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

Brisbane Office
Job Number: DL17/131
Ref No: 12056
Author: L. McDowall

1st August 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 425
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 500m^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 425 are representative of the fill constructed on Lot 425. The closest test to Lot 425 was performed on Lot 426. A summary of tests representative of the fill constructed on Lot 425 are presented in Table 1 below.

Table 1: Summary of Testing

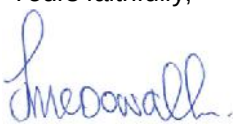
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
426	20	20th July 2017	100.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 425 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 425 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 25th July 2017.

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/131 – 14
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 14
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	24/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1		

Sample Number :	232083	232084		
Test Number :	19	20		
Sampling Method :	-	-		
Date Sampled :	20/07/2017	20/07/2017		
Date Tested :	20/07/2017	20/07/2017		
Material Type :	Capping Layer	Capping Layer		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	Old Temporary Basin E 484629.353 N 6939996.499 RL 74.683	Old Temporary Basin E 484646.721 N 6939993.907 RL 74.474		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	17.5	16.5		
Hilf MDR Number :	232083	232084		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	93	91		
Field Wet Density (t/m³) :	1.936	2.048		
Optimum Moisture Content (%) :	18.8	18.1		
Moisture Variation :	1.3	1.6		
Peak Converted Wet Density (t/m³) :	1.979	2.039		
Hilf Density Ratio (%) :	98.0	100.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

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.

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

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

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject To 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 such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations", many of these provisions indicate where geotechnical engineers responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

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

Rely on Your Geotechnical Engineer for Additional Assistance

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

ASFE PROFESSIONAL FIRMS PRACTICING IN THE GEOSCIENCES

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email: info@asfe.org www.asfe.org

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Brisbane Office
Job Number: DL17/131
Ref No: 12057
Author: L. McDowall

1st August 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 426
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 500m^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 426 are presented in Table 1 below.

Table 1: Summary of Testing

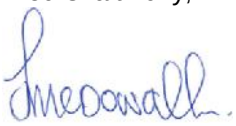
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
426	20	20th July 2017	100.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 426 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 426 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 25th July 2017.

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/131 – 14
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 14
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	24/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1		

Sample Number :	232083	232084		
Test Number :	19	20		
Sampling Method :	-	-		
Date Sampled :	20/07/2017	20/07/2017		
Date Tested :	20/07/2017	20/07/2017		
Material Type :	Capping Layer	Capping Layer		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	Old Temporary Basin E 484629.353 N 6939996.499 RL 74.683	Old Temporary Basin E 484646.721 N 6939993.907 RL 74.474		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	17.5	16.5		
Hilf MDR Number :	232083	232084		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
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Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
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ASFE PROFESSIONAL FIRMS PRACTICING IN THE GEOSCIENCES

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email: info@asfe.org www.asfe.org

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MORRISON GEOTECHNIC

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Brisbane Office
Job Number: DL17/131
Ref No: 12058
Author: L. McDowall

1st August 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 427
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

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Compaction testing at the Edens Crossing Estate, Stage 1 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 427 are presented in Table 1 below.

Table 1: Summary of Testing

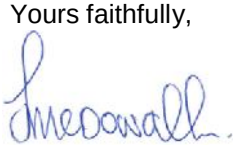
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
427	19	20th July 2017	98.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 427 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 427 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 25th July 2017.

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/131 – 14
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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ABN: 51 009 878 899
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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 14
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	24/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1		

Sample Number :	232083	232084		
Test Number :	19	20		
Sampling Method :	-	-		
Date Sampled :	20/07/2017	20/07/2017		
Date Tested :	20/07/2017	20/07/2017		
Material Type :	Capping Layer	Capping Layer		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	Old Temporary Basin E 484629.353 N 6939996.499 RL 74.683	Old Temporary Basin E 484646.721 N 6939993.907 RL 74.474		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	17.5	16.5		
Hilf MDR Number :	232083	232084		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	93	91		
Field Wet Density (t/m³) :	1.936	2.048		
Optimum Moisture Content (%) :	18.8	18.1		
Moisture Variation :	1.3	1.6		
Peak Converted Wet Density (t/m³) :	1.979	2.039		
Hilf Density Ratio (%) :	98.0	100.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

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.

