MORRISON GEOTECHNIC

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

Brisbane Office
Job Number: DL17/132
Ref No: 12508
Author: L. McDowall

12th October 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 469
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 469 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 469 are representative of the fill constructed on Lot 469. The closest test to Lot 469 was performed on Lot 471. A summary of tests representative of the fill constructed on Lot 469 are presented in Table 1 below.

Table 1: Summary of Testing

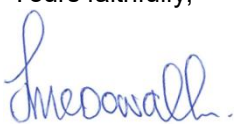
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
471	5	21st July 2017	100.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 469 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 469 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 DL17/132 – 5
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 5
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	07/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	232158	232159	232160	
Test Number :	5	6	7	
Sampling Method :	-	-	-	
Date Sampled :	21/07/2017	21/07/2017	21/07/2017	
Date Tested :	21/07/2017	21/07/2017	21/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484525.448 N 6939930.983 RL 79.688	E 484553.090 N 6939923.302 RL 78.364	Road 3 E 484535.000 N 6939913.507 RL 79.070	
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 (%) :	18.0	19.5	19.3	
Hilf MDR Number :	232158	232159	232160	
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	
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Optimum Moisture Content (%) :	20.4	21.3	20.6	
Moisture Variation :	2.2	1.7	1.2	
Peak Converted Wet Density (t/m³) :	2.066	2.062	2.054	
Hilf Density Ratio (%) :	100.5	99.5	101.5	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

NATA ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

Sam Woodley (Brisbane) - Laboratory Manager
NATA Accreditation Number
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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.

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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

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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
THE BEST PEOPLE ON EARTH

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

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Brisbane Office
Job Number: DL17/132
Ref No: 12509
Author: L. McDowall

12th October 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 470
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 470 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 470 are representative of the fill constructed on Lot 470. The closest test to Lot 470 was performed on Lot 471. A summary of tests representative of the fill constructed on Lot 470 are presented in Table 1 below.

Table 1: Summary of Testing

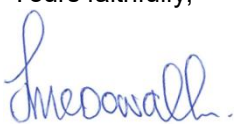
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
471	5	21st July 2017	100.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 470 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 470 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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
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Encl: Laboratory Test Report DL17/132 – 5
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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 5
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	07/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	232158	232159	232160	
Test Number :	5	6	7	
Sampling Method :	-	-	-	
Date Sampled :	21/07/2017	21/07/2017	21/07/2017	
Date Tested :	21/07/2017	21/07/2017	21/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
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Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
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Hilf Density Ratio (%) :	100.5	99.5	101.5	
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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MORRISON GEOTECHNIC

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

Brisbane Office
Job Number: DL17/132
Ref No: 12510
Author: L. McDowall

12th October 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 471
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 471 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 471 are presented in Table 1 below.

Table 1: Summary of Testing

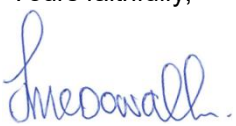
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
471	5	21st July 2017	100.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 471 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 471 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 DL17/132 – 5
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 5
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	07/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	232158	232159	232160	
Test Number :	5	6	7	
Sampling Method :	-	-	-	
Date Sampled :	21/07/2017	21/07/2017	21/07/2017	
Date Tested :	21/07/2017	21/07/2017	21/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484525.448 N 6939930.983 RL 79.688	E 484553.090 N 6939923.302 RL 78.364	Road 3 E 484535.000 N 6939913.507 RL 79.070	
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 (%) :	18.0	19.5	19.3	
Hilf MDR Number :	232158	232159	232160	
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 (%) :	88.5	91.5	94	
Field Wet Density (t/m³) :	2.078	2.051	2.082	
Optimum Moisture Content (%) :	20.4	21.3	20.6	
Moisture Variation :	2.2	1.7	1.2	
Peak Converted Wet Density (t/m³) :	2.066	2.062	2.054	
Hilf Density Ratio (%) :	100.5	99.5	101.5	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

NATA ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

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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Brisbane Office
Job Number: DL17/132
Ref No: 12511
Author: L. McDowall

12th October 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 472
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 472 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 472 are presented in Table 1 below.

