MORRISON GEOTECHNIC

Brisbane | Gold Coast | **Maroochydore**
Unit 4, 81 Wises Road, Maroochydore Q 4558 **P** (07) 5443 9522 **F** (07) 5479 1633
ABN 51 009 878 899
www.morrisongeo.com.au

Sunshine Coast Office
Job Number: ML17-070
Ref No: 14259
Author: M. Morrison

23rd January 2019

Hall Contracting Pty Ltd
PO Box 519
Buderim QLD 4006

ATTENTION: MR NELSON RIDDLE
Email: NelsonRiddle@hallcontracting.com.au

Dear Sir,

RE: LEVEL ONE COMPLIANCE REPORT FOR EARTHWORKS FILLING OPERATIONS TO FORMER VEE DRAIN NORTH HARBOUR STAGE 17

Earthworks filling operations were carried at North Harbour Stage 17 to backfill a former Vee Drain.

This report covers fill constructed at the following locations: -

- Lots 504-515 & 548-551
- As shown on Attached plan

Earthworks were constructed by Hall Contracting (The Client) between 5th November 2018 and 20th November 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.
- Moreton Bay Regional Council Specifications.
- KN Group Drawings.

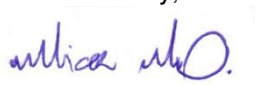
Level One Inspections and Testing was carried out on the stripped ground surface, and during the placement and compaction of fill materials. Field and laboratory testing included proof roll testing of the stripped surface, field density testing using the nuclear soil moisture density gauge and standard Compactions. Compaction testing on the fill achieved at least 95% Std at the test locations.

Fill constructed to backfill a former Vee drain has been observed to be placed and compacted in accordance with the Brief. The fill "Controlled Fill" in accordance with AS 2870-2011 "Residential Slabs and Footings".

This statement is limited to the above lots and does not include any top soil, which may have been placed for use as Lot dressing or any other subsequent earthworks after November 2018.

If there are any queries concerning the above please do not hesitate to contact this office.

Yours faithfully,



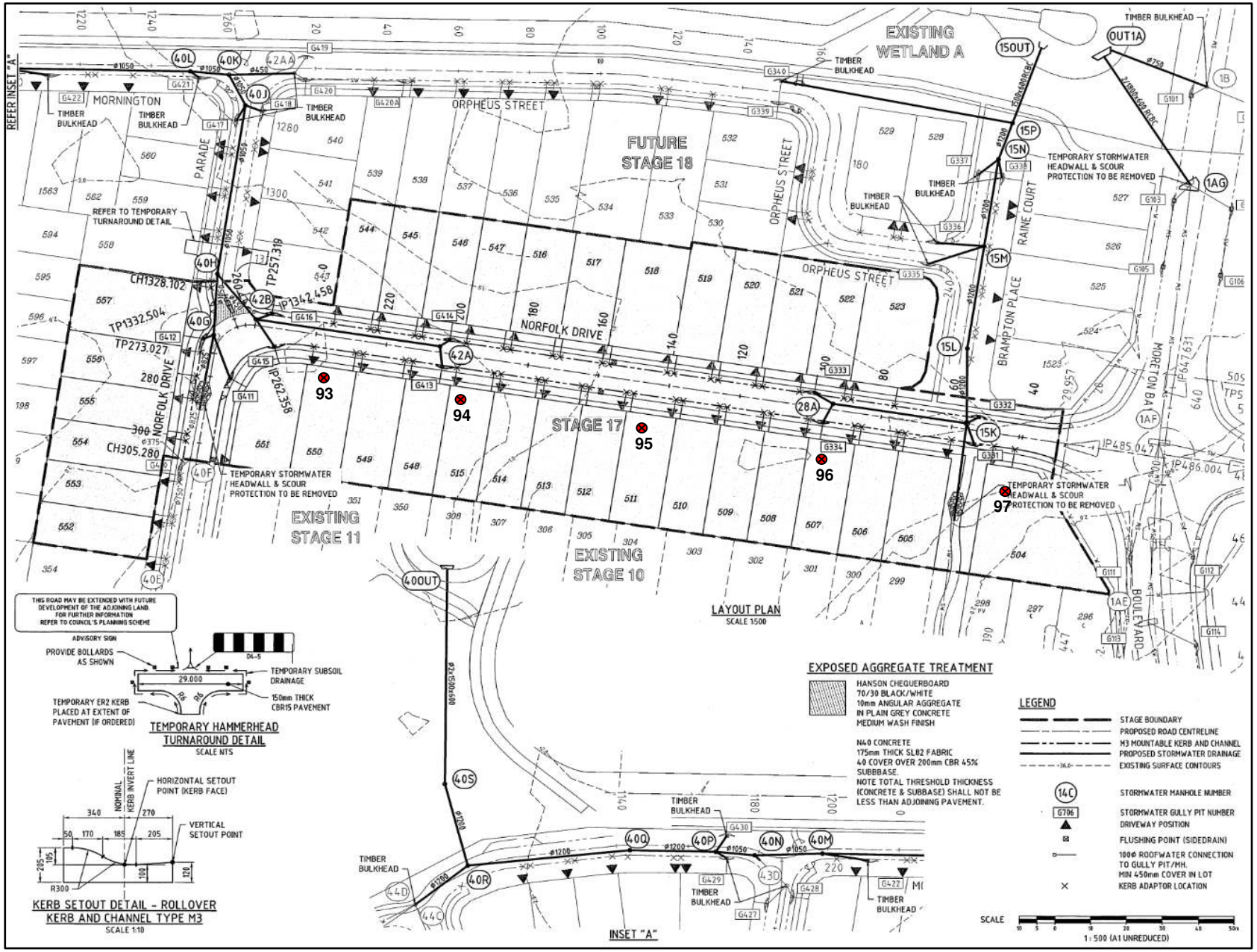
MICHAEL MORRISON
For and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

