

Donegal Stud Residential Subdivision Stages 15A & 15C at 36 Tir Conaill Avenue, Flat Bush

Geotechnical Completion Report

Hugh Green Limited

Reference: GENZAUCK16856AE

29 November 2021

DONEGAL STUD RESIDENTIAL SUBDIVISION STAGES 15A & 15C AT 36 TIR CONAILL AVENUE

Geotechnical Completion Report

Report reference number: GENZAUCK16856AE

29 November 2021

PREPARED FOR

Hugh Green Limited

C/- Harrison Grierson Consultants Limited
PO Box 5760
Wellesley Street
Auckland 1051

PREPARED BY

Tetra Tech Coffey

Level 4, 25 Teed Street, Newmarket
Auckland
1023 New Zealand
p: +64 9 379 9463

NZBN 9429033691923

QUALITY INFORMATION

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1. INTRODUCTION AND DESCRIPTION OF SUBDIVISION

This Geotechnical Completion Report has been prepared for Hugh Green Limited as part of the documentation required to be submitted to the Auckland Council following residential subdivisional development.

It contains our Suitability Statement, relevant test data and the Harrison Grierson Consultants Limited as-built plan set relating to Stages 15A and 15C of the Donegal Stud Residential Subdivision as follows:

Table 1: Harrison Grierson Consultants Limited As-Built Plans

Title	Reference No.	Date
Finished Contours As-Built Plan	146689-15-AB200 Rev B	01.12.2021
Finished Contours As-Built Plan (Slopes >1:4)	146689-15-AB200 Rev B	01.12.2021
Cut to Fill As-Built Plan	146689-15-AB220	19.11.2021
Overall Stormwater As-Built Plan	146689-15-AB400	18.11.2021
Stormwater As-Built Plan, Sheet 1	146689-15-AB401	18.11.2021
Stormwater As-Built Plan, Sheet 2	146689-15-AB402	18.11.2021
Stormwater As-Built Plan, Schedule of Coordinates	146689-15-AB402	18.11.2021

This report covers the construction period between October 2020 and November 2021 and is intended to be used for certification purposes for:

- 63 residential lots numbered Lots 67 to 120, 129 to 136 and 402;
- The extension of Koromeke Street and Uru drive, and
- 2 new roads named Brackloon Lane and Ballyalton Crescent.

Stages 15A and 15C are located at 36 Tir Conaill Avenue, Flat Bush, and as can be seen on the Cut to Fill As-Built Plan, most of the lots in this residential development have been partly or totally affected by bulk earthworks with associated fill depths of approximately 2.0 metres and/or cut to approximately 3.0m.

2. RELATED REPORTS

Previous Tetra Tech Coffey geotechnical reports prepared for the subject land include:

- Geotechnical Investigation Report on Proposed Donegal Stud Stage 10 Residential Subdivision, 62 Thomas Road, Flat Bush, reference GENZAUCK16856AB, dated 11 May 2017;
- Slope Stability Assessment for Eastern and Western Boundary Gully Flanks, reference GENZAUCK16856AB, dated 16 April 2018;
- Geotechnical Completion Report on Donegal Stud Stage 10A, reference GENZAUCK16856AB, dated 24 September 2018;
- Geotechnical Completion Report on Donegal Stud Stage 10A Residential Subdivision, 84 Thomas Road, Flat Bush, reference GENZAUCK16856AB, dated 24 September 2018;
- Slope Stability in Recreation Reserve (Lot 406), reference 16856AB, dated 2 April 2019;

- Geotechnical Completion Report on Donegal Stud Stage 10B Residential Subdivision, 84 Thomas Road, Flat Bush, reference GENZAUCK16856AB, dated 9 August 2019;
- Slope Stability in Recreation Reserve (Lot 408), reference 16856AE, dated 6 December 2019;
- Proposed MSE Block Retaining Wall at Road 6 Donegal Stud Stage 13 Residential Subdivision Flat Bush, reference GENZAUCK16856AE, dated 23 January 2020;
- Geotechnical Investigation Report on Proposed Donegal Stud Stage 14-16 at, 64 Thomas Road, Flat Bush, reference GENZAUCK16856AE, dated 8 April 2020;
- Geotechnical Completion Report on Donegal Stud Stages 13, Flat Bush, reference GENZAUCK16856AE, dated 19 January 2021; and,
- Geotechnical Completion Report on Donegal Stud Stages 14, Flat Bush, reference GENZAUCK16856AE, dated 27 September 2021.

The conclusions and recommendations of the above documents (where relevant) have been referenced as part of the preparation of this report.

3. EARTHWORKS OPERATIONS

3.1. PLANT

The main items of plant used by the subdivision contractor, Dempsey Wood Civil Limited, included:

- Motor Scrapers;
- Bulldozers with Scoops;
- Bulldozers;
- Dump Trucks;
- Excavators;
- Tractor with Discs;
- Tractors;
- Front End Loaders;
- Water Trucks;
- Sheep Foot Compactors;
- Pad Foot Compactor;
- Graders; and
- Vibrating Drum Rollers.

3.2. CONSTRUCTION PROGRAMME

Bulk earthworks operations for Stages 15A and 15C were largely undertaken in conjunction with Stage 14 to 16 and the major earthworks events have been discussed in detail in Section 3.2 Construction Program, of our Geotechnical Completion Report (GCR) prepared for Donegal Stud Residential Subdivision Stage 14, dated 27 September 2021. We do not intend to reiterate those comments in this report.

4. QUALITY ASSURANCE AND CONTROLS

4.1. INSPECTIONS

During the earthworks operation engineering inspections were undertaken on a regular basis to assess compliance with NZS 4431:1989 and our project specific recommendations and specifications. Project specific inspections were required on Stages 15A and 15C for:

- Topsoil stripping;
- Undercuts to remove soft and/or unsuitable material and to confirm that adequate strength base materials had been exposed;
- Retaining wall construction;
- Removal of existing stockpiles;
- Gully areas prior to the placement of fill materials to ascertain that all mullock and soft inorganic subsoils had been satisfactorily removed;
- Placement of underfill drainage in the bases of the gullies or along portions of Koromeke Street to enhance slope stability;
- Silt pond stripping and preparation for backfilling to ensure that all soft unsuitable material had been removed; and
- Observation of bulk cut to fill operations and compaction testing on Engineered fill.

4.2. QUALITY CONTROL CRITERIA

4.2.1. Compaction

Due to the varying soil types being used as filling, the compaction control criteria of minimum allowable shear strength and maximum allowable air voids were mainly used for quality assurance purposes.

Specification details were as follows:

Minimum Shear Strength and Maximum Air Voids Method

Table 2: Minimum Shear Strength and Maximum Air Voids Method

(a)	<u>Air Voids Percentage</u>	
	(As defined in NZS 4402)	
	General Fill	
	Average value less than	10%
	Maximum single value	12%
(b)	<u>Undrained Shear Strength</u>	
	(Measured by Pilcon shear vane - calibrated using NZGS 2001 method)	
	General fill	
	Average value not less than	140 kPa
	Minimum single value	120 kPa

Note: The average value shall be determined over any ten consecutive tests

4.3. QUALITY ASSURANCE TESTING

4.3.1. Compaction

Regular insitu density, strength and water content tests were carried out on all areas of the filling at or in excess of the frequency recommended by NZS 4431:1989.

Control tests carried out on the filling showed that on a few occasions the required compaction standards were not achieved. Results of these test failures were relayed to the site foreman and/or his staff, and to the best of our knowledge the affected areas of fill were re-worked as necessary.

In each case, further testing was carried out until compliance with the above standards was achieved.

5. PROJECT EVALUATION

5.1. BEARING CAPACITY AND SETTLEMENT OF BUILDING FOUNDATIONS

Following the completion of earthworks operations, we returned to the site during May and December 2021 and drilled a series of hand auger boreholes at appropriate locations in order to evaluate likely foundation options for future residential building development. Typical topsoil depths on each lot were also assessed during this time period as the test sites became available.

Based on the findings of the boreholes we have assessed that at current subgrade levels, all cut, filled and undisturbed natural ground has a geotechnical ultimate bearing capacity of 300 kPa (as required by NZS 3604:2011) within the zone of influence of conventional shallow residential building foundation loads.

It should be noted that NZS 3604:2011 only allows a maximum backfill depth of 600mm over the building platform of a dwelling unless an Engineering design solution is proposed, on account of the risk of induced consolidation of the subsoils caused by the weight of the backfill.

5.2. Expansive Soils

Three sets of laboratory Shrink Swell Index Tests were carried out on samples selected from within the zone of likely influence of future shallow building foundations over the wider area of Stages 14 to 16, one test per stage area.

These tests were carried out in accordance with AS1289, Methods of Testing Soils for Engineering Purposes test Section 7 and were primarily intended to assess the Expansive Site Class of the site materials as defined in AS2870, "Residential Slabs and Footings – Construction".

All test results are IANZ (International Accreditation New Zealand) endorsed and full details are included in Appendix B.

Based on the results of the laboratory tests together with our visual-tactile assessment and local knowledge, the assessed AS2870 expansive site Class is presented below in Table 3. Specific design alternatives for this site Class are presented in the Suitability Statement. Alternatively, foundation design can be undertaken in accordance with BmVM4

On some expansive clay sites if cast on-grade floor slab construction takes place during a long dry summer, exposed building platform soils may dry out and become highly desiccated.

Over time the presence of the floor slab will cause capillary rise of moisture to the underside of the damp proof course and potentially expansive dry ground may wet up and swell, causing floor slab uplift. The effect may be very slight in some cases and extreme in others, especially if free water can reach the central

underside of the slab as could occur if any subsoil drainage is discharged beneath the slab or an under-slab water pipe leaks.

Floor slab uplift usually remains unnoticed in carpeted homes but can cause distress on tile floors and in garages where cracks are more apparent. It may also rack upper storeys if non-load bearing ground floor walls are lifted and act as struts. Further, it may cause drainage problems on flat roofed houses where gutter gradients may be reversed.

Thorough soaking (in the form of low flow sprinklers for an extended period rather than flooding of the surface with a hose only once is recommended to allow for infiltration into the soil) of the exposed building platform area a few days before hardfill placement can help to reduce this potential problem. Careful detailing of construction joints in brittle building elements can also be of benefit. Alternatively, removal and replacement of the desiccated surface layers could be undertaken.

5.3. FILL INDUCED SETTLEMENT

As a result of our pre-fill inspections and quality control testing, we are of the opinion that induced differential settlements beneath or within the certified filling due to its imposed weight should be insignificant with respect to conventional NZS 3604:2011 residential building developments.

5.4. SLOPE STABILITY

5.4.1. General

Stability conditions along the gully flank within the Drainage Reserve (Lot 407) have been enhanced by lowering existing groundwater levels through the installation of:

5.5. LAND DRAINAGE

5.5.1. Underfill Drains

During the development of Stages 15A and 15C a 160mmØ perforated underfill drain coil was placed in the base of a 4m depth trench that was cut along the crest of the gully flank along Koromeke Street. To provide redundancy, a second perforated drain coil was placed at invert level of a stormwater line installed within the road reserve of Koromeke Street.

Both drains are intended to intercept localised groundwater tables and to help provide general control over groundwater levels, as required by NZS 4431:1989. All underfill drains are buried beneath more than 2m depth of Engineered fill and therefore, we do not foresee any construction issues related to the drains due to their locations being either well beyond any building platforms or are at a depth beneath accessways and/or service corridors not to be of concern.

5.6. LOT GRADIENTS

The appended HGCL Finished Contour as-built plan shows Lots 111 to 115 and Lots 407 and 408 as having or being immediately adjacent to land having gradients steeper than 1V:4H. The extent of these areas has been determined by as-built site gradients.

We are generally satisfied that these areas are not subject to the hazards described in Section 71(3) of the Building Act.

Details of resulting building and earthworks restrictions in the vicinity of these areas are presented in the Suitability Statement.

5.7. STORMWATER CONTROLS

It is important on all lots that due care is paid to the design and construction of appropriate stormwater disposal systems. These systems should serve to collect all runoff from roofs, driveways and paved areas, together with discharges from retaining wall drains and other subsoil drains and should connect directly into the public stormwater drainage network.

5.8. SERVICE TRENCHES

As is normal on all subdivisions, building developments involving foundations within the 45-degree zone of influence from pipe inverts will require engineering input. However, it is unlikely to be an issue for the Stage 15A and 15C lots based on the as-built plans provided.

5.9. ROAD SUBGRADES

Dynamic Cone Penetrometer (DCP) testing was undertaken at regular intervals on the trimmed road subgrades and the results were subsequently forwarded to HGCL for pavement design purposes.

5.10. VEGETATION COVER

Wherever practical on sloping land beyond building platform areas, all existing grass cover should be maintained and even supplemented with new plantings. Any vegetation cleared beyond the immediate area of building platforms for temporary construction purposes should be replanted replaced as soon as possible.

The contribution of appropriate vegetation cover to sediment and erosion control should not be underestimated.

5.11. TOPSOIL

Topsoil depths in likely building platform areas were checked by the drilling of a shallow borehole probe in the approximate centre of each lot. Our findings, which are indicative only and subject to variation at other locations, show that topsoil depths are likely range between 100 mm and 300 mm.

5.12. CONTRACTOR'S WORK

We have relied on the Contractor's work practices and assume that the works have been carried out in accordance with:

- (i) The approved Contract drawings and design details,
- (ii) The approved Contract specifications,
- (iii) Authorised Variations issued during the execution of the works,
- (iv) The conditions of Resource, Earthworks and Building Consents where applicable,
- (v) The relevant Tetra Tech Coffey Geotechnics reports, recommendations and site instructions,

and that all as-built information and other details provided to the Client and/or Tetra Tech Coffey (NZ) Limited are accurate and correct in all respects.

6. STATEMENT OF PROFESSIONAL OPINION AS TO THE SUITABILITY OF LAND FOR BUILDING DEVELOPMENT

I, Chris Armstrong, of Tetra Tech Coffey (NZ) Limited, Auckland, hereby confirm that:

1. I am a Chartered Professional Engineer experienced in the field of geotechnical engineering as defined in section 1.2.3 of NZS 4404:1989 and was retained by the Developer as the Geotechnical Engineer on Stages 15A and 15C of the Donegal Stud residential subdivision, Flat Bush.
2. The extent of preliminary investigations carried out to date are described in the Coffey Geotechnical Investigation Report, reference GENZAUCK16856AE, dated 08 April 2020. The conclusions and recommendations of that document have been re-evaluated during the preparation of this report. Details of the results of all tests carried out are appended.
3. In my professional opinion, not to be construed as a guarantee, I consider that:
 - a. The earth fills shown on the appended Harrison Grierson Consultants Limited Cut to Fill as-built plan have been placed in compliance with NZS 4431:1989 and related documents.
 - b. A geotechnical ultimate bearing capacity of 300 kPa may be assumed for shallow foundation design on all residential lots. Where a geotechnical bearing capacity greater than 300 kPa is required, (i.e. outside the limits of NZS 3604:2011, such as when piling is undertaken), further specific site investigation and design of foundations should be carried out prior to building consent application.
 - c. The completed earthworks give due regard to land slope and foundation stability considerations within the residential lots however, as shown on the appended HGCL Finished Contours as-built plan, areas within Lots 111 to 115 and Lot 400 (Local Purpose Drainage Reserve) have gradients steeper than 1V:4H or are adjacent to land having such gradients.

No building construction and no earthworks which increases the slope angle or surcharge loading should take place anywhere within the areas shown as steeper than 1 in 4 in the area of Lots 111 to 115 and Lots 407 and 408 unless endorsed by a Chartered Professional Engineer experienced in geomechanics, as such operations may, in certain circumstances, have detrimental effects on overall site stability. Depending on the building design proposals this may require geotechnical investigations.
 - d. The backfilling and compaction of the stormwater and sanitary sewer trenches on this subdivision has, where possible, been carried out to appropriate standards having regard for the prevailing ground conditions and associated compaction induced pipe loadings.
 - e. Nevertheless, no building development should take place within the 45-degree zone of influence of drain inverts unless endorsed by specific site investigations, foundation designs and by construction inspections undertaken by a Chartered Professional Engineer experienced in geomechanics to ensure that lateral stability and differential settlement issues are addressed and that building loads are transferred beyond the influence of the pipe and the trench backfill.
 - f. Although unlikely to be an issue, the function of the underfill drain and cut-off drains placed along Koromeke Street must not be impaired by any future building development or landscaping works. In particular, any trenched services, bored or driven piles must be positioned to avoid damaging these drains. The presence of all such drains should be recorded on Council's Hazard Register.
 - g. The assessed AS 2870:2011 expansive site Class for all residential lots in Stages 15A and 15C is M (Moderate).
 - h. Subject to the geotechnical recommendations and expansive soil assessment associated with 3(b), 3(c), 3(d), 3(e), 3(f) and 3(g) above:
 - (i) The cut, filled and original ground within residential lot boundaries is generally suitable for residential buildings constructed in accordance with NZS 3604:2011 (that incorporates specific foundation and associated structural design on account of the expansive soils site Class) and related documents.
 - (ii) On all residential lots in Stages 15A and 15C foundation design may be carried out in accordance with AS 2870 (Class M) or alternatively, the foundation design may be carried out in accordance with NZS3604:2011 provided that in this case the minimum recommended foundation depth

4. Road subgrades have been formed having due regard for slope stability and settlement, although CBR values will likely vary between natural and filled ground as is to be expected.

7. LIMITATIONS

The as-built plans and the professional opinion contained within this report are furnished to Auckland Council and Hugh Green Limited for their purposes alone on the express condition that they will not be relied upon by any other person. Prospective purchasers should still satisfy themselves as to any specific conditions pertaining to their particular land interest.

The appended table summarises the status of each residential lot covered by this Suitability Statement.

For and on behalf of Tetra Tech Coffey

Prepared By:



Tasman Lambert Andrews
Graduate Engineering Geologist

Project Manager:



Ray Berry
Associate Engineering Geologist

Reviewed and Authorised By:



Chris Armstrong
Geotechnics Leader Auckland
CMEng.NZ, CPEng

Table 3: Suitability Statement Summary

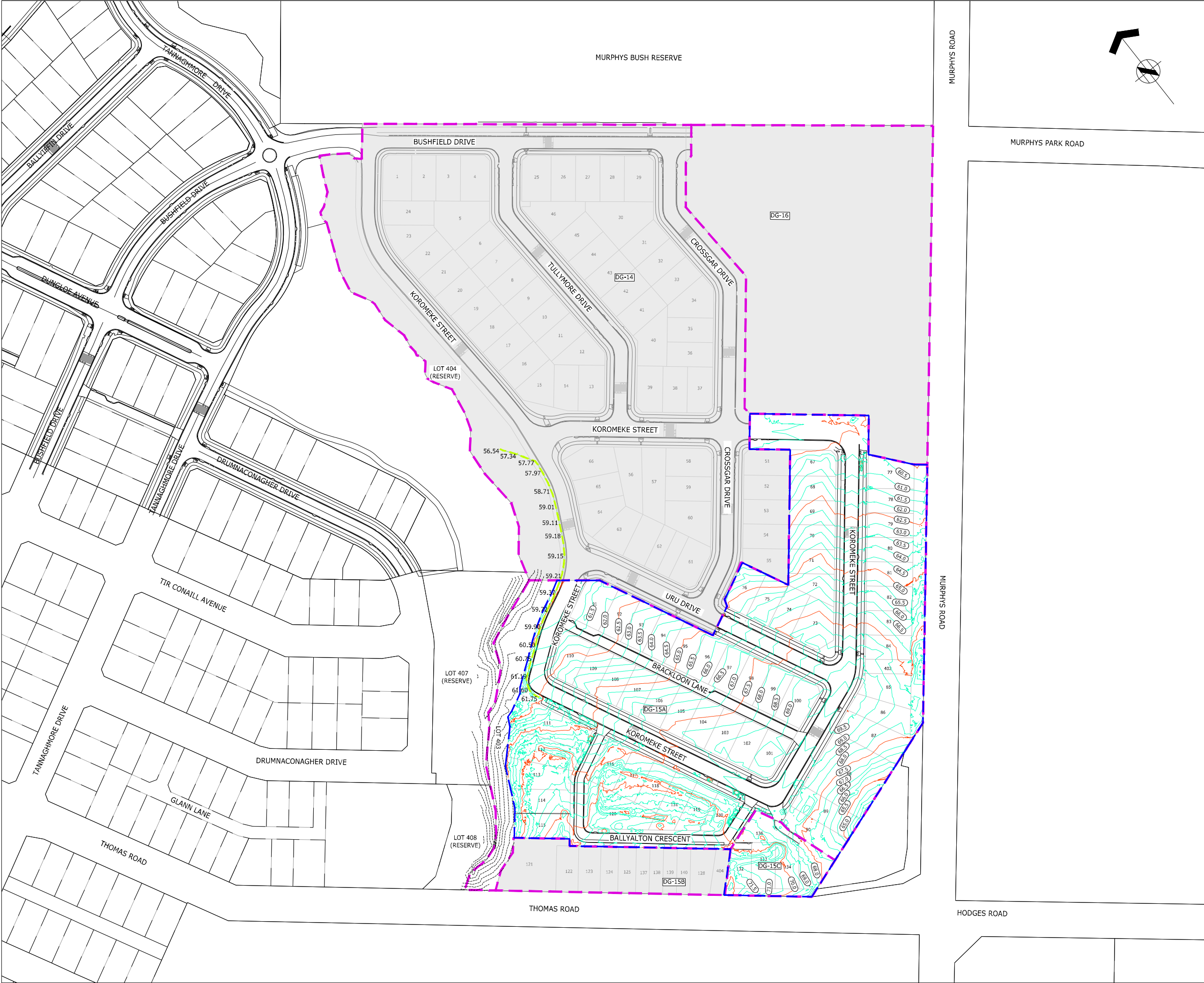
Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870: 2011 Class
67	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
68	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
69	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	160	300	M
70	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
71	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
72	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
73	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
74	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	300	300	M
75	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	300	300	M
76	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
77	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
78	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	300	300	M
79	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
80	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
81	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
82	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
83	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
84	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
85	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	100	300	M
86	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
87	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M

88	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
89	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
90	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
91	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
92	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
93	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
94	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
95	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
96	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
97	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
98	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
99	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
100	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
101	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
102	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
103	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
104	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
105	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
106	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
107	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
108	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
109	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
110	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M

111	Specific engineering endorsement required for any building development or earthworks within the area demarcated as having gradients steeper than 1 (v) in 4 (h). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	300	300	M
112	Specific engineering endorsement required for any building development or earthworks within the area demarcated as having gradients steeper than 1 (v) in 4 (h). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	300	300	M
113	Specific engineering endorsement required for any building development or earthworks within the area demarcated as having gradients steeper than 1 (v) in 4 (h). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
114	Specific engineering endorsement required for any building development or earthworks within the area demarcated as having gradients steeper than 1 (v) in 4 (h). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
115	Specific engineering endorsement required for any building development or earthworks within the area demarcated as having gradients steeper than 1 (v) in 4 (h). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
116	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
117	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
118	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
119	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
120	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
129	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
130	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
131	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
132	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
133	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M

134	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
135	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
136	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
402	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M

APPENDIX A: HARRISON GRIERSON LIMITED AS-BUILT PLANS





ASSOCIATION OF CONSULTING
ENGINEERS NEW ZEALAND

ISO 9001
QUALITY
ASSURED

THIS DRAWING AND DESIGN REMAINS THE PROPERTY OF, AND MAY NOT BE REPRODUCED OR ALTERED, WITHOUT THE WRITTEN PERMISSION OF HARRISON GRIERSON CONSULTANTS LIMITED. NO LIABILITY SHALL BE ACCEPTED FOR UNAUTHORISED USE OF THIS DRAWING.

NOTES:

1. ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m

2. ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE

3. SURVEY INFORMATION PROVIDED BY DEMPSEY
WOOD CIVIL LTD AND TO THE BEST OF OUR
KNOWLEDGE IS ACCURATE.

LEGEND:

EARTHWORKS BOUNDARY

STAGE BOUNDARY

55.0

CONTOUR MAJOR

55.5

CONTOUR MINOR AT 0.5m INTERVALS

EXISTING CONTOURS

RETAINING WALL SUBSOIL DRAIN

ENGINEERING APPROVAL
ENG-60363080

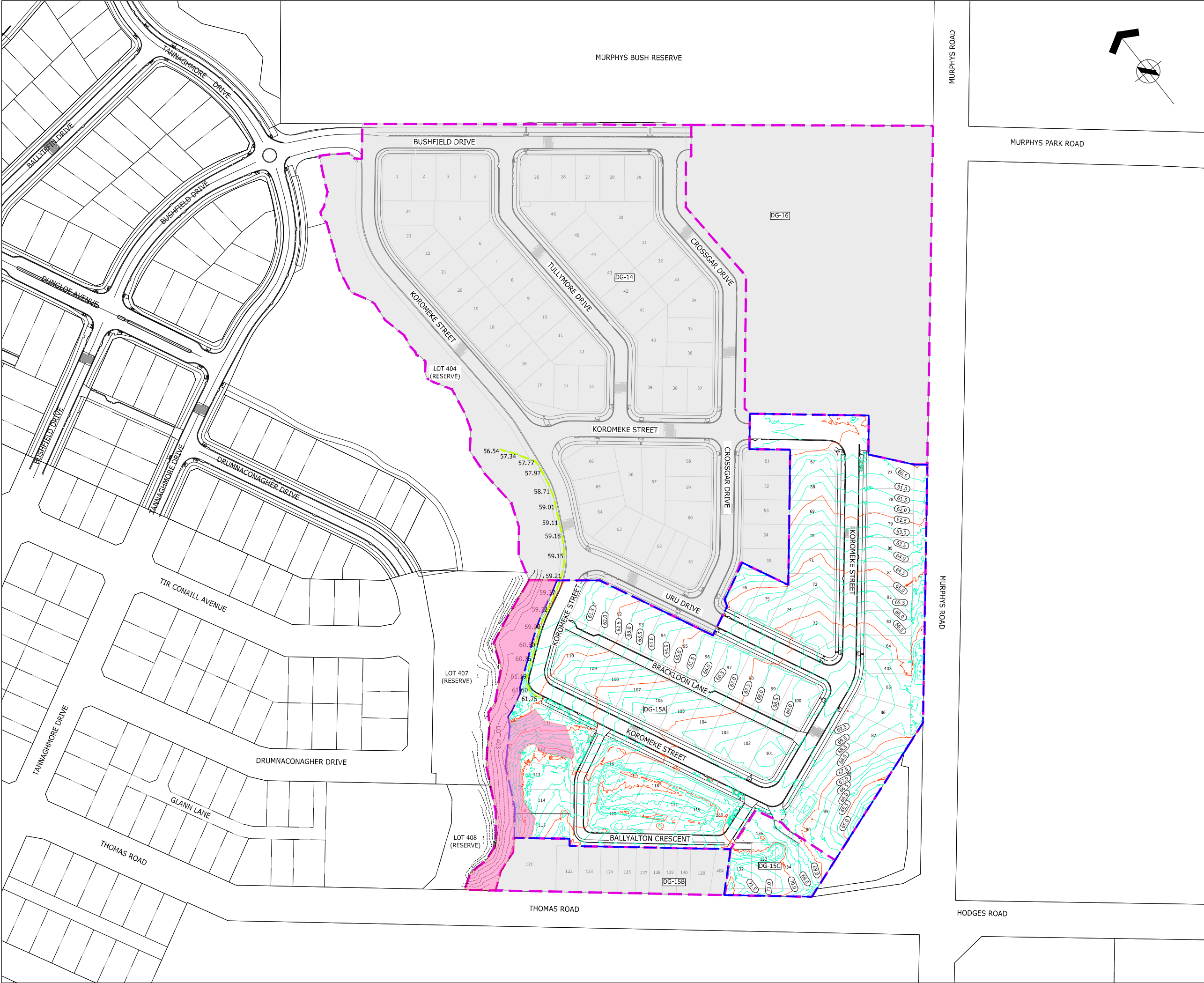


HUGH GREEN
LIMITED



AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5000
W www.harrisongrierson.com

B	AS-BUILT (RESERVE LOT LABELS)	WKK	01.12.21
A	AS-BUILT	WKK	19.11.21
REF	REVISIONS	BY	DATE
PROJECT:			
HUGH GREEN LIMITED DONEGAL STAGE 15 36 TIR CONAILL AVENUE, FLAT BUSH			
TITLE:			
FINISHED CONTOURS AS-BUILT PLAN			
ORIGINATOR:	DATE:	SIGNED:	PLOT BY:
KKA	15.11.21		WKK
DRAWN:	DATE:	SIGNED:	PLOT DATE:
KKA	15.11.21		15.11.21
CHECKED:	DATE:	SIGNED:	SURVEY BY:
WKK	15.11.21		DEMPSEY WOOD
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
DAS	19.11.21		10.2021
ISSUE STATUS:			
AS-BUILT			
PROJECT No:	SCALES:		A1
1050-146689-01	1:1000-A1 1:2000-A3		
DRAWING No:			REV
146689-15-AB200			B





ASSOCIATION OF CONSULTING
ENGINEERS NEW ZEALAND

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NOTES:

- ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m
- ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE
- SURVEY INFORMATION PROVIDED BY DEMPSEY WOOD CIVIL LTD AND TO THE BEST OF OUR KNOWLEDGE IS ACCURATE.

LEGEND:

- EARTHWORKS BOUNDARY
- STAGE BOUNDARY
- 55.0 CONTOUR MAJOR
- 55.5 CONTOUR MINOR AT 0.5m INTERVALS
- EXISTING CONTOURS
- RETAINING WALL SUBSOIL DRAIN

ENGINEERING APPROVAL
ENG-60363080



HUGH GREEN
LIMITED



AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5000
W www.harrisongrierson.com

B	AS-BUILT (RESERVE LOT LABELS)	WKK	01.12.21
A	AS-BUILT	WKK	19.11.21
REF	REVISIONS	BY	DATE
PROJECT:			
HUGH GREEN LIMITED DONEGAL STAGE 15 36 TIR CONAILL AVENUE, FLAT BUSH			
TITLE:			
FINISHED CONTOURS AS-BUILT PLAN			
ORIGINATOR:	DATE:	SIGNED:	PLOT BY:
KKA	15.11.21		WKK
DRAWN:	DATE:	SIGNED:	PLOT DATE:
KKA	15.11.21		15.11.21
CHECKED:	DATE:	SIGNED:	SURVEY BY:
WKK	15.11.21		DEMPSEY WOOD
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
DAS	19.11.21		10.2021
ISSUE STATUS:			
AS-BUILT			
PROJECT No:	SCALES:	A1	
1050-146689-01	1:1000-A1 1:2000-A3		
DRAWING No:	REV		
146689-15-AB200			B



- NOTES:**
- ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m
 - ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE
 - ALL CONNECTIONS ARE DN 100 uPVC. CHAINAGE FOR CONNECTIONS ARE FROM DOWNSTREAM MANHOLE CENTRE.
 - ALL STORMWATER LINES ARE RCRRJ CLASS 2 UNLESS SHOWN OTHERWISE.
 - ALL CATCHPIT LEADS ARE RCRRJ CLASS 4.
 - ALL NEW MANHOLES ARE DN 1050 RC UNLESS SHOWN OTHERWISE.
 - SURVEY INFORMATION PROVIDED BY DEMPSEY WOOD CIVIL LTD AND TO THE BEST OF OUR KNOWLEDGE IS ACCURATE.
 - REFER AB480-AB481 FOR RAIN GARDEN DETAILS

- LEGEND:**
- SW NEW PUBLIC STORMWATER LINE & MH
 - NEW PUBLIC/ PRIVATE CATCHPIT
 - NEW LOT CONNECTION
 - EXISTING LOT CONNECTION
 - SW EXISTING SW LINE, MH AND CP
 - NEW PUBLIC/ PRIVATE RAINGARDEN
 - EXISTING RAINGARDEN
 - NEW PRIVATE CONNECTION
 - STAGE BOUNDARY

ENGINEERING APPROVAL
ENG-60363080

I CERTIFY THAT THESE ASBUILT PLANS ARE AN ACCURATE RECORD OF THE WORKS UNDERTAKEN AND THAT:

- THE COORDINATES (X,Y) ARE IN TERMS OF NZTM ON NZGD (2000), AND ARE WITHIN ±50mm.
- THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL) LINZ DATUM (DOSLI DATUM), AND ARE WITHIN ±25mm.

Signed: 
CHARTERED PROFESSIONAL ENGINEER

Date: 19/11/2021

Name: DANIEL ALEXANDER HOWARD SCOTT

Phone: 09-917-5000

Email: d.scott@harrsongrierson.com

HG AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5000
W www.harrsongrierson.com

A	AS-BUILT		WKK
REF	REVISIONS	BY	DATE

PROJECT:

HUGH GREEN LIMITED
DONEGAL STAGE 15
36 TIR CONAILL AVENUE, FLATBUSH

TITLE:

STORMWATER DETAILS AS-BUILTS

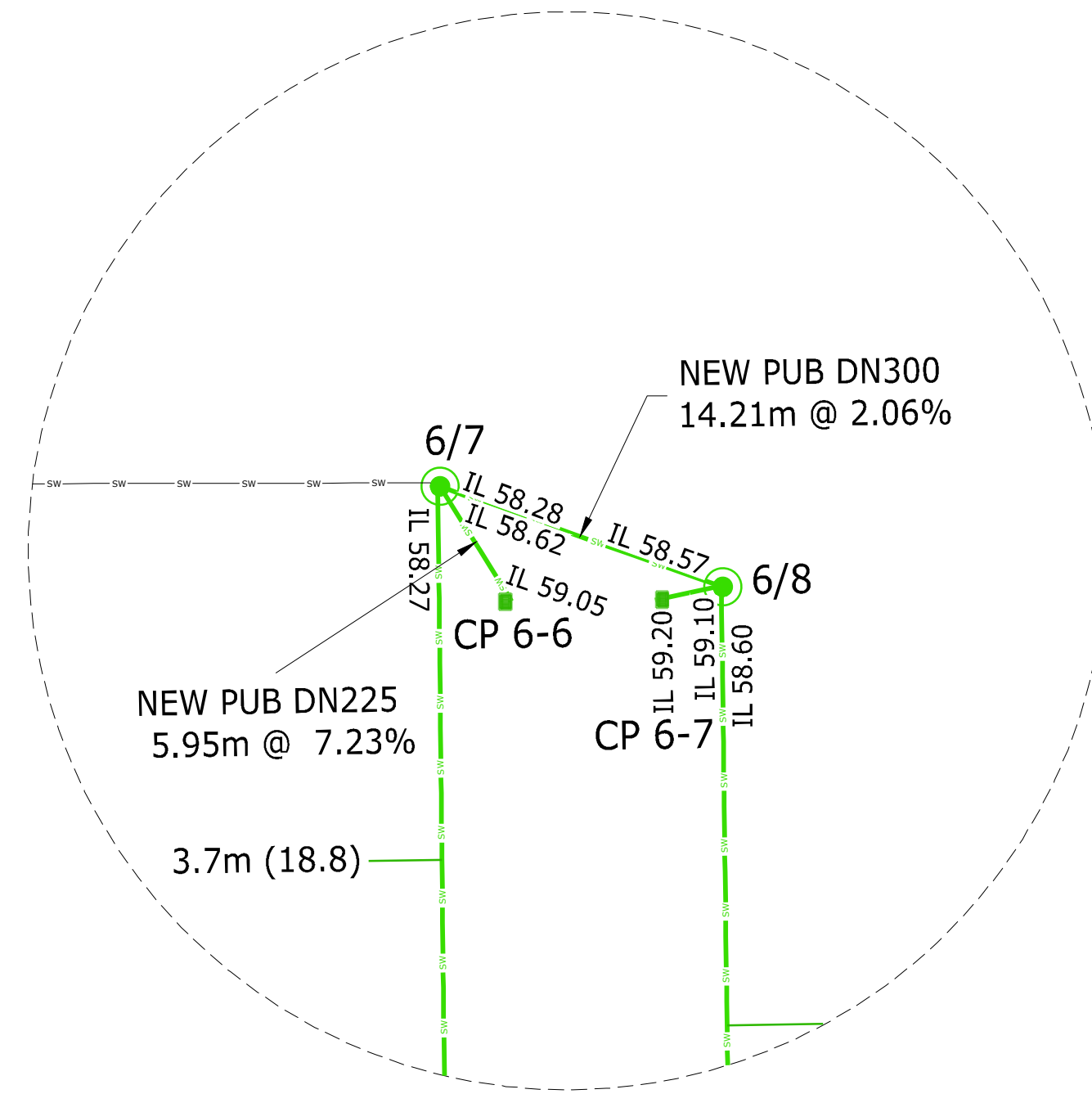
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WKK	31.05.21		WKK
DRAWN:	DATE:	SIGNED:	PLOT DATE:
LAL	16.11.21		18.11.21
CHECKED:	DATE:	SIGNED:	SURVEY BY:
WKK	18.11.21		DEMPSEY WOOD
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
DAS	18.11.21		10.2021

ISSUE STATUS:

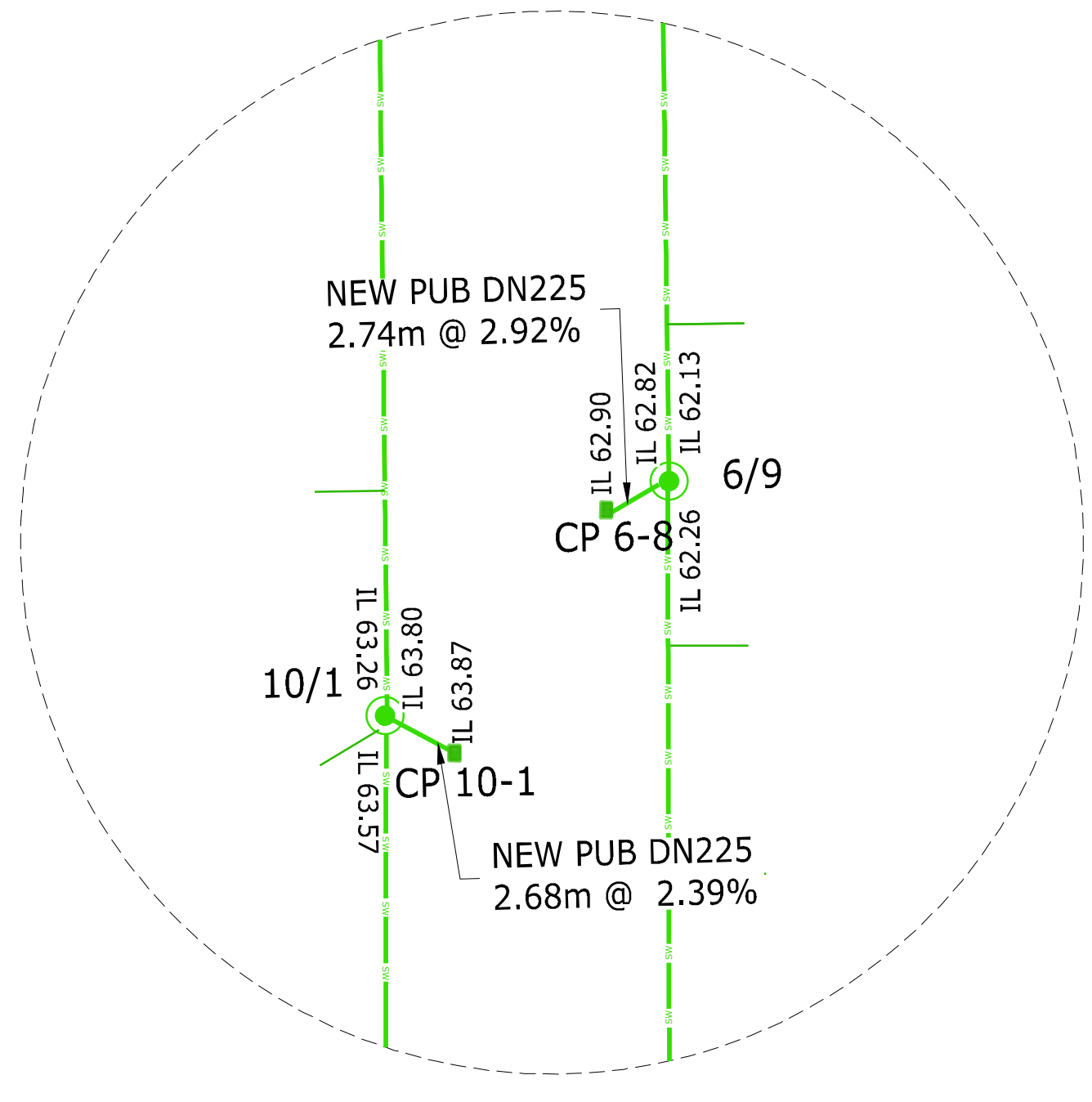
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PROJECT No:	SCALES:	
1050-146689-01	NOT TO SCALE	A1

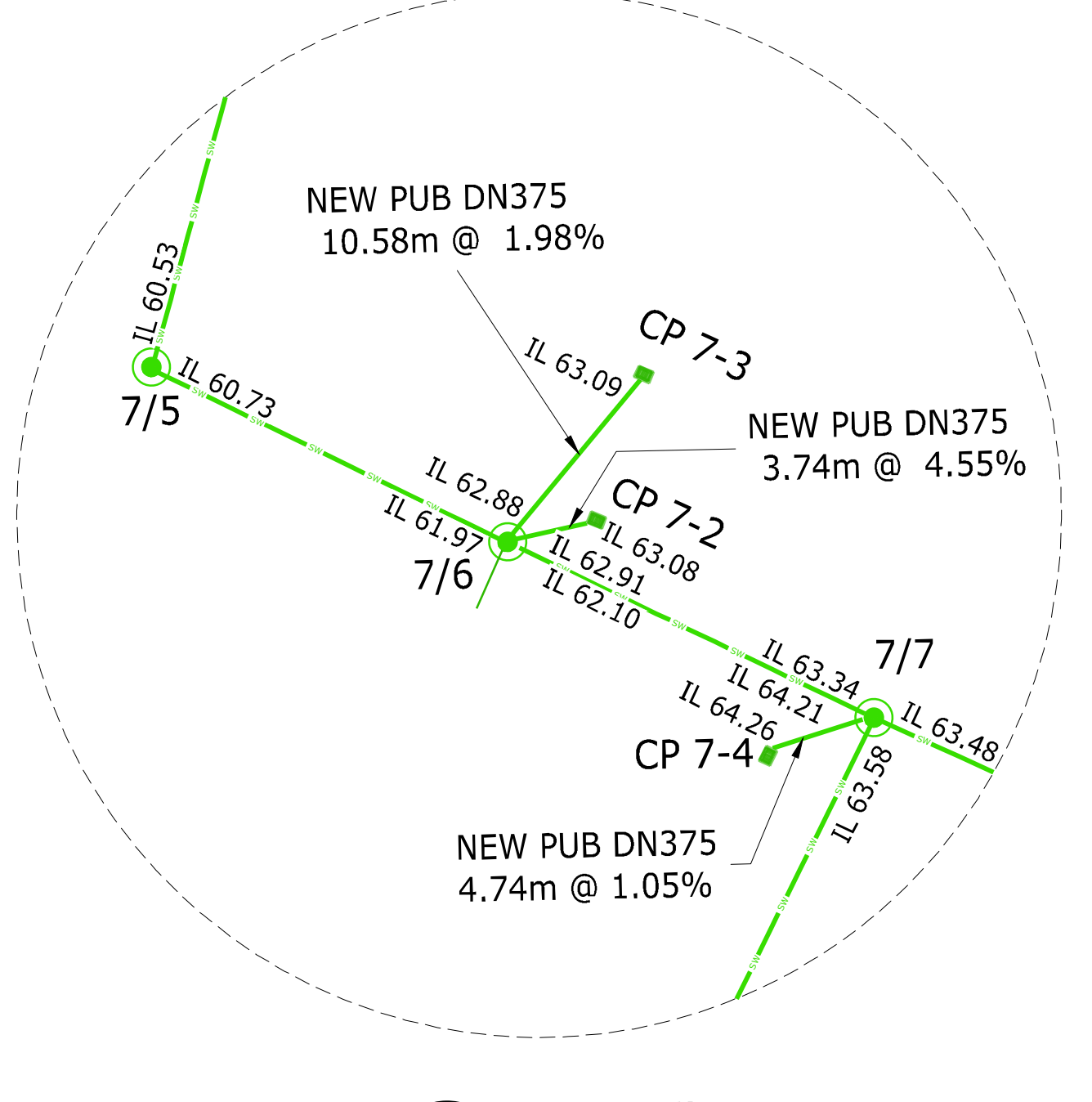
DRAWING No:	REV
146689-15-AB402	A



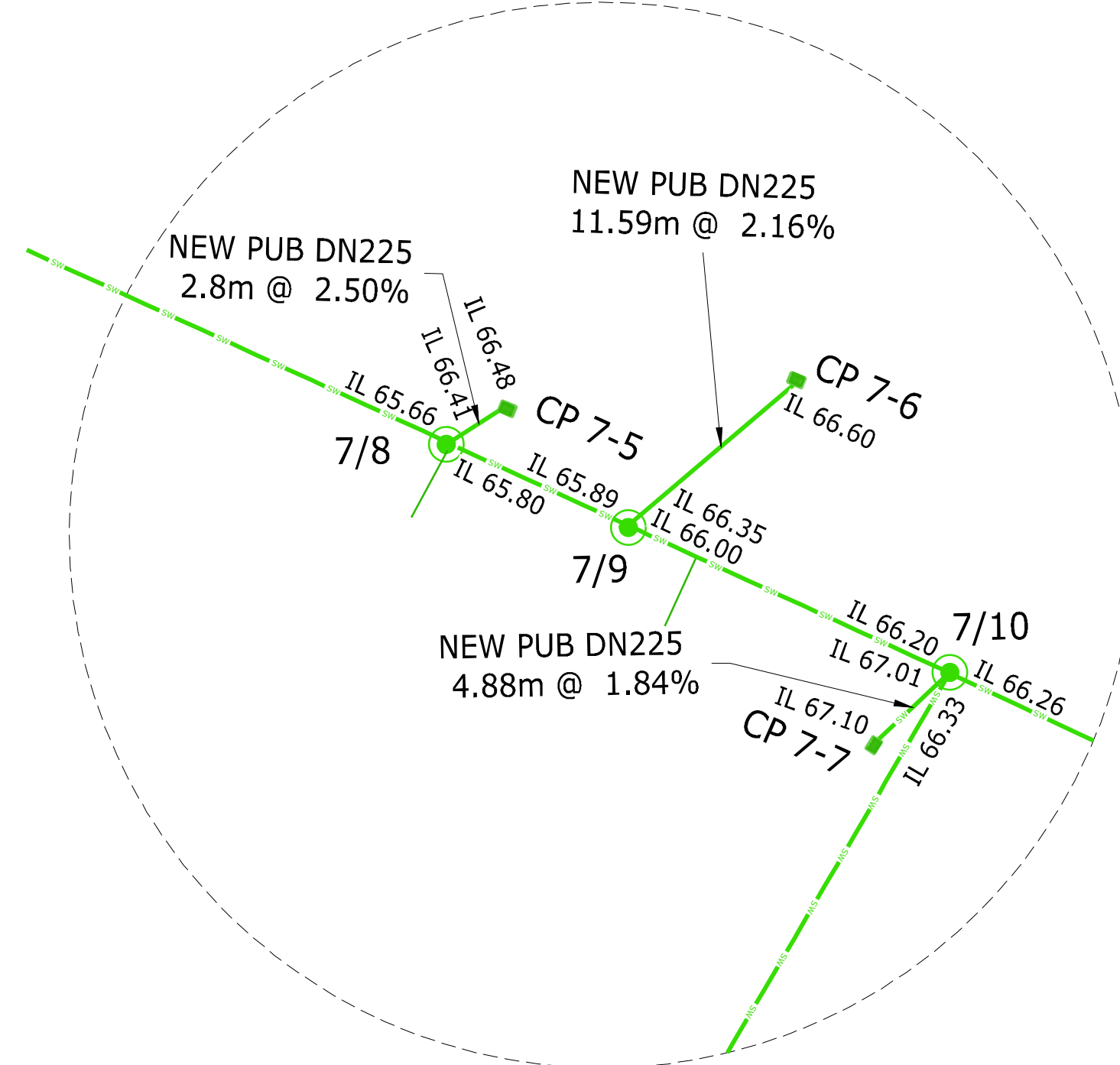
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DETAIL
SCALE NTS



