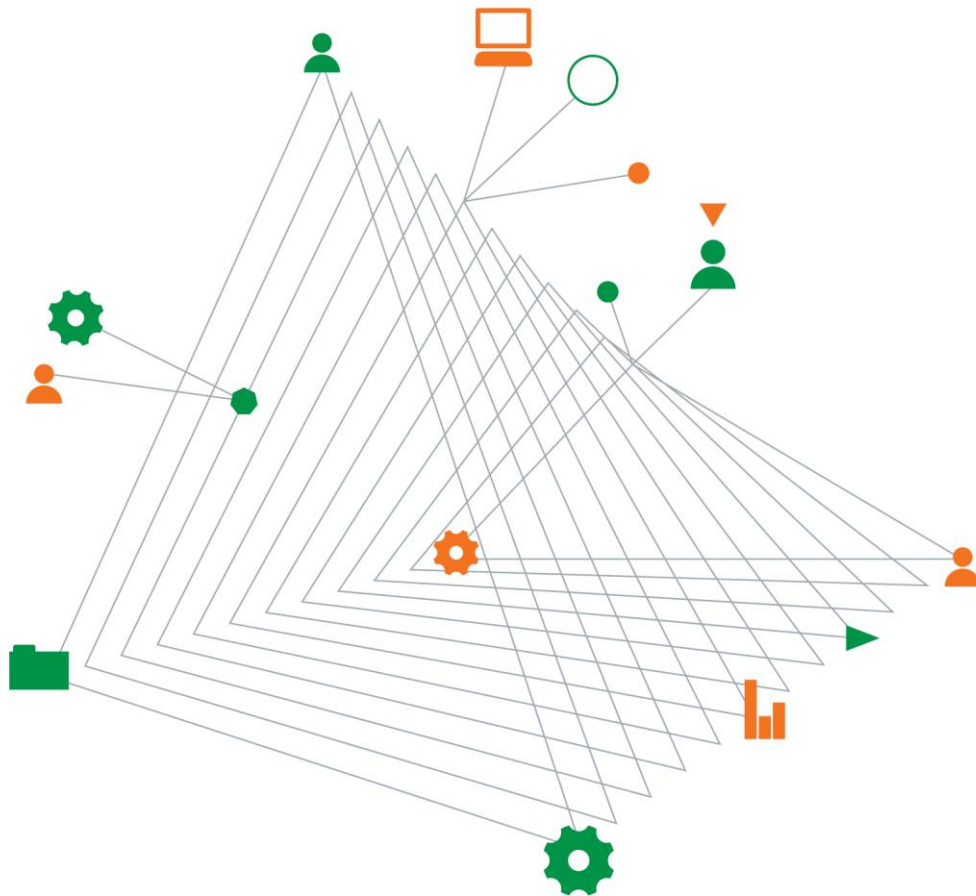


Hugh Green Limited

**Donegal Stud Residential Subdivision Stage 10A at
84 Thomas Road, Flat Bush**

Geotechnical Completion Report
GENZAUCK16856AB

24 September 2018



Experience
comes to life
when it is
powered by
expertise

Donegal Stud Stage 10A at 84 Thomas Road, Flat Bush

Prepared for
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24 September 2018

Our Reference: GENZAUCK16856AB

RE: Geotechnical Completion Report for Residential Subdivision at Donegal Stud Stage 10A, 84 Thomas Road, Flat Bush, Auckland

This Geotechnical Completion Report presents all supporting geotechnical data, our Suitability Statement, and the Harrison Grierson Consultants Limited as-built plan set in relation to land development works recently completed at the above location.

It has been prepared in accordance with instructions received from Harrison Grierson Consultants Limited and forms part of the documentation required by Auckland Council to achieve certification under Section 224(c) of the Resource Management Act.

If you have any queries or you require any further clarification on any aspects of this report, please do not hesitate to contact the undersigned.

For and on behalf of Coffey



Ray Berry
Associate Engineering Geologist

Quality information

Revision history

Revision	Description	Date	Author	Reviewer	Signatory
0	Final	24/09/2018	RB	PBCB	PBCB

Distribution

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1. Introduction and Description of Subdivision

This Geotechnical Completion Report (GCR) 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 (HGCL) as-built plan set relating to Stage 10A 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 (Sheet 1 of 2)	139718-AB200-Rev B	12 September 2018
Finished Contours As-Built Plan (Sheet 2 of 2)	139718-AB200-Rev B	12 September 2018
Cut to Fill As-Built Plan (Sheet 1 of 2)	139718-AB220-Rev B	12 September 2018
Cut to Fill As-Built Plan (Sheet 2 of 2)	139718-AB220-Rev B	12 September 2018

This report covers the construction period late October 2017 to July 2018 and is intended to be used for certification purposes for:

- 84 residential lots numbered Lots 1 to 5 and 7 to 85;
- 1 superlot numbered Lot 6;
- 1 culvert road crossing connecting to Tir Conaill Avenue beyond the western boundary;
- The extension of Tir Conaill Avenue from the culvert road crossing to the eastern site boundary;
- 6 new roads named Cloonlyon Drive, Coorven Crescent, Drumbouy Drive, Cumber Lane, Clonmany Road and Bushfield Drive;
- 1 joint own access lane (JOAL); and,
- 1 new recreation reserve numbered Lot 405.

Stage 10A is located at 84 Thomas Road, Flat Bush, and as can be seen on the Cut to Fill as-built plans, most of the lots have been partly or totally affected by filling to a maximum depth of approximately 8 metres.

2. Related Reports

Geotechnical Reports prepared on the subject land by this consultancy include:

- Geotechnical Investigation Report on Donegal Stud Stage 8 Residential Subdivision, reference GENZAUCK16403AA, dated 12 December 2014;
- Plan Review for Proposed Earthworks supporting the development of Donegal Stud Stage 8, reference GENZAUCK16403AC dated 22 July 2015
- Geotechnical Completion Report on Donegal Stud Stage 8, reference GENZAUCK16403AC, dated 6 December 2016; and

- Geotechnical Investigation Report on Proposed Donegal Stud Stage 10 Residential Subdivision, 62 Thomas Road, Flat Bush, reference GENZAUCK16856AB, dated 11 May 2017.

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 were:

- 2 x Motor Scrapers;
- 5 x Bulldozers with Scoops;
- 1 x Bulldozer;
- 3 x Dump Trucks;
- 5 x Excavators;
- 1 x Tractor with Scoop;
- 1 x Tractor with Discs;
- 2 x Tractors;
- 2 x Front End Loaders;
- 1 x Water Truck;
- 2 x Sheep Foot Compactors;
- 1 x Pad Foot Compactor;
- 1 x Grader; and
- 2 x Vibrating Drum Rollers.

3.2. Construction Programme

Earthworks construction for Stage 10A commenced in late October / early November 2017 with enabling works involving the construction of sediment retention ponds and diversion bunds. Shortly after the enabling works were completed topsoil stripping commenced, focussing on the western portion of the site.

By mid-November 2017 earthworks construction had expanded to the stripping of vegetation and mucking out of mullock from the flanks and invert of a pond. The pond was part of two pre-existing ponds formed in a watercourse that passes through the centre of Stage 10A. Adjacent to the ponds were pre-existing farm buildings that were demolished and removed from site as the stripping of the ponds progressed.

Large deposits of uncertified fill were uncovered on the gully flanks adjacent to the lower pond. Deep deposits of mullock and soft unsuitable alluvial deposits were also uncovered when the vegetation was removed from the pond. The unsuitable deposits were fully removed to expose competent natural ground in the base of the undercut. Once all the unsuitable material had been removed the resulting

excavation was backfilled with compacted Soft Pit Run (SPR) to the existing invert / spring level. Groundwater seepages were also observed in the flanks of the pond and these were tapped by covering them with SPR hardfill. A 160mm perforated draincoil was then placed along the natural water line of the mucked-out pond and then covered with drainage metal and geotextile cloth.

Filling of the lower pond / watercourse commenced by late November 2017 once the draincoil was installed. As fill was being placed in the lower pond, works commenced to prepare the upper pond for filling. Stripping of the pond flanks and the head of a gully between the pond and Thomas Road uncovered further deposits of unsuitable fill. The unsuitable fill mostly comprised mixtures of sands, silts and clays with large basalt rock boulders, topsoil and construction debris. Due to the large volume of this material and the relatively deep nature of the gully / pond fills, most of the basalt rock and construction debris was removed from the unsuitable fill so the remaining material could be conditioned and mixed into the deep gully / pond fills below 2m from finished ground level.

Mucking out of the upper pond / gully, installation of SPR drainage blankets and underfill draincoils were completed by late November 2017. Once completed, filling of the upper pond / gully with mixed materials commenced. Stripping, conditioning, mixing and placement of the unsuitable material with natural soils sourced from the cut areas continued steadily until mid-December 2017. Filling of this area continued from this point with clean clay until the Christmas holiday break. Filling of the ponds/ gully resumed after the break and was mostly complete by February 2018.

Once the filling of the gully and ponds were complete filling of less extensive fill areas began. The fill materials were sourced from the down cutting of the higher areas within Stage 10B and appeared similar to those used to fill the gully / ponds. However, the compacted materials consistently failed to meet the minimum criteria of 10% air voids but when proof roll tested with a loaded dump truck and shear vane, the materials met generally accepted criteria. To identify the cause of this problem, samples of the fill material were collected and laboratory tests were performed for allophane content and solid density. The results of the laboratory testing confirmed the solid density of the material had changed (reduced). This information was then relayed to the testing technicians so the correct values could be input into the Nuclear Density Meter (NDM). Accordingly, field test results improved and the areas that failed previously met the minimum criteria.

The installation and formation of internal road subgrades commenced in late December and continued after the Christmas break while the pond / gully areas were being filled. By late February 2018 the flanks of the watercourse that formed the western site boundary had been stripped of vegetation in preparation for the placement of landscape fill to buttress the existing natural slope.

Prior to fill being placed, two, 3m deep shear keys were excavated and replaced with rock along the toe of the proposed landscape fill batter. Once the shear keys were installed (and drainage blanket formed), landscape fill comprising of basalt rock boulders intermixed with sand, silt, clay and gravel was placed in successive layers until a 1(v):3(h) batter had been formed. Due to the composition of the fill, compaction was monitored by means of proof roll testing with a loaded dump truck and where excessive deflections were observed the materials were removed, conditioned and replaced and then rechecked before the next layer of fill was placed. To allow for landscape plantings and the formation of footpaths over this portion of the site, the top 1m of material placed to form the landscape fill batter comprised sands, silts, clays, gravel and topsoil. The work to form the landscape fill batter continued steadily throughout February and March 2018.

By mid-March 2018 works to construct a box culvert road crossing connecting Donegal Stud Stage 8 to Stage 10A commenced. To remove soft organic and / or soft unsuitable alluvial deposits a 2m depth undercut was performed beneath and slightly beyond the foot print of the box culvert. As with the adjacent gully / pond fills, the undercut for the box culvert was backfilled with compacted SPR hardfill. To prevent water passing under the box culvert at the inlet end, the SPR fill was removed and a 1m x 1m (min) block of compacted clay fill was placed. The inlet end (lip) of the box culvert was then placed on the compacted clay. As an added protection a small trench was formed across the width of the box culvert and connecting sections of the block walls. The trench was backfilled with site concrete (10 MPa).

Backfilling of the box culvert to form the road crossing commenced once all the box culvert sections had been lifted into place and foundations for the block walls were constructed. Construction of the road subgrade and block walls and placement of geogrid continued steadily between late March and June 2018.

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 and our project specific recommendations and specifications. Project specific inspections were required on Stage 10A for:

- Topsoil stripping;
- Gully areas prior to the placement of fill materials to ascertain that all mullock and soft inorganic subsoils had been removed to our satisfaction;
- Placement of underfill drainage in the bases of gullies;
- Construction and proof roll testing of reserve fill embankment;
- Foundation excavations for box culvert and associated block retaining walls;
- Observation of bulk cut to fill operations; and
- Removal of pre-existing uncontrolled fill placed to form pond bunds or to cover gully flanks.

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%
	Maximum value	
(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. Within Stage 10A there were several occasions where the filling failed to meet the minimum compaction criteria. As discussed above in Section 3.2, cut material sourced from areas to the north and east of Stage 10A contained engineering properties that were different to the fill placed previously. The change in soil properties lead to increased air void counts and subsequently, failed test results being recorded.

Samples collected from the cut areas were then submitted to a soils laboratory and subjected to a range of tests to identify reasons causing the high air void counts. To enable bulk cut to fill operations to continue, existing and subsequent fill layers containing failed tests results were re-assessed by conducting proof roll testing using a fully loaded dump truck and as an added check, shear vane testing.

This procedure continued until laboratory testing identified that the Solid Density of the cut material was the contributing factor leading to increased air void counts being recorded. Subsequently the Solid Density parameter entered into the field testing equipment (Nuclear Density Meter) was reduced to the maximum achievable level derived from laboratory testing. The laboratory test results are included in Appendix B.

Elsewhere, test failures were relayed to the site foreman and/or his staff, and the affected areas of fill were re-worked and tested as necessary.

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 2018 and drilled a series of hand auger boreholes at appropriate natural ground 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 our 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 within the zone of influence of conventional shallow residential building foundation loads.

It should be noted that NZS 3604 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

Two sets of laboratory Expansive Soil Tests were carried out on samples selected from within the zone of likely influence of shallow building foundations in Stage 10A.

These tests were carried out in accordance with NZS 4402, "Methods of Testing Soils for Civil Engineering Purposes" test section 2 and were primarily intended to assess the Expansive Classes of the site materials as defined in AS 2870, "Residential Slabs and Footings – Construction".

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

The AS 2870 expansive site Class for this subdivision is assessed to be M (moderate), and is based on the laboratory results together with our visual-tactile assessment and local knowledge. Specific design alternatives for this expansive site Class are presented in the following Suitability Statement.

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 residential building developments.

5.4. 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.

5.5. 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.

5.6. 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 Stage 10A based on the as-built plans provided.

5.7. Road Subgrades

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

5.8. Underfill Drains

During the development of Stage 10A a series of perforated underfill drains were placed in the mucked-out gully inverts to tap groundwater seepages prior to filling, as required by NZS 4431.

These drains were intended to intercept localised groundwater seepages and springs during earthworks and to help provide general control over groundwater levels. They are buried beneath 1 to 8m depth of engineered fill. In the event of any foundation solutions being constructed in the 45-degree zone of influence of these drains, they must be endorsed by a Chartered Professional Engineer familiar with the contents of this report to ensure they do not compromise the function of the drains.

5.9. Topsoil

Topsoil depths in likely building platform areas were checked by the drilling of a shallow borehole probe in the approximate centre of each of the lots. 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.

The Contractor has been notified that there are locations within the lots that have excessive topsoil depths (i.e. greater than 300mm). In lieu of re-grading the lots to achieve compliant topsoil depths (150-300mm), Dempsey Wood have agreed to carry out the required remedial work should this become an issue during Building Consent and house construction.

5.10. 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 Coffey Geotechnics reports, recommendations and site instructions,

and that all as-built information and other details provided to the Client and/or Coffey Geotechnics are accurate and correct in all respects.

6. Statement of Professional Opinion as to the Suitability of Land for Building Development

I, Peter Marchant, of Coffey Geotechnics (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 and was retained by the Developer as the Geotechnical Engineer on Stage 10A 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 GENZAUCK16856AB, dated 11 May 2017. 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 Plans have been placed in compliance with NZS 4431 and related documents.
 - b. A geotechnical ultimate bearing capacity of 300 kPa may be assumed for shallow foundation design on all lots.

Where a geotechnical bearing capacity greater than 300 kPa is required, (i.e. outside the limits of NZS 3604, 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 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.

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.

- d. The function of the underfill drains on Lots 30, 31, 38, 39, 42, 43, 44, 45, 47, 52, 53, 57, 58 and 59 must not be impaired by any building development or landscaping works. In particular, any 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.
 - e. The assessed AS 2870:2011 expansive site Class for all lots in Stage 10A is M (moderate).
 - f. Subject to the geotechnical recommendations and expansive soil assessment associated with 3(b), 3(c) 3(d) and 3(e) above:
 - (i) The cut, filled and original ground within residential lot boundaries is generally suitable for residential buildings constructed in accordance with NZS 3604 (that incorporates specific foundation and associated structural design on account of the expansive soils site class) and related documents.
 - (ii) On all lots foundation design may be carried out in accordance with AS 2870:2011 (Class M) or alternatively, a specific foundation and structural design may be undertaken by a Chartered Professional Engineer who should allow for expansive soil effects in the design. The minimum recommended foundation depth below cleared ground level following topsoil removal and benching of building platform areas is 600mm for NZS3604 type strip and pad foundations.
 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 Coffey

Prepared By:



Ray Berry
Associate Engineering Geologist

Reviewed and Authorised By:



Peter Bosselmann
Senior Principal

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.	200	300	M
2	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
3	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
4	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
5	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
6	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
7	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
8	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
9	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
10	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	275	300	M
11	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
12	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
13	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
14	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
15	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
16	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
17	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
18	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
19	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
20	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	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.	>300	300	M
23	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870:2011 Class
24	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
25	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
26	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
27	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
28	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
29	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
30	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
31	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
32	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
33	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
34	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
35	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
36	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
37	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
38	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
39	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
40	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
41	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	175	300	M
42	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
43	Buried underfill drain to be preserved (refer section 6.3(b)).	200	300	M

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870:2011 Class
	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.			
44	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
45	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
46	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
47	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
48	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
49	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
50	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
51	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
52	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
53	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
54	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
55	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
56	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
57	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
58	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
59	Buried underfill drain to be preserved (refer section 6.3(b)). AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870:2011 Class
60	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
61	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
62	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	225	300	M
63	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
64	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
65	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
66	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
67	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
68	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
69	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
70	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
71	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	300	M
72	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	300	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.	250	300	M
75	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	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.	250	300	M
78	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
79	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	225	300	M
80	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
81	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
82	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870:2011 Class
83	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
84	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M
85	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	>300	300	M



Important information about your **Coffey** Report

As a client of Coffey you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by Coffey and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking Coffey to assess how factors that changed subsequent to the date of the report affect the report's recommendations. Coffey cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, owners should retain the services of Coffey through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.

Interpretation by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other project design professionals who are affected by the report. Have Coffey explain the report implications to design professionals affected by them and then review plans and specifications produced to see how they incorporate the report findings.



Important information about your **Coffey** Report

Data should not be separated from the report*

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples. These logs etc. should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Geoenvironmental concerns are not at issue

Your report is not likely to relate any findings, conclusions, or recommendations about the potential for hazardous materials existing at the site unless specifically required to do so by the client. Specialist equipment, techniques, and personnel are used to perform a geoenvironmental assessment. Contamination can create major health, safety and environmental risks. If you have no information about the potential for your site to be contaminated or create an environmental hazard, you are advised to contact Coffey for information relating to geoenvironmental issues.

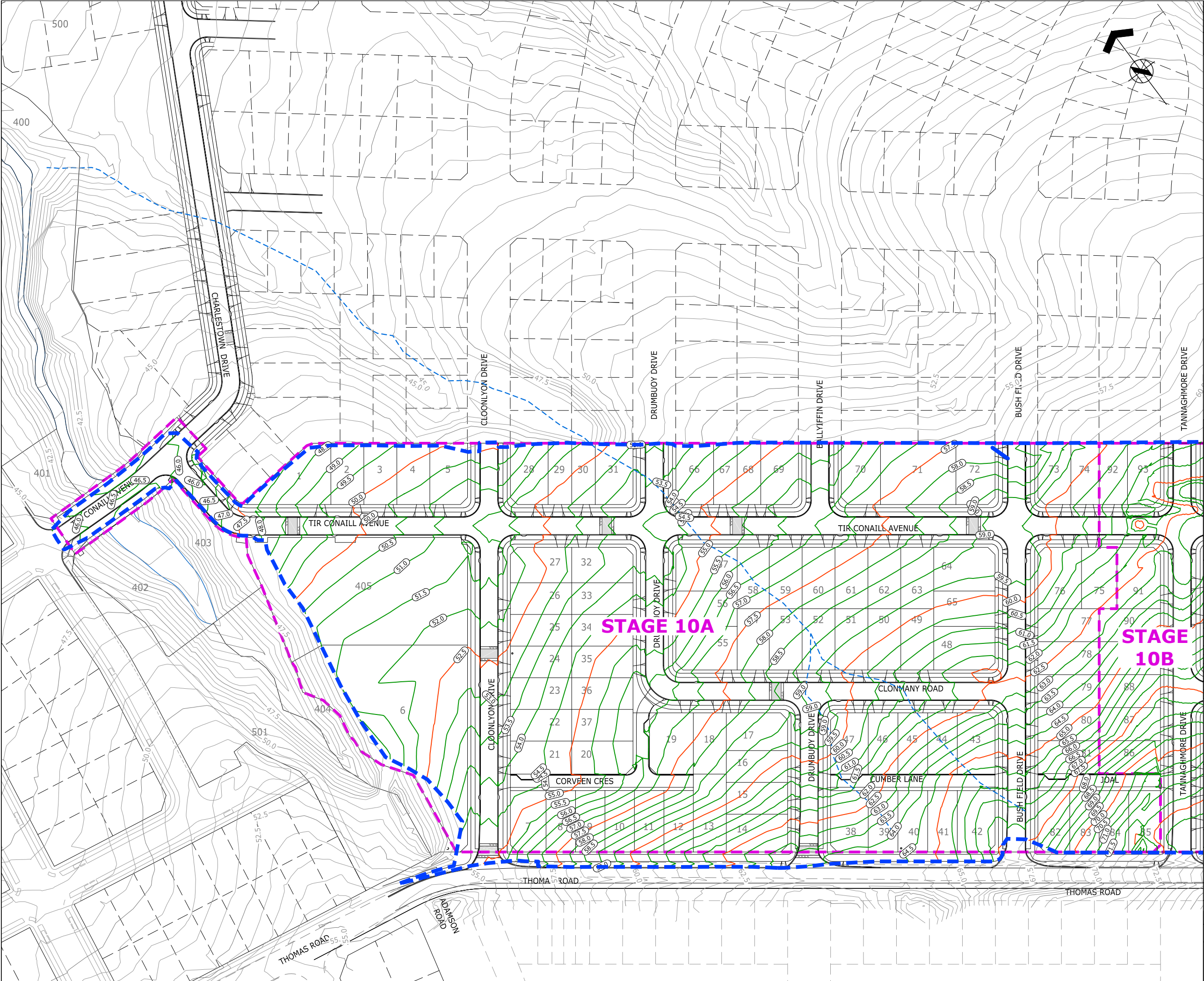
Rely on Coffey for additional assistance

Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a project, from design to construction. It is common that not all approaches will be necessarily dealt with in your site assessment report due to concepts proposed at that time. As the project progresses through design towards construction, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than the design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.

**Appendix A – Harrison Grierson Consultants
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:

- ORIGIN OF LEVELS
S 66 SO 48643
RL 54.50m
- ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE

LEGEND:

- STAGE BOUNDARY
- EXTENT OF EARTHWORKS
- CONTOUR MAJOR
- CONTOUR MINOR
- EXISTING 3 x 1500 NOVAFLOW
- EXISTING 1000 NOVAFLOW
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR

ENGINEERING APPROVAL
ENG-60310923

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: 12.09.2018

Name: WILLIAM JOHN FREDERICK PLATTS

Phone: 09-917-5000

Email: w.platts@harrisingrierson.com



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

B	AS-BUILT	DXK	12.09.18
A	AS-BUILT	WJP	07.09.18
REF	REVISIONS	BY	DATE

PROJECT:

HUGH GREEN LIMITED
DONEGAL STUD
84 THOMAS ROAD, FLAT BUSH

TITLE:

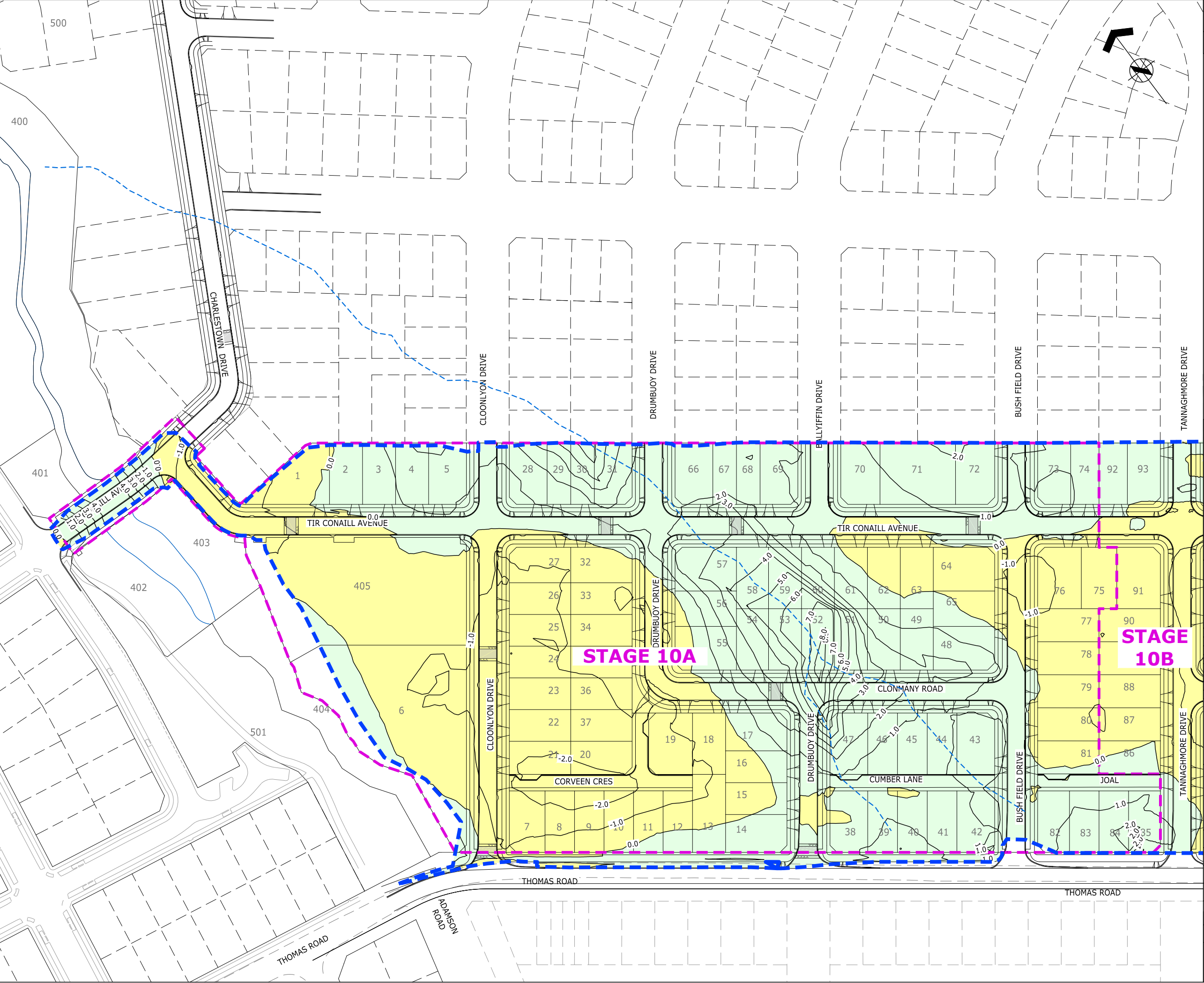
FINISHED CONTOURS
AS-BUILT PLAN
SHEET 1 OF 2

ORIGINATOR:	DATE:	SIGNED:	PLOT BY:
DW	07.2018		BKB
DRAWN:	DATE:	SIGNED:	PLOT DATE:
DXK,BB	08.2018		12.09.18
CHECKED:	DATE:	SIGNED:	SURVEY BY:
WJP	12.09.18		DEMPSEY WOOD
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
WJP	12.09.18		07.2018

ISSUE STATUS:

AS-BUILT

PROJECT No:	SCALES:	A1
1050-139718-01	1:750-A1 1:1500-A3	
DRAWING No:		REV
139718-AB200		B





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NOTES:
1. ORIGIN OF LEVELS
S 66 SO 48643
RL 54,50m
2. ORIGIN OF COORDINATES
S 66 SO 48643
5905356.71mN
1770941.22mE

LEGEND
— 1.0 — FILL CONTOUR
— -1.0 — CUT CONTOUR
- - - STAGE BOUNDARY
- - - EXTENT OF EARTHWORKS
CUT
FILL
- - - EXISTING 3 x 1500 NOVAFLOW
- - - EXISTING 1000 NOVAFLOW

ENGINEERING APPROVAL
ENG-60310923

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: 12.09.2018
Name: WILLIAM JOHN FREDERICK PLATTS
Phone: 09-917-5000
Email: w.platts@harrisonsgrinson.com



