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: DL17/134
Ref No: 13458
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 508
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 508 are presented in Table 1 below.

Table 1: Summary of Testing

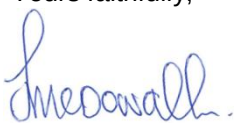
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
508	30	20th July 2017	100.0
508	36	24th July 2017	99.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 11, 16
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 11
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	27/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232112	232113	232114	232115
Test Number :	30	31	32	33
Sampling Method :	-	-	-	-
Date Sampled :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Date Tested :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484560.333 N 6939710.061 RL 81.345	E 484527.962 N 6939655.204 RL 84.928	E 484518.844 N 6939646.077 RL 85.408	E 484529.387 N 6939628.113 RL 86.083
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	22.9	28.0	26.6	27.3
Hilf MDR Number :	232112	232113	232114	232115
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	100	99	99.5	91.5
Field Wet Density (t/m³) :	1.868	1.836	1.817	1.886
Optimum Moisture Content (%) :	22.9	28.3	26.8	29.9
Moisture Variation :	0.0	0.3	0.1	2.5
Peak Converted Wet Density (t/m³) :	1.872	1.781	1.778	1.786
Hilf Density Ratio (%) :	100.0	103.0	102.0	105.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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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Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232220	232221		
Test Number :	35	36		
Sampling Method :	-	-		
Date Sampled :	24/07/2017	24/07/2017		
Date Tested :	24/07/2017	24/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	E 484551.591 N 6939696.161 RL 83.515	E 484550.305 N 6939709.124 RL 83.056		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	18.6	13.7		
Hilf MDR Number :	232220	232221		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	84.5	82		
Field Wet Density (t/m³) :	1.996	2.106		
Optimum Moisture Content (%) :	22.0	16.7		
Moisture Variation :	3.2	2.9		
Peak Converted Wet Density (t/m³) :	2.077	2.120		
Hilf Density Ratio (%) :	96.0	99.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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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2nd July 2018

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

Dear Sir,

RE: LOT 509
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 509 are presented in Table 1 below.

Table 1: Summary of Testing

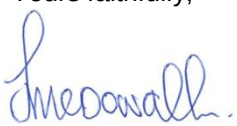
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
509	35	24th July 2017	96.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232220	232221		
Test Number :	35	36		
Sampling Method :	-	-		
Date Sampled :	24/07/2017	24/07/2017		
Date Tested :	24/07/2017	24/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)		
Lot Number :	-	-		
Sample Location :	E 484551.591 N 6939696.161 RL 83.515	E 484550.305 N 6939709.124 RL 83.056		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
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Peak Converted Wet Density (t/m³) :	2.077	2.120		
Hilf Density Ratio (%) :	96.0	99.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

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THE BEST PEOPLE ON EARTH

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Brisbane Office
Job Number: DL17/134
Ref No: 13460
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 510
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 510 are presented in Table 1 below.

Table 1: Summary of Testing

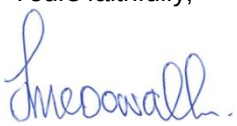
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
510	21	18th July 2017	95.5
510	43	25th July 2017	104.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 8, 18
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 8
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	231957	231958	231959	231960
Test Number :	21	22	23	24
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484555.929 N 6939683.690 RL 82.675	E 484550.225 N 6939625.225 RL 82.956	E 484542.070 N 6939661.105 RL 83.423	E 484534.430 N 6939645.012 RL 84.188
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	14.3	11.7	13.7	15.5
Hilf MDR Number :	231957	231958	231959	231960
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	84	81.5	83	86
Field Wet Density (t/m³) :	1.925	1.941	1.924	1.949
Optimum Moisture Content (%) :	17.0	14.4	16.5	18.0
Moisture Variation :	2.7	2.7	2.8	2.5
Peak Converted Wet Density (t/m³) :	2.013	2.029	2.025	1.984
Hilf Density Ratio (%) :	95.5	95.5	95.0	98.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 18
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232244	232245	232246	
Test Number :	41	42	43	
Sampling Method :	-	-	-	
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	
Date Tested :	25/07/2017	25/07/2017	25/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484541.115 N 6939644.320 RL 86.189	E 484537.305 N 6939656.919 RL 85.569	E 484549.389 N 6939684.171 RL 83.988	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	17.1	17.1	15.8	
Hilf MDR Number :	232244	232245	232246	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	84.5	77	83	
Field Wet Density (t/m³) :	1.972	1.975	2.144	
Optimum Moisture Content (%) :	20.2	22.2	19.1	
Moisture Variation :	3.1	5.0	3.1	
Peak Converted Wet Density (t/m³) :	1.974	1.891	2.061	
Hilf Density Ratio (%) :	100.0	104.5	104.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

NATA
WORLD RECOGNISED ACCREDITATION

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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

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Brisbane Office
Job Number: DL17/134
Ref No: 13461
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 511
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 511 are presented in Table 1 below.

Table 1: Summary of Testing

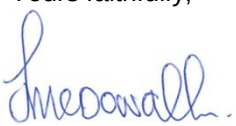
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
511	52	27th July 2017	97.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/134 – 21
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 21
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232474	232475	232476	
Test Number :	50	51	52	
Sampling Method :	-	-	-	
Date Sampled :	27/07/2017	27/07/2017	27/07/2017	
Date Tested :	27/07/2017	27/07/2017	27/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484503.464 N 6939639.110 RL 87.180	E 484538.268 N 6939631.798 Final Level	E 484545.391 N 6939669.323 Final Level	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	11.6	23.6	13.1	
Hilf MDR Number :	232474	232475	232476	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	70	111	86.5	
Field Wet Density (t/m³) :	2.200	1.978	2.100	
Optimum Moisture Content (%) :	16.6	21.2	15.1	
Moisture Variation :	4.7	-2.3	2.0	
Peak Converted Wet Density (t/m³) :	2.185	2.056	2.168	
Hilf Density Ratio (%) :	100.5	96.0	97.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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

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: DL17/134
Ref No: 13462
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 512
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 512 are presented in Table 1 below.

Table 1: Summary of Testing

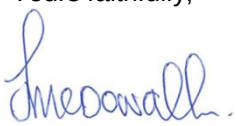
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
512	20	17th July 2017	95.0
512	23	18th July 2018	95.0
512	31	20th July 2017	103.0
512	42	25th July 2017	104.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 7, 8, 11, 18
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 7
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	24/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	231936	231937	231938	
Test Number :	18	19	20	
Sampling Method :	-	-	-	
Date Sampled :	17/07/2017	17/07/2017	17/07/2017	
Date Tested :	17/07/2017	17/07/2017	17/07/2017	
Material Type :	General Fill	General Fill	General Fill	
Material Source :	On Site	On Site	On Site	
Lot Number :	-	-	-	
Sample Location :	E 0484543 N 6939630 RL 84.150	E 0484541 N 6939643 RL 83.225	E 0484544 N 6939663 RL 82.495	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	16.6	15.8	25.3	
Hilf MDR Number :	231936	231937	231938	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	99	89	99	
Field Wet Density (t/m³) :	1.960	1.953	1.750	
Optimum Moisture Content (%) :	16.8	17.7	25.6	
Moisture Variation :	0.2	1.9	0.3	
Peak Converted Wet Density (t/m³) :	2.029	2.038	1.839	
Hilf Density Ratio (%) :	96.5	96.0	95.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 8
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	231957	231958	231959	231960
Test Number :	21	22	23	24
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484555.929 N 6939683.690 RL 82.675	E 484550.225 N 6939625.225 RL 82.956	E 484542.070 N 6939661.105 RL 83.423	E 484534.430 N 6939645.012 RL 84.188
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	14.3	11.7	13.7	15.5
Hilf MDR Number :	231957	231958	231959	231960
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	84	81.5	83	86
Field Wet Density (t/m³) :	1.925	1.941	1.924	1.949
Optimum Moisture Content (%) :	17.0	14.4	16.5	18.0
Moisture Variation :	2.7	2.7	2.8	2.5
Peak Converted Wet Density (t/m³) :	2.013	2.029	2.025	1.984
Hilf Density Ratio (%) :	95.5	95.5	95.0	98.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 11
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	27/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232112	232113	232114	232115
Test Number :	30	31	32	33
Sampling Method :	-	-	-	-
Date Sampled :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Date Tested :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484560.333 N 6939710.061 RL 81.345	E 484527.962 N 6939655.204 RL 84.928	E 484518.844 N 6939646.077 RL 85.408	E 484529.387 N 6939628.113 RL 86.083
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	22.9	28.0	26.6	27.3
Hilf MDR Number :	232112	232113	232114	232115
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	100	99	99.5	91.5
Field Wet Density (t/m³) :	1.868	1.836	1.817	1.886
Optimum Moisture Content (%) :	22.9	28.3	26.8	29.9
Moisture Variation :	0.0	0.3	0.1	2.5
Peak Converted Wet Density (t/m³) :	1.872	1.781	1.778	1.786
Hilf Density Ratio (%) :	100.0	103.0	102.0	105.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 18
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232244	232245	232246	
Test Number :	41	42	43	
Sampling Method :	-	-	-	
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	
Date Tested :	25/07/2017	25/07/2017	25/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484541.115 N 6939644.320 RL 86.189	E 484537.305 N 6939656.919 RL 85.569	E 484549.389 N 6939684.171 RL 83.988	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	17.1	17.1	15.8	
Hilf MDR Number :	232244	232245	232246	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	84.5	77	83	
Field Wet Density (t/m³) :	1.972	1.975	2.144	
Optimum Moisture Content (%) :	20.2	22.2	19.1	
Moisture Variation :	3.1	5.0	3.1	
Peak Converted Wet Density (t/m³) :	1.974	1.891	2.061	
Hilf Density Ratio (%) :	100.0	104.5	104.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13463
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 513
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 513 are presented in Table 1 below.