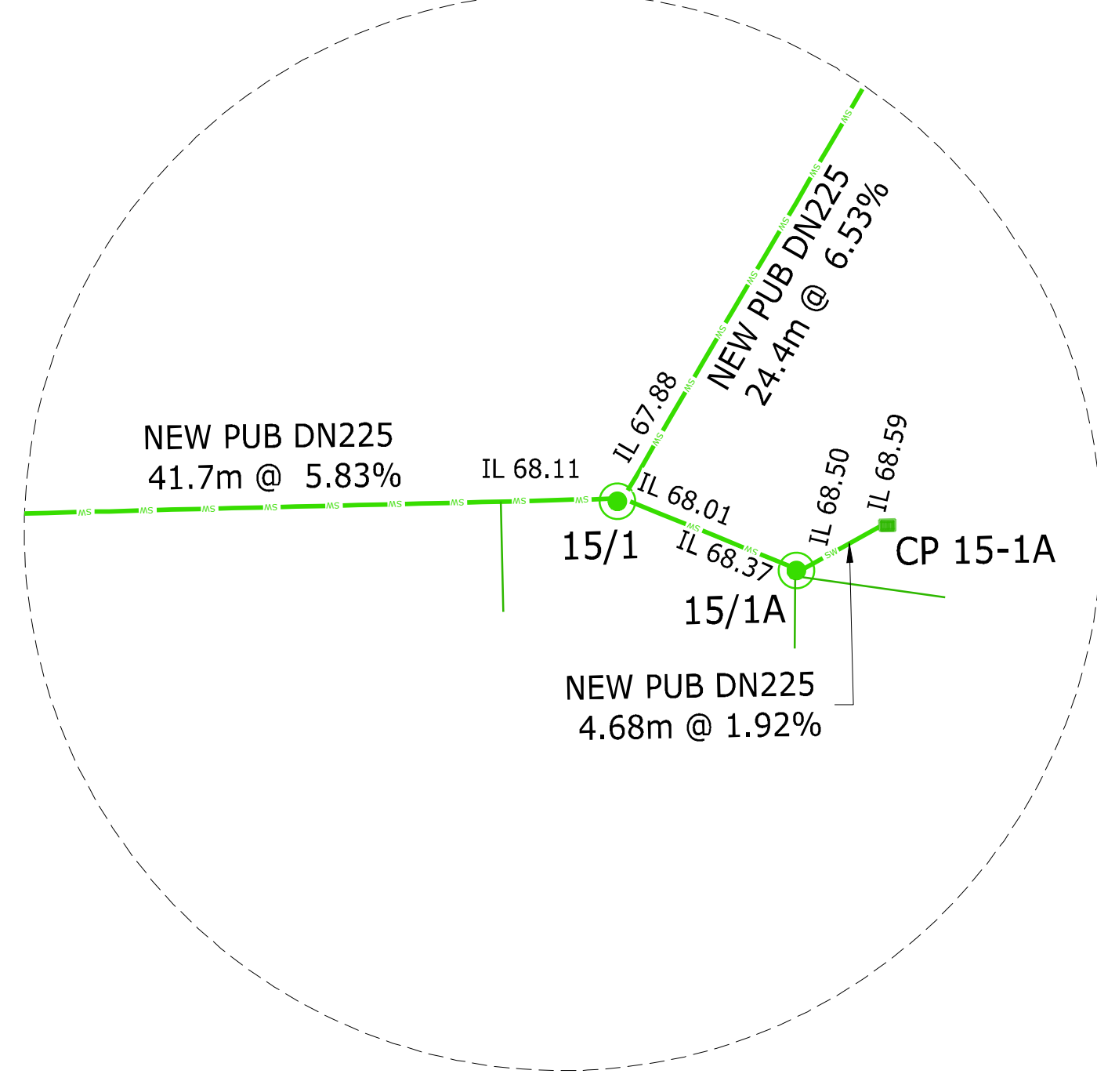
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DETAIL
SCALE NTS



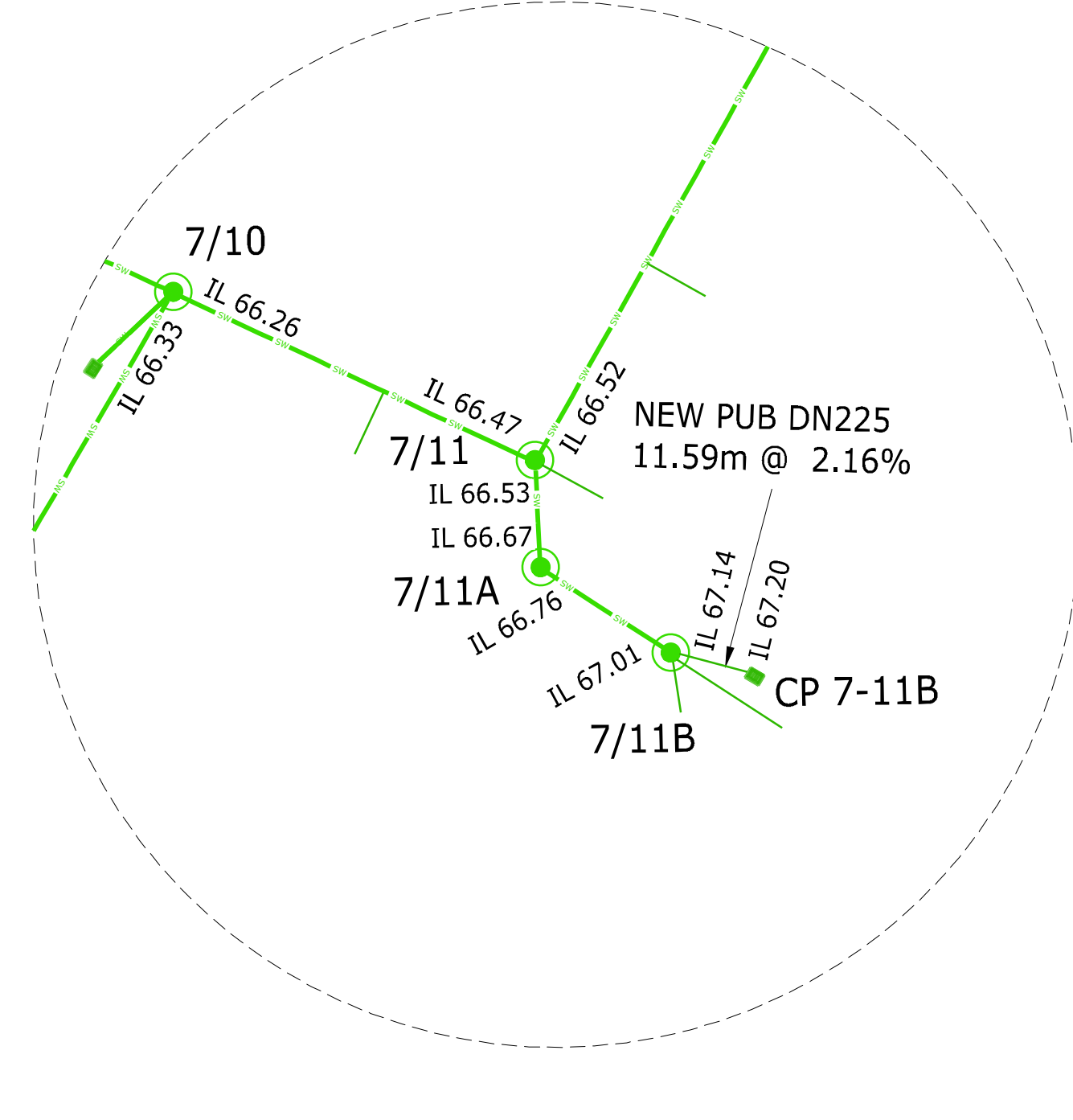
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AB402
DETAIL
SCALE NTS



4
AB402
DETAIL
SCALE NTS



5
AB402
DETAIL
SCALE NTS



6
AB402
DETAIL
SCALE NTS



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LIMITED. NO LIABILITY SHALL BE ACCEPTED FOR UNAUTHORISED USE OF THIS DRAWING.

NOTES:

1. ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m

2. ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE

3. SURVEY INFORMATION PROVIDED BY DEMPSEY
WOOD CIVIL LTD AND TO THE BEST OF OUR
KNOWLEDGE IS ACCURATE.

ENGINEERING APPROVAL
ENG-60363080

I CERTIFY THAT THESE ASBUILT PLANS ARE AN ACCURATE RECORD OF
THE WORKS UNDERTAKEN AND THAT:

- THE COORDINATES (X,Y) ARE IN TERMS OF NZTM ON NZGD
(2000), AND ARE WITHIN ±50mm.
- THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL)
LINZ DATUM (DOSLI DATUM), AND ARE WITHIN ±25mm.



Signed:
CHARTERED PROFESSIONAL ENGINEER

Date: 19/11/2021

Name: DANIEL ALEXANDER HOWARD SCOTT

Phone: 09-917-5000

Email: d.scott@harrisonsongrierson.com



AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5000
W www.harrisonsongrierson.com

A	AS-BUILT		WKK
REF	REVISIONS	BY	DATE

PROJECT:

HUGH GREEN LIMITED

DONEGAL STAGE 15

36 TIR CONAILL AVENUE, FLATBUSH

TITLE:

STORMWATER AS-BUILT

SCHEDULE OF COORDINATES

ORIGINATOR: WKK	DATE: 31.05.21	SIGNED:	PLOT BY: WKK
DRAWN: LAL	DATE: 16.11.21	SIGNED:	PLOT DATE: 18.11.21
CHECKED: WKK	DATE: 18.11.21	SIGNED:	SURVEY BY: DEMPSEY WOOD
APPROVED: DAS	DATE: 18.11.21	SIGNED:	SURVEY DATE: 10.2021

ISSUE STATUS:

AS-BUILT

PROJECT No: 1050-146689-01	SCALES: NOT TO SCALE	A1
DRAWING No:		REV

146689-15-AB403

A

COORDINATE SCHEDULE - MANHOLES			
MH No.	mE	mN	LL
6/8	1770843.32	5905187.11	60.58
6/9	1770830.55	5905133.36	64.10
6/10	1770814.57	5905068.71	69.33
6/11	1770808.13	5905058.31	69.63
7/4	1770655.96	5905132.56	60.42
7/5	1770634.30	5905093.67	62.23
7/6	1770649.54	5905080.85	64.13
7/7	1770665.29	5905067.82	65.57
7/8	1770712.47	5905030.06	67.72
7/9	1770720.90	5905023.37	67.80
7/10	1770735.80	5905011.63	68.05
7/11	1770751.66	5904998.81	68.31
7/11A	1770750.62	5904993.41	68.59
7/11B	1770756.02	5904987.58	68.12
7/12	1770795.07	5905044.84	69.57
9/3	1770768.67	5905103.49	66.71
10/1	1770813.89	5905125.36	65.03
10/2	1770809.26	5905106.66	64.65
11/3	1770779.74	5905076.17	68.06
13/1	1770719.42	5905081.92	65.83
13/2	1770758.56	5905050.67	68.52
14/1	1770646.47	5905045.55	67.73
14/2	1770638.32	5905013.06	70.43
14/3	1770664.43	5905006.71	71.48
15/1	1770717.74	5904993.39	70.07
15/1A	1770725.96	5904987.61	69.87
15/2	1770683.37	5905001.46	72.15

COORDINATE SCHEDULE - CATCHPITS & SCRUFFY DOMES						
POINT	mE	mN	LL	IL (IN)	IL (OUT)	SIZE (mm)
CP 6-6	1770832.46	5905189.00	60.41	59.05	58.62	675 x 450
CP 6-7	1770840.21	5905187.21	60.43	59.20	59.10	675 x 450
CP 6-8	1770827.05	5905132.75	64.19	62.90	62.82	675 x 450
CP 7-1	1770661.94	5905132.29	60.72	59.52	59.40	675 x 450
CP 7-2	1770654.07	5905080.87	64.28	63.08	62.91	675 x 450
CP 7-3	1770658.28	5905087.53	64.30	63.09	62.88	675 x 450
CP 7-4	1770659.91	5905067.48	65.45	64.26	64.21	675 x 450
CP 7-5	1770716.11	5905031.25	67.75	66.48	66.41	675 x 450
CP 7-6	1770731.40	5905028.66	67.94	66.60	66.35	675 x 450
CP 7-7	1770731.13	5905008.68	68.51	67.10	67.01	675 x 450
CP 7-11B	1770759.69	5904985.15	67.73	67.20	67.14	675 x 450
CP 10-1	1770816.59	5905122.71	65.26	63.86	63.80	675 x 450
CP 13-1	1770721.90	5905084.82	65.67	64.43	64.20	675 x 450
CP 14-1	1770648.05	5905013.92	70.71	69.36	68.60	675 x 450
CP 15-1A	1770731.13	5904988.43	69.70	68.59	68.50	675 x 450

APPENDIX B: CLASSIFICATION TEST DATA

Shrink Swell Index Report

Report No: SSI:ETAM21S-02605

Issue No: 1

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

Project No.: 773-ETAM01121AA

Project Name: 773-GENZAUCK16856AE - DONEGAL STUD

Lot No.: - **TRN:** -



Approved Signatory: James McKelvey
(Senior Technician)

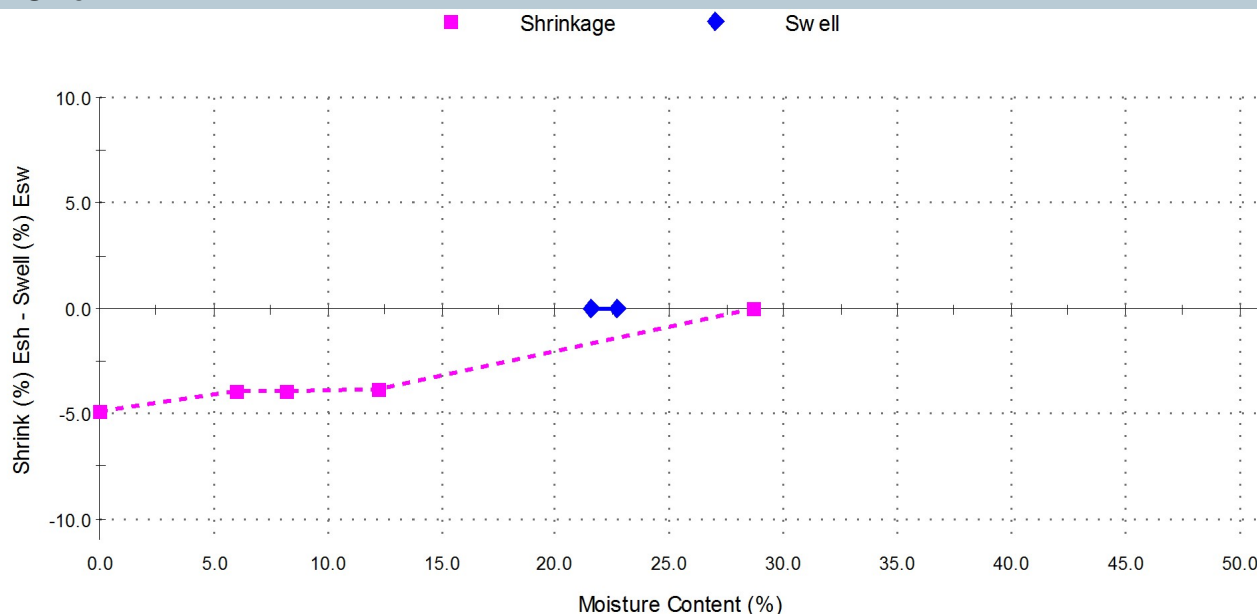
Date of Issue: 4/06/2021

Sample Details

Sample ID:	ETAM21S-02605	Sampling Method:	NZS4407: 2015 Part 2.4.8.3
Date Sampled:	27/05/2021	Material:	Undisturbed Soil
Date Submitted:	28/05/2021	Source:	In-Situ
Date Tested:	28/05/2021		
Project Location:	Greenam Drive, Flat Bush		
Sample Location:	HA01		
Borehole Number:	HA01		
Borehole Depth (m):	0.2		

Swell Test		Shrink Test	
AS 1289.7.1.1		AS 1289.7.1.1	
Swell on Saturation (%):	0.0	Shrink on drying (%):	4.9
Moisture Content before (%):	21.6	Shrinkage Moisture Content (%):	28.7
Moisture Content after (%):	22.7	Est. inert material (%):	2%
Est. Unc. Comp. Strength before (kPa):	450+	Crumbling during shrinkage:	0.5%
Est. Unc. Comp. Strength after (kPa):	450+	Cracking during shrinkage:	0.5%

Shrink Swell



Shrink Swell Index - Iss (%): 2.7

Comments

Not accredited
Work Order No : ETAM21W00723
Tested By: JM

Shrink Swell Index Report

Report No: SSI:ETAM21S-02606

Issue No: 1

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

Project No.: 773-ETAM01121AA

Project Name: 773-GENZAUCK16856AE - DONEGAL STUD

Lot No.: - TRN: -



Approved Signatory: James McKelvey
(Senior Technician)

Date of Issue: 4/06/2021

Sample Details

Sample ID:	ETAM21S-02606	Sampling Method:	NZS4407: 2015 Part 2.4.8.3
Date Sampled:	27/05/2021	Material:	Undisturbed Soil
Date Submitted:	28/05/2021	Source:	In-Situ
Date Tested:	28/05/2021		
Project Location:	Greenam Drive, Flat Bush		
Sample Location:	HA33, 0.2 - 0.5 m		
Borehole Number:	HA33		
Borehole Depth (m):	0.2 - 0.5		

Swell Test AS 1289.7.1.1

Swell on Saturation (%): 0.1

Moisture Content before (%): 38.9

Moisture Content after (%): 40.9

Est. Unc. Comp. Strength before (kPa): 350

Est. Unc. Comp. Strength after (kPa): 275

Shrink Test AS 1289.7.1.1

Shrink on drying (%): 3.5

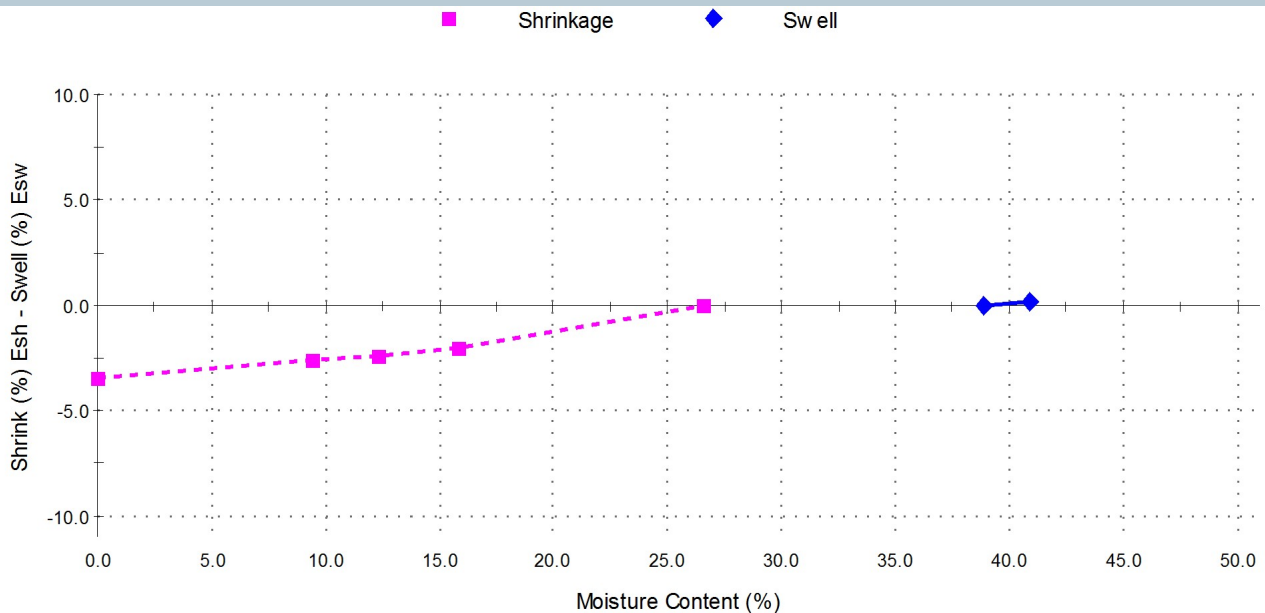
Shrinkage Moisture Content (%): 26.6

Est. inert material (%): 1%

Crumbling during shrinkage: 0.5%

Cracking during shrinkage: 1.5%

Shrink Swell



Shrink Swell Index - Iss (%): 2.0

Comments

Not accredited
Work Order No : ETAM21W00723
Tested By: JM

Shrink Swell Index Report

Report No: SSI:ETAM21S-02607

Issue No: 1

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

Project No.: 773-ETAM01121AA

Project Name: 773-GENZAUCK16856AE - DONEGAL STUD

Lot No.: - TRN: -



Approved Signatory: James McKelvey
(Senior Technician)

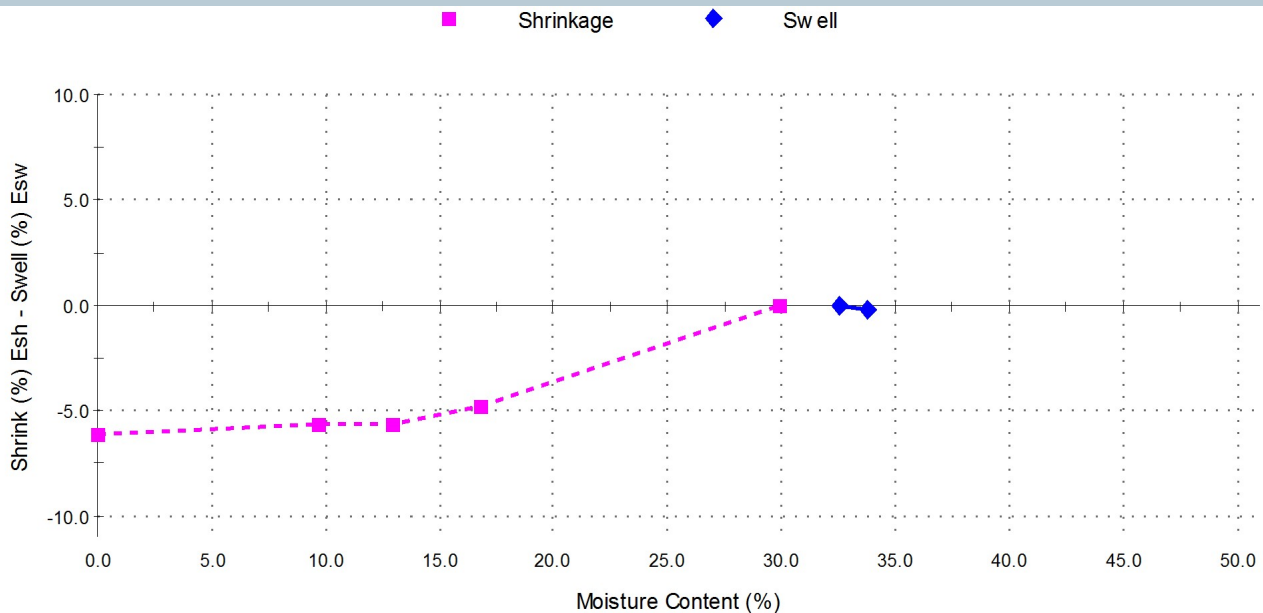
Date of Issue: 4/06/2021

Sample Details

Sample ID:	ETAM21S-02607	Sampling Method:	NZS4407: 2015 Part 2.4.8.3
Date Sampled:	27/05/2021	Material:	Undisturbed Soil
Date Submitted:	28/05/2021	Source:	In-Situ
Date Tested:	28/05/2021		
Project Location:	Greenam Drive, Flat Bush		
Sample Location:	HA36, 0.3 - 0.5 m		
Borehole Number:	HA36		
Borehole Depth (m):	0.3 - 0.5		

Swell Test AS 1289.7.1.1		Shrink Test AS 1289.7.1.1	
Swell on Saturation (%):	-0.2	Shrink on drying (%):	6.1
Moisture Content before (%):	32.6	Shrinkage Moisture Content (%):	29.9
Moisture Content after (%):	33.8	Est. inert material (%):	15%
Est. Unc. Comp. Strength before (kPa):	275	Crumbling during shrinkage:	3%
Est. Unc. Comp. Strength after (kPa):	175	Cracking during shrinkage:	0.5%

Shrink Swell



Shrink Swell Index - Iss (%): 3.4

Comments

Not accredited
Work Order No : ETAM21W00723
Tested By: JM

APPENDIX C: FIELD DENSITY TEST SUMMARY SHEETS

Earthworks Fill Report

Report No: EFIL:ETAM20W01691
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01691

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Louis Smit

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14-15



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.

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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 4/11/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Density Calculations (in accordance with NZS 4402:1986 Tests 4.2.7)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
30/10/2020	ETAM20W01691	SC	60	1.85	26.8	1.46	2.70	7	UTP	UTP	UTP	UTP	Pond Wall SRPB Stage 15	1770730	5905192	59.3	Silty CLAY	
30/10/2020	ETAM20W01691	SC	61	1.75	36.6	1.28	2.70	6	170	170	153	153	Pond Wall SRPB Stage 15	1770686	5905197	59.9	Silty CLAY	
30/10/2020	ETAM20W01691	SC	62	1.72	35.9	1.26	2.70	8	UTP	UTP	170	170	Pond Wall SRPB Stage 15	1770686	5905187	60.1	Silty CLAY	
30/10/2020	ETAM20W01691	SC	63	1.93	32.1	1.46	2.70	0	UTP	UTP	UTP	UTP	DB2 Stage 14	1770627	5905405	48.7	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01691

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14-15

Location: As below

Tested by: SC

Date tested: 30/10/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01774
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01774

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Louis Smit

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD STAGE 14-15



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 19/11/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):
Density Calculations (in accordance with NZS 4402:1986 Tests 4.2.7)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
17/11/2020	ETAM20W01774	MA	64	1.95	26.2	1.55	2.70	2	UTP	UTP	UTP	UTP	Stage 14 Fill Area	1770743	5905300	-	CLAY	0.8m below finish level
17/11/2020	ETAM20W01774	MA	65	1.95	25.5	1.55	2.70	3	UTP	UTP	UTP	UTP	Stage 14 Fill Area	1770727	5905294	-	CLAY	0.8m below finish level
17/11/2020	ETAM20W01774	MA	66	1.86	30.0	1.45	2.70	4	132	138	122	127	Stage 14 Fill Area	1770702	5905288	-	CLAY	0.8m below finish level
17/11/2020	ETAM20W01774	MA	67	1.88	31.2	1.51	2.70	0	174	167	UTP	UTP	Stage 14 Fill Area	1770646	5905378	-	CLAY	0.6m below finish level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01774

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14-15

Location: As below

Tested by:

MA

Date tested:

17/11/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01798
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01798

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Louis Smit
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 23/11/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
20/11/2020	ETAM20W01798	LW	68	1.97	23.7	1.60	2.70	3	144	164	140	151	Stage 13 Fill area	1770522	590291	-	Clayey SILT	1.0m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01798

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 11-13

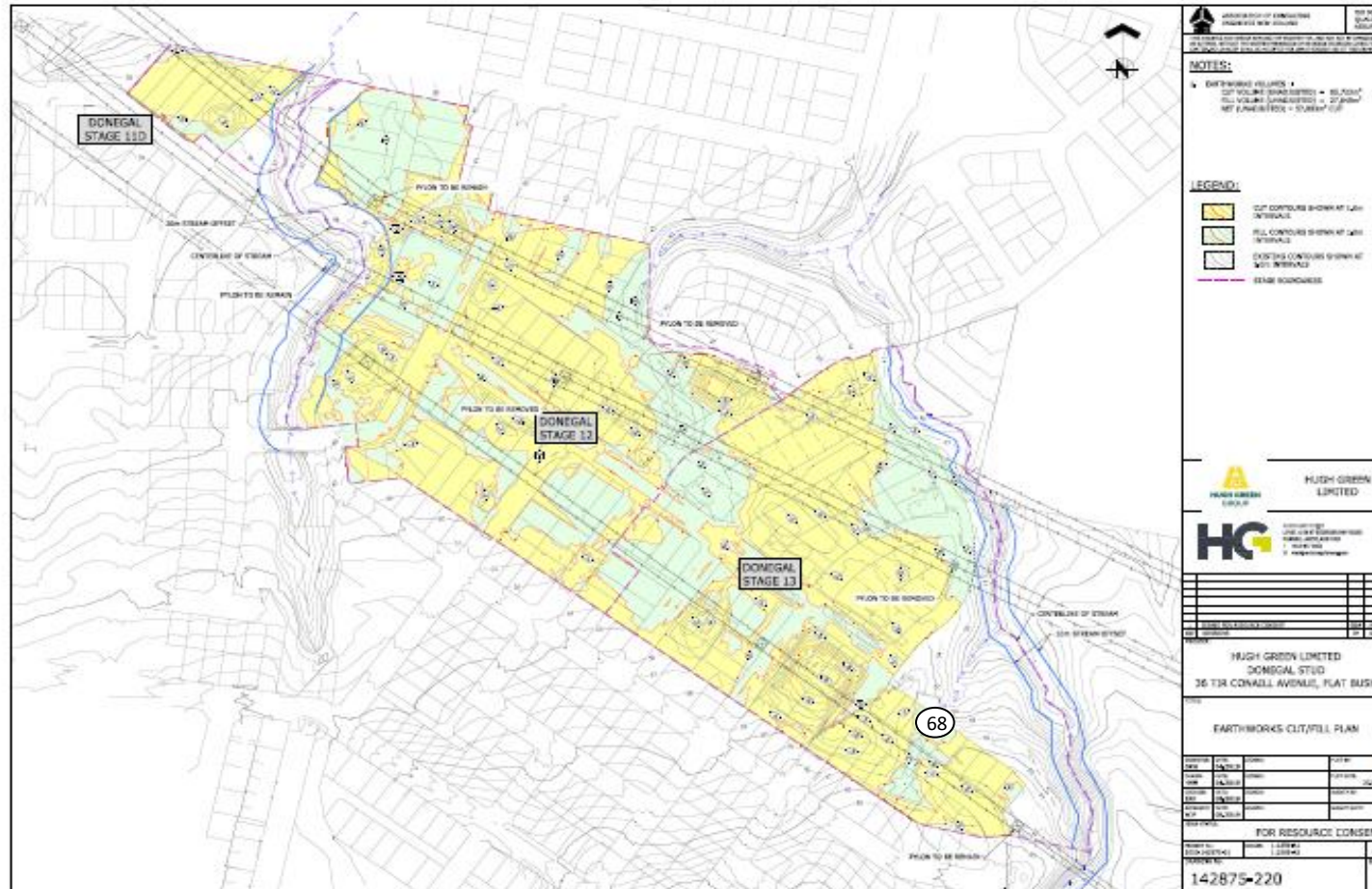
Location: As below

Tested by:

LW

Date tested:

20/11/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01807
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01807

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Louis Smit
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD STAGE 14



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 25/11/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
23/11/2020	ETAM20W01807	LW	69	1.95	23.8	1.58	2.70	4	UTP	UTP	UTP	UTP	DB Stage 14	1770687	5905404	-	Clayey SILT	0.80m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01807

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14-15

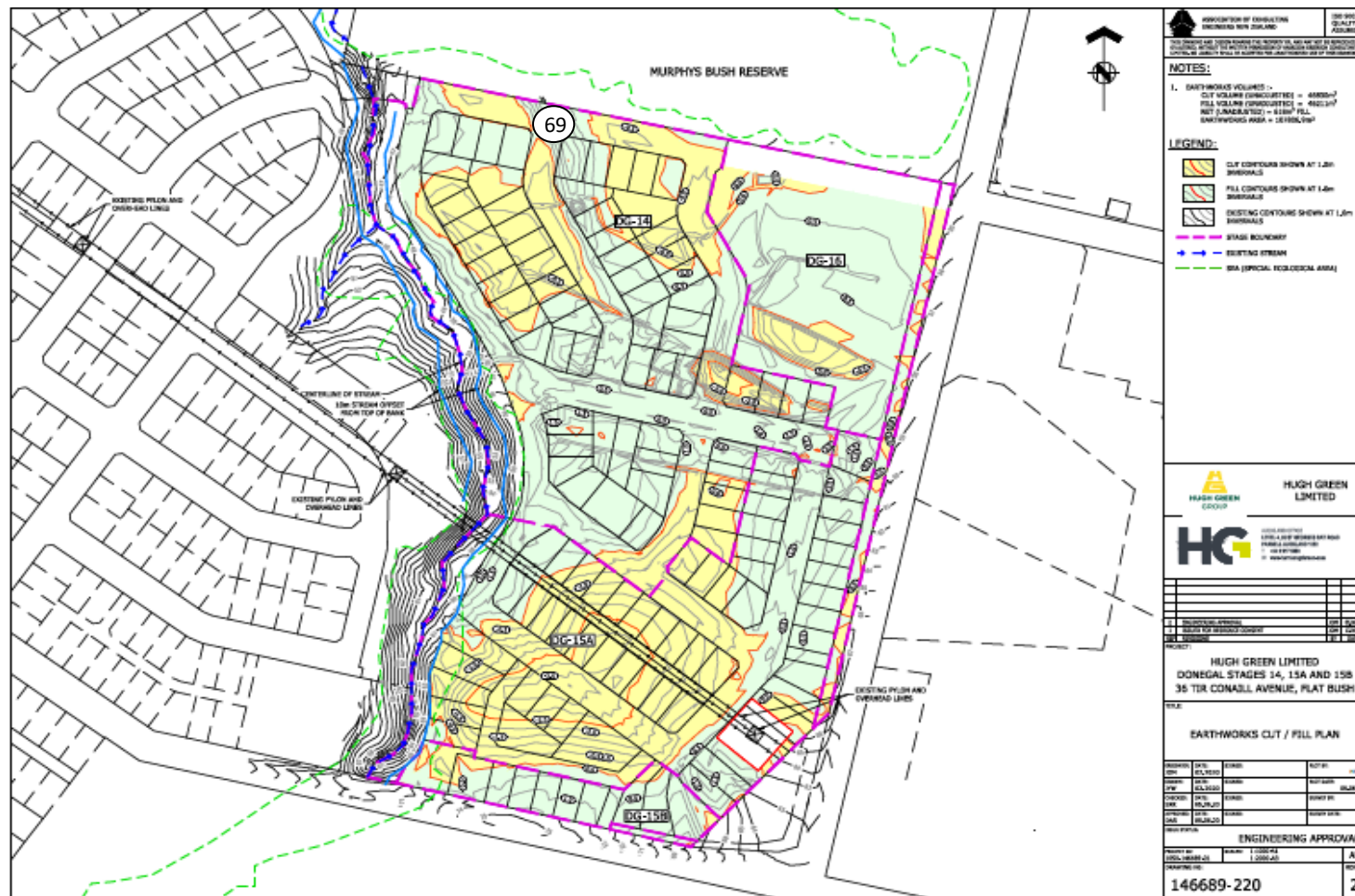
Location: As below

Tested by:

LW

Date tested:

23/11/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01873
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01873

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Louis Smit
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 7/12/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
2/12/2020	ETAM20W01873	SC	70	1.97	25.6	1.56	2.70	2	170	170	153	153	Stage 14	1770739	5905279	-	Silty CLAY	1.0m below finished level
2/12/2020	ETAM20W01873	SC	71	1.95	23.8	1.57	2.70	4	170	170	170	170	Stage 14	1770733	5905313	-	Silty CLAY	1.0m below finished level
2/12/2020	ETAM20W01873	SC	72	1.95	23.5	1.58	2.70	4	170	170	176	176	Stage 14, Road 4	1770712	5905308	-	Silty CLAY	At finished level
2/12/2020	ETAM20W01873	SC	73	1.90	27.3	1.50	2.70	4	176	176	176	176	Stage 14, Lot 13	1770697	5905257	-	Silty CLAY	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01873

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by:

SC

Date tested:


2/12/2020




Earthworks Fill Report

Report No: EFIL:ETAM20W01913
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01913

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Louis Smit
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14


 All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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 Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 11/12/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
9/12/2020	ETAM20W01913	SC,SSC	74	1.85	28.0	1.45	2.70	6	153	180+	180+	180+	Stage 14	1770711	5905212	-	Silty CLAY	1.0m below finished level
9/12/2020	ETAM20W01913	SC,SSC	75	1.87	27.4	1.47	2.70	5	UTP	UTP	UTP	UTP	Stage 14	1770729	5905209	-	Silty CLAY	1.0m below finished level
9/12/2020	ETAM20W01913	SC,SSC	76	1.83	36.1	1.34	2.70	2	180+	UTP	UTP	UTP	Stage 14	1770717	5905159	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01913

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by:

SC,SSC

Date tested:

9/12/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01935
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01935

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 15/12/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
11/12/2020	ETAM20W01935	SC	77	1.92	26.4	1.52	2.70	4	UTP	145	UTP	180+	Road 1, Stage 14	17700612	5905170	-	Silty CLAY	0.7m below finished level
11/12/2020	ETAM20W01935	SC	78	1.85	25.5	1.48	2.70	8	UTP	UTP	UTP	UTP	Road 1, Stage 14	17700625	5905311	-	Silty CLAY	0.7m below finished level
11/12/2020	ETAM20W01935	SC	79	1.94	22.9	1.58	2.70	6	UTP	180+	180+	180+	Road 1, Stage 14	17700614	5905331	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01935

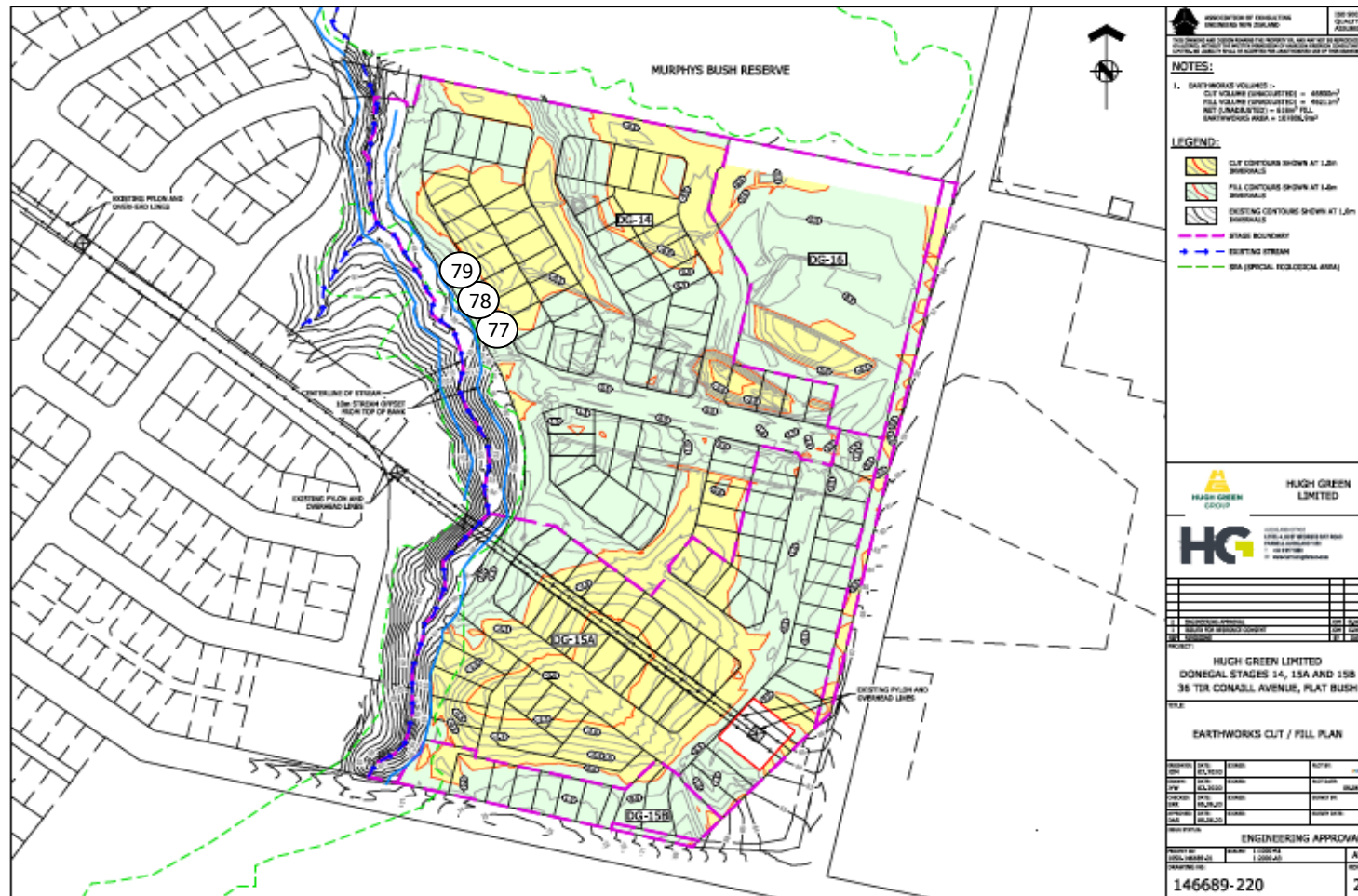
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by: SSC

Date tested: 11/12/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01965
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01965

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 18/12/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
15/12/2020	ETAM20W01965	MP	80	1.74	50.6	1.15	2.70	0	112	107	119	174+	Bottom side of pond	1770724	5905199	59.96	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01965

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

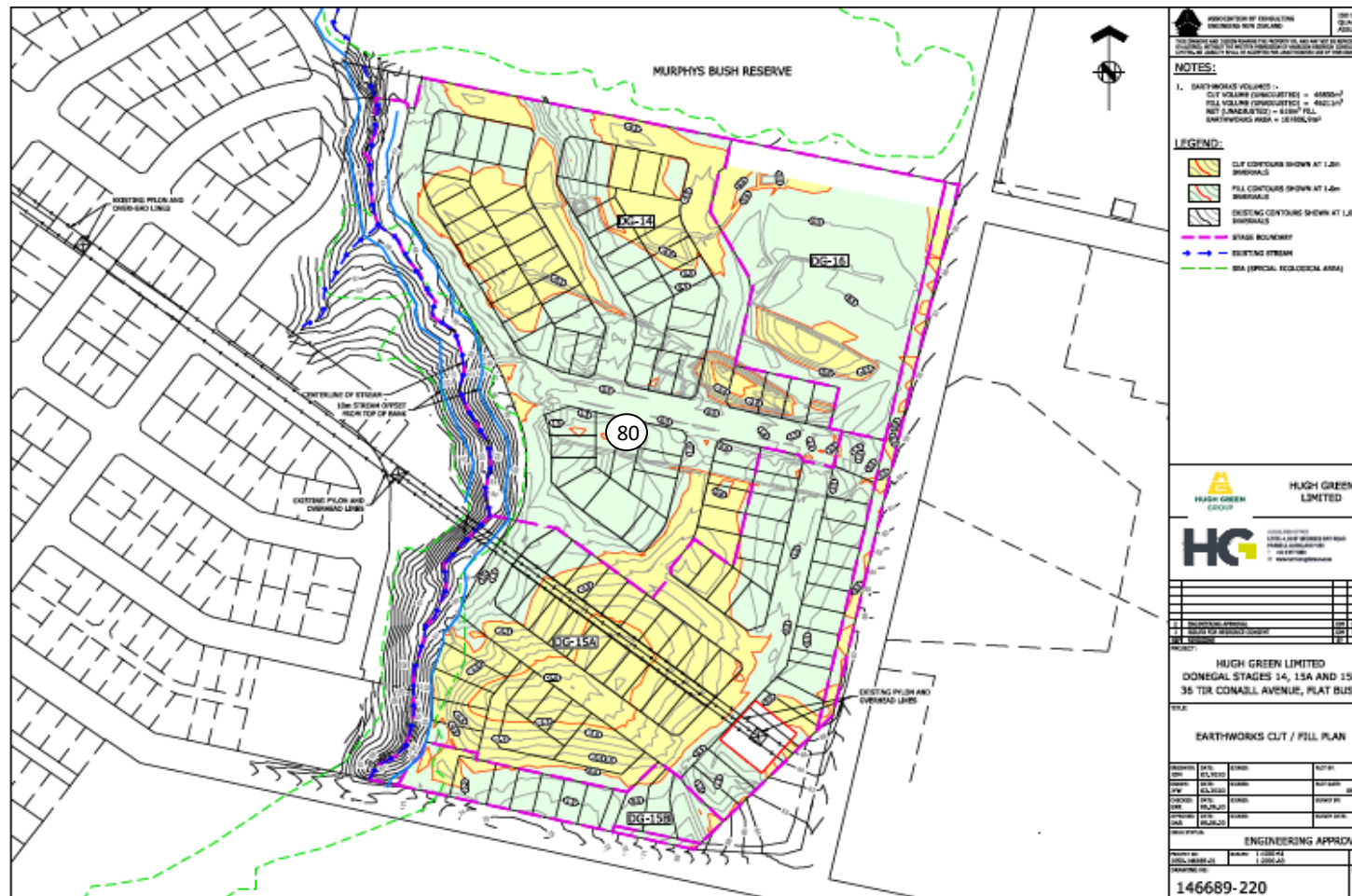
Location: As below

Tested by:

MP

Date tested:

15/12/2020



Earthworks Fill Report

Report No: EFIL:ETAM21W00026
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00026