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

B	AS-BUILT	DXK	12.09.18
A	AS-BUILT	WJP	07.09.18
REF	REVISIONS	BY	DATE

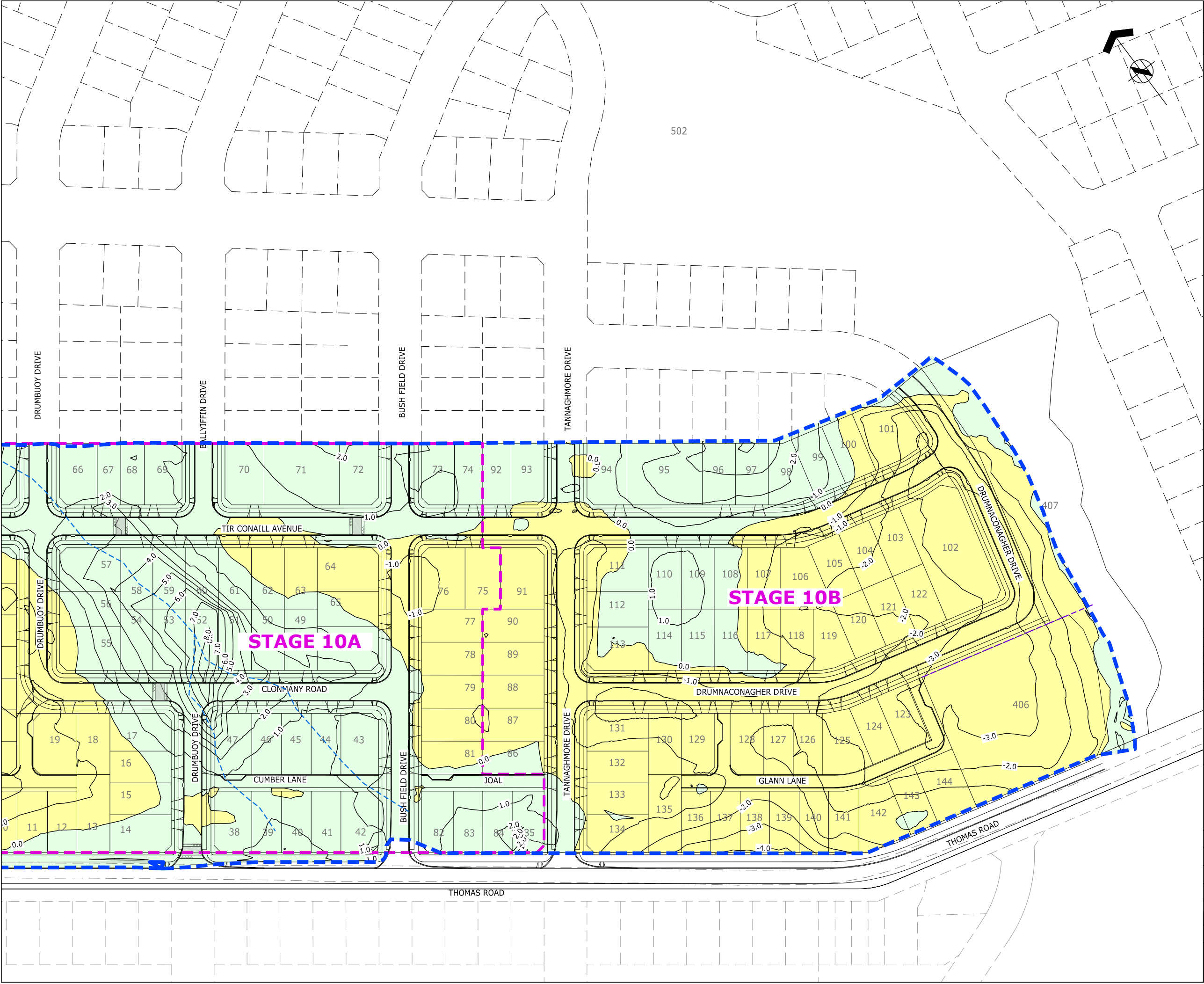
PROJECT:
HUGH GREEN LIMITED
DONEGAL STUD
84 THOMAS ROAD, FLAT BUSH

TITLE:
CUT TO FILL
AS-BUILT PLAN
SHEET 1 OF 2 SHEETS

ORIGINATOR: DW	DATE: 07.2018	SIGNED:	PLOT BY: BKB
DRAWN: DXK,BB	DATE: 08.2018	SIGNED:	PLOT DATE: 12.09.18
CHECKED: WJP	DATE: 12.09.18	SIGNED:	SURVEY BY: DEMPSEY WOOD
APPROVED: WJP	DATE: 12.09.18	SIGNED:	SURVEY DATE: 07.2018

ISSUE STATUS:
AS-BUILT

PROJECT No: 1050-139718-01	SCALES: 1:750-A1 1:1500-A3	A1
DRAWING No: 139718-AB220		REV B





ASSOCIATION OF CONSULTING
ENGINEERS NEW ZEALAND

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NOTES:

1. ORIGIN OF LEVELS
S 66 SO 48643
RL 54,50m

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

LEGEND

1.0

CUT

-1.0

FILL

STAGE BOUNDARY

EXTENT OF EARTHWORKS

EXISTING 3 x 1500 NOVAFLOW

EXISTING 1000 NOVAFLOW

ENGINEERING APPROVAL
ENG-60310923

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: 12.09.2018

Name: WILLIAM JOHN FREDERICK PLATTS

Phone: 09-917-5000

Email: w.platts@harrisonsgrimson.com

HG

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T +64 9 917 5000
W www.harrisonsgrimson.com

B	AS-BUILT	DXK	12.09.18
A	AS-BUILT	WJP	07.09.18
REF	REVISIONS	BY	DATE

PROJECT:

HUGH GREEN LIMITED
DONEGAL STUD
84 THOMAS ROAD, FLAT BUSH

TITLE:

CUT TO FILL
AS-BUILT PLAN
SHEET 2 OF 2 SHEETS

ORIGINATOR: DW	DATE: 07.2018	SIGNED:	PLOT BY: BKB
DRAWN: DXK,BB	DATE: 08.2018	SIGNED:	PLOT DATE: 12.09.18
CHECKED: WJP	DATE: 12.09.18	SIGNED:	SURVEY BY: DEMPSEY WOOD
APPROVED: WJP	DATE: 12.09.18	SIGNED:	SURVEY DATE: 07.2018

ISSUE STATUS:

AS-BUILT

PROJECT No: 1050-139718-01	SCALES: 1:750-A1 1:1500-A3	A1
DRAWING No: 139718-AB221		B

Appendix B – Classification Test Data

Clegg Impact Value Test Report


Report No: CLEG:ETAM18W01461

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01461'



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 Accredited Laboratory Number: 105
Date of Issue: 17/04/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01461

Sample ID: ETAM18S-04208 To ETAM18S-04211

Material: - GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

Date Tested: 11/04/2018

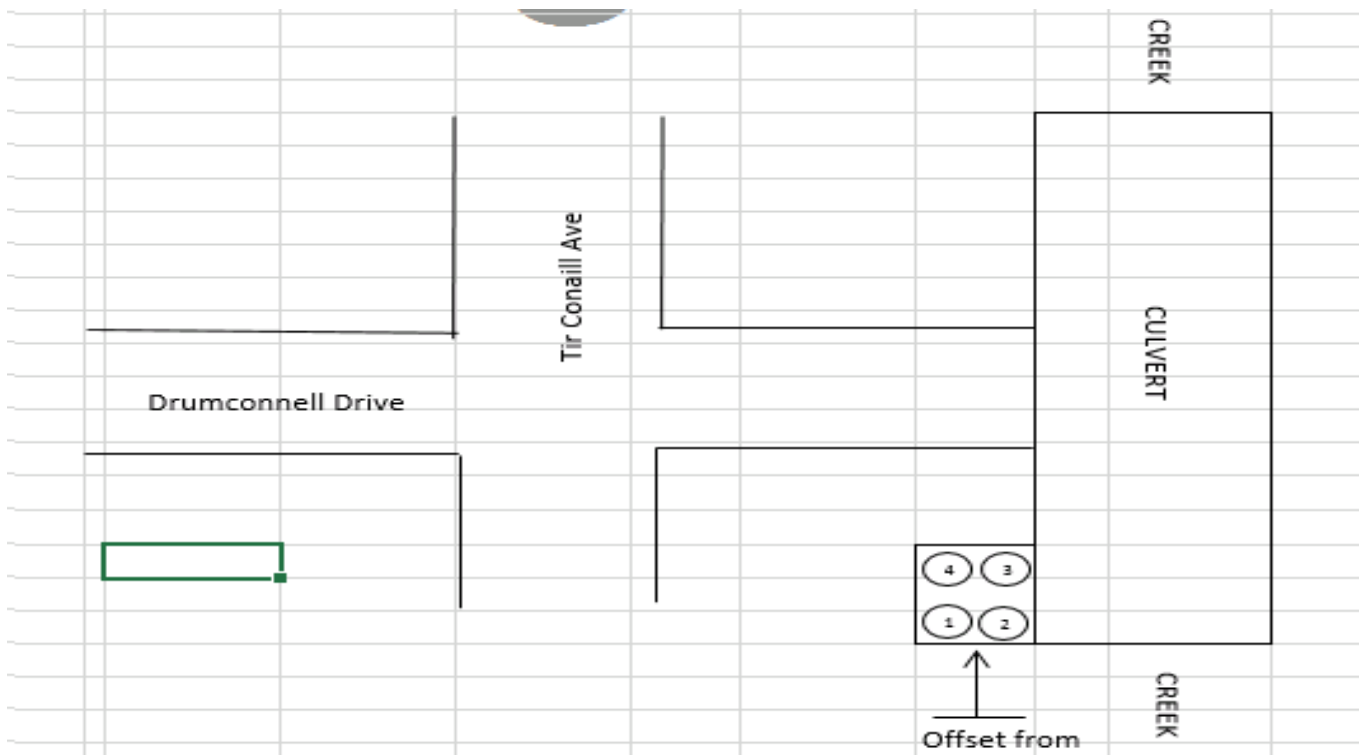
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1	1			27	CH 0 is end of culvert box. RL : 400mm above base
2	3			30	
3	1			28	
4	3			34	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01460

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01460'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 17/04/2018

Site Details

Work Order ID: ETAM18W01460

Sample ID: ETAM18S-04204 To ETAM18S-04207

Material: - GAP 65

Project Location: 84 Thomas Road, Flat Bush

Start Location: Culvert Box, Refer to plan

Date Tested: 11/04/2018

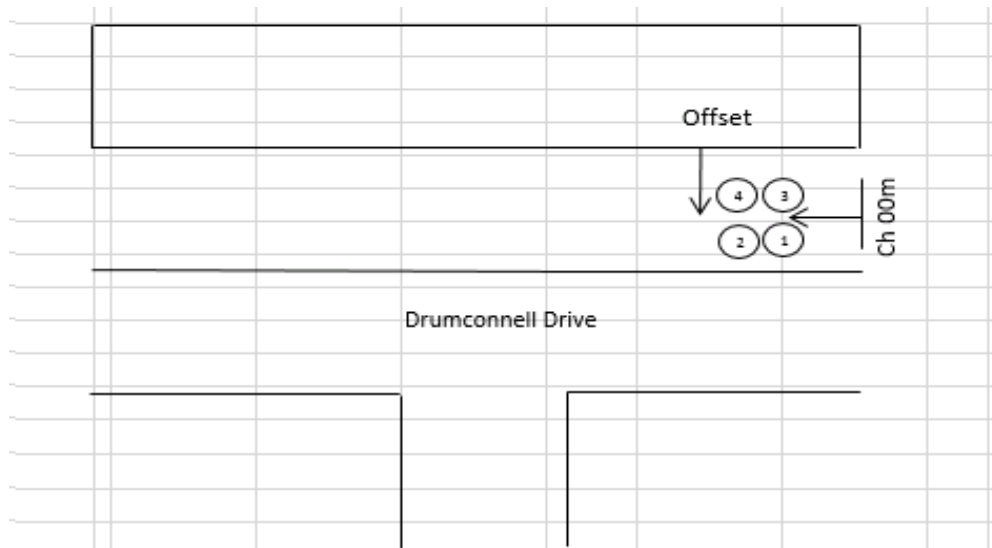
Tested by: Fred Perese

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1	1	4.0	Edge of culvert	26	CH 0 is at end of Culvert Box RL : 150mm above base
2	3	4.0	Edge of culvert	27	
3	1	1.0	Edge of culvert	29	
4	3	1.0	Edge of culvert	35	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01529

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01529'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 20/04/2018

Site Details

Work Order ID: ETAM18W01529

Sample ID: ETAM18S-04394

Material: - GAP 40

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

Date Tested: 12/04/2018

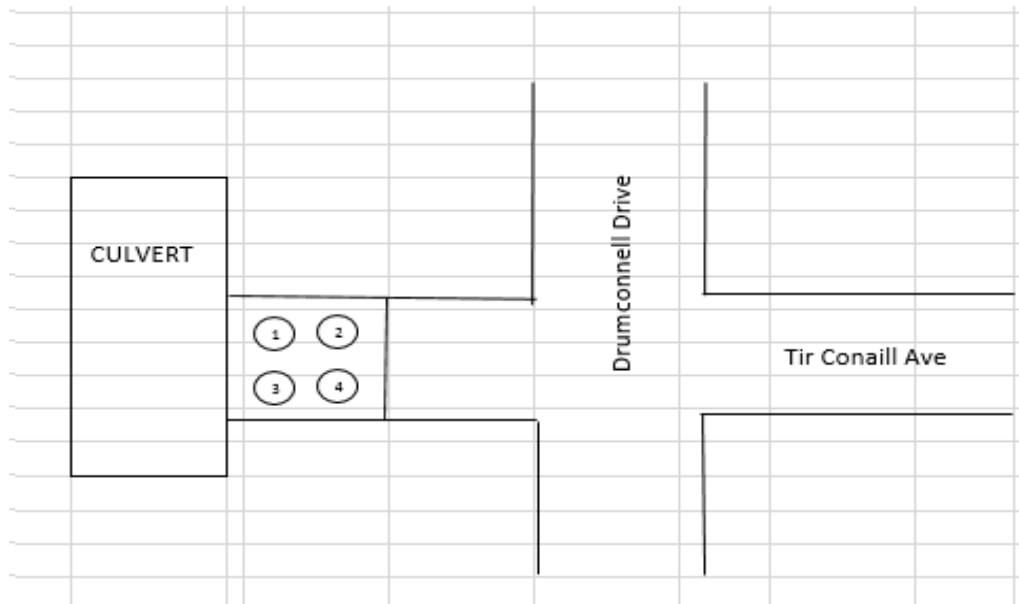
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1	1		Culvert Wall	31	RL : 700mm
2	3		Culvert Wall	33	
3	1		Culvert Wall	35	
4	3		Culvert Wall	38	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01530

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01530'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 20/04/2018

Site Details

Work Order ID: ETAM18W01530

Sample ID: ETAM18S-04395

Material: - GAP 65

Project Location: 84 Thomas Road, Flat Bush

Start Location: Culvert Box, Refer to plan

Date Tested: 13/04/2018

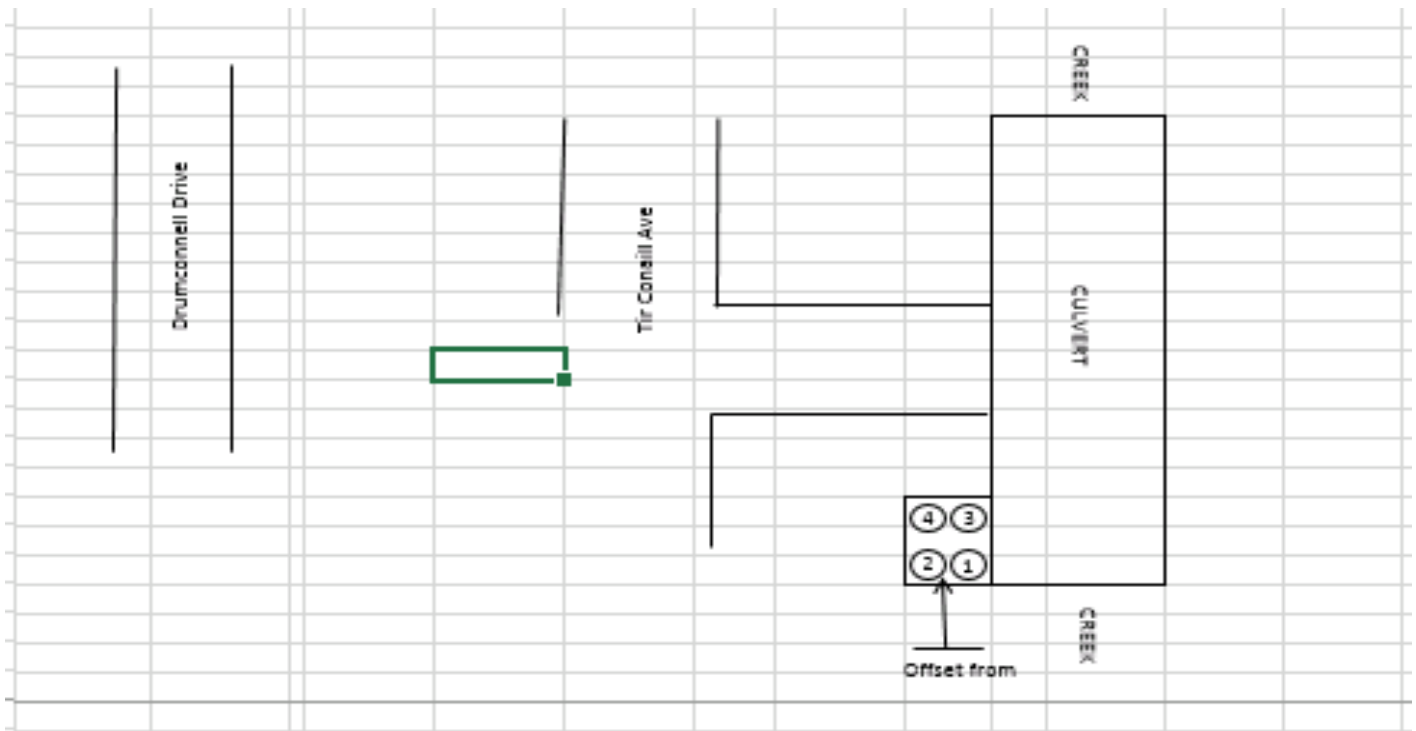
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1	1			29	
2	3			33	
3	1			40	
4	3			33	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01518

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01518'

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[Signature]

Approved Signatory: Cesar Pura
(Senior Technician)

IANZ Accredited Laboratory Number: 105

Date of Issue: 20/04/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01518

Sample ID: ETAM18S-04367

Material: - GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

Date Tested: 16/04/2018

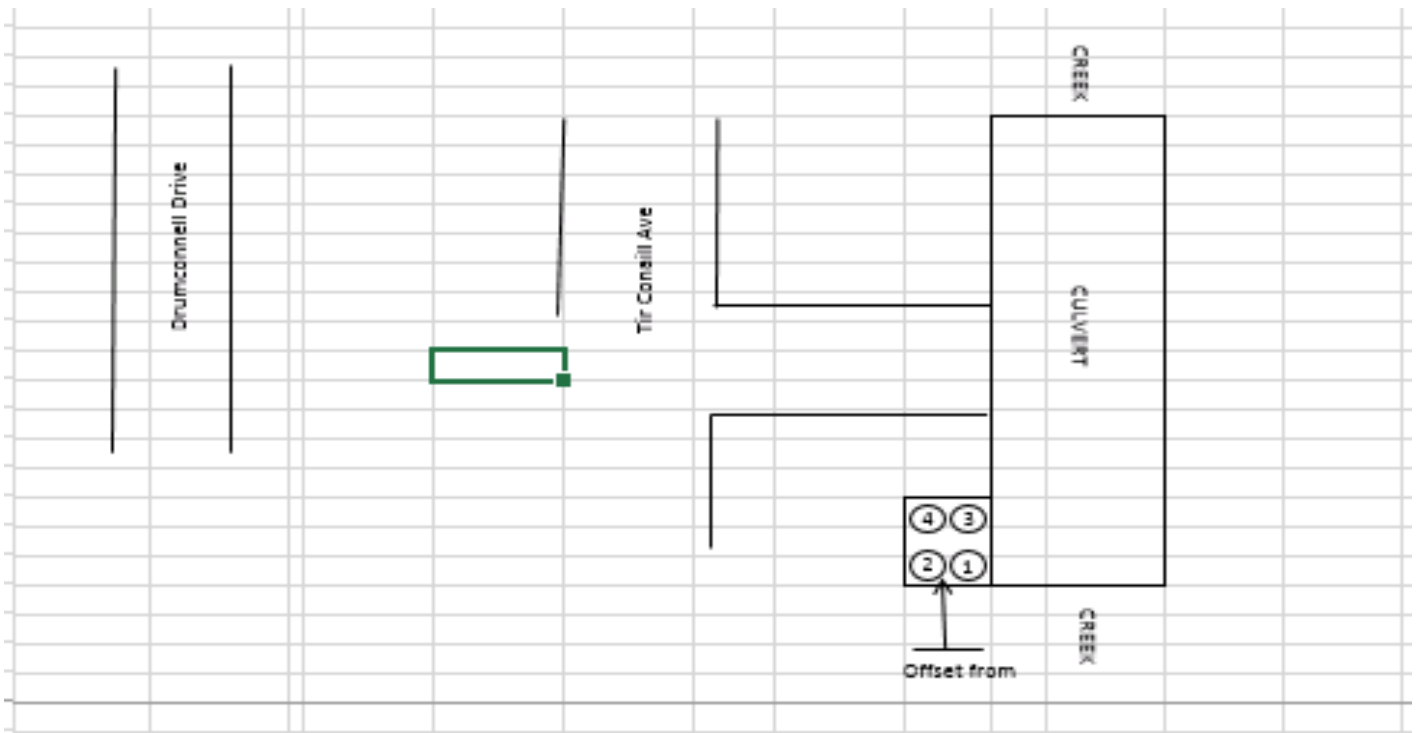
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1	1			26	RL : 1.40m
2	3			31	
3	1			28	
4	3			29	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01545

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01545'

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 Accredited Laboratory Number: 105

Date of Issue: 20/04/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01545

Sample ID: ETAM18S-04499

Material: - GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

Date Tested: 17/04/2018

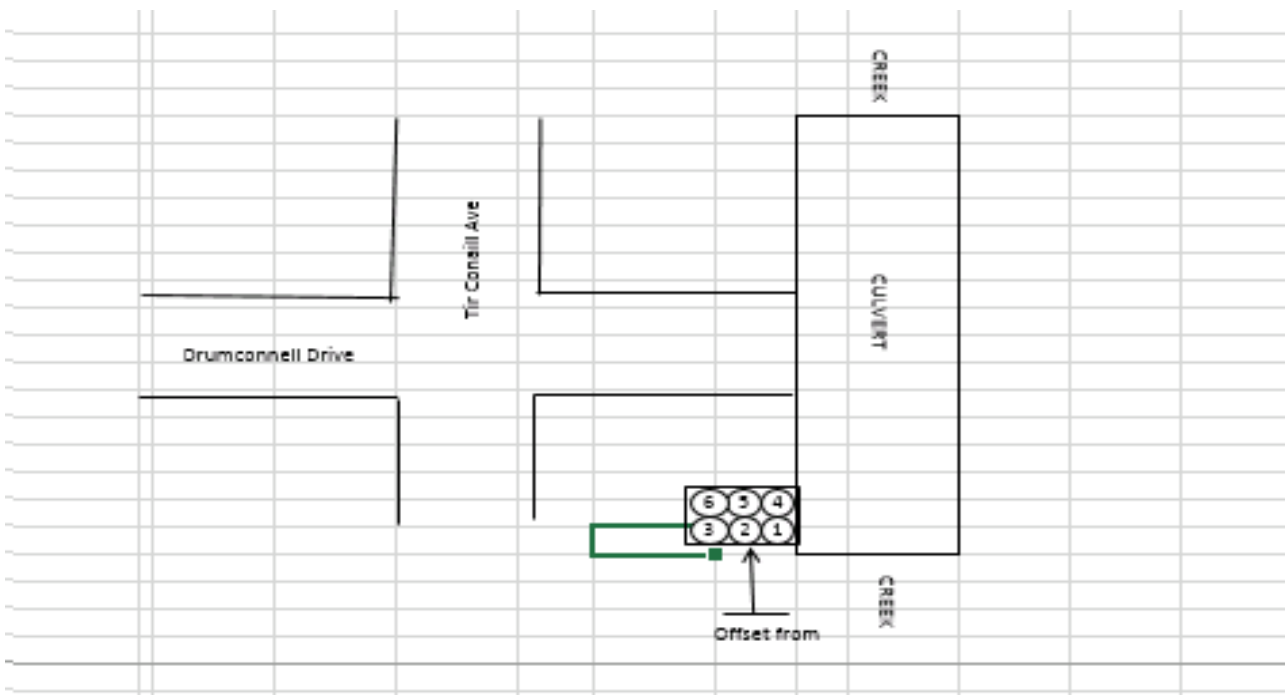
Tested by: Mohammed Azam

General Test Information

Test Method: Hammer Mass (kg):

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1	1		Culvert	29	RL: 2.0m
2	3		Culvert	30	
3	6		Culvert	25	
4	1		Culvert	26	
5	3		Culvert	25	
6	6		Culvert	33	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W02209

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02209'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 25/05/2018

Site Details

Work Order ID: ETAM18W02209

Sample ID: ETAM18S-06731

Material: GAP 65

Project Location: Donegal Stage 10

Start Location: Allan Block Wall, Refer to plan

Date Tested: 18/05/2018

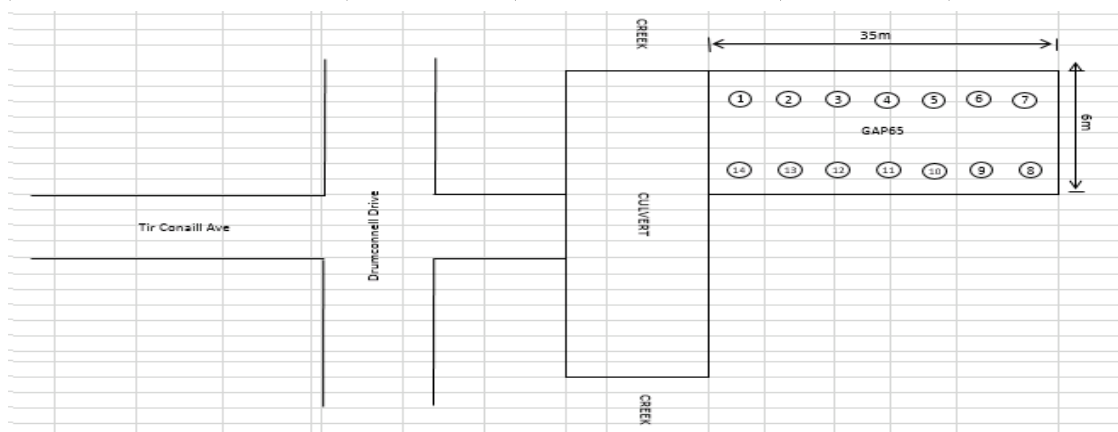
Tested by: Bruno DasilvaSouza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				25	Offsets at 2.0m were taken from boundary
2				23	
3				21	
4				24	
5				24	
6				29	
7				27	
8				52	Offsets at 4.0m were taken from boundary
9				30	
10				38	
11				55	
12				47	
13				44	
14				48	



Comments:

CIV=Clegg Impact Value
RL is at 4.8m from base

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01546

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01546'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 20/04/2018

Site Details

Work Order ID: ETAM18W01546

Sample ID: ETAM18S-04500

Material: - GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

Date Tested: 18/04/2018

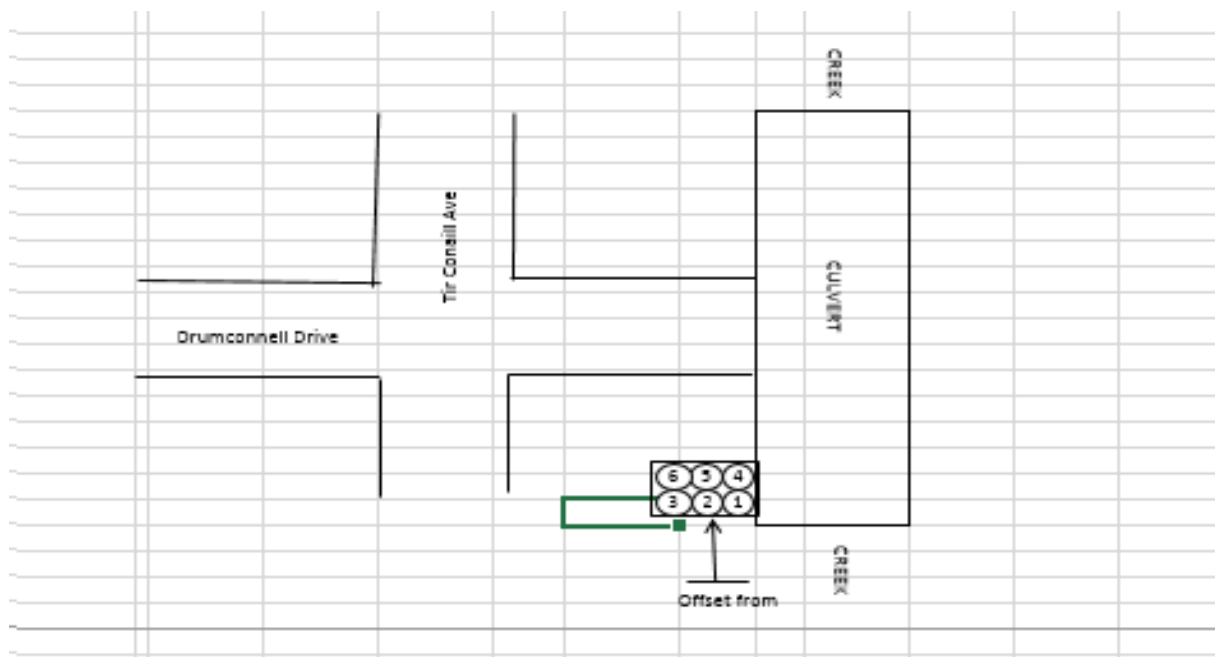
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1	1		Brickwall	21	RL : 2.6m from Subgrade CH 0 from Culvert
2	3		Brickwall	24	
3	6		Brickwall	21	
4	1		Brickwall	27	
5	3		Brickwall	25	
6	6		Brickwall	34	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01577

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01577'

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 Accredited Laboratory Number: 105