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

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

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject To 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 such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations", many of these provisions indicate where geotechnical engineers responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

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

Rely on Your Geotechnical Engineer for Additional Assistance

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

ASFE PROFESSIONAL FIRMS PRACTICING IN THE GEOSCIENCES

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email: info@asfe.org www.asfe.org

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Brisbane Office
Job Number: DL17/131
Ref No: 12059
Author: L. McDowall

1st August 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 428
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 500m^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 428 are representative of the fill constructed on Lot 428. The closest test to Lot 428 was performed on Lot 427. A summary of tests representative of the fill constructed on Lot 428 are presented in Table 1 below.

Table 1: Summary of Testing

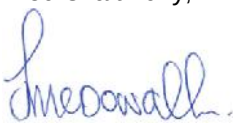
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
427	19	20th July 2017	98.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 428 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 428 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 25th July 2017.

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/131 – 14
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 14
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	24/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1		

Sample Number :	232083	232084		
Test Number :	19	20		
Sampling Method :	-	-		
Date Sampled :	20/07/2017	20/07/2017		
Date Tested :	20/07/2017	20/07/2017		
Material Type :	Capping Layer	Capping Layer		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	Old Temporary Basin E 484629.353 N 6939996.499 RL 74.683	Old Temporary Basin E 484646.721 N 6939993.907 RL 74.474		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	17.5	16.5		
Hilf MDR Number :	232083	232084		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
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Field Wet Density (t/m³) :	1.936	2.048		
Optimum Moisture Content (%) :	18.8	18.1		
Moisture Variation :	1.3	1.6		
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Hilf Density Ratio (%) :	98.0	100.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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APPROVED SIGNATORY

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

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Telephone: 301-565-2733 Facsimile: 301-589-2017
email: info@asfe.org www.asfe.org

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

Brisbane Office
Job Number: DL17/131
Ref No: 12060
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 429
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 429 are representative of the fill constructed on Lot 429. The closest test to Lot 429 was performed on Lot 431. A summary of tests representative of the fill constructed on Lot 429 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 429 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 429 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 3 and 4
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 3
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228106			
Test Number :	8			
Sampling Method :	-			
Date Sampled :	28/04/2017			
Date Tested :	28/04/2017			
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut			
Lot Number :	-			
Sample Location :	E 484569.413 N 6940009.567 RL 76.500			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	21.8			
Hilf MDR Number :	228106			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	89.5			
Field Wet Density (t/m³) :	1.964			
Optimum Moisture Content (%) :	24.4			
Moisture Variation :	2.4			
Peak Converted Wet Density (t/m³) :	1.965			
Hilf Density Ratio (%) :	100.0			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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www.morrisongeo.com.au

Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 4
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228107	228108		
Test Number :	9	10		
Sampling Method :	-	-		
Date Sampled :	29/04/2017	29/04/2017		
Date Tested :	29/04/2017	29/04/2017		
Material Type :	Embankment	Embankment		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	Road 1 E 484550.841 N 6939985.154 RL 76.494	Road 1 E 484586.940 N 6939979.621 RL 75.545		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	18.5	17.9		
Hilf MDR Number :	228107	228108		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	87.5	87.5		
Field Wet Density (t/m³) :	2.050	2.087		
Optimum Moisture Content (%) :	21.2	20.4		
Moisture Variation :	2.5	2.4		
Peak Converted Wet Density (t/m³) :	1.987	1.971		
Hilf Density Ratio (%) :	103.0	106.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
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Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. 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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Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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Brisbane Office
Job Number: DL17/131
Ref No: 12061
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 430
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 430 are representative of the fill constructed on Lot 430. The closest test to Lot 430 was performed on Lot 431. A summary of tests representative of the fill constructed on Lot 430 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 430 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 430 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 3 and 4
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 3
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228106			
Test Number :	8			
Sampling Method :	-			
Date Sampled :	28/04/2017			
Date Tested :	28/04/2017			
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut			
Lot Number :	-			
Sample Location :	E 484569.413 N 6940009.567 RL 76.500			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	21.8			
Hilf MDR Number :	228106			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	89.5			
Field Wet Density (t/m³) :	1.964			
Optimum Moisture Content (%) :	24.4			
Moisture Variation :	2.4			
Peak Converted Wet Density (t/m³) :	1.965			
Hilf Density Ratio (%) :	100.0			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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