Table 1: Summary of Testing

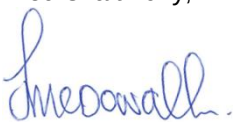
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
513	19	17th July 2017	96.0
513	24	18th July 2018	98.0
513	28	19th July 2017	99.5
513	41	25th July 2017	100.0
513	55	23rd January 2018	98.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 7, 8, 9, 18, 29
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 7
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	24/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	231936	231937	231938	
Test Number :	18	19	20	
Sampling Method :	-	-	-	
Date Sampled :	17/07/2017	17/07/2017	17/07/2017	
Date Tested :	17/07/2017	17/07/2017	17/07/2017	
Material Type :	General Fill	General Fill	General Fill	
Material Source :	On Site	On Site	On Site	
Lot Number :	-	-	-	
Sample Location :	E 0484543 N 6939630 RL 84.150	E 0484541 N 6939643 RL 83.225	E 0484544 N 6939663 RL 82.495	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	16.6	15.8	25.3	
Hilf MDR Number :	231936	231937	231938	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	99	89	99	
Field Wet Density (t/m³) :	1.960	1.953	1.750	
Optimum Moisture Content (%) :	16.8	17.7	25.6	
Moisture Variation :	0.2	1.9	0.3	
Peak Converted Wet Density (t/m³) :	2.029	2.038	1.839	
Hilf Density Ratio (%) :	96.5	96.0	95.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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APPROVED SIGNATORY

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

Client :	CCA WINSLOW	Report Number:	DL17/134 - 8
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	231957	231958	231959	231960
Test Number :	21	22	23	24
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484555.929 N 6939683.690 RL 82.675	E 484550.225 N 6939625.225 RL 82.956	E 484542.070 N 6939661.105 RL 83.423	E 484534.430 N 6939645.012 RL 84.188
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	14.3	11.7	13.7	15.5
Hilf MDR Number :	231957	231958	231959	231960
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	84	81.5	83	86
Field Wet Density (t/m³) :	1.925	1.941	1.924	1.949
Optimum Moisture Content (%) :	17.0	14.4	16.5	18.0
Moisture Variation :	2.7	2.7	2.8	2.5
Peak Converted Wet Density (t/m³) :	2.013	2.029	2.025	1.984
Hilf Density Ratio (%) :	95.5	95.5	95.0	98.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 9
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232107	232108	232109	232110
Test Number :	25	26	27	28
Sampling Method :	-	-	-	-
Date Sampled :	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Date Tested :	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484493.812 N 6939647.952 RL 85.409	E 484498.318 N 6939657.342 RL 85.260	E 484502.926 N 6939637.758 RL 85.403	E 484548.391 N 6939641.892 RL 84.534
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	38.3	35.5	20.1	17.5
Hilf MDR Number :	232107	232108	232109	232110
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	101	98	95	92.5
Field Wet Density (t/m³) :	1.877	1.747	1.985	2.003
Optimum Moisture Content (%) :	38.0	36.3	21.2	19.0
Moisture Variation :	-0.3	0.8	1.0	1.4
Peak Converted Wet Density (t/m³) :	1.839	1.822	1.968	2.017
Hilf Density Ratio (%) :	102.0	96.0	101.0	99.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 18
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232244	232245	232246	
Test Number :	41	42	43	
Sampling Method :	-	-	-	
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	
Date Tested :	25/07/2017	25/07/2017	25/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484541.115 N 6939644.320 RL 86.189	E 484537.305 N 6939656.919 RL 85.569	E 484549.389 N 6939684.171 RL 83.988	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	17.1	17.1	15.8	
Hilf MDR Number :	232244	232245	232246	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	84.5	77	83	
Field Wet Density (t/m³) :	1.972	1.975	2.144	
Optimum Moisture Content (%) :	20.2	22.2	19.1	
Moisture Variation :	3.1	5.0	3.1	
Peak Converted Wet Density (t/m³) :	1.974	1.891	2.061	
Hilf Density Ratio (%) :	100.0	104.5	104.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 29**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/02/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**33832**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	240840	240841	240842	240843
Test Number :	55	56	57	58
Sampling Method :	-	-	-	-
Date Sampled :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Date Tested :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**
Lot Number :	513	515	514	-
Sample Location :	Lot 513 E 484552.829 N 6939640.594 RL 85.270	Lot 515 E 484547.140 N 6939620.310 RL 86.425	Lot 514 E 484554.692 N 6939655.004 RL 85.644 / Final Level	E 484542.006 N 6939608.599 RL 87.704 Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	12.1	14.1	11.0	15.1
Hilf MDR Number :	240840	240841	240842	240843
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	87	82.5	73.5	91.5
Field Wet Density (t/m³) :	2.113	2.070	2.026	2.148
Optimum Moisture Content (%) :	13.9	17.1	14.9	16.5
Moisture Variation :	1.8	2.9	3.8	1.3
Peak Converted Wet Density (t/m³) :	2.155	2.025	2.082	2.128
Hilf Density Ratio (%) :	**98.0**	**102.0**	**97.5**	**101.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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APPROVED SIGNATORY

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

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
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e-mail: info@asfe.org www.asfe.org

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Brisbane Office
Job Number: DL17/134
Ref No: 13464
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 514
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 514 are presented in Table 1 below.

Table 1: Summary of Testing

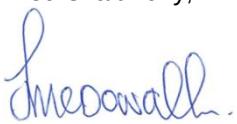
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
514	18	17th July 2017	96.5
514	22	18th July 2018	95.5
514	33	20th July 2017	105.5
514	40	25th July 2017	102.5
514	56	23rd January 2018	102.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 7, 8, 11, 17, 29
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 7
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	24/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	231936	231937	231938	
Test Number :	18	19	20	
Sampling Method :	-	-	-	
Date Sampled :	17/07/2017	17/07/2017	17/07/2017	
Date Tested :	17/07/2017	17/07/2017	17/07/2017	
Material Type :	General Fill	General Fill	General Fill	
Material Source :	On Site	On Site	On Site	
Lot Number :	-	-	-	
Sample Location :	E 0484543 N 6939630 RL 84.150	E 0484541 N 6939643 RL 83.225	E 0484544 N 6939663 RL 82.495	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	16.6	15.8	25.3	
Hilf MDR Number :	231936	231937	231938	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	99	89	99	
Field Wet Density (t/m³) :	1.960	1.953	1.750	
Optimum Moisture Content (%) :	16.8	17.7	25.6	
Moisture Variation :	0.2	1.9	0.3	
Peak Converted Wet Density (t/m³) :	2.029	2.038	1.839	
Hilf Density Ratio (%) :	96.5	96.0	95.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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APPROVED SIGNATORY