Date of Issue: 24/04/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01577

Sample ID: ETAM18S-04595

Material: - GAP 65

Project Location: 84 Thomas Road, Flat Bush

Start Location: Allan Block wall, Refer to plan

Date Tested: 19/04/2018

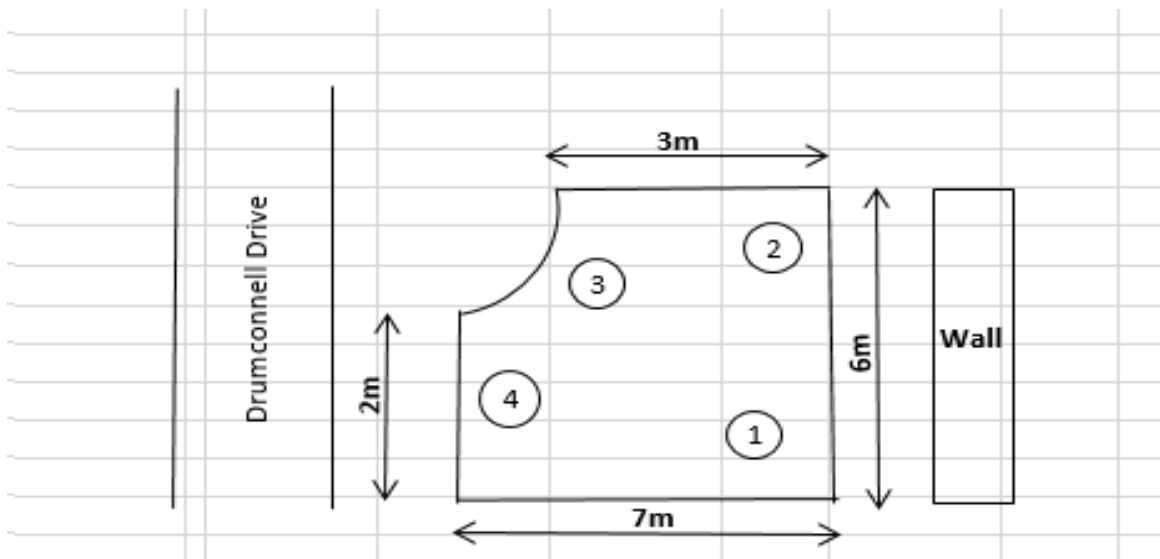
Tested by: Bruno Souza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				32	1.4 meters from the base
2				29	
3				32	
4				29	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01597

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01597'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 24/04/2018

Site Details

Work Order ID: ETAM18W01597

Sample ID: ETAM18S-04644

Material: - GAP 65

Project Location: Donegal Stage 10

Start Location: Allan Block wall, Refer to plan

Date Tested: 20/04/2018

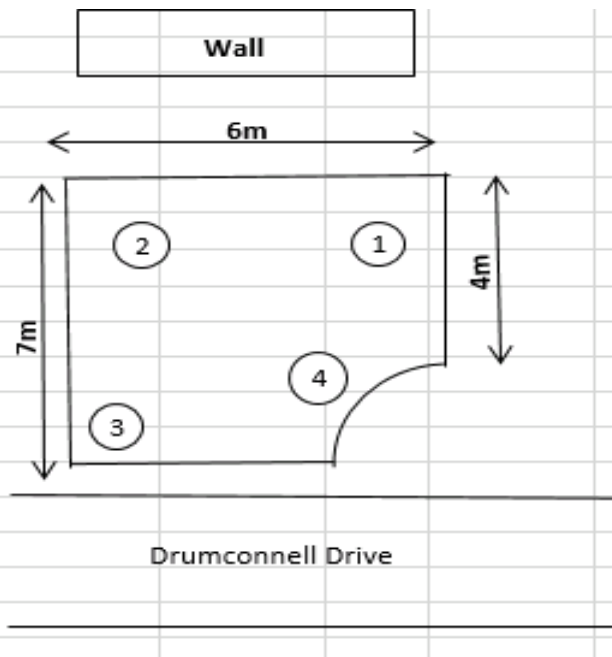
Tested by: Bruno Souza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				29	1.8m from the base
2				41	
3				29	
4				41	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01623

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01623'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 26/04/2018

Site Details

Work Order ID: ETAM18W01623

Sample ID: ETAM18S-04783

Material: - GAP 65

Project Location: Donegal Stage 10

Start Location: Allan Block Wall, Refer to plan

Date Tested: 23/04/2018

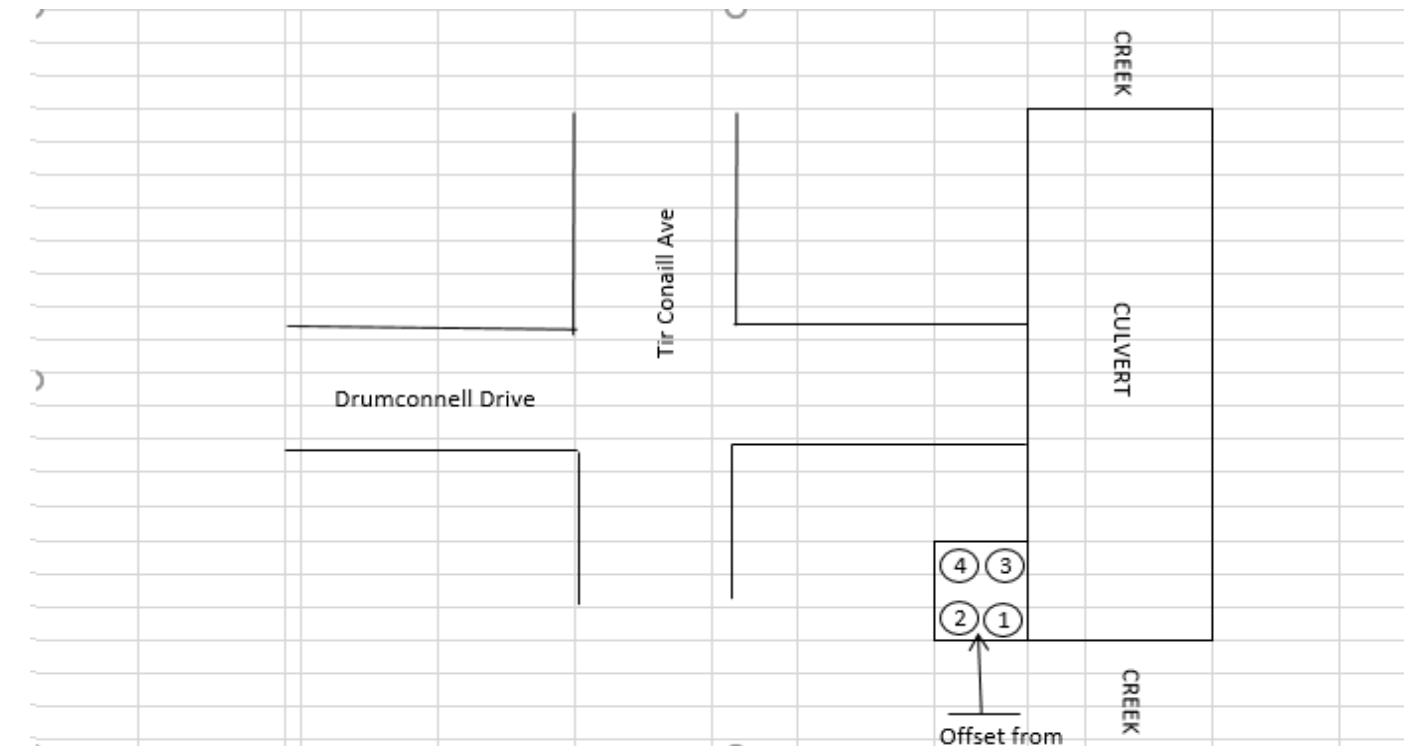
Tested by: Bruno Souza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				27	3.0m from base
2				26	
3				36	
4				28	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01666

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01666'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 27/04/2018

Site Details

Work Order ID: ETAM18W01666

Sample ID: ETAM18S-04934

Material: - GAP 65

Project Location: 84 Thomas Road, Flat Bush

Start Location: Northeast Culvert, Refer to plan

Date Tested: 24/04/2018

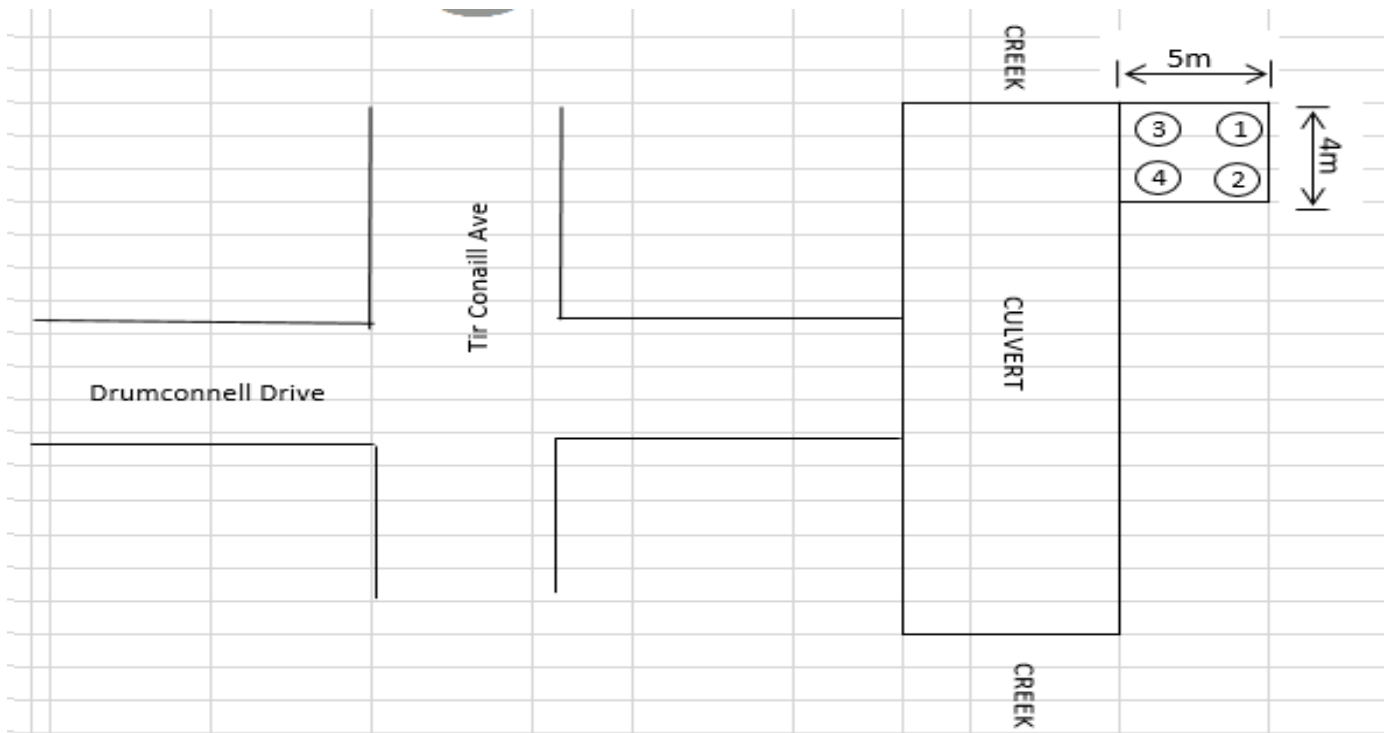
Tested by: Bruno Souza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				22	200mm from base
2				23	
3				31	
4				23	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01708

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01708'

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 Accredited Laboratory Number: 105

Date of Issue: 30/04/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01708

Date Tested: 26/04/2018

Sample ID: ETAM18S-04994

Tested by: Bruno Souza

Material: - SPR

Project Location: Donegal Stage 10

Start Location: Allan Block Wall - 1.0m from Undercut

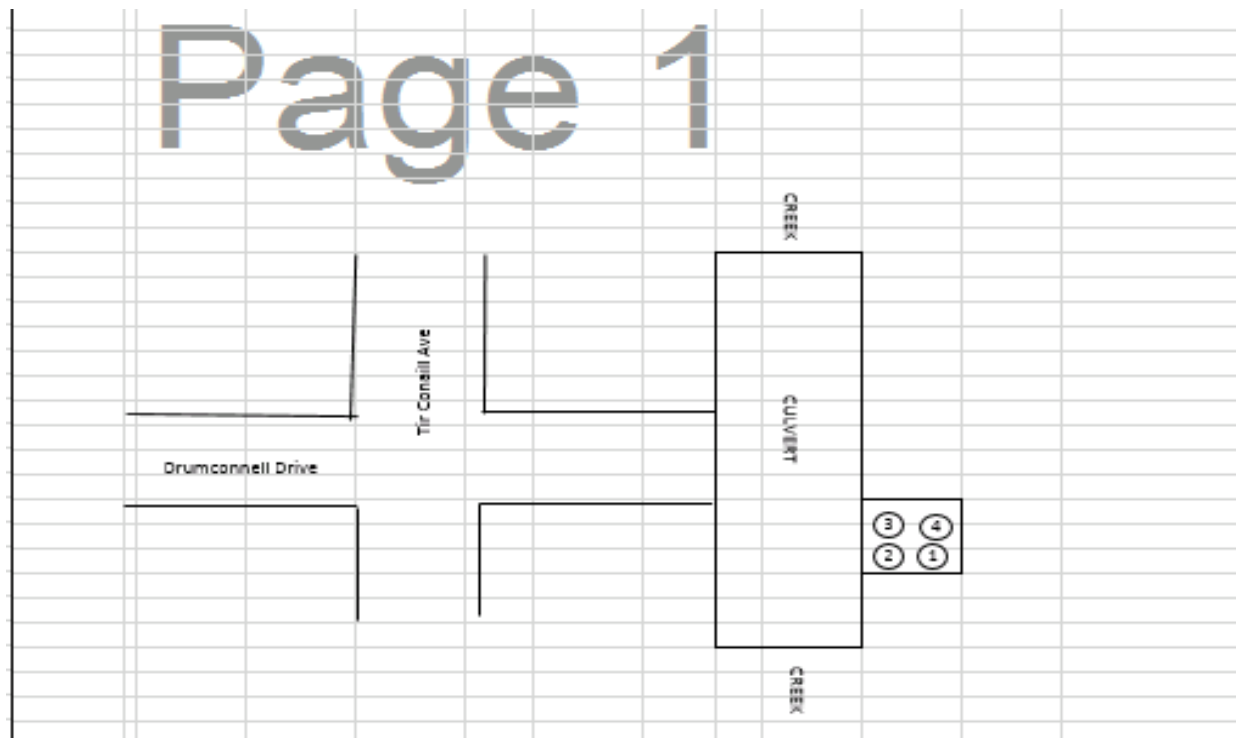
General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] *

Hammer Mass (kg): 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				20	
2				20	
3				24	
4				29	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01782

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01782'

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 Accredited Laboratory Number: 105

Date of Issue: 7/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01782

Sample ID: ETAM18S-05274

Material: - GAP 40 + 65 Mix

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

Date Tested: 26/04/2018

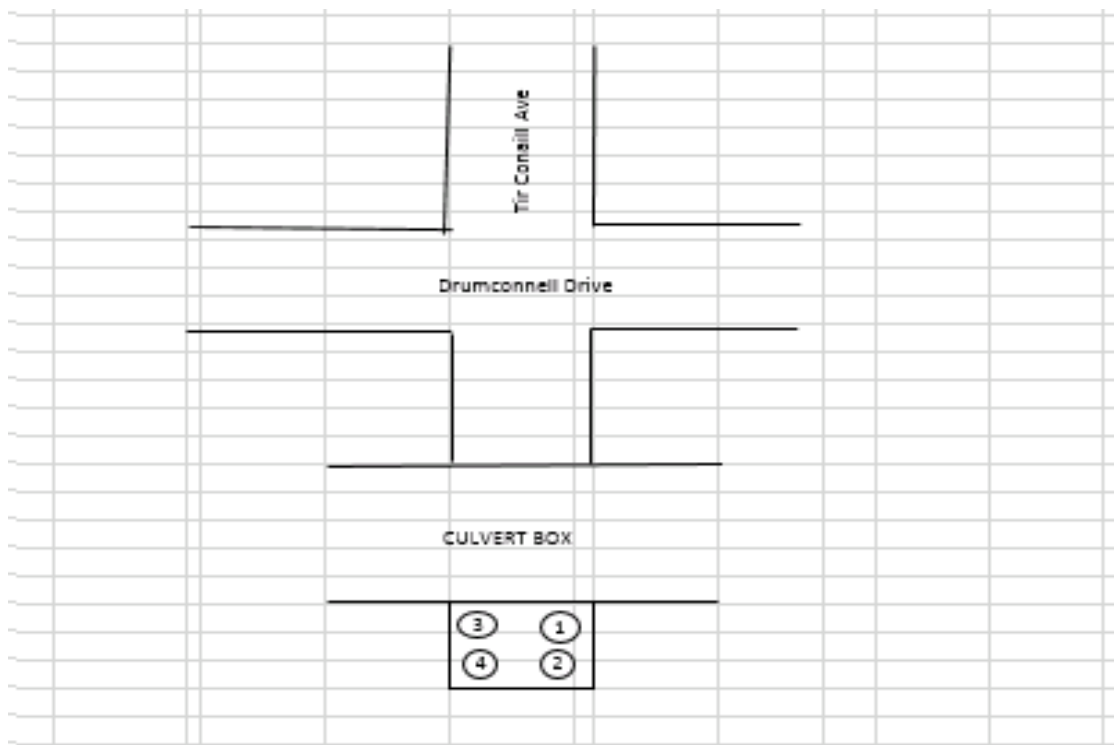
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1	1			26	Height: 600mm
2	3			32	
3	1			28	
4	3			27	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01726

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01726'

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 Accredited Laboratory Number: 105

Date of Issue: 1/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01726

Sample ID: ETAM18S-05103

Material: - GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

Date Tested: 27/04/2018

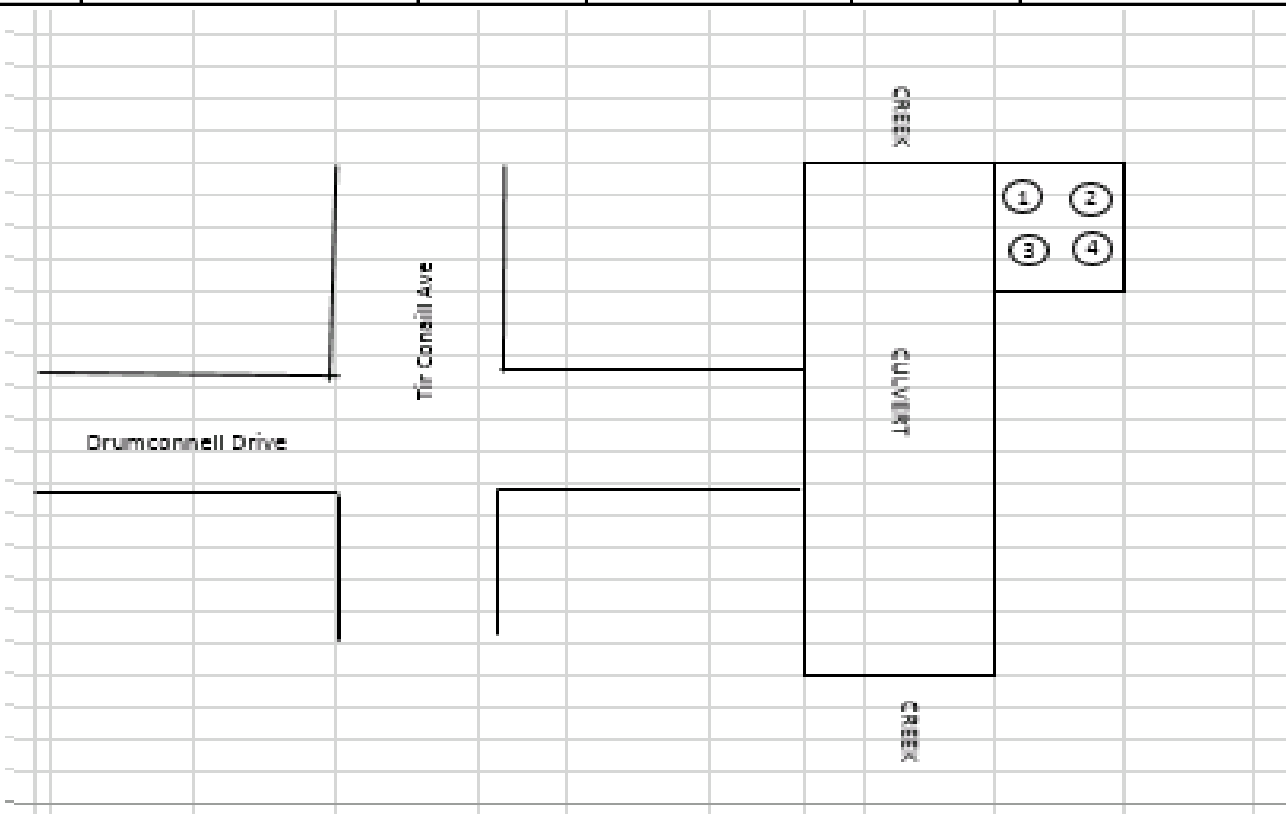
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				32	1.2m
2				35	
3				27	
4				25	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01840

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01840'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

Lot No.: **TRN:**



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 Accredited Laboratory Number: 105
Date of Issue: 3/05/2018

Site Details

Work Order ID: ETAM18W01840

Sample ID: ETAM18S-05500

Material: - GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert Box - Refer to plan.

Date Tested: 1/05/2018

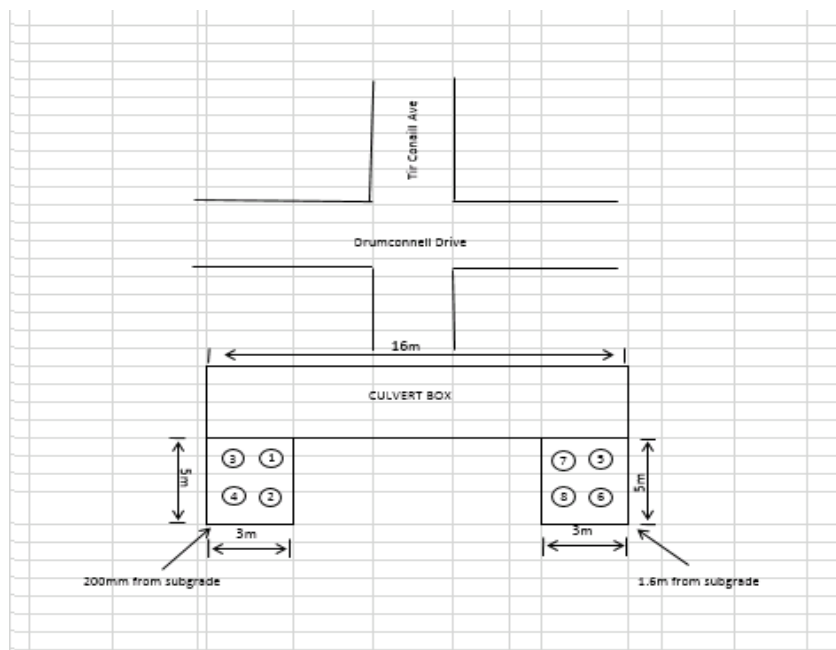
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				34	
2				32	
3				35	
4				28	
5				32	
6				37	
7				28	
8				40	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01837

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01837'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

Lot No.: **TRN:**



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 Accredited Laboratory Number: 105
Date of Issue: 3/05/2018

Site Details

Work Order ID: ETAM18W01837

Sample ID: ETAM18S-05495

Material: - SPR

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan.

Date Tested: 1/05/2018

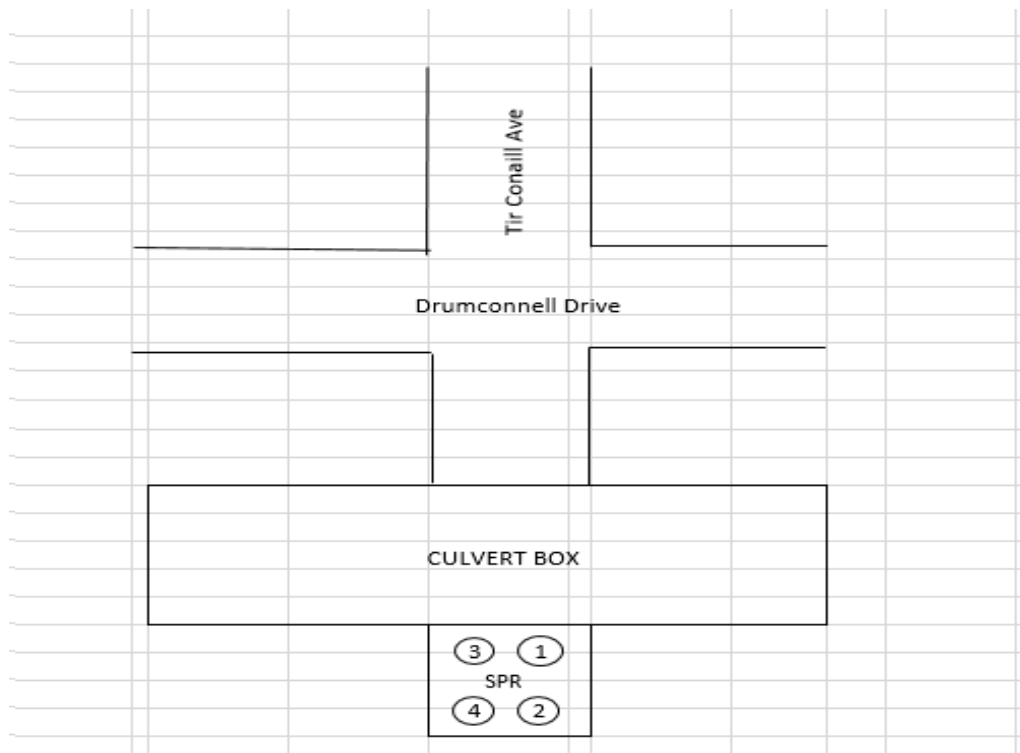
Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				25	Tested SPR at 1.0m elevation from subgrade
2				26	
3				26	
4				25	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01878

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01878'

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 Accredited Laboratory Number: 105

Date of Issue: 4/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01878

Sample ID: ETAM18S-05687

Material: - GAP 65

Project Location: 84 Thomas Road, Flat Bush

Start Location: Culvert Box, Refer to plan

Date Tested: 1/05/2018

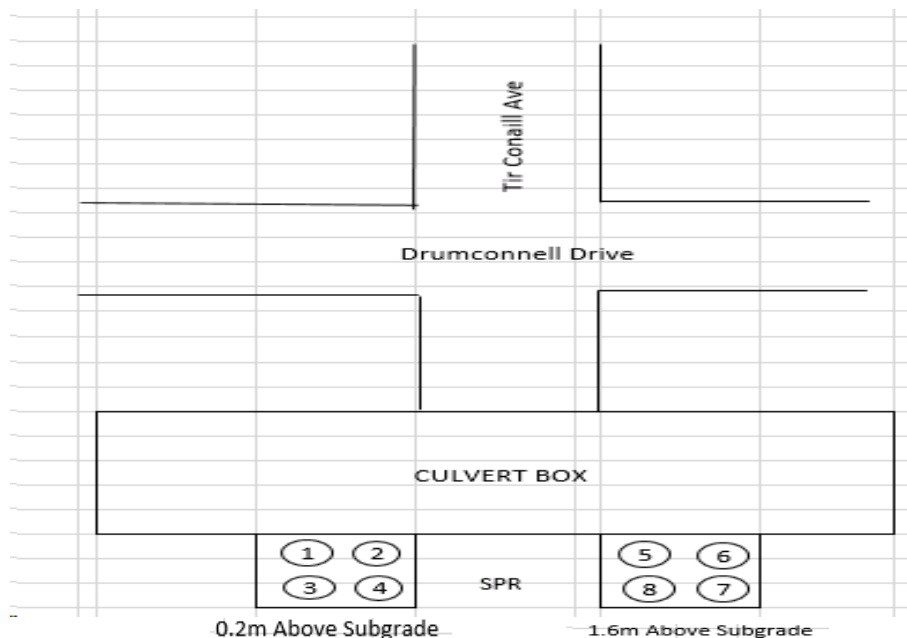
Tested by: Salvindra Chandra

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				32	
2				26	
3				27	
4				30	
5				31	
6				25	
7				26	
8				27	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01879

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01879'

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 Accredited Laboratory Number: 105

Date of Issue: 4/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01879

Sample ID: ETAM18S-05688

Material: - SPR

Project Location: 84 Thomas Road, Flat Bush

Start Location: Culvert Box, Refer to plan

Date Tested: 1/05/2018

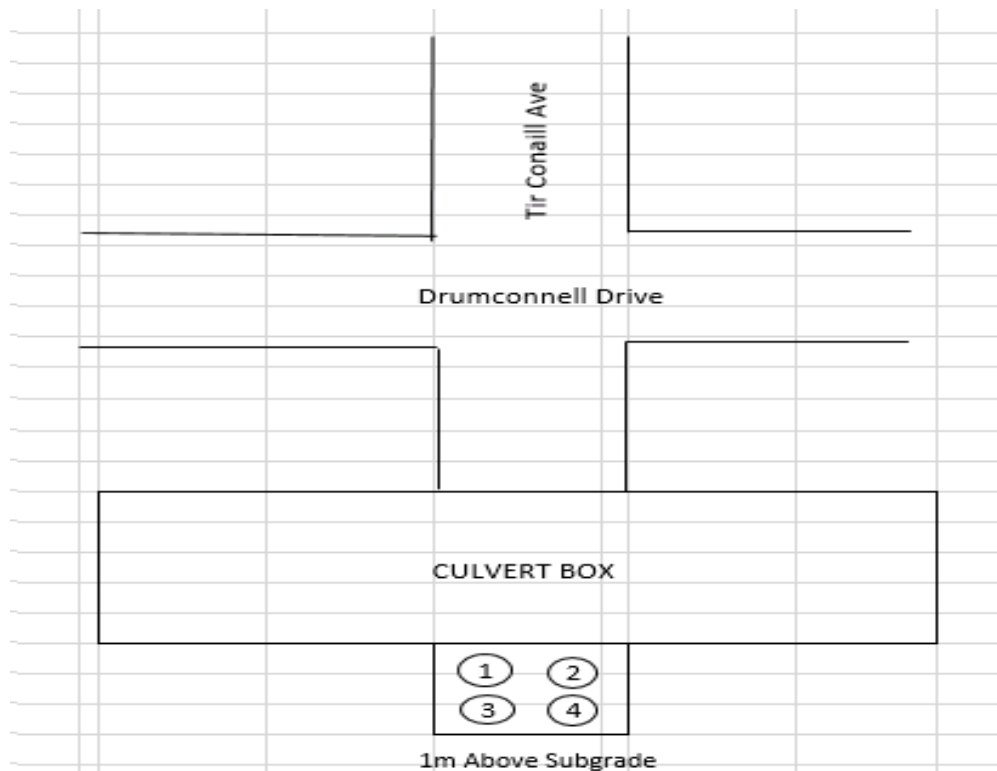
Tested by: Salvindra Chandra

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Chainage (m)	Offset (m)	Offset from	CIV	Comments
1				28	
2				28	
3				27	
4				26	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01905

