary of Testing

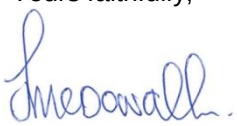
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
570	57	10th April 2018	100.0
570	59	11th April 2018	99.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 570 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 570 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 25, DL17/135 - 29.
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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 25**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**16/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243605	243606		
Test Number :	57	58		
Sampling Method :	-	-		
Date Sampled :	10/04/2018	10/04/2018		
Date Tested :	10/04/2018	10/04/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**570**	**568**		
Sample Location :	Lot 570 E 484409.561 N 6939711.707 RL 88.814	Lot 568 E 484412.739 N 6939735.577 RL 88.085		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	14.0	13.8		
Hilf MDR Number :	243605	243606		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	99	99.5		
Field Wet Density (t/m³) :	2.209	2.180		
Optimum Moisture Content (%) :	14.2	13.9		
Moisture Variation :	0.1	0.1		
Peak Converted Wet Density (t/m³) :	2.206	2.210		
Hilf Density Ratio (%) :	**100.0**	**98.5**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

Liam A McDowall

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

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

Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 29**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**28/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243652	243653	243654	243655
Test Number :	59	60	61	62
Sampling Method :	-	-	-	-
Date Sampled :	11/04/2018	11/04/2018	11/04/2018	11/04/2018
Date Tested :	11/04/2018	11/04/2018	11/04/2018	11/04/2018
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**
Lot Number :	**570**	**569**	**568**	**567**
Sample Location :	Lot 570 E 484393.180 N 6939714.270 Final Level	Lot 569 E 484397.695 N 6939726.709 Final Level	Lot 568 E 484403.905 N 6939738.130 Final Level	Lot 567 E 484405.718 N 6939750.131 Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	13	12
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	2.722	2.716
Field Moisture Content (%) :	13.8	13.7	13.1	15.4
Hilf MDR Number :	243652	243653	243654	243655
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 (%) :	89	89.5	84.5	99.5
Field Wet Density (t/m³) :	2.126	2.168	2.333	2.274
Optimum Moisture Content (%) :	15.6	15.3	15.5	15.4
Moisture Variation :	1.7	1.5	2.4	0.0
Peak Converted Wet Density (t/m³) :	2.143	2.158	2.209*	2.232*
Hilf Density Ratio (%) :	**99.0**	**100.5**	**105.5**	**102.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	Crushed BASALT
Remarks :	-			

* - denotes adjusted for oversize

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

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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.

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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: DL17/135
Ref No: 13579
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 571
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 571 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 571 are presented in Table 1 below.

Table 1: Summary of Testing

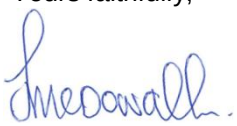
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
571	54	10th April 2018	96.0
571	55	11th April 2018	102.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 571 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 571 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 24.
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 24**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**16/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243602	243603	243604	
Test Number :	54	55	56	
Sampling Method :	-	-	-	
Date Sampled :	10/04/2018	10/04/2018	10/04/2018	
Date Tested :	10/04/2018	10/04/2018	10/04/2018	
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	
Lot Number :	**517**	**517**	**572**	
Sample Location :	Lot 517 E 484337.524 N 6939693.538 Final Level	Lot 517 E 484329.215 N 6939694.093 RL 92.316	Lot 572 E 484347.825 N 6939707.606 Final Level	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	15.7	10.6	13.6	
Hilf MDR Number :	243602	243603	243604	
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 (%) :	100	80	98.5	
Field Wet Density (t/m³) :	2.084	2.171	2.170	
Optimum Moisture Content (%) :	15.7	13.2	13.8	
Moisture Variation :	0.0	2.6	0.2	
Peak Converted Wet Density (t/m³) :	2.173	2.127	2.169	
Hilf Density Ratio (%) :	**96.0**	**102.0**	**100.0**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

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Brisbane Office
Job Number: DL17/135
Ref No: 13580
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 572
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

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This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

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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 572 are presented in Table 1 below.