Sample Number :	228107	228108		
Test Number :	9	10		
Sampling Method :	-	-		
Date Sampled :	29/04/2017	29/04/2017		
Date Tested :	29/04/2017	29/04/2017		
Material Type :	Embankment	Embankment		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	Road 1 E 484550.841 N 6939985.154 RL 76.494	Road 1 E 484586.940 N 6939979.621 RL 75.545		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	18.5	17.9		
Hilf MDR Number :	228107	228108		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
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Brisbane Office
Job Number: DL17/131
Ref No: 12062
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 431
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 431 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 431 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 431 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 3
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 3
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228106			
Test Number :	8			
Sampling Method :	-			
Date Sampled :	28/04/2017			
Date Tested :	28/04/2017			
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site Cut			
Lot Number :	-			
Sample Location :	E 484569.413 N 6940009.567 RL 76.500			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	21.8			
Hilf MDR Number :	228106			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	89.5			
Field Wet Density (t/m³) :	1.964			
Optimum Moisture Content (%) :	24.4			
Moisture Variation :	2.4			
Peak Converted Wet Density (t/m³) :	1.965			
Hilf Density Ratio (%) :	100.0			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
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1162 / 1169

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- not prepared for your project,
- not prepared for the specific site explored, or
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Subsurface Conditions Can Change

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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.

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

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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.

ASFE
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Brisbane Office
Job Number: DL17/131
Ref No: 12063
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 432
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 432 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 432 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 432 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484514.964 N 6940016.926 RL 78.351	E 484527.927 N 6940019.169 RL 77.814	E 484542.200 N 6940006.621 RL 77.331	E 484555.166 N 6940008.777 RL 77.067
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	18.1	20.5	15.6	18.9
Hilf MDR Number :	228102	228103	228104	228105
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	79	82.5	87	89.5
Field Wet Density (t/m³) :	2.068	2.026	2.138	2.133
Optimum Moisture Content (%) :	22.9	24.8	18.0	21.2
Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³) :	1.942	1.927	2.094	2.016
Hilf Density Ratio (%) :	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Brisbane Office
Job Number: DL17/131
Ref No: 12064
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 433
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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A summary of tests representative of the fill constructed on Lot 433 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 433 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 433 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

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L. McDOWALL
For and on behalf of
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Client :	CCA WINSLOW	Report Number:	DL17/131 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484514.964 N 6940016.926 RL 78.351	E 484527.927 N 6940019.169 RL 77.814	E 484542.200 N 6940006.621 RL 77.331	E 484555.166 N 6940008.777 RL 77.067
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	18.1	20.5	15.6	18.9
Hilf MDR Number :	228102	228103	228104	228105
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	79	82.5	87	89.5
Field Wet Density (t/m³) :	2.068	2.026	2.138	2.133
Optimum Moisture Content (%) :	22.9	24.8	18.0	21.2
Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³) :	1.942	1.927	2.094	2.016
Hilf Density Ratio (%) :	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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APPROVED SIGNATORY

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

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- 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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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.