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01905'

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 Accredited Laboratory Number: 105

Date of Issue: 8/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

Lot No.: **TRN:**

Site Details

Work Order ID: ETAM18W01905

Sample ID: ETAM18S-05732

Material: GAP 65/SPR

Project Location: 84 Thomas Road, Flat Bush

Start Location: Allan Block Wall, refer to plan

Date Tested: 3/05/2018

Tested by: Bruno Souza

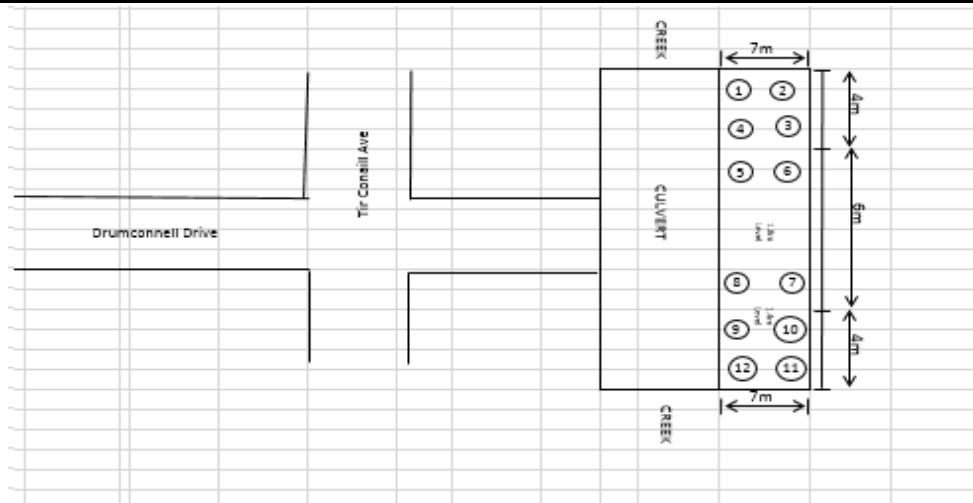
General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] *

Hammer Mass (kg):

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				36	GAP 65
2				30	
3				37	
4				39	
5				24	SPR
6				23	
7				23	
8				24	
9				26	GAP 65
10				26	
11				25	
12				39	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01897

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01897'

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 Accredited Laboratory Number: 105

Date of Issue: 8/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01897

Sample ID: ETAM18S-05717

Material: GAP 65 and SPR

Project Location: Donegal Stage 10

Start Location: Allan Wall, Refer to Plan

Date Tested: 3/05/2018

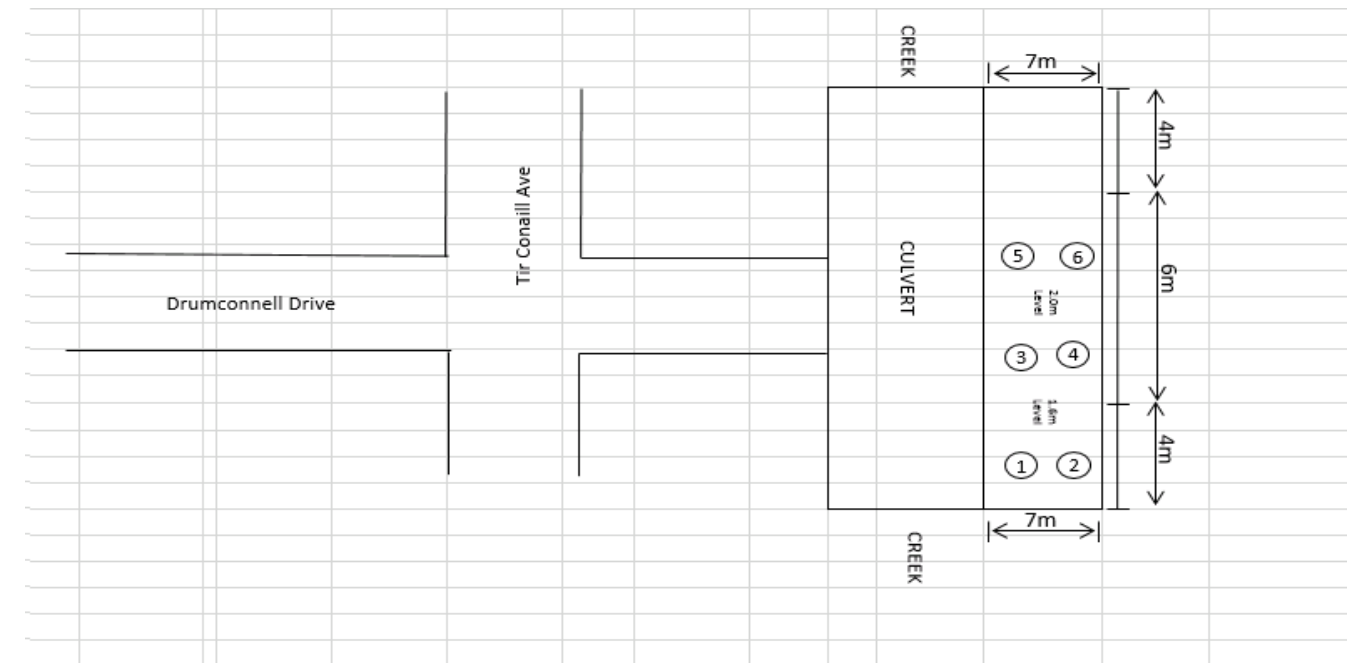
Tested by: Bruno Souza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				39	GAP 65
2				24	
3				28	
4				39	SPR
5				29	
6				31	



Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01919

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01919'

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 Accredited Laboratory Number: 105

Date of Issue: 8/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

Lot No.: **TRN:**

Site Details

Work Order ID: ETAM18W01919

Sample ID: ETAM18S-05750

Material: GAP 65/SPR

Project Location: Donegal Stage 10

Start Location: Allan Block Wall, refer to plan

Date Tested: 7/05/2018

Tested by: Bruno Souza

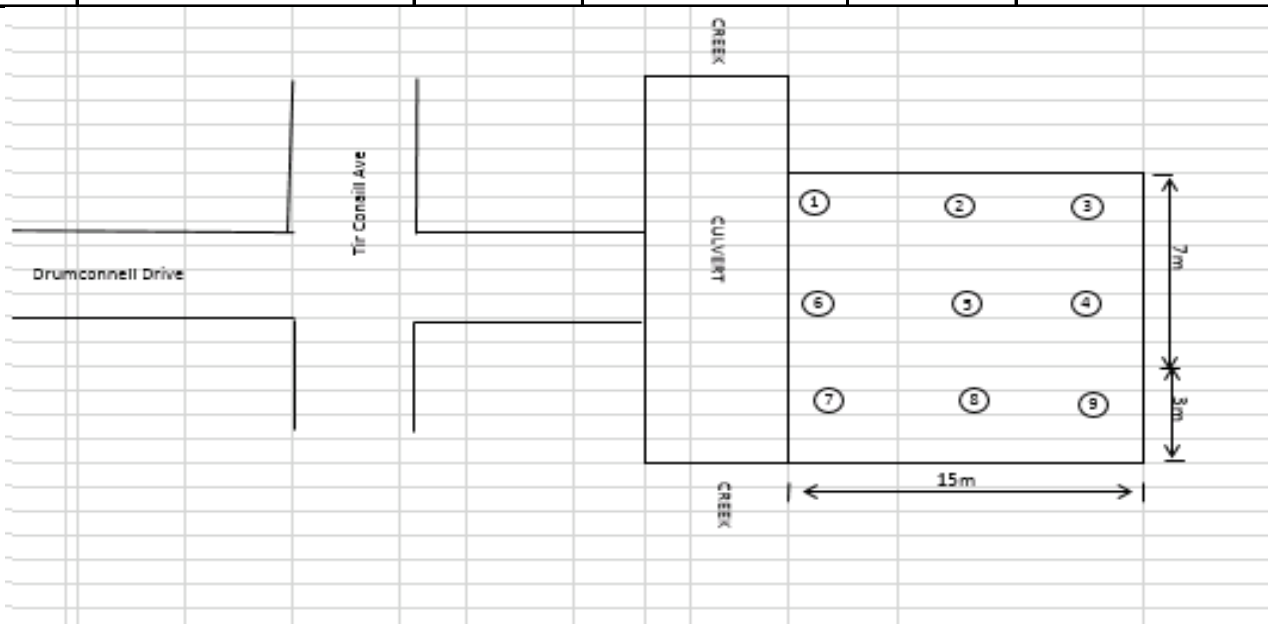
General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] *

Hammer Mass (kg): 4.5

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				26	SPR
2				32	
3				30	
4				27	
5				28	
6				25	
7				27	GAP 65
8				29	
9				38	



Comments:

CIV=Clegg

RL: 2.1m - from base

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W01969

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W01969'

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 Accredited Laboratory Number: 105

Date of Issue: 10/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W01969

Sample ID: ETAM18S-06124

Material: GAP65

Project Location: Donegal Stage 10

Start Location: Allan Block Wall, Refer to plan

Date Tested: 8/05/2018

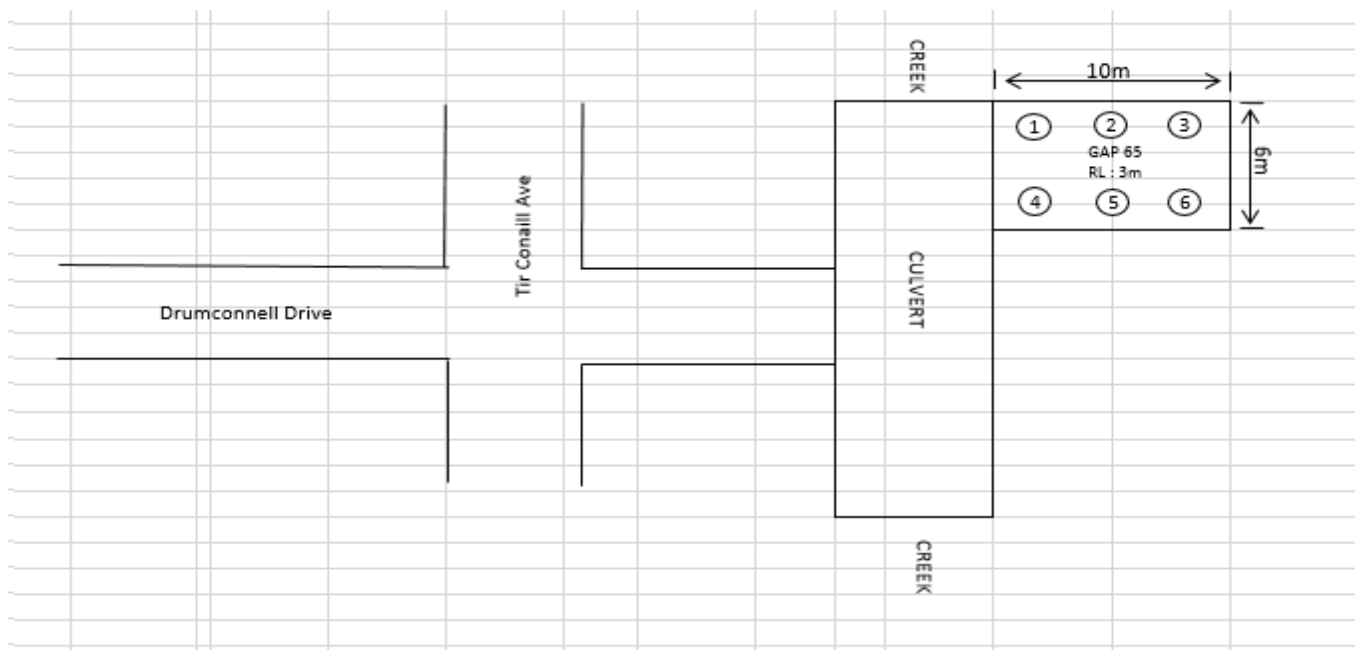
Tested by: Bruno Souza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				38	GAP65
2				29	
3				28	
4				27	
5				29	
6				29	



Comments:

CIV=Clegg Impact Value
RL: 3m from base

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W02101

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02101'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 21/05/2018

Site Details

Work Order ID: ETAM18W02101

Sample ID: ETAM18S-06467 To ETAM18S-06490

Material: GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

Date Tested: 9/05/2018

Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				25	
2				25	
3				26	
4				26	
5				22	
6				23	
7				26	
8				27	
9				26	
10				25	
11				24	
12				24	
13				27	
14				25	
15				26	
16				25	
17				29	
18				28	
19				25	
20				25	
21				25	
22				31	
23				25	
24				27	

Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W02101

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02101'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 21/05/2018

Site Details

Work Order ID: ETAM18W02101

Sample ID: ETAM18S-06467 To ETAM18S-06490

Material: GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert Box, Refer to plan

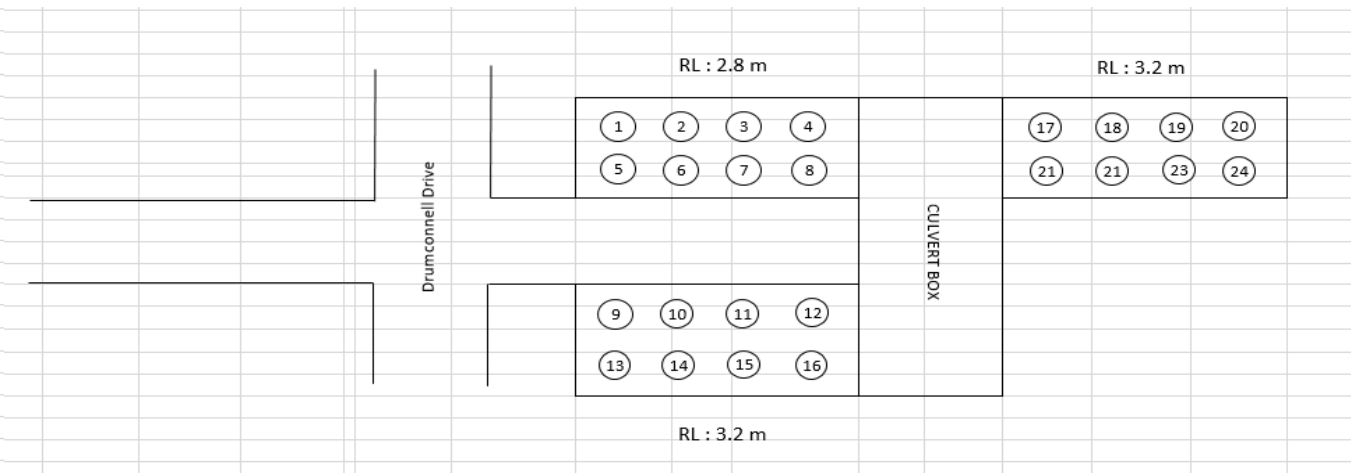
Date Tested: 9/05/2018

Tested by: Mohammed Azam

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
					

Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report


Report No: CLEG:ETAM18W02081

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02081'



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 Accredited Laboratory Number: 105
Date of Issue: 16/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W02081

Date Tested: 14/05/2018

Sample ID: ETAM18S-06444

Tested by: Bruno DasilvaSouza

Material: GAP 65

Project Location: Donegal Stage 10

Start Location: Allan Block Wall, refer to plan

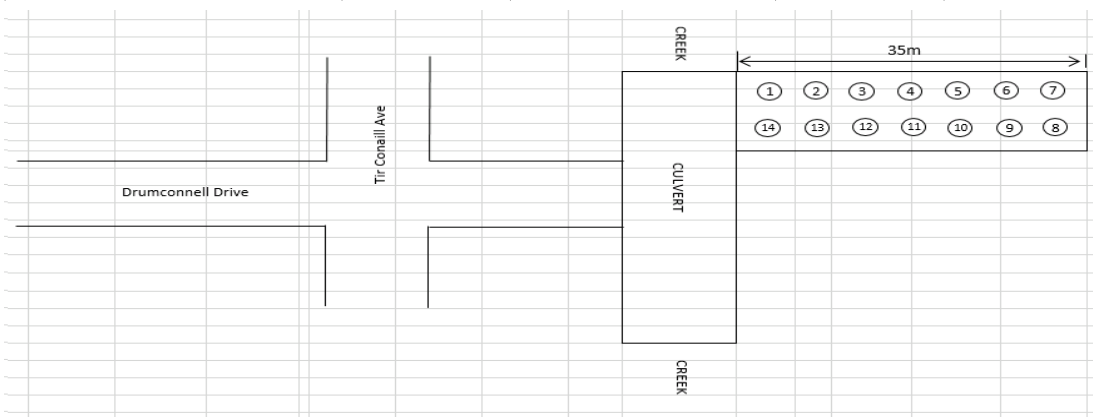
General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] *

Hammer Mass (kg): 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				28	
2				29	
3				35	
4				39	
5				29	
6				30	
7				27	
8				32	
9				31	
10				29	
11				36	
12				34	
13				33	
14				30	



Comments:

CIV=Clegg
RL= 3.8m from base

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W02133

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02133'

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 Accredited Laboratory Number: 105

Date of Issue: 21/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W02133

Sample ID: ETAM18S-06567

Material: GAP 65

Project Location: Donegal Stage 10

Start Location: Allan Block Wall, Refer to plan

Date Tested: 15/05/2018

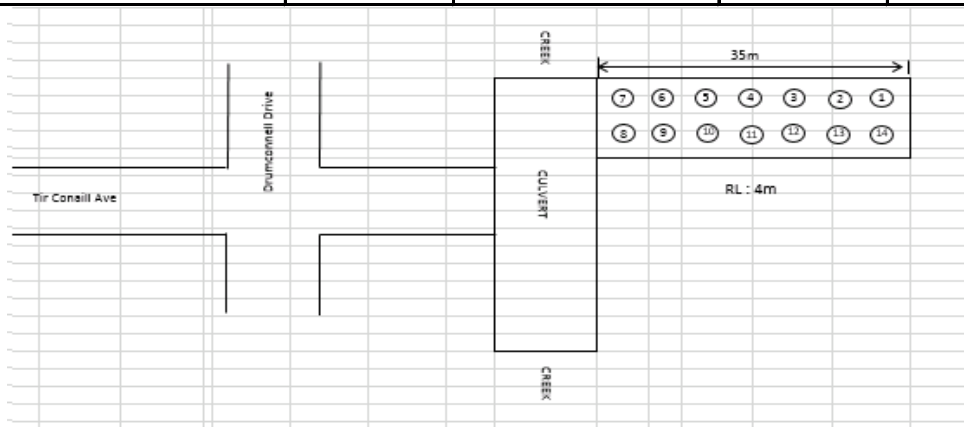
Tested by: Bruno DasilvaSouza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				25	
2				28	
3				33	
4				29	
5				28	
6				25	
7				27	
8				34	
9				26	
10				29	
11				35	
12				38	
13				37	
14				39	



Comments:

CIV=Clegg Impact Value
RL: 4m from base

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W02158

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02158'

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 Accredited Laboratory Number: 105

Date of Issue: 24/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W02158

Sample ID: ETAM18S-06604 To ETAM18S-06627

Material: GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert, Refer to plan

Date Tested: 16/05/2018

Tested by: Salvindra Chandra

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				43	
2				32	
3				28	
4				26	
5				28	
6				30	
7				41	
8				42	
9				47	
10				35	
11				38	
12				34	
13				23	
14				32	
15				30	

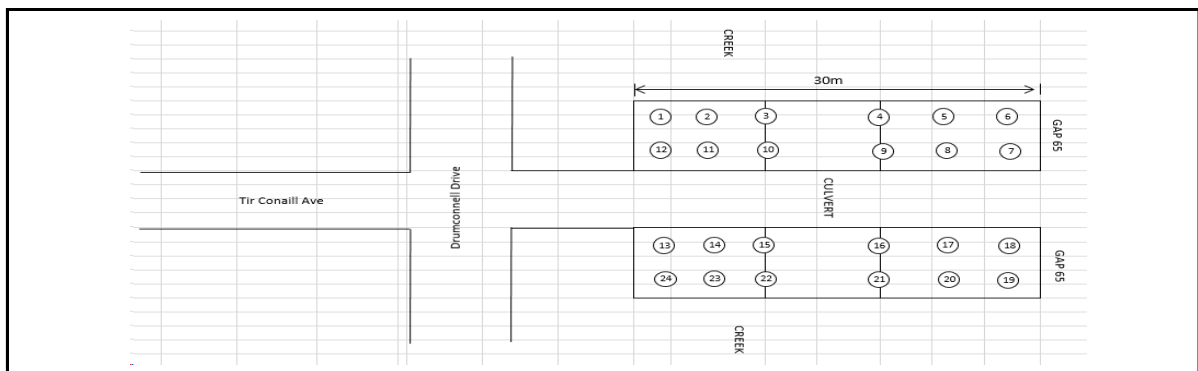


Figure 1: Site Plan

Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W02158

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02158'

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

Principal: Ray Berry


Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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



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 Accredited Laboratory Number: 105
Date of Issue: 24/05/2018

Site Details

Work Order ID: ETAM18W02158

Sample ID: ETAM18S-06604 To ETAM18S-06627

Material: GAP 65

Project Location: Donegal Stage 10

Start Location: Culvert, Refer to plan

Date Tested: 16/05/2018

Tested by: Salvindra Chandra

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
16				24	
17				43	
18				23	
19				31	
20				33	
21				40	
22				30	
23				34	
24				28	

Comments:

CIV=Clegg Impact Value

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W02157

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02157'

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 Accredited Laboratory Number: 105

Date of Issue: 24/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W02157

Sample ID: ETAM18S-06603

Material: SPR

Project Location: Donegal Stage 10

Start Location: Culvert, Refer to plan

Date Tested: 16/05/2018

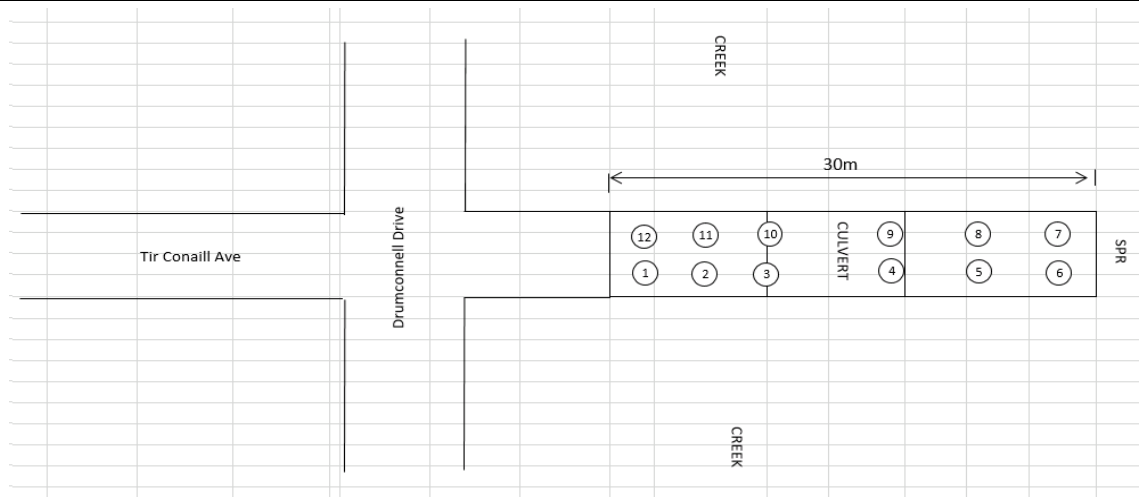
Tested by: Salvindra Chandra

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50

Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				32	
2				30	
3				36	
4				28	
5				34	
6				28	
7				22	
8				21	
9				23	
10				28	
11				35	
12				32	



Comments:

CIV=Clegg Impact Value
RL is at 0.5m below finish level

Clegg Impact Value Test Report

Report No: CLEG:ETAM18W02322

Issue No:1

This report replaces all previous issues of report no. 'CLEG:ETAM18W02322'

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 Accredited Laboratory Number: 105

Date of Issue: 30/05/2018

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Site Details

Work Order ID: ETAM18W02322

Sample ID: ETAM18S-07052

Material: GAP 65

Project Location: Donegal Stage 10

Start Location: Allan Block Wall, Refer to plan

Date Tested: 29/05/2018

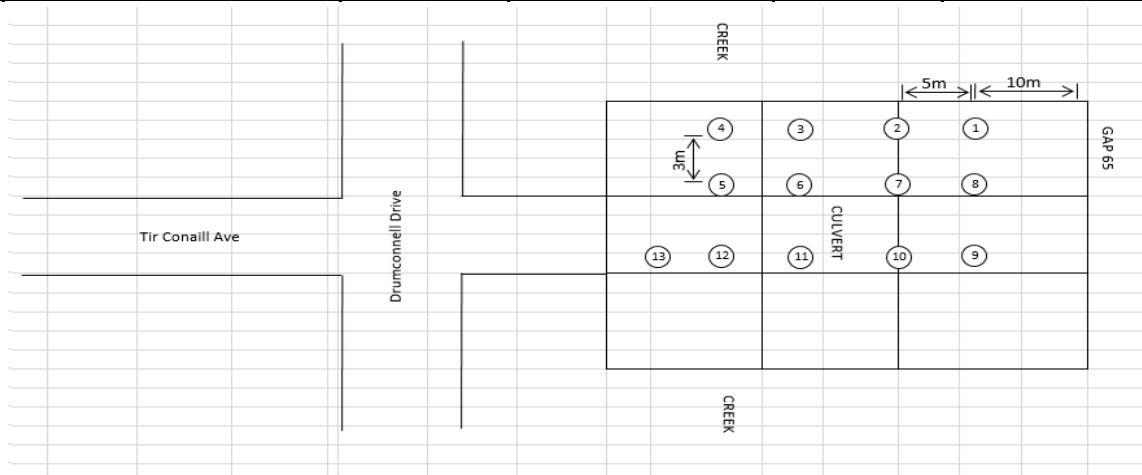
Tested by: Bruno DasilvaSouza

General Test Information

Test Method: Clegg Impact Value [ASTM D5874-2016] * **Hammer Mass (kg):** 4.50


Test Results

Test No.	Location	Offset	Offset from	CIV	Comments
1				20	
2				23	
3				23	
4				23	
5				24	
6				27	
7				25	
8				23	
9				41	
10				30	
11				33	
12				26	
13				32	



Comments:

CIV=Clegg
At finished level.

Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: Ray Berry Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;">  <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;"> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 22/11/2017</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (t/m ³)	Solid Density	Air Voids (%)
15/11/2017	17W03990	AB	1		Silty CLAY	Gully Undercut Backfill	1770230	5905432	-	150	~ 4.0m to Subgrade level	UTP	UTP	UTP	UTP	1.91	18.9	1.60	2.70	10.3
15/11/2017	17W03990	AB	2		Silty CLAY	Gully Undercut Backfill	1770238	5905419	-	150	~ 4.0m to Subgrade level	UTP	UTP	UTP	UTP	1.95	22.7	1.59	2.70	5.3

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W03990

Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: Gully Undercut Backfill

Tested by: AB

Date tested: 15.11.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c: Ray Berry Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;">  <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;"> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 24/11/2017</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (t/m ³)	Solid Density	Air Voids (%)
17/11/2017	17W04104	BS	3	Fill	Silty CLAY	Gully	1770233	5905427	-	150	~ 4.0m to Subgrade level	197	197	197	197	2.01	24.1	1.62	2.70	1.1
17/11/2017	17W04104	BS	4	Fill	Silty CLAY	Gully	1770243	5905403	-	150	~ 4.0m to Subgrade level	UTP	UTP	UTP	UTP	2.03	31.9	1.54	2.70	0.0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04104

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: Gully

Tested by: BS

Date tested: 17.11.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c: Ray Berry Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  <p>IANZ ACCREDITED LABORATORY</p> </div> <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;">  <p>Approved Signatory: Cesar Pura Issue date: 24/11/2017</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (t/m ³)	Solid Density	Air Voids (%)
20/11/2017	ETAM17W04122	BS/DL	5	Fill	Silty CLAY	Gully	1770238	5905425	-	150	3.5m to Finished Level	197+	197+	197+	197+	1.99	19.9	1.66	2.7	5.4
20/11/2017	ETAM17W04122	BS/DL	6	Fill	Silty CLAY	Gully	1770245	5905404	-	150	3.5m to Finished Level	197+	197+	197+	197+	1.95	28.3	1.52	2.7	0.6

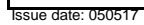
Project No: 773-ETAM00525AA


Work Order No: ETAM17W04122

2 of 2

Tested by: DL

Date tested: 20.11.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: Ray Berry Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: 84 Thomas Road, Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2										
										 <div style="display: flex; justify-content: space-between; align-items: center;"> <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;"> <p>Approved Signatory: Cesar Pura Issue date: 28/11/2017</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (t/m ³)	Solid Density	Air Voids (%)
22/11/2017	ETAM17W04160	DL/BS	7	Fill	Silty CLAY	Gully 2	1770273	5905290	-	150	7.0m to Finished Level	197+	197+	197+	197+	1.89	37.8	1.37	2.70	0.0
22/11/2017	ETAM17W04160	DL/BS	8	Fill	Silty CLAY	Gully 2	1770268	5905312	-	150	7.0m to Finished Level	197+	197+	197+	197+	1.95	29.2	1.51	2.70	0.2
22/11/2017	ETAM17W04160	DL/BS	9	Fill	Silty CLAY	Gully 1	1770240	5905414	-	150	2.5m to Finished Level	172	138	189	144	1.90	25.7	1.51	2.70	5.0
22/11/2017	ETAM17W04160	DL/BS	10	Fill	Silty CLAY	Gully 1	1770235	5905422	-	150	2.5m to Finished Level	197+	197+	197+	197+	1.99	22.8	1.62	2.70	3.0
22/11/2017	ETAM17W04160	DL/BS	11	Fill	Silty CLAY	General Fill	1770453	5905193	-	150	2.0m to Finished Level	197	197	197	197	1.81	27.1	1.42	2.70	8.8
22/11/2017	ETAM17W04160	DL/BS	12	Fill	Silty CLAY	General Fill	1770439	5905179	-	150	2.0m to Finished Level	153	153	153	153	1.74	41.2	1.23	2.7	3.8
22/11/2017	ETAM17W04160	DL/BS	13	Fill	Silty CLAY	General Fill	1770534	5905188	-	150	2.5m to Finished Level	197	197	197	197	1.76	42.8	1.23	2.7	1.5
22/11/2017	ETAM17W04160	DL/BS	14	Fill	Silty CLAY	General Fill	1770523	5905198	-	150	2.5m to Finished Level	197	197	197	197	1.77	37.9	1.28	2.7	3.9
22/11/2017	ETAM17W04160	DL/BS	15	Fill	Silty CLAY	General Fill	1770501	5905211	-	150	2.0m to Finished Level	197	197	197	197	1.76	39.4	1.26	2.7	3.4

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04160

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: DL/BS

Date tested: 22.11.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c: Ray Berry Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: 84 Thomas Road, Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  <p>IANZ ACCREDITED LABORATORY</p> </div> <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;">  <p>Approved Signatory: Cesar Pura Issue date: 29/11/2017</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (t/m ³)	Solid Density	Air Voids (%)
24/11/2017	ETAM17W04231	BS	16	Fill	Silty CLAY	General Fill	1770493	5905195	-	150	0.5 Below Subgrade Level	197+	197+	197+	197+	1.85	33.0	1.39	2.7	2.5
24/11/2017	ETAM17W04231	BS	17	Fill	Silty CLAY	General Fill	1770505	5905201	-	150	0.5 Below Subgrade Level	197+	197+	197+	197+	1.75	52.7	1.15	2.7	0.0
24/11/2017	ETAM17W04231	BS	18	Fill	Silty CLAY	Gully 2	1770272	5905291	-	150	3.0 Below Subgrade Level	197+	197+	197+	197+	1.88	28.5	1.46	2.7	4.2
24/11/2017	ETAM17W04231	BS	19	Fill	Silty CLAY	Gully 1	1770242	5905409	-	150	1.5 Below Subgrade Level	197+	197+	197+	197+	1.91	23.6	1.55	2.7	6.3
24/11/2017	ETAM17W04231	BS	20	Fill	Silty CLAY	General Fill	1770521	5905178	-	150	0.5 Below Finished Level	UTP	UTP	UTP	UTP	1.94	26.3	1.54	2.7	2.7
24/11/2017	ETAM17W04231	BS	21	Fill	Silty CLAY	General Fill	1770536	5905181	-	150	0.5 Below Finished Level	197	197	197	197	1.88	41.5	1.33	2.7	0.0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04231

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 24.11.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c: Ray Berry Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 4/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (t/m ³)	Solid Density	Air Voids (%)
27/11/2017	ETAM17W04287	BS	22	Fill	Silty CLAY	Gully 1 and 2 Combined	1770273	5905292	-	150	1.5m to Subgrade Level	197+	197+	197+	197+	1.97	23.8	1.59	2.7	3.5
27/11/2017	ETAM17W04287	BS	23	Fill	Silty CLAY	Gully 1 and 2 Combined	1770269	5905312	-	150	1.5m to Subgrade Level	197+	197+	197+	197+	1.92	22.3	1.57	2.7	7.0
27/11/2017	ETAM17W04287	BS	24	Fill	Silty CLAY	Gully 1 and 2 Combined	1770260	5905335	-	150	1.5m to Subgrade Level	172	172	172	172	1.92	25.9	1.53	2.7	3.9
27/11/2017	ETAM17W04287	BS	25	Fill	Silty CLAY	Gully 1 and 2 Combined	1770259	5905360	-	150	1.5m to Subgrade Level	153	153	153	153	1.88	31.0	1.43	2.7	2.4
27/11/2017	ETAM17W04287	BS	26	Fill	Silty CLAY	Gully 1 and 2 Combined	1770254	5905379	-	150	1.5m to Subgrade Level	197+	197+	197+	197+	1.81	34.4	1.35	2.7	4
27/11/2017	ETAM17W04287	BS	27	Fill	Silty CLAY	Gully 1 and 2 Combined	1770242	5905411	-	150	Subgrade Level	UTP	UTP	UTP	UTP	2.03	19.0	1.71	2.7	4.3
27/11/2017	ETAM17W04287	BS	28	Fill	Silty CLAY	Gully 1 and 2 Combined	1770233	5905420	-	150	Subgrade Level	UTP	UTP	UTP	UTP	1.96	22.9	1.60	2.7	4.2
27/11/2017	ETAM17W04287	BS	29	Fill	Silty CLAY	Gully 1 and 2 Combined	1770223	5905433	-	150	Subgrade Level	197+	197+	197+	197+	1.86	22.8	1.51	2.7	9.5
27/11/2017	ETAM17W04287	BS	30	Fill	Silty CLAY	General Fill	1770483	5905207	-	150	0.5m to Subgrade Level	197	197	197	197	1.85	39.7	1.32	2.7	0.0
27/11/2017	ETAM17W04287	BS	31	Fill	Silty CLAY	General Fill	1770490	5905194	-	150	0.5m to Subgrade Level	153	153	153	153	1.80	43.0	1.26	2.7	0.0
27/11/2017	ETAM17W04287	BS	32	Fill	Silty CLAY	General Fill	1770507	5905187	-	150	0.5m to Subgrade Level	197	197	197	197	1.84	34.3	1.37	2.7	2.5
27/11/2017	ETAM17W04287	BS	33	Fill	Silty CLAY	General Fill	1770533	5905168	-	150	0.5m to Subgrade Level	197	197	197	197	1.71	39.7	1.22	2.7	6.3

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04287

Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 27.11.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: Ray Berry Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;">  <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;"> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 6/12/2017</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (t/m ³)	Solid Density	Air Voids (%)
29/11/2017	ETAM17W04352	AB	34	Fill	Silty CLAY	General Fill	1770473	5905213	-	150	0.5m to Subgrade Level	UTP	UTP	UTP	UTP	1.86	28.1	1.45	2.7	5.4
29/11/2017	ETAM17W04352	AB	35	Fill	Silty CLAY	General Fill	1770493	5905201	-	150	0.5m to Subgrade Level	161	168	218+	218+	1.78	45.9	1.22	2.7	0.0
29/11/2017	ETAM17W04352	AB	36	Fill	Silty CLAY	General Fill	1770515	5905193	-	150	0.5m to Subgrade Level	UTP	UTP	UTP	UTP	1.73	36.9	1.26	2.7	6.6
29/11/2017	ETAM17W04352	AB	37	Fill	Silty CLAY	General Fill	1770538	5905181	-	150	0.5m to Subgrade Level	UTP	UTP	UTP	UTP	1.89	30.5	1.45	2.7	2.0
29/11/2017	ETAM17W04352	AB	38	Fill	Silty CLAY	General Fill	1770529	5905173	-	150	0.5m to Subgrade Level	218+	218+	218+	218+	1.81	37.0	1.32	2.7	2.1
29/11/2017	ETAM17W04352	AB	39	Fill	Silty CLAY	General Fill	1770518	5905186	-	150	0.5m to Subgrade Level	181	141	154	148	1.70	54.3	1.10	2.7	0.0
29/11/2017	ETAM17W04352	AB	40	Fill	Silty CLAY	General Fill	1770498	5905190	-	150	0.5m to Subgrade Level	161	194	201	161	1.76	41.9	1.24	2.7	2.0
29/11/2017	ETAM17W04352	DL	41	Fill	Silty CLAY	Gully Fill	1770260	5905292	-	150	2m to Subgrade Level	UTP	UTP	UTP	UTP	1.98	19.5	1.66	2.7	6.2
29/11/2017	ETAM17W04352	DL	42	Fill	Silty CLAY	Gully Fill	1770265	5905314	-	150	2m to Subgrade Level	189	192	172	151	2.04	17.5	1.74	2.7	5.2
29/11/2017	ETAM17W04352	DL	43	Fill	Silty CLAY	Gully Fill	1770265	5905327	-	150	2m to Subgrade Level	191	196	187	172	1.88	29.1	1.45	2.7	3.8
29/11/2017	ETAM17W04352	DL	44	Fill	Silty CLAY	Gully Fill	1770260	5905339	-	150	2m to Subgrade Level	192	196	196	197	1.89	28.8	1.47	2.7	3.2
29/11/2017	ETAM17W04352	DL	45	Fill	Silty CLAY	Gully Fill	1770257	5905352	-	150	2m to Subgrade Level	UTP	UTP	UTP	196	1.93	28.9	1.50	2.7	1.1
29/11/2017	ETAM17W04352	DL	46	Fill	Silty CLAY	Gully Fill	1770255	5905367	-	150	2m to Subgrade Level	172	144	148	155	1.81	38.8	1.30	2.7	1.0
29/11/2017	ETAM17W04352	DL	47	Fill	Silty CLAY	Gully Fill	1770252	5905384	-	150	2m to Subgrade Level	UTP	161	170	196	1.87	25.0	1.50	2.7	7.3
29/11/2017	ETAM17W04352	DL	48	Fill	Silty CLAY	Gully Fill	1770246	5905413	-	150	2m to Subgrade Level	153	153	153	197	1.88	36.6	1.37	2.7	0.0
29/11/2017	ETAM17W04352	DL	49	Fill	Silty CLAY	Gully Fill	1770238	5905428	-	150	2m to Subgrade Level	UTP	UTP	UTP	UTP	2.00	22.4	1.63	2.7	2.8
29/11/2017	ETAM17W04352	DL	50	Fill	Silty CLAY	Gully Fill	1770229	5905437	-	150	2m to Subgrade Level	191	172	148	157	1.96	20.4	1.63	2.7	6.5

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04352

Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: Refer to plan

Tested by: AB/DL

Date tested: 29.11.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="margin-left: 100px; text-align: right;"> <p>Approved Signatory: Cesar Pura Issue date: 9/12/2017</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
4/12/2017	ETAM17W04420	DL	51	Fill	Silty CLAY	General Fill	1770479	5905208	-	150	300mm below Subgrade Level	196	172	197	UTP	1.87	24.5	1.50	2.7	7.4
4/12/2017	ETAM17W04420	DL	52	Fill	Silty CLAY	General Fill	1770512	5905193	-	150	300mm below Subgrade Level	116	136	136	109	1.78	37.7	1.30	2.7	3.1
4/12/2017	ETAM17W04420	DL	53	Fill	Silty CLAY with aggregates	General Fill	1770227	5905419	-	150	1m below Subgrade Level	UTP	UTP	UTP	UTP	1.99	22.3	1.63	2.7	3.3
4/12/2017	ETAM17W04420	DL	54	Fill	Silty CLAY with aggregates	General Fill	1770254	5905379	-	150	1m below Subgrade Level	168	192	161	172	1.92	26.5	1.52	2.7	3.7
4/12/2017	ETAM17W04420	DL	55	Fill	Silty CLAY	Gully Fill	1770272	5905271	-	150	3m to Subgrade Level	UTP	UTP	UTP	UTP	1.89	32.1	1.43	2.7	1.2

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04420

Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: Refer to plan



Tested by:

DL

Date tested:

04.12.17



Client: Coffey Services NZ Ltd (Auckland) Address PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 12/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
5/12/2017	ETAM17W04456	DL	56	Fill	Silty CLAY	General Fill	1770522	5905185	-	150	300mm below Subgrade Level	196	192	197	UTP	1.77	40.3	1.26	2.7	2.4
5/12/2017	ETAM17W04456	DL	57	Fill	Silty CLAY	General Fill	1770474	5905205	-	150	300mm below Subgrade Level	192	168	172	165	1.78	38.0	1.29	2.7	3.3

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04456

Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below



Tested by:

DL

Date tested:

05.12.17



Client: Coffey Services NZ Ltd (Auckland) Address PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 13/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
6/12/2017	ETAM17W04478	BS	58	Fill	Silty CLAY	General Fill	1770241	5905364	-	150	3m to Subgrade Level	116	112	122	116	1.86	27.5	1.46	2.7	5.7
6/12/2017	ETAM17W04478	BS	59	Fill	Silty CLAY	General Fill	1770260	5905327	-	150	3m to Subgrade Level	UTP	UTP	UTP	UTP	2.00	24.0	1.61	2.7	1.6

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04478

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 06.12.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 14/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
7/12/2017	ETAM17W04489	BS	60	Fill	Silty CLAY	Gully	1770273	5905296	-	150		197	197	197	197	1.98	24.2	1.60	2.7	2.3
7/12/2017	ETAM17W04489	BS	61	Fill	Silty CLAY	Gully	1770264	5905336	-	150		197	197	197	197	1.91	22.4	1.56	2.7	7.2

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04489

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 07.12.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 14/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
8/12/2017	ETAM17W04533	BS	62	Fill	Silty CLAY	General Fill	1770426	5905157	-	150		UTP	UTP	UTP	UTP	1.75	36.0	1.29	2.7	6.1
8/12/2017	ETAM17W04533	BS	63	Fill	Silty CLAY	General Fill	1770450	5905185	-	150		197	197	197	197	1.77	41.5	1.25	2.7	1.9

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04533

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 08.12.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 16/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
11/12/2017	ETAM17W04588	BS	64	Fill	Silty CLAY	Gully	1770271	5905306	-	150	2m to Subgrade Level	197	197	197	197	1.93	29.8	1.48	2.7	0.9
11/12/2017	ETAM17W04588	BS	65	Fill	Silty CLAY	Gully	1770275	5905279	-	150	2m to Subgrade Level	189	189	189	189	1.91	29.5	1.48	2.7	1.7

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04588

Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 11.12.17



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

14/09/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m ³)	Oven Water Content (%)	Dry Density (T/m ³)	Solid Density (T/m ³) (Measured)	Air Voids (%)
13/12/2017	ETAM17W04637	BS	66	Fill	Silty CLAY	Refer to plan	1770445	5905172	-	150	200mm to S/G Level	UTP	UTP	UTP	UTP	2.10	24.6	1.68	2.7	0
13/12/2017	ETAM17W04637	BS	67	Fill	Silty CLAY	Refer to plan	1770512	5905193	-	150	300mm to S/G Level	189	189	189	189	2.02	23.3	1.63	2.7	1
13/12/2017	ETAM17W04637	BS	68	Fill	Silty CLAY	Refer to plan	1770241	5905364	-	150	3.0m to S/G Level, Retest of Test No.58	189	189	189	189	2.09	23.6	1.69	2.7	0

Revision 1

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04637

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 13.12.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Eric Paton Issue date: 18/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
14/12/2017	ETAM17W04688	BS	69	Fill	Silty CLAY	Ref to plan	1770376	5905277	-	150	500mm to S/G Level	172	189	189	189	1.78	39.9	1.27	2.7	2.0
14/12/2017	ETAM17W04688	BS	70	Fill	Silty CLAY	Ref to plan	1770399	5905253	-	150	500mm to S/G Level	189	189	189	189	1.78	38.6	1.28	2.7	2.9

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04688

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 14.12.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Eric Paton Issue date: 19/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
15/12/2017	ETAM17W04698	BS	71	Fill	Silty CLAY	Ref to plan	1770275	5905271	-	150	3m to Subgrade Level	UTP	UTP	UTP	UTP	1.85	26.0	1.47	2.7	7.3
15/12/2017	ETAM17W04698	BS	72	Fill	Silty CLAY	Ref to plan	1770284	5905194	-	150	3m to Subgrade Level	189	189	189	189	1.94	40.5	1.38	2.7	0.0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04698

Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush


Location: As below

Tested by: BS

Date tested: 15.12.17



Revision 1

Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush		PROJECT CODE: 773-ETAM00525AA Page: 1 of 2	
		<div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="margin-left: 100px; text-align: right;"> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 27/12/2017</p> </div> </div>	

Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
18/12/2017	ETAM17W04762	BS	73	Fill	Silty CLAY	Refer to plan	1770269	5905223	-	150	3m to Subgrade Level	UTP	UTP	UTP	UTP	1.79	27.8	1.40	2.7	9.4
18/12/2017	ETAM17W04762	BS	74	Fill	Silty CLAY	Refer to plan	1770261	5905268	-	150	3m to Subgrade Level	UTP	UTP	UTP	UTP	1.75	34.4	1.30	2.7	7.1

Revision 1

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04762

Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush



Location: As below

Tested by: BS

Date tested: 18.12.17



Revision 1

Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush	PROJECT CODE: 773-ETAM00525AA Page: 1 of 2																																																																																					
	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 27/12/2017 </div> </div>																																																																																					
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<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #e6f2ff;"> <th rowspan="2">Date</th> <th rowspan="2">Work Order No: ETAM...</th> <th rowspan="2">Tested by</th> <th rowspan="2">Test No.</th> <th rowspan="2">Layer</th> <th rowspan="2">Material tested</th> <th rowspan="2">Location</th> <th rowspan="2">Easting</th> <th rowspan="2">Northing</th> <th rowspan="2">RL</th> <th rowspan="2">Probe Test Depth (mm) FL = Finished level</th> <th rowspan="2">Comments</th> <th colspan="4">Field Shear Strength in kPa</th> <th rowspan="2">Wet Density (t/m³)</th> <th rowspan="2">Oven Water Content (%)</th> <th rowspan="2">Dry Density (tm³)</th> <th rowspan="2">Solid Density</th> <th rowspan="2">Air Voids (%)</th> </tr> <tr style="background-color: #e6f2ff;"> <th colspan="4">UTP = Unable to penetrate</th> </tr> </thead> <tbody> <tr> <td>19/12/2017</td> <td>ETAM17W04766</td> <td>BS</td> <td>75</td> <td>Fill</td> <td>Silty CLAY</td> <td>Gully</td> <td>1770270</td> <td>5905235</td> <td>-</td> <td>150</td> <td>2.0m to Subgrade Level</td> <td>172</td> <td>153</td> <td>165</td> <td>189+</td> <td>1.72</td> <td>42.7</td> <td>1.21</td> <td>2.7</td> <td>3.7</td> </tr> <tr> <td>19/12/2017</td> <td>ETAM17W04766</td> <td>BS</td> <td>76</td> <td>Fill</td> <td>Silty CLAY</td> <td>Gully</td> <td>1770261</td> <td>5905291</td> <td>-</td> <td>150</td> <td>2.0m to Subgrade Level</td> <td>148</td> <td>168</td> <td>179</td> <td>165</td> <td>1.66</td> <td>46.8</td> <td>1.13</td> <td>2.7</td> <td>5.4</td> </tr> </tbody> </table>																				Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)	UTP = Unable to penetrate				19/12/2017	ETAM17W04766	BS	75	Fill	Silty CLAY	Gully	1770270	5905235	-	150	2.0m to Subgrade Level	172	153	165	189+	1.72	42.7	1.21	2.7	3.7	19/12/2017	ETAM17W04766	BS	76	Fill	Silty CLAY	Gully	1770261	5905291	-	150	2.0m to Subgrade Level	148	168	179	165	1.66	46.8	1.13	2.7	5.4
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density													Air Voids (%)																																																						
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19/12/2017	ETAM17W04766	BS	75	Fill	Silty CLAY	Gully	1770270	5905235	-	150	2.0m to Subgrade Level	172	153	165	189+	1.72	42.7	1.21	2.7	3.7																																																																		
19/12/2017	ETAM17W04766	BS	76	Fill	Silty CLAY	Gully	1770261	5905291	-	150	2.0m to Subgrade Level	148	168	179	165	1.66	46.8	1.13	2.7	5.4																																																																		

Revision 1

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04766

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 19.12.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 27/12/2017 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
20/12/2017	ETAM17W04791	BS	77	Fill	Silty CLAY	Gully	1770277	5905278	-	150	2.0m to Subgrade Level	178	178	163	163	1.75	47.5	1.18	2.7	0.0
20/12/2017	ETAM17W04791	BS	78	Fill	Silty CLAY	Gully	1770277	5905243	-	150	2.0m to Subgrade Level	159	159	163	163	1.70	48.7	1.14	2.7	2.0

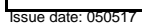
Project No: 773-ETAM00525AA



Work Order No: ETAM17W04791

2 of 2

Tested by: BS

Date tested: 20.12.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 8/01/2018 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
21/12/2017	ETAM17W04790	BS	79	Fill	Silty CLAY	Gully 2	1770265	5905282	-	150	1.5m to Subgrade Level	182	182	206+	206+	1.68	37.3	1.22	2.7	9.1
21/12/2017	ETAM17W04790	BS	80	Fill	Silty CLAY	Gully 2	1770267	5905252	-	150	1.5m to Subgrade Level	UTP	UTP	UTP	UTP	1.82	30.3	1.40	2.7	6.0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM17W04790

Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 21.12.17



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush	PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 11/01/2018</p> </div>  </div>
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Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
10/01/2018	ETAM18W00033	BS	81	Fill	Silty CLAY	Main Gully	1770277	5905195	-	150	1.5m to Subgrade Level	202	206	198	186	1.81	35.1	1.34	2.7	3.2
10/01/2018	ETAM18W00033	BS	82	Fill	Silty CLAY	Main Gully	1770271	5905235	-	150	1.5m to Subgrade Level	206	206	186	182	1.76	42.2	1.23	2.7	2.1
10/01/2018	ETAM18W00033	BS	83	Fill	Silty CLAY	Main Gully	1770265	5905282	-	150	1.5m to Subgrade Level	206	206	206	206	1.70	38.8	1.22	2.7	7.3

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00033

Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush


Location: As below

Tested by: BS

Date tested: 10.01.18



Issue date: 050517

Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 17/01/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
11/01/2018	ETAM18W00073	BS	84	Fill	Silty CLAY	Main Gully	1770258	5905228	-	150	1.0m to Subgrade Level	113	116	106	103	1.78	43.4	1.24	2.7	0.4
11/01/2018	ETAM18W00073	BS	85	Fill	Silty CLAY	Main Gully	1770255	5905288	-	150	1.0m to Subgrade Level	106	123	130	127	1.75	42.9	1.23	2.7	1.9

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00073

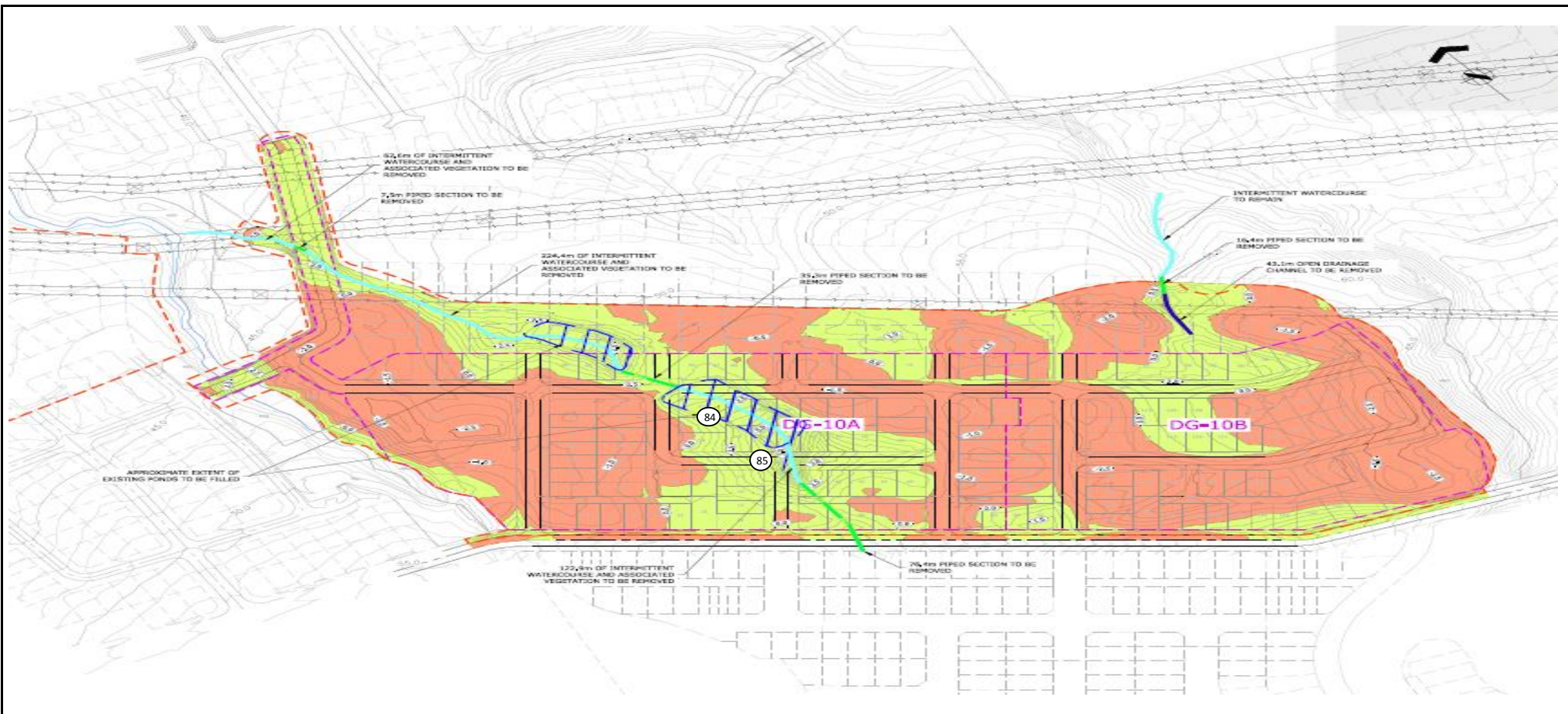
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 11.01.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 17/01/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
12/01/2018	ETAM18W00092	BS	86	Fill	Silty CLAY	Main Gully	1770258	5905228	-	150	Retest of Test No. 84	172	191	191	178	1.71	39.4	1.23	2.7	6.1
12/01/2018	ETAM18W00092	BS	87	Fill	Silty CLAY	Main Gully	1770255	5905288	-	150	Retest of Test No. 85	159	172	172	166	1.72	43.6	1.20	2.7	3.4

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00092

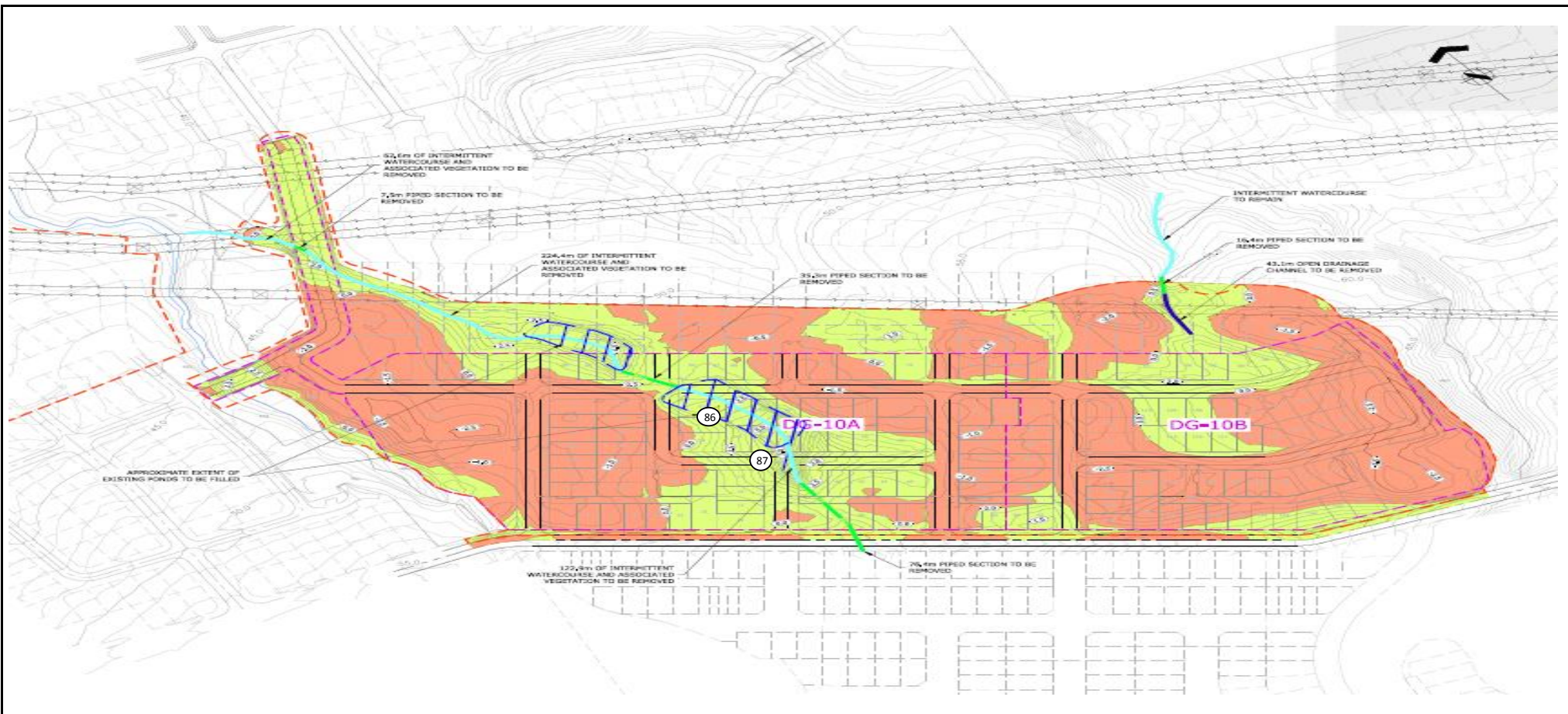
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 12.01.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 18/01/2018</p> </div>  </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
15/01/2018	ETAM18W00121	DL	88	Fill	Silty CLAY	General Fill	1770189	5905239	-	150	At Finish Level	UTP	UTP	UTP	UTP	1.95	21.9	1.60	2.7	5.5
15/01/2018	ETAM18W00121	DL	89	Fill	Silty CLAY	General Fill	1770268	5905275	-	150	At Finish Level	197+	197+	197+	197+	1.79	35.9	1.32	2.7	3.8
15/01/2018	ETAM18W00121	DL	90	Fill	Silty CLAY	General Fill	1770275	5905213	-	150	At Finish Level	172	165	153	161	1.76	35.6	1.30	2.7	5.5