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 11/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
7/01/2021	ETAM21W00026	LW	82	1.71	45.4	1.18	2.70	3	144	144	158+	158+	Pond Backfill	1770698	5905370	-	Clayey SILT	2.0m below finished level
7/01/2021	ETAM21W00026	LW	83	1.75	40.2	1.25	2.70	3	140	149	158+	158+	Pond Backfill	1770700	5905359	-	Clayey SILT	1.0m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00026

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by: LW

Date tested: 7/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00040
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00040

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 13/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
11/01/2021	ETAM21W00040	SC	84	1.84	23.7	1.49	2.70	10	UTP	UTP	180+	180+	Refer to plan	1770694	5905388	-	Silty CLAY	2.0m below finished level
11/01/2021	ETAM21W00040	SC	85	1.72	42.3	1.21	2.70	4	UTP	UTP	180+	180+	Refer to plan	1770724	5905199	59.96	Silty CLAY	Retest of Test No. 80
11/01/2021	ETAM21W00040	SC	86	1.77	33.7	1.33	2.70	6	UTP	UTP	UTP	UTP	Refer to plan	1770640	5905111	-	Silty CLAY	0.5m below finished level
11/01/2021	ETAM21W00040	SC	87	1.69	35.1	1.25	2.70	10	UTP	UTP	UTP	UTP	Refer to plan	1770647	5905128	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00040

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

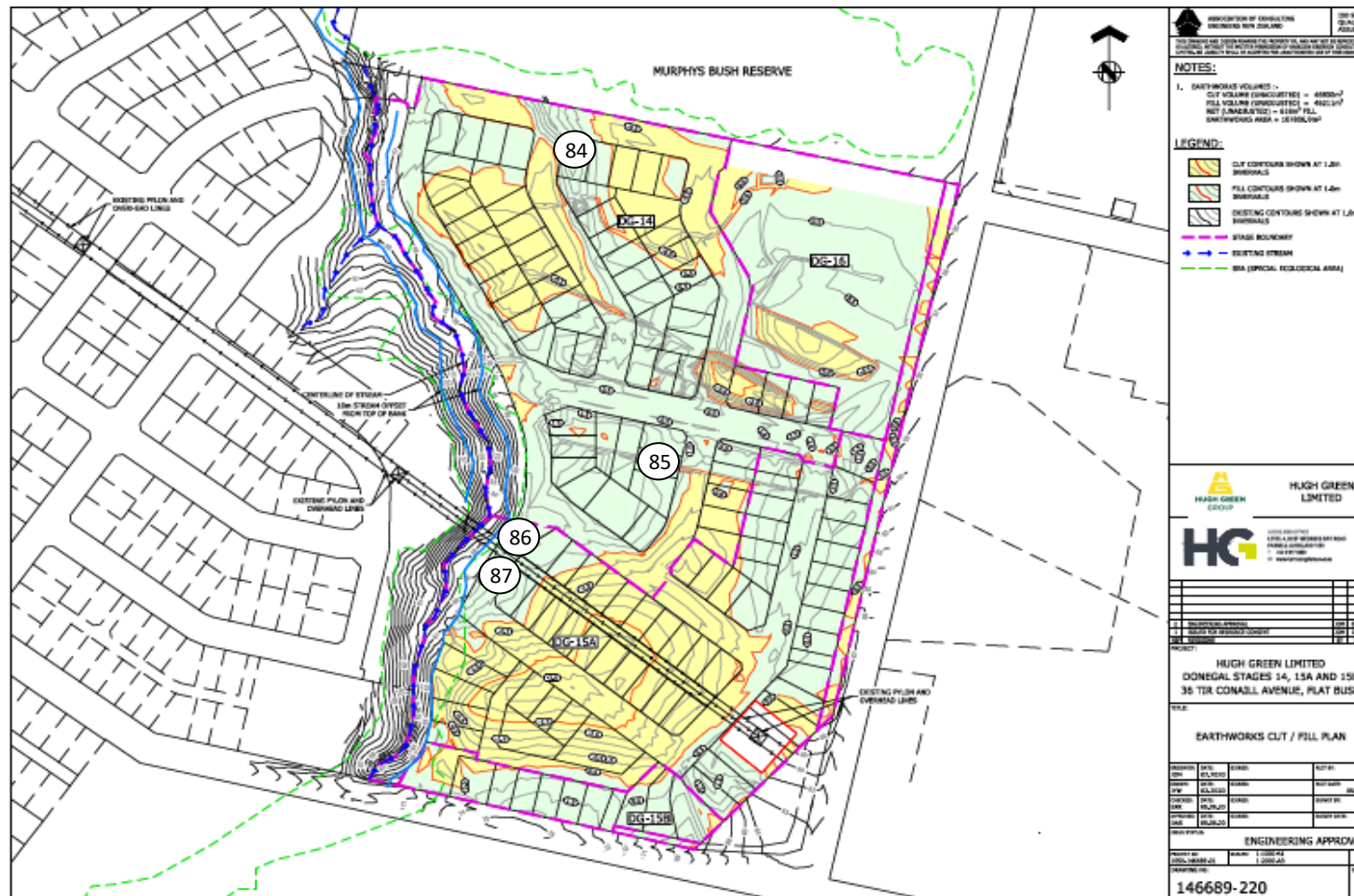
Location: As below

Tested by:

SC

Date tested:

11/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00062
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00062

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14-15



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 19/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
13/01/2021	ETAM21W00062	LW	88	1.84	49.4	1.23	2.70	0	140	154	158+	140	Stage 15B Fill	1770781	5904992	66.95	Clayey SILT	
13/01/2021	ETAM21W00062	LW	89	1.82	45.4	1.26	2.70	0	140	144	154	144	Stage 15B Fill	1770805	5905007	64.26	Clayey SILT	
13/01/2021	ETAM21W00062	LW	90	1.77	45.4	1.22	2.70	0	140	158+	158+	154	Stage 15B Fill	1770817	5905017	66.42	Clayey SILT	
13/01/2021	ETAM21W00062	LW	91	1.91	26.3	1.51	2.70	4	UTP	UTP	UTP	UTP	Stage 14 Pond Area	1770690	5905373	-	Clayey SILT	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00062

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 13/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00096
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00096

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 22/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
19/01/2021	ETAM21W00096	SC	92	1.77	48.3	1.19	2.70	0	170	166	180+	UTP	Refer to plan	1770744	5904975	-	Silty CLAY	1.0m below finished level
19/01/2021	ETAM21W00096	SC	93	1.76	48.7	1.18	2.70	0	180+	180+	180+	180+	Refer to plan	1770751	5904984	-	Silty CLAY	At finished level
19/01/2021	ETAM21W00096	SC	94	1.82	45.8	1.25	2.70	0	180+	180+	180+	180+	Refer to plan	1770689	5904973	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00096

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 19/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00106
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00106

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 25/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
21/01/2021	ETAM21W00106	SC	95	1.92	25.7	1.53	2.70	4	UTP	UTP	UTP	UTP	DG - 15B	1770751	5904960	-	Silty CLAY	At finished level
21/01/2021	ETAM21W00106	SC	96	1.84	29.1	1.43	2.70	6	UTP	UTP	UTP	UTP	DG - 15B	1770725	5904968	-	Silty CLAY	At finished level
21/01/2021	ETAM21W00106	SC	97	1.84	33.3	1.38	2.70	3	UTP	UTP	UTP	UTP	DG - 15B	1770705	5904990	-	Silty CLAY	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00106

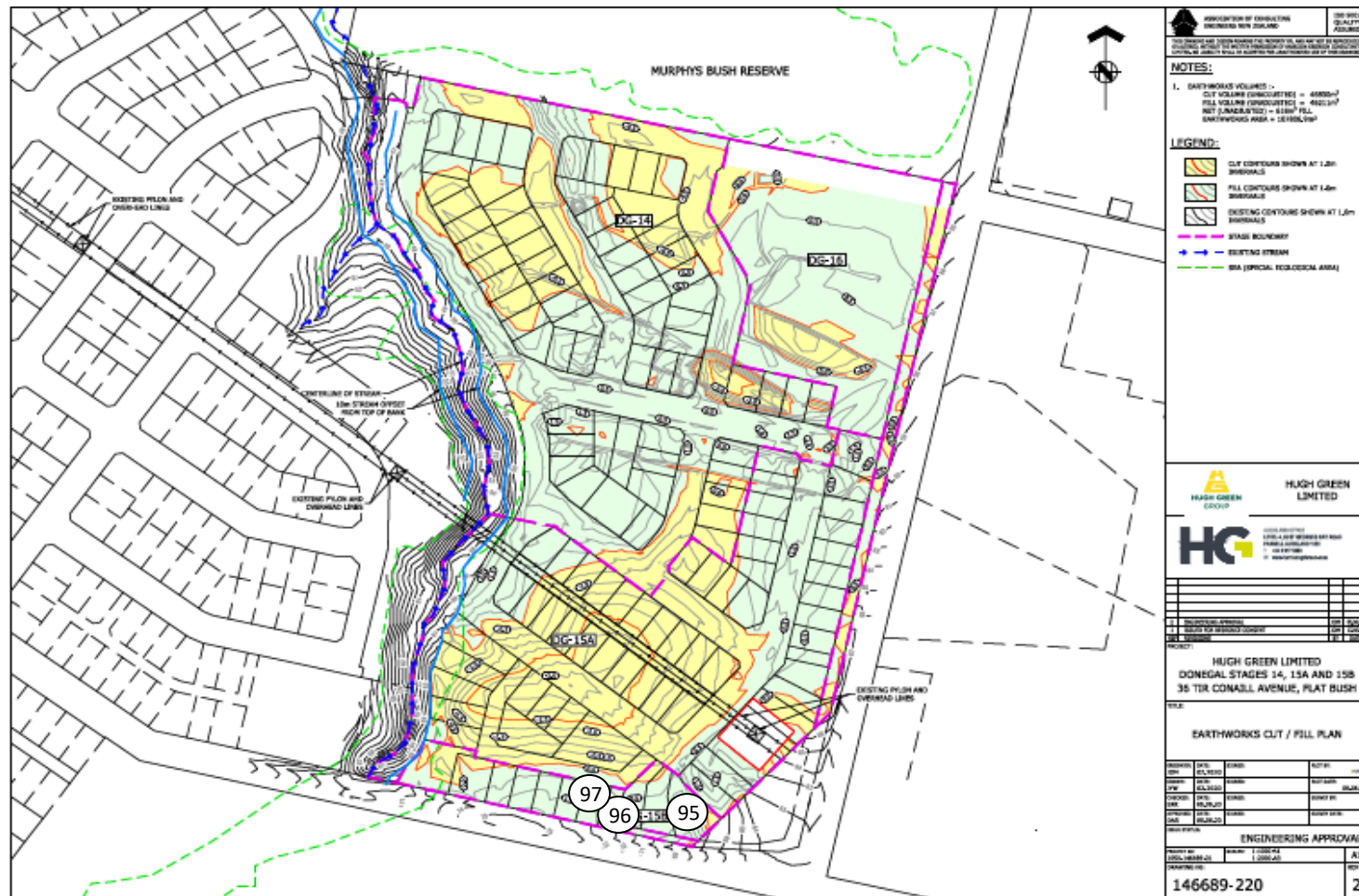
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 21/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00126
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00126

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
25/01/2021	ETAM21W00126	SC	98	1.84	30.3	1.41	2.70	5	UTP	UTP	180+	180+	Stage 16	1770852	5905288	-	Silty CLAY	0.3m below finished level
25/01/2021	ETAM21W00126	SC	99	1.81	36.7	1.32	2.70	3	180+	180+	180+	180+	Stage 16	1770832	5905289	-	Silty CLAY	0.3m below finished level
25/01/2021	ETAM21W00126	SC	100	1.75	35.2	1.30	2.70	6	180+	180+	180+	180+	Stage 16	1770808	5905314	-	Silty CLAY	0.3m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00126

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 25/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00145
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00145

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 28/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
27/01/2021	ETAM21W00145	SC	101	1.68	34.8	1.25	2.70	11	UTP	UTP	180+	180+	Old topsoil stockpile undercut	1770807	5905272	56.01	Silty CLAY	
27/01/2021	ETAM21W00145	SC	102	1.83	34.4	1.37	2.70	3	UTP	UTP	180+	180+	Old topsoil stockpile undercut	1770832	5905279	56.01	Silty CLAY	
27/01/2021	ETAM21W00145	SC	103	1.87	21.5	1.54	2.70	10	UTP	UTP	UTP	UTP	Refer to plan	1770801	5905336	53.98	Silty CLAY	
27/01/2021	ETAM21W00145	SC	104	1.72	48.7	1.16	2.70	1	180+	180+	180+	180+	Refer to plan	1770826	5905326	53.98	Silty CLAY	
27/01/2021	ETAM21W00145	SC	105	1.74	40.1	1.25	2.70	4	180+	180+	180+	180+	Refer to plan	1770847	5905322	53.80	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00145

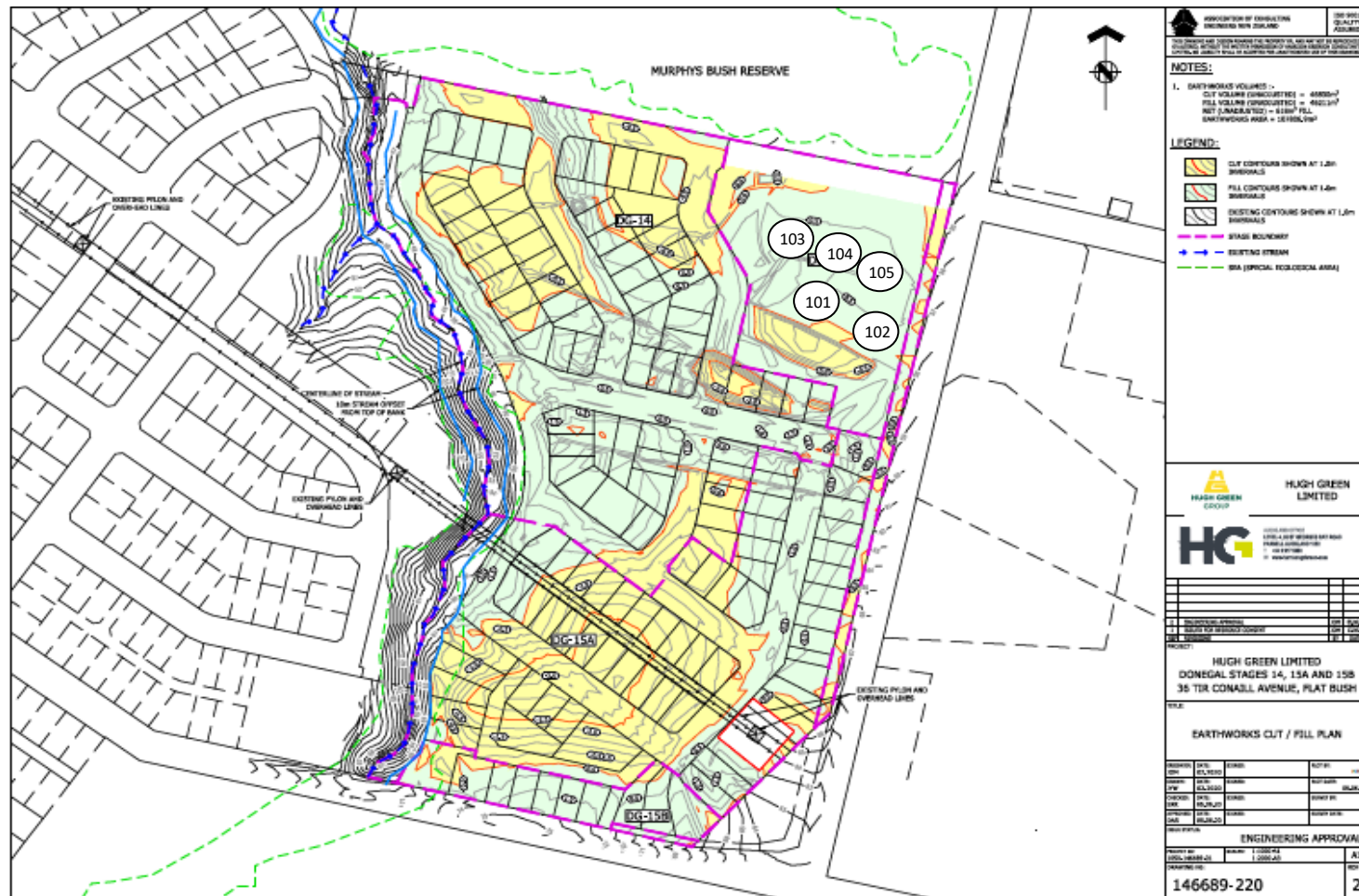
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 27/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00166
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00166

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 2/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
29/01/2021	ETAM21W00166	SC	106	1.76	43.3	1.23	2.70	1	180+	180+	180+	180+	Old topsoil stockpile undercut	1770807	5905272	56.01	Silty CLAY	Retest of Test No. 101
29/01/2021	ETAM21W00166	SC	107	1.80	43.9	1.25	2.70	0	180+	180+	180+	180+	Old topsoil stockpile undercut	1770820	5905250	56.40	Silty CLAY	
29/01/2021	ETAM21W00166	SC	108	1.77	34.9	1.31	2.70	6	180+	180+	UTP	UTP	Stage 16	1770801	5905336	53.98	Silty CLAY	Retest of Test No. 103
29/01/2021	ETAM21W00166	SC	109	1.87	28.2	1.46	2.70	5	UTP	UTP	UTP	UTP	Stage 16	1770843	5905286	54.39	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00166

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 29/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00173
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00173

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 3/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
2/02/2021	ETAM21W00173	SC	110	1.97	20.4	1.64	2.70	6	UTP	UTP	UTP	UTP	Refer to plan	1770811	5905270	57.27	Silty CLAY	
2/02/2021	ETAM21W00173	SC	111	1.87	28.1	1.46	2.70	5	UTP	UTP	UTP	UTP	Refer to plan	1770828	5905260	27.28	Silty CLAY	
2/02/2021	ETAM21W00173	SC	112	1.81	46.8	1.23	2.70	0	180+	180+	180+	180+	Refer to plan	1770807	5905311	54.82	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00173

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 2/02/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00189
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00189

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 9/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
4/02/2021	ETAM21W00189	SC	113	1.82	27.2	1.43	2.70	8	180+	180+	180+	180+	Refer to plan	1770837	5905279	57.70	Silty CLAY	
4/02/2021	ETAM21W00189	SC	114	1.79	42.2	1.26	2.70	0	UTP	UTP	UTP	UTP	Refer to plan	1770843	5905331	55.20	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00189

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 4/02/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00227
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00227

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
12/02/2021	ETAM21W00227	LW	115	1.79	38.5	1.29	2.70	3	158+	158+	158+	158+	Stage 15 Redesign	1770622	5905045	-	Clayey SILT	0.4m below finished level
12/02/2021	ETAM21W00227	LW	116	1.78	40.4	1.26	2.70	2	158+	158+	158+	158+	Stage 15 Redesign	1770635	5905035	-	Clayey SILT	0.4m below finished level
12/02/2021	ETAM21W00227	LW	117	1.88	32.8	1.41	2.70	1	158+	158+	158+	158+	Stage 16	1770816	5905254	-	Clayey SILT	At finished level
12/02/2021	ETAM21W00227	LW	118	1.85	32.3	1.40	2.70	3	158+	158+	158+	158+	Stage 16	1770831	5905288	-	Clayey SILT	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00227

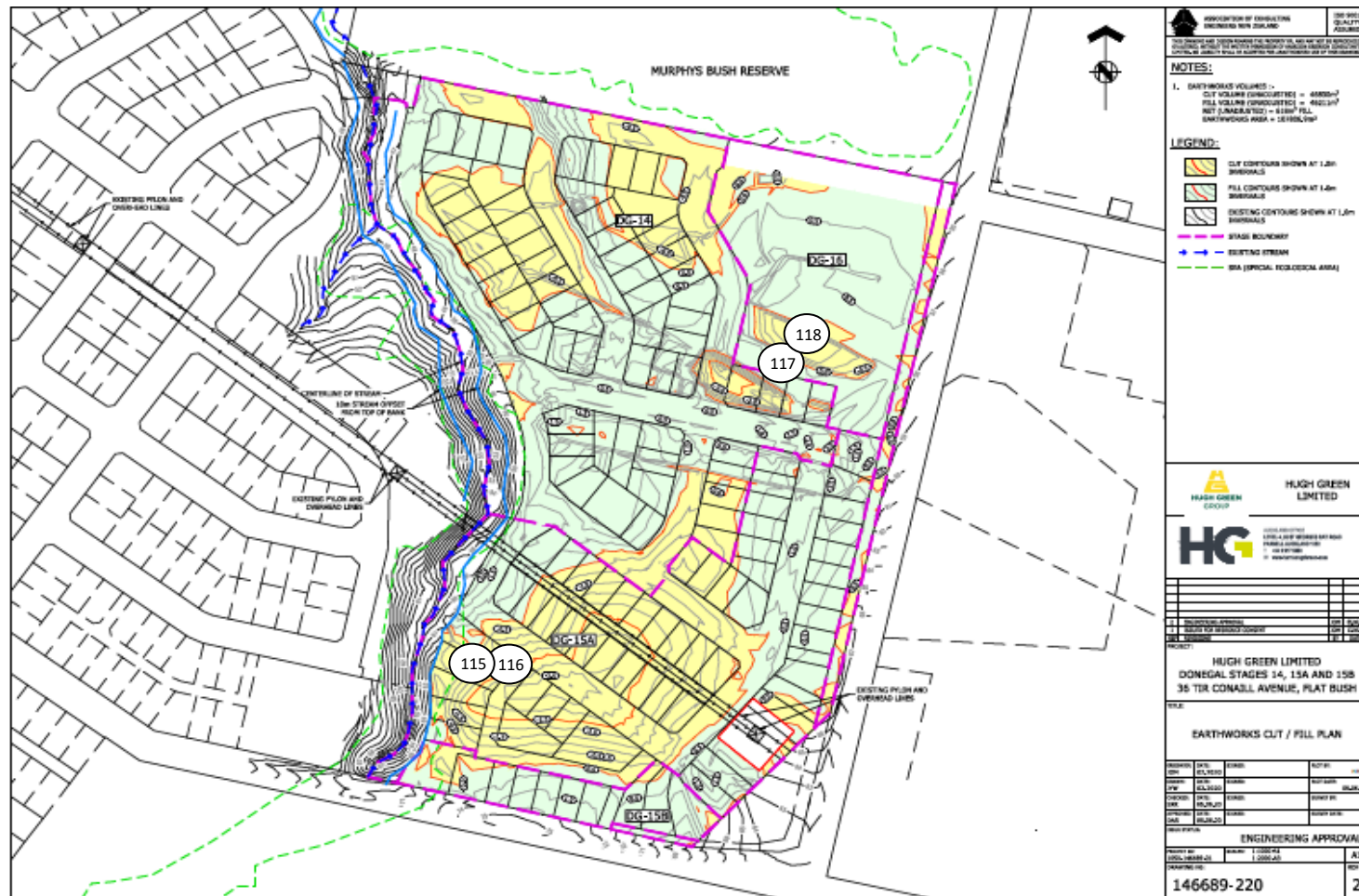
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 12/02/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00227
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00227

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
12/02/2021	ETAM21W00227	LW	115	1.79	38.5	1.29	2.70	3	158+	158+	158+	158+	Stage 15 Redesign	1770622	5905045	-	Clayey SILT	0.4m below finished level
12/02/2021	ETAM21W00227	LW	116	1.78	40.4	1.26	2.70	2	158+	158+	158+	158+	Stage 15 Redesign	1770635	5905035	-	Clayey SILT	0.4m below finished level
12/02/2021	ETAM21W00227	LW	117	1.88	32.8	1.41	2.70	1	158+	158+	158+	158+	Stage 16	1770816	5905254	-	Clayey SILT	At finished level
12/02/2021	ETAM21W00227	LW	118	1.85	32.3	1.40	2.70	3	158+	158+	158+	158+	Stage 16	1770831	5905288	-	Clayey SILT	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00227

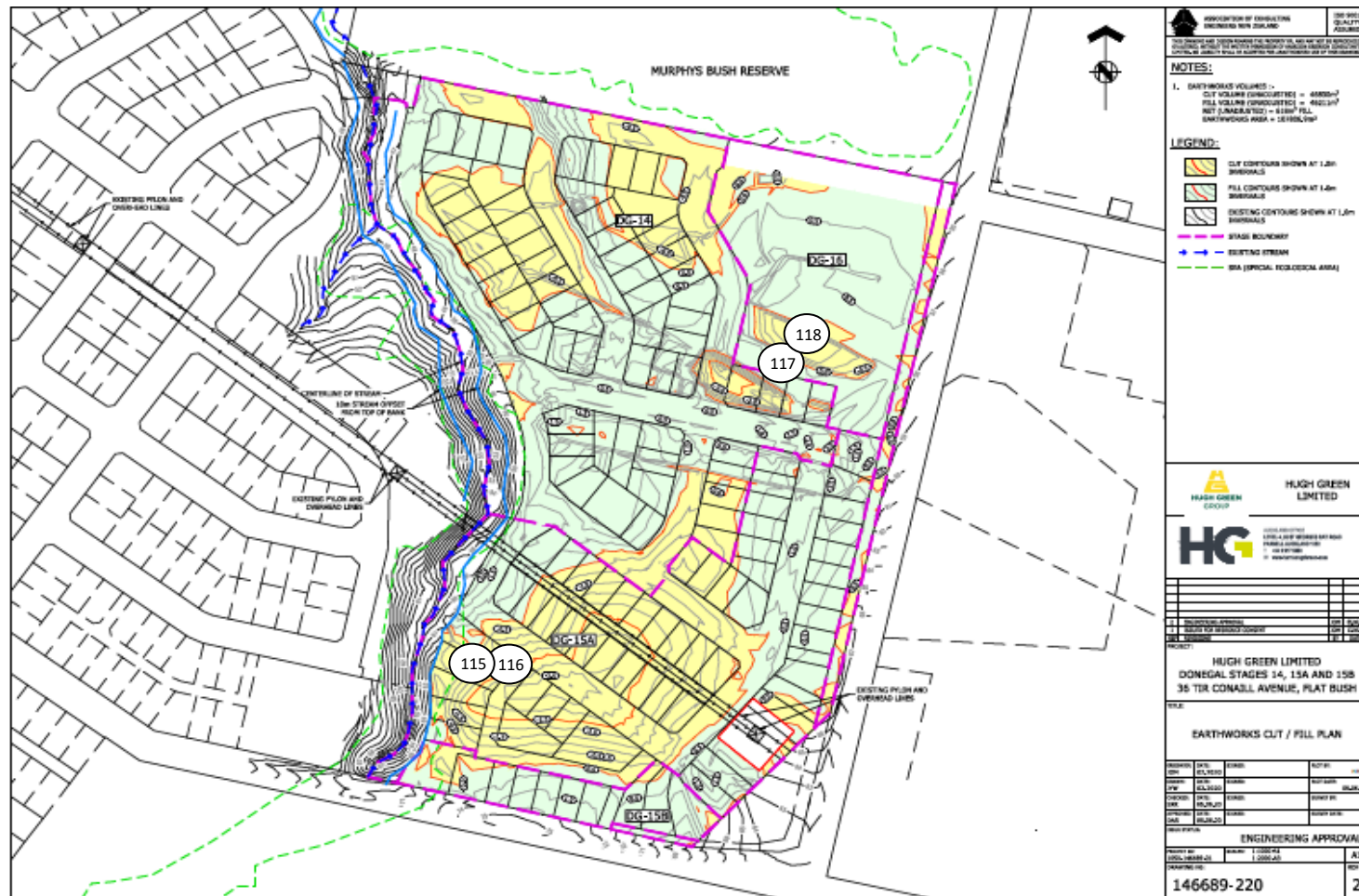
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 12/02/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00308
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00308

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 10/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
9/03/2021	ETAM21W00308	SC	123	1.81	29.2	1.40	2.70	7	UTP	UTP	UTP	UTP	RW A CH 43	1770598	5905373	48.45	Silty CLAY with aggregate	Retest of Test No. 119
9/03/2021	ETAM21W00308	SC	124	1.99	15.9	1.72	2.70	9	170	170	153	153	RW A CH 15	1770602	5905396	47.59		Retest of Test No. 120
9/03/2021	ETAM21W00308	SC	125	1.86	19.5	1.55	2.70	12	180+	180+	180+	180+	RW B CH 35	1770627	5905306	50.65		Retest of Test No. 122

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00308

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 9/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00335
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00335

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 12/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
11/03/2021	ETAM21W00335	SC	126	1.77	30.7	1.35	2.70	8	180+	180+	153	153	Stage 14 Pond	1770718	5905190	-	Silty CLAY	1.5m below finished level
11/03/2021	ETAM21W00335	SC	127	1.74	47.1	1.18	2.70	1	170	170	170	153	Stage 14 Pond	1770716	5905180	-	Silty CLAY	1.5m below finished level
11/03/2021	ETAM21W00335	SC	128	1.82	34.8	1.35	2.70	4	170	170	170	170	Stage 14 Pond	1770728	5905184	-	Silty CLAY	1.0m below finished level
11/03/2021	ETAM21W00335	SC	129	1.80	41.9	1.27	2.70	0	170	170	170	170	Stage 14 Pond	1770738	5905180	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00335

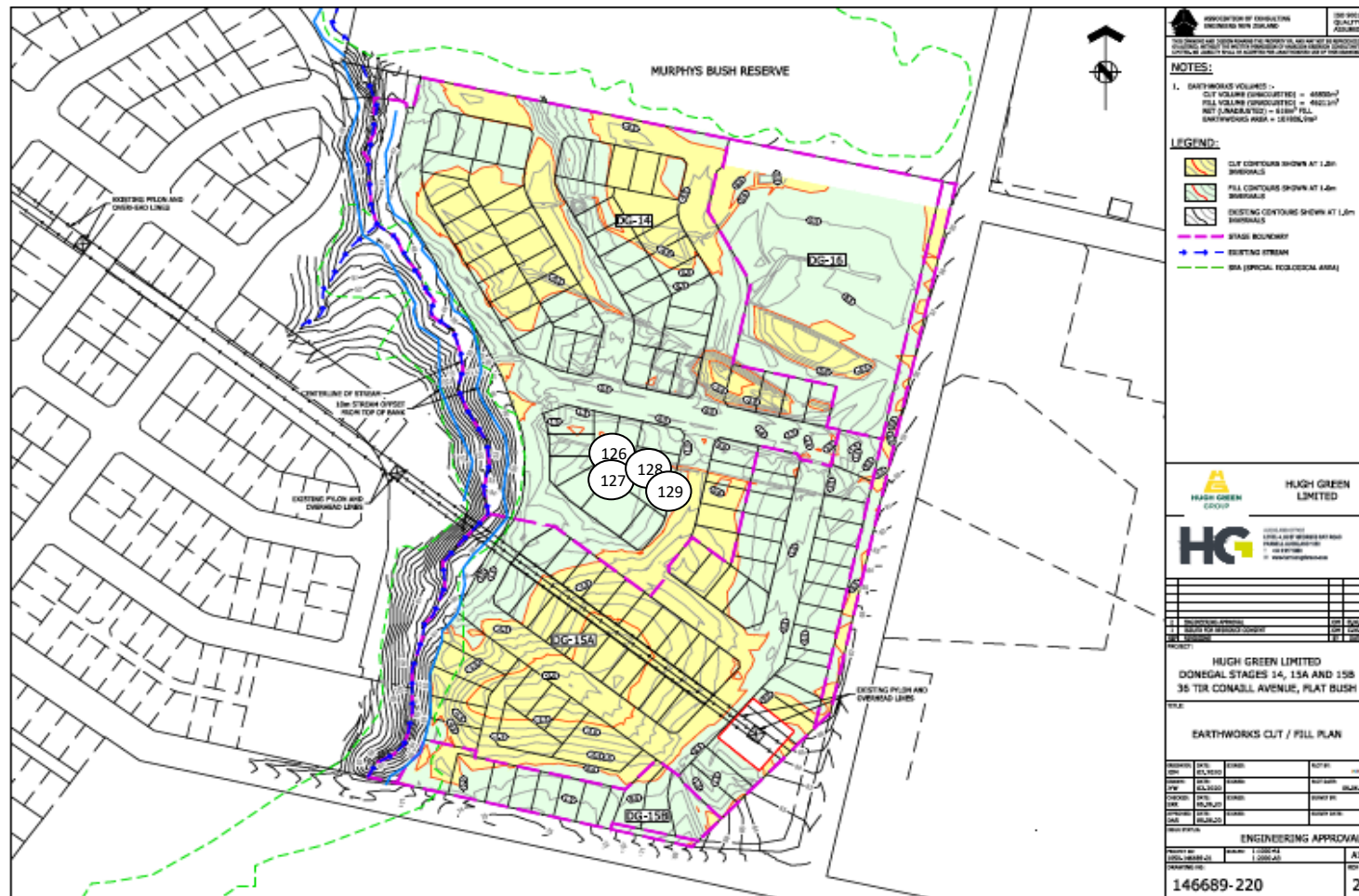
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 11/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00336
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00336

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 12/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
11/03/2021	ETAM21W00336	LW	130	1.89	29.6	1.45	2.70	3	158+	158+	158+	158+	RW B, CH 35	1770627	5905306	50.65	Silty CLAY	Retest of Test No. 125

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00336

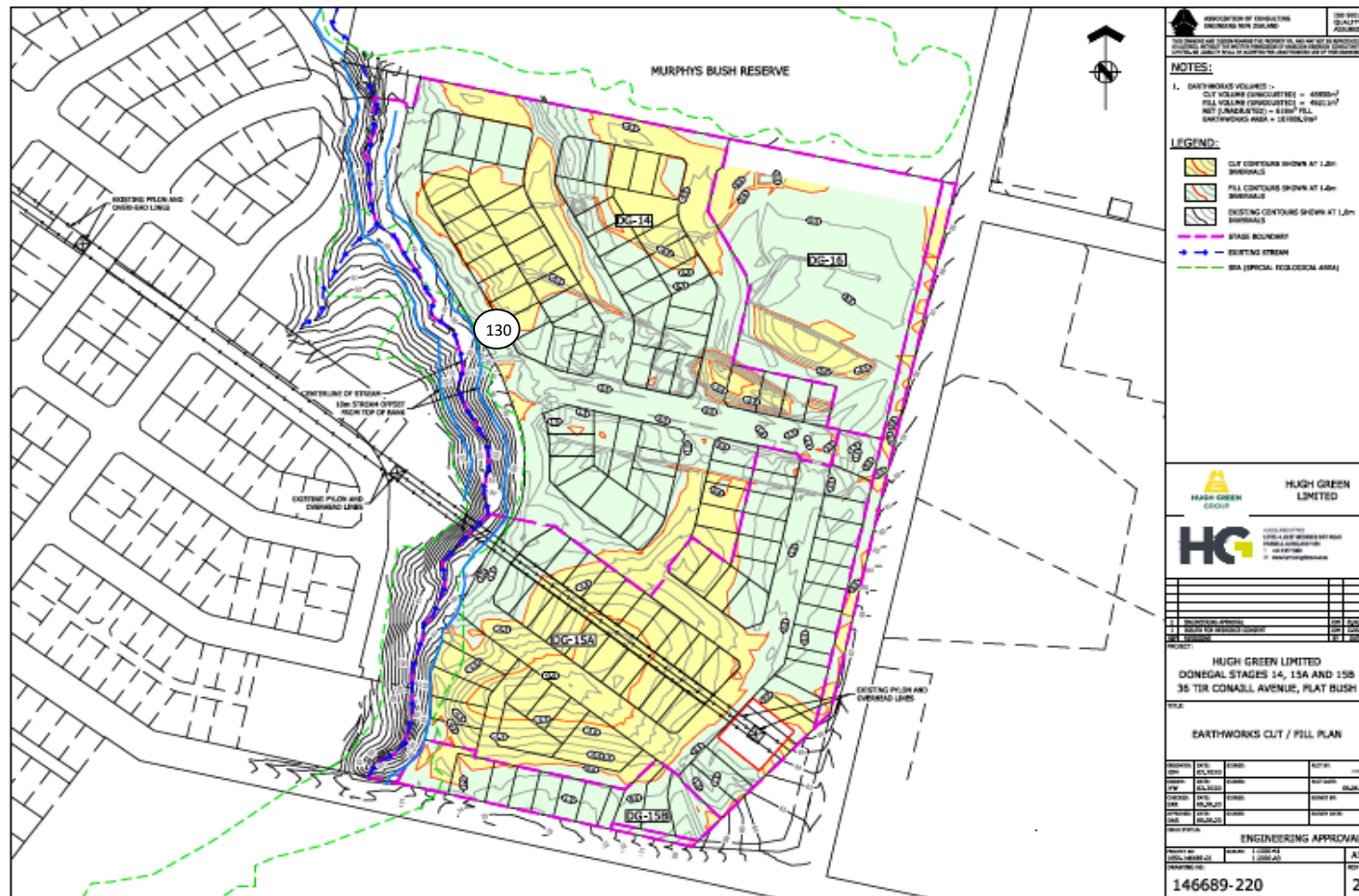
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 11/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00349
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00349

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 15/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
12/03/2021	ETAM21W00349	SC	131	1.90	25.3	1.52	2.70	5	180+	180+	180+	180+	Refer to plan	1770883	5905296	-	Silty CLAY	0.8m below finished level
12/03/2021	ETAM21W00349	SC	132	1.80	37.9	1.30	2.70	3	180+	180+	180+	180+	Refer to plan	1770876	5905310	-	Silty CLAY	0.8m below finished level
12/03/2021	ETAM21W00349	SC	133	1.77	35.1	1.31	2.70	6	170	170	153	153	Refer to plan	1770731	5905186	-	Silty CLAY	0.5m below finished level
12/03/2021	ETAM21W00349	SC	134	1.79	40.0	1.28	2.70	2	153	153	170	170	Refer to plan	1770716	5905180	-	Silty CLAY	1.0m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00349

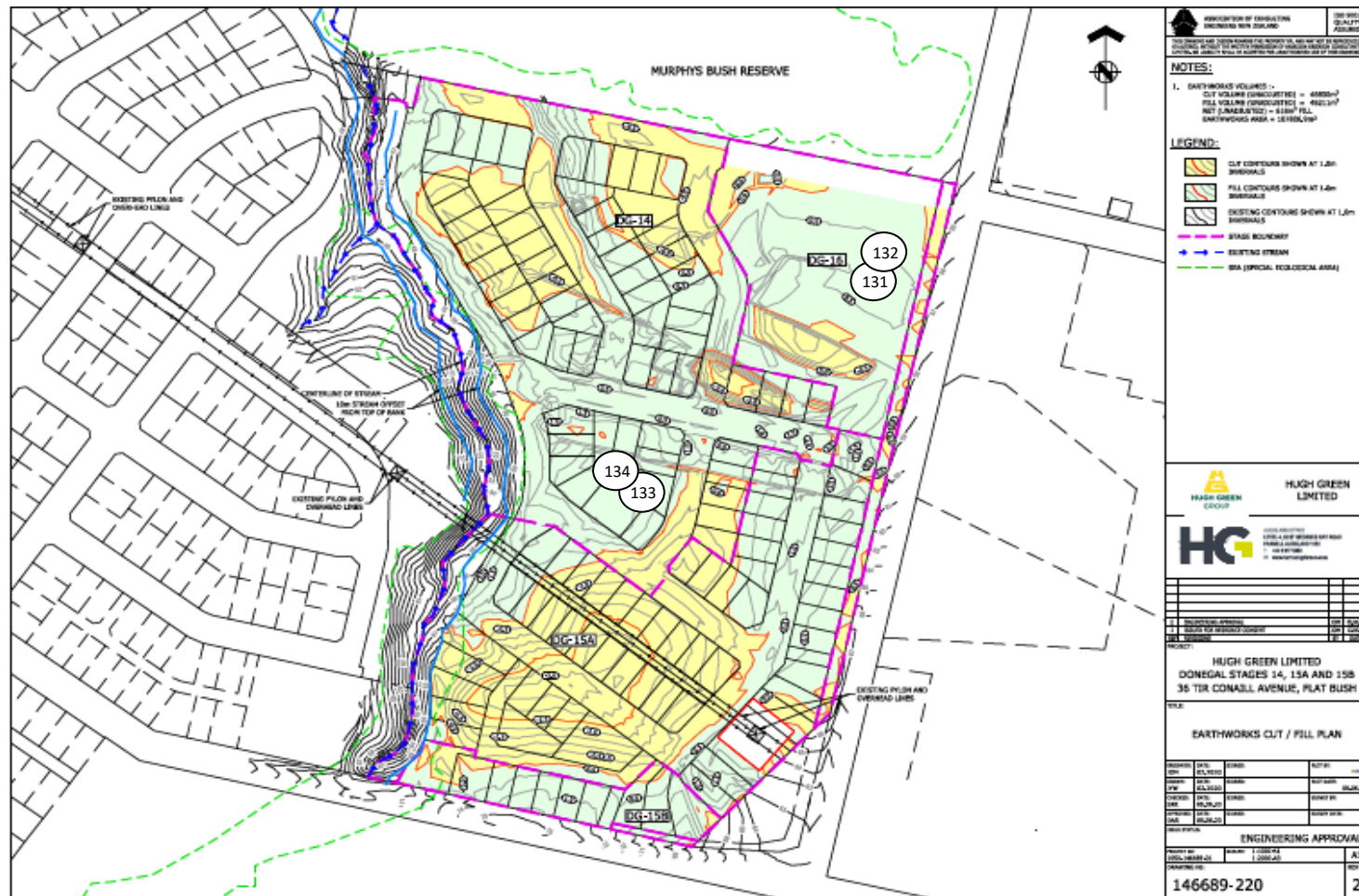
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 12/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00352
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00352

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 17/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
16/03/2021	ETAM21W00352	SSC	135	1.73	38.4	1.25	2.70	6	138	UTP	UTP	146	RW A, CH 8.5	1770605	5905403	47.836	Silty CLAY	
16/03/2021	ETAM21W00352	SSC	136	1.68	37.9	1.22	2.70	9	UTP	UTP	180+	180+	RW A, CH 38.4	1770598	5905378	48.509	Silty CLAY	
16/03/2021	ETAM21W00352	SSC	137	1.78	26.5	1.41	2.70	11	UTP	UTP	UTP	UTP	RW B, CH 15	1770615	5905322	50.723	Silty CLAY	
16/03/2021	ETAM21W00352	SSC	138	1.74	30.3	1.34	2.70	10	UTP	UTP	UTP	UTP	RW B, CH 47.6	1770633	5905299	52.000	Silty CLAY	
16/03/2021	ETAM21W00352	SSC	139	1.80	27.3	1.41	2.70	9	UTP	UTP	UTP	UTP	Stage 14 Pond B	1770716	5905193	-	Silty CLAY	At finished level
16/03/2021	ETAM21W00352	SSC	140	1.86	25.2	1.49	2.70	8	UTP	UTP	UTP	UTP	Stage 14 Pond B	1770718	5905181	-	Silty CLAY	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)
Aggregate present in fill.

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00352

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SSC

Date tested: 16/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00362
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00362

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 18/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
17/03/2021	ETAM21W00362	LW	141	1.89	29.9	1.45	2.70	3	UTP	UTP	UTP	UTP	RW B, CH 70	1770649	5905306	53.35	Silty CLAY with aggregate	
17/03/2021	ETAM21W00362	LW	142	1.96	32.6	1.48	2.70	0	UTP	UTP	UTP	UTP	RW B, CH 43	1770630	5905301	52.10		

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00362

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 17/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00430
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00430

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 29/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
25/03/2021	ETAM21W00430	LW	143	1.89	30.2	1.45	2.70	3	UTP	UTP	UTP	UTP	Stage 15 Pond Backfill	1770695	5905187	-	Silty CLAY	1.5m below finished level
25/03/2021	ETAM21W00430	LW	144	1.89	28.1	1.48	2.70	4	UTP	UTP	UTP	UTP	Stage 15 Pond Backfill	1770704	5905194	-	Silty CLAY	1.2m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)
Fill material contains some medium gravel.