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Brisbane Office
Job Number: DL17/131
Ref No: 12065
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 434
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 434 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 434 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 434 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 2
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484514.964 N 6940016.926 RL 78.351	E 484527.927 N 6940019.169 RL 77.814	E 484542.200 N 6940006.621 RL 77.331	E 484555.166 N 6940008.777 RL 77.067
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	18.1	20.5	15.6	18.9
Hilf MDR Number :	228102	228103	228104	228105
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Compactive Effort :	Standard	Standard	Standard	Standard
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Optimum Moisture Content (%) :	22.9	24.8	18.0	21.2
Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³) :	1.942	1.927	2.094	2.016
Hilf Density Ratio (%) :	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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APPROVED SIGNATORY

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ASFE
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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/131
Ref No: 12066
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 435
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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Compaction testing at the Edens Crossing Estate, Stage 1 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 435 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 435 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 435 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 2
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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484514.964 N 6940016.926 RL 78.351	E 484527.927 N 6940019.169 RL 77.814	E 484542.200 N 6940006.621 RL 77.331	E 484555.166 N 6940008.777 RL 77.067
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	18.1	20.5	15.6	18.9
Hilf MDR Number :	228102	228103	228104	228105
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	79	82.5	87	89.5
Field Wet Density (t/m³) :	2.068	2.026	2.138	2.133
Optimum Moisture Content (%) :	22.9	24.8	18.0	21.2
Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³) :	1.942	1.927	2.094	2.016
Hilf Density Ratio (%) :	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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ACCREDITATION

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APPROVED SIGNATORY

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

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- not prepared for your project,
- not prepared for the specific site explored, or
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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

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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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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Brisbane Office
Job Number: DL17/131
Ref No: 12067
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 436
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 436 are representative of the fill constructed on Lot 436. The closest test to Lot 436 was performed on Lot 435. A summary of tests representative of the fill constructed on Lot 436 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 436 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 436 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 2
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228102	228103	228104	228105
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date Tested :	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484514.964 N 6940016.926 RL 78.351	E 484527.927 N 6940019.169 RL 77.814	E 484542.200 N 6940006.621 RL 77.331	E 484555.166 N 6940008.777 RL 77.067
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	18.1	20.5	15.6	18.9
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Moisture Variation :	4.5	4.1	2.3	2.2
Peak Converted Wet Density (t/m³) :	1.942	1.927	2.094	2.016
Hilf Density Ratio (%) :	106.5	105.0	102.0	106.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Brisbane Office
Job Number: DL17/131
Ref No: 12068
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 437
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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Compaction testing at the Edens Crossing Estate, Stage 1 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 437 are representative of the fill constructed on Lot 437. The closest test to Lot 437 was performed on Lot 438. A summary of tests representative of the fill constructed on Lot 437 are presented in Table 1 below.

Table 1: Summary of Testing

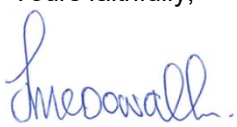
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
438	1	27th April 2017	104.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 437 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 437 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/131 – 1
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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602 N 6940018.677 RL 80.936	E 484455.472 N 6940021.843 RL 81.942	E 484420.595 N 6940032.744 RL 82.556	
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 (%) :	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	89.5	89.5	84.5	
Field Wet Density (t/m³) :	1.963	1.918	1.911	
Optimum Moisture Content (%) :	27.6	24.4	22.8	
Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³) :	1.888	1.875	1.891	
Hilf Density Ratio (%) :	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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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.

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. 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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e-mail: info@asfe.org www.asfe.org

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Brisbane Office
Job Number: DL17/131
Ref No: 12069
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 438
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 438 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 438 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 438 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 1
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602 N 6940018.677 RL 80.936	E 484455.472 N 6940021.843 RL 81.942	E 484420.595 N 6940032.744 RL 82.556	
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 (%) :	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	89.5	89.5	84.5	
Field Wet Density (t/m³) :	1.963	1.918	1.911	
Optimum Moisture Content (%) :	27.6	24.4	22.8	
Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³) :	1.888	1.875	1.891	
Hilf Density Ratio (%) :	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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THE BEST PEOPLE ON EARTH