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00121

Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: DL

Date tested: 15.01.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="margin-left: 100px; text-align: right;"> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 22/01/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
17/01/2018	ETAM18W00166	BS	91	Fill	Silty CLAY	Main Gully	1770274	5905224	-	150	850mm to Subgrade Level	220+	220+	220+	220+	1.86	30.9	1.42	2.7	3.6
17/01/2018	ETAM18W00166	BS	92	Fill	Silty CLAY	Main Gully	1770278	5905268	-	150	850mm to Subgrade Level	217	217	217	217	1.85	36.0	1.36	2.7	0.9

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00166

Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 17.01.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 30/01/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
26/01/2018	ETAM18W00243	BS	93	Fill	Silty CLAY	Main Gully	1770264	5905229	-	150	1m below Subgrade Level	145	145	159	159	1.81	27.0	1.42	2.7	9.0
26/01/2018	ETAM18W00243	BS	94	Fill	Silty CLAY	Main Gully	1770279	5905282	-	150	1m below Subgrade Level	145	145	145	152	1.78	38.3	1.29	2.7	2.8

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00243

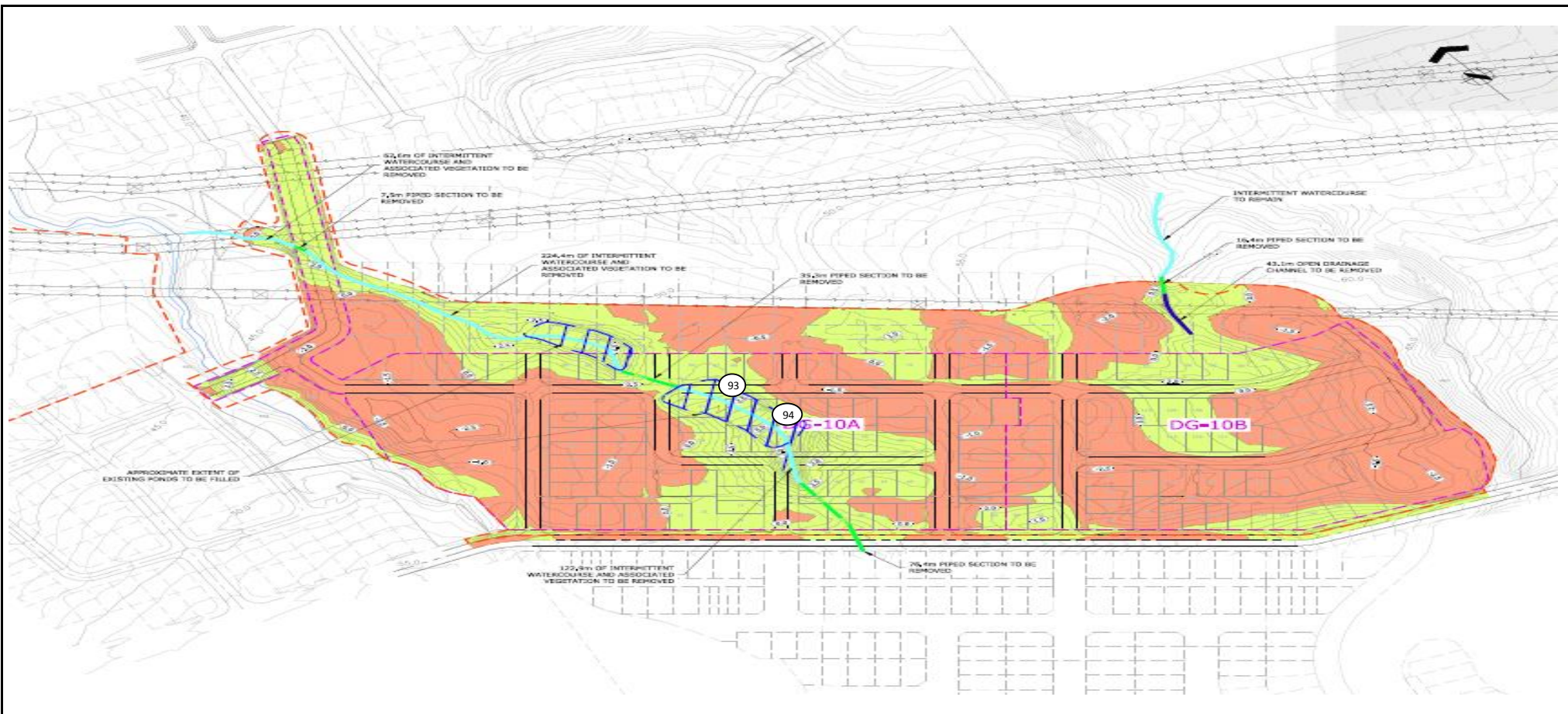
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 26.01.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="margin-left: 100px; text-align: right;">  Approved Signatory: Cesar Pura Issue date: 1/02/2018 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
30/01/2018	ETAM18W00291	BS	95	Fill	Silty CLAY	Main Gully	1770264	5905181	-	150	1.0m to Finished Level	UTP	UTP	UTP	UTP	1.96	22.1	1.61	2.7	5.0
30/01/2018	ETAM18W00291	BS	96	Fill	Silty CLAY	Main Gully	1770275	5905207	-	150	1.0m to Finished Level	UTP	UTP	UTP	UTP	1.99	21.4	1.64	2.7	4.3

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00291

Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 30.01.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 2/02/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
31/01/2018	ETAM18W00303	BS	97	Fill	Silty CLAY	Main Gully	1770260	5905192	-	150	1.0m to Subgrade Level	UTP	UTP	UTP	UTP	1.91	23.1	1.55	2.7	6.8
31/01/2018	ETAM18W00303	BS	98	Fill	Silty CLAY	Main Gully	1770257	5905216	-	150	1.0m to Subgrade Level	UTP	UTP	UTP	UTP	1.91	22.2	1.56	2.7	7.6

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00303

Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 31.01.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 8/02/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
1/02/2018	ETAM18W00342	FP	99	Fill	Silty CLAY	General Fill	1770276	5905185	-	150	At Subgrade Level	UTP	UTP	UTP	UTP	2.00	24.0	1.61	2.7	1.6
1/02/2018	ETAM18W00342	FP	100	Fill	Silty CLAY	General Fill	1770249	5905413	-	150	~0.5m below Subgrade Level	UTP	UTP	UTP	UTP	1.87	26.2	1.48	2.7	6.5

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00342

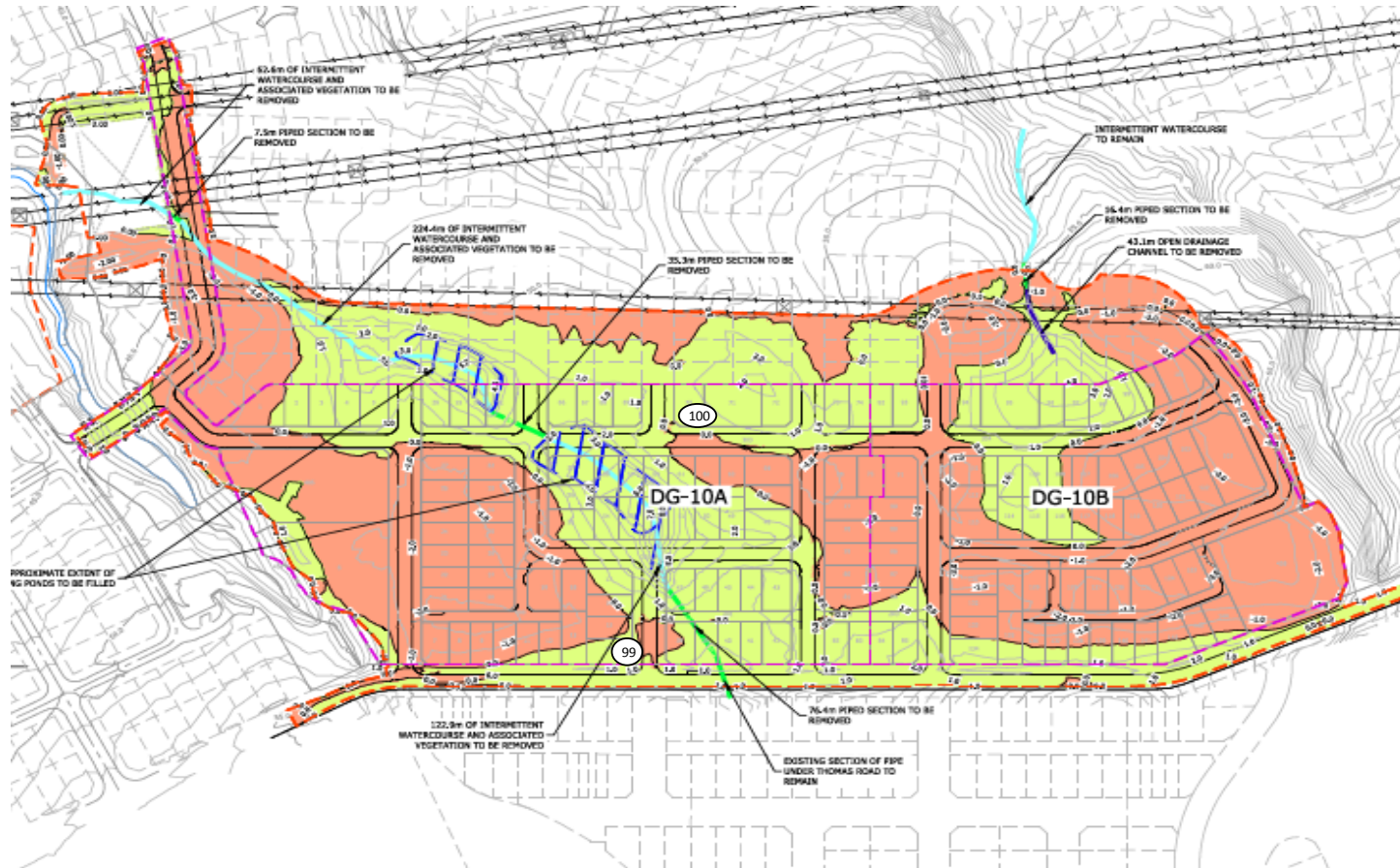
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: General Fill, As below

Tested by: FP

Date tested: 01.02.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 12/02/2018 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
8/02/2018	ETAM18W00400	FP	101	Fill	Silty CLAY	Road 7	1770304	5905310	-	150	At Subgrade Level	157	161	161	150	1.89	28.1	1.48	2.7	3.7
8/02/2018	ETAM18W00400	FP	102	Fill	Silty CLAY	Road 7	1770359	5905271	-	150	At Subgrade Level	150	161	146	143	1.84	43.5	1.28	2.7	0.0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00400

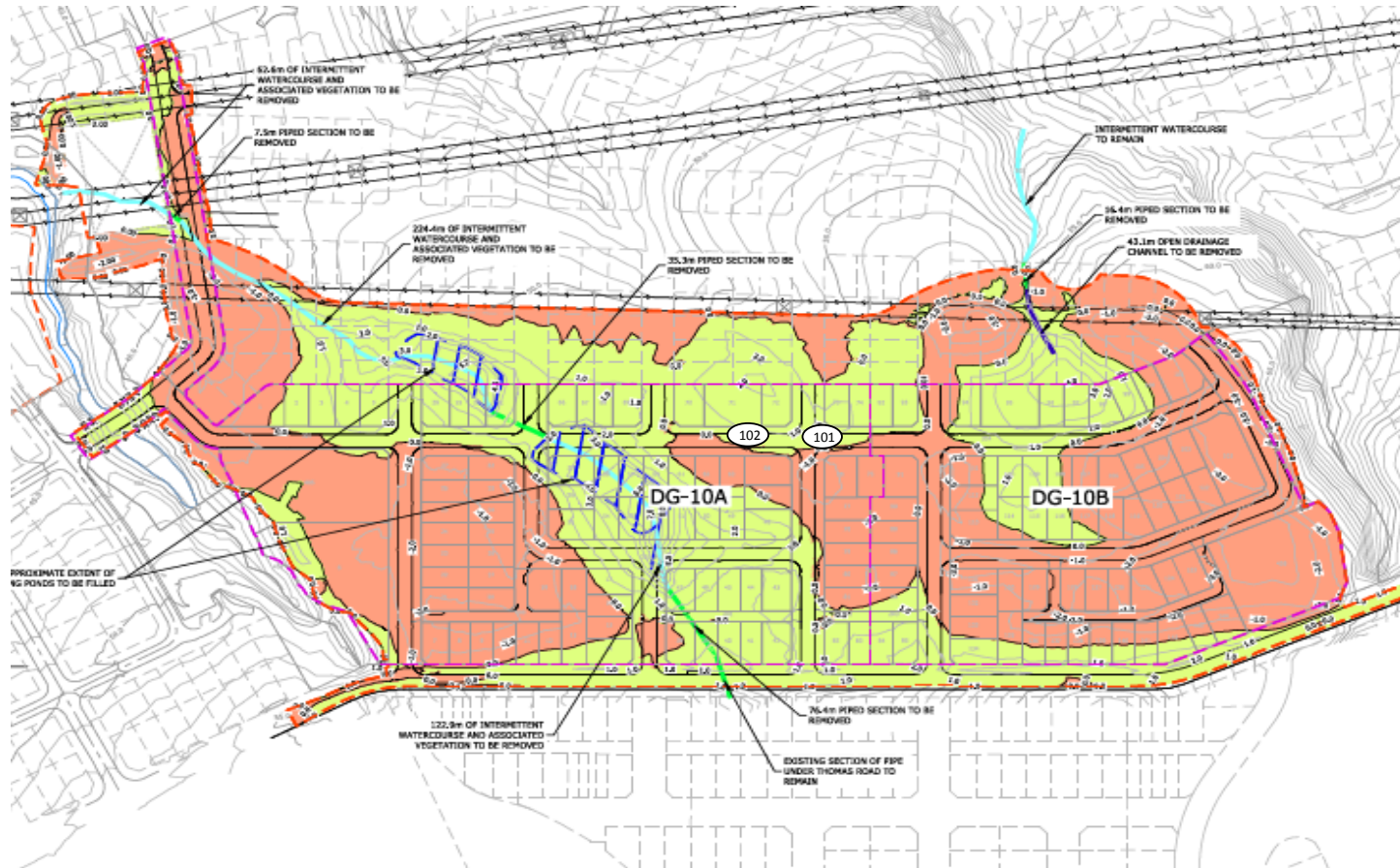
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: FP

Date tested: 08.02.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="margin-left: 100px; text-align: right;"> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 21/02/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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); Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
19/02/2018	ETAM18W00562	BS	103	Fill	Silty CLAY	Old Pond Fill	1770241	5905389	-	150	700mm to Subgrade Level	159	220+	220+	220+	1.84	34.3	1.37	2.7	2.5
19/02/2018	ETAM18W00562	BS	104	Fill	Silty CLAY	Old Pond Fill	1770217	5905400	-	150	700mm to Subgrade Level	152	178	191	191	1.85	31.1	1.41	2.7	3.8

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00562

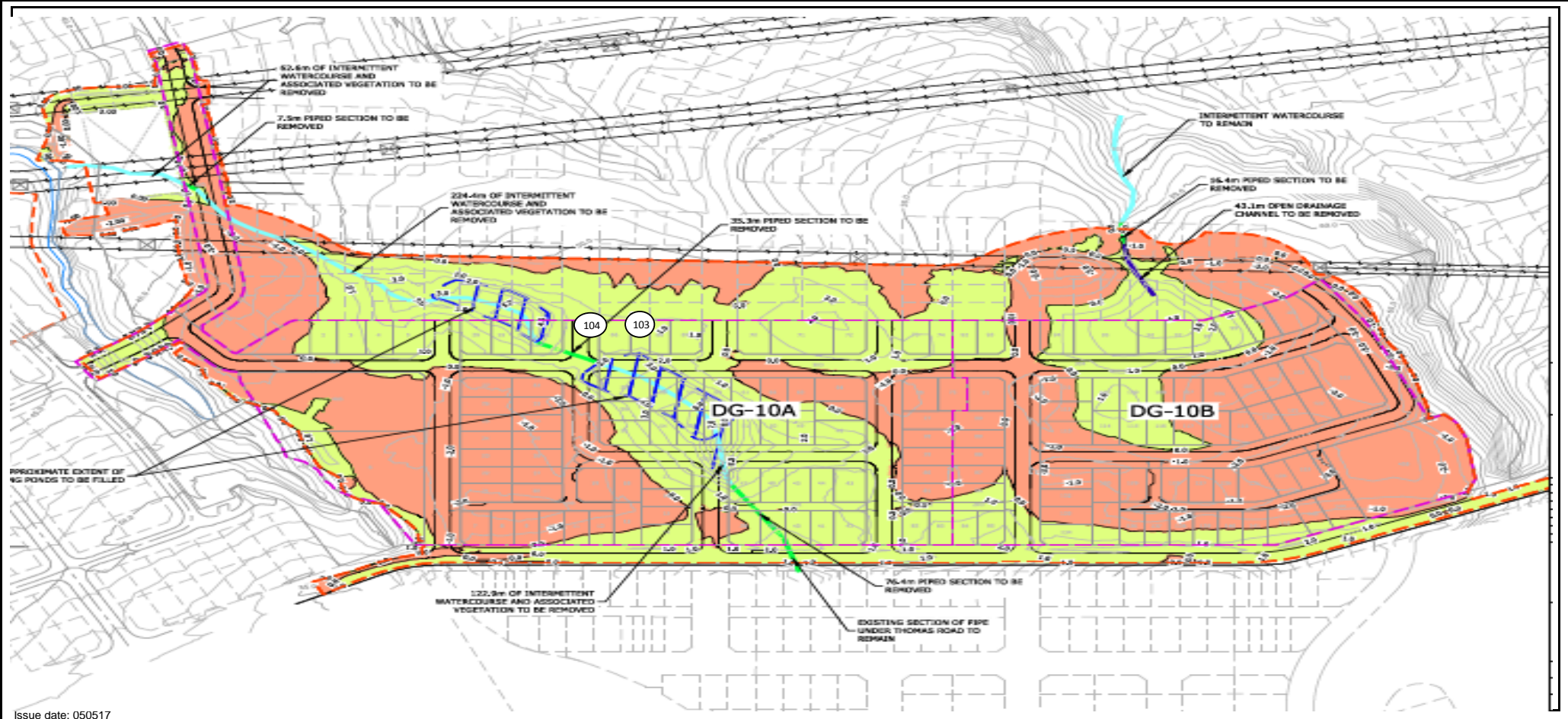
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 19.02.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 22/02/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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); Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
20/02/2018	ETAM18W00584	DL	105	Fill	Silty CLAY	General Fill	1770294	5905169	-	150	200mm to Subgrade Level	197+	197+	197+	197+	1.90	33.8	1.42	2.7	0.0
20/02/2018	ETAM18W00584	DL	106	Fill	Silty CLAY	General Fill	1770258	5905194	-	150	200mm to Subgrade Level	196	197+	197+	197+	1.86	24.0	1.50	2.7	8.6

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00584

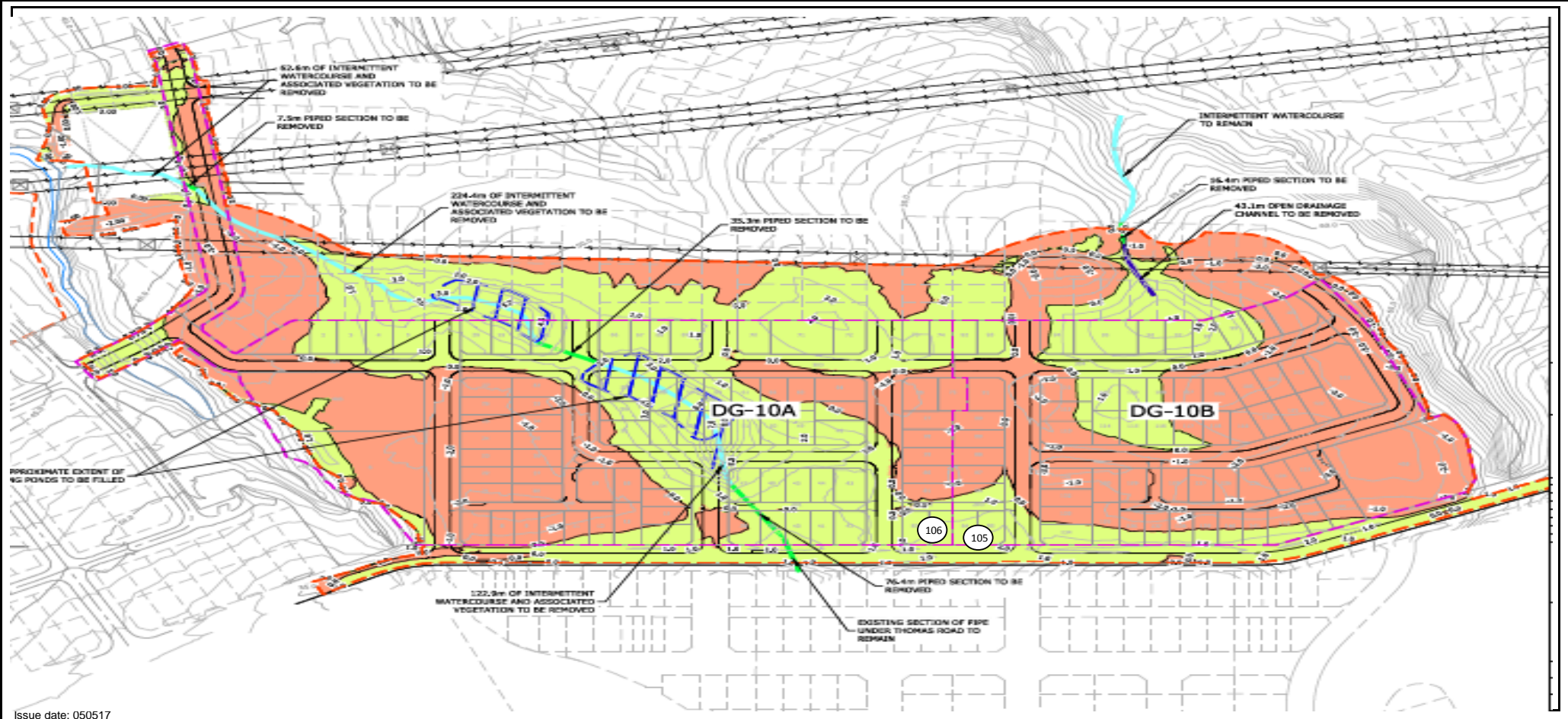
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: DL

Date tested: 20.02.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 23/02/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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); Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
22/02/2018	ETAM18W00618	BS	107	Fill	Silty CLAY	Main Gully	1770275	5905187	-	150	Final Level	UTP	UTP	UTP	UTP	1.86	28.0	1.45	2.7	5.5
22/02/2018	ETAM18W00618	BS	108	Fill	Silty CLAY	Main Gully	1770288	5905169	-	150	Final Level	UTP	UTP	UTP	UTP	1.86	32.3	1.40	2.7	2.7

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00618

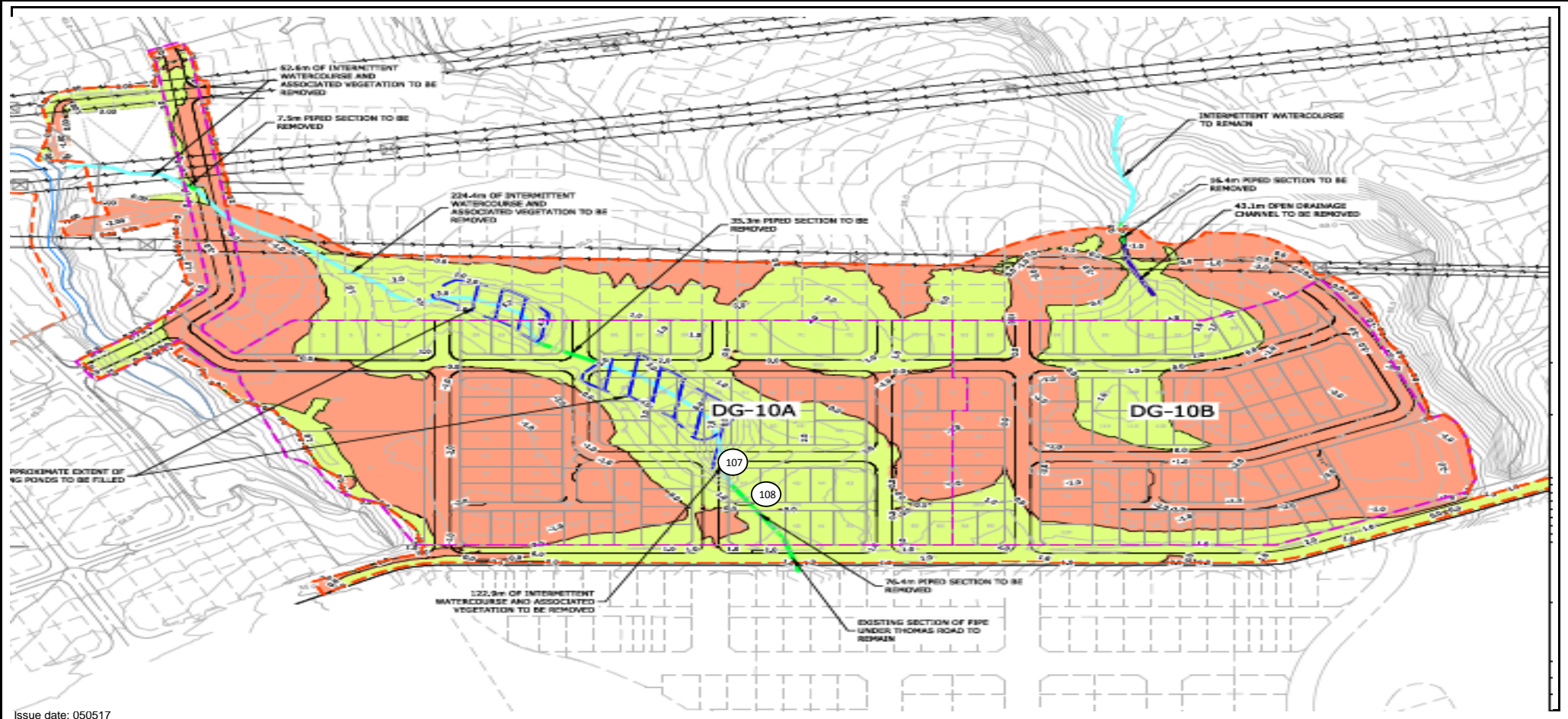
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 22.02.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="margin-left: 20px; text-align: right;">  Approved Signatory: Cesar Pura Issue date: 27/02/2018 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
23/02/2018	ETAM18W00684	BS	109	Fill	Silty CLAY	Old Pond Fill	1770257	5905370	-	150	1.0m to Subgrade Level	159	178	220+	191	1.84	30.7	1.40	2.7	4.9
23/02/2018	ETAM18W00684	BS	110	Fill	Silty CLAY	Old Pond Fill	1770232	5905386	-	150	1.0m to Subgrade Level	178	159	159	159	1.83	28.7	1.42	2.7	6.3

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00684

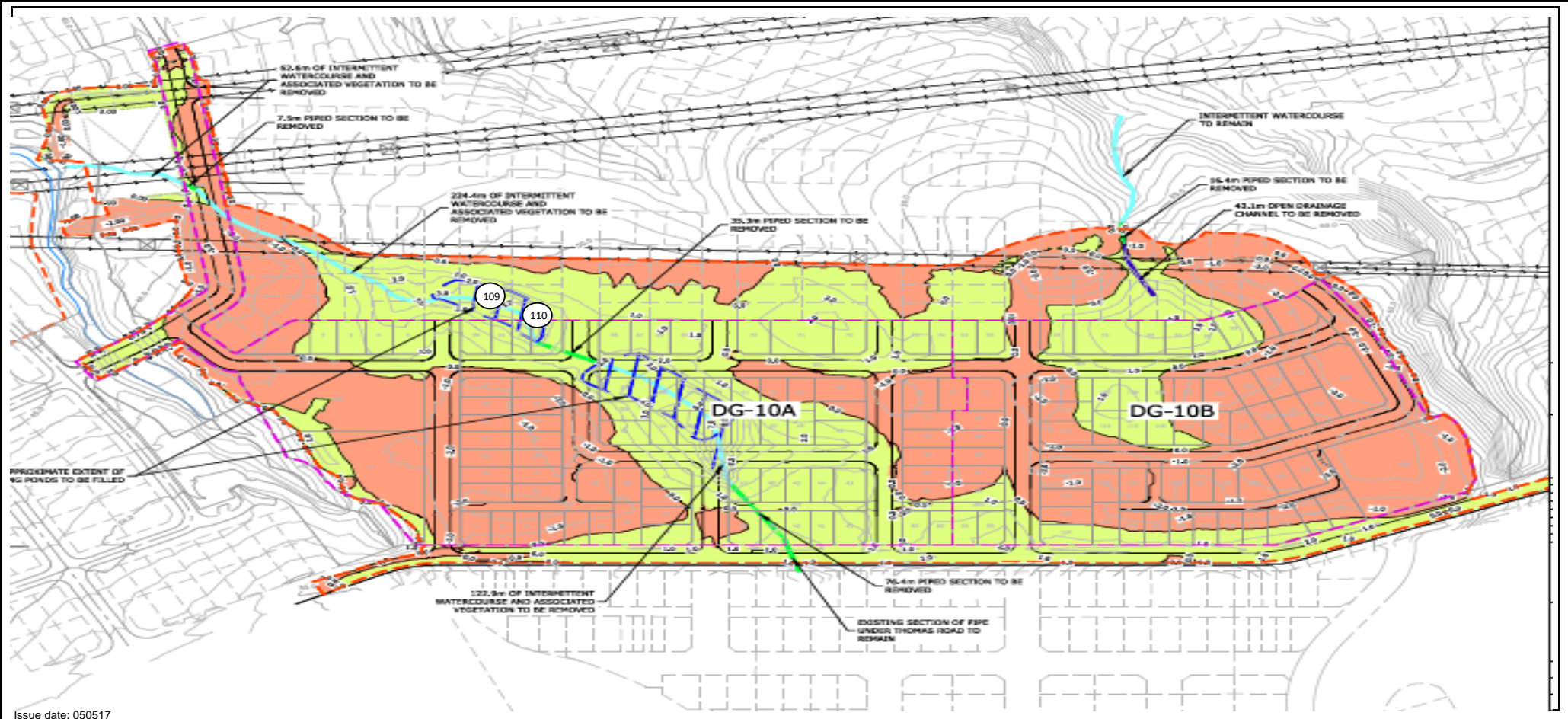
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 23.02.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;">  <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 28/02/2018 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
26/02/2018	ETAM18W00718	BS	111	Fill	Silty CLAY	Old Gully	1770250	5905374	-	150	500mm to Subgrade Level	145	145	159	159	1.77	34.0	1.32	2.7	6.0
26/02/2018	ETAM18W00718	BS	112	Fill	Silty CLAY	Old Gully	1770269	5905363	-	150	500mm to Subgrade Level	145	145	145	152	1.78	42.4	1.25	2.7	0.7