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00430

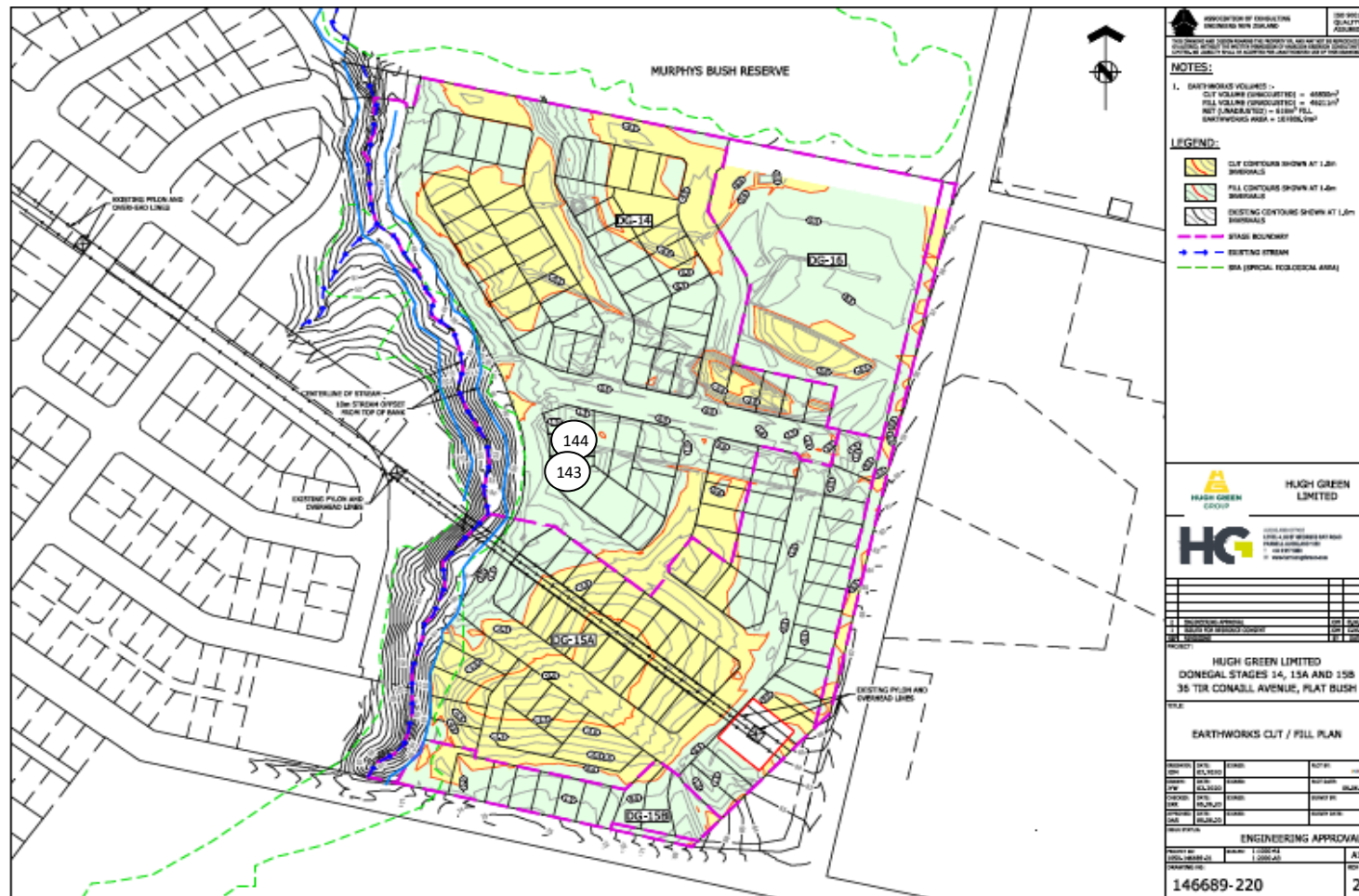
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 25/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00451
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00451

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 31/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
26/03/2021	ETAM21W00451	SC	145	1.83	34.8	1.36	2.70	2	UTP	UTP	UTP	UTP	Stage 16	1770894	5905304	-	Silty CLAY	1.0m below finished level
26/03/2021	ETAM21W00451	SC	146	1.77	35.3	1.31	2.70	5	UTP	UTP	UTP	UTP	Stage 16	1770887	5905335	-	Silty CLAY	1.0m below finished level
26/03/2021	ETAM21W00451	SC	147	1.90	25.2	1.52	2.70	5	UTP	UTP	UTP	UTP	Stage 15 Pond Backfill	1770698	5905192	-	Silty CLAY	1.0m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00451

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 26/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00473
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00473

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 7/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
6/04/2021	ETAM21W00473	SC	148	1.83	27.8	1.44	2.70	7	UTP	UTP	180+	180+	Retaining Wall A Backfill	1770597	5905393	47.30	Silty CLAY	CH 17
6/04/2021	ETAM21W00473	SC	149	1.91	25.6	1.52	2.70	5	180+	180+	180+	180+	Retaining Wall A Backfill	1770594	5905381	47.70	Silty CLAY	CH 29
6/04/2021	ETAM21W00473	SC	150	1.92	22.2	1.57	2.70	7	UTP	UTP	180+	180+	Retaining Wall A Backfill	1770597	5905368	48.52	Silty CLAY	CH 48

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00473

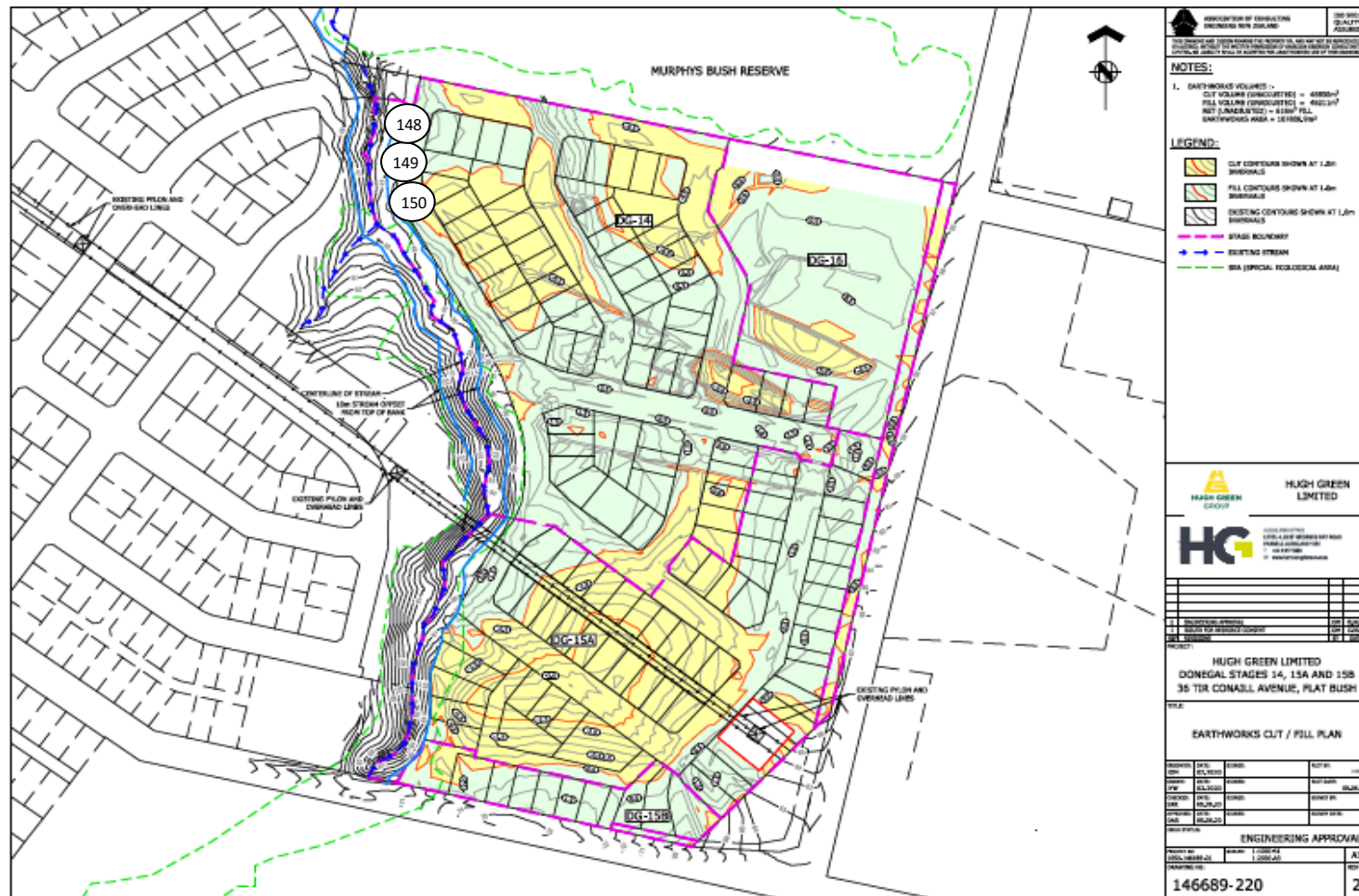
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 6/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00487
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00487

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 8/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
7/04/2021	ETAM21W00487	SC	151	1.79	26.2	1.42	2.70	10	UTP	UTP	UTP	UTP	CH 39, RW Backfill	1770597	5905368	-	Silty CLAY	At finished level
7/04/2021	ETAM21W00487	SC	152	1.75	26.8	1.38	2.70	12	UTP	UTP	UTP	UTP	CH 25, RW Backfill	1770597	5905387	-	Silty CLAY	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00487

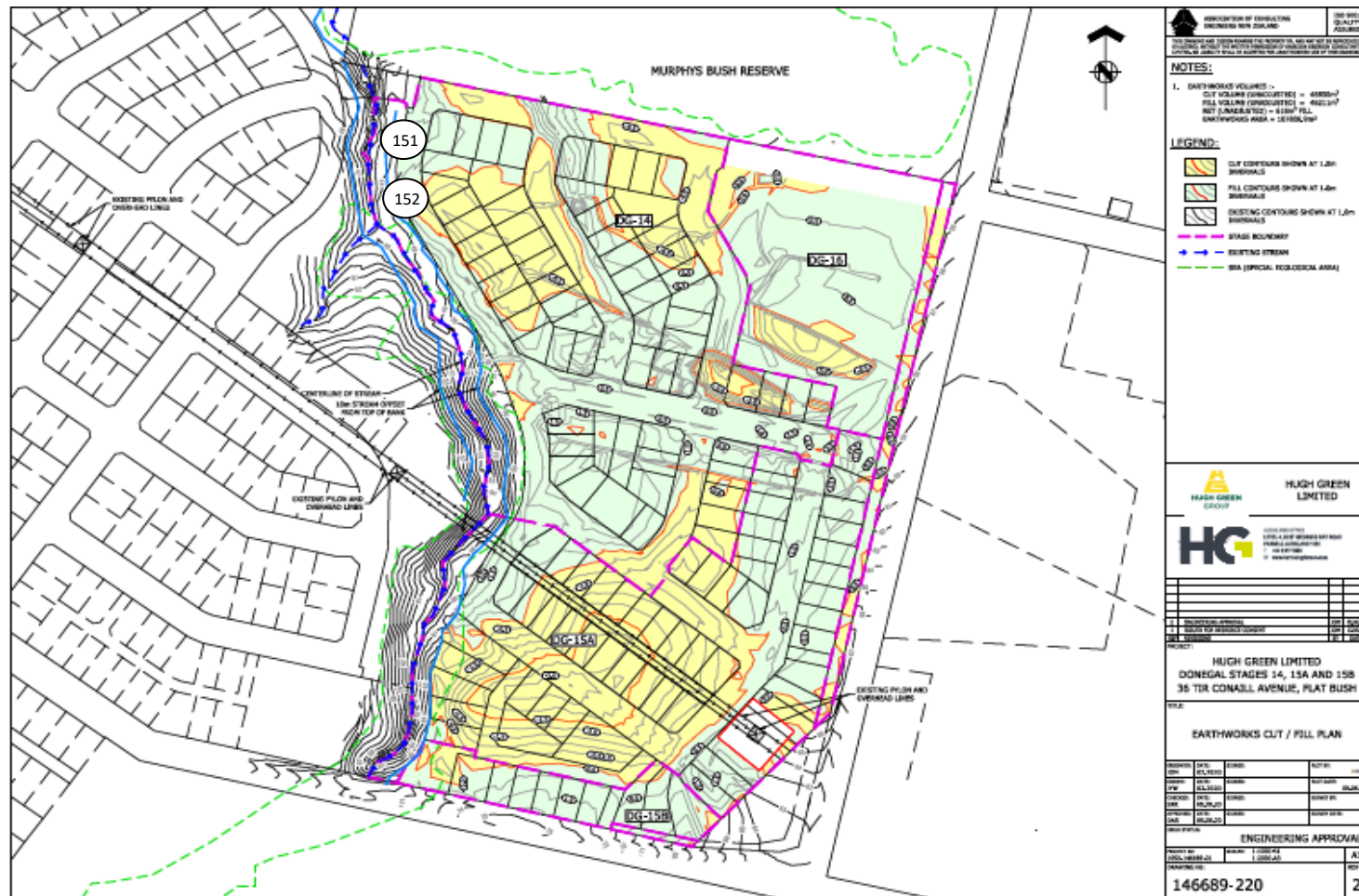
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 7/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00501
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00501

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 13/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
9/04/2021	ETAM21W00501	LW	153	1.89	25.3	1.51	2.70	6	UTP	UTP	UTP	UTP	RW B, CH 37	1770628	5905301	50.68	Clayey SILT	
9/04/2021	ETAM21W00501	LW	154	1.99	22.1	1.63	2.70	4	UTP	UTP	UTP	UTP	RW B, CH 20	1770618	5905317	50.23	Clayey SILT	
9/04/2021	ETAM21W00501	LW	155	1.96	24.4	1.58	2.70	3	UTP	UTP	UTP	UTP	RW B, CH 7	1770612	5905333	50.12	Clayey SILT	
9/04/2021	ETAM21W00501	LW	156	1.87	26.1	1.48	2.70	6	UTP	UTP	UTP	UTP	MSE Wall	1770683	5905412	47.91	Clayey SILT	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00501

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 9/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00503
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00503

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 13/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
12/04/2021	ETAM21W00503	SC	157	1.96	24.6	1.57	2.70	3	153	170	UTP	UTP	MSE Wall	1770682	5905408	48.04	Clayey SILT	CH 125

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00503

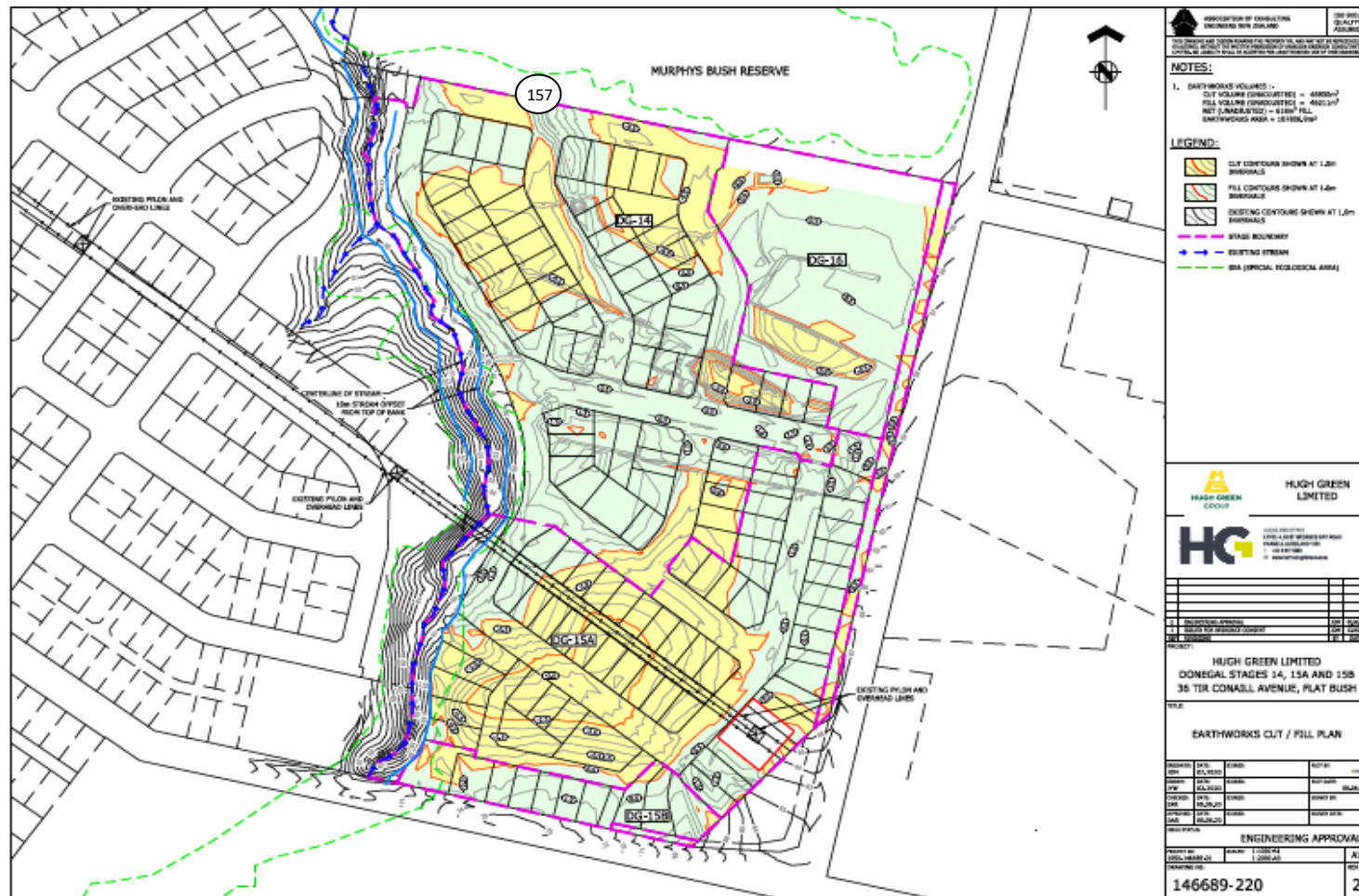
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 12/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00513
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00513

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 14/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
13/04/2021	ETAM21W00513	SC	158	1.90	38.1	1.38	2.70	0	153	153	170	170	MSE Wall	1770679	5905414	48.8	Clayey SILT	CH 125

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)
 Aggregate present in fill.

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00513

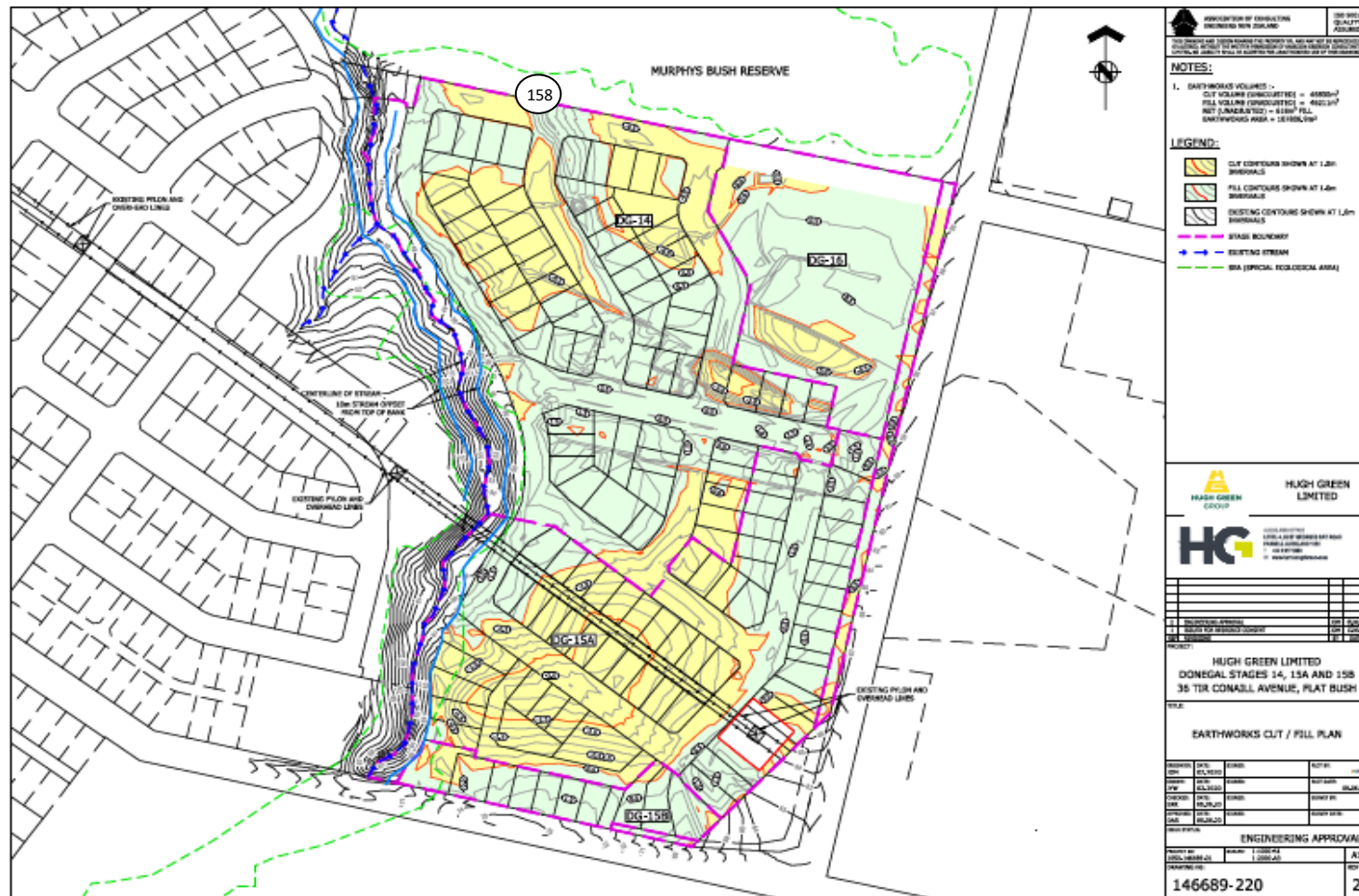
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 13/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00528
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00528

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 19/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
17/04/2021	ETAM21W00528	LW	159	1.75	27.6	1.37	2.70	11	143	125	146	156	RW B, CH 7	1770612	5905334	50.52	Silty CLAY	
17/04/2021	ETAM21W00528	LW	160	1.76	30.1	1.36	2.70	9	160	179+	179+	168	RW B, CH 33	1770624	5905312	50.93	Silty CLAY	
17/04/2021	ETAM21W00528	LW	161	1.73	32.1	1.31	2.70	9	134	146	156	131	RW B, CH 48	1770640	5905282	51.22	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00528

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 17/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00533
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00533

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 20/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
19/04/2021	ETAM21W00533	SC	162	1.90	25.8	1.51	2.70	5	180+	180+	180+	153	RW A, CH 5 Backfill	1770599	5905409	46.66	Silty CLAY	
19/04/2021	ETAM21W00533	SC	163	1.91	30.0	1.47	2.70	1	153	153	153	153	RW A, CH 12 Backfill	1770602	5905401	46.82	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00533

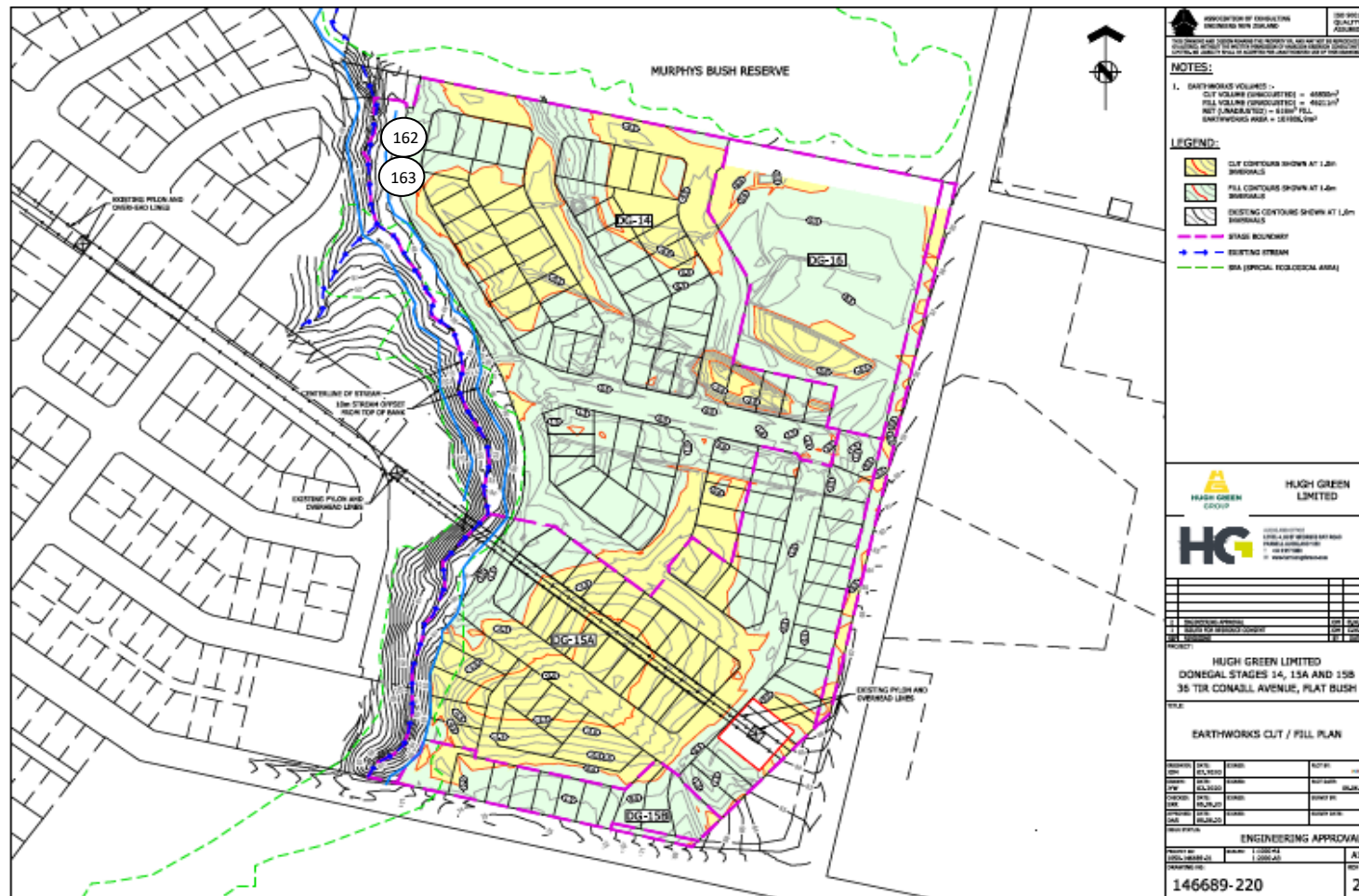
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 19/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00551
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00551

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
23/04/2021	ETAM21W00551	SC	164	1.87	29.0	1.45	2.70	5	UTP	UTP	UTP	UTP	RW B, CH 7	1770612	5905334	50.52	Silty CLAY	Retest of Test No. 159
23/04/2021	ETAM21W00551	SC	165	1.84	28.2	1.43	2.70	7	180+	180+	180+	180+	RW B, CH 46	1770630	5905296	51.85	Silty CLAY	
23/04/2021	ETAM21W00551	SC	166	1.87	34.0	1.39	2.70	1	170	170	170	153	RW B, CH 66	1770640	5905277	53.14	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00551

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 23/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00553
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00553

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 27/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
23/04/2021	ETAM21W00553	SC	167	1.94	24.7	1.56	2.70	4	UTP	UTP	UTP	UTP	Stage 16	1770831	5905292	55.50	Silty CLAY	
23/04/2021	ETAM21W00553	SC	168	1.95	23.5	1.58	2.70	4	UTP	UTP	UTP	UTP	Stage 16	1770829	5905313	55.55	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00553

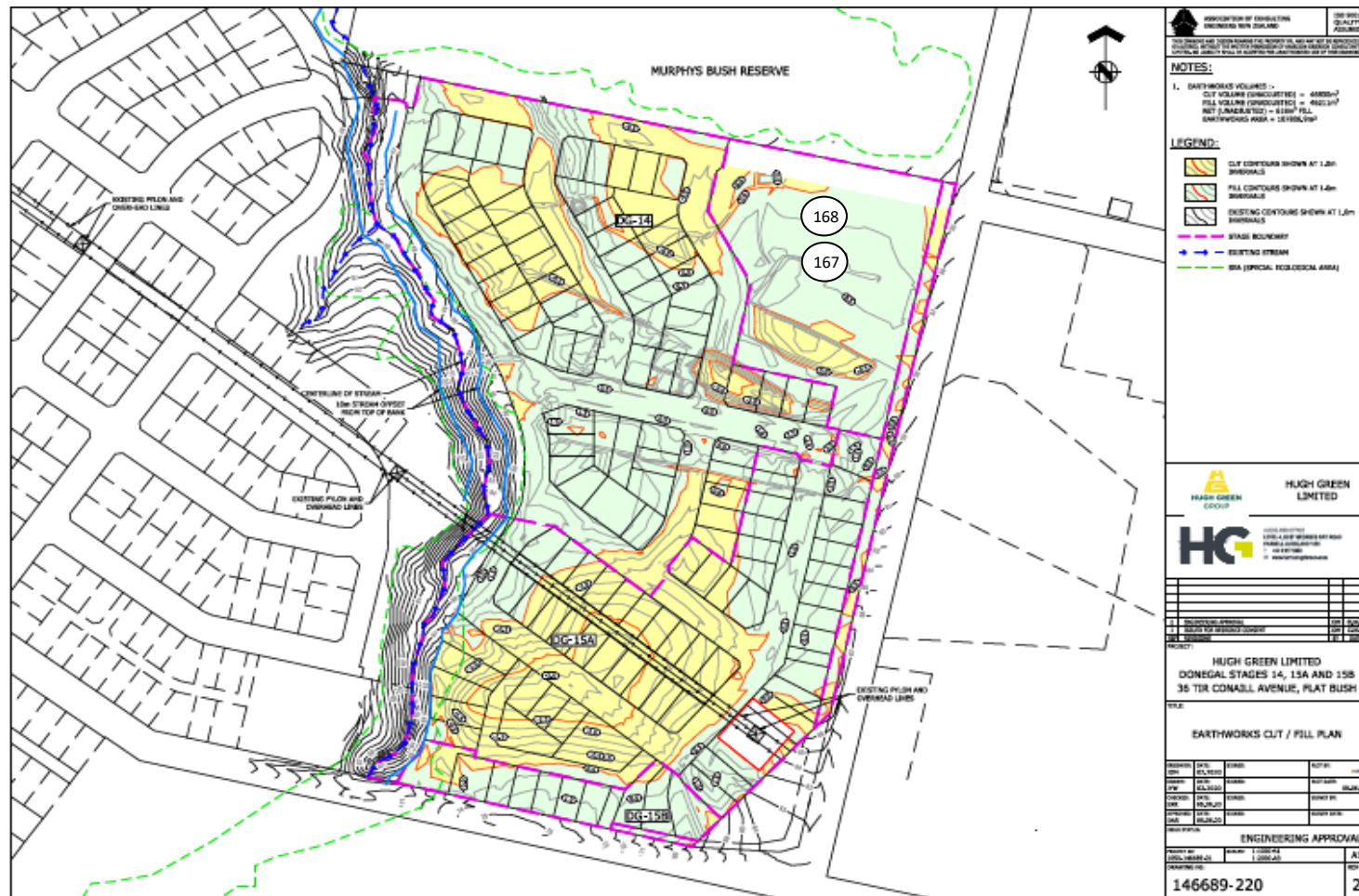
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 23/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00560
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00560

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 28/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
27/04/2021	ETAM21W00560	LW	169	1.84	30.0	1.42	2.70	5	179+	179+	140	146	RW B, CH 175	1770654	5905263	53.30	Silty CLAY	
27/04/2021	ETAM21W00560	LW	170	1.83	34.3	1.36	2.70	3	179+	179+	179+	179+	RW B, CH 168	1770649	5905272	53.30	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00560

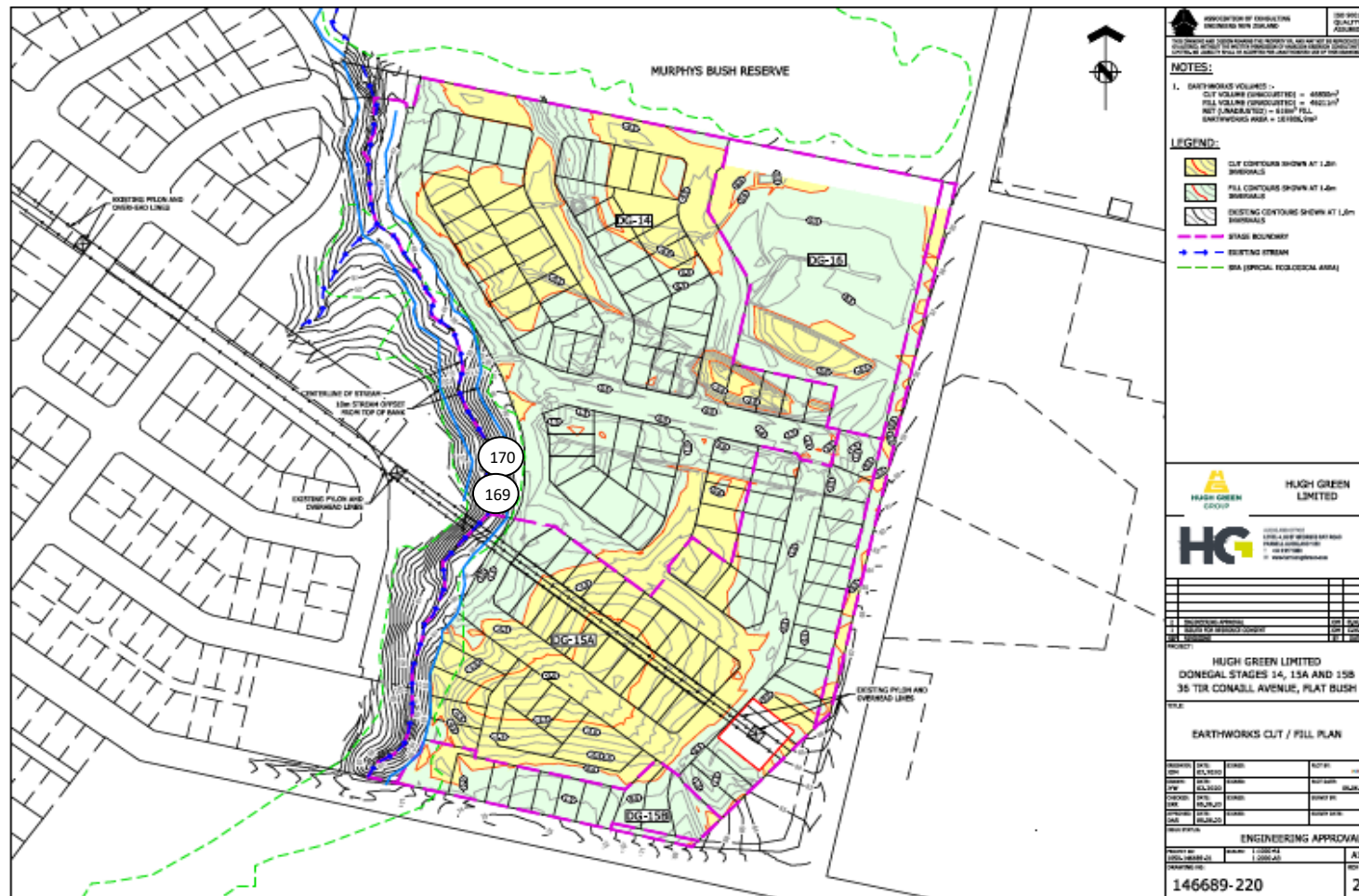
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 27/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00563
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00563

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 29/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
28/04/2021	ETAM21W00563	LW	171	1.91	27.4	1.50	2.70	4	146	156	179+	179+	RW B, CH 171	1770649	5905265	53.80	Silty CLAY	
28/04/2021	ETAM21W00563	LW	172	1.86	34.2	1.39	2.70	1	179+	179+	179+	168	RW B, CH 160	1770645	5905275	53.65	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00563

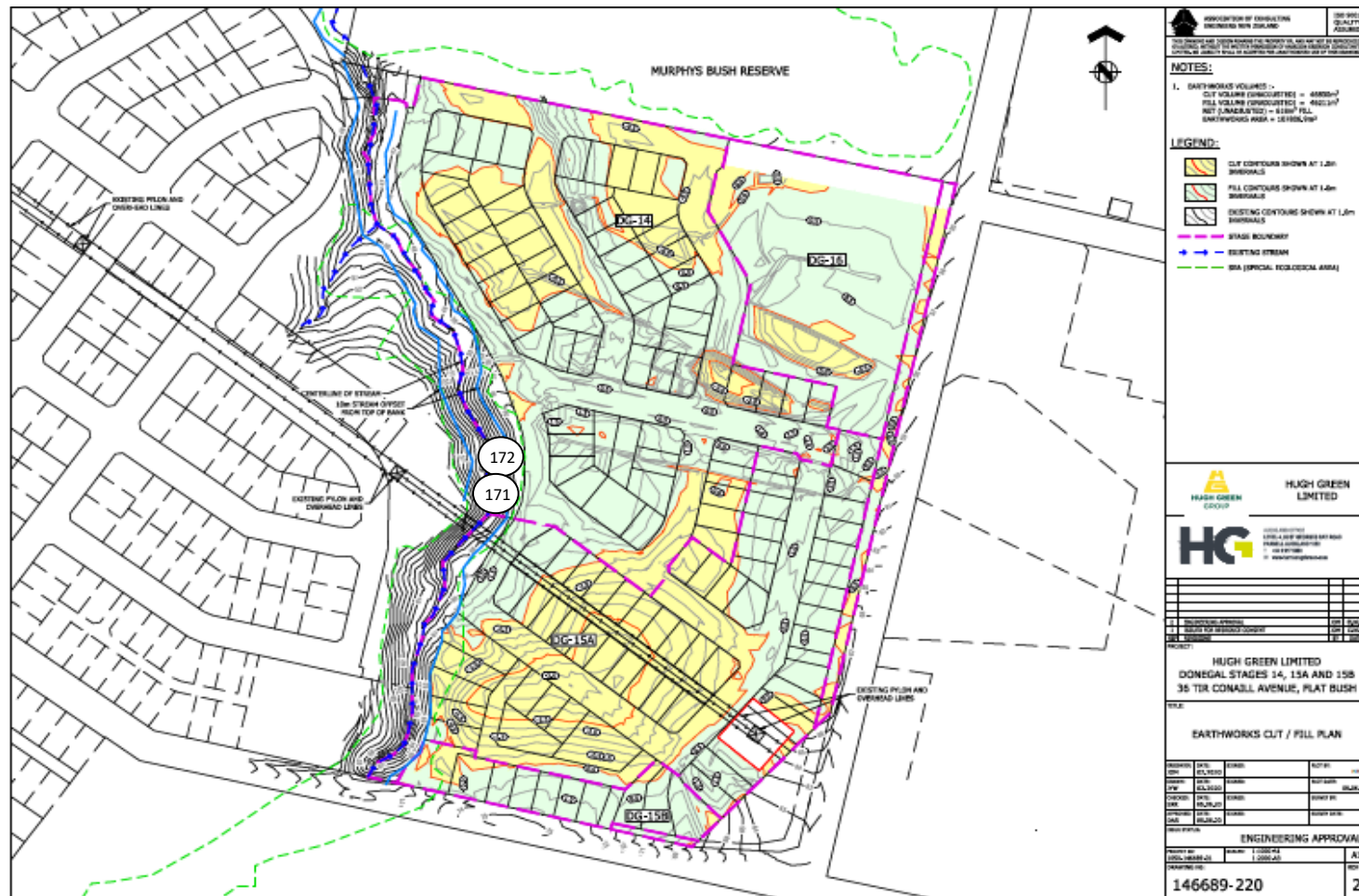
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 28/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00564
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00564

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 29/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
28/04/2021	ETAM21W00564	LW	173	1.93	25.7	1.54	2.70	4	UTP	UTP	UTP	UTP	RW B, CH 170	1770652	5905263	54.25	Silty CLAY	
28/04/2021	ETAM21W00564	LW	174	1.99	21.6	1.63	2.70	4	UTP	UTP	UTP	UTP	RW B, CH 160	1770647	5905273	54.05	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00564

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 28/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00570
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00570

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 30/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
29/04/2021	ETAM21W00570	LW	175	1.94	36.9	1.42	2.70	0	UTP	UTP	UTP	179+	RW B, CH 173	1770655	5905264	54.75	Silty CLAY	
29/04/2021	ETAM21W00570	LW	176	1.92	30.9	1.47	2.70	0	UTP	UTP	UTP	168	RW B, CH 165	1770651	5905274	54.20	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00570

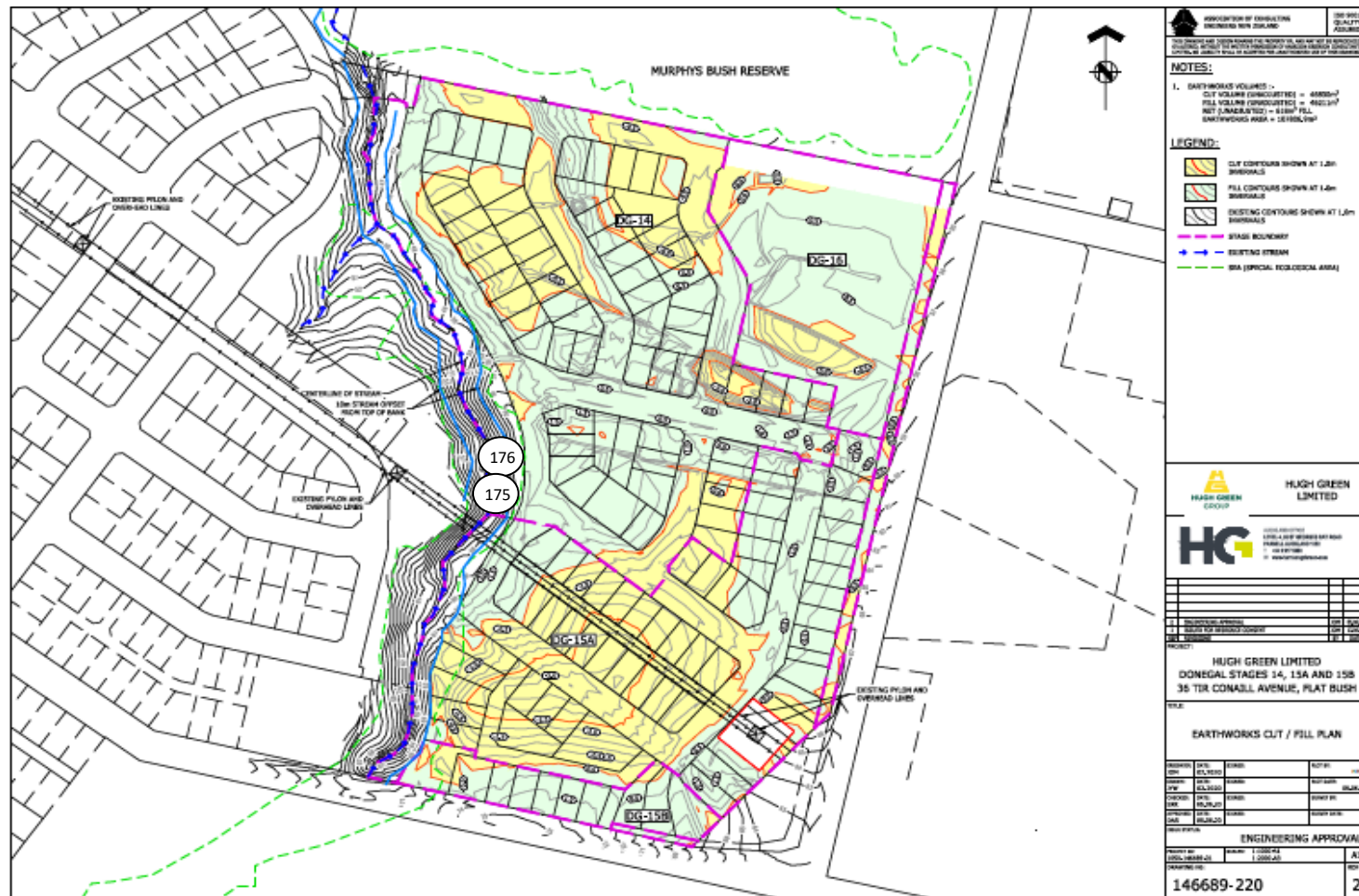
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 29/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00579
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00579

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 3/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
30/04/2021	ETAM21W00579	LW	177	1.85	38.7	1.33	2.70	0	179+	179+	179+	179+	RW B Embankment	1770645	5905266	54.00	Silty CLAY	
30/04/2021	ETAM21W00579	LW	178	1.87	39.2	1.34	2.70	0	UTP	UTP	UTP	179+	RW B Embankment	1770646	5905253	54.45	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00579

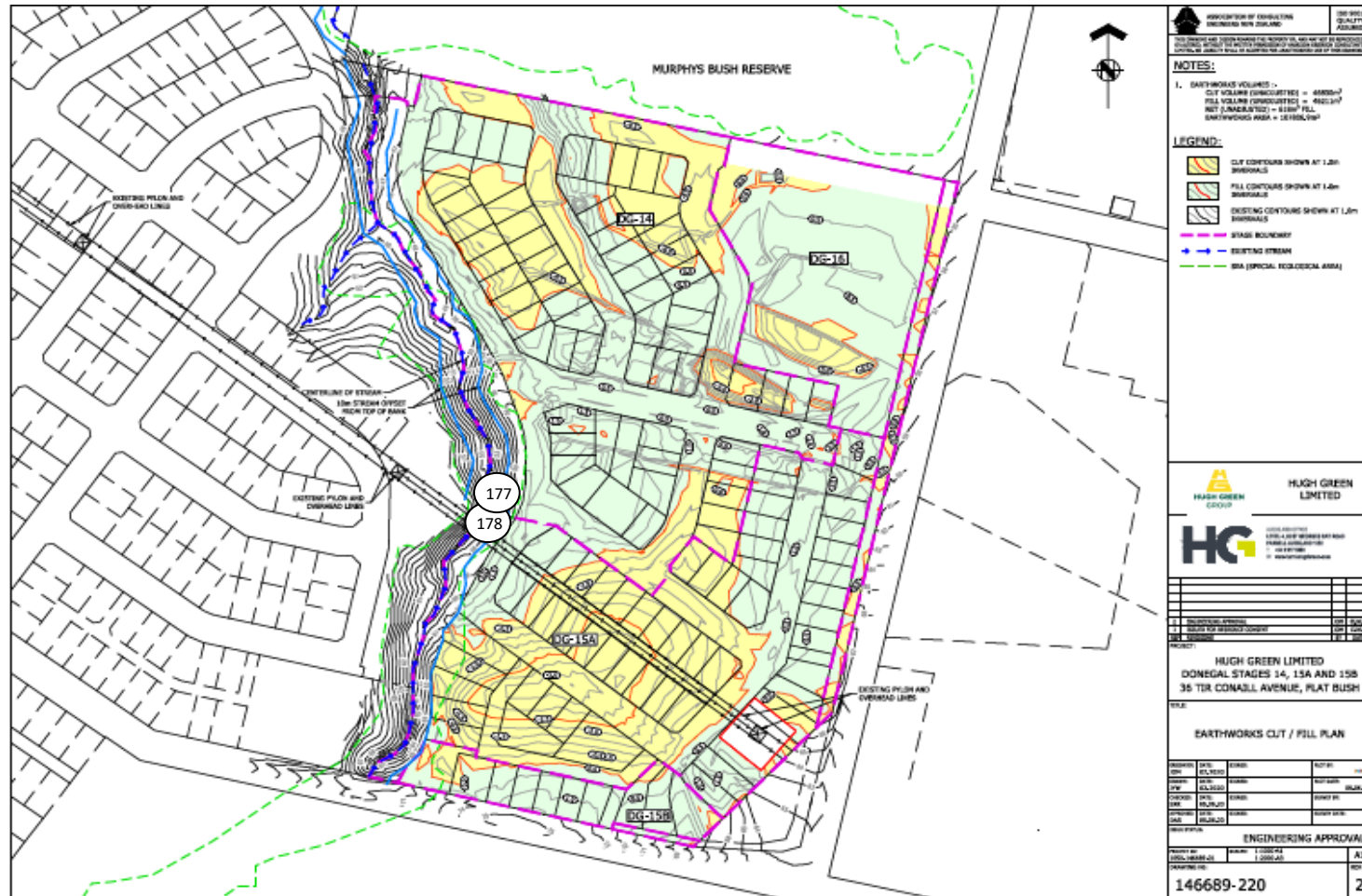
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 30/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00584
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00584

Client: Tetra Tech Coffey (NZ) Limited- Auckland
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
(This document may not be altered or reproduced except in full. This report relates only to the positions tested.)