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

Client :	CCA WINSLOW	Report Number:	DL17/134 - 8
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	231957	231958	231959	231960
Test Number :	21	22	23	24
Sampling Method :	-	-	-	-
Date Sampled :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Date Tested :	18/07/2017	18/07/2017	18/07/2017	18/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484555.929 N 6939683.690 RL 82.675	E 484550.225 N 6939625.225 RL 82.956	E 484542.070 N 6939661.105 RL 83.423	E 484534.430 N 6939645.012 RL 84.188
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	14.3	11.7	13.7	15.5
Hilf MDR Number :	231957	231958	231959	231960
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	84	81.5	83	86
Field Wet Density (t/m³) :	1.925	1.941	1.924	1.949
Optimum Moisture Content (%) :	17.0	14.4	16.5	18.0
Moisture Variation :	2.7	2.7	2.8	2.5
Peak Converted Wet Density (t/m³) :	2.013	2.029	2.025	1.984
Hilf Density Ratio (%) :	95.5	95.5	95.0	98.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 11
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	27/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232112	232113	232114	232115
Test Number :	30	31	32	33
Sampling Method :	-	-	-	-
Date Sampled :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Date Tested :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484560.333 N 6939710.061 RL 81.345	E 484527.962 N 6939655.204 RL 84.928	E 484518.844 N 6939646.077 RL 85.408	E 484529.387 N 6939628.113 RL 86.083
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	22.9	28.0	26.6	27.3
Hilf MDR Number :	232112	232113	232114	232115
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	100	99	99.5	91.5
Field Wet Density (t/m³) :	1.868	1.836	1.817	1.886
Optimum Moisture Content (%) :	22.9	28.3	26.8	29.9
Moisture Variation :	0.0	0.3	0.1	2.5
Peak Converted Wet Density (t/m³) :	1.872	1.781	1.778	1.786
Hilf Density Ratio (%) :	100.0	103.0	102.0	105.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 17
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232240	232241	232242	232243
Test Number :	37	38	39	40
Sampling Method :	-	-	-	-
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Date Tested :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484536.593 N 6939602.637 RL 87.575	E 484526.232 N 6939609.665 RL 87.883	E 484530.272 N 6939622.855 RL 87.676	E 484538.570 N 6939629.983 RL 87.112
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	16.8	15.5	16.6	23.9
Hilf MDR Number :	232240	232241	232242	232243
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	83.5	86.5	89.5	89.5
Field Wet Density (t/m³) :	2.174	2.176	2.190	2.054
Optimum Moisture Content (%) :	20.1	17.9	18.5	26.7
Moisture Variation :	3.1	2.3	1.8	2.6
Peak Converted Wet Density (t/m³) :	2.076	2.084	2.131	2.008
Hilf Density Ratio (%) :	104.5	104.5	103.0	102.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 29**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/02/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**33832**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	240840	240841	240842	240843
Test Number :	55	56	57	58
Sampling Method :	-	-	-	-
Date Sampled :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Date Tested :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**
Lot Number :	513	515	514	-
Sample Location :	Lot 513 E 484552.829 N 6939640.594 RL 85.270	Lot 515 E 484547.140 N 6939620.310 RL 86.425	Lot 514 E 484554.692 N 6939655.004 RL 85.644 / Final Level	E 484542.006 N 6939608.599 RL 87.704 Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	12.1	14.1	11.0	15.1
Hilf MDR Number :	240840	240841	240842	240843
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	87	82.5	73.5	91.5
Field Wet Density (t/m³) :	2.113	2.070	2.026	2.148
Optimum Moisture Content (%) :	13.9	17.1	14.9	16.5
Moisture Variation :	1.8	2.9	3.8	1.3
Peak Converted Wet Density (t/m³) :	2.155	2.025	2.082	2.128
Hilf Density Ratio (%) :	**98.0**	**102.0**	**97.5**	**101.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13465
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 515
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 515 are presented in Table 1 below.

Table 1: Summary of Testing

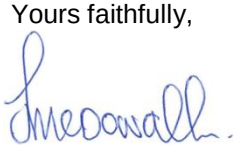
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
515	32	20th July 2017	102.0
515	39	25th July 2018	103.0
515	51	27th July 2017	96.0
515	56	23rd January 2018	102.0
515	57	23rd January 2018	97.5
515	58	23rd January 2018	101.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1,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

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 –11, 17, 21, 29
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 11
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	27/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232112	232113	232114	232115
Test Number :	30	31	32	33
Sampling Method :	-	-	-	-
Date Sampled :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Date Tested :	20/07/2017	20/07/2017	20/07/2017	20/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484560.333 N 6939710.061 RL 81.345	E 484527.962 N 6939655.204 RL 84.928	E 484518.844 N 6939646.077 RL 85.408	E 484529.387 N 6939628.113 RL 86.083
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	22.9	28.0	26.6	27.3
Hilf MDR Number :	232112	232113	232114	232115
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	100	99	99.5	91.5
Field Wet Density (t/m³) :	1.868	1.836	1.817	1.886
Optimum Moisture Content (%) :	22.9	28.3	26.8	29.9
Moisture Variation :	0.0	0.3	0.1	2.5
Peak Converted Wet Density (t/m³) :	1.872	1.781	1.778	1.786
Hilf Density Ratio (%) :	100.0	103.0	102.0	105.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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

Client :	CCA WINSLOW	Report Number:	DL17/134 - 17
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232240	232241	232242	232243
Test Number :	37	38	39	40
Sampling Method :	-	-	-	-
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Date Tested :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484536.593 N 6939602.637 RL 87.575	E 484526.232 N 6939609.665 RL 87.883	E 484530.272 N 6939622.855 RL 87.676	E 484538.570 N 6939629.983 RL 87.112
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	16.8	15.5	16.6	23.9
Hilf MDR Number :	232240	232241	232242	232243
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	83.5	86.5	89.5	89.5
Field Wet Density (t/m³) :	2.174	2.176	2.190	2.054
Optimum Moisture Content (%) :	20.1	17.9	18.5	26.7
Moisture Variation :	3.1	2.3	1.8	2.6
Peak Converted Wet Density (t/m³) :	2.076	2.084	2.131	2.008
Hilf Density Ratio (%) :	104.5	104.5	103.0	102.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 21
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232474	232475	232476	
Test Number :	50	51	52	
Sampling Method :	-	-	-	
Date Sampled :	27/07/2017	27/07/2017	27/07/2017	
Date Tested :	27/07/2017	27/07/2017	27/07/2017	
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	
Lot Number :	-	-	-	
Sample Location :	E 484503.464 N 6939639.110 RL 87.180	E 484538.268 N 6939631.798 Final Level	E 484545.391 N 6939669.323 Final Level	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	11.6	23.6	13.1	
Hilf MDR Number :	232474	232475	232476	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	70	111	86.5	
Field Wet Density (t/m³) :	2.200	1.978	2.100	
Optimum Moisture Content (%) :	16.6	21.2	15.1	
Moisture Variation :	4.7	-2.3	2.0	
Peak Converted Wet Density (t/m³) :	2.185	2.056	2.168	
Hilf Density Ratio (%) :	100.5	96.0	97.0	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 29**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/02/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**33832**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	240840	240841	240842	240843
Test Number :	55	56	57	58
Sampling Method :	-	-	-	-
Date Sampled :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Date Tested :	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Material Type :	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**	**Allotment Fill**
Material Source :	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**	**On Site (Crushed Basalt)**
Lot Number :	513	515	514	-
Sample Location :	Lot 513 E 484552.829 N 6939640.594 RL 85.270	Lot 515 E 484547.140 N 6939620.310 RL 86.425	Lot 514 E 484554.692 N 6939655.004 RL 85.644 / Final Level	E 484542.006 N 6939608.599 RL 87.704 Final Level
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	12.1	14.1	11.0	15.1
Hilf MDR Number :	240840	240841	240842	240843
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	87	82.5	73.5	91.5
Field Wet Density (t/m³) :	2.113	2.070	2.026	2.148
Optimum Moisture Content (%) :	13.9	17.1	14.9	16.5
Moisture Variation :	1.8	2.9	3.8	1.3
Peak Converted Wet Density (t/m³) :	2.155	2.025	2.082	2.128
Hilf Density Ratio (%) :	**98.0**	**102.0**	**97.5**	**101.0**
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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- project ownership.

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

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

A Report's Recommendations Are *Not* Final

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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.*

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

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/134
Ref No: 13466
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 516
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 516 are presented in Table 1 below.