Table 1: Summary of Testing

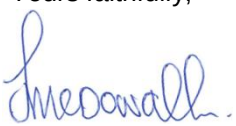
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
572	56	10th April 2018	100.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 572 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 572 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 24.
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

Brisbane | Gold Coast | Maroochydore
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ABN: 51 009 878 899
www.morrisongeo.com.au

Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 24**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**16/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243602	243603	243604	
Test Number :	54	55	56	
Sampling Method :	-	-	-	
Date Sampled :	10/04/2018	10/04/2018	10/04/2018	
Date Tested :	10/04/2018	10/04/2018	10/04/2018	
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	
Lot Number :	**517**	**517**	**572**	
Sample Location :	Lot 517 E 484337.524 N 6939693.538 Final Level	Lot 517 E 484329.215 N 6939694.093 RL 92.316	Lot 572 E 484347.825 N 6939707.606 Final Level	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	15.7	10.6	13.6	
Hilf MDR Number :	243602	243603	243604	
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 (%) :	100	80	98.5	
Field Wet Density (t/m³) :	2.084	2.171	2.170	
Optimum Moisture Content (%) :	15.7	13.2	13.8	
Moisture Variation :	0.0	2.6	0.2	
Peak Converted Wet Density (t/m³) :	2.173	2.127	2.169	
Hilf Density Ratio (%) :	**96.0**	**102.0**	**100.0**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

Liam A McDowall

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

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Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

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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.

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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.*

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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 *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.*

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: DL17/135
Ref No: 13581
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 573
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 573 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 20th April 2017 and 11th April 2018.

This report should be read in conjunction with Morrison Geotechnic Report "13439 – DL17/135 – CCA Winslow – Edens Crossing Estate, Stage 8 – Level One Report" Dated 26th June 2018.

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 8 Development was carried out at a frequency of 1 test per 500m^3 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 573 are presented in Table 1 below.

Table 1: Summary of Testing

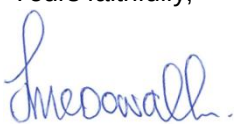
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
573	52	6th April 2018	100.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 573 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 573 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 23**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**16/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243441	243442		
Test Number :	52	53		
Sampling Method :	-	-		
Date Sampled :	06/04/2018	06/04/2018		
Date Tested :	06/04/2018	06/04/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site**	**On Site**		
Lot Number :	**573**	**574**		
Sample Location :	Lot 573 E 484350.062 N 6939724.938 RL 89.943	Lot 574 E 484346.400 N 6939737.539 RL 89.410		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	15.9	16.2		
Hilf MDR Number :	243441	243442		
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 :	AS1289.2.1.4	AS1289.2.1.4		
Moisture Ratio (%) :	97.5	101		
Field Wet Density (t/m³) :	2.182	2.151		
Optimum Moisture Content (%) :	16.3	16.0		
Moisture Variation :	0.4	-0.1		
Peak Converted Wet Density (t/m³) :	2.182	2.165		
Hilf Density Ratio (%) :	**100.0**	**99.5**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

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ASFE
THE BEST PEOPLE ON EARTH

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/135
Ref No: 13582
Author: L. McDowall

23rd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

ATTENTION: MR ANTHONY ROSARIO
MR KIERAN HOY
Email: Anthonyrosario@ccawinslow.com.au
kieranh@ccawinslow.com.au

Dear Sir,

RE: LOT 574
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 8
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 574 at the above Development to form a working platform to support a future residential building.

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

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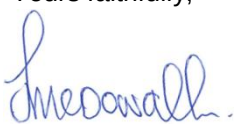
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
574	53	6th April 2018	99.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 574 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 574 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 11th April 2018

If there are any queries concerning the above please do not hesitate to contact this office, or alternatively send to my email at: lmcdowall@morrisongeo.com.au

Yours faithfully,



L. McDOWALL
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports DL17/135 – 23.
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/135 - 23**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**16/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/135**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 8**	**Page 1 of 1**	

Sample Number :	243441	243442		
Test Number :	52	53		
Sampling Method :	-	-		
Date Sampled :	06/04/2018	06/04/2018		
Date Tested :	06/04/2018	06/04/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site**	**On Site**		
Lot Number :	**573**	**574**		
Sample Location :	Lot 573 E 484350.062 N 6939724.938 RL 89.943	Lot 574 E 484346.400 N 6939737.539 RL 89.410		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	15.9	16.2		
Hilf MDR Number :	243441	243442		
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 :	AS1289.2.1.4	AS1289.2.1.4		
Moisture Ratio (%) :	97.5	101		
Field Wet Density (t/m³) :	2.182	2.151		
Optimum Moisture Content (%) :	16.3	16.0		
Moisture Variation :	0.4	-0.1		
Peak Converted Wet Density (t/m³) :	2.182	2.165		
Hilf Density Ratio (%) :	**100.0**	**99.5**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *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.*

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.

ASFE
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