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 5/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
3/05/2021	ETAM21W00584	LW	179	1.92	27.6	1.51	2.70	3	180+	180+	180+	180+	Stage 16	1770829	5905296	56.70	Silty CLAY	
3/05/2021	ETAM21W00584	LW	180	1.86	28.3	1.45	2.70	5	180+	180+	180+	180+	Stage 16	1770842	5905325	55.30	Silty CLAY	
3/05/2021	ETAM21W00584	LW	181	1.93	26.6	1.53	2.70	3	180+	180+	180+	180+	Stage 16	1770875	5905326	55.20	Silty CLAY	
3/05/2021	ETAM21W00584	LW	182	1.81	29.6	1.40	2.70	7	180+	180+	180+	180+	RW B, Backfill	1770648	5905263	54.57	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00584

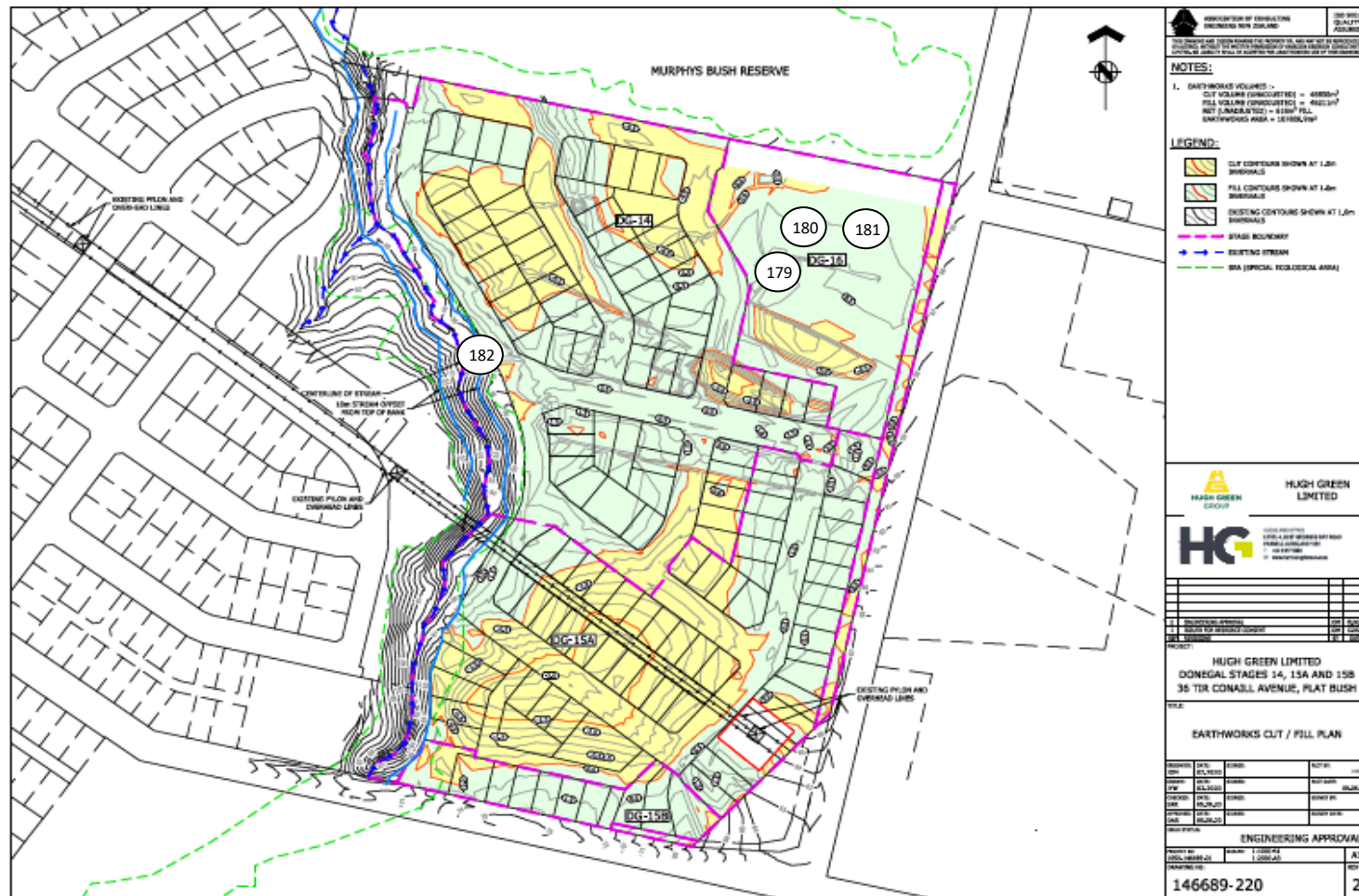
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 3/05/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00685
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00685

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 24/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
20/05/2021	ETAM21W00685	AK	183	1.77	38.8	1.28	2.70	3	UTP	UTP	UTP	UTP	Retaining Wall C	1770650	5905137	59.30	Clayey Silt	CH 37
20/05/2021	ETAM21W00685	AK	184	1.73	41.6	1.22	2.70	4	94	94	101	101	Retaining Wall C	1770639	5905118	59.90	Clayey Silt	CH 36
20/05/2021	ETAM21W00685	AK	185	1.75	41.9	1.23	2.70	3	79	94	108	101	Retaining Wall C	1770630	5905110	60.37	Clayey Silt	CH 47

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client:	Coffey Services (NZ) Limited (Auckland) PO Box 8261, Symonds Street Auckland 1150
Principal:	Ray Berry
cc to:	-
Project No.:	773-ETAM01121AA
Project Name.:	773-GENZAUCK16856AE - DONEGAL STUD
Project Location:	DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00685

Issue No:1

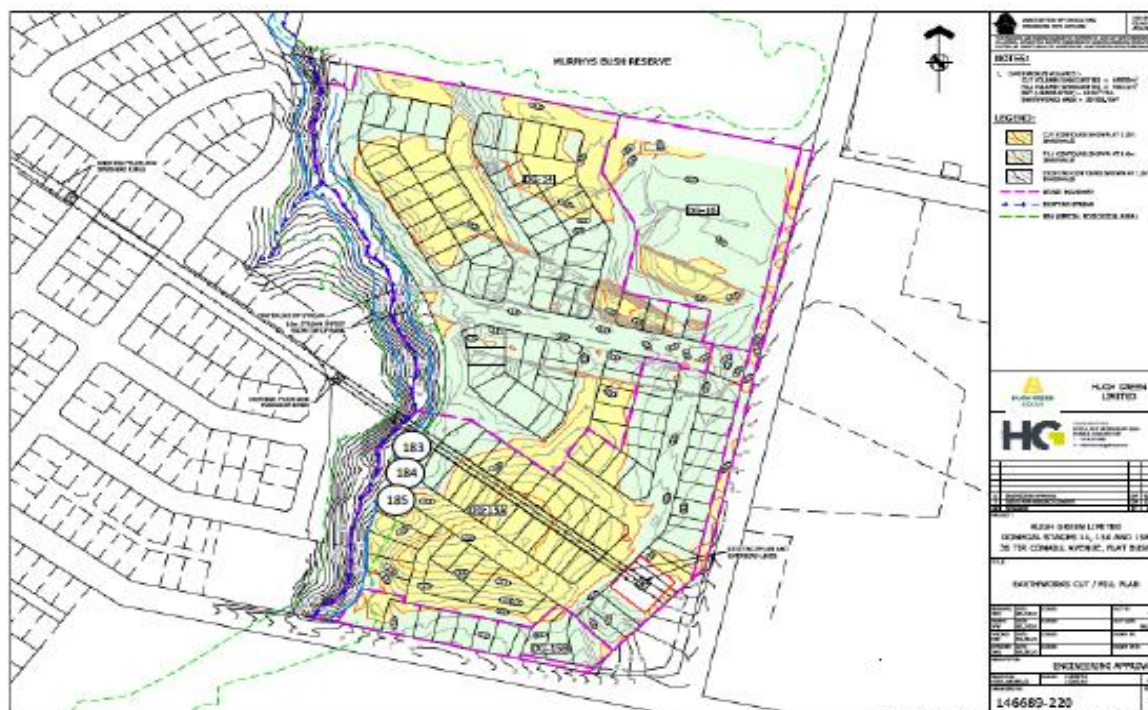
This report replaces all previous issues of report no. EFIL:ETAM21W00685

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.

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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 24/05/2021



SITE PLAN - NOT TO SCALE

Earthworks Fill Report

Report No: EFIL:ETAM21W00693
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00693

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 24/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZS 2001); Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2); Water Content Testing (in accordance with NZS 4402:1986 Test 2.1);

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
21/05/2021	ETAM21W00693	AK	186	1.92	24.1	1.54	2.70	6	101	101	137	137	Retaining Wall C, CH 36	1770639	5905118	59.9	Clayey SILT	Retest of Test No. 184

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00693

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00693

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Handwritten signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 24/05/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00702
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00702

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 25/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
24/05/2021	ETAM21W00702	AK	187	1.80	38.1	1.30	2.70	2	170	180+	145	145	Retaining Wall C, CH 13	1770646	5905140	59.50	Clayey SILT	
24/05/2021	ETAM21W00702	AK	188	1.78	35.6	1.31	2.70	5	UTP	UTP	180	178	Retaining Wall C, CH 36	1770639	5905118	59.30	Clayey SILT	Retest of Test No. 186
24/05/2021	ETAM21W00702	AK	189	1.75	39.4	1.25	2.70	4	170	170	153	153	Retaining Wall C, CH 47	1770630	5905110	60.37	Clayey SILT	Retest of Test No. 185

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00702

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00702

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

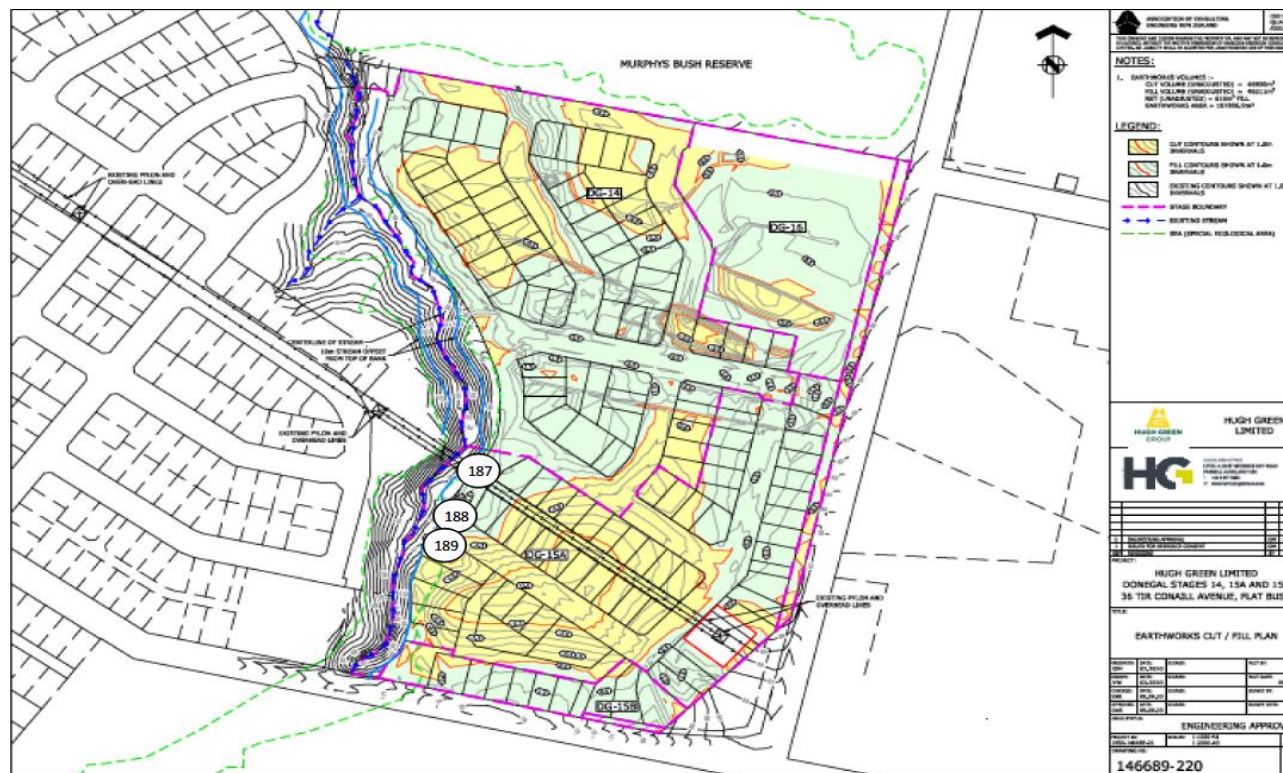
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 25/05/2021



SITE PLAN - NOT TO SCALE

Earthworks Fill Report

Report No: EFIL:ETAM21W00706
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00706

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 26/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
25/05/2021	ETAM21W00706	AK	190	1.78	35.9	1.31	2.70	4	180+	180+	180+	145	Retaining Wall C, CH 20	1770638	590126	59.75	Silty CLAY	
25/05/2021	ETAM21W00706	AK	191	1.77	40.9	1.26	2.70	2	145	161	153	153	Retaining Wall C, CH 38	1770631	590111	60.80	Silty CLAY	
25/05/2021	ETAM21W00706	AK	192	1.75	42.9	1.23	2.70	2	161	170	145	170	Retaining Wall C, CH 50	1770638	590116	61.50	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00706

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00706

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 26/05/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00716
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00716

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
26/05/2021	ETAM21W00716	LW	193	1.81	41.0	1.28	2.70	0	179+	179+	179+	179+	RW C, CH 45	1770632	5905111	61.30	Silty CLAY	
26/05/2021	ETAM21W00716	LW	194	1.77	38.4	1.28	2.70	4	179+	179+	179+	179+	RW C, CH 25	1770642	5905126	60.30	Silty CLAY	
26/05/2021	ETAM21W00716	LW	195	1.85	33.5	1.38	2.70	3	179+	179+	179+	179+	RW C, CH 5	1770654	5905141	59.75	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00716

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00716

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/05/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00717
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00717

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
26/05/2021	ETAM21W00717	LW	196	1.84	30.8	1.40	2.70	5	UTP	UTP	179+	179+	Retaining Wall C, CH 50	1770634	5905108	61.45	Silty CLAY	
26/05/2021	ETAM21W00717	LW	197	1.83	35.0	1.36	2.70	3	UTP	UTP	179+	179+	Retaining Wall C, CH 30	1770641	5905125	60.80	Silty CLAY	
26/05/2021	ETAM21W00717	LW	198	1.86	34.8	1.38	2.70	1	UTP	UTP	UTP	179+	Retaining Wall C, CH 5	1770652	5905142	59.95	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00717

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00717

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/05/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00938
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00938

Client: Tetra Tech Coffey (NZ) Limited- Auckland
 Coffey House, Level 4, Teed Street
 New Market Auckland 1023
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 13/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
12/07/2021	ETAM21W00938	LW	199	1.75	38.9	1.26	2.70	4	105	125	134	143	Stage 15 B Fill Area	1770646	5904979	-	Silty CLAY	0.6m below finish level
12/07/2021	ETAM21W00938	LW	200	1.85	30.7	1.42	2.70	4	146	120	149	128	Stage 15 B Fill Area	1770660	5904979	-	Silty CLAY	0.6m below finish level
12/07/2021	ETAM21W00938	LW	201	1.94	27.2	1.52	2.70	2	118	113	108	131	Stage 15 B Fill Area	1770672	5904973	-	Silty CLAY	0.7m below finish level
12/07/2021	ETAM21W00938	LW	202	1.85	31.9	1.40	2.70	4	140	134	123	128	Stage 15 B Fill Area	1770699	5904967	-	Silty CLAY	0.9m below finish level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00938

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00938



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 13/07/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00944
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00944

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 14/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
13/07/2021	ETAM21W00944	SC	203	1.81	37.0	1.32	2.70	2	108	105	125	134	Stage 15B Fill Area	1770646	5904979	-	Silty CLAY	Retest of Test No. 199
13/07/2021	ETAM21W00944	SC	204	1.84	40.5	1.31	2.70	0	118	108	123	120	Stage 15B Fill Area	1770660	5904979	-	Silty CLAY	Retest of Test No. 200
13/07/2021	ETAM21W00944	SC	205	1.88	33.4	1.41	2.70	1	134	134	105	108	Stage 15B Fill Area	1770672	5904973	-	Silty CLAY	Retest of Test No. 201
13/07/2021	ETAM21W00944	SC	206	1.84	34.2	1.37	2.70	3	128	108	118	120	Stage 15B Fill Area	1770699	5904967	-	Silty CLAY	Retest of Test No. 202

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00944

Issue No: 1

This report replaces all previous issues of report no. EFIL:ETAM21W00944



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 14/07/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00946
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00946

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
14/07/2021	ETAM21W00946	LW	207	1.77	32.5	1.34	2.70	7	179+	156	131	143	Stage 15B Fill Area	1770652	5904976	-	Silty CLAY	Retest of Test Nos. 199, 203
14/07/2021	ETAM21W00946	LW	208	1.88	32.9	1.42	2.70	1	179+	179+	179+	164	Stage 15B Fill Area	1770662	5904975	-	Silty CLAY	Retest of Test Nos. 200, 204
14/07/2021	ETAM21W00946	LW	209	1.86	29.0	1.44	2.70	5	179+	179+	179+	179+	Stage 15B Fill Area	1770682	5904974	-	Silty CLAY	Retest of Test Nos. 201, 205
14/07/2021	ETAM21W00946	LW	210	1.85	33.3	1.39	2.70	3	179+	179+	168	160	Stage 15B Fill Area	1770695	5904968	-	Silty CLAY	Retest of Test Nos. 202, 206

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00946

Issue No: 1

This report replaces all previous issues of report no. EFIL:ETAM21W00946



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/07/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00960
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00960

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
15/07/2021	ETAM21W00960	SC	211	1.89	30.8	1.45	2.70	2	168	168	168	168	Stage 15 B	1770652	5904976	-	Silty CLAY	0.6m below finished level
15/07/2021	ETAM21W00960	SC	212	1.85	34.6	1.37	2.70	2	164	164	168	168	Stage 15 B	1770662	5904982	-	Silty CLAY	0.3m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00960

Issue No: 1

This report replaces all previous issues of report no. EFIL:ETAM21W00960



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/07/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00971
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00971

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 19/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
16/07/2021	ETAM21W00971	SC	213	1.81	28.6	1.41	2.70	8	177	177	173	170	Stage 16 Backfill	1770824	5905358	-	Silty CLAY, aggregate present	2.5m below finished level
16/07/2021	ETAM21W00971	SC	214	1.86	38.2	1.35	2.70	0	177	177	159	159	Stage 15 B Backfill	1770691	5904974	-		At finished level
16/07/2021	ETAM21W00971	SC	215	1.93	35.4	1.42	2.70	0	177	177	159	159	Stage 15 B Backfill	1770673	5904975	-		At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

APPENDIX D: GEOTECHNICAL COMPLETION REPORT FOR DONEGAL STUD STAGE 14

Donegal Stud Residential Subdivision Stage 14 at 36 Tir Conaill Avenue, Flat Bush

Geotechnical Completion Report

Hugh Green Limited



Reference: GENZAUCK16856AE

27 September 2021

DONEGAL STUD RESIDENTIAL SUBDIVISION STAGE 14 AT 36 TIR CONAILL AVENUE

Geotechnical Completion Report

Report reference number: GENZAUCK16856AE

27 September 2021

PREPARED FOR

Hugh Green Limited

C/- Harrison Grierson Consultants Limited
PO Box 5760
Wellesley Street
Auckland 1051

PREPARED BY

Tetra Tech Coffey

Level 4, 25 Teed Street, Newmarket
Auckland
1023 New Zealand
p: +64 9 379 9463

NZBN 9429033691923

QUALITY INFORMATION

Revision history

Revision	Description	Date	Author	Reviewer	Approver
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1. INTRODUCTION

This Geotechnical Completion Report has been prepared for Hugh Green limited as part of the documentation required to be submitted to the Auckland Council following residential subdivisional development.

It contains our Suitability Statement, relevant test data and the Harrison Grierson Consultants Limited as-built plan set relating to Stage 14 of the Donegal Stud Residential Subdivision as follows:

Table 1: Harrison Grierson Consultants Limited As-Built Plans

Title	Reference No.	Date
Finished Contours As-Built Plan	146689-14-AB200	27/10/2021
Cut to Fill As-Built Plan	146689-14-AB220	03/09/2021
Overall Stormwater As-Built Plan	146689-14-AB400	29/10/2021
Stormwater As-Built Plan Sheets 1	146689-14-AB401	29/10/2021
Stormwater As-Built Plan Sheets 2	146689-14-AB402	29/10/2021

This report covers the construction period between October 2020 and August 2021 and is intended to be used for certification purposes for:

- 63 residential lots numbered Lots 1 to 46, 51 to 66 and 150;
- The extension of Bushfield Drive;
- 5 new roads named Crossgar Drive, Knockanara Drive, Koromeke Street, Tullymore Drive and Uru Drive;
- 1 local purpose (drainage) reserve numbered Lot 400, and
- The construction of a culvert road crossing on Bushfield Drive.

Stage 14 is located at 36 Tir Conaill Avenue, Flat Bush, and as can be seen on the Cut to Fill As-Built Plan, most of the lots in Stage 14 have been partly or totally affected across the wider development by filling to a maximum depth of approximately 2.5 metres. However, isolated fill depths of up 8 metres have been placed to construct the culvert road crossing which connects Donegal Stud Stages 13 and 14 on Bushfield Drive.

2. RELATED REPORTS

Previous Tetra Tech Coffey geotechnical reports prepared for the subject land include:

- Geotechnical Investigation Report on Proposed Donegal Stud Stage 10 Residential Subdivision, 62 Thomas Road, Flat Bush, reference GENZAUCK16856AB, dated 11 May 2017;
- Slope Stability Assessment for Eastern and Western Boundary Gully Flanks, reference GENZAUCK16856AB, dated 16 April 2018;
- Geotechnical Completion Report on Donegal Stud Stage 10A, reference GENZAUCK16856AB, dated 24 September 2018;
- Geotechnical Completion Report on Donegal Stud Stage 10A Residential Subdivision, 84 Thomas Road, Flat Bush, reference GENZAUCK16856AB, dated 24 September 2018;
- Slope Stability in Recreation Reserve (Lot 406), reference 16856AB, dated 2 April 2019;
- Geotechnical Completion Report on Donegal Stud Stage 10B Residential Subdivision, 84 Thomas Road, Flat Bush, reference GENZAUCK16856AB, dated 9 August 2019;

- Slope Stability in Recreation Reserve (Lot 408), reference 16856AE, dated 6 December 2019;
- Proposed MSE Block Retaining Wall at Road 6 Donegal Stud Stage 13 Residential Subdivision Flat Bush, reference GENZAUCK16856AE, dated 23 January 2020;
- Geotechnical Investigation Report on Proposed Donegal Stud Stage 14-16 at, 64 Thomas Road, Flat Bush, reference GENZAUCK16856AE, dated 8 April 2020; and,
- Geotechnical Completion Report on Donegal Stud Stages 13, Flat Bush, reference GENZAUCK16856AE, dated 19 January 2021.

The conclusions and recommendations of the above documents (where relevant) have been referenced as part of the preparation of this report.

3. EARTHWORKS OPERATIONS

3.1 PLANT

The main items of plant used by the subdivision contractor, Dempsey Wood Civil Limited, included:

- Motor Scrapers;
- Bulldozers with Scoops;
- Bulldozers;
- Dump Trucks;
- Excavators;
- Tractor with Discs;
- Tractors;
- Front End Loaders;
- Water Trucks;
- Sheep Foot Compactors;
- Pad Foot Compactor;
- Graders; and
- Vibrating Drum Rollers.

3.2 CONSTRUCTION PROGRAMME

Earthworks operations for Donegal Stud Stage 14 commenced in October 2020 with enabling works, primarily the construction of topsoil bunds, silt traps and a large sediment pond in the vicinity of Lots 56 and 57. Topsoil stripping commenced shortly after the enabling works were complete and focussed on removing topsoil from an area between Koromeke Street and Crossgar Drive.

During this phase of work a groundwater spring was uncovered in a shallow gully located at the intersection of Bushfield and Tullymore Drives. To provide control over groundwater during this phase of work a 160mmØ perforated drain coil was placed into a trench cut into the invert of the gully. Prior to placement and covering of the coil with drainage metal the trench was lined with geotextile cloth and then placed over the drain coil and metal.

By November 2020 conditioning and blending of stockpiled materials for use as fill commenced and as the materials reached optimum moisture levels it was uplifted and placed fill over the area stripped of topsoil. As these works progressed the area between Koromeke Street and Knockanara Drive was stripped of topsoil so

insitu materials over this area could be down cut and placed as fill over the northern portions of Donegal Stud Stage 14. By mid-December 2020 the majority of the bulk earthworks had been completed over Stage 14.

Earthworks re-commenced after the Christmas holiday break in early January 2021 with the construction of Retaining Wall A, near the north western corner of Stage 14. The foundation soils exposed within the excavation comprised very stiff to hard, natural silty clay that was consistent along the entirety of the foundation excavation.

As work to construct Retaining Wall A continued, Retaining Wall B foundation line was stripped of unsuitable materials. The composition of the subsoils observed along the foundation line were consistent with those observed along the foundation line of Retaining Wall A and measured soils strengths were also very stiff to hard.

Our inspections also observed that during the stripping of unsuitable materials from the Retaining Wall B foundation line an old farm track retaining wall was encountered near the southern end. The farm track retaining wall was in a state of disrepair and was deemed unsuitable to carry foundation loads associated with Retaining Wall B. As a result, the farm track retaining wall and associated backfill were completely removed (undercut) and disposed of offsite.

To reinstate the undercut ground back to design subgrade level an approximately 1.5m high geogrid reinforced embankment was constructed from soft pit run (SPR) hardfill. To construct the reinforced embankment a 4m wide platform was cut into the natural soils beneath Retaining Wall B. Geogrid was then placed over the base of the excavation before SPR was placed and compacted to form a 0.5m thick layer. The base layer of the geogrid was then wrapped over the face and placed on top of the SPR before the next layer of geogrid was placed. This process was repeated until design subgrade level for Retaining Wall B was reached.

We also visited the site on numerous occasions between January 2021 and July 2021 and observed the construction of the box culvert that forms the stream crossing within the western portion of the Donegal Stud Stage 14 residential subdivision.

By January 2021 work commenced on the construction of a box culvert road crossing located in the north western corner of Stage 14, on Bushfield Drive. Prior to the construction of the box culvert the existing watercourse was widened and deepened to design invert levels. During the initial earthworks, all soft, saturated and/or organic material was removed and the base of the box culvert sections were embedded into dense Waitemata Group Transition Zone materials or very dense dark grey sandstone.

As an added protection to prevent stormwater passing beneath the box culvert sections, a 0.5m wide x 0.5m deep concrete cut-off trench was installed across front of the box culvert inlet with the cut-off extending 1m into the gully flanks on each side.

Backfilling of the box culvert to form the subgrade for the road crossing commenced once all box culvert sections had been lifted into place and the foundations for the block walls had been formed. Backfilling of the block walls and placement of geogrid continued steadily from mid-January 2021 to mid-July 2021. During this period, we observed the foundation excavations for the associated retaining walls. Once foundation construction for the box culvert and retaining walls were complete, we then monitored the placement and compaction of hardfill to form the road subgrade.

During the construction of the Bushfield Drive culvert road crossing a 160mmØ perforated underfill drain coil was placed in the base of a 4m depth trench that was cut along the crest of the gully flank along Koromeke Street between the intersections of Koromeke Street and Uru Drive. The underfill drain was installed to act as a cut-off drain by intercepting groundwater flows that may lead to saturation and weakening of the soils forming the steeper gully slopes. To provide redundancy, a second perforated drain coil was placed at invert level of a stormwater line installed within the road reserve between the intersections of Koromeke Street and Uru Drive.

4. QUALITY ASSURANCE AND CONTROLS

4.1 INSPECTIONS

During the earthworks operation engineering inspections were undertaken on a regular basis to assess compliance with NZS 4431:1989 and our project specific recommendations and specifications. Project specific inspections were required on Stage 14 for:

- Topsoil stripping;
- Undercuts to remove soft and/or unsuitable material and to confirm that adequate strength base materials had been exposed;
- Retaining wall construction;
- Culvert construction;
- Removal of existing stockpiles;
- Gully areas prior to the placement of fill materials to ascertain that all mullock and soft inorganic subsoils had been satisfactorily removed;
- Placement of underfill drainage in the bases of the gullies or along the crests of moderately steep slopes to enhance slope stability;
- Silt pond stripping and preparation for backfilling to ensure that all soft unsuitable material had been removed; and
- Observation of bulk cut to fill operations and compaction testing on Engineered fill.

4.2 QUALITY CONTROL CRITERIA

4.2.1 Compaction

Due to the varying soil types being used as filling, the compaction control criteria of minimum allowable shear strength and maximum allowable air voids were mainly used for quality assurance purposes.

Specification details were as follows:

Minimum Shear Strength and Maximum Air Voids Method

Table 2: Minimum Shear Strength and Maximum Air Voids Method

(a)	<u>Air Voids Percentage</u>	
	(As defined in NZS 4402)	
	General Fill	
	Average value less than	10%
	Maximum single value	12%
(b)	<u>Undrained Shear Strength</u>	
	(Measured by Pilcon shear vane - calibrated using NZGS 2001 method)	
	General fill	
	Average value not less than	140 kPa
	Minimum single value	120 kPa

Note: The average value shall be determined over any ten consecutive tests

4.3 QUALITY ASSURANCE TESTING

4.3.1 Compaction

Regular insitu density, strength and water content tests were carried out on all areas of the filling at or in excess of the frequency recommended by NZS 4431:1989.

Control tests carried out on the filling showed that on a few occasions the required compaction standards were not achieved. Results of these test failures were relayed to the site foreman and/or his staff, and to the best of our knowledge the affected areas of fill were re-worked as necessary.

In each case, further testing was carried out until compliance with the above standards was achieved.

5. PROJECT EVALUATION

5.1 BEARING CAPACITY AND SETTLEMENT OF BUILDING FOUNDATIONS

Following the completion of earthworks operations, we returned to the site during May 2021 and drilled a series of hand auger boreholes at appropriate locations in order to evaluate likely foundation options for future residential building development. Typical topsoil depths on each lot were also assessed at this time.

Based on the findings of the boreholes we have assessed that at current subgrade levels, all cut, filled and undisturbed natural ground has a geotechnical ultimate bearing capacity of 300 kPa (as required by NZS 3604:2011) within the zone of influence of conventional shallow residential building foundation loads.

It should be noted that NZS 3604:2011 only allows a maximum backfill depth of 600mm over the building platform of a dwelling unless an Engineering design solution is proposed, on account of the risk of induced consolidation of the subsoils caused by the weight of the backfill.

5.2 EXPANSIVE SOILS

Three sets of laboratory Shrink Swell Index Tests were carried out on samples selected from within the zone of likely influence of future shallow building foundations over the wider area of Stages 14 to 16, one test per stage area.

These tests were carried out in accordance with AS1289, Methods of Testing Soils for Engineering Purposes test Section 7 and were primarily intended to assess the Expansive Site Class of the site materials as defined in AS2870, "Residential Slabs and Footings – Construction".

All test results are IANZ (International Accreditation New Zealand) endorsed and full details are included in Appendix B.

Based on the results of the laboratory tests together with our visual-tactile assessment and local knowledge, the assessed AS2870 expansive site Class is presented below in Table 3. Specific design alternatives for this site Class are presented in the Suitability Statement.

On some expansive clay sites if cast on-grade floor slab construction takes place during a long dry summer, exposed building platform soils may dry out and become highly desiccated.

Over time the presence of the floor slab will cause capillary rise of moisture to the underside of the damp proof course and potentially expansive dry ground may wet up and swell, causing floor slab uplift. The effect may be very slight in some cases and extreme in others, especially if free water can reach the central underside of the slab as could occur if any subsoil drainage is discharged beneath the slab or an under-slab water pipe leaks.

Floor slab uplift usually remains unnoticed in carpeted homes but can cause distress on tile floors and in garages where cracks are more apparent. It may also rack upper storeys if non-load bearing ground floor walls are lifted and act as struts. Further, it may cause drainage problems on flat roofed houses where gutter gradients may be reversed.

Thorough soaking (in the form of low flow sprinklers for an extended period rather than flooding of the surface with a hose only once is recommended to allow for infiltration into the soil) of the exposed building platform area a few days before hardfill placement can help to reduce this potential problem. Careful detailing of construction joints in brittle building elements can also be of benefit. Alternatively, removal and replacement of the desiccated surface layers could be undertaken.

5.3 FILL INDUCED SETTLEMENT

As a result of our pre-fill inspections and quality control testing, we are of the opinion that induced differential settlements beneath or within the certified filling due to its imposed weight should be insignificant with respect to conventional NZS 3604:2011 residential building developments.

5.4 SLOPE STABILITY

5.4.1 General

Stability conditions along the gully flank within the Drainage Reserve (Lot 400) have been enhanced by a range of engineering works, including:

5.5 LAND DRAINAGE

5.5.1 Underfill Drains

During the development of Stage 14 a 160mmØ perforated underfill drain coil was placed in the base of a 4m depth trench that was cut along the crest of the gully flank along Koromeke Street between the intersections of Koromeke Street and Uru Drive. To provide redundancy, a second perforated drain coil was placed at invert level of a stormwater line installed within the road reserve between the intersections of Koromeke Street and Uru Drive.

A third 160mmØ perforated underfill drain coil was placed in the base of an overland flowpath beneath the intersection of Bushfield Drive and Tullymore Drive. Both drains are intended to intercept localised groundwater seepages and springs exposed during earthworks and to help provide general control over groundwater levels, as required by NZS 4431:1989. All underfill drains are buried beneath more than 2m depth of Engineered fill and therefore, we do not foresee any construction issues related to the drains due to their locations being either well beyond any building platforms or are at a depth beneath accessways and/or service corridors not to be of concern.

5.6 LOT GRADIENTS

Some of the slopes within Lot 400 Local Purpose (drainage) Reserve, particularly adjacent to Koromeke Street between the intersections of Koromeke Street and Uru Drive, contain land gradients steeper than 1V:4H. We are generally satisfied that these areas are not subject to the hazards described in Section 71(3) of the Building Act.

Details of resulting building and earthworks restrictions in the vicinity of these areas are presented in the Suitability Statement.

5.7 STORMWATER CONTROLS

It is important on all lots that due care is paid to the design and construction of appropriate stormwater disposal systems. These systems should serve to collect all runoff from roofs, driveways and paved areas, together with discharges from retaining wall drains and other subsoil drains and should connect directly into the public stormwater drainage network.

5.8 SERVICE TRENCHES

As is normal on all subdivisions, building developments involving foundations within the 45-degree zone of influence from pipe inverts will require engineering input. However, it is unlikely to be an issue for the Stage 14 lots based on the as-built plans provided.

5.9 ROAD SUBGRADES

Dynamic Cone Penetrometer (DCP) testing was undertaken at regular intervals on the trimmed road subgrades and the results were subsequently forwarded to HGCL for pavement design purposes.

5.10 VEGETATION COVER

Wherever practical on sloping land beyond building platform areas, all existing grass cover should be maintained and even supplemented with new plantings. Any vegetation cleared beyond the immediate area of building platforms for temporary construction purposes should be replanted replaced as soon as possible.

The contribution of appropriate vegetation cover to sediment and erosion control should not be underestimated.

5.11 TOPSOIL

Topsoil depths in likely building platform areas were checked by the drilling of a shallow borehole probe in the approximate centre of each lot. Our findings, which are indicative only and subject to variation at other locations, show that topsoil depths are likely range between 100 mm and 300 mm.

5.12 CONTRACTOR'S WORK

We have relied on the Contractor's work practices and assume that the works have been carried out in accordance with:

- (i) The approved Contract drawings and design details,
- (ii) The approved Contract specifications,
- (iii) Authorised Variations issued during the execution of the works,
- (iv) The conditions of Resource, Earthworks and Building Consents where applicable,
- (v) The relevant Tetra Tech Coffey reports, recommendations and site instructions,

and that all as-built information and other details provided to the Client and/or Tetra Tech Coffey (NZ) Limited are accurate and correct in all respects.

6. STATEMENT OF PROFESSIONAL OPINION AS TO THE SUITABILITY OF LAND FOR BUILDING DEVELOPMENT

I, Chris Armstrong, of Tetra Tech Coffey (NZ) Limited, Auckland, hereby confirm that:

1. I am a Chartered Professional Engineer experienced in the field of geotechnical engineering as defined in section 1.2.3 of NZS 4404:1989 and was retained by the Developer as the Geotechnical Engineer on Stage 14 of the Donegal Stud residential subdivision, Flat Bush.
2. The extent of preliminary investigations carried out to date are described in the Coffey Geotechnical Investigation Report, reference GENZAUCK16856AE, dated 08 April 2020. The conclusions and recommendations of that document have been re-evaluated during the preparation of this report. Details of the results of all tests carried out are appended.

3. In my professional opinion, not to be construed as a guarantee, I consider that:

- a. The earth fills shown on the appended Harrison Grierson Consultants Limited Cut to Fill as-built plan have been placed in compliance with NZS 4431:1989 and related documents.
- b. A geotechnical ultimate bearing capacity of 300 kPa may be assumed for shallow foundation design on all residential lots. Where a geotechnical bearing capacity greater than 300 kPa is required, (i.e. outside the limits of NZS 3604:2011, such as when piling is undertaken), further specific site investigation and design of foundations should be carried out prior to building consent application.
- c. The completed earthworks give due regard to land slope and foundation stability considerations within the residential lots however, as shown on the appended HGCL Finished Contours as-built plan, areas within Lot 400 (Local Purpose Drainage Reserve) have gradients steeper than 1V:4H and as such between the intersections of Koromeke Street and Uru Drive are adjacent to land having such gradients.

No building construction and no earthworks which increases the slope angle or surcharge loading should take place anywhere within the areas shown as steeper than 1 in 4 in the area of Lot 400 unless endorsed by a Chartered Professional Engineer experienced in geomechanics, as such operations may, in certain circumstances, have detrimental effects on overall site stability. Depending on the building design proposals this may require geotechnical investigations.

- d. The backfilling and compaction of the stormwater and sanitary sewer trenches on this subdivision has, where possible, been carried out to appropriate standards having regard for the prevailing ground conditions and associated compaction induced pipe loadings.
- e. Nevertheless, no building development should take place within the 45-degree zone of influence of drain inverts unless endorsed by specific site investigations, foundation designs and by construction inspections undertaken by a Chartered Professional Engineer experienced in geomechanics to ensure that lateral stability and differential settlement issues are addressed and that building loads are transferred beyond the influence of the pipe and the trench backfill.
- f. Although unlikely to be an issue, the function of the underfill drain and cut-off drains placed along Koromeke Street between the intersections of Koromeke Street and Uru Drive and beneath the intersection of Bushfield Drive and Tullymore Drive must not be impaired by any future building development or landscaping works. In particular, any trenched services, bored or driven piles must be positioned to avoid damaging these drains. The presence of all such drains should be recorded on Council's Hazard Register.
- g. The assessed AS 2870:2011 expansive site Class for all residential lots in Stage 14 is M (Moderate).
- h. Subject to the geotechnical recommendations and expansive soil assessment associated with 3(b), 3(c), 3(d), 3(e) and 3(f) above:
 - (i) The cut, filled and original ground within residential lot boundaries is generally suitable for residential buildings constructed in accordance with NZS 3604:2011 (that incorporates specific foundation and associated structural design on account of the expansive soils site Class) and related documents.
 - (ii) On all residential lots in Stage 14 foundation design may be carried out in accordance with AS 2870 (Class M) or alternatively, the foundation design may be carried out in accordance with

NZS3604:2011 provided that in this case the minimum recommended foundation depth below cleared ground level following topsoil removal and benching of building platform areas is 600mm.

4. Road subgrades have been formed having due regard for slope stability and settlement, although CBR values will likely vary between natural and filled ground as is to be expected.

7. LIMITATIONS

The as-built plans and the professional opinion contained within this report are furnished to Auckland Council and Hugh Green Limited for their purposes alone on the express condition that they will not be relied upon by any other person. Prospective purchasers should still satisfy themselves as to any specific conditions pertaining to their particular land interest.

The appended table summarises the status of each residential lot covered by this Suitability Statement.

For and on behalf of Tetra Tech Coffey

Prepared By:

Project Manager:



Tasman Lambert Andrews
Graduate Engineering Geologist



Ray Berry
Associate Engineering Geologist

Reviewed and Authorised By:



Chris Armstrong
Geotechnics Leader Auckland
CMEng.NZ, CPEng

Table 3: Suitability Statement Summary

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870:2011 Class
1	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	180	300	M
2	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	180	300	M
3	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
4	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
5	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
6	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
7	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	240	300	M
8	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
9	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	280	300	M
10	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	100	300	M
11	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
12	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	140	300	M
13	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
14	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	100	300	M
15	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	120	300	M

16	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	130	300	M
17	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
18	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	280	300	M
19	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	280	300	M
20	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	260	300	M
21	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
22	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
23	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	260	300	M
24	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
25	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	100	300	M
26	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	220	300	M
27	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
28	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	220	300	M
29	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
30	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	250	300	M
31	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	220	300	M

32	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	280	300	M
33	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	260	300	M
34	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	180	300	M
35	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
36	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	280	300	M
37	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	130	300	M
38	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	120	300	M
39	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
40	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	100	300	M
41	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	120	300	M
42	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	130	300	M
43	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	150	300	M
44	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	220	300	M
45	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	240	300	M
46	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	290	300	M
51	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	280	300	M

52	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	220	300	M
53	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
54	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	170	300	M
55	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	200	300	M
56	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	100	300	M
57	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	110	300	M
58	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	230	300	M
59	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	180	300	M
60	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	120	300	M
61	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	140	300	M
62	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	180	300	M
63	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	290	300	M
64	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	260	300	M
65	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	240	300	M
66	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	220	300	M
150	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm	160	300	M

APPENDIX A: HARRISON GRIERSON LIMITED AS-BUILT PLANS





ASSOCIATION OF CONSULTING
ENGINEERS NEW ZEALAND

ISO 9001
QUALITY
ASSURED

THIS DRAWING AND DESIGN REMAINS THE PROPERTY OF, AND MAY NOT BE REPRODUCED
OR ALTERED, WITHOUT THE WRITTEN PERMISSION OF HARRISON GRIERSON CONSULTANTS
LIMITED. NO LIABILITY SHALL BE ACCEPTED FOR UNAUTHORISED USE OF THIS DRAWING.

NOTES:

1. ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m

2. ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE

3. SURVEY INFORMATION PROVIDED BY DEMPSEY
WOOD CIVIL LTD AND TO THE BEST OF OUR
KNOWLEDGE IS ACCURATE.

LEGEND:

EARTHWORKS BOUNDARY

STAGE BOUNDARY

CONTOUR MAJOR

CONTOUR MINOR AT 0.5m INTERVALS

EXISTING CONTOURS

1500 PERFORATED & SOCKED
NOVAFLOW COUNTERFORT DRAIN

1500 PERFORATED & SOCKED
NOVAFLOW SUBSOIL DRAIN

ENGINEERING APPROVAL
ENG-60363080



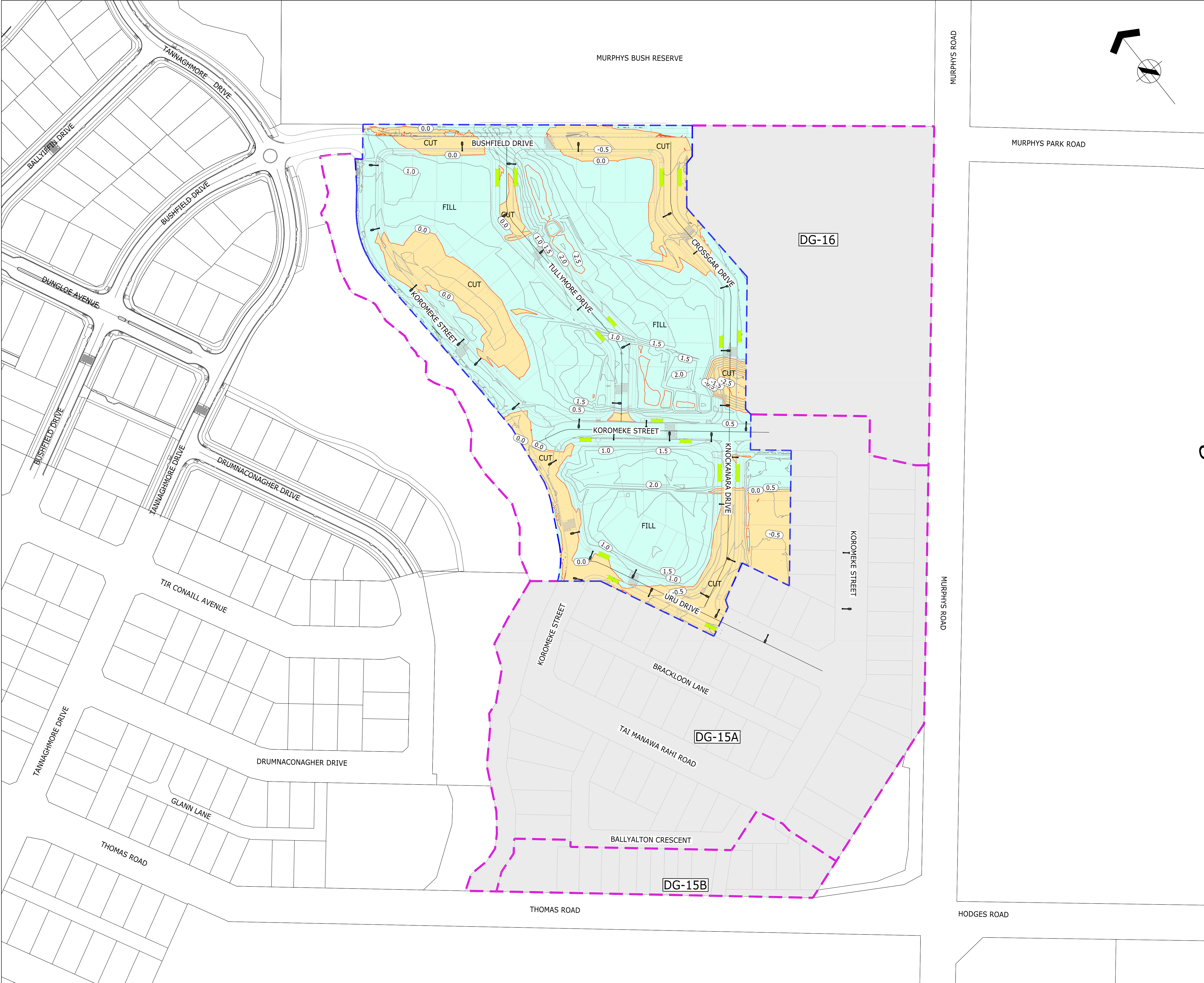
HUGH GREEN
LIMITED




AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5900
W www.harrisongrierson.com

A	AS-BUILT	WXX	27.10.21
REF	REVISIONS	BY	DATE
PROJECT:			
HUGH GREEN LIMITED DONEGAL STAGE 14 36 TIR CONAILL AVENUE, FLAT BUSH			
TITLE:			
FINISHED CONTOURS AS-BUILT PLAN			
ORIGINATOR:	DATE:	SIGNED:	PLOT BY:
WXX	20.08.21		WXX
DRAWN:	DATE:	SIGNED:	PLOT DATE:
WXX	20.08.21		19.08.21
CHECKED:	DATE:	SIGNED:	SURVEY BY:
DDS	26.08.21		DEMPSEY WOOD
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
DAS	31.08.21		08.2021
ISSUE STATUS:			
AS-BUILT			
PROJECT No:	SCALES:		A1
1050-146689-01	1:1000-A1 1:2000-A3		
DRAWING No:			REV
146689-14-AB200			A

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: DATA\LOCAL\AUTODESK\C3D 2021\ENU\TEMPLATE N:\1050\146689_A\CAD\AS BUILTS\STAGE 14\146689-14-AB200.DWG





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LIMITED. NO LIABILITY SHALL BE ACCEPTED FOR UNAUTHORISED USE OF THIS DRAWING.