Table 1: Summary of Testing

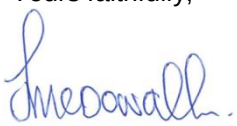
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
516	37	25th July 2017	104.5
516	38	25th July 2018	104.5
516	60	21st March 2018	102.0
516	62	26th March 2018	98.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 –17, 30, 32
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 17
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232240	232241	232242	232243
Test Number :	37	38	39	40
Sampling Method :	-	-	-	-
Date Sampled :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Date Tested :	25/07/2017	25/07/2017	25/07/2017	25/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484536.593 N 6939602.637 RL 87.575	E 484526.232 N 6939609.665 RL 87.883	E 484530.272 N 6939622.855 RL 87.676	E 484538.570 N 6939629.983 RL 87.112
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	16.8	15.5	16.6	23.9
Hilf MDR Number :	232240	232241	232242	232243
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	83.5	86.5	89.5	89.5
Field Wet Density (t/m³) :	2.174	2.176	2.190	2.054
Optimum Moisture Content (%) :	20.1	17.9	18.5	26.7
Moisture Variation :	3.1	2.3	1.8	2.6
Peak Converted Wet Density (t/m³) :	2.076	2.084	2.131	2.008
Hilf Density Ratio (%) :	104.5	104.5	103.0	102.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 30**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243036	243037		
Test Number :	59	60		
Sampling Method :	-	-		
Date Sampled :	21/03/2018	21/03/2018		
Date Tested :	21/03/2018	21/03/2018		
Material Type :	**Cut Replacement (Capping Layer)**	**Cut Replacement (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**-**	**516**		
Sample Location :	Verge E 484496.417 N 6939624.908 RL 87.126	Lot 516 E 484521.840 N 6939613.231 RL 86.617		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	13	16		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	2.492	2.554		
Field Moisture Content (%) :	17.1	15.3		
Hilf MDR Number :	243036	243037		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	99	99		
Field Wet Density (t/m³) :	2.182	2.284		
Optimum Moisture Content (%) :	17.3	15.4		
Moisture Variation :	0.2	0.1		
Peak Converted Wet Density (t/m³) :	2.184*	2.234*		
Hilf Density Ratio (%) :	**100.0**	**102.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

* - denotes adjusted for oversize

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APPROVED SIGNATORY

Liam A McDowall

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

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 32**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243089	243090	243091	
Test Number :	62	63	64	
Sampling Method :	-	-	-	
Date Sampled :	26/03/2018	26/03/2018	26/03/2018	
Date Tested :	26/03/2018	26/03/2018	26/03/2018	
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	
Lot Number :	**516**	**517**	**519**	
Sample Location :	Lot 516 E 484527.724 N 6939612.500 Final Level	Lot 517 E 484525.350 N 6939601.735 Final Level	Lot 517 E 484515.250 N 6939577.902 Final Level	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	13	11	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	2.527	2.505	-	
Field Moisture Content (%) :	14.3	16.6	14.4	
Hilf MDR Number :	243089	243090	243091	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	98.5	97.5	99.5	
Field Wet Density (t/m³) :	2.196	2.298	2.185	
Optimum Moisture Content (%) :	14.5	17.0	14.5	
Moisture Variation :	0.2	0.4	0.1	
Peak Converted Wet Density (t/m³) :	2.229*	2.215*	2.197	
Hilf Density Ratio (%) :	**98.5**	**103.5**	**99.5**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

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Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13467
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 517
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 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 517 are presented in Table 1 below.

Table 1: Summary of Testing

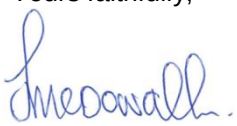
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
517	63	26th March 2018	103.5
517	64	26th March 2018	99.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/134 –32
Brochure: Important Information About Your Geotechnical Engineering Report

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www.morrisongeo.com.au

Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 32**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243089	243090	243091	
Test Number :	62	63	64	
Sampling Method :	-	-	-	
Date Sampled :	26/03/2018	26/03/2018	26/03/2018	
Date Tested :	26/03/2018	26/03/2018	26/03/2018	
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	
Lot Number :	**516**	**517**	**519**	
Sample Location :	Lot 516 E 484527.724 N 6939612.500 Final Level	Lot 517 E 484525.350 N 6939601.735 Final Level	Lot 517 E 484515.250 N 6939577.902 Final Level	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	13	11	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	2.527	2.505	-	
Field Moisture Content (%) :	14.3	16.6	14.4	
Hilf MDR Number :	243089	243090	243091	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	98.5	97.5	99.5	
Field Wet Density (t/m³) :	2.196	2.298	2.185	
Optimum Moisture Content (%) :	14.5	17.0	14.5	
Moisture Variation :	0.2	0.4	0.1	
Peak Converted Wet Density (t/m³) :	2.229*	2.215*	2.197	
Hilf Density Ratio (%) :	**98.5**	**103.5**	**99.5**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

* - denotes adjusted for oversize

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Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

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

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Geotechnical Engineering Report

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

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.

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Brisbane Office
Job Number: DL17/134
Ref No: 13468
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 518
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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 518 are presented in Table 1 below.

Table 1: Summary of Testing

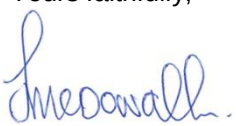
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
518	61	22nd March 2018	99.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/134 –31
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 31**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243055			
Test Number :	61			
Sampling Method :	-			
Date Sampled :	22/03/2018			
Date Tested :	22/03/2018			
Material Type :	**Allotment Fill (Capping Layer)**			
Material Source :	**On Site Stockpile**			
Lot Number :	**518**			
Sample Location :	Lot 518 E 484522.945 N 6939587.400 RL 88.591			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	14.2			
Hilf MDR Number :	243055			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	101			
Field Wet Density (t/m³) :	2.160			
Optimum Moisture Content (%) :	14.0			
Moisture Variation :	-0.1			
Peak Converted Wet Density (t/m³) :	2.185			
Hilf Density Ratio (%) :	**99.0**			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	CRUSHED BASALT			
Remarks :	-			

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ASFE
THE BEST PEOPLE ON EARTH

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Brisbane Office
Job Number: DL17/134
Ref No: 13469
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 519
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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The Brief from the Client was limited to:

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- ETS Engineering Pty Ltd Earthworks Plan, Drawing Number C200, Job Code – 17BNE-0007, Revision A, dated 27th Septmeber 2017

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

Compaction testing at the Edens Crossing Estate, Stage 7 Development was carried out at a frequency of 1 test per 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 519 are representative of the fill constructed on Lot 519. The closest tests to Lot 519 were prefomred on Lot 518 and Lot 520 A summary of tests representative of the fill constructed on Lot 519 are presented in Table 1 below.

Table 1: Summary of Testing

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

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

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

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

Yours faithfully,

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

Encl: Laboratory Test Reports DL17/134 –35, 36
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

Brisbane | Gold Coast | Maroochydore
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ABN: 51 009 878 899
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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 35**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**06/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243202	243203		
Test Number :	69	70		
Sampling Method :	-	-		
Date Sampled :	28/03/2018	28/03/2018		
Date Tested :	28/03/2018	28/03/2018		
Material Type :	**Allotment Fill**	**Allotment Fill**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**521**	**520**		
Sample Location :	Lot 521 E 484496.428 N 6939548.568 RL 91.137	Lot 520 E 484506.433 N 6939565.417 RL 90.350		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	15	11		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	2.445	2.440		
Field Moisture Content (%) :	17.9	16.7		
Hilf MDR Number :	243202	243203		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	107.5	111		
Field Wet Density (t/m³) :	2.245	2.147		
Optimum Moisture Content (%) :	16.6	15.1		
Moisture Variation :	-1.2	-1.6		
Peak Converted Wet Density (t/m³) :	2.245*	2.233*		
Hilf Density Ratio (%) :	**100.0**	**96.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

* - denotes adjusted for oversize

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APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
NATA Accreditation Number
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Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243219			
Test Number :	71			
Sampling Method :	-			
Date Sampled :	29/03/2018			
Date Tested :	29/03/2018			
Material Type :	**Allotment Fill (Capping Layer)**			
Material Source :	**On Site Stockpile**			
Lot Number :	**520**			
Sample Location :	Lot 520 E 484508.692 N 6939564.674 Final Level			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	15.2			
Hilf MDR Number :	243219			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	96			
Field Wet Density (t/m³) :	2.141			
Optimum Moisture Content (%) :	15.8			
Moisture Variation :	0.6			
Peak Converted Wet Density (t/m³) :	2.173			
Hilf Density Ratio (%) :	**98.5**			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	Crushed BASALT			
Remarks :	-			

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Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13470
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 520
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