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Brisbane Office
Job Number: DL17/131
Ref No: 12070
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 439
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 500m^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 439 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 439 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 439 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 1
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602 N 6940018.677 RL 80.936	E 484455.472 N 6940021.843 RL 81.942	E 484420.595 N 6940032.744 RL 82.556	
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 (%) :	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	89.5	89.5	84.5	
Field Wet Density (t/m³) :	1.963	1.918	1.911	
Optimum Moisture Content (%) :	27.6	24.4	22.8	
Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³) :	1.888	1.875	1.891	
Hilf Density Ratio (%) :	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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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
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: DL17/131
Ref No: 12071
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 440
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 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 440 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
440	3	27th April 2017	101.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 440 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 440 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 1
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602 N 6940018.677 RL 80.936	E 484455.472 N 6940021.843 RL 81.942	E 484420.595 N 6940032.744 RL 82.556	
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 (%) :	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
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Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³) :	1.888	1.875	1.891	
Hilf Density Ratio (%) :	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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Brisbane Office
Job Number: DL17/131
Ref No: 12072
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 441
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 500m^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 441 are representative of the fill constructed on Lot 441. The closest test to Lot 441 was performed on Lot 440. A summary of tests representative of the fill constructed on Lot 441 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
440	3	27th April 2017	101.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 441 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 441 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 1
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602 N 6940018.677 RL 80.936	E 484455.472 N 6940021.843 RL 81.942	E 484420.595 N 6940032.744 RL 82.556	
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 (%) :	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	89.5	89.5	84.5	
Field Wet Density (t/m³) :	1.963	1.918	1.911	
Optimum Moisture Content (%) :	27.6	24.4	22.8	
Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³) :	1.888	1.875	1.891	
Hilf Density Ratio (%) :	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

NATA
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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.

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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.

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- 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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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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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/131
Ref No: 12073
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 442
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 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 442 are representative of the fill constructed on Lot 442. The closest test to Lot 442 was performed on Lot 440. A summary of tests representative of the fill constructed on Lot 442 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
440	3	27th April 2017	101.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 442 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 442 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 1
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228099	228100	228101	
Test Number :	1	2	3	
Sampling Method :	-	-	-	
Date Sampled :	27/04/2017	27/04/2017	27/04/2017	
Date Tested :	27/04/2017	27/04/2017	27/04/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484471.602 N 6940018.677 RL 80.936	E 484455.472 N 6940021.843 RL 81.942	E 484420.595 N 6940032.744 RL 82.556	
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 (%) :	24.7	21.9	19.3	
Hilf MDR Number :	228099	228100	228101	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	89.5	89.5	84.5	
Field Wet Density (t/m³) :	1.963	1.918	1.911	
Optimum Moisture Content (%) :	27.6	24.4	22.8	
Moisture Variation :	2.7	2.5	3.4	
Peak Converted Wet Density (t/m³) :	1.888	1.875	1.891	
Hilf Density Ratio (%) :	104.0	102.5	101.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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Brisbane Office
Job Number: DL17/131
Ref No: 12074
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 444
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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Compaction testing at the Edens Crossing Estate, Stage 1 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 444 are representative of the fill constructed on Lot 444. The closest test to Lot 444 was performed on Lot 445. A summary of tests representative of the fill constructed on Lot 444 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 444 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 444 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 8
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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 8
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	08/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228396			
Test Number :	18			
Sampling Method :	-			
Date Sampled :	04/05/2017			
Date Tested :	04/05/2017			
Material Type :	Allotment Fill (Cut)			
Material Source :	On Site Cut			
Lot Number :	-			
Sample Location :	Unsuitable Replacement E 484411.735 N 6939969.019 RL 83.499			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	14.2			
Hilf MDR Number :	228396			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	91			
Field Wet Density (t/m³) :	2.146			
Optimum Moisture Content (%) :	15.6			
Moisture Variation :	1.3			
Peak Converted Wet Density (t/m³) :	2.145			
Hilf Density Ratio (%) :	100.0			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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APPROVED SIGNATORY