NOTES:

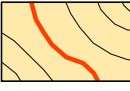
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S 66 SO 48643
RL 54.50m

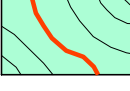
2. ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE


3. EARTHWORKS VOLUMES :
AREA = 43,594.2m²
CUT VOLUME (UNADJUSTED) = 5,759m³
FILL VOLUME (UNADJUSTED) = 31,937m³
NET (UNADJUSTED) = 26,178m³


4. SURVEY INFORMATION PROVIDED BY DEMPSEY
WOOD CIVIL LTD AND TO THE BEST OF OUR
KNOWLEDGE IS ACCURATE.

LEGEND:


 CUT CONTOURS SHOWN AT 0.5m
INTERVALS

 FILL CONTOURS SHOWN AT 0.5m
INTERVALS


 EARTHWORKS BOUNDARY

 STAGE BOUNDARY

ENGINEERING APPROVAL
ENG-60363080



HUGH GREEN
LIMITED



AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5000
W www.harrisonsongrierson.com

A	AS-BUILT	WKK	03.09.21
REF	REVISIONS	BY	DATE
PROJECT:			
HUGH GREEN LIMITED DONEGAL STAGE 14 36 TIR CONAILL AVENUE, FLAT BUSH			
TITLE:			
CUT AND FILL AS-BUILT PLAN			
ORIGINATOR:	DATE:	SIGNED:	PLOT BY:
WKK	04.08.21		WKK
DRAWN:	DATE:	SIGNED:	PLOT DATE:
WKK	04.08.21		08.09.21
CHECKED:	DATE:	SIGNED:	SURVEY BY:
DDS	26.08.21		DEMPSEY WOOD
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
DAS	31.08.21		08.2021
ISSUE STATUS:			
AS-BUILT			
PROJECT No:	SCALES:	A1	
1050-146689-01	1:1000-A1 1:2000-A3		
DRAWING No:	REV		
146689-14-AB220			A

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: DATA\LOCAL\AUTODESK\C3D 2021\ENU\TEMPLATE N:\1050\146689_A\CAD\AS BUILTS\STAGE 14\146689-14-AB220.DWG












ISO 9001
QUALITY
ASSURED

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NOTES:

1. ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m
2. ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mE
1770941.22mE
3. ALL CONNECTIONS ARE DN 100 uPVC. CHAINAGE FOR CONNECTIONS ARE FROM DOWNSTREAM MANHOLE CENTRE.
4. ALL STORMWATER LINES ARE RCRRJ CLASS 2 UNLESS SHOWN OTHERWISE.
5. ALL CATCHPIP LEADS ARE RCRRJ CLASS 4.
6. ALL NEW MANHOLES ARE DN 1050 RC UNLESS SHOWN OTHERWISE.
7. AS-BUILT INFORMATION PROVIDED BY DEMPSEY WOOD CIVIL LTD AND TO THE BEST OF OUR KNOWLEDGE IS ACCURATE.
8. REFER AB480-AB481 FOR RAIN GARDEN DETAILS.

LEGEND:

-
-  NEW PUBLIC STORMWATER LINE & MH
 NEW PUBLIC/ PRIVATE CATCHPIT
 NEW LOT CONNECTION
 EXISTING LOT CONNECTION
 EXISTING SW LINE, MH AND CP
 NEW PUBLIC/ PRIVATE RAINGARDEN
 EXISTING RAINGARDEN
 NEW PRIVATE CONNECTION
 STAGE BOUNDARY

ENGINEERING APPROVAL
ENG-60363080

I CERTIFY THAT THESE ASBUILT PLANS ARE AN ACCURATE RECORD OF THE WORKS UNDERTAKEN AND THAT:

- THE COORDINATES (X,Y) ARE IN TERMS OF NZTM ON NZGD (2000), AND ARE WITHIN $\pm 50\text{mm}$.
- THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL) LINZ DATUM (DOSLI DATUM), AND ARE WITHIN $\pm 25\text{mm}$.

Signed:
REGISTERED PROFESSIONAL SURVEYOR

Date:

Name: STEPHEN JAMES WARDLE

Phone: 09-917-5000

Email: s.wardle@harrisongrierson.com



AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5000
W www.harrisongrlerson.com

A	AS-BUILT			WXK	29.10.2017
REF	REVISIONS			BY	DATE

REV	REV
PROJECT:	

HUGH GREEN LIMITED
DONEGAL STAGE 14
36 TIR CONAILL AVENUE, FLATBUSH

TITLE:

OVERALL STORMWATER AS-BUILT PLAN

ORIGINATOR: WXX	DATE: 31.05.21	SIGNED:	PLOT BY: WXX
DRAWN: WXX	DATE: 31.05.21	SIGNED:	PLOT DATE: 28.10.21
CHECKED: DAS	DATE: 28.10.21	SIGNED:	SURVEY BY: DEMPSEY WOOD
APPROVED: DAS	DATE: 28.10.21	SIGNED:	SURVEY DATE: 05.20.21

ISSUE STATUS:

AS-BUILT

PROJECT No:	SCALES: 1:1000-A1	A1
1050-146689-01	1:2000-A3	

DRAWING No:

146689-14-AB400

	REV
--	-----

A

MURPHYS BUSH RESERVE

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NOTES:

- ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m
- ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE
- ALL CONNECTIONS ARE DN 100 uPVC. CHAINAGE FOR CONNECTIONS ARE FROM DOWNSTREAM MANHOLE CENTRE.
- ALL STORMWATER LINES ARE RCRRJ CLASS 2 UNLESS SHOWN OTHERWISE.
- ALL CATCHPIT LEADS ARE RCRRJ CLASS 4.
- ALL NEW MANHOLES ARE DN 1050 RC UNLESS SHOWN OTHERWISE.
- AS-BUILT INFORMATION PROVIDED BY DEMPSEY WOOD CIVIL LTD AND TO THE BEST OF OUR KNOWLEDGE IS ACCURATE.
- REFER AB480-AB481 FOR RAIN GARDEN DETAILS.

LEGEND:

- NEW PUBLIC STORMWATER LINE & MH
- NEW PUBLIC/ PRIVATE CATCHPIT
- NEW LOT CONNECTION
- EXISTING LOT CONNECTION
- EXISTING SW LINE, MH AND CP
- NEW PUBLIC/ PRIVATE RAINGARDEN
- EXISTING RAINGARDEN
- NEW PRIVATE CONNECTION
- STAGE BOUNDARY

ENGINEERING APPROVAL
ENG-60363080

I CERTIFY THAT THESE ASBUILT PLANS ARE AN ACCURATE RECORD OF THE WORKS UNDERTAKEN AND THAT:
• THE COORDINATES (X,Y) ARE IN TERMS OF NZTM ON NZGD (2000), AND ARE WITHIN ±50mm.
• THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL) LINZ DATUM (DOSLI DATUM), AND ARE WITHIN ±25mm.

Signed:
REGISTERED PROFESSIONAL SURVEYOR

Date:

Name: STEPHEN JAMES WARDLE

Phone: 09-917-5000

Email: s.wardle@harringtongrierson.com

HG AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5000
W www.harringtongrierson.com

A	AS-BUILT	WKK	28.10.21
REF	REVISIONS	BY	DATE

PROJECT:
HUGH GREEN LIMITED
DONEGAL STAGE 14
36 TIR CONAILL AVENUE, FLATBUSH

TITLE:
STORMWATER
AS-BUILT PLAN
SHEET 1 OF 2

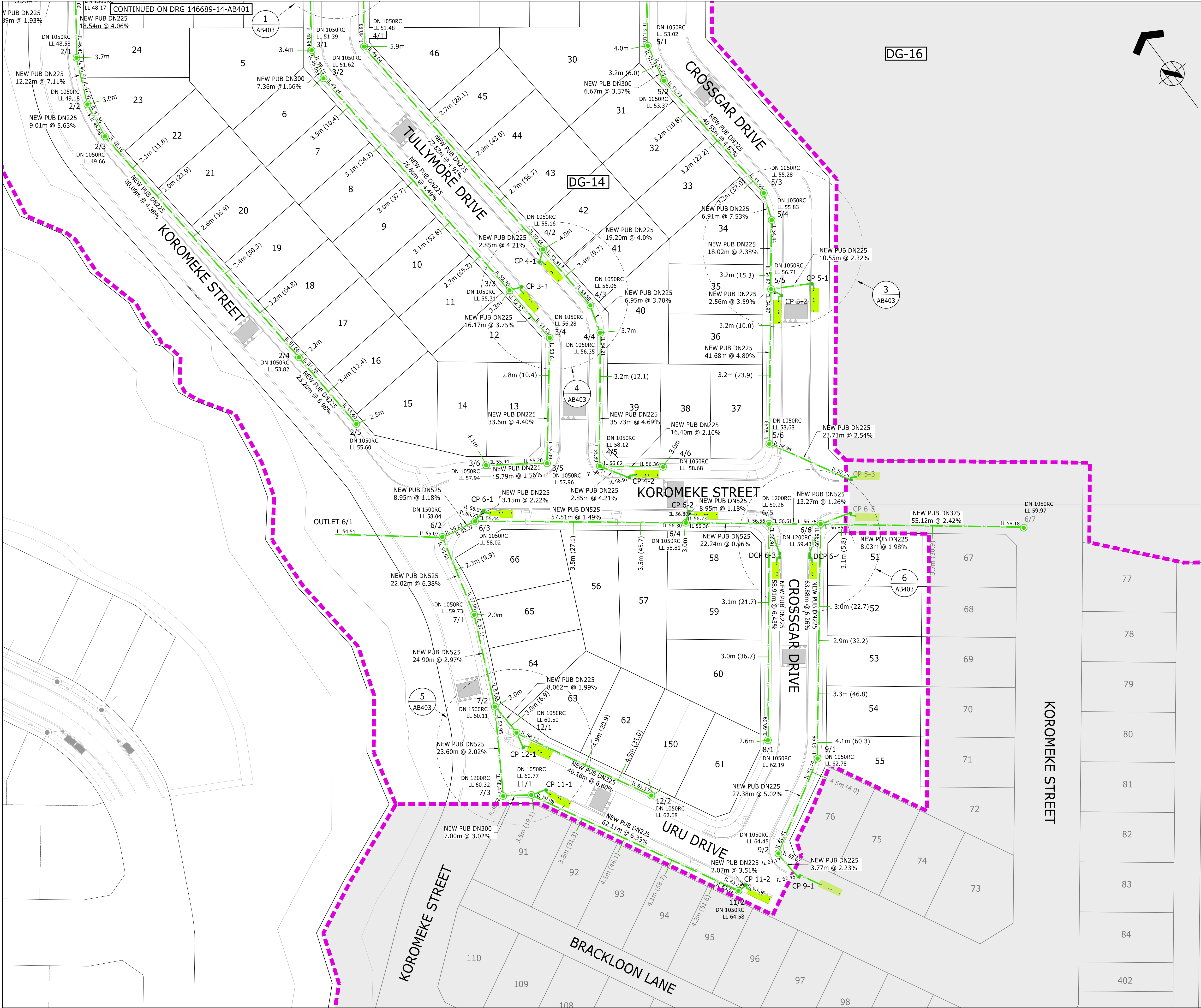
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WKK	31.05.21		WKK
DRAWN:	DATE:	SIGNED:	PLOT DATE:
WKK	31.05.21		28.10.21
CHECKED:	DATE:	SIGNED:	SURVEY BY:
DAS	28.10.21		DEMPSEY WOOD
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
DAS	28.10.21		05.2021

ISSUE STATUS:
AS-BUILT

PROJECT No:	SCALES:	A1
1050-146689-01	1:500-A1 1:1000-A3	
DRAWING No:		REV

146689-14-AB401

A



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NOTES:

- ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m
- ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE
- ALL CONNECTIONS ARE DN 100 uPVC. CHAINAGE FOR CONNECTIONS ARE FROM DOWNSTREAM MANHOLE CENTRE.
- ALL STORMWATER LINES ARE RCRRJ CLASS 2 UNLESS SHOWN OTHERWISE.
- ALL CATCHPIT LEADS ARE RCRRJ CLASS 4.
- ALL NEW MANHOLES ARE DN 1050 RC UNLESS SHOWN OTHERWISE.
- AS-BUILT INFORMATION PROVIDED BY DEMPSEY WOOD CIVIL LTD AND TO THE BEST OF OUR KNOWLEDGE IS ACCURATE.
- REFER AB480-AB481 FOR RAIN GARDEN DETAILS.

LEGEND:

- SW —

NEW PUBLIC STORMWATER LINE & MH
- NEW PUBLIC/ PRIVATE CATCHPIT
- NEW LOT CONNECTION
- EXISTING LOT CONNECTION
- SW —

EXISTING SW LINE, MH AND CP
- NEW PUBLIC/ PRIVATE RAINGARDEN
- EXISTING RAINGARDEN
- NEW PRIVATE CONNECTION
- STAGE BOUNDARY

ENGINEERING APPROVAL
ENG-60363080

I CERTIFY THAT THESE ASBUILT PLANS ARE AN ACCURATE RECORD OF THE WORKS UNDERTAKEN AND THAT:

- THE COORDINATES (X,Y) ARE IN TERMS OF NZTM ON NZGD (2000), AND ARE WITHIN ±50mm.
- THE LEVELS (Z) ARE IN TERMS OF THE AUCKLAND 1946 (MSL) LINZ DATUM (DOSLI DATUM), AND ARE WITHIN ±25mm.

Signed:
REGISTERED PROFESSIONAL SURVEYOR

Date:

Name: STEPHEN JAMES WARDLE

Phone: 09-917-5000

Email: s.wardle@harringtongrison.com

HG

AUCKLAND OFFICE
LEVEL 4, 96 ST GEORGES BAY ROAD
PARNELL AUCKLAND 1052
T +64 9 917 5000
W www.harringtongrison.com

A	AS-BUILT	WKK	28.10.21
REF	REVISIONS	BY	DATE

PROJECT:

HUGH GREEN LIMITED
DONEGAL STAGE 14
36 TIR CONAILL AVENUE, FLATBUSH

TITLE:

STORMWATER
AS-BUILT PLAN
SHEET 2 OF 2

ORIGINATOR:	DATE:	SIGNED:	PLOT BY:
WKK	31.05.21		WKK
DRAWN:	DATE:	SIGNED:	PLOT DATE:
WKK	31.05.21		28.10.21
CHECKED:	DATE:	SIGNED:	SURVEY BY:
DAS	28.10.21		DEMPSEY WOOD
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
DAS	28.10.21		05.2021

ISSUE STATUS:

AS-BUILT

PROJECT No:	SCALES:	A1
1050-146689-01	1:500-A1 1:1000-A3	
DRAWING No:		REV

146689-14-AB402

A

APPENDIX B: CLASSIFICATION TEST DATA

Shrink Swell Index Report

Report No: SSI:ETAM21S-02605

Issue No: 1

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

Project No.: 773-ETAM01121AA

Project Name: 773-GENZAUCK16856AE - DONEGAL STUD

Lot No.: - TRN: -



Approved Signatory: James McKelvey
(Senior Technician)

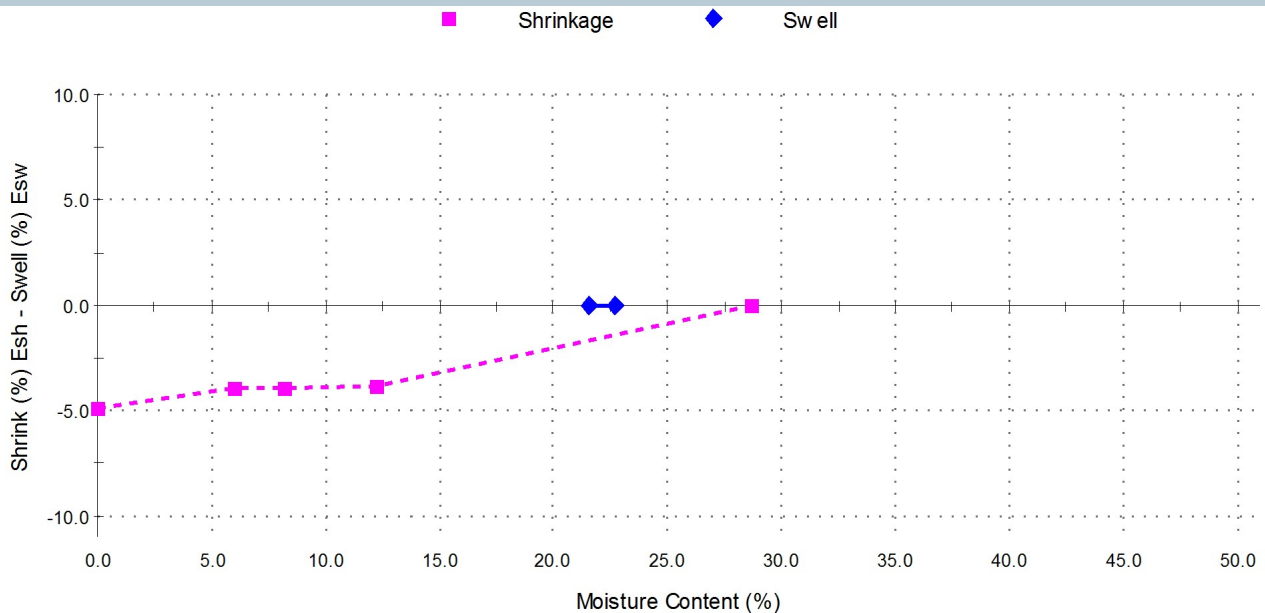
Date of Issue: 4/06/2021

Sample Details

Sample ID:	ETAM21S-02605	Sampling Method:	NZS4407: 2015 Part 2.4.8.3
Date Sampled:	27/05/2021	Material:	Undisturbed Soil
Date Submitted:	28/05/2021	Source:	In-Situ
Date Tested:	28/05/2021		
Project Location:	Greenam Drive, Flat Bush		
Sample Location:	HA01		
Borehole Number:	HA01		
Borehole Depth (m):	0.2		

Swell Test AS 1289.7.1.1		Shrink Test AS 1289.7.1.1	
Swell on Saturation (%):	0.0	Shrink on drying (%):	4.9
Moisture Content before (%):	21.6	Shrinkage Moisture Content (%):	28.7
Moisture Content after (%):	22.7	Est. inert material (%):	2%
Est. Unc. Comp. Strength before (kPa):	450+	Crumbling during shrinkage:	0.5%
Est. Unc. Comp. Strength after (kPa):	450+	Cracking during shrinkage:	0.5%

Shrink Swell



Shrink Swell Index - Iss (%): 2.7

Comments

Not accredited
Work Order No : ETAM21W00723
Tested By: JM

Shrink Swell Index Report

Report No: SSI:ETAM21S-02606

Issue No: 1

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

Project No.: 773-ETAM01121AA

Project Name: 773-GENZAUCK16856AE - DONEGAL STUD

Lot No.: - TRN: -



Approved Signatory: James McKelvey
(Senior Technician)

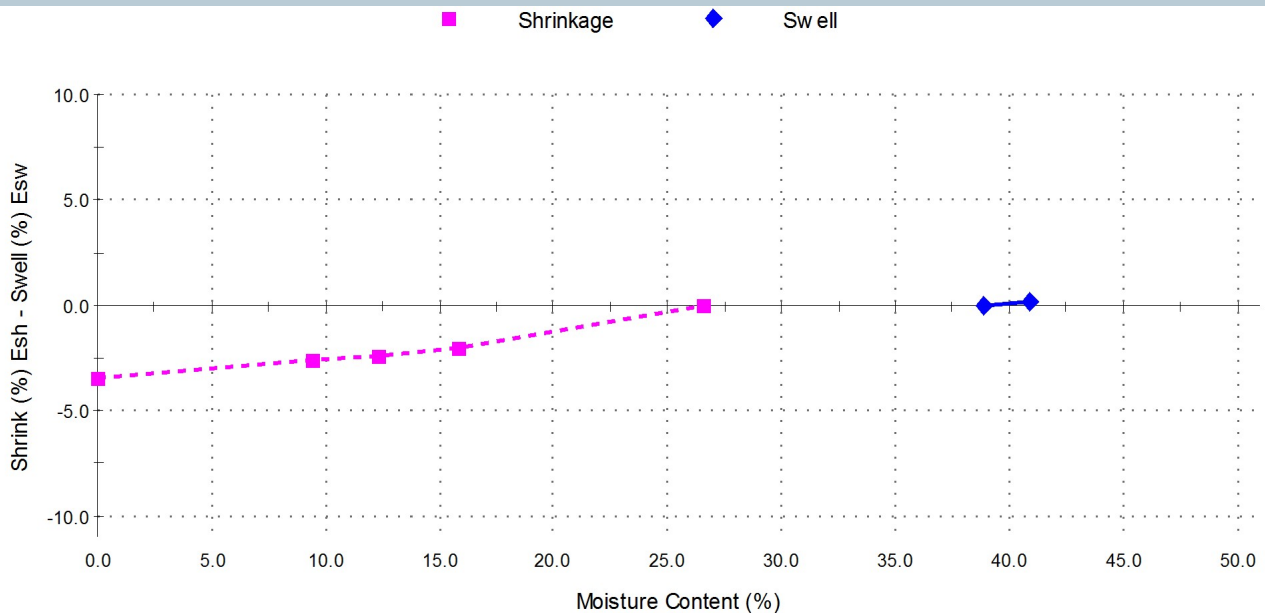
Date of Issue: 4/06/2021

Sample Details

Sample ID:	ETAM21S-02606	Sampling Method:	NZS4407: 2015 Part 2.4.8.3
Date Sampled:	27/05/2021	Material:	Undisturbed Soil
Date Submitted:	28/05/2021	Source:	In-Situ
Date Tested:	28/05/2021		
Project Location:	Greenam Drive, Flat Bush		
Sample Location:	HA33, 0.2 - 0.5 m		
Borehole Number:	HA33		
Borehole Depth (m):	0.2 - 0.5		

Swell Test AS 1289.7.1.1		Shrink Test AS 1289.7.1.1	
Swell on Saturation (%):	0.1	Shrink on drying (%):	3.5
Moisture Content before (%):	38.9	Shrinkage Moisture Content (%):	26.6
Moisture Content after (%):	40.9	Est. inert material (%):	1%
Est. Unc. Comp. Strength before (kPa):	350	Crumbling during shrinkage:	0.5%
Est. Unc. Comp. Strength after (kPa):	275	Cracking during shrinkage:	1.5%

Shrink Swell



Shrink Swell Index - Iss (%): 2.0

Comments

Not accredited
Work Order No : ETAM21W00723
Tested By: JM

Shrink Swell Index Report

Report No: SSI:ETAM21S-02607

Issue No: 1

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

Project No.: 773-ETAM01121AA

Project Name: 773-GENZAUCK16856AE - DONEGAL STUD

Lot No.: - TRN: -



Approved Signatory: James McKelvey
(Senior Technician)

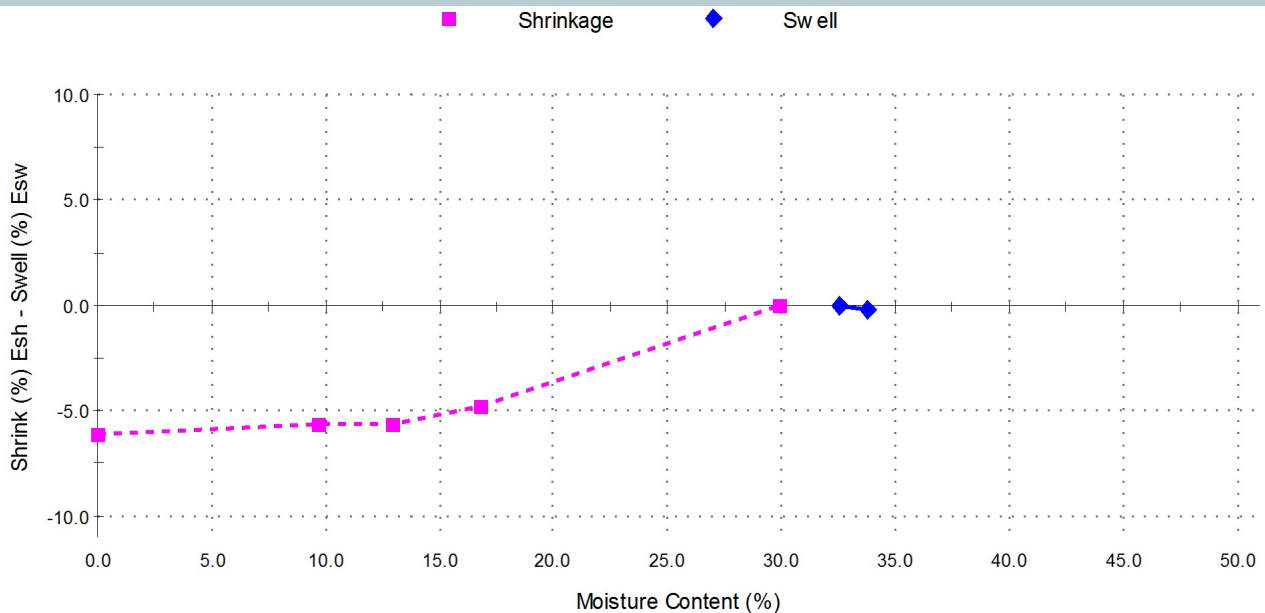
Date of Issue: 4/06/2021

Sample Details

Sample ID:	ETAM21S-02607	Sampling Method:	NZS4407: 2015 Part 2.4.8.3
Date Sampled:	27/05/2021	Material:	Undisturbed Soil
Date Submitted:	28/05/2021	Source:	In-Situ
Date Tested:	28/05/2021		
Project Location:	Greenam Drive, Flat Bush		
Sample Location:	HA36, 0.3 - 0.5 m		
Borehole Number:	HA36		
Borehole Depth (m):	0.3 - 0.5		

Swell Test AS 1289.7.1.1		Shrink Test AS 1289.7.1.1	
Swell on Saturation (%):	-0.2	Shrink on drying (%):	6.1
Moisture Content before (%):	32.6	Shrinkage Moisture Content (%):	29.9
Moisture Content after (%):	33.8	Est. inert material (%):	15%
Est. Unc. Comp. Strength before (kPa):	275	Crumbling during shrinkage:	3%
Est. Unc. Comp. Strength after (kPa):	175	Cracking during shrinkage:	0.5%

Shrink Swell



Shrink Swell Index - Iss (%): 3.4

Comments

Not accredited
Work Order No : ETAM21W00723
Tested By: JM

APPENDIX C: FIELD DENSITY TEST SUMMARY SHEETS

Earthworks Fill Report

Report No: EFIL:ETAM20W01691
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01691

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Louis Smit

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14-15



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.

{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 4/11/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Density Calculations (in accordance with NZS 4402:1986 Tests 4.2.7)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
30/10/2020	ETAM20W01691	SC	60	1.85	26.8	1.46	2.70	7	UTP	UTP	UTP	UTP	Pond Wall SRPB Stage 15	1770730	5905192	59.3	Silty CLAY	
30/10/2020	ETAM20W01691	SC	61	1.75	36.6	1.28	2.70	6	170	170	153	153	Pond Wall SRPB Stage 15	1770686	5905197	59.9	Silty CLAY	
30/10/2020	ETAM20W01691	SC	62	1.72	35.9	1.26	2.70	8	UTP	UTP	170	170	Pond Wall SRPB Stage 15	1770686	5905187	60.1	Silty CLAY	
30/10/2020	ETAM20W01691	SC	63	1.93	32.1	1.46	2.70	0	UTP	UTP	UTP	UTP	DB2 Stage 14	1770627	5905405	48.7	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01691

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14-15

Location: As below

Tested by: SC

Date tested: 30/10/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01774
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01774

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Louis Smit
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD STAGE 14-15



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 19/11/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):
 Density Calculations (in accordance with NZS 4402:1986 Tests 4.2.7)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
17/11/2020	ETAM20W01774	MA	64	1.95	26.2	1.55	2.70	2	UTP	UTP	UTP	UTP	Stage 14 Fill Area	1770743	5905300	-	CLAY	0.8m below finish level
17/11/2020	ETAM20W01774	MA	65	1.95	25.5	1.55	2.70	3	UTP	UTP	UTP	UTP	Stage 14 Fill Area	1770727	5905294	-	CLAY	0.8m below finish level
17/11/2020	ETAM20W01774	MA	66	1.86	30.0	1.45	2.70	4	132	138	122	127	Stage 14 Fill Area	1770702	5905288	-	CLAY	0.8m below finish level
17/11/2020	ETAM20W01774	MA	67	1.88	31.2	1.51	2.70	0	174	167	UTP	UTP	Stage 14 Fill Area	1770646	5905378	-	CLAY	0.6m below finish level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01774

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14-15

Location: As below

Tested by:

MA

Date tested:

17/11/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01798
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01798

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Louis Smit
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 23/11/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
20/11/2020	ETAM20W01798	LW	68	1.97	23.7	1.60	2.70	3	144	164	140	151	Stage 13 Fill area	1770522	590291	-	Clayey SILT	1.0m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01798

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 11-13

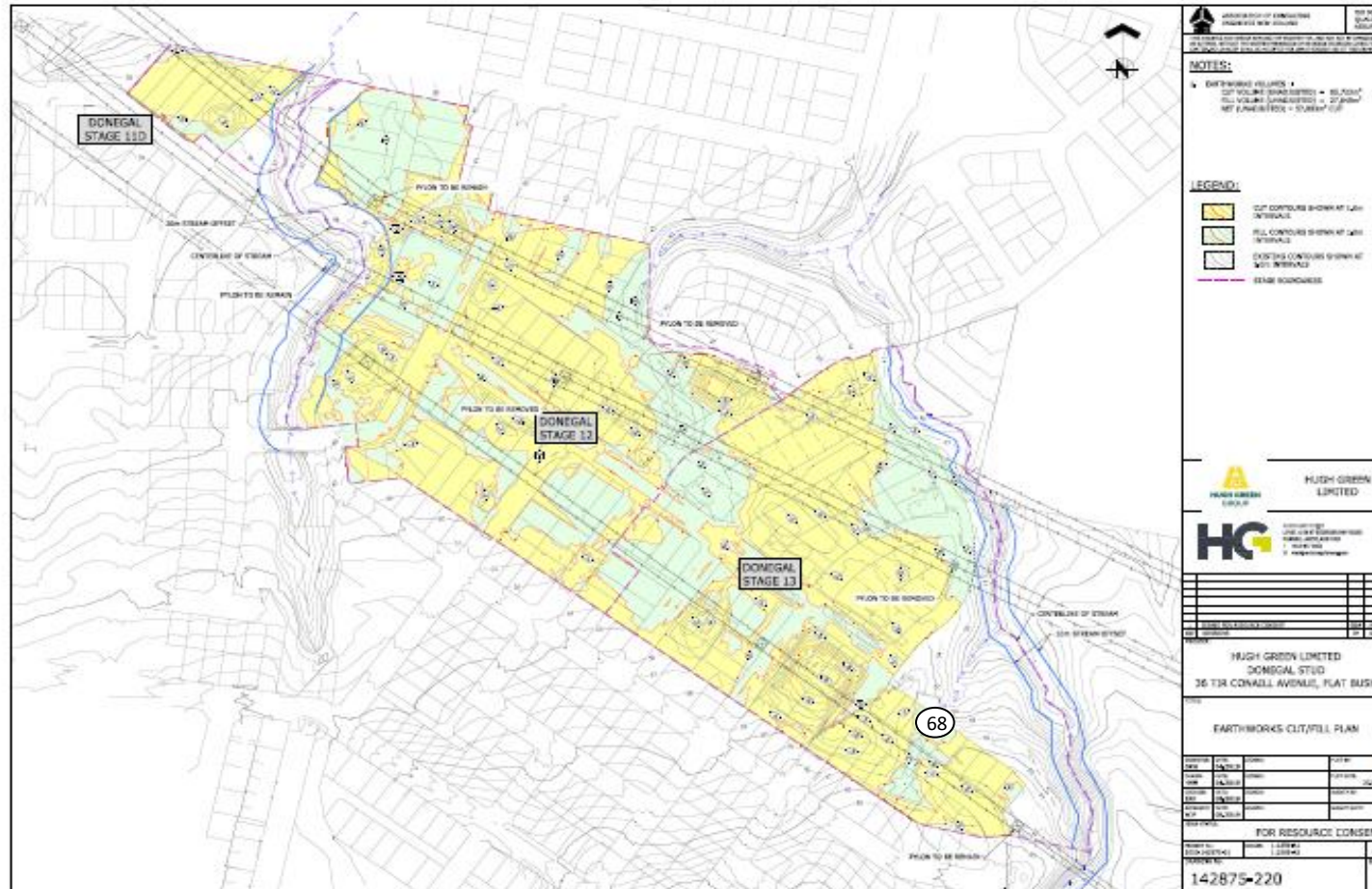
Location: As below

Tested by:

LW

Date tested:

20/11/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01807
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01807

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Louis Smit

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD STAGE 14



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 25/11/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
23/11/2020	ETAM20W01807	LW	69	1.95	23.8	1.58	2.70	4	UTP	UTP	UTP	UTP	DB Stage 14	1770687	5905404	-	Clayey SILT	0.80m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01807

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14-15

Location: As below

Tested by:

LW

Date tested:

23/11/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01873
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01873

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Louis Smit

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 7/12/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
2/12/2020	ETAM20W01873	SC	70	1.97	25.6	1.56	2.70	2	170	170	153	153	Stage 14	1770739	5905279	-	Silty CLAY	1.0m below finished level
2/12/2020	ETAM20W01873	SC	71	1.95	23.8	1.57	2.70	4	170	170	170	170	Stage 14	1770733	5905313	-	Silty CLAY	1.0m below finished level
2/12/2020	ETAM20W01873	SC	72	1.95	23.5	1.58	2.70	4	170	170	176	176	Stage 14, Road 4	1770712	5905308	-	Silty CLAY	At finished level
2/12/2020	ETAM20W01873	SC	73	1.90	27.3	1.50	2.70	4	176	176	176	176	Stage 14, Lot 13	1770697	5905257	-	Silty CLAY	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01873

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by:

SC

Date tested:


2/12/2020




Earthworks Fill Report

Report No: EFIL:ETAM20W01913
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01913

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Louis Smit
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14


 All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}


 Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 11/12/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
9/12/2020	ETAM20W01913	SC,SSC	74	1.85	28.0	1.45	2.70	6	153	180+	180+	180+	Stage 14	1770711	5905212	-	Silty CLAY	1.0m below finished level
9/12/2020	ETAM20W01913	SC,SSC	75	1.87	27.4	1.47	2.70	5	UTP	UTP	UTP	UTP	Stage 14	1770729	5905209	-	Silty CLAY	1.0m below finished level
9/12/2020	ETAM20W01913	SC,SSC	76	1.83	36.1	1.34	2.70	2	180+	UTP	UTP	UTP	Stage 14	1770717	5905159	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01913

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by:

SC,SSC

Date tested:

9/12/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01935
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01935

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 15/12/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
11/12/2020	ETAM20W01935	SC	77	1.92	26.4	1.52	2.70	4	UTP	145	UTP	180+	Road 1, Stage 14	17700612	5905170	-	Silty CLAY	0.7m below finished level
11/12/2020	ETAM20W01935	SC	78	1.85	25.5	1.48	2.70	8	UTP	UTP	UTP	UTP	Road 1, Stage 14	17700625	5905311	-	Silty CLAY	0.7m below finished level
11/12/2020	ETAM20W01935	SC	79	1.94	22.9	1.58	2.70	6	UTP	180+	180+	180+	Road 1, Stage 14	17700614	5905331	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01935

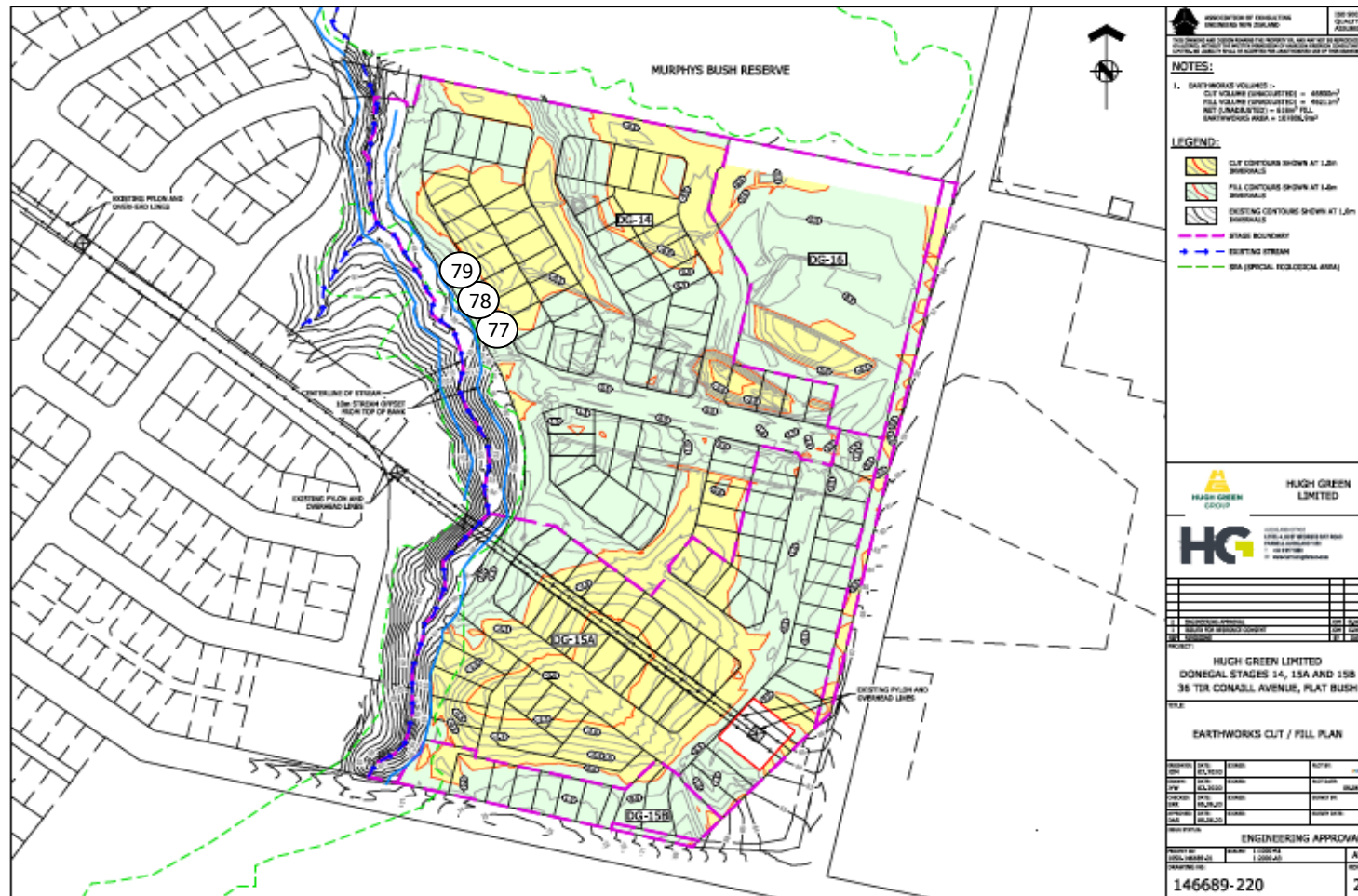
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by: SSC

Date tested: 11/12/2020



Earthworks Fill Report

Report No: EFIL:ETAM20W01965
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM20W01965

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 18/12/2020

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
15/12/2020	ETAM20W01965	MP	80	1.74	50.6	1.15	2.70	0	112	107	119	174+	Bottom side of pond	1770724	5905199	59.96	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM20W01965

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by:

MP

Date tested:

15/12/2020



Earthworks Fill Report

Report No: EFIL:ETAM21W00026
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00026

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 11/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1)

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
7/01/2021	ETAM21W00026	LW	82	1.71	45.4	1.18	2.70	3	144	144	158+	158+	Pond Backfill	1770698	5905370	-	Clayey SILT	2.0m below finished level
7/01/2021	ETAM21W00026	LW	83	1.75	40.2	1.25	2.70	3	140	149	158+	158+	Pond Backfill	1770700	5905359	-	Clayey SILT	1.0m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00026

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14

Location: As below

Tested by: LW

Date tested: 7/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00040
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00040

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 13/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
11/01/2021	ETAM21W00040	SC	84	1.84	23.7	1.49	2.70	10	UTP	UTP	180+	180+	Refer to plan	1770694	5905388	-	Silty CLAY	2.0m below finished level
11/01/2021	ETAM21W00040	SC	85	1.72	42.3	1.21	2.70	4	UTP	UTP	180+	180+	Refer to plan	1770724	5905199	59.96	Silty CLAY	Retest of Test No. 80
11/01/2021	ETAM21W00040	SC	86	1.77	33.7	1.33	2.70	6	UTP	UTP	UTP	UTP	Refer to plan	1770640	5905111	-	Silty CLAY	0.5m below finished level
11/01/2021	ETAM21W00040	SC	87	1.69	35.1	1.25	2.70	10	UTP	UTP	UTP	UTP	Refer to plan	1770647	5905128	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00040

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 11/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00062
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00062

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14-15



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 19/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
13/01/2021	ETAM21W00062	LW	88	1.84	49.4	1.23	2.70	0	140	154	158+	140	Stage 15B Fill	1770781	5904992	66.95	Clayey SILT	
13/01/2021	ETAM21W00062	LW	89	1.82	45.4	1.26	2.70	0	140	144	154	144	Stage 15B Fill	1770805	5905007	64.26	Clayey SILT	
13/01/2021	ETAM21W00062	LW	90	1.77	45.4	1.22	2.70	0	140	158+	158+	154	Stage 15B Fill	1770817	5905017	66.42	Clayey SILT	
13/01/2021	ETAM21W00062	LW	91	1.91	26.3	1.51	2.70	4	UTP	UTP	UTP	UTP	Stage 14 Pond Area	1770690	5905373	-	Clayey SILT	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00062

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 13/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00096
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00096

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 22/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
19/01/2021	ETAM21W00096	SC	92	1.77	48.3	1.19	2.70	0	170	166	180+	UTP	Refer to plan	1770744	5904975	-	Silty CLAY	1.0m below finished level
19/01/2021	ETAM21W00096	SC	93	1.76	48.7	1.18	2.70	0	180+	180+	180+	180+	Refer to plan	1770751	5904984	-	Silty CLAY	At finished level
19/01/2021	ETAM21W00096	SC	94	1.82	45.8	1.25	2.70	0	180+	180+	180+	180+	Refer to plan	1770689	5904973	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00096

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 19/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00106
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00106

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 25/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
21/01/2021	ETAM21W00106	SC	95	1.92	25.7	1.53	2.70	4	UTP	UTP	UTP	UTP	DG - 15B	1770751	5904960	-	Silty CLAY	At finished level
21/01/2021	ETAM21W00106	SC	96	1.84	29.1	1.43	2.70	6	UTP	UTP	UTP	UTP	DG - 15B	1770725	5904968	-	Silty CLAY	At finished level
21/01/2021	ETAM21W00106	SC	97	1.84	33.3	1.38	2.70	3	UTP	UTP	UTP	UTP	DG - 15B	1770705	5904990	-	Silty CLAY	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00106

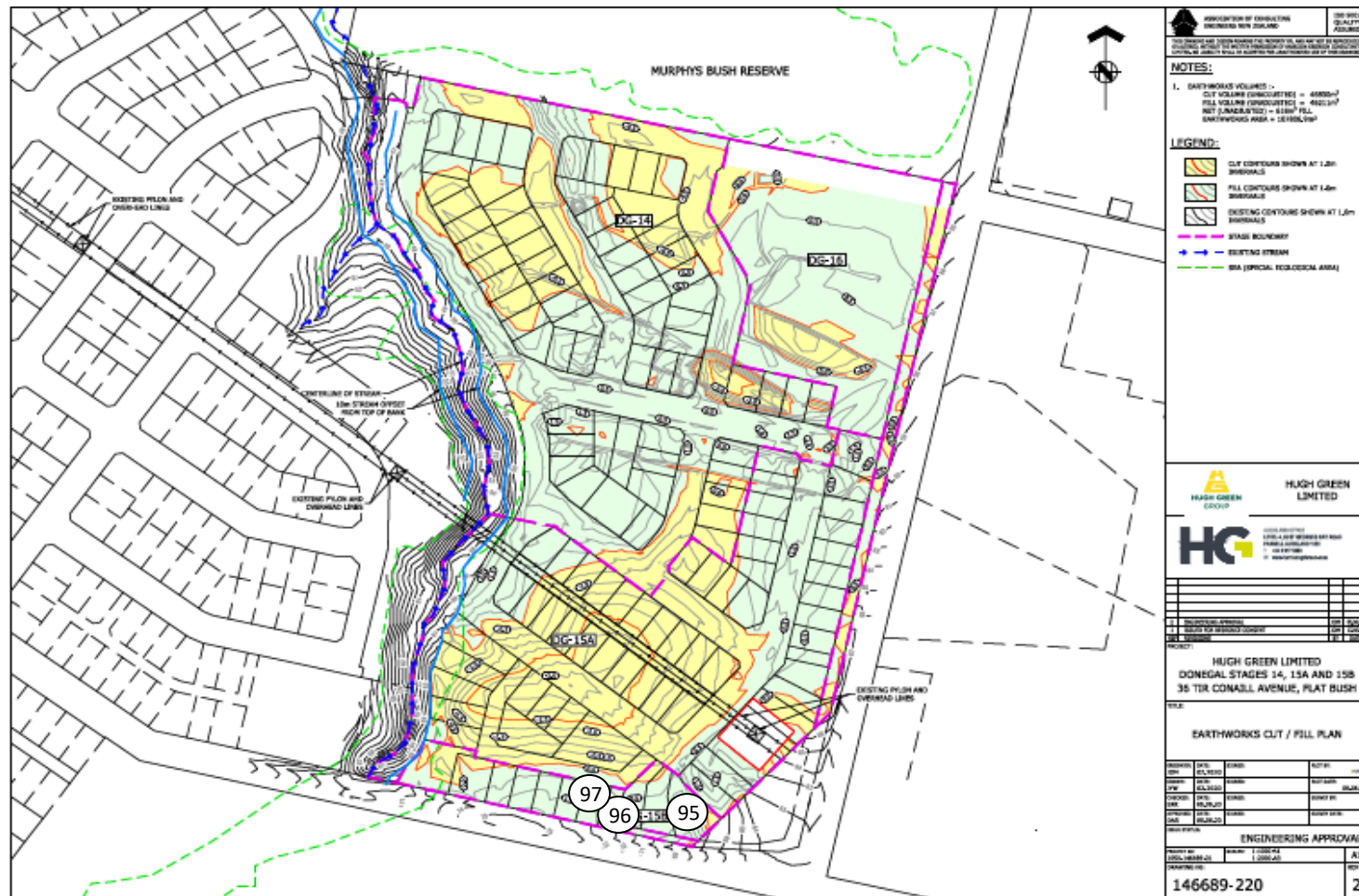
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 21/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00126
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00126

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
25/01/2021	ETAM21W00126	SC	98	1.84	30.3	1.41	2.70	5	UTP	UTP	180+	180+	Stage 16	1770852	5905288	-	Silty CLAY	0.3m below finished level
25/01/2021	ETAM21W00126	SC	99	1.81	36.7	1.32	2.70	3	180+	180+	180+	180+	Stage 16	1770832	5905289	-	Silty CLAY	0.3m below finished level
25/01/2021	ETAM21W00126	SC	100	1.75	35.2	1.30	2.70	6	180+	180+	180+	180+	Stage 16	1770808	5905314	-	Silty CLAY	0.3m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00126

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 25/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00145
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00145

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 28/01/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
27/01/2021	ETAM21W00145	SC	101	1.68	34.8	1.25	2.70	11	UTP	UTP	180+	180+	Old topsoil stockpile undercut	1770807	5905272	56.01	Silty CLAY	
27/01/2021	ETAM21W00145	SC	102	1.83	34.4	1.37	2.70	3	UTP	UTP	180+	180+	Old topsoil stockpile undercut	1770832	5905279	56.01	Silty CLAY	
27/01/2021	ETAM21W00145	SC	103	1.87	21.5	1.54	2.70	10	UTP	UTP	UTP	UTP	Refer to plan	1770801	5905336	53.98	Silty CLAY	
27/01/2021	ETAM21W00145	SC	104	1.72	48.7	1.16	2.70	1	180+	180+	180+	180+	Refer to plan	1770826	5905326	53.98	Silty CLAY	
27/01/2021	ETAM21W00145	SC	105	1.74	40.1	1.25	2.70	4	180+	180+	180+	180+	Refer to plan	1770847	5905322	53.80	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00166
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00166

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.