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

Table 1: Summary of Testing

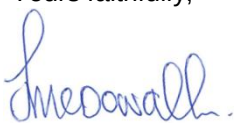
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
520	70	28th March 2018	96.0
520	71	29th March 2018	98.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 35**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**06/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243202	243203		
Test Number :	69	70		
Sampling Method :	-	-		
Date Sampled :	28/03/2018	28/03/2018		
Date Tested :	28/03/2018	28/03/2018		
Material Type :	**Allotment Fill**	**Allotment Fill**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**521**	**520**		
Sample Location :	Lot 521 E 484496.428 N 6939548.568 RL 91.137	Lot 520 E 484506.433 N 6939565.417 RL 90.350		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	15	11		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	2.445	2.440		
Field Moisture Content (%) :	17.9	16.7		
Hilf MDR Number :	243202	243203		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	107.5	111		
Field Wet Density (t/m³) :	2.245	2.147		
Optimum Moisture Content (%) :	16.6	15.1		
Moisture Variation :	-1.2	-1.6		
Peak Converted Wet Density (t/m³) :	2.245*	2.233*		
Hilf Density Ratio (%) :	**100.0**	**96.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

* - denotes adjusted for oversize

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Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243219			
Test Number :	71			
Sampling Method :	-			
Date Sampled :	29/03/2018			
Date Tested :	29/03/2018			
Material Type :	**Allotment Fill (Capping Layer)**			
Material Source :	**On Site Stockpile**			
Lot Number :	**520**			
Sample Location :	Lot 520 E 484508.692 N 6939564.674 Final Level			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
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Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	15.2			
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Moisture Ratio (%) :	96			
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Optimum Moisture Content (%) :	15.8			
Moisture Variation :	0.6			
Peak Converted Wet Density (t/m³) :	2.173			
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Moisture Specification :	-			
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Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

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

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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Telephone: 301/565-2733 Facsimile: 301/589-2017
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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/134
Ref No: 13471
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 521
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

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

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

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

Table 1: Summary of Testing

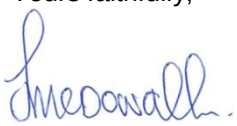
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
521	69	28th March 2018	100.0
521	73	3rd April 2018	101.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

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

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 –35, 38
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 35**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**06/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243202	243203		
Test Number :	69	70		
Sampling Method :	-	-		
Date Sampled :	28/03/2018	28/03/2018		
Date Tested :	28/03/2018	28/03/2018		
Material Type :	**Allotment Fill**	**Allotment Fill**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**521**	**520**		
Sample Location :	Lot 521 E 484496.428 N 6939548.568 RL 91.137	Lot 520 E 484506.433 N 6939565.417 RL 90.350		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	15	11		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	2.445	2.440		
Field Moisture Content (%) :	17.9	16.7		
Hilf MDR Number :	243202	243203		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	107.5	111		
Field Wet Density (t/m³) :	2.245	2.147		
Optimum Moisture Content (%) :	16.6	15.1		
Moisture Variation :	-1.2	-1.6		
Peak Converted Wet Density (t/m³) :	2.245*	2.233*		
Hilf Density Ratio (%) :	**100.0**	**96.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

* - denotes adjusted for oversize

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APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 38**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**10/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243281	243282	243283	
Test Number :	73	74	75	
Sampling Method :	-	-	-	
Date Sampled :	03/04/2018	03/04/2018	03/04/2018	
Date Tested :	03/04/2018	03/04/2018	03/04/2018	
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	
Lot Number :	**521**	**523**	**522**	
Sample Location :	Lot 521 E 484498.521 N 6939553.507 Final Level	Lot 523 E 484457.304 N 6939599.511 RL 90.857	Lot 522 E 484451.870 N 6939583.430 RL 91.281	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	12.0	12.5	17.4	
Hilf MDR Number :	243281	243282	243283	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	83.5	87	103.5	
Field Wet Density (t/m³) :	2.173	2.067	2.106	
Optimum Moisture Content (%) :	14.3	14.4	16.8	
Moisture Variation :	2.3	1.9	-0.6	
Peak Converted Wet Density (t/m³) :	2.152	2.154	2.197	
Hilf Density Ratio (%) :	**101.0**	**96.0**	**96.0**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

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Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13472
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 522
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 522 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

- Level One Inspection of the placement and compaction of fill materials in accordance with AS3798 2007 – "Guidelines on Earthworks for Commercial and Residential Developments";
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Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 522 are presented in Table 1 below.

Table 1: Summary of Testing

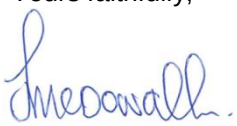
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
522	75	3rd April 2018	96.0
522	76	5th April 2018	95.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 522 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 522 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 –38, 39
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 38**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**10/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243281	243282	243283	
Test Number :	73	74	75	
Sampling Method :	-	-	-	
Date Sampled :	03/04/2018	03/04/2018	03/04/2018	
Date Tested :	03/04/2018	03/04/2018	03/04/2018	
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	
Lot Number :	**521**	**523**	**522**	
Sample Location :	Lot 521 E 484498.521 N 6939553.507 Final Level	Lot 523 E 484457.304 N 6939599.511 RL 90.857	Lot 522 E 484451.870 N 6939583.430 RL 91.281	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	12.0	12.5	17.4	
Hilf MDR Number :	243281	243282	243283	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	83.5	87	103.5	
Field Wet Density (t/m³) :	2.173	2.067	2.106	
Optimum Moisture Content (%) :	14.3	14.4	16.8	
Moisture Variation :	2.3	1.9	-0.6	
Peak Converted Wet Density (t/m³) :	2.152	2.154	2.197	
Hilf Density Ratio (%) :	**101.0**	**96.0**	**96.0**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

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

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

Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 39**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**13/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243407	243408		
Test Number :	76	77		
Sampling Method :	-	-		
Date Sampled :	05/04/2018	05/04/2018		
Date Tested :	05/04/2018	05/04/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**522**	**523**		
Sample Location :	Lot 522 E 484454.953 N 6939586.967 Final Level	Lot 523 E 484461.523 N 6939598.739 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	15.9	15.4		
Hilf MDR Number :	243407	243408		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	101.5	101		
Field Wet Density (t/m³) :	2.127	2.266		
Optimum Moisture Content (%) :	15.7	15.2		
Moisture Variation :	-0.2	-0.2		
Peak Converted Wet Density (t/m³) :	2.238	2.236		
Hilf Density Ratio (%) :	**95.0**	**101.5**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

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APPROVED SIGNATORY

Liam A McDowall

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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.

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

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

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

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Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13473
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 523
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 523 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 523 are presented in Table 1 below.

Table 1: Summary of Testing

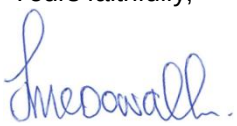
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
523	74	3rd April 2018	96.0
523	77	5th April 2018	101.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 523 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 523 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 –38, 39
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 38**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**10/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243281	243282	243283	
Test Number :	73	74	75	
Sampling Method :	-	-	-	
Date Sampled :	03/04/2018	03/04/2018	03/04/2018	
Date Tested :	03/04/2018	03/04/2018	03/04/2018	
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**	
Material Source :	**On Site Stockpile**	**On Site Stockpile**	**On Site Stockpile**	
Lot Number :	**521**	**523**	**522**	
Sample Location :	Lot 521 E 484498.521 N 6939553.507 Final Level	Lot 523 E 484457.304 N 6939599.511 RL 90.857	Lot 522 E 484451.870 N 6939583.430 RL 91.281	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	12.0	12.5	17.4	
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Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	83.5	87	103.5	
Field Wet Density (t/m³) :	2.173	2.067	2.106	
Optimum Moisture Content (%) :	14.3	14.4	16.8	
Moisture Variation :	2.3	1.9	-0.6	
Peak Converted Wet Density (t/m³) :	2.152	2.154	2.197	
Hilf Density Ratio (%) :	**101.0**	**96.0**	**96.0**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

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Brisbane Office
Job Number: DL17/134
Ref No: 13474
Author: L. McDowall

2nd July 2018

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Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 524
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 524 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 524 are presented in Table 1 below.