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00718

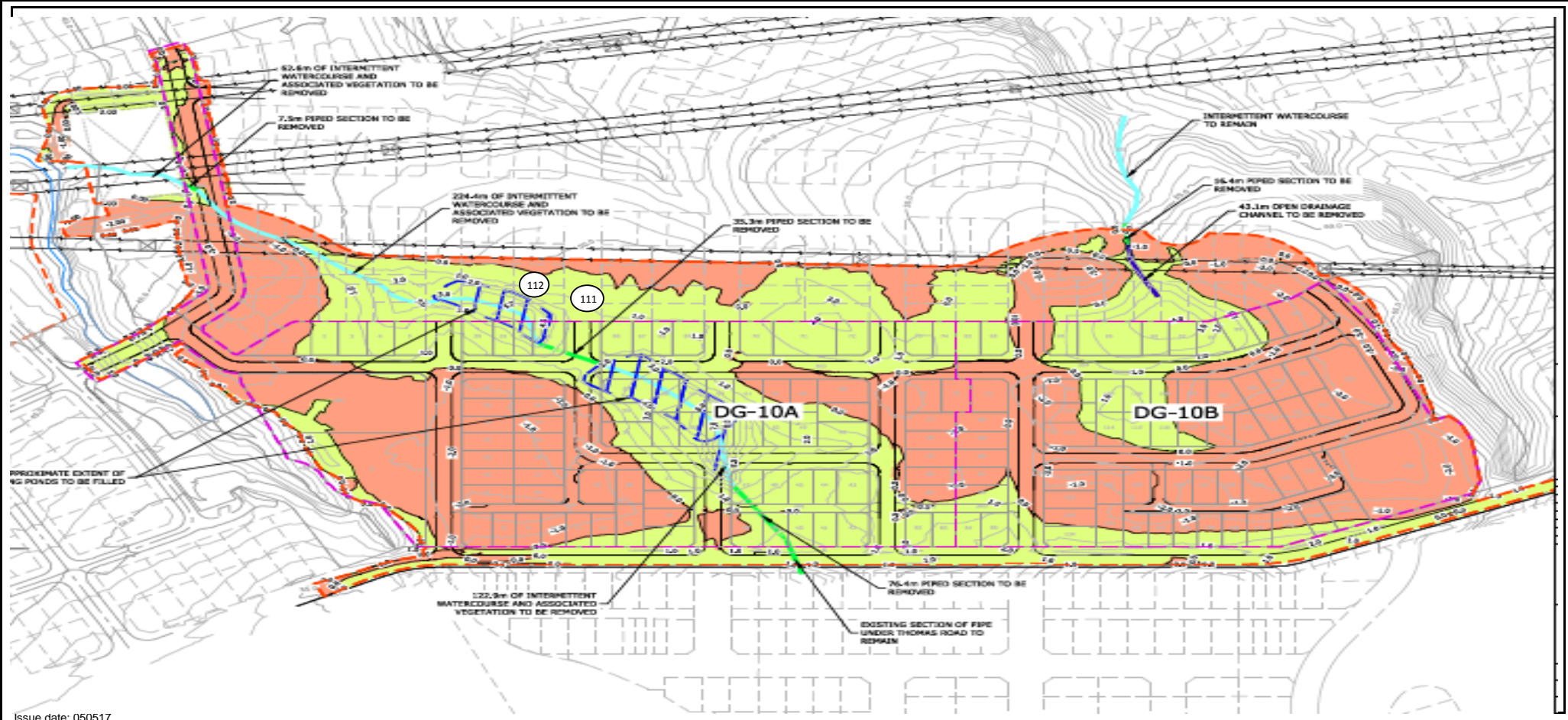
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 26.02.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 2/03/2018 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
27/02/2018	ETAM18W00750	BS	113	Fill	Silty CLAY	Old Pond	1770250	5905373	-	150	300mm to Subgrade Level	220+	220+	191	191	1.86	29.4	1.44	2.7	4.4
27/02/2018	ETAM18W00750	BS	114	Fill	Silty CLAY	Old Pond	1770262	5905361	-	150	300mm to Subgrade Level	UTP	UTP	220+	220+	1.81	28.6	1.41	2.7	7.6

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00750

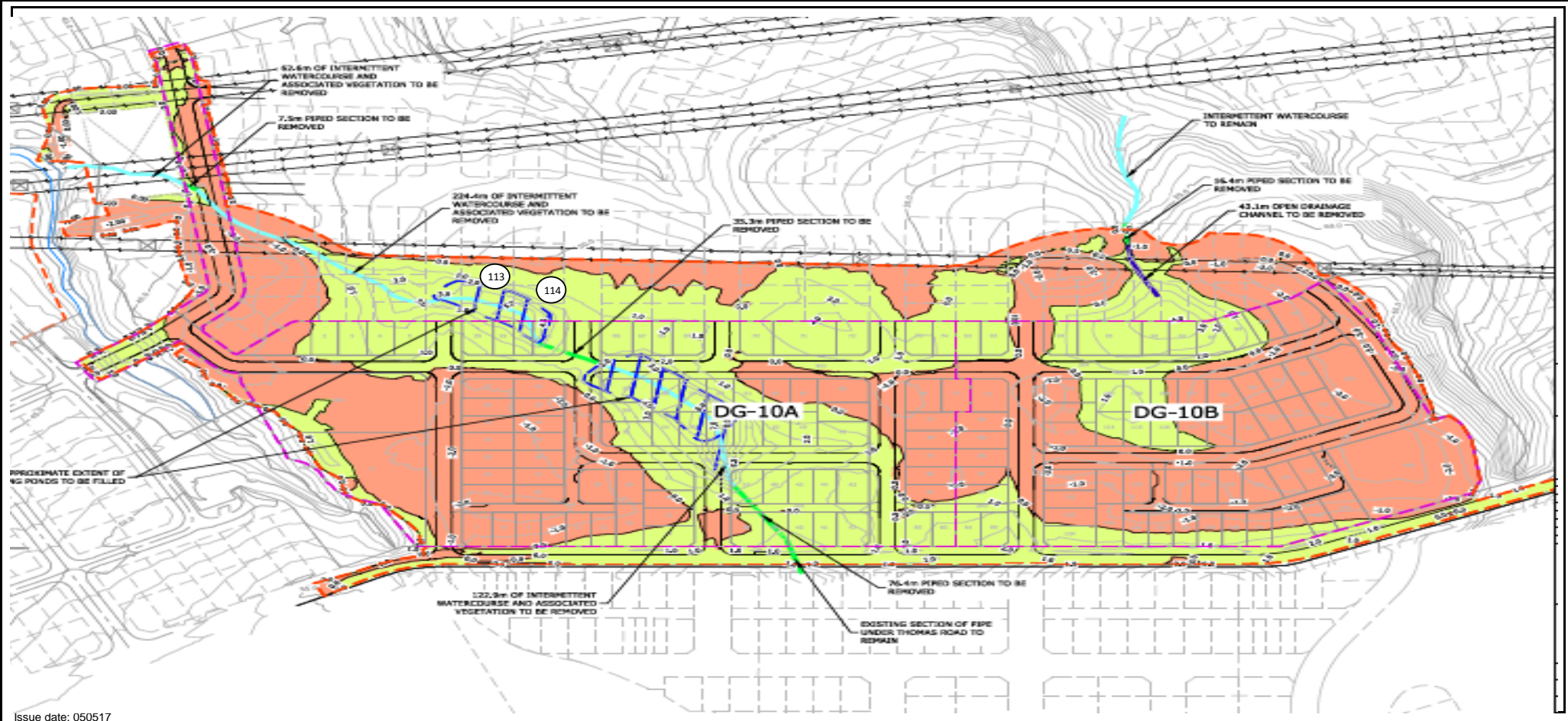
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 27.02.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 6/03/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
1/03/2018	ETAM18W00805	BS	115	Fill	Silty CLAY	Old Gully	1770266	5905360	-	150	-	191	191	191	191	1.84	28.9	1.43	2.7	5.8
1/03/2018	ETAM18W00805	BS	116	Fill	Silty CLAY	Old Gully	1770252	5905368	-	150	-	159	159	191	191	1.84	27.5	1.45	2.7	6.7

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00805

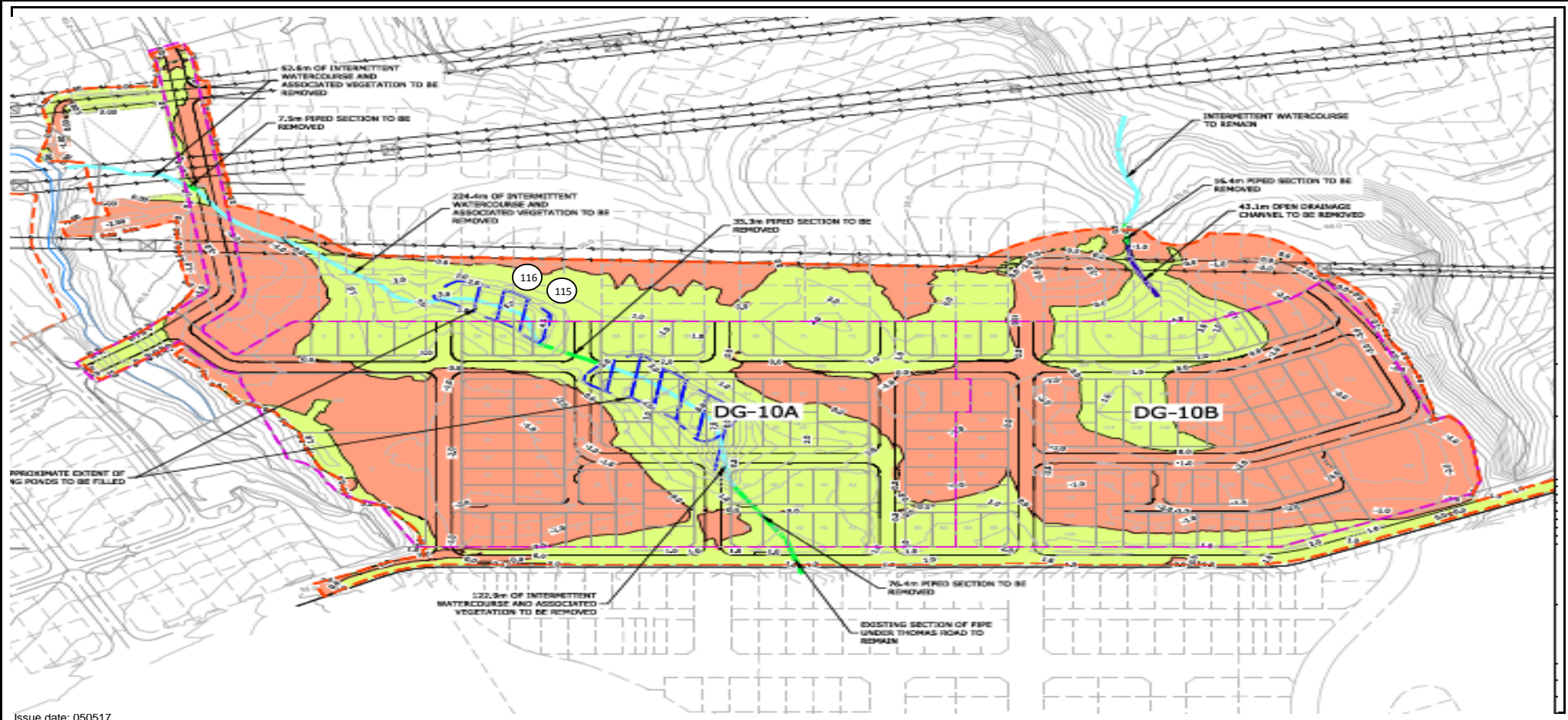
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 01.03.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 8/03/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
2/03/2018	ETAM18W00841	BS	117	Fill	Silty CLAY	Pond A	1770492	5905191	-	150	500mm to Subgrade Level	220+	220+	220+	220+	1.58	48.9	1.06	2.7	8.9
2/03/2018	ETAM18W00841	BS	118	Fill	Silty CLAY	Pond A	1770482	5905210	-	150	500mm to Subgrade Level	220+	220+	220+	220+	1.57	50.1	1.04	2.7	9.0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00841

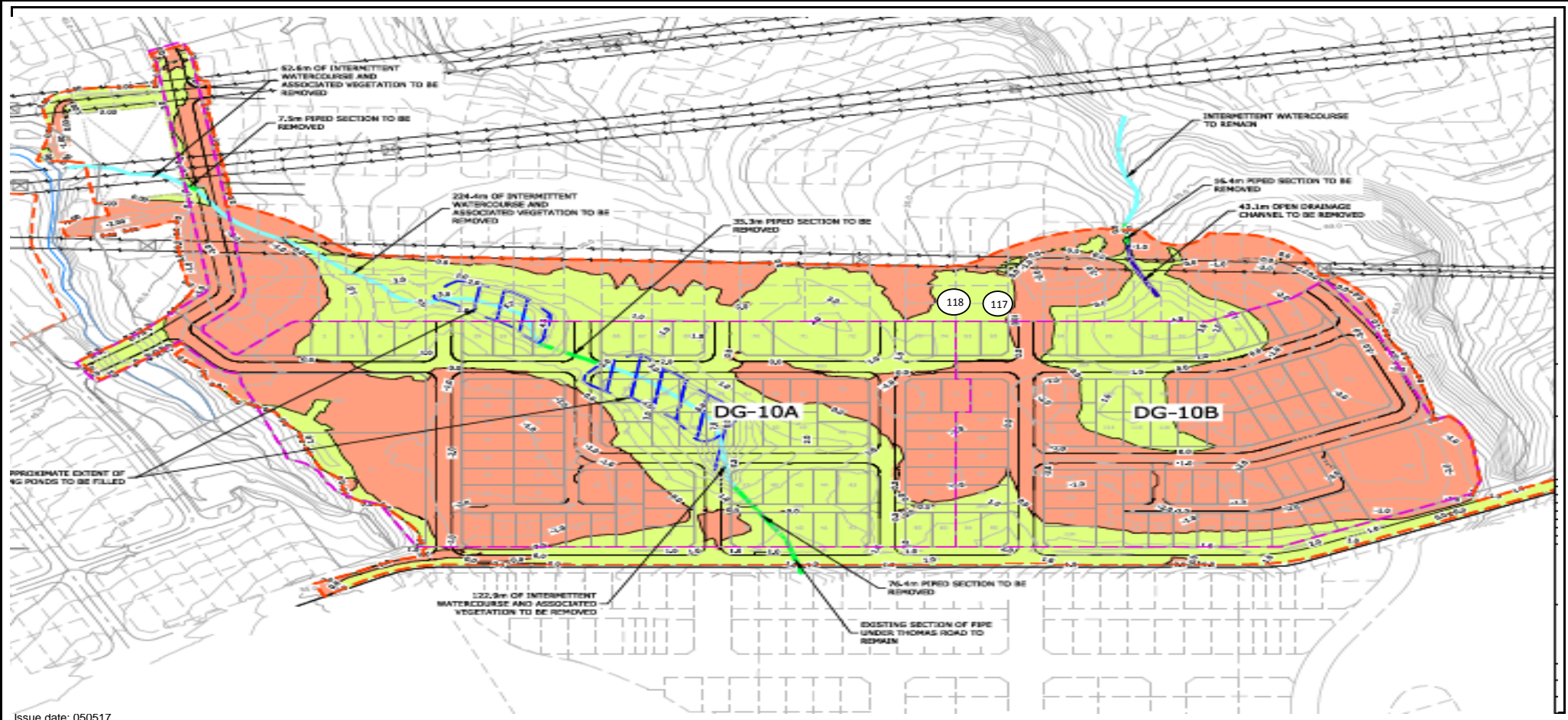
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 02.03.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 8/03/2018</p> </div>  </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
5/03/2018	ETAM18W00854	BS	119	Fill	Silty CLAY	Pond B	1770406	5905253	-	150	-	UTP	UTP	159	191	1.73	32.4	1.31	2.7	9.3
5/03/2018	ETAM18W00854	BS	120	Fill	Silty CLAY	Old Gully	1770281	5905350	-	150	-	UTP	UTP	UTP	UTP	1.89	29.0	1.47	2.7	3.1

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00854

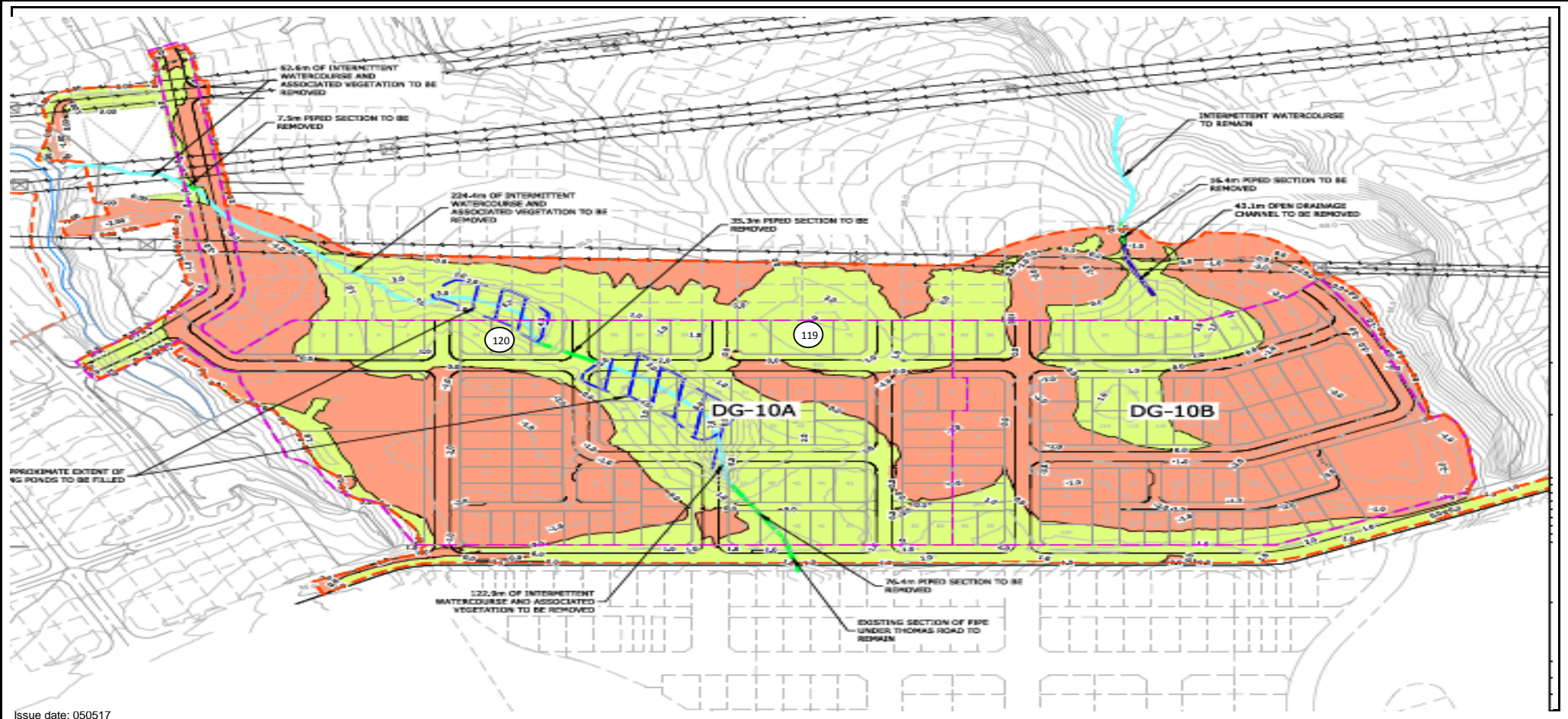
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 05.03.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center;">  <div> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> <p>Approved Signatory: Cesar Pura</p> <p>Issue date: 9/03/2018</p> </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
6/03/2018	ETAM18W00879	BS	121	Fill	Silty CLAY	General Fill	1770387	5905269	-	150	500mm to Subgrade Level	UTP	UTP	152	152	1.72	28.5	1.34	2.7	12.4
6/03/2018	ETAM18W00879	BS	122	Fill	Silty CLAY	General Fill	1770352	5905296	-	150	500mm to Subgrade Level	UTP	UTP	UTP	UTP	1.71	40.9	1.21	2.7	5.4

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00879

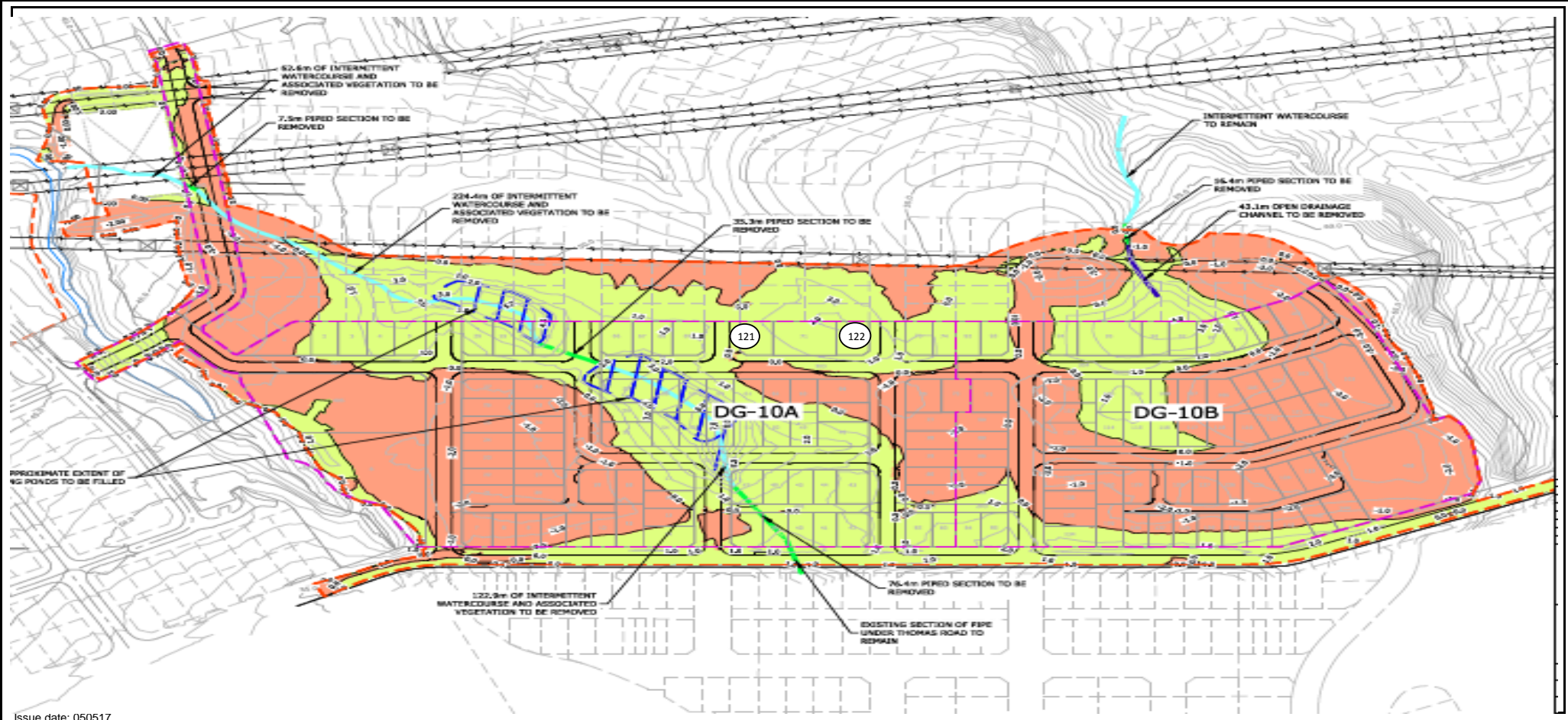
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 06.03.18



Client: Coffey Services NZ Ltd (Auckland)

Address PO Box 8261, Symonds Street, Auckland 1150

Attention: Ray Berry


c.c: -

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: Flat Bush

PROJECT CODE: 773-ETAM00525AA

Page: 1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory: Cesar Pura

Issue date: 13/09/2018

Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
8/03/2018	ETAM18W00893	BS	123	Fill	Silty CLAY	Pond B	1770381	5905265	-	150	200mm to Subgrade Level	191	UTP	UTP	UTP	1.76	22.6	1.43	2.59	12
8/03/2018	ETAM18W00893	BS	124	Fill	Silty CLAY	Pond B	1770369	5905278	-	150	200mm to Subgrade Level	UTP	UTP	UTP	UTP	1.75	25.2	1.39	2.59	11

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00893

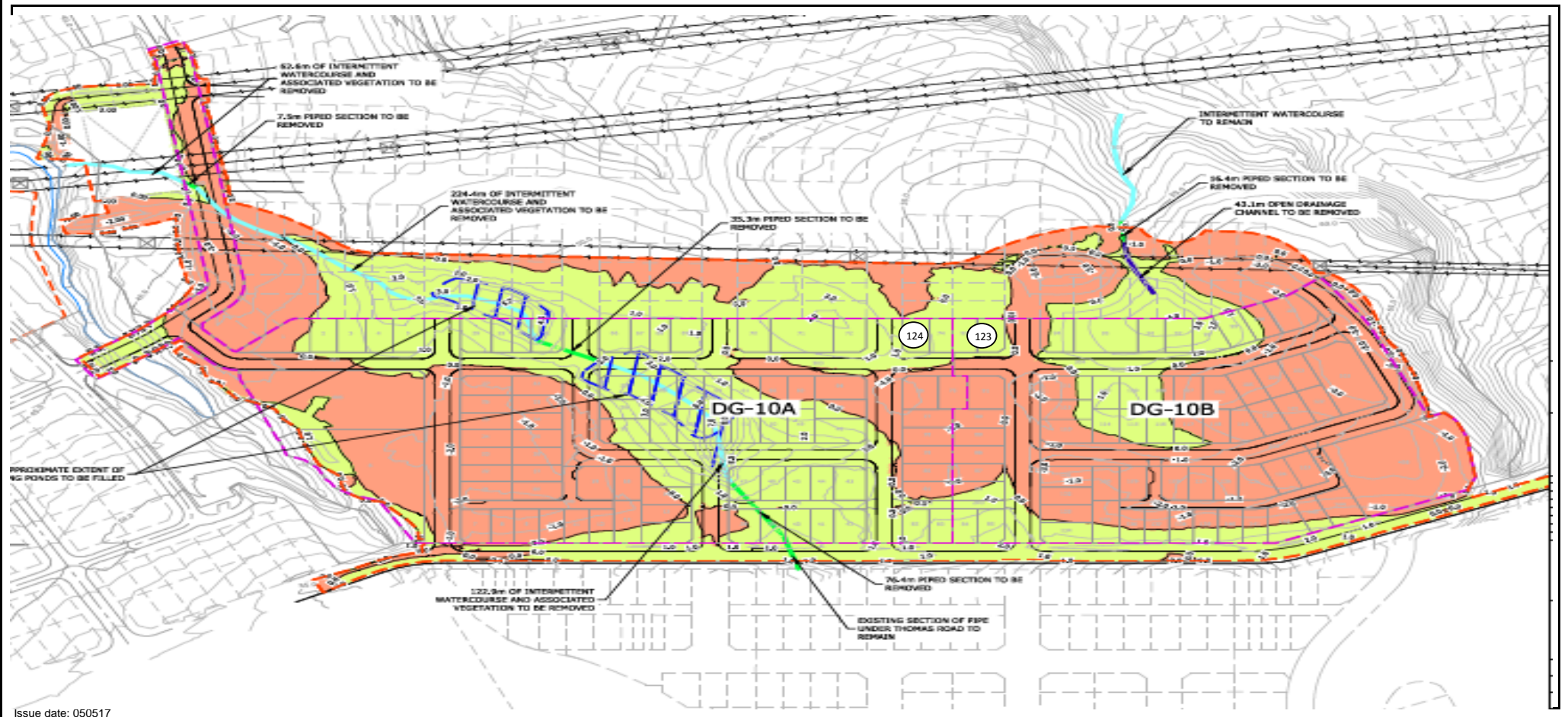
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 08.03.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

13/09/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
9/03/2018	ETAM18W00922	BS	125	Fill	Silty CLAY	General Fill	1770361	5905286	-	150	300mm to Subgrade Level	UTP	UTP	UTP	UTP	1.73	33.1	1.30	2.59	7
9/03/2018	ETAM18W00922	BS	126	Fill	Silty CLAY	General Fill	1770419	5905252	-	150	300mm to Subgrade Level	197	166	178	172	1.69	31.1	1.29	2.59	10