{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 2/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
29/01/2021	ETAM21W00166	SC	106	1.76	43.3	1.23	2.70	1	180+	180+	180+	180+	Old topsoil stockpile undercut	1770807	5905272	56.01	Silty CLAY	Retest of Test No. 101
29/01/2021	ETAM21W00166	SC	107	1.80	43.9	1.25	2.70	0	180+	180+	180+	180+	Old topsoil stockpile undercut	1770820	5905250	56.40	Silty CLAY	
29/01/2021	ETAM21W00166	SC	108	1.77	34.9	1.31	2.70	6	180+	180+	UTP	UTP	Stage 16	1770801	5905336	53.98	Silty CLAY	Retest of Test No. 103
29/01/2021	ETAM21W00166	SC	109	1.87	28.2	1.46	2.70	5	UTP	UTP	UTP	UTP	Stage 16	1770843	5905286	54.39	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00166

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 29/01/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00173
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00173

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 3/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
2/02/2021	ETAM21W00173	SC	110	1.97	20.4	1.64	2.70	6	UTP	UTP	UTP	UTP	Refer to plan	1770811	5905270	57.27	Silty CLAY	
2/02/2021	ETAM21W00173	SC	111	1.87	28.1	1.46	2.70	5	UTP	UTP	UTP	UTP	Refer to plan	1770828	5905260	27.28	Silty CLAY	
2/02/2021	ETAM21W00173	SC	112	1.81	46.8	1.23	2.70	0	180+	180+	180+	180+	Refer to plan	1770807	5905311	54.82	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00173

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 2/02/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00189
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00189

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 9/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
4/02/2021	ETAM21W00189	SC	113	1.82	27.2	1.43	2.70	8	180+	180+	180+	180+	Refer to plan	1770837	5905279	57.70	Silty CLAY	
4/02/2021	ETAM21W00189	SC	114	1.79	42.2	1.26	2.70	0	UTP	UTP	UTP	UTP	Refer to plan	1770843	5905331	55.20	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00189

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 4/02/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00227
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00227

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
12/02/2021	ETAM21W00227	LW	115	1.79	38.5	1.29	2.70	3	158+	158+	158+	158+	Stage 15 Redesign	1770622	5905045	-	Clayey SILT	0.4m below finished level
12/02/2021	ETAM21W00227	LW	116	1.78	40.4	1.26	2.70	2	158+	158+	158+	158+	Stage 15 Redesign	1770635	5905035	-	Clayey SILT	0.4m below finished level
12/02/2021	ETAM21W00227	LW	117	1.88	32.8	1.41	2.70	1	158+	158+	158+	158+	Stage 16	1770816	5905254	-	Clayey SILT	At finished level
12/02/2021	ETAM21W00227	LW	118	1.85	32.3	1.40	2.70	3	158+	158+	158+	158+	Stage 16	1770831	5905288	-	Clayey SILT	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00227

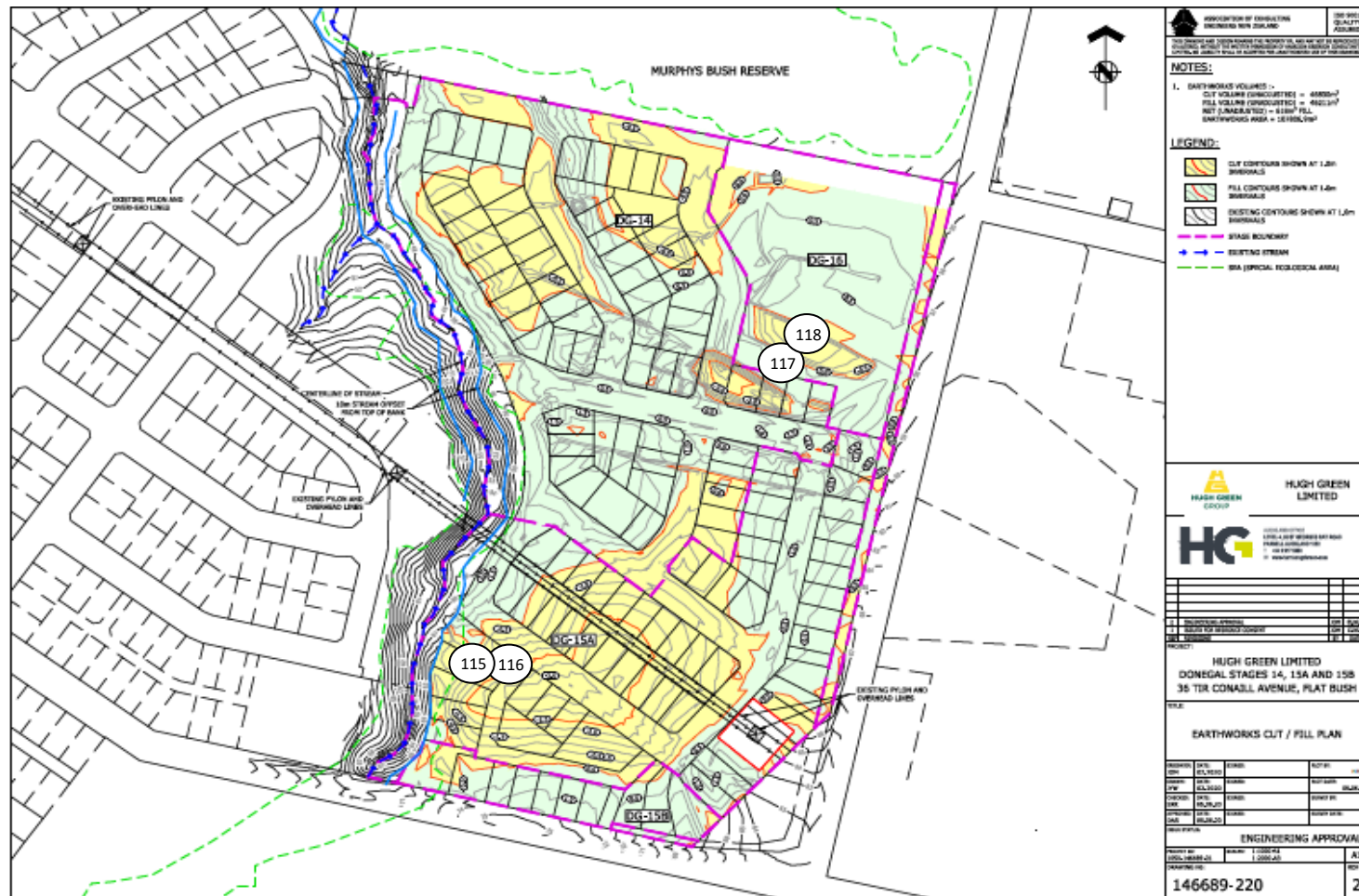
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 12/02/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00227
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00227

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/02/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
12/02/2021	ETAM21W00227	LW	115	1.79	38.5	1.29	2.70	3	158+	158+	158+	158+	Stage 15 Redesign	1770622	5905045	-	Clayey SILT	0.4m below finished level
12/02/2021	ETAM21W00227	LW	116	1.78	40.4	1.26	2.70	2	158+	158+	158+	158+	Stage 15 Redesign	1770635	5905035	-	Clayey SILT	0.4m below finished level
12/02/2021	ETAM21W00227	LW	117	1.88	32.8	1.41	2.70	1	158+	158+	158+	158+	Stage 16	1770816	5905254	-	Clayey SILT	At finished level
12/02/2021	ETAM21W00227	LW	118	1.85	32.3	1.40	2.70	3	158+	158+	158+	158+	Stage 16	1770831	5905288	-	Clayey SILT	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00227

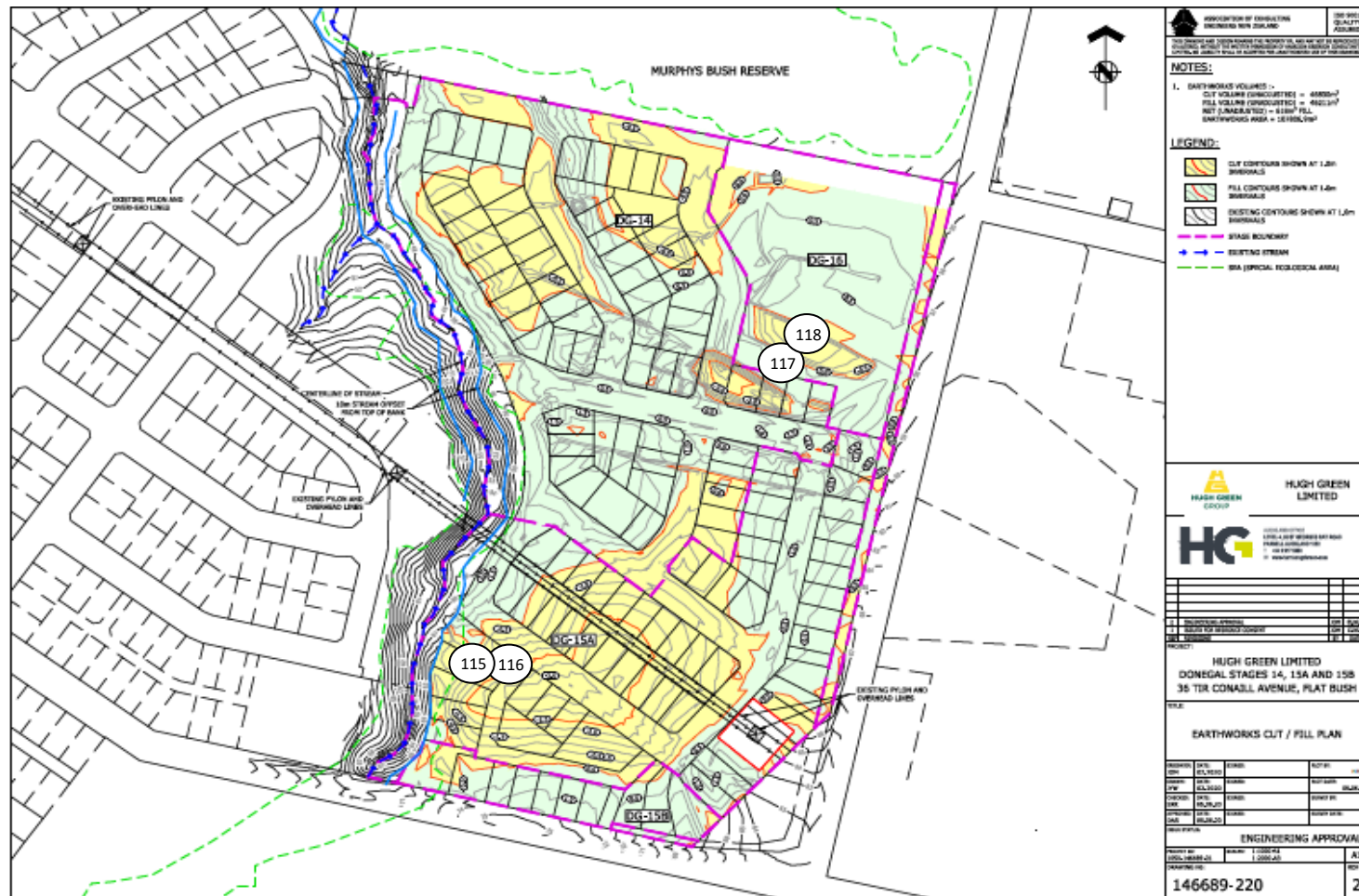
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 12/02/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00308
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00308

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 10/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
9/03/2021	ETAM21W00308	SC	123	1.81	29.2	1.40	2.70	7	UTP	UTP	UTP	UTP	RW A CH 43	1770598	5905373	48.45	Silty CLAY with aggregate	Retest of Test No. 119
9/03/2021	ETAM21W00308	SC	124	1.99	15.9	1.72	2.70	9	170	170	153	153	RW A CH 15	1770602	5905396	47.59		Retest of Test No. 120
9/03/2021	ETAM21W00308	SC	125	1.86	19.5	1.55	2.70	12	180+	180+	180+	180+	RW B CH 35	1770627	5905306	50.65		Retest of Test No. 122

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00308

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 9/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00335
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00335

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 12/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
11/03/2021	ETAM21W00335	SC	126	1.77	30.7	1.35	2.70	8	180+	180+	153	153	Stage 14 Pond	1770718	5905190	-	Silty CLAY	1.5m below finished level
11/03/2021	ETAM21W00335	SC	127	1.74	47.1	1.18	2.70	1	170	170	170	153	Stage 14 Pond	1770716	5905180	-	Silty CLAY	1.5m below finished level
11/03/2021	ETAM21W00335	SC	128	1.82	34.8	1.35	2.70	4	170	170	170	170	Stage 14 Pond	1770728	5905184	-	Silty CLAY	1.0m below finished level
11/03/2021	ETAM21W00335	SC	129	1.80	41.9	1.27	2.70	0	170	170	170	170	Stage 14 Pond	1770738	5905180	-	Silty CLAY	0.5m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00335

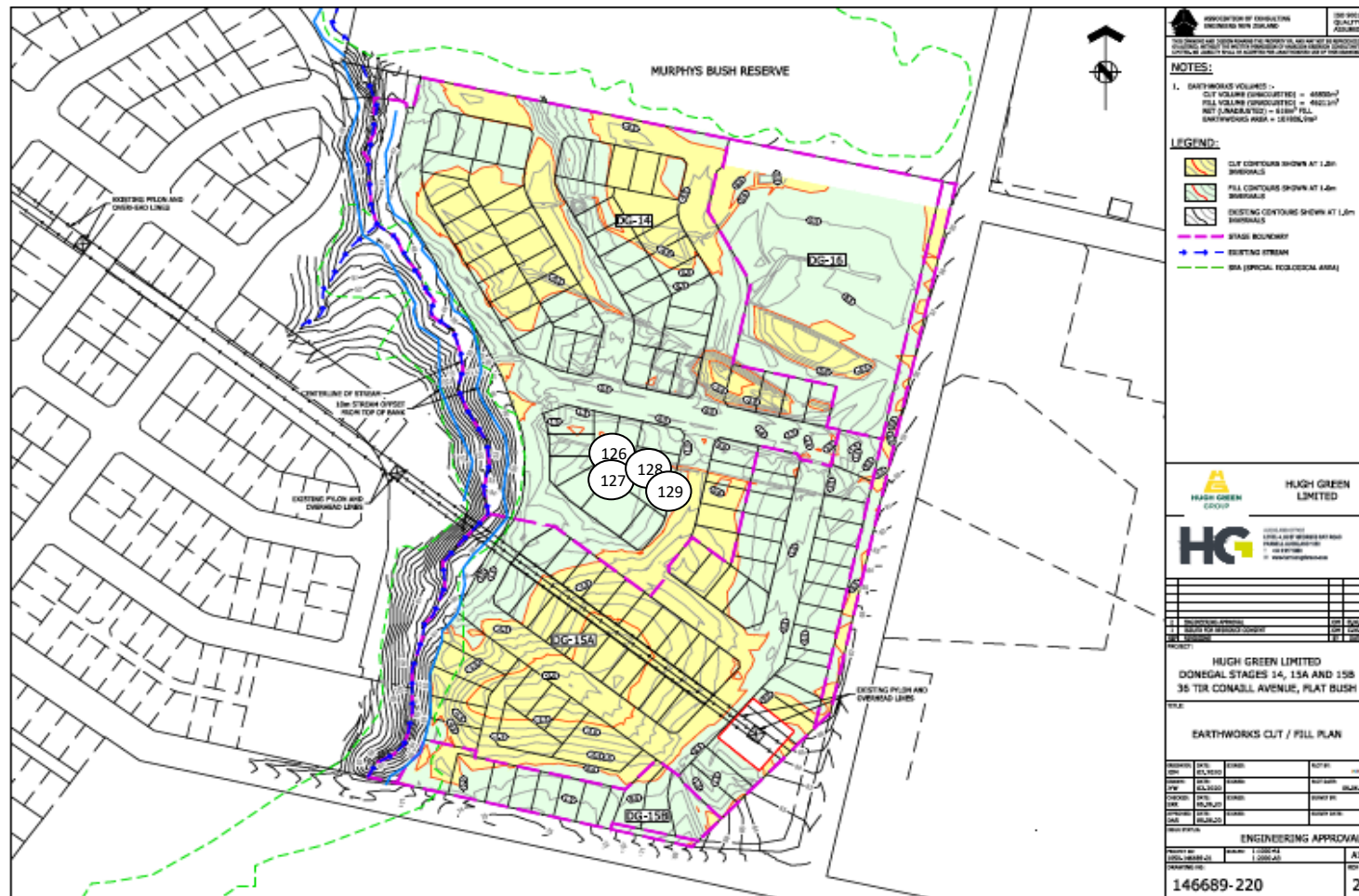
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 11/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00336
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00336

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 12/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
11/03/2021	ETAM21W00336	LW	130	1.89	29.6	1.45	2.70	3	158+	158+	158+	158+	RW B, CH 35	1770627	5905306	50.65	Silty CLAY	Retest of Test No. 125

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00336

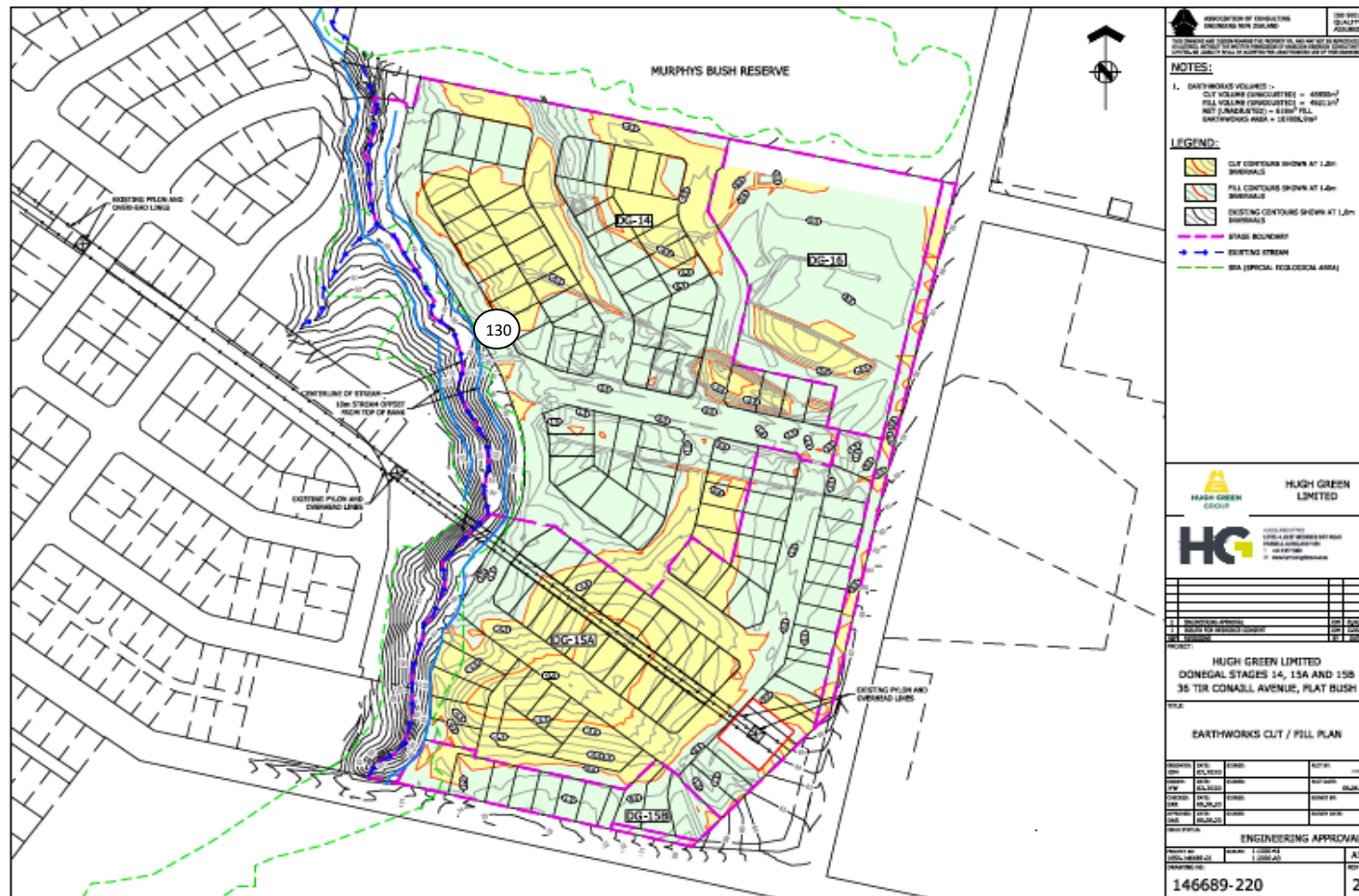
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 11/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00349
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00349

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 15/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
12/03/2021	ETAM21W00349	SC	131	1.90	25.3	1.52	2.70	5	180+	180+	180+	180+	Refer to plan	1770883	5905296	-	Silty CLAY	0.8m below finished level
12/03/2021	ETAM21W00349	SC	132	1.80	37.9	1.30	2.70	3	180+	180+	180+	180+	Refer to plan	1770876	5905310	-	Silty CLAY	0.8m below finished level
12/03/2021	ETAM21W00349	SC	133	1.77	35.1	1.31	2.70	6	170	170	153	153	Refer to plan	1770731	5905186	-	Silty CLAY	0.5m below finished level
12/03/2021	ETAM21W00349	SC	134	1.79	40.0	1.28	2.70	2	153	153	170	170	Refer to plan	1770716	5905180	-	Silty CLAY	1.0m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00349

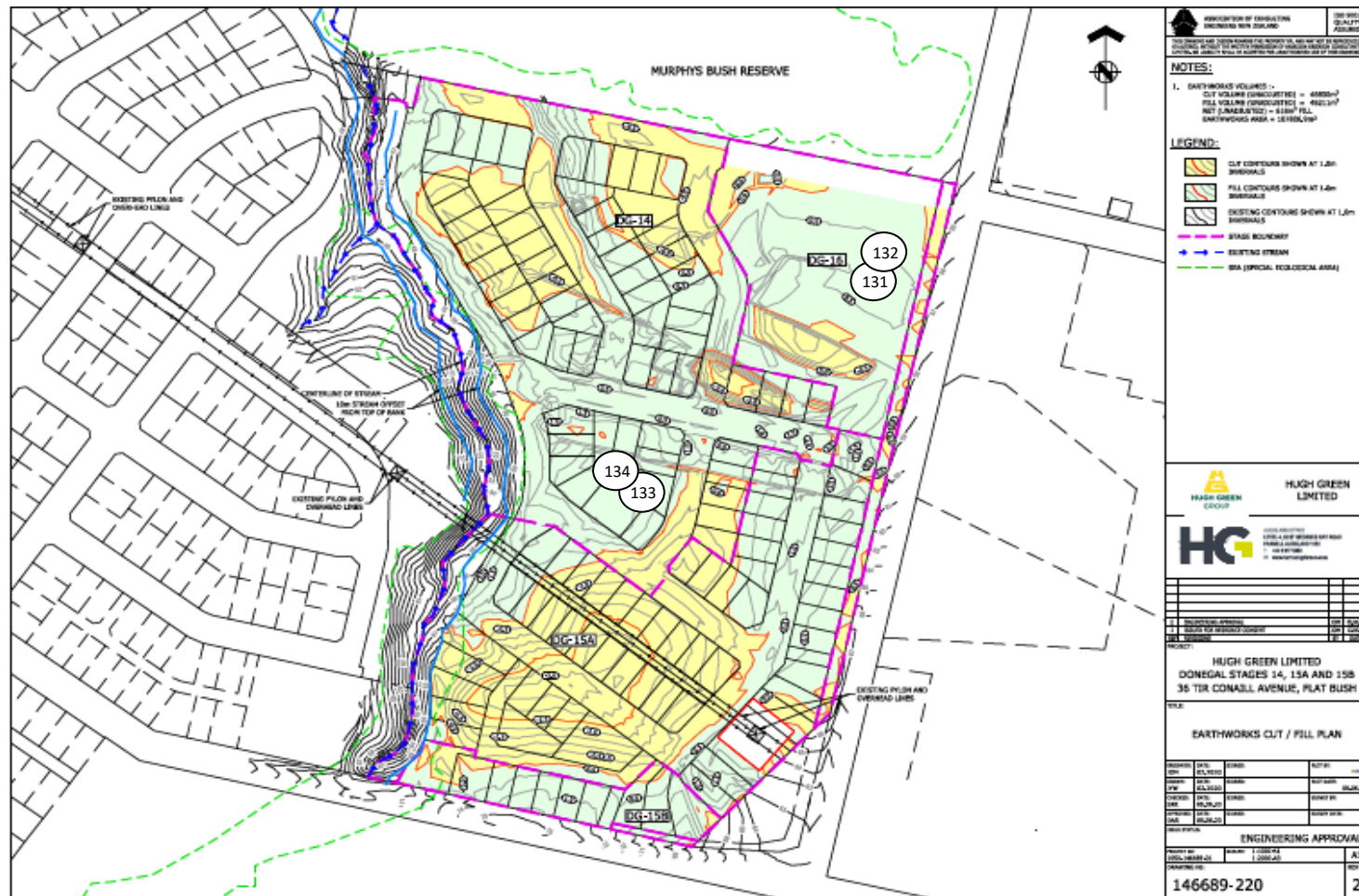
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 12/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00352
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00352

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 17/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
16/03/2021	ETAM21W00352	SSC	135	1.73	38.4	1.25	2.70	6	138	UTP	UTP	146	RW A, CH 8.5	1770605	5905403	47.836	Silty CLAY	
16/03/2021	ETAM21W00352	SSC	136	1.68	37.9	1.22	2.70	9	UTP	UTP	180+	180+	RW A, CH 38.4	1770598	5905378	48.509	Silty CLAY	
16/03/2021	ETAM21W00352	SSC	137	1.78	26.5	1.41	2.70	11	UTP	UTP	UTP	UTP	RW B, CH 15	1770615	5905322	50.723	Silty CLAY	
16/03/2021	ETAM21W00352	SSC	138	1.74	30.3	1.34	2.70	10	UTP	UTP	UTP	UTP	RW B, CH 47.6	1770633	5905299	52.000	Silty CLAY	
16/03/2021	ETAM21W00352	SSC	139	1.80	27.3	1.41	2.70	9	UTP	UTP	UTP	UTP	Stage 14 Pond B	1770716	5905193	-	Silty CLAY	At finished level
16/03/2021	ETAM21W00352	SSC	140	1.86	25.2	1.49	2.70	8	UTP	UTP	UTP	UTP	Stage 14 Pond B	1770718	5905181	-	Silty CLAY	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)
Aggregate present in fill.

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00352

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SSC

Date tested: 16/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00362
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00362

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 18/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
17/03/2021	ETAM21W00362	LW	141	1.89	29.9	1.45	2.70	3	UTP	UTP	UTP	UTP	RW B, CH 70	1770649	5905306	53.35	Silty CLAY with aggregate	
17/03/2021	ETAM21W00362	LW	142	1.96	32.6	1.48	2.70	0	UTP	UTP	UTP	UTP	RW B, CH 43	1770630	5905301	52.10		

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00362

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 17/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00430
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00430

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 29/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
25/03/2021	ETAM21W00430	LW	143	1.89	30.2	1.45	2.70	3	UTP	UTP	UTP	UTP	Stage 15 Pond Backfill	1770695	5905187	-	Silty CLAY	1.5m below finished level
25/03/2021	ETAM21W00430	LW	144	1.89	28.1	1.48	2.70	4	UTP	UTP	UTP	UTP	Stage 15 Pond Backfill	1770704	5905194	-	Silty CLAY	1.2m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)
 Fill material contains some medium gravel.

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00430

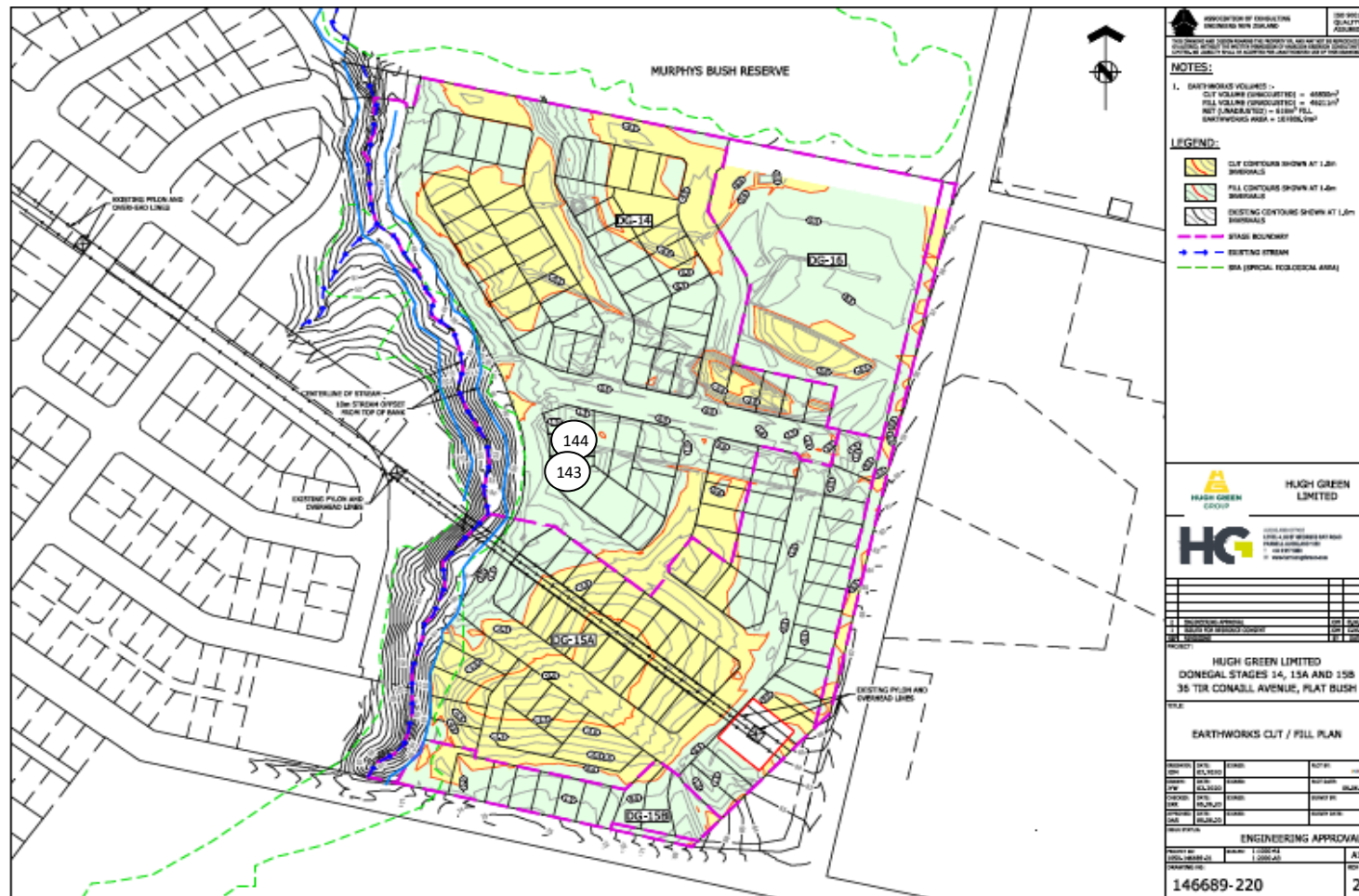
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 25/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00451
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00451

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: Greenam Drive, Flat Bush



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 31/03/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
26/03/2021	ETAM21W00451	SC	145	1.83	34.8	1.36	2.70	2	UTP	UTP	UTP	UTP	Stage 16	1770894	5905304	-	Silty CLAY	1.0m below finished level
26/03/2021	ETAM21W00451	SC	146	1.77	35.3	1.31	2.70	5	UTP	UTP	UTP	UTP	Stage 16	1770887	5905335	-	Silty CLAY	1.0m below finished level
26/03/2021	ETAM21W00451	SC	147	1.90	25.2	1.52	2.70	5	UTP	UTP	UTP	UTP	Stage 15 Pond Backfill	1770698	5905192	-	Silty CLAY	1.0m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00451

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 26/03/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00473
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00473

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 7/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
6/04/2021	ETAM21W00473	SC	148	1.83	27.8	1.44	2.70	7	UTP	UTP	180+	180+	Retaining Wall A Backfill	1770597	5905393	47.30	Silty CLAY	CH 17
6/04/2021	ETAM21W00473	SC	149	1.91	25.6	1.52	2.70	5	180+	180+	180+	180+	Retaining Wall A Backfill	1770594	5905381	47.70	Silty CLAY	CH 29
6/04/2021	ETAM21W00473	SC	150	1.92	22.2	1.57	2.70	7	UTP	UTP	180+	180+	Retaining Wall A Backfill	1770597	5905368	48.52	Silty CLAY	CH 48

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00473

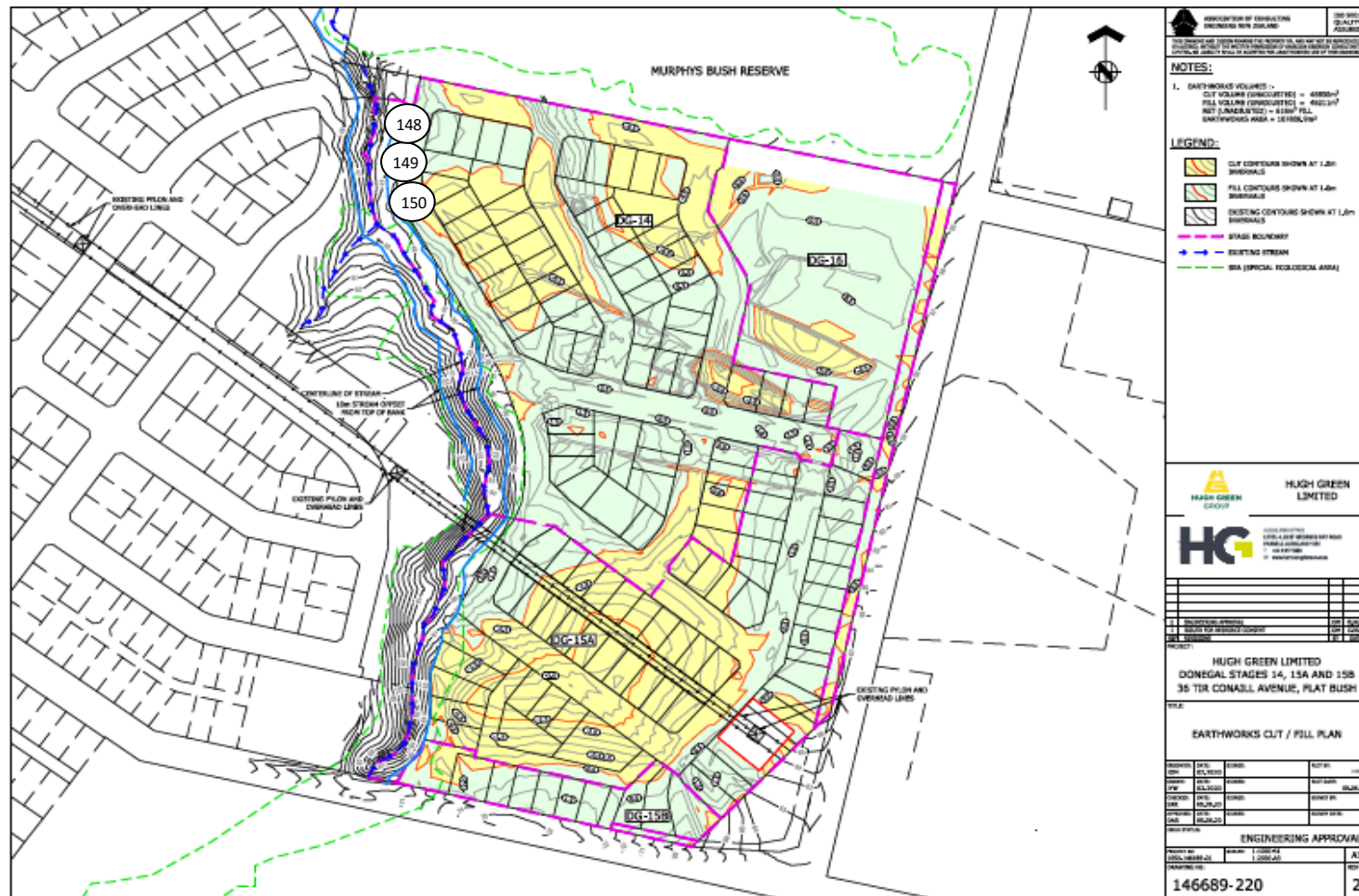
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 6/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00487
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00487

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 8/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
7/04/2021	ETAM21W00487	SC	151	1.79	26.2	1.42	2.70	10	UTP	UTP	UTP	UTP	CH 39, RW Backfill	1770597	5905368	-	Silty CLAY	At finished level
7/04/2021	ETAM21W00487	SC	152	1.75	26.8	1.38	2.70	12	UTP	UTP	UTP	UTP	CH 25, RW Backfill	1770597	5905387	-	Silty CLAY	At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00487

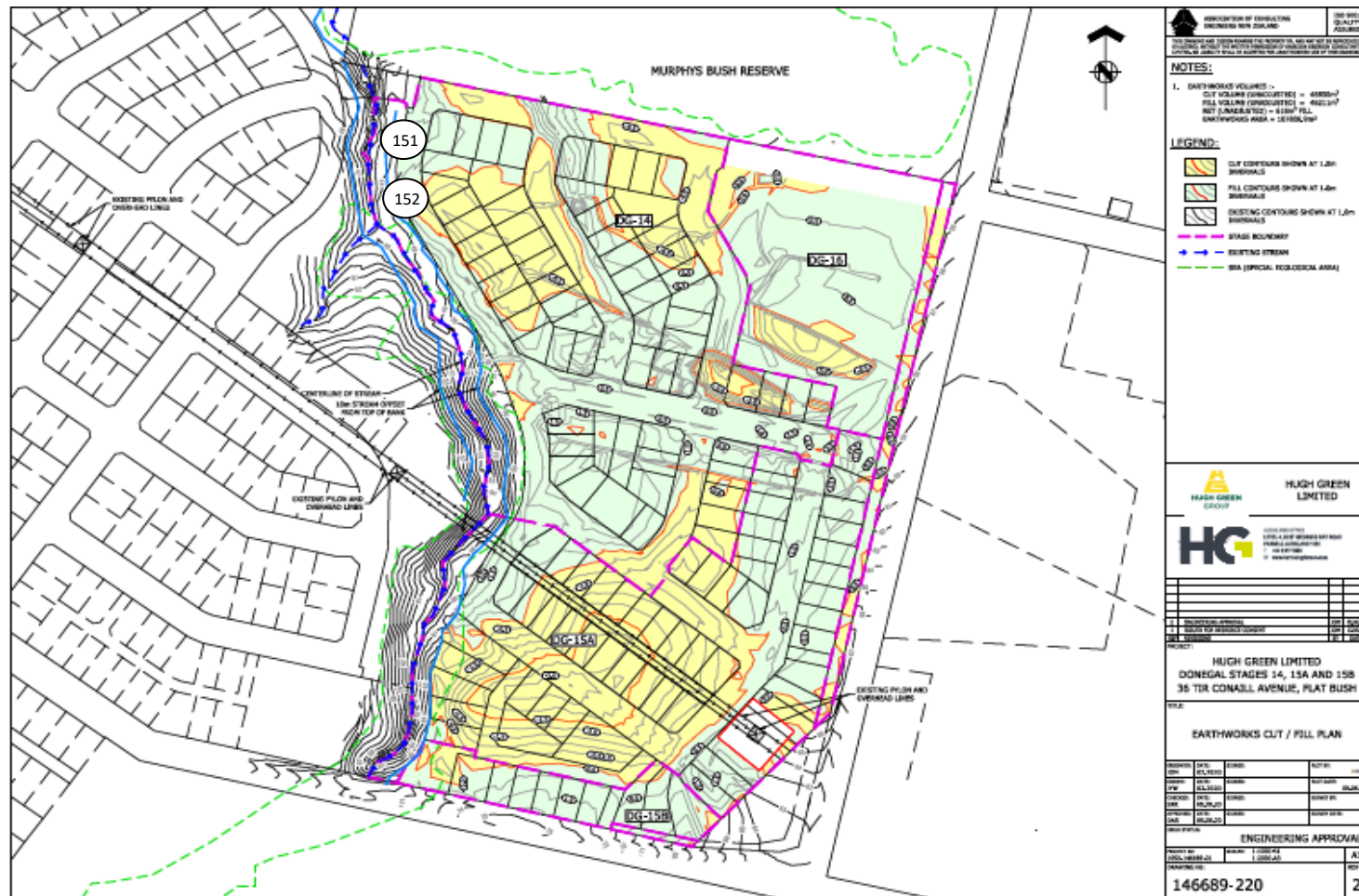
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 7/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00501
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00501

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 13/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
9/04/2021	ETAM21W00501	LW	153	1.89	25.3	1.51	2.70	6	UTP	UTP	UTP	UTP	RW B, CH 37	1770628	5905301	50.68	Clayey SILT	
9/04/2021	ETAM21W00501	LW	154	1.99	22.1	1.63	2.70	4	UTP	UTP	UTP	UTP	RW B, CH 20	1770618	5905317	50.23	Clayey SILT	
9/04/2021	ETAM21W00501	LW	155	1.96	24.4	1.58	2.70	3	UTP	UTP	UTP	UTP	RW B, CH 7	1770612	5905333	50.12	Clayey SILT	
9/04/2021	ETAM21W00501	LW	156	1.87	26.1	1.48	2.70	6	UTP	UTP	UTP	UTP	MSE Wall	1770683	5905412	47.91	Clayey SILT	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00501

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 9/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00503
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00503

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 13/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
12/04/2021	ETAM21W00503	SC	157	1.96	24.6	1.57	2.70	3	153	170	UTP	UTP	MSE Wall	1770682	5905408	48.04	Clayey SILT	CH 125

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00503

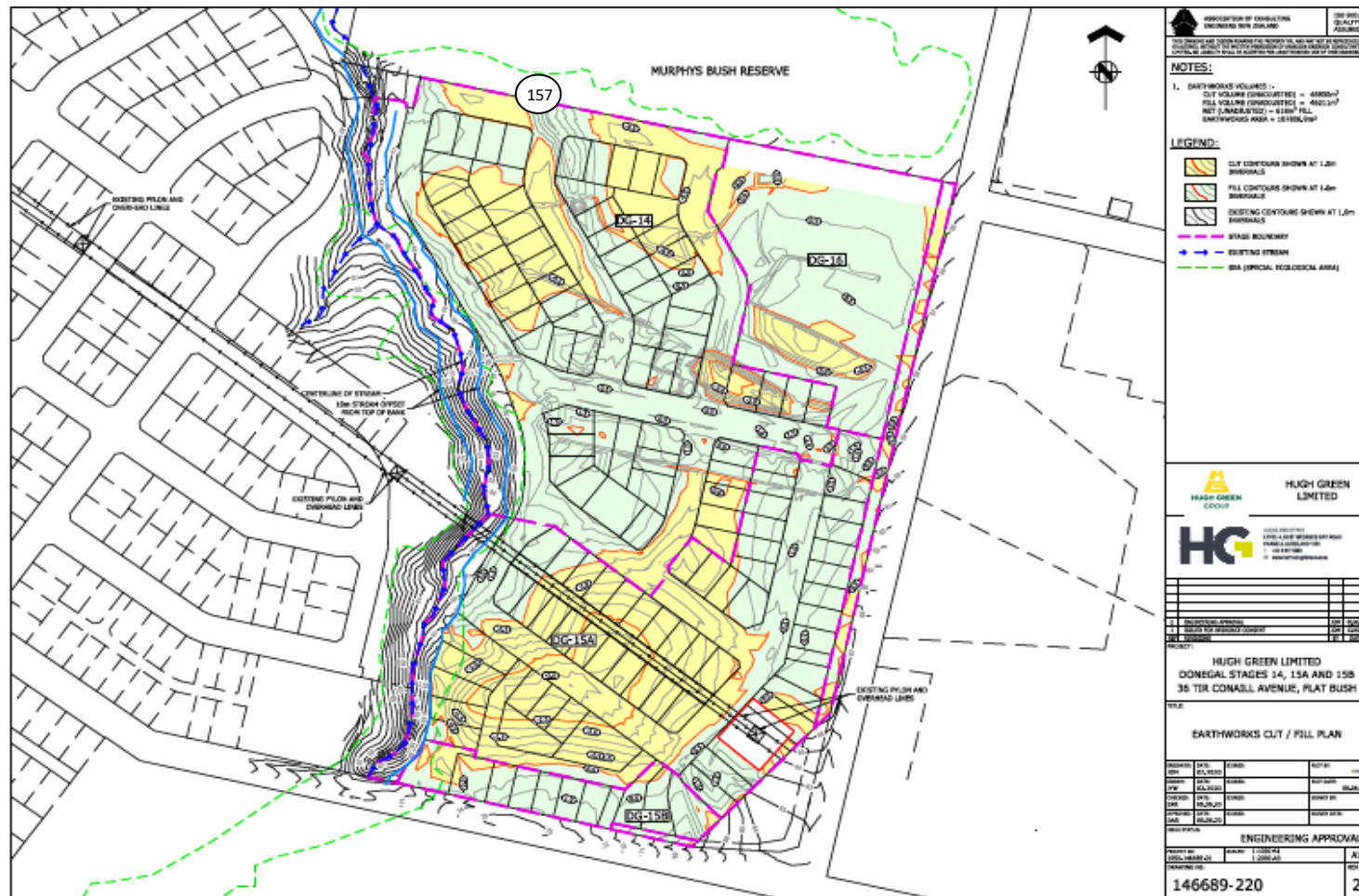
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 12/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00513
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00513

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 14/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
13/04/2021	ETAM21W00513	SC	158	1.90	38.1	1.38	2.70	0	153	153	170	170	MSE Wall	1770679	5905414	48.8	Clayey SILT	CH 125

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)
 Aggregate present in fill.