Table 1: Summary of Testing

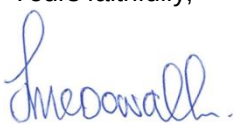
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
524	78	16th May 2018	95.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 524 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 524 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Encl: Laboratory Test Report DL17/134 –43
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 43**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/06/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	245465	245466	245467	
Test Number :	78	79	80	
Sampling Method :	-	-	-	
Date Sampled :	16/05/2018	16/05/2018	16/05/2018	
Date Tested :	16/05/2018	16/05/2018	16/05/2018	
Material Type :	**Allotment Replacement (Capping Layer)**	**Allotment Replacement (Capping Layer)**	**Allotment Replacement (Capping Layer)**	
Material Source :	**On Site**	**On Site**	**On Site**	
Lot Number :	**-**	**-**	**-**	
Sample Location :	E 484531 N 6939628 0.5m Below Final Level	E 484533 N 6939615 Final Level	E 484537 N 6939648 Final Level	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	10	7	11	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	2.338	2.430	2.437	
Field Moisture Content (%) :	13.8	14.5	14.0	
Hilf MDR Number :	245465	245466	245467	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.4	AS1289.2.1.4	AS1289.2.1.4	
Moisture Ratio (%) :	88.5	88.5	88	
Field Wet Density (t/m³) :	2.060	2.110	2.171	
Optimum Moisture Content (%) :	15.6	16.4	15.9	
Moisture Variation :	1.8	1.8	1.9	
Peak Converted Wet Density (t/m³) :	2.158*	2.201*	2.22*	
Hilf Density Ratio (%) :	**95.5**	**96.0**	**98.0**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

* - denotes adjusted for oversize

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APPROVED SIGNATORY

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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: DL17/134
Ref No: 13475
Author: L. McDowall

2nd July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 525
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 525 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 525 are presented in Table 1 below.

Table 1: Summary of Testing

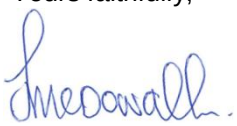
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
525	11	26th April 2017	98.0
525	12	26th April 2017	99.0
525	13	26th April 2017	98.5
525	34	21st July 2017	98.5
525	46	27th July 2017	102.5
525	47	27th July 2017	102.0
525	65	26th March 2018	97.5
525	67	27th March 2018	99.5
525	79	16th May 2018	96.0
525	80	16th May 2018	98.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 525 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 525 can be termed as “Controlled Fill” in accordance with AS 2870-2011 “Residential Slabs and Footings”.

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 5, 12, 19, 33, 34, 43
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 5
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228096	228097	228098	
Test Number :	11	12	13	
Sampling Method :	-	-	-	
Date Sampled :	26/04/2017	26/04/2017	26/04/2017	
Date Tested :	26/04/2017	26/04/2017	26/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484486.684 N 6939620.848 RL 87.237	E 484470.715 N 6939635.331 RL 87.721	E 484476.115 N 6939625.172 RL 87.412	
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 (%) :	33.7	34.9	32.8	
Hilf MDR Number :	228096	228097	228098	
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 (%) :	110	110	110.5	
Field Wet Density (t/m³) :	1.842	1.866	1.856	
Optimum Moisture Content (%) :	30.6	31.7	29.7	
Moisture Variation :	-3.0	-3.1	-3.0	
Peak Converted Wet Density (t/m³) :	1.876	1.889	1.883	
Hilf Density Ratio (%) :	98.0	99.0	98.5	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 12
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	27/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7		

Sample Number :	232164			
Test Number :	34			
Sampling Method :	-			
Date Sampled :	21/07/2017			
Date Tested :	21/07/2017			
Material Type :	Bulk Fill (Capping Layer)			
Material Source :	On Site (Crushed Basalt)			
Lot Number :	-			
Sample Location :	E 484486.855 N 6939618.940 RL 87.715			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	13.8			
Hilf MDR Number :	232164			
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 (%) :	78.5			
Field Wet Density (t/m³) :	2.034			
Optimum Moisture Content (%) :	17.6			
Moisture Variation :	3.6			
Peak Converted Wet Density (t/m³) :	2.063			
Hilf Density Ratio (%) :	98.5			
Minimum Specification :	95			
Moisture Specification :	-			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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APPROVED SIGNATORY

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

Client :	CCA WINSLOW	Report Number:	DL17/134 - 19
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232468	232469	232470	232471
Test Number :	44	45	46	47
Sampling Method :	-	-	-	-
Date Sampled :	27/07/2017	27/07/2017	27/07/2017	27/07/2017
Date Tested :	27/07/2017	27/07/2017	27/07/2017	27/07/2017
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)
Material Source :	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)	On Site (Crushed Basalt)
Lot Number :	-	-	-	-
Sample Location :	E 484501.072 N 6939720.406 RL 83.861	E 484496.471 N 6939694.973 RL 84.992	E 484490.038 N 6939657.134 RL 86.083	E 484494.582 N 6939621.488 RL 87.454
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	14.8	12.7	14.4	20.3
Hilf MDR Number :	232468	232469	232470	232471
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	93.5	85	75	85.5
Field Wet Density (t/m³) :	1.998	1.994	2.093	1.855
Optimum Moisture Content (%) :	15.8	15.0	19.2	23.7
Moisture Variation :	1.0	2.2	4.6	3.4
Peak Converted Wet Density (t/m³) :	2.092	2.103	2.043	1.822
Hilf Density Ratio (%) :	95.5	95.0	102.5	102.0
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

NATA
ACCREDITATION

Accredited for compliance with ISO/IEC 17025.

APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 33**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243092	243093		
Test Number :	65	66		
Sampling Method :	-	-		
Date Sampled :	26/03/2018	26/03/2018		
Date Tested :	26/03/2018	26/03/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	**525**	**526**		
Sample Location :	Lot 525 E 484481.220 N 6939618.957 RL 88.645	Lot 526 E 484457.491 N 6939631.837 RL 89.385		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	15	12		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	2.544	2.486		
Field Moisture Content (%) :	16.4	14.9		
Hilf MDR Number :	243092	243093		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	98	99		
Field Wet Density (t/m³) :	2.178	2.189		
Optimum Moisture Content (%) :	16.7	15.0		
Moisture Variation :	0.3	0.1		
Peak Converted Wet Density (t/m³) :	2.232*	2.253*		
Hilf Density Ratio (%) :	**97.5**	**97.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

* - denotes adjusted for oversize

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.

APPROVED SIGNATORY

Liam A McDowall

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

MORRISON GEOTECHNIC

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

Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 34**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/04/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	243112	243113		
Test Number :	67	68		
Sampling Method :	-	-		
Date Sampled :	27/03/2018	27/03/2018		
Date Tested :	27/03/2018	27/03/2018		
Material Type :	**Allotment Fill (Capping Layer)**	**Allotment Fill (Capping Layer)**		
Material Source :	**On Site Stockpile**	**On Site Stockpile**		
Lot Number :	-	-		
Sample Location :	E 484473.900 N 6939625.485 RL 89.428	E 484438.900 N 6939619.120 RL 90.44		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	11	12		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	2.474	2.500		
Field Moisture Content (%) :	15.9	16.0		
Hilf MDR Number :	243112	243113		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	101	101.5		
Field Wet Density (t/m³) :	2.213	2.168		
Optimum Moisture Content (%) :	15.8	15.8		
Moisture Variation :	-0.1	-0.2		
Peak Converted Wet Density (t/m³) :	2.225*	2.216*		
Hilf Density Ratio (%) :	**99.5**	**98.0**		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	Crushed BASALT	Crushed BASALT		
Remarks :	-			

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Hilf Density Ratio Report

Client :	**CCA WINSLOW**	Report Number:	**DL17/134 - 43**
Address :	**1587 IPSWICH ROAD, ROCKLEA, QLD, 4106**	Report Date :	**05/06/2018**
Project Name :	**EARTHWORKS SUPERVISION**	Order Number :	**37618**
Project Number :	**DL17/134**	Test Method :	**AS1289.5.8.1 & 5.7.1**
Location:	**EDEN'S CROSSING , STAGE 7**	**Page 1 of 1**	

Sample Number :	245465	245466	245467	
Test Number :	78	79	80	
Sampling Method :	-	-	-	
Date Sampled :	16/05/2018	16/05/2018	16/05/2018	
Date Tested :	16/05/2018	16/05/2018	16/05/2018	
Material Type :	**Allotment Replacement (Capping Layer)**	**Allotment Replacement (Capping Layer)**	**Allotment Replacement (Capping Layer)**	
Material Source :	**On Site**	**On Site**	**On Site**	
Lot Number :	**-**	**-**	**-**	
Sample Location :	E 484531 N 6939628 0.5m Below Final Level	E 484533 N 6939615 Final Level	E 484537 N 6939648 Final Level	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	10	7	11	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	2.338	2.430	2.437	
Field Moisture Content (%) :	13.8	14.5	14.0	
Hilf MDR Number :	245465	245466	245467	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.4	AS1289.2.1.4	AS1289.2.1.4	
Moisture Ratio (%) :	88.5	88.5	88	
Field Wet Density (t/m³) :	2.060	2.110	2.171	
Optimum Moisture Content (%) :	15.6	16.4	15.9	
Moisture Variation :	1.8	1.8	1.9	
Peak Converted Wet Density (t/m³) :	2.158*	2.201*	2.22*	
Hilf Density Ratio (%) :	**95.5**	**96.0**	**98.0**	
Minimum Specification :	95	95	95	
Moisture Specification :	-	-	-	
Site Selection :	-	-	-	
Soil Description :	Crushed BASALT	Crushed BASALT	Crushed BASALT	
Remarks :	-			

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13476
Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 529
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 529 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 529 are presented in Table 1 below.