Table 1: Summary of Testing

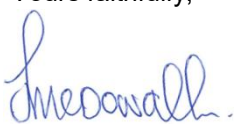
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
472	1	3rd May 2017	100.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 472 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 472 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 DL17/132 – 1
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	228320	228321	228322	228323
Test Number :	1	2	3	4
Sampling Method :	-	-	-	-
Date Sampled :	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Date Tested :	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484534.680 N 6939942.168 RL 79.473	E 484557.29 N 6939937.216 RL 78.727	E 484569.157 N 6939935.802 RL 78.507	E 484584.551 N 6939936.687 RL 78.506
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 (%) :	10.5	11.7	13.3	21.8
Hilf MDR Number :	228320	228321	228322	228323
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	82.5	81.5	76	97.5
Field Wet Density (t/m³) :	2.133	2.203	2.120	1.857
Optimum Moisture Content (%) :	12.7	14.4	17.5	22.4
Moisture Variation :	2.2	2.6	4.1	0.6
Peak Converted Wet Density (t/m³) :	2.138	2.157	2.043	1.871
Hilf Density Ratio (%) :	100.0	102.0	104.0	99.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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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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MORRISON GEOTECHNIC

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/132
Ref No: 12512
Author: L. McDowall

12th October 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 473
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 473 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 473 are presented in Table 1 below.

Table 1: Summary of Testing

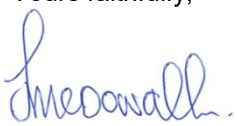
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
473	2	3rd May 2017	102.0
473	8	22nd July 2017	97.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 473 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 473 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 Reports DL17/132 – 1 and 6
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	228320	228321	228322	228323
Test Number :	1	2	3	4
Sampling Method :	-	-	-	-
Date Sampled :	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Date Tested :	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484534.680 N 6939942.168 RL 79.473	E 484557.29 N 6939937.216 RL 78.727	E 484569.157 N 6939935.802 RL 78.507	E 484584.551 N 6939936.687 RL 78.506
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 (%) :	10.5	11.7	13.3	21.8
Hilf MDR Number :	228320	228321	228322	228323
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	82.5	81.5	76	97.5
Field Wet Density (t/m³) :	2.133	2.203	2.120	1.857
Optimum Moisture Content (%) :	12.7	14.4	17.5	22.4
Moisture Variation :	2.2	2.6	4.1	0.6
Peak Converted Wet Density (t/m³) :	2.138	2.157	2.043	1.871
Hilf Density Ratio (%) :	100.0	102.0	104.0	99.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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ABN: 51 009 878 899
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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 6
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	07/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	232175	232176		
Test Number :	8	9		
Sampling Method :	-	-		
Date Sampled :	22/07/2017	22/07/2017		
Date Tested :	22/07/2017	22/07/2017		
Material Type :	General Fill	General Fill		
Material Source :	On Site	On Site		
Lot Number :	-	-		
Sample Location :	E 484553.255 N 6939927.010 Final Level	E 484562.975 N 6939924.065 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	15.9	16.9		
Hilf MDR Number :	232175	232176		
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 (%) :	96.5	99.5		
Field Wet Density (t/m³) :	2.087	2.082		
Optimum Moisture Content (%) :	16.5	17.0		
Moisture Variation :	0.6	0.1		
Peak Converted Wet Density (t/m³) :	2.136	2.152		
Hilf Density Ratio (%) :	97.5	97.0		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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APPROVED SIGNATORY

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

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: DL17/132
Ref No: 12514
Author: L. McDowall

12th October 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 475
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 475 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 475 are presented in Table 1 below.