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- 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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Brisbane Office
Job Number: DL17/131
Ref No: 12075
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 445
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 445 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 445 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 445 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 8
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 8
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	08/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228396			
Test Number :	18			
Sampling Method :	-			
Date Sampled :	04/05/2017			
Date Tested :	04/05/2017			
Material Type :	Allotment Fill (Cut)			
Material Source :	On Site Cut			
Lot Number :	-			
Sample Location :	Unsuitable Replacement E 484411.735 N 6939969.019 RL 83.499			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	14.2			
Hilf MDR Number :	228396			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	91			
Field Wet Density (t/m³) :	2.146			
Optimum Moisture Content (%) :	15.6			
Moisture Variation :	1.3			
Peak Converted Wet Density (t/m³) :	2.145			
Hilf Density Ratio (%) :	100.0			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
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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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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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:

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- not prepared for your project,
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ASFE
THE BEST PEOPLE ON EARTH

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Brisbane Office
Job Number: DL17/131
Ref No: 12076
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 453
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 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 453 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 453 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 453 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 5
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 5
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228109	228110	228111	228112
Test Number :	11	12	13	14
Sampling Method :	-	-	-	-
Date Sampled :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Date Tested :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484592.404 N 6939952.741 RL 76.292	E 484575.500 N 6939953.111 RL 76.597	E 484561.676 N 6939953.024 RL 77.024	E 484549.839 N 6939954.741 RL 77.428
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	20.4	21.4	20.5	21.3
Hilf MDR Number :	228109	228110	228111	228112
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	91.5	94.5	90.5	100.5
Field Wet Density (t/m³) :	2.096	1.955	2.056	1.993
Optimum Moisture Content (%) :	22.4	22.7	22.6	21.2
Moisture Variation :	1.8	1.3	2.1	-0.1
Peak Converted Wet Density (t/m³) :	1.978	1.954	1.971	1.959
Hilf Density Ratio (%) :	106.0	100.0	104.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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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.***

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/131
Ref No: 12077
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 454
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 454 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 454 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 454 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 5
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 5
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228109	228110	228111	228112
Test Number :	11	12	13	14
Sampling Method :	-	-	-	-
Date Sampled :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Date Tested :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484592.404 N 6939952.741 RL 76.292	E 484575.500 N 6939953.111 RL 76.597	E 484561.676 N 6939953.024 RL 77.024	E 484549.839 N 6939954.741 RL 77.428
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	20.4	21.4	20.5	21.3
Hilf MDR Number :	228109	228110	228111	228112
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	91.5	94.5	90.5	100.5
Field Wet Density (t/m³) :	2.096	1.955	2.056	1.993
Optimum Moisture Content (%) :	22.4	22.7	22.6	21.2
Moisture Variation :	1.8	1.3	2.1	-0.1
Peak Converted Wet Density (t/m³) :	1.978	1.954	1.971	1.959
Hilf Density Ratio (%) :	106.0	100.0	104.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA
ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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

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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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Brisbane Office
Job Number: DL17/131
Ref No: 12078
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 455
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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Compaction testing at the Edens Crossing Estate, Stage 1 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 455 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 455 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 455 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 5
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 5
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228109	228110	228111	228112
Test Number :	11	12	13	14
Sampling Method :	-	-	-	-
Date Sampled :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Date Tested :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484592.404 N 6939952.741 RL 76.292	E 484575.500 N 6939953.111 RL 76.597	E 484561.676 N 6939953.024 RL 77.024	E 484549.839 N 6939954.741 RL 77.428
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
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Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
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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

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.***

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

Brisbane Office
Job Number: DL17/131
Ref No: 12079
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 456
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 456 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 456 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 456 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 5
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 5
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228109	228110	228111	228112
Test Number :	11	12	13	14
Sampling Method :	-	-	-	-
Date Sampled :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Date Tested :	29/04/2017	29/04/2017	29/04/2017	29/04/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484592.404 N 6939952.741 RL 76.292	E 484575.500 N 6939953.111 RL 76.597	E 484561.676 N 6939953.024 RL 77.024	E 484549.839 N 6939954.741 RL 77.428
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	20.4	21.4	20.5	21.3
Hilf MDR Number :	228109	228110	228111	228112
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	91.5	94.5	90.5	100.5
Field Wet Density (t/m³) :	2.096	1.955	2.056	1.993
Optimum Moisture Content (%) :	22.4	22.7	22.6	21.2
Moisture Variation :	1.8	1.3	2.1	-0.1
Peak Converted Wet Density (t/m³) :	1.978	1.954	1.971	1.959
Hilf Density Ratio (%) :	106.0	100.0	104.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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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.