Table 1: Summary of Testing

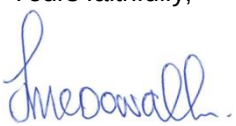
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
529	26	19th July 2017	96.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 529 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 529 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 9
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 9
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	26/07/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232107	232108	232109	232110
Test Number :	25	26	27	28
Sampling Method :	-	-	-	-
Date Sampled :	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Date Tested :	19/07/2017	19/07/2017	19/07/2017	19/07/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site	On Site	On Site	On Site
Lot Number :	-	-	-	-
Sample Location :	E 484493.812 N 6939647.952 RL 85.409	E 484498.318 N 6939657.342 RL 85.260	E 484502.926 N 6939637.758 RL 85.403	E 484548.391 N 6939641.892 RL 84.534
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	38.3	35.5	20.1	17.5
Hilf MDR Number :	232107	232108	232109	232110
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	101	98	95	92.5
Field Wet Density (t/m³) :	1.877	1.747	1.985	2.003
Optimum Moisture Content (%) :	38.0	36.3	21.2	19.0
Moisture Variation :	-0.3	0.8	1.0	1.4
Peak Converted Wet Density (t/m³) :	1.839	1.822	1.968	2.017
Hilf Density Ratio (%) :	102.0	96.0	101.0	99.5
Minimum Specification :	95	95	95	95
Moisture Specification :	-	-	-	-
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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

Read Responsibility Provisions Closely

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

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Obtain Professional Assistance To Deal with Mold

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

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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/134
Ref No: 13477
Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 582
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 582 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 582 are presented in Table 1 below.

Table 1: Summary of Testing

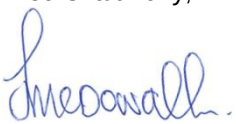
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
582	5	24th April 2017	96.0
582	10	24th April 2017	106.5
582	53	29th July 2017	102.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 582 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 582 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 3, 4, 22
Brochure: Important Information About Your Geotechnical Engineering Report

MORRISON GEOTECHNIC

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 3
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228089	228090	228091	228092
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Date Tested :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484507.492 N 6939703.907 RL 82.460	E 484495.074 N 6939673.079 RL 83.665	E 484505.440 N 6939684.950 RL 83.110	E 484518.264 N 6939694.307 RL 82.400
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	42.0	45.0	37.4	39.9
Hilf MDR Number :	228089	228090	228091	228092
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	95	107.5	103	99
Field Wet Density (t/m³) :	1.792	1.612	1.838	1.708
Optimum Moisture Content (%) :	44.2	41.9	36.4	40.2
Moisture Variation :	2.7	-3.7	-1.0	0.3
Peak Converted Wet Density (t/m³) :	1.616	1.677	1.726	1.679
Hilf Density Ratio (%) :	111.0	96.0	106.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 4
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228093	228094	228095	
Test Number :	8	9	10	
Sampling Method :	-	-	-	
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	
Date Tested :	24/04/2017	24/04/2017	24/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484503.544 N 6939707.115 RL 83.225	E 484499.819 N 6939635.630 RL 83.672	E 484494.770 N 6939670.599 RL 84.835	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	29.8	29.8	27.6	
Hilf MDR Number :	228093	228094	228095	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
Compactive Effort :	Standard	Standard	Standard	
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	111.5	107	100	
Field Wet Density (t/m³) :	1.917	1.846	2.013	
Optimum Moisture Content (%) :	26.7	27.9	27.6	
Moisture Variation :	-3.1	-2.0	0.0	
Peak Converted Wet Density (t/m³) :	1.901	1.823	1.888	
Hilf Density Ratio (%) :	101.0	101.5	106.5	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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APPROVED SIGNATORY

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

Client :	CCA WINSLOW	Report Number:	DL17/134 - 22
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232568	232569		
Test Number :	53	54		
Sampling Method :	-	-		
Date Sampled :	29/07/2017	29/07/2017		
Date Tested :	29/07/2017	29/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site	On Site		
Lot Number :	-	-		
Sample Location :	E 0484474 N 6939669 Final Level	E 0484486 N 6939701 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	15.6	16.9		
Hilf MDR Number :	232568	232569		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	88	99.5		
Field Wet Density (t/m³) :	2.176	2.192		
Optimum Moisture Content (%) :	17.7	17.0		
Moisture Variation :	2.0	0.1		
Peak Converted Wet Density (t/m³) :	2.124	2.223		
Hilf Density Ratio (%) :	102.5	98.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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

Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13478
Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 530
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 530 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 530 are presented in Table 1 below.

Table 1: Summary of Testing

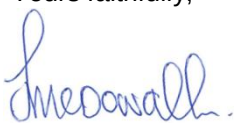
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
530	1	21st April 2017	98.0
530	2	21st April 2017	95.0
530	3	22nd April 2017	100.5
530	6	24th April 2017	106.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 530 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 530 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 – 1, 2, 3
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 1
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	08/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228080	228081		
Test Number :	1	2		
Sampling Method :	-	-		
Date Sampled :	21/04/2017	21/04/2017		
Date Tested :	21/04/2017	21/04/2017		
Material Type :	Bulk Fill	Bulk Fill		
Material Source :	On Site Cut	On Site Cut		
Lot Number :	-	-		
Sample Location :	E 484490 N 6939686 RL 82.900	E 484496 N 6939690 RL 83.50		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	26.8	26.4		
Hilf MDR Number :	228080	228081		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	100	101.5		
Field Wet Density (t/m³) :	1.890	1.799		
Optimum Moisture Content (%) :	26.8	26.1		
Moisture Variation :	0.0	-0.4		
Peak Converted Wet Density (t/m³) :	1.927	1.898		
Hilf Density Ratio (%) :	98.0	95.0		
Minimum Specification :	95	95		
Moisture Specification :	+ or - 2%	+ or - 2%		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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APPROVED SIGNATORY

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

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 2
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	08/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228088			
Test Number :	3			
Sampling Method :	-			
Date Sampled :	22/04/2017			
Date Tested :	22/04/2017			
Material Type :	Bulk Fill			
Material Source :	On Site Cut			
Lot Number :	-			
Sample Location :	E 484490.150 N 6939683.931 RL 84.288			
Test Depth (mm) :	150			
Layer Depth (mm) :	-			
Maximum Size (mm) :	19			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Oversize Density (t/m³) :	-			
Field Moisture Content (%) :	27.5			
Hilf MDR Number :	228088			
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1			
Compactive Effort :	Standard			
Field Density Method :	AS1289.5.8.1 & 5.7.1			
Moisture Method :	AS1289.2.1.1			
Moisture Ratio (%) :	99			
Field Wet Density (t/m³) :	1.919			
Optimum Moisture Content (%) :	27.7			
Moisture Variation :	0.2			
Peak Converted Wet Density (t/m³) :	1.912			
Hilf Density Ratio (%) :	100.5			
Minimum Specification :	95			
Moisture Specification :	+ or - 2%			
Site Selection :	-			
Soil Description :	-			
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 3
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228089	228090	228091	228092
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Date Tested :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484507.492 N 6939703.907 RL 82.460	E 484495.074 N 6939673.079 RL 83.665	E 484505.440 N 6939684.950 RL 83.110	E 484518.264 N 6939694.307 RL 82.400
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	42.0	45.0	37.4	39.9
Hilf MDR Number :	228089	228090	228091	228092
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
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Optimum Moisture Content (%) :	44.2	41.9	36.4	40.2
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Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Important Information about Your

Geotechnical Engineering Report

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

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

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

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

Read the Full Report

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

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

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

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

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

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

Do Not Redraw the Engineer's Logs

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

Give Contractors a Complete Report and Guidance

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance To Deal with Mold

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

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

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

ASFE
THE BEST PEOPLE ON EARTH

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

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Brisbane Office
Job Number: DL17/134
Ref No: 13479
Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 531
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 531 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 531 are presented in Table 1 below.