Table 1: Summary of Testing

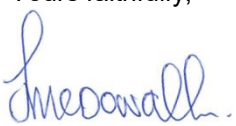
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
475	3	3rd May 2017	104.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 475 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 475 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 DL17/132 – 1
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	228320	228321	228322	228323
Test Number :	1	2	3	4
Sampling Method :	-	-	-	-
Date Sampled :	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Date Tested :	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484534.680 N 6939942.168 RL 79.473	E 484557.29 N 6939937.216 RL 78.727	E 484569.157 N 6939935.802 RL 78.507	E 484584.551 N 6939936.687 RL 78.506
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 (%) :	10.5	11.7	13.3	21.8
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Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA ACCREDITATION

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APPROVED SIGNATORY

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

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

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- 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.

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Brisbane Office
Job Number: DL17/132
Ref No: 12515
Author: L. McDowall

12th October 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 476
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 476 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 476 are presented in Table 1 below.

Table 1: Summary of Testing

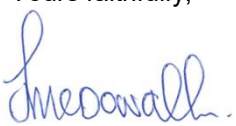
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
476	4	3rd May 2017	99.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 476 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 476 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 DL17/132 – 1
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	05/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	228320	228321	228322	228323
Test Number :	1	2	3	4
Sampling Method :	-	-	-	-
Date Sampled :	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Date Tested :	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484534.680 N 6939942.168 RL 79.473	E 484557.29 N 6939937.216 RL 78.727	E 484569.157 N 6939935.802 RL 78.507	E 484584.551 N 6939936.687 RL 78.506
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 (%) :	10.5	11.7	13.3	21.8
Hilf MDR Number :	228320	228321	228322	228323
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	82.5	81.5	76	97.5
Field Wet Density (t/m³) :	2.133	2.203	2.120	1.857
Optimum Moisture Content (%) :	12.7	14.4	17.5	22.4
Moisture Variation :	2.2	2.6	4.1	0.6
Peak Converted Wet Density (t/m³) :	2.138	2.157	2.043	1.871
Hilf Density Ratio (%) :	100.0	102.0	104.0	99.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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.

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

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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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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: DL17/132
Ref No: 12516
Author: L. McDowall

12th October 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 477
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 477 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 477 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
477	10	9th August 2017	100.5
477	11	9th August 2017	101.0
477	14	11th August 2017	99.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 477 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 477 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 Reports DL17/132 – 7 and 9
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 7
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	233211	233212		
Test Number :	10	11		
Sampling Method :	-	-		
Date Sampled :	09/08/2017	09/08/2017		
Date Tested :	09/08/2017	09/08/2017		
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	E 484549.608 N 6939881.443 RL 79.413	E 484552.833 N 6939890.452 RL 79.039		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	150	150		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	15.5	16.7		
Hilf MDR Number :	233211	233212		
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 (%) :	90	82		
Field Wet Density (t/m³) :	2.081	2.030		
Optimum Moisture Content (%) :	17.3	20.4		
Moisture Variation :	1.7	3.5		
Peak Converted Wet Density (t/m³) :	2.066	2.008		
Hilf Density Ratio (%) :	100.5	101.0		
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 A McDowall

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

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 9
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	30/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	233460			
Test Number :	14			
Sampling Method :	-			
Date Sampled :	11/08/2017			
Date Tested :	11/08/2017			
Material Type :	Allotment Fill (Capping Layer)			
Material Source :	On Site			
Lot Number :	-			
Sample Location :	E 484540.245 N 6939889.365 Final Level			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	12.5			
Hilf MDR Number :	233460			
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 (%) :	81.5			
Field Wet Density (t/m³) :	2.127			
Optimum Moisture Content (%) :	15.3			
Moisture Variation :	2.7			
Peak Converted Wet Density (t/m³) :	2.144			
Hilf Density Ratio (%) :	99.0			
Minimum Specification :	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

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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Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/132
Ref No: 12517
Author: L. McDowall

12th October 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 478
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 478 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 478 are representative of the fill constructed on Lot 478. The closest test to Lot 478 was performed on Lot 477. A summary of tests representative of the fill constructed on Lot 478 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
477	10	9th August 2017	100.5
477	11	9th August 2017	101.0
477	14	11th August 2017	99.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 478 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 478 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 Reports DL17/132 – 7 and 9
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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www.morrisongeo.com.au

Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 7
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	233211	233212		
Test Number :	10	11		
Sampling Method :	-	-		
Date Sampled :	09/08/2017	09/08/2017		
Date Tested :	09/08/2017	09/08/2017		
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	E 484549.608 N 6939881.443 RL 79.413	E 484552.833 N 6939890.452 RL 79.039		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	150	150		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	15.5	16.7		
Hilf MDR Number :	233211	233212		
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 (%) :	90	82		
Field Wet Density (t/m³) :	2.081	2.030		
Optimum Moisture Content (%) :	17.3	20.4		
Moisture Variation :	1.7	3.5		
Peak Converted Wet Density (t/m³) :	2.066	2.008		
Hilf Density Ratio (%) :	100.5	101.0		
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 A McDowall

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

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 9
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	30/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	233460			
Test Number :	14			
Sampling Method :	-			
Date Sampled :	11/08/2017			
Date Tested :	11/08/2017			
Material Type :	Allotment Fill (Capping Layer)			
Material Source :	On Site			
Lot Number :	-			
Sample Location :	E 484540.245 N 6939889.365 Final Level			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	12.5			
Hilf MDR Number :	233460			
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 (%) :	81.5			
Field Wet Density (t/m³) :	2.127			
Optimum Moisture Content (%) :	15.3			
Moisture Variation :	2.7			
Peak Converted Wet Density (t/m³) :	2.144			
Hilf Density Ratio (%) :	99.0			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/132
Ref No: 12518
Author: L. McDowall

12th October 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 494
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 494 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 494 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
494	13	11th August 2017	101.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 494 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 494 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 DL17/132 – 8
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 8
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	30/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	233458	233459		
Test Number :	12	13		
Sampling Method :	-	-		
Date Sampled :	11/08/2017	11/08/2017		
Date Tested :	11/08/2017	11/08/2017		
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	E 484593.920 N 6939862.999 Final Level	E 484599.080 N 6939872.750 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	13.8	13.6		
Hilf MDR Number :	233458	233459		
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 (%) :	75	82.5		
Field Wet Density (t/m³) :	2.020	2.164		
Optimum Moisture Content (%) :	18.4	16.5		
Moisture Variation :	4.4	2.8		
Peak Converted Wet Density (t/m³) :	2.055	2.141		
Hilf Density Ratio (%) :	98.5	101.0		
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 A McDowall

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.

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- not prepared for your project,
- not prepared for the specific site explored, or
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Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

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

Brisbane Office
Job Number: DL17/132
Ref No: 12519
Author: L. McDowall

12th October 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 495
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 2
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 495 at the above Development to form a working platform to support a future residential building.

Earthworks were constructed by CCA Winslow (The Client) between 29th April 2017 and 11th August 2017.

This report should be read in conjunction with Morrison Geotechnic Report "12364 – DL17/132 – CCA Winslow – Edens Crossing Estate, Stage 2 – Level One Report" Dated 27th September 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, Drawing Number C200, Job Code – 17BNE-0002, Revision A, dated 20.04.2017

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 2 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 495 are presented in Table 1 below.

Table 1: Summary of Testing

Lot Number	Test Number	Date Tested	Density Ratio Achieved %
495	12	11th August 2017	98.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 495 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 495 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after 11th August 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 DL17/132 – 8
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/132 - 8
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	30/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/132	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 2	Page 1 of 1	

Sample Number :	233458	233459		
Test Number :	12	13		
Sampling Method :	-	-		
Date Sampled :	11/08/2017	11/08/2017		
Date Tested :	11/08/2017	11/08/2017		
Material Type :	Allotment Fill (Capping Layer)	Allotment Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	E 484593.920 N 6939862.999 Final Level	E 484599.080 N 6939872.750 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	13.8	13.6		
Hilf MDR Number :	233458	233459		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
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