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00922

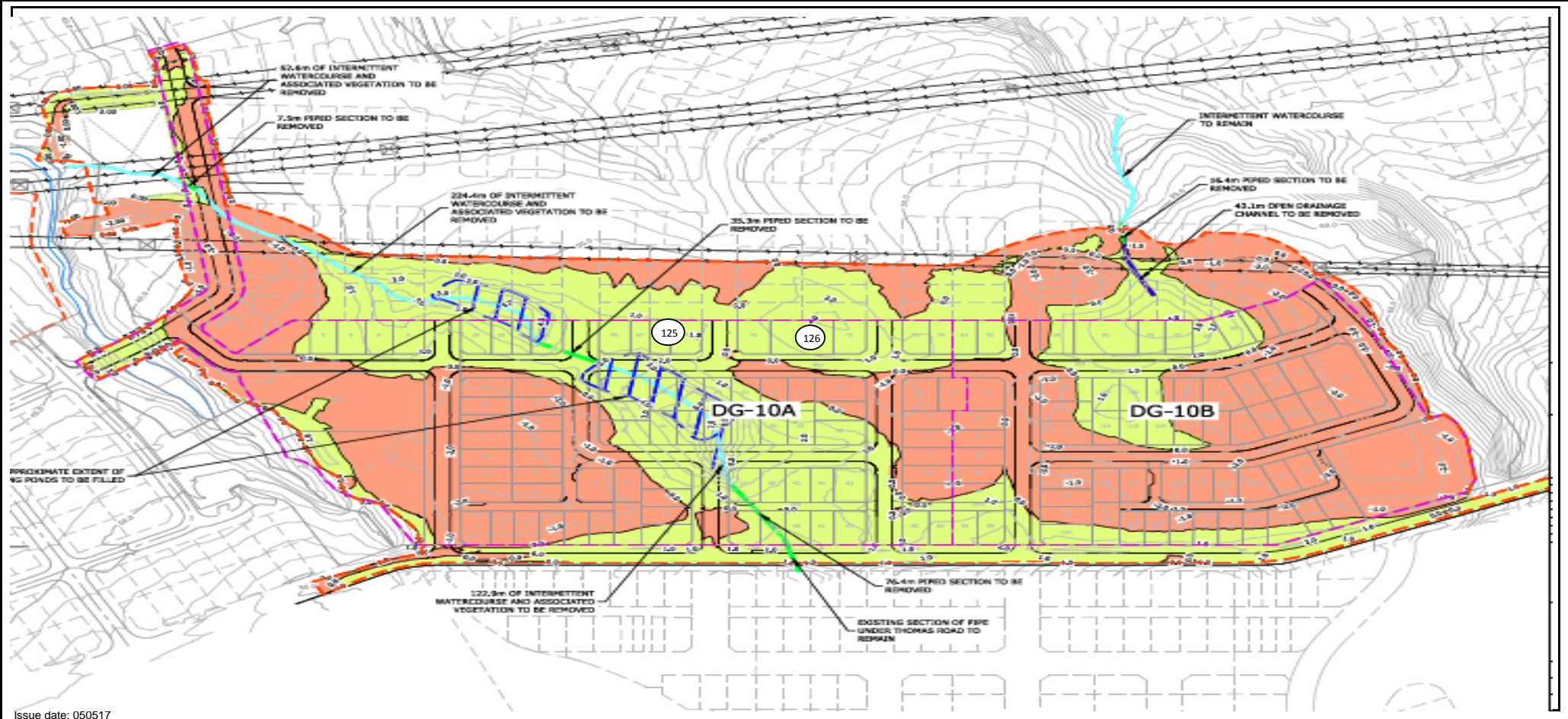
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 09.03.18



Client: Coffey Services NZ Ltd (Auckland)
Address: PO Box 8261, Symonds Street, Auckland 1150
Attention: Ray Berry
c.c: -
Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush
Location: Flat Bush

PROJECT CODE: 773-ETAM00525AA
Page: 1 of 2

IANZ ACCREDITED LABORATORY
Tests indicated as not accredited are outside the scope of the laboratory's accreditation
Approved Signatory: Cesar Pura
Issue date: 13/09/2018

Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
												UTP = Unable to penetrate								
12/03/2018	ETAM18W00993	BS	127	Fill	Silty CLAY	General Fill	1770419	5905252	-	150	(Retest of Test No. 126)	191	191	UTP	UTP	1.74	35.8	1.28	2.59	5
12/03/2018	ETAM18W00993	BS	128	Fill	Silty CLAY	General Fill	1770387	5905269	-	150	(Retest of Test No. 121)	159	159	159	159	1.72	31.3	1.31	2.59	8
12/03/2018	ETAM18W00993	BS	129	Fill	Silty CLAY	Pond B	1770381	5905265	-	150	(Retest of Test No. 123)	UTP	UTP	UTP	UTP	1.83	21.3	1.51	2.59	10
12/03/2018	ETAM18W00993	BS	130	Fill	Silty CLAY	Pond B	1770369	5905278	-	150	(Retest of Test No. 124)	UTP	UTP	UTP	UTP	1.74	23.4	1.41	2.59	13

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W00993

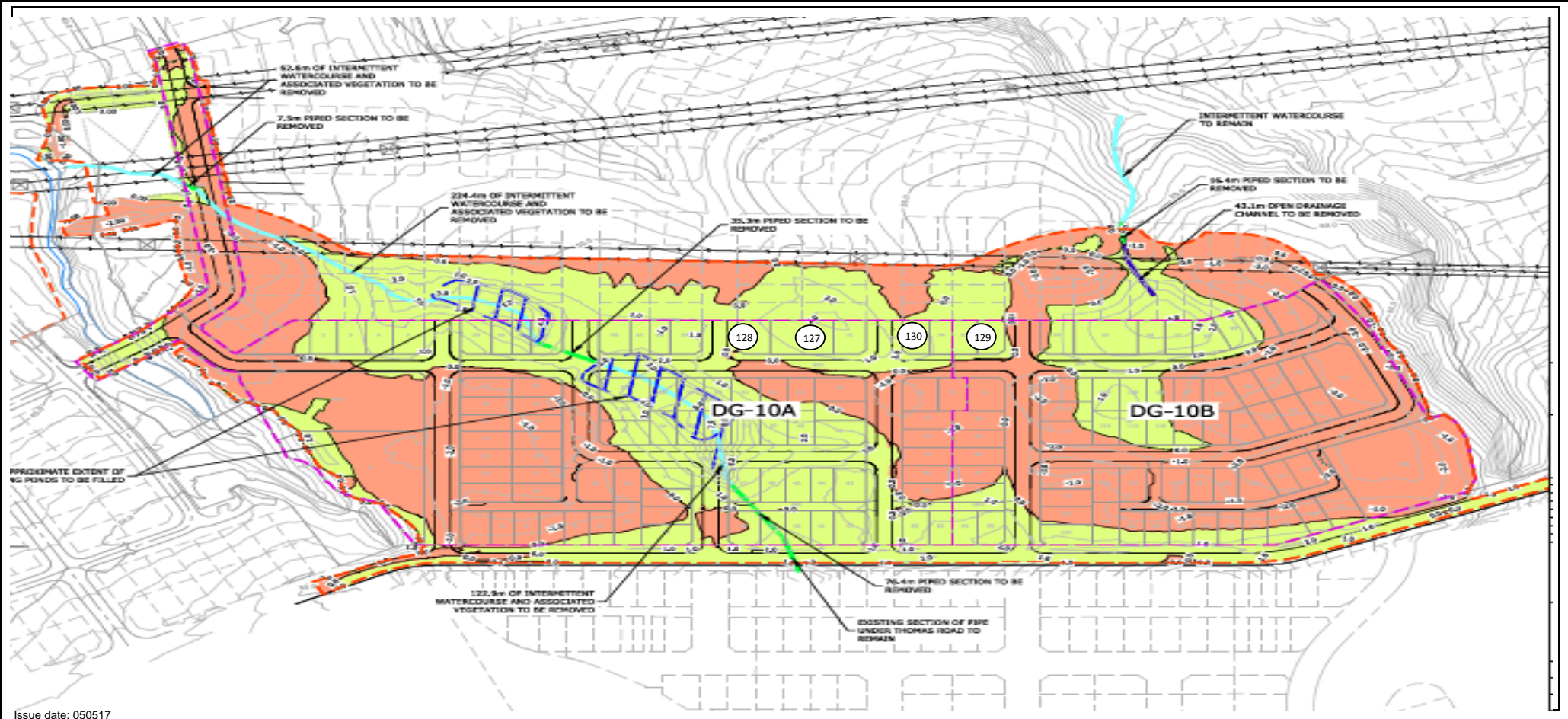
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 12.03.18



Client:	Coffey Services NZ Ltd (Auckland)	PROJECT CODE:	773-ETAM00525AA	
Address	PO Box 8261, Symonds Street, Auckland 1150	Page:	1 of 2	
Attention:	Ray Berry	 Tests indicated as not accredited are outside the scope of the laboratory's accreditation	 Approved Signatory: Cesar Pura	
c.c:	-			Issue date: 13/09/2018
Project:	773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush			
Location:	Flat Bush			

Test method:	Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.
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Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
												UTP = Unable to penetrate								
15/03/2018	ETAM18W01105	BS	131	Fill	Silty CLAY	Old Pond	1770272	5905364	-	150	At Finished Level	UTP	UTP	213	213	1.75	24.8	1.40	2.59	11
15/03/2018	ETAM18W01105	BS	132	Fill	Silty CLAY	Old Pond	1770228	5905393	-	150	At Finished Level	213	213	213	UTP	1.77	26.0	1.41	2.59	9

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01105

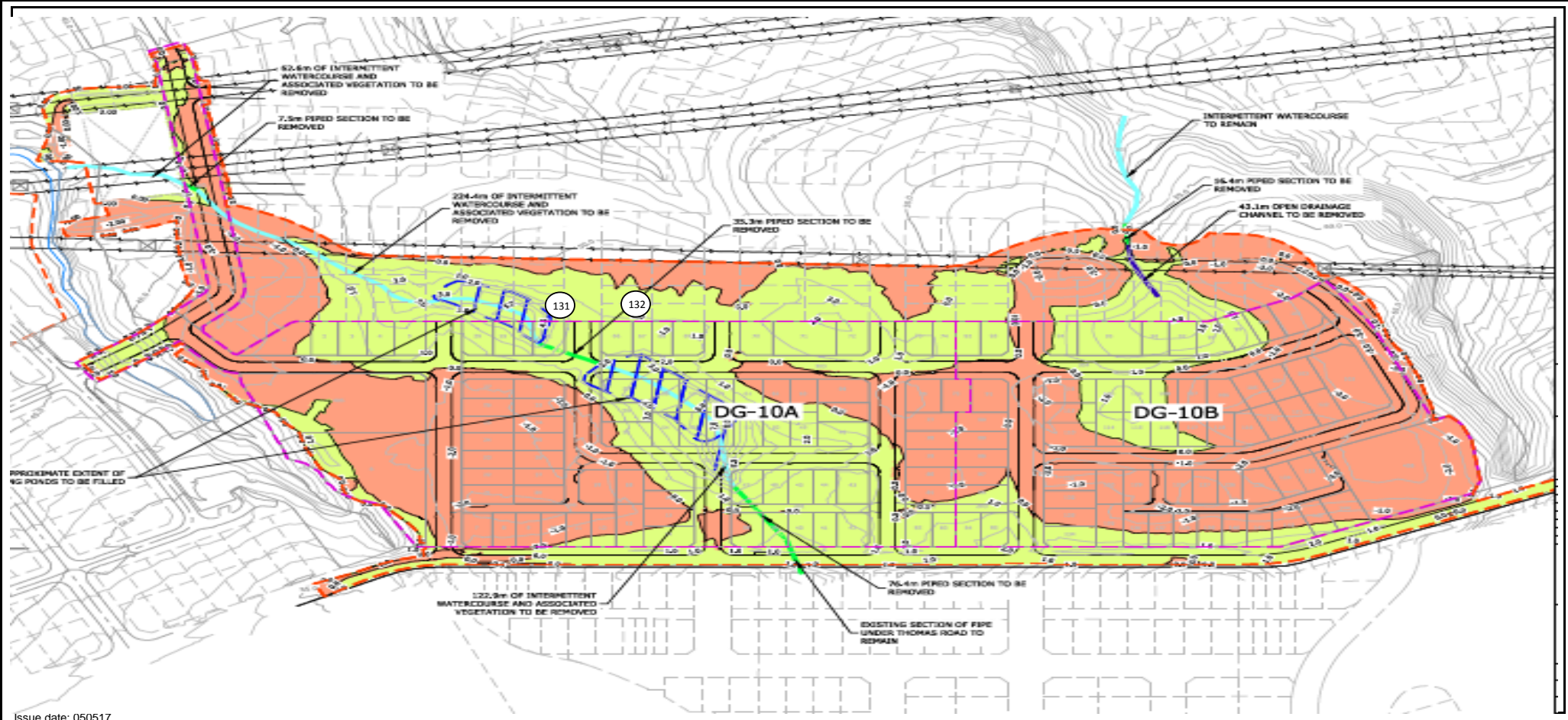
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 15.03.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 24/03/2018 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
16/03/2018	ETAM18W01109	BS	133	Fill	Silty CLAY	Old Gully	1770273	5905266	-	150	At Finished Level	220+	220+	220+	220+	2.10	30.4	1.61	2.7	0.0
16/03/2018	ETAM18W01109	BS	134	Fill	Silty CLAY	Eastern Transmission	1770730	5905231	-	150	1.0m to Subgrade Level	116	130	127	123	1.92	31.3	1.46	2.7	0.0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01109

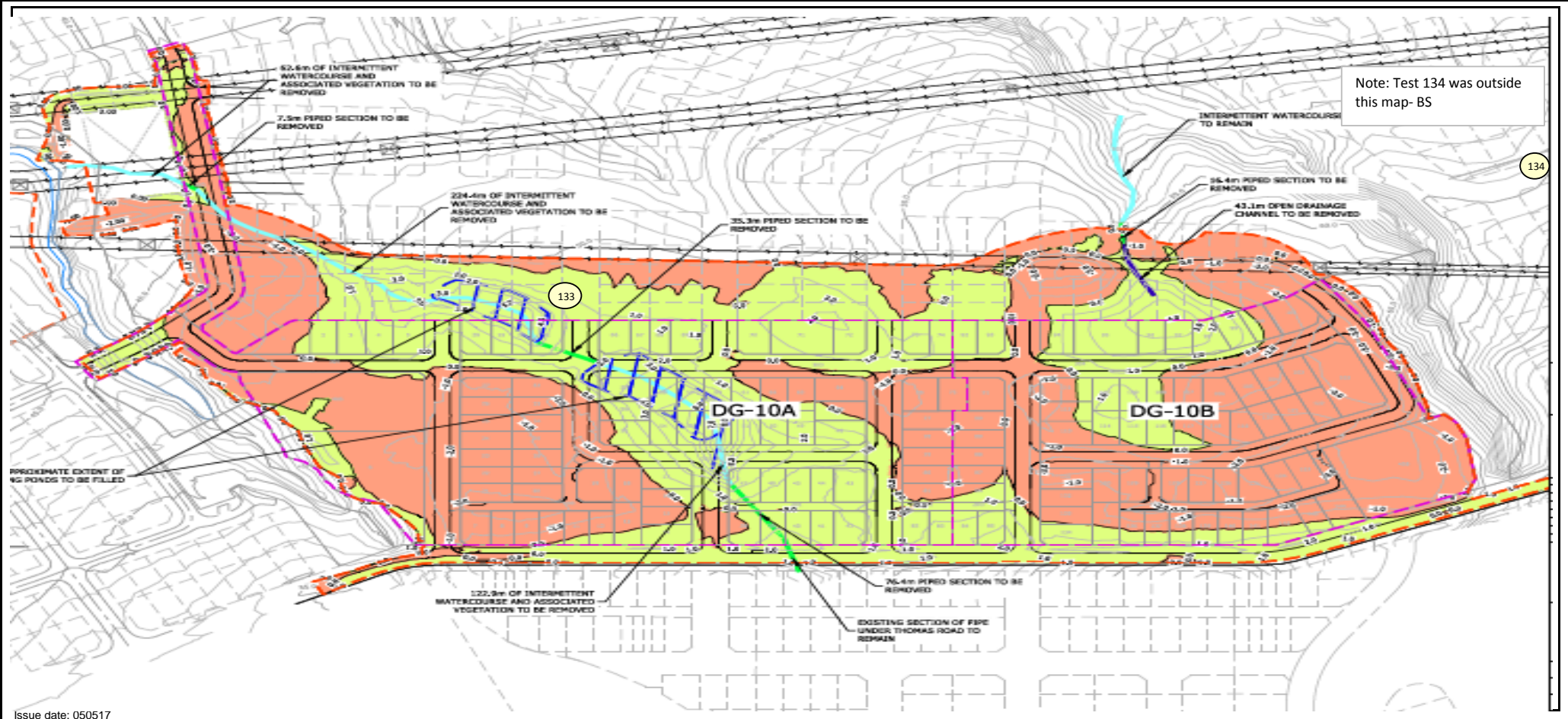
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 16.03.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: center;">  IANZ ACCREDITED LABORATORY </div> <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation </div> <div style="text-align: right;">  Approved Signatory: Cesar Pura Issue date: 26/03/2018 </div> </div>										
Test method: Test Methods in accordance with: 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): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b)). Please note that Air Void calculations are not IANZ endorsed as part of this report.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL	Probe Test Depth (mm) FL = Finished level	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (t/m ³)	Oven Water Content (%)	Dry Density (tm ³)	Solid Density	Air Voids (%)
19/03/2018	ETAM18W01163	BS	135	Fill	Silty CLAY	Eastern Lot Undercut	1770528	5905120	-	150	Undercut Area	220+	220+	220+	220+	1.72	41.2	1.21	2.7	5.0
19/03/2018	ETAM18W01163	BS	136	Fill	Silty CLAY	Eastern Lot Undercut	1770554	5905113	-	150	Undercut Area	UTP	UTP	191	191	1.88	26.9	1.48	2.7	5.2
19/03/2018	ETAM18W01163	BS	137	Fill	Silty CLAY	Eastern Transmission	1770735	5905229	-	150	800mm to Subgrade Level	191	191	220+	220+	1.90	29.8	1.46	2.7	2.3
19/03/2018	ETAM18W01163	BS	138	Fill	Silty CLAY	Eastern Transmission	1770730	5905231	-	150	(Retest of Test No. 134)	191	191	191	191	1.87	29.5	1.44	2.7	3.9

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01163

Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 19.03.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

13/09/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
20/03/2018	ETAM18W01167	BS	139	Fill	Silty CLAY	Eastern Transmission	1770706	5905244	-	150	500mm to Subgrade Level	191	191	UTP	UTP	1.83	31.2	1.40	2.59	2
20/03/2018	ETAM18W01167	BS	140	Fill	Silty CLAY	Eastern Transmission	1770731	5905228	-	150	500mm to Subgrade Level	159	159	208	197	1.79	36.9	1.31	2.59	1

This report must not be altered or reproduced except in full.
 This report replaces all previous reports under Work Order No. ETAM18W01167.
 IANZ Accredited Laboratory No:105
 LPS-07F11 Issue date 04072016

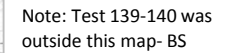
Project No: 773-ETAM00525AA

Work Order No: ETAM18W01167

2 of 2

Tested by: BS

Date tested: 20.03.18



Issue date: 050517

Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:

Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2

IANZ

ACCREDITED LABORATORY

Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

13/09/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
21/03/2018	ETAM18W01184	JJ	141	Fill	Silty CLAY	Thomas Road front Undercut	1770312	5905144	-	150	1.2m to Finished Level	UTP	UTP	UTP	170	1.73	30.8	1.32	2.59	8
21/03/2018	ETAM18W01184	JJ	142	Fill	Silty CLAY	Thomas Road front Undercut	1770285	5905156	-	150	1.2m to Finished Level	UTP	UTP	UTP	UTP	1.71	31.2	1.30	2.59	9

This report must not be altered or reproduced except in full.
This report replaces all previous reports under Work Order No. ETAM18W01184.
IANZ Accredited Laboratory No:105
LPS-07F11 Issue date 04072016

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01184

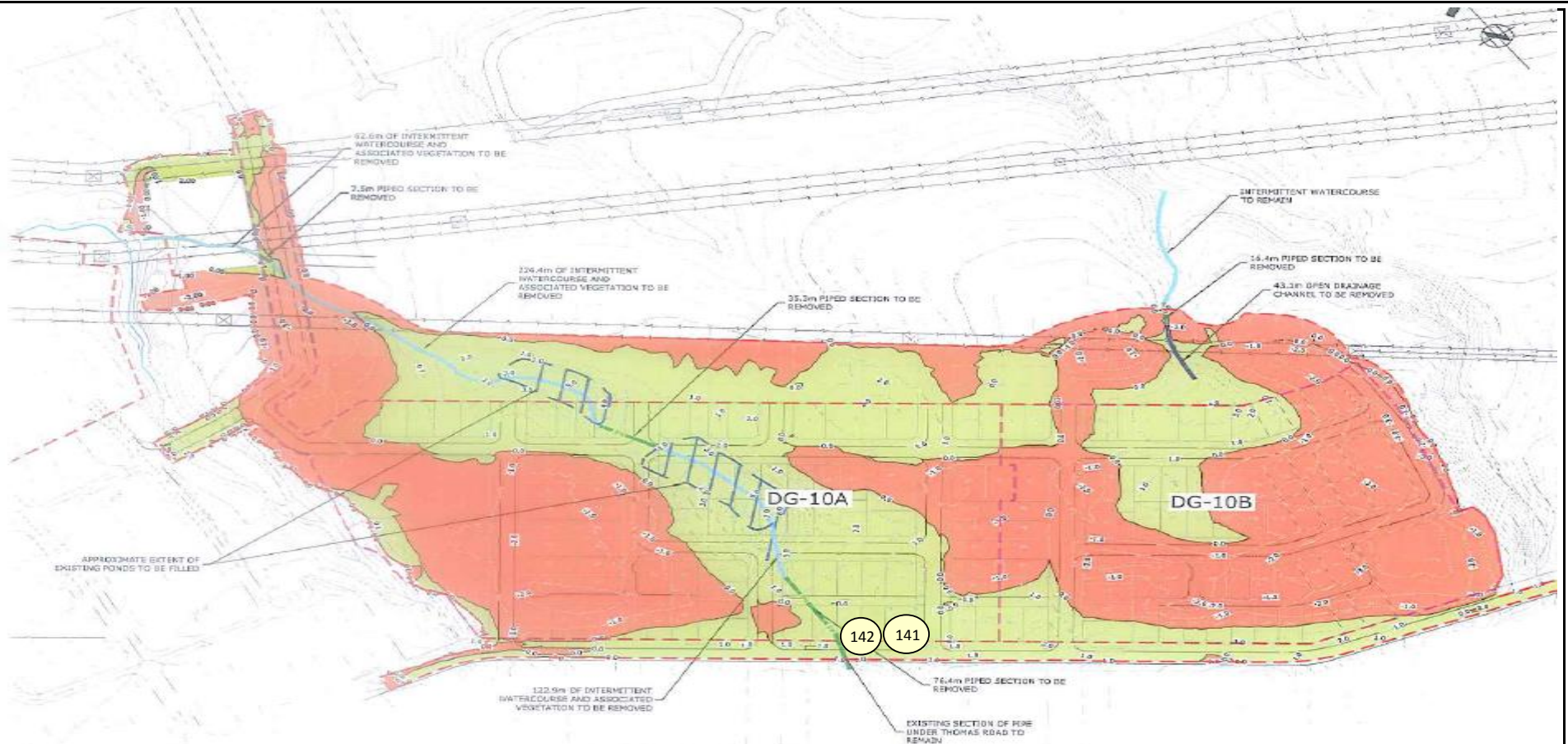
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush


Location: As below

Tested by: JJ

Date tested: 21.03.18



Revision 1

Client:	Coffey Services NZ Ltd (Auckland)	PROJECT CODE:	773-ETAM00525AA
Address	PO Box 8261, Symonds Street, Auckland 1150	Page:	1 of 2
Attention:	Ray Berry	 Tests indicated as not accredited are outside the scope of the laboratory's accreditation	
c.c:	-		
Project:	773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush		
Location:	Flat Bush	Approved Signatory:	Cesar Pura
		Issue date:	13/09/2018

Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m ³)	Oven Water Content (%)	Dry Density (T/m ³)	Solid Density (T/m ³) (Measured)	Air Voids (%)
22/03/2018	ETAM18W01189	BS	143	Fill	Silty CLAY	Refer to plan	1770302	5905140	-	150		UTP	UTP	UTP	UTP	1.87	31.1	1.42	2.59	1
22/03/2018	ETAM18W01189	BS	144	Fill	Silty CLAY	Refer to plan	1770482	5905201	-	150	-	220+	220+	220+	220+	1.65	34.0	1.23	2.59	10
22/03/2018	ETAM18W01189	BS	145	Fill	Silty CLAY	Eastern Transmission	1770714	5905227	-	150	-	159	159	159	197	1.64	41.4	1.16	2.59	7
22/03/2018	ETAM18W01189	BS	146	Fill	Silty CLAY	Old Pond	1770272	5905364	-	150	Retest of Test No. 131	UTP	UTP	UTP	UTP	1.66	34.0	1.24	2.59	10
22/03/2018	ETAM18W01189	BS	147	Fill	Silty CLAY	Old Pond	1770228	5905393	-	150		UTP	UTP	UTP	UTP	1.79	20.7	1.48	2.59	12
22/03/2018	ETAM18W01189	BS	148	Fill	Silty CLAY	General Fill	1770387	5905269	-	150		UTP	UTP	UTP	UTP	1.70	34.8	1.26	2.59	8
22/03/2018	ETAM18W01189	BS	149	Fill	Silty CLAY	Pond B	1770381	5905265	-	150	Retest of Test No. 129	UTP	UTP	UTP	UTP	1.70	28.1	1.33	2.59	12
22/03/2018	ETAM18W01189	BS	150	Fill	Silty CLAY	Pond B	1770369	5905278	-	150	Retest of Test No. 130	UTP	UTP	UTP	UTP	1.74	24.6	1.39	2.59	12

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01189

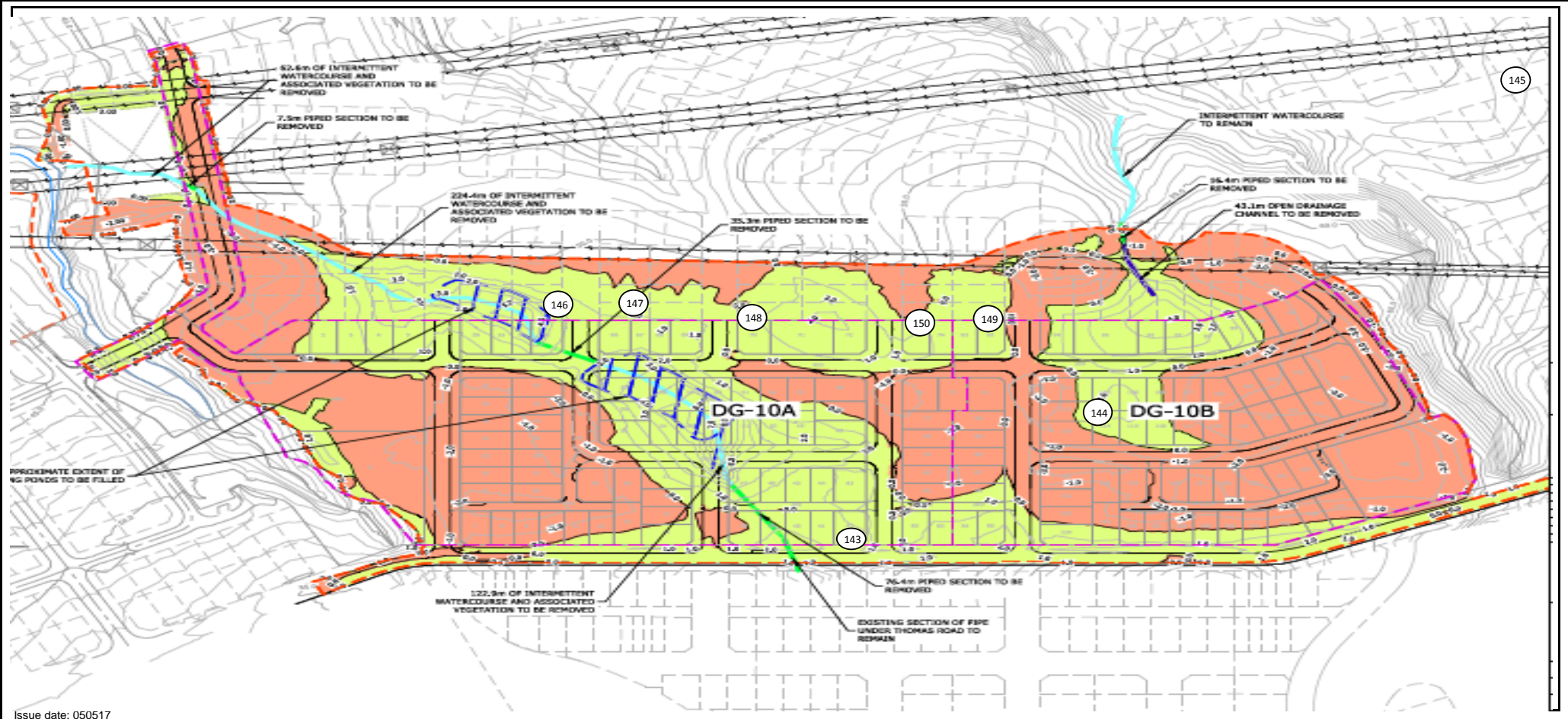
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 22.03.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div style="display: flex; align-items: center; justify-content: space-between; padding: 10px;"> <div style="text-align: center;">  <p>IANZ ACCREDITED LABORATORY</p> </div> <div style="text-align: center;"> <p>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</p> </div> <div style="text-align: right;">  <p>Approved Signatory: Cesar Pura Issue date: 13/09/2018</p> </div> </div>										
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa <small>UTP = Unable to penetrate</small>				Wet Density (T/m ³)	Oven Water Content (%)	Dry Density (T/m ³)	Solid Density (T/m ³) <small>(Measured)</small>	Air Voids (%)
23/03/2018	ETAM18W01268	BS	151	Fill	Silty CLAY	Eastern Transmission	1770709	5905231	-	150	200mm to Subgrade Level	UTP	UTP	UTP