Table 1: Summary of Testing

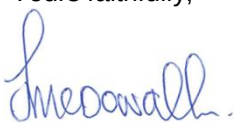
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
531	7	24th April 2017	101.5
531	54	29th July 2017	98.5
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 531 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 531 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 –3, 22
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 3
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228089	228090	228091	228092
Test Number :	4	5	6	7
Sampling Method :	-	-	-	-
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Date Tested :	24/04/2017	24/04/2017	24/04/2017	24/04/2017
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Material Source :	On Site Cut	On Site Cut	On Site Cut	On Site Cut
Lot Number :	-	-	-	-
Sample Location :	E 484507.492 N 6939703.907 RL 82.460	E 484495.074 N 6939673.079 RL 83.665	E 484505.440 N 6939684.950 RL 83.110	E 484518.264 N 6939694.307 RL 82.400
Test Depth (mm) :	150	150	150	150
Layer Depth (mm) :	-	-	-	-
Maximum Size (mm) :	19	19	19	19
Oversize Wet (%) :	-	-	-	-
Oversize Dry (%) :	-	-	-	-
Oversize Density (t/m³) :	-	-	-	-
Field Moisture Content (%) :	42.0	45.0	37.4	39.9
Hilf MDR Number :	228089	228090	228091	228092
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1
Compactive Effort :	Standard	Standard	Standard	Standard
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1
Moisture Ratio (%) :	95	107.5	103	99
Field Wet Density (t/m³) :	1.792	1.612	1.838	1.708
Optimum Moisture Content (%) :	44.2	41.9	36.4	40.2
Moisture Variation :	2.7	-3.7	-1.0	0.3
Peak Converted Wet Density (t/m³) :	1.616	1.677	1.726	1.679
Hilf Density Ratio (%) :	111.0	96.0	106.5	101.5
Minimum Specification :	95	95	95	95
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	+ or - 2%
Site Selection :	-	-	-	-
Soil Description :	-	-	-	-
Remarks :	-			

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 22
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	11/08/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	232568	232569		
Test Number :	53	54		
Sampling Method :	-	-		
Date Sampled :	29/07/2017	29/07/2017		
Date Tested :	29/07/2017	29/07/2017		
Material Type :	Bulk Fill (Capping Layer)	Bulk Fill (Capping Layer)		
Material Source :	On Site	On Site		
Lot Number :	-	-		
Sample Location :	E 0484474 N 6939669 Final Level	E 0484486 N 6939701 Final Level		
Test Depth (mm) :	150	150		
Layer Depth (mm) :	-	-		
Maximum Size (mm) :	19	19		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Oversize Density (t/m³) :	-	-		
Field Moisture Content (%) :	15.6	16.9		
Hilf MDR Number :	232568	232569		
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1		
Compactive Effort :	Standard	Standard		
Field Density Method :	AS1289.5.8.1 & 5.7.1	AS1289.5.8.1 & 5.7.1		
Moisture Method :	AS1289.2.1.1	AS1289.2.1.1		
Moisture Ratio (%) :	88	99.5		
Field Wet Density (t/m³) :	2.176	2.192		
Optimum Moisture Content (%) :	17.7	17.0		
Moisture Variation :	2.0	0.1		
Peak Converted Wet Density (t/m³) :	2.124	2.223		
Hilf Density Ratio (%) :	102.5	98.5		
Minimum Specification :	95	95		
Moisture Specification :	-	-		
Site Selection :	-	-		
Soil Description :	-	-		
Remarks :	-			

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

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

Subsurface Conditions Can Change

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

Most Geotechnical Findings Are Professional Opinions

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

A Report's Recommendations Are *Not* Final

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

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

A Geotechnical Engineering Report Is Subject to Misinterpretation

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

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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www.morrisongeo.com.au

Brisbane Office
Job Number: DL17/134
Ref No: 13480
Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 532
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 532 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 532 are presented in Table 1 below.

Table 1: Summary of Testing

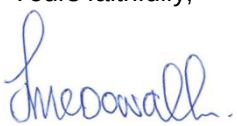
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
532	8	24th April 2017	101.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 532 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 532 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Encl: Laboratory Test Reports DL17/134 –4
Brochure: Important Information About Your Geotechnical Engineering Report

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Hilf Density Ratio Report

Client :	CCA WINSLOW	Report Number:	DL17/134 - 4
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228093	228094	228095	
Test Number :	8	9	10	
Sampling Method :	-	-	-	
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	
Date Tested :	24/04/2017	24/04/2017	24/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
Lot Number :	-	-	-	
Sample Location :	E 484503.544 N 6939707.115 RL 83.225	E 484499.819 N 6939635.630 RL 83.672	E 484494.770 N 6939670.599 RL 84.835	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
Oversize Dry (%) :	-	-	-	
Oversize Density (t/m³) :	-	-	-	
Field Moisture Content (%) :	29.8	29.8	27.6	
Hilf MDR Number :	228093	228094	228095	
Hilf MDR Method :	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	AS1289.5.1.1 & 5.7.1	
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Moisture Method :	AS1289.2.1.1	AS1289.2.1.1	AS1289.2.1.1	
Moisture Ratio (%) :	111.5	107	100	
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Optimum Moisture Content (%) :	26.7	27.9	27.6	
Moisture Variation :	-3.1	-2.0	0.0	
Peak Converted Wet Density (t/m³) :	1.901	1.823	1.888	
Hilf Density Ratio (%) :	101.0	101.5	106.5	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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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- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
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Brisbane Office
Job Number: DL17/134
Ref No: 13481
Author: L. McDowall

4th July 2018

CCA Winslow Pty Ltd
1587 Ipswich Road
Rocklea, QLD 4106

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

Dear Sir,

RE: LOT 533
LEVEL ONE COMPLIANCE REPORT FOR
BULK EARTHWORKS FILLING OPERATIONS
EDENS CROSSING ESTATE, STAGE 7
MT JUILLERAT DRIVE, REDBANK PLAINS

Earthworks filling operations were carried out on Lot 533 at the above Development to form a working platform to support a future residential building.

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

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

The Brief from the Client was limited to:

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

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

Compaction testing at the Edens Crossing Estate, Stage 7 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.

summary of tests representative of the fill constructed on Lot 533 are presented in Table 1 below.

Table 1: Summary of Testing

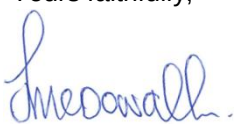
Lot Number	Test Number	Date Tested	Density Ratio Achieved %
533	45	27th July 2017	95.0
Note: Laboratory Standard Test Methods Used: AS1289.5.8.1, 5.7.1, 2.1.1.			

Fill constructed on Lot 533 has been observed to be placed and compacted in accordance with the Brief. The fill on Lot 533 can be termed as "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

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

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

Yours faithfully,



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

Client :	CCA WINSLOW	Report Number:	DL17/134 - 4
Address :	1587 IPSWICH ROAD, ROCKLEA, QLD, 4106	Report Date :	15/05/2017
Project Name :	EARTHWORKS SUPERVISION	Order Number :	33832
Project Number :	DL17/134	Test Method :	AS1289.5.8.1 & 5.7.1
Location:	EDEN'S CROSSING , STAGE 7	Page 1 of 1	

Sample Number :	228093	228094	228095	
Test Number :	8	9	10	
Sampling Method :	-	-	-	
Date Sampled :	24/04/2017	24/04/2017	24/04/2017	
Date Tested :	24/04/2017	24/04/2017	24/04/2017	
Material Type :	Bulk Fill	Bulk Fill	Bulk Fill	
Material Source :	On Site Cut	On Site Cut	On Site Cut	
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Sample Location :	E 484503.544 N 6939707.115 RL 83.225	E 484499.819 N 6939635.630 RL 83.672	E 484494.770 N 6939670.599 RL 84.835	
Test Depth (mm) :	150	150	150	
Layer Depth (mm) :	-	-	-	
Maximum Size (mm) :	19	19	19	
Oversize Wet (%) :	-	-	-	
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Hilf Density Ratio (%) :	101.0	101.5	106.5	
Minimum Specification :	95	95	95	
Moisture Specification :	+ or - 2%	+ or - 2%	+ or - 2%	
Site Selection :	-	-	-	
Soil Description :	-	-	-	
Remarks :	-			

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APPROVED SIGNATORY

Liam Mcdowall (Brisbane) - Branch Manager
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- 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.

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