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00513

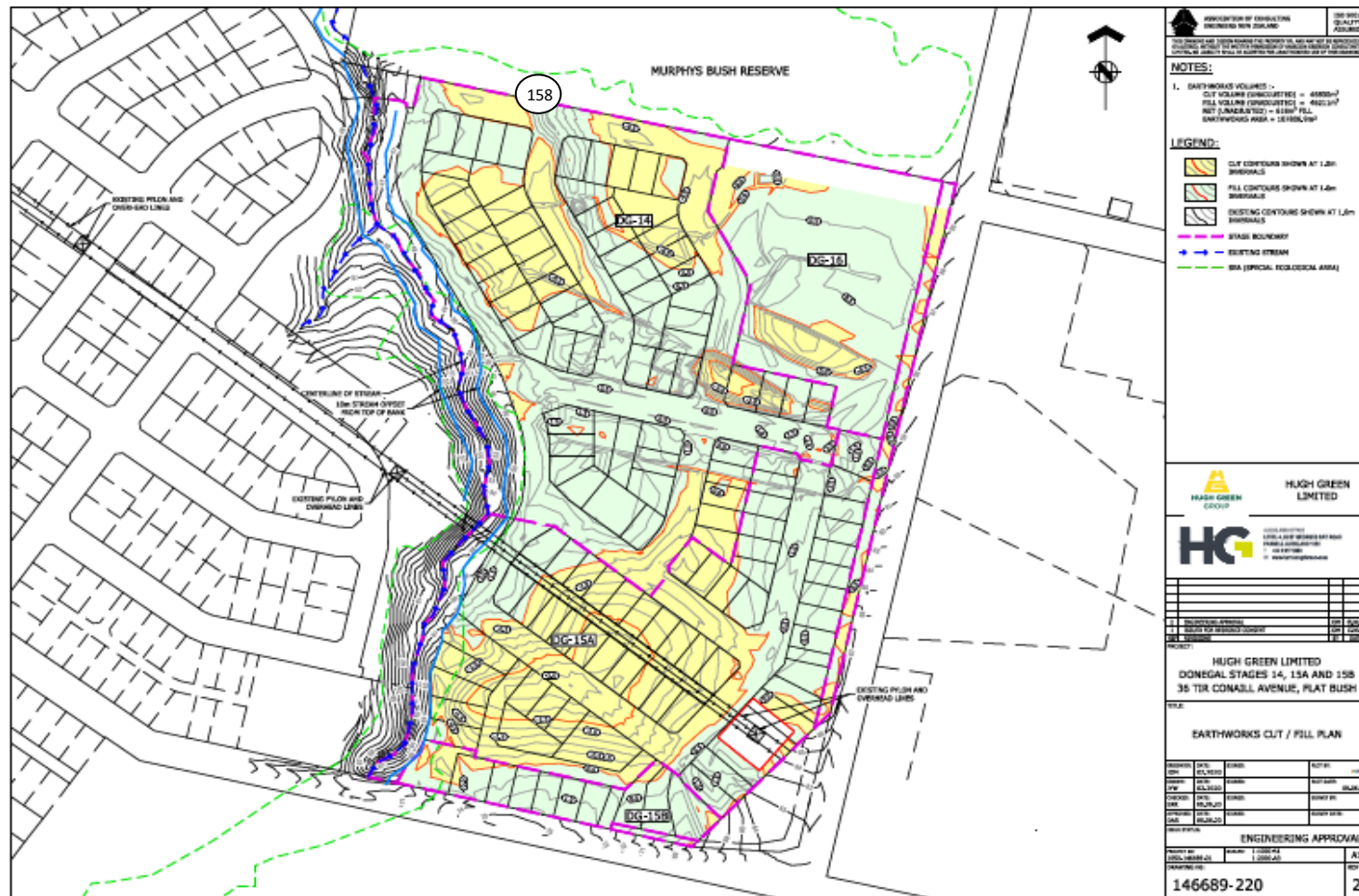
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 13/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00528
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00528

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 19/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
17/04/2021	ETAM21W00528	LW	159	1.75	27.6	1.37	2.70	11	143	125	146	156	RW B, CH 7	1770612	5905334	50.52	Silty CLAY	
17/04/2021	ETAM21W00528	LW	160	1.76	30.1	1.36	2.70	9	160	179+	179+	168	RW B, CH 33	1770624	5905312	50.93	Silty CLAY	
17/04/2021	ETAM21W00528	LW	161	1.73	32.1	1.31	2.70	9	134	146	156	131	RW B, CH 48	1770640	5905282	51.22	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00528

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 17/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00533
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00533

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 20/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
19/04/2021	ETAM21W00533	SC	162	1.90	25.8	1.51	2.70	5	180+	180+	180+	153	RW A, CH 5 Backfill	1770599	5905409	46.66	Silty CLAY	
19/04/2021	ETAM21W00533	SC	163	1.91	30.0	1.47	2.70	1	153	153	153	153	RW A, CH 12 Backfill	1770602	5905401	46.82	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00533

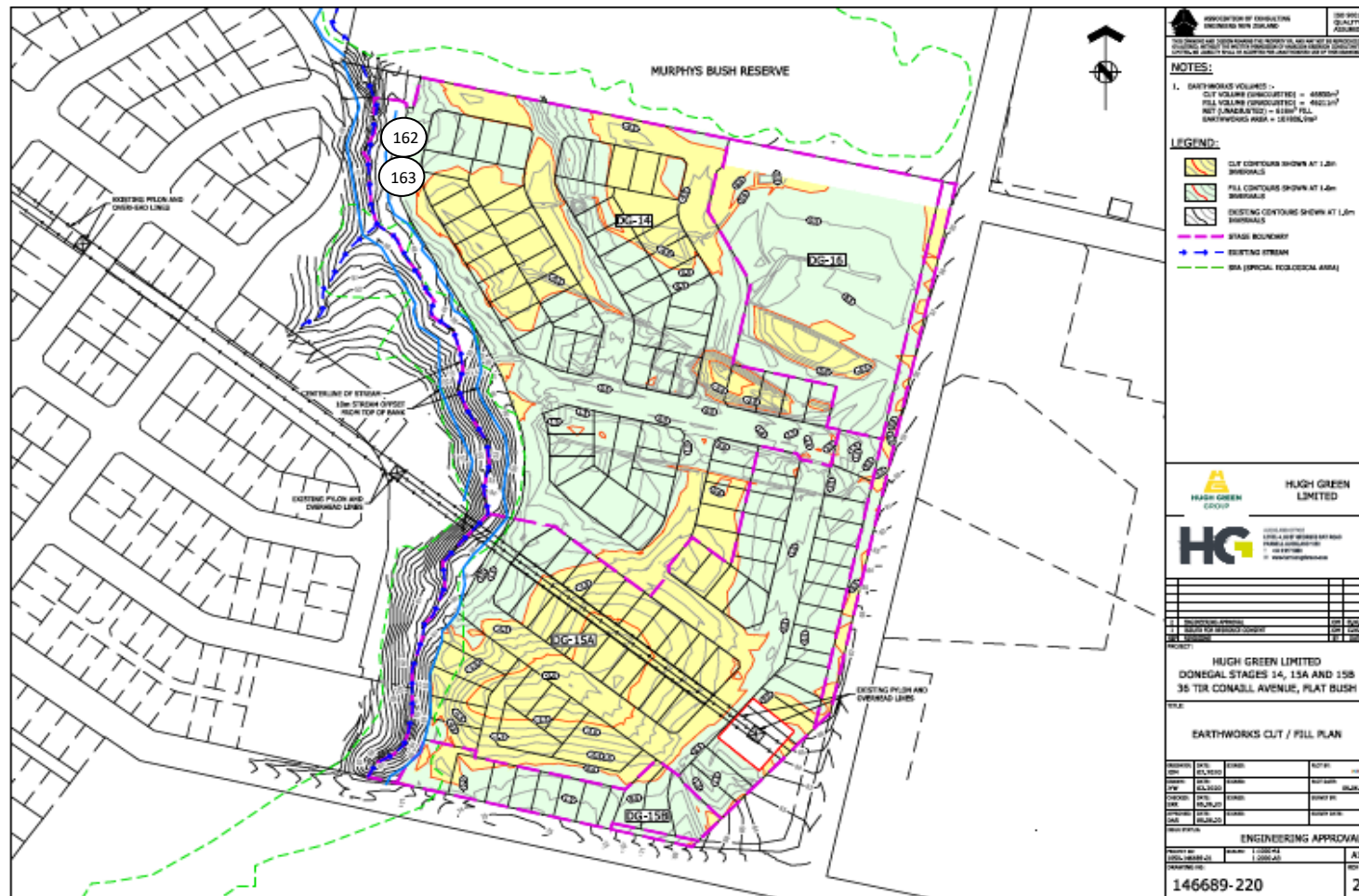
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 19/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00551
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00551

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
23/04/2021	ETAM21W00551	SC	164	1.87	29.0	1.45	2.70	5	UTP	UTP	UTP	UTP	RW B, CH 7	1770612	5905334	50.52	Silty CLAY	Retest of Test No. 159
23/04/2021	ETAM21W00551	SC	165	1.84	28.2	1.43	2.70	7	180+	180+	180+	180+	RW B, CH 46	1770630	5905296	51.85	Silty CLAY	
23/04/2021	ETAM21W00551	SC	166	1.87	34.0	1.39	2.70	1	170	170	170	153	RW B, CH 66	1770640	5905277	53.14	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00551

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 23/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00553
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00553

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
23/04/2021	ETAM21W00553	SC	167	1.94	24.7	1.56	2.70	4	UTP	UTP	UTP	UTP	Stage 16	1770831	5905292	55.50	Silty CLAY	
23/04/2021	ETAM21W00553	SC	168	1.95	23.5	1.58	2.70	4	UTP	UTP	UTP	UTP	Stage 16	1770829	5905313	55.55	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00553

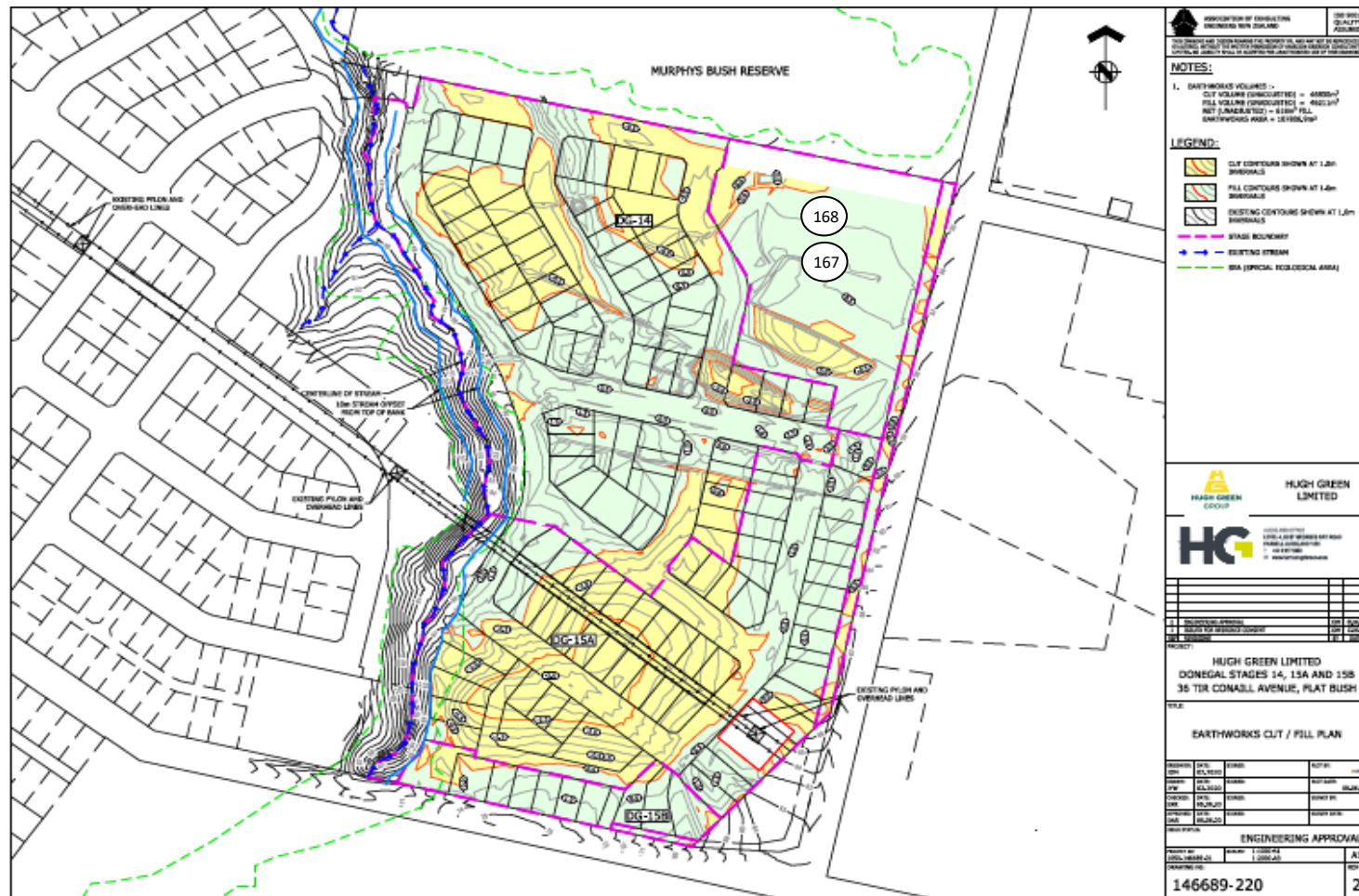
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 23/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00560
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00560

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 28/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
27/04/2021	ETAM21W00560	LW	169	1.84	30.0	1.42	2.70	5	179+	179+	140	146	RW B, CH 175	1770654	5905263	53.30	Silty CLAY	
27/04/2021	ETAM21W00560	LW	170	1.83	34.3	1.36	2.70	3	179+	179+	179+	179+	RW B, CH 168	1770649	5905272	53.30	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00560

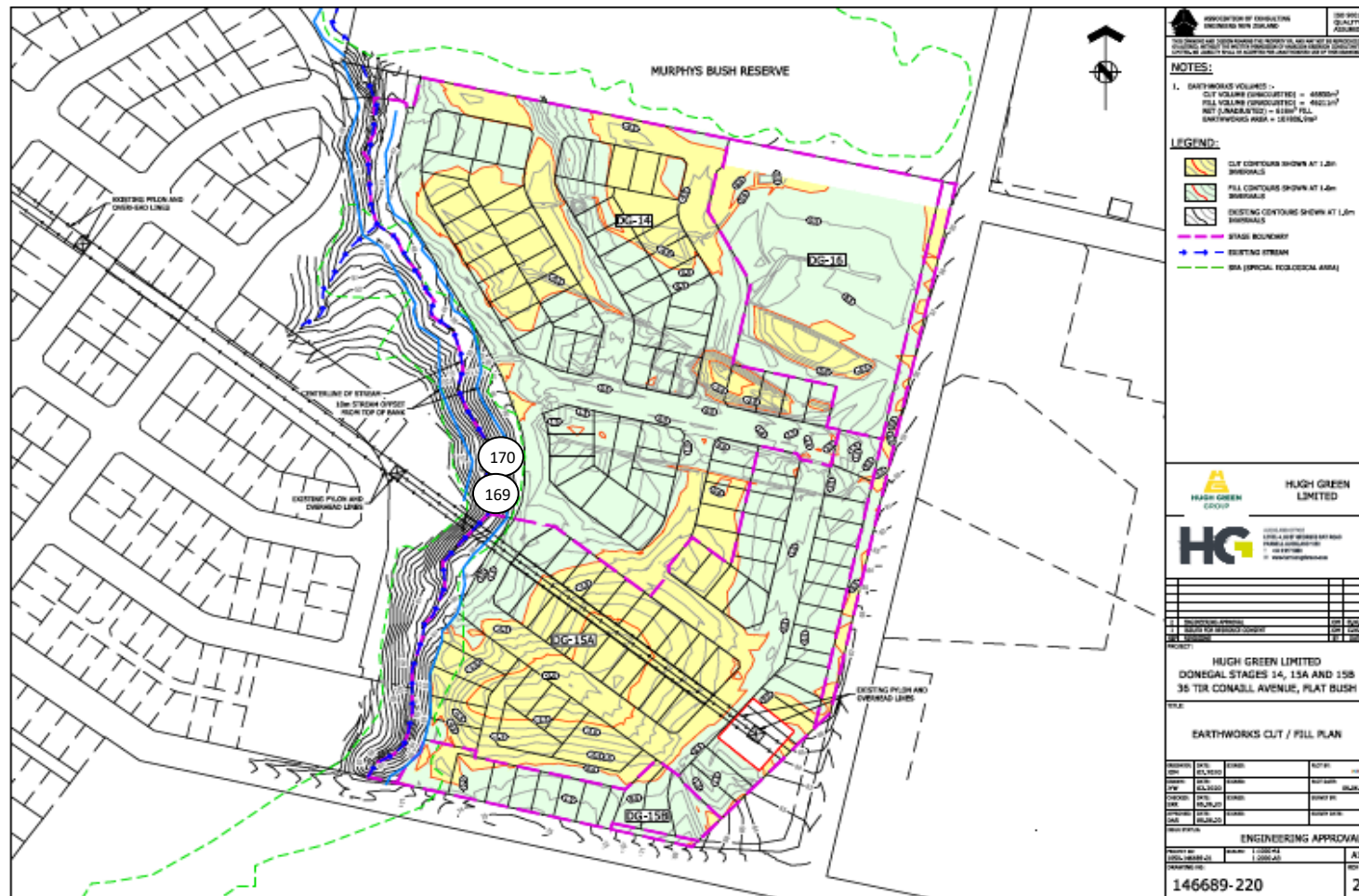
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 27/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00563
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00563

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 29/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
28/04/2021	ETAM21W00563	LW	171	1.91	27.4	1.50	2.70	4	146	156	179+	179+	RW B, CH 171	1770649	5905265	53.80	Silty CLAY	
28/04/2021	ETAM21W00563	LW	172	1.86	34.2	1.39	2.70	1	179+	179+	179+	168	RW B, CH 160	1770645	5905275	53.65	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00563

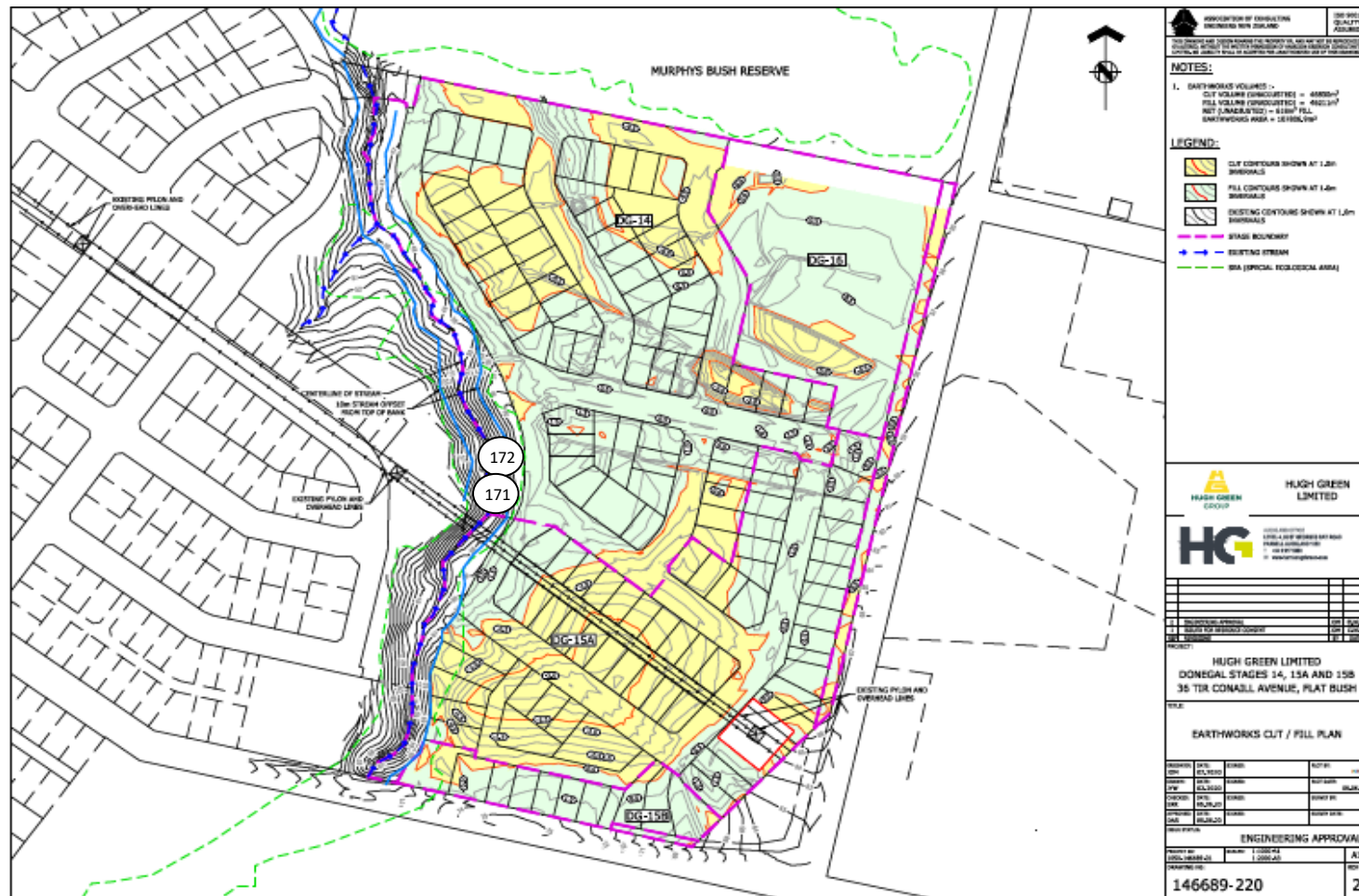
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 28/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00564
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00564

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 29/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
28/04/2021	ETAM21W00564	LW	173	1.93	25.7	1.54	2.70	4	UTP	UTP	UTP	UTP	RW B, CH 170	1770652	5905263	54.25	Silty CLAY	
28/04/2021	ETAM21W00564	LW	174	1.99	21.6	1.63	2.70	4	UTP	UTP	UTP	UTP	RW B, CH 160	1770647	5905273	54.05	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00564

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 28/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00570
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00570

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 30/04/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
29/04/2021	ETAM21W00570	LW	175	1.94	36.9	1.42	2.70	0	UTP	UTP	UTP	179+	RW B, CH 173	1770655	5905264	54.75	Silty CLAY	
29/04/2021	ETAM21W00570	LW	176	1.92	30.9	1.47	2.70	0	UTP	UTP	UTP	168	RW B, CH 165	1770651	5905274	54.20	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00570

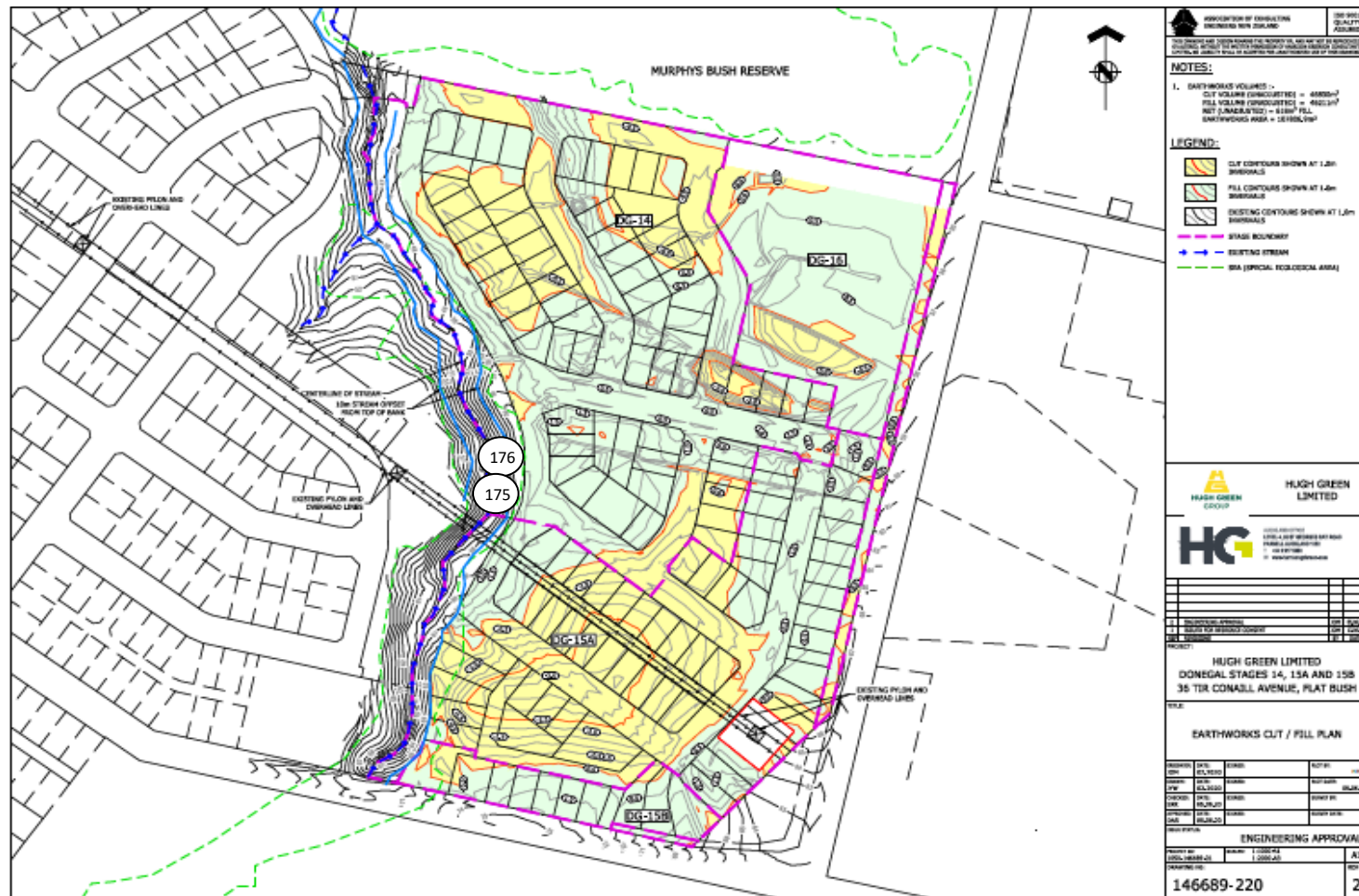
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 29/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00579
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00579

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 3/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
30/04/2021	ETAM21W00579	LW	177	1.85	38.7	1.33	2.70	0	179+	179+	179+	179+	RW B Embankment	1770645	5905266	54.00	Silty CLAY	
30/04/2021	ETAM21W00579	LW	178	1.87	39.2	1.34	2.70	0	UTP	UTP	UTP	179+	RW B Embankment	1770646	5905253	54.45	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00579

Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: LW

Date tested: 30/04/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00584
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00584

Client: Tetra Tech Coffey (NZ) Limited- Auckland
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 5/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
3/05/2021	ETAM21W00584	LW	179	1.92	27.6	1.51	2.70	3	180+	180+	180+	180+	Stage 16	1770829	5905296	56.70	Silty CLAY	
3/05/2021	ETAM21W00584	LW	180	1.86	28.3	1.45	2.70	5	180+	180+	180+	180+	Stage 16	1770842	5905325	55.30	Silty CLAY	
3/05/2021	ETAM21W00584	LW	181	1.93	26.6	1.53	2.70	3	180+	180+	180+	180+	Stage 16	1770875	5905326	55.20	Silty CLAY	
3/05/2021	ETAM21W00584	LW	182	1.81	29.6	1.40	2.70	7	180+	180+	180+	180+	RW B, Backfill	1770648	5905263	54.57	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM01121AA

Work Order No: ETAM21W00584

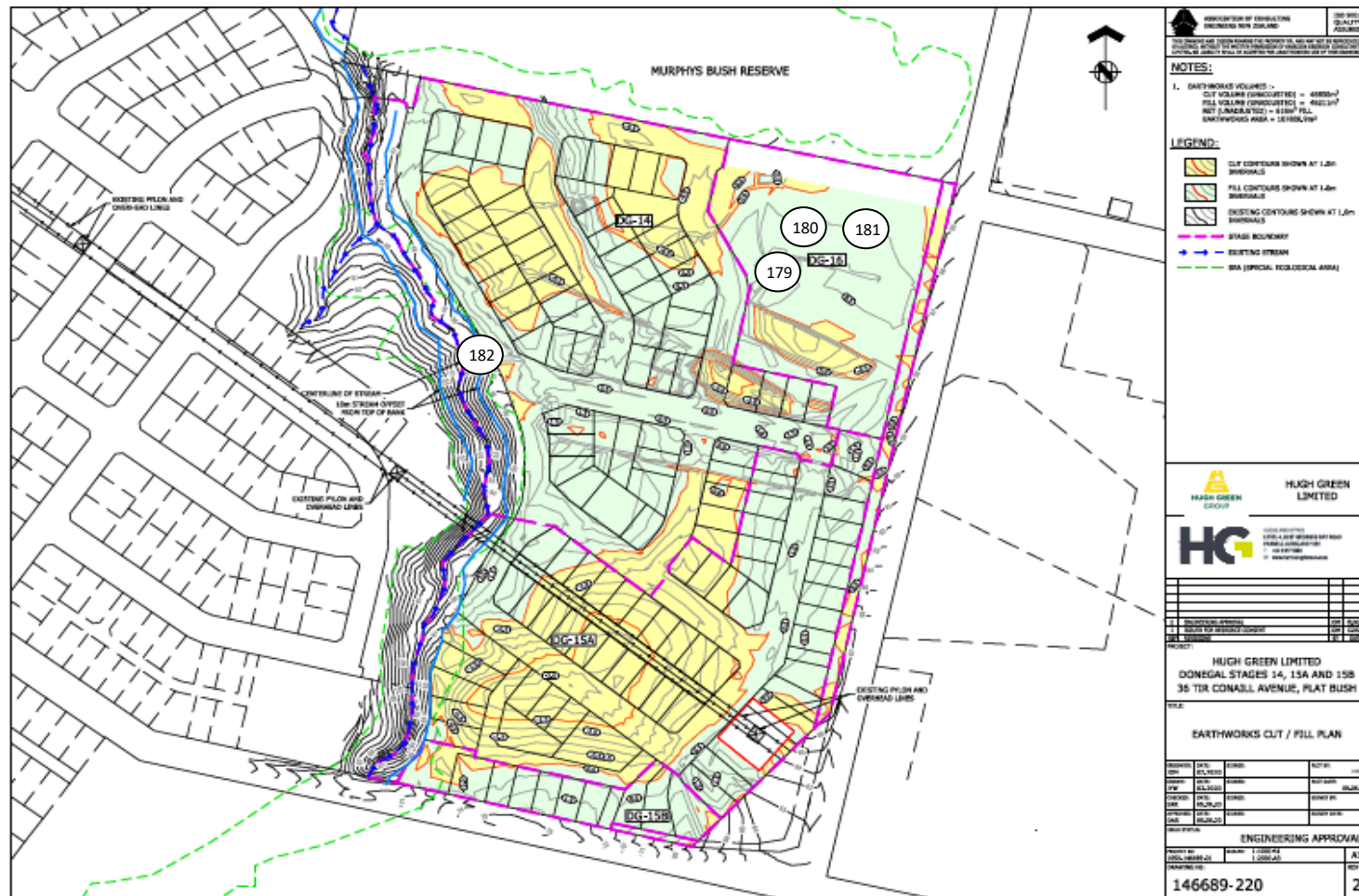
Page No: 2 of 2

Project: 773-GENZAUCK16856AE - DONEGAL STUD - Stage 14 - 16

Location: As below

Tested by: SC

Date tested: 3/05/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00685
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00685

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 24/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
20/05/2021	ETAM21W00685	AK	183	1.77	38.8	1.28	2.70	3	UTP	UTP	UTP	UTP	Retaining Wall C	1770650	5905137	59.30	Clayey Silt	CH 37
20/05/2021	ETAM21W00685	AK	184	1.73	41.6	1.22	2.70	4	94	94	101	101	Retaining Wall C	1770639	5905118	59.90	Clayey Silt	CH 36
20/05/2021	ETAM21W00685	AK	185	1.75	41.9	1.23	2.70	3	79	94	108	101	Retaining Wall C	1770630	5905110	60.37	Clayey Silt	CH 47

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client:	Coffey Services (NZ) Limited (Auckland) PO Box 8261, Symonds Street Auckland 1150
Principal:	Ray Berry
cc to:	-
Project No.:	773-ETAM01121AA
Project Name.:	773-GENZAUCK16856AE - DONEGAL STUD
Project Location:	DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00685

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00685

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.

{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 24/05/2021



SITE PLAN - NOT TO SCALE

Earthworks Fill Report

Report No: EFIL:ETAM21W00693
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00693

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 24/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZS 2001); Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2); Water Content Testing (in accordance with NZS 4402:1986 Test 2.1);

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
21/05/2021	ETAM21W00693	AK	186	1.92	24.1	1.54	2.70	6	101	101	137	137	Retaining Wall C, CH 36	1770639	5905118	59.9	Clayey SILT	Retest of Test No. 184

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00693

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00693

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 24/05/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00702
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00702

Client: Coffey Services (NZ) Limited (Auckland)
 PO Box 8261, Symonds Street
 Auckland 1150
Principal: Ray Berry
cc to: -
Project No.: 773-ETAM01121AA
Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD
Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
 {This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
 Senior Technician
 IANZ Site Number: 105
 Date of Issue: 25/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
24/05/2021	ETAM21W00702	AK	187	1.80	38.1	1.30	2.70	2	170	180+	145	145	Retaining Wall C, CH 13	1770646	5905140	59.50	Clayey SILT	
24/05/2021	ETAM21W00702	AK	188	1.78	35.6	1.31	2.70	5	UTP	UTP	180	178	Retaining Wall C, CH 36	1770639	5905118	59.30	Clayey SILT	Retest of Test No. 186
24/05/2021	ETAM21W00702	AK	189	1.75	39.4	1.25	2.70	4	170	170	153	153	Retaining Wall C, CH 47	1770630	5905110	60.37	Clayey SILT	Retest of Test No. 185

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00702

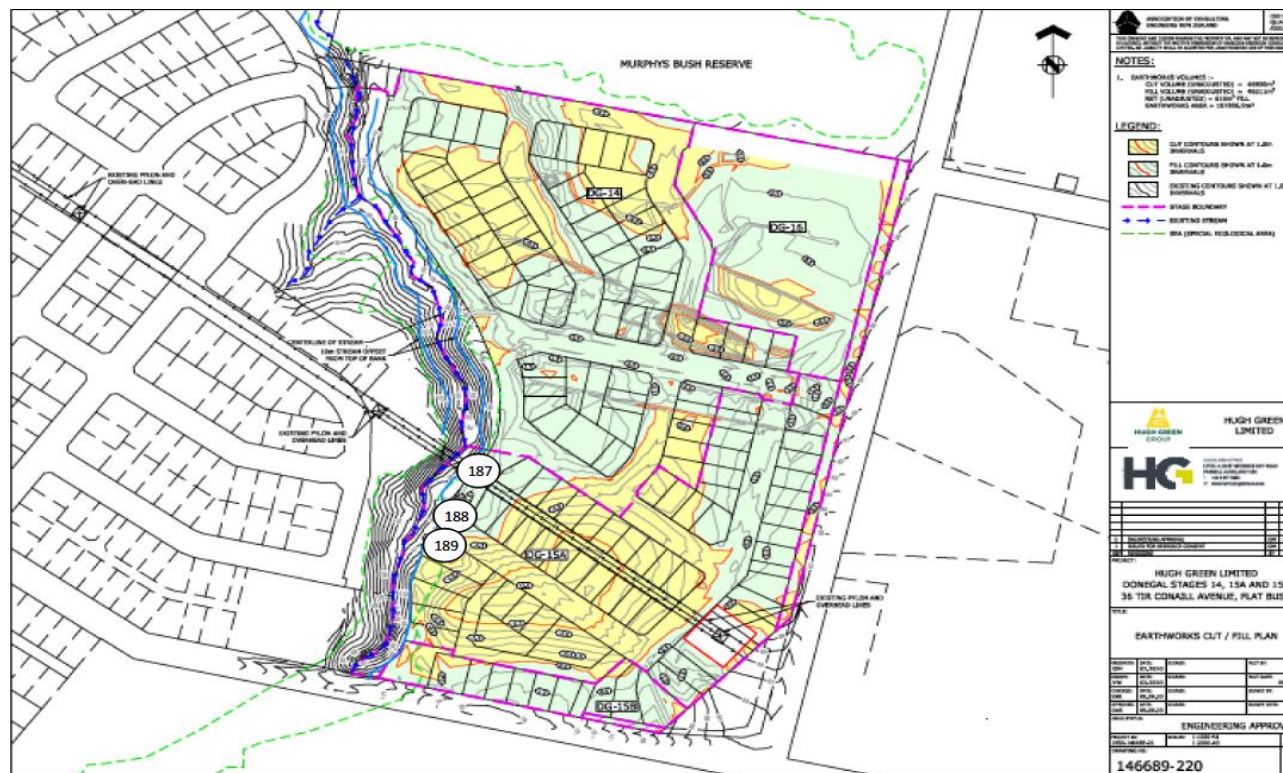
Issue No: 1

This report replaces all previous issues of report no. EFIL:ETAM21W00702



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 25/05/2021



SITE PLAN - NOT TO SCALE

Earthworks Fill Report

Report No: EFIL:ETAM21W00706
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00706

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 26/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
25/05/2021	ETAM21W00706	AK	190	1.78	35.9	1.31	2.70	4	180+	180+	180+	145	Retaining Wall C, CH 20	1770638	590126	59.75	Silty CLAY	
25/05/2021	ETAM21W00706	AK	191	1.77	40.9	1.26	2.70	2	145	161	153	153	Retaining Wall C, CH 38	1770631	590111	60.80	Silty CLAY	
25/05/2021	ETAM21W00706	AK	192	1.75	42.9	1.23	2.70	2	161	170	145	170	Retaining Wall C, CH 50	1770638	590116	61.50	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00706

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00706

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 26/05/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00716
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00716

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
26/05/2021	ETAM21W00716	LW	193	1.81	41.0	1.28	2.70	0	179+	179+	179+	179+	RW C, CH 45	1770632	5905111	61.30	Silty CLAY	
26/05/2021	ETAM21W00716	LW	194	1.77	38.4	1.28	2.70	4	179+	179+	179+	179+	RW C, CH 25	1770642	5905126	60.30	Silty CLAY	
26/05/2021	ETAM21W00716	LW	195	1.85	33.5	1.38	2.70	3	179+	179+	179+	179+	RW C, CH 5	1770654	5905141	59.75	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client:	Coffey Services (NZ) Limited (Auckland) PO Box 8261, Symonds Street Auckland 1150
Principal:	Ray Berry
cc to:	-
Project No.:	773-ETAM01121AA
Project Name.:	773-GENZAUCK16856AE - DONEGAL STUD
Project Location:	DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00716

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00716



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.

{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/05/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00717
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00717

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/05/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
26/05/2021	ETAM21W00717	LW	196	1.84	30.8	1.40	2.70	5	UTP	UTP	179+	179+	Retaining Wall C, CH 50	1770634	5905108	61.45	Silty CLAY	
26/05/2021	ETAM21W00717	LW	197	1.83	35.0	1.36	2.70	3	UTP	UTP	179+	179+	Retaining Wall C, CH 30	1770641	5905125	60.80	Silty CLAY	
26/05/2021	ETAM21W00717	LW	198	1.86	34.8	1.38	2.70	1	UTP	UTP	UTP	179+	Retaining Wall C, CH 5	1770652	5905142	59.95	Silty CLAY	

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00717

Issue No:1

This report replaces all previous issues of report no. EFIL:ETAM21W00717

Client: Coffey Services (NZ) Limited (Auckland)
PO Box 8261, Symonds Street
Auckland 1150

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 27/05/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00938
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00938

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 13/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
12/07/2021	ETAM21W00938	LW	199	1.75	38.9	1.26	2.70	4	105	125	134	143	Stage 15 B Fill Area	1770646	5904979	-	Silty CLAY	0.6m below finish level
12/07/2021	ETAM21W00938	LW	200	1.85	30.7	1.42	2.70	4	146	120	149	128	Stage 15 B Fill Area	1770660	5904979	-	Silty CLAY	0.6m below finish level
12/07/2021	ETAM21W00938	LW	201	1.94	27.2	1.52	2.70	2	118	113	108	131	Stage 15 B Fill Area	1770672	5904973	-	Silty CLAY	0.7m below finish level
12/07/2021	ETAM21W00938	LW	202	1.85	31.9	1.40	2.70	4	140	134	123	128	Stage 15 B Fill Area	1770699	5904967	-	Silty CLAY	0.9m below finish level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Report No: EFIL:ETAM21W00944
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00944

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 14/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
13/07/2021	ETAM21W00944	SC	203	1.81	37.0	1.32	2.70	2	108	105	125	134	Stage 15B Fill Area	1770646	5904979	-	Silty CLAY	Retest of Test No. 199
13/07/2021	ETAM21W00944	SC	204	1.84	40.5	1.31	2.70	0	118	108	123	120	Stage 15B Fill Area	1770660	5904979	-	Silty CLAY	Retest of Test No. 200
13/07/2021	ETAM21W00944	SC	205	1.88	33.4	1.41	2.70	1	134	134	105	108	Stage 15B Fill Area	1770672	5904973	-	Silty CLAY	Retest of Test No. 201
13/07/2021	ETAM21W00944	SC	206	1.84	34.2	1.37	2.70	3	128	108	118	120	Stage 15B Fill Area	1770699	5904967	-	Silty CLAY	Retest of Test No. 202

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00944

Issue No: 1

This report replaces all previous issues of report no. EFIL:ETAM21W00944



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 14/07/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00946
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00946

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
14/07/2021	ETAM21W00946	LW	207	1.77	32.5	1.34	2.70	7	179+	156	131	143	Stage 15B Fill Area	1770652	5904976	-	Silty CLAY	Retest of Test Nos. 199, 203
14/07/2021	ETAM21W00946	LW	208	1.88	32.9	1.42	2.70	1	179+	179+	179+	164	Stage 15B Fill Area	1770662	5904975	-	Silty CLAY	Retest of Test Nos. 200, 204
14/07/2021	ETAM21W00946	LW	209	1.86	29.0	1.44	2.70	5	179+	179+	179+	179+	Stage 15B Fill Area	1770682	5904974	-	Silty CLAY	Retest of Test Nos. 201, 205
14/07/2021	ETAM21W00946	LW	210	1.85	33.3	1.39	2.70	3	179+	179+	168	160	Stage 15B Fill Area	1770695	5904968	-	Silty CLAY	Retest of Test Nos. 202, 206

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00946

Issue No: 1

This report replaces all previous issues of report no. EFIL:ETAM21W00946



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/07/2021



SITE PLAN (NOT TO SCALE)

Earthworks Fill Report

Report No: EFIL:ETAM21W00960
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00960

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
15/07/2021	ETAM21W00960	SC	211	1.89	30.8	1.45	2.70	2	168	168	168	168	Stage 15 B	1770652	5904976	-	Silty CLAY	0.6m below finished level
15/07/2021	ETAM21W00960	SC	212	1.85	34.6	1.37	2.70	2	164	164	168	168	Stage 15 B	1770662	5904982	-	Silty CLAY	0.3m below finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

Earthworks Fill Report

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16

Report No: EFIL:ETAM21W00960

Issue No: 1

This report replaces all previous issues of report no. EFIL:ETAM21W00960



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}

[Signature]

Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 16/07/2021



Earthworks Fill Report

Report No: EFIL:ETAM21W00971
Issue No:1
This report replaces all previous issues of report no. EFIL:ETAM21W00971

Client: Tetra Tech Coffey (NZ) Limited- Auckland
Coffey House, Level 4, Teed Street
New Market Auckland 1023

Principal: Ray Berry

cc to: -

Project No.: 773-ETAM01121AA

Project Name.: 773-GENZAUCK16856AE - DONEGAL STUD

Project Location: DONEGAL STUD Stage 14 - 16



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation.
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Approved Signatory: Cesar Pura
Senior Technician
IANZ Site Number: 105
Date of Issue: 19/07/2021

Test Results

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:2015 Test 4.2): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1):

Date Sampled	Work Order	Tested By	Test No.	Wet Density t/m ³	Oven Water Content %	Dry Density t/m ³	Solid Density t/m ³	Air Voids %	Field Shear Strength (UTP = Unable to penetrate) kPa				Test Location	Easting	Northing	RL	Material Tested	Comments
16/07/2021	ETAM21W00971	SC	213	1.81	28.6	1.41	2.70	8	177	177	173	170	Stage 16 Backfill	1770824	5905358	-	Silty CLAY, aggregate present	2.5m below finished level
16/07/2021	ETAM21W00971	SC	214	1.86	38.2	1.35	2.70	0	177	177	159	159	Stage 15 B Backfill	1770691	5904974	-		At finished level
16/07/2021	ETAM21W00971	SC	215	1.93	35.4	1.42	2.70	0	177	177	159	159	Stage 15 B Backfill	1770673	5904975	-		At finished level

Comments:

Moisture contents and dry densities are corrected against oven dried moisture content testing. Probe Depth: 150mm; SG= 2.70 T/m3 (Assumed)