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

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Brisbane Office
Job Number: DL17/131
Ref No: 12080
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 457
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
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Level One Inspections and Testing was carried out on the stripped ground surface and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions.

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 457 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 457 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 457 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 6
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 6
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228113	228114		
Test Number :	15	16		
Sampling Method :	-	-		
Date Sampled :	29/04/2017	29/04/2017		
Date Tested :	29/04/2017	29/04/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	E 484537.253 N 6939963.564 RL 77.711	E 484525.066 N 6939972.308 RL 77.991		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	18.1	15.7		
Hilf MDR Number :	228113	228114		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	91.5	83.5		
Field Wet Density (t/m³) :	1.976	2.043		
Optimum Moisture Content (%) :	19.7	18.8		
Moisture Variation :	1.6	3.1		
Peak Converted Wet Density (t/m³) :	2.007	1.954		
Hilf Density Ratio (%) :	98.5	104.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
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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

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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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/131
Ref No: 12081
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 458
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 458 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 458 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 458 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 6
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 6
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228113	228114		
Test Number :	15	16		
Sampling Method :	-	-		
Date Sampled :	29/04/2017	29/04/2017		
Date Tested :	29/04/2017	29/04/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	E 484537.253 N 6939963.564 RL 77.711	E 484525.066 N 6939972.308 RL 77.991		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	18.1	15.7		
Hilf MDR Number :	228113	228114		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	91.5	83.5		
Field Wet Density (t/m³) :	1.976	2.043		
Optimum Moisture Content (%) :	19.7	18.8		
Moisture Variation :	1.6	3.1		
Peak Converted Wet Density (t/m³) :	2.007	1.954		
Hilf Density Ratio (%) :	98.5	104.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

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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Obtain Professional Assistance To Deal with Mold

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

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Brisbane Office
Job Number: DL17/131
Ref No: 12082
Author: L. McDowall

20th June 2017

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 459
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 1
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
- Relative Density Control Testing in accordance with AS1289 – Testing of Soils for Engineering Purposes and at frequencies required in AS3798 Table 8.
- Ipswich City Council Specifications.
- ETS Engineering Pty Ltd Earthworks Plan, Sheet Number C200, Job Code – 17BNE-0001, Revision B, dated 18.04.2017

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

Compaction testing at the Edens Crossing Estate, Stage 1 Development was carried out at a frequency of 1 test per 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 459 are representative of the fill constructed on Lot 459. The closest test to Lot 459 was performed on Lot 458. A summary of tests representative of the fill constructed on Lot 459 are presented in Table 1 below.

Table 1: Summary of Testing

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

Fill constructed on Lot 459 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 459 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 4th May 2017.

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

Yours faithfully,

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

Encl: Laboratory Test Report DL17/131 – 6
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/131 - 6
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/131	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 1	Page 1 of 1	

Sample Number :	228113	228114		
Test Number :	15	16		
Sampling Method :	-	-		
Date Sampled :	29/04/2017	29/04/2017		
Date Tested :	29/04/2017	29/04/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	E 484537.253 N 6939963.564 RL 77.711	E 484525.066 N 6939972.308 RL 77.991		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	18.1	15.7		
Hilf MDR Number :	228113	228114		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
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Moisture Variation :	1.6	3.1		
Peak Converted Wet Density (t/m³) :	2.007	1.954		
Hilf Density Ratio (%) :	98.5	104.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
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1162 / 1169

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Subsurface Conditions Can Change

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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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