Encl: Laboratory Test Reports

APPENDIX A

Site Plan

Test Locations



MORRISON GEOTECHNIC PTY LTD
ABN: 51 009 878 899

Unit 4/81 Wises Rd, Maroochydore Qld 4558
Ph: 5443 9522 Fax: 5479 1633
Email: caboolturelab@morrisongeo.com.au

Client	Hall Contracting		
Project:	North Harbour– Stage 17		
Project No:	ML17/070	Drawing No:	ML17/070- 1
Legend:	Test Location ⊗		*Date: 22nd January 2019*
			Drawing not to Scale

APPENDIX B

Test Certificates

Material Test Report

Report Number: **ML17/070-43**
Issue Number: 1
Date Issued: 14/12/2018
Client: HALL CONTRACTING PTY LTD
PO BOX 519, BUDERIM QLD 4556
Contact: Nelson Riddle
Project Number: ML17/070
Project Name: STAGE 17 BULK EARTHWORKS
Project Location: NORTH HARBOUR, BURPENGARY
Work Request: 129
Date Sampled: 05/12/2018 10:30
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Site Selection: AS 1289.1.4.1
Material: Sandy Clay. Brown
Material Source: Onsite

MORRISON GEOTECHNIC
Morrison Geotechnic Pty Ltd
Base Facility No:17071
North Harbour Annex Facility No:24234
Unit 4 / 81 Wises Road Maroochydore QLD 4558
Phone: (07) 5443 9522
Email: maroochydorelab@morrisongeo.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

NATA WORLD RECOGNISED ACCREDITATION

Approved Signatory: David Taylor
Senior Technician
NATA Accredited Laboratory Number: 1169

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	N18-129A	N18-129B	N18-129C	N18-129D	N18-129E
Test Number	93	94	95	96	97
Date Tested	05/12/2018	05/12/2018	05/12/2018	05/12/2018	05/12/2018
Time Tested	10:50	10:55	11:00	11:05	11:10
Test Request #/Location	Lot 550	Lot 515	Lot 511	Lot 507	Lot 504
Line / Offset	3m fr N/B	4m fr N/B	4m fr N/B	5m fr N/B	6m fr N/B
Offset	5m fr W/B	3m fr W/B	6m fr W/B	3m fr W/B	5m fr W/B
Layer / Reduced Level	1m BFL	.5m BFL	F/L	1m BFL	.5m BFL
Soil Description	Sandy Clay. Brown	Sandy Clay. Brown	Sandy Clay. Brown	Sandy Clay. Brown	Sandy Clay. Brown
Test Depth (mm)	150	150	150	150	150
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**	0.0	0.0
Field Wet Density (FWD) t/m^3	2.00	2.02	2.03	2.07	2.06
Field Moisture Content %	12.5	12.7	12.8	10.7	12.6
Field Dry Density (FDD) t/m^3	1.78	1.79	1.80	1.87	1.83
Peak Converted Wet Density t/m^3	2.05	2.06	2.08	2.10	2.09
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	**
Moisture Variation (Wv) %	2.0	2.0	2.0	2.0	2.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	**97.5**	**98.0**	**98.0**	**98.5**	**98.5**
Compaction Method	**Standard**	**Standard**	**Standard**	**Standard**	**Standard**

Moisture Variation Note:
Positive values = test is dry of OMC
Negative values = test is wet of OMC

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

IIGER06085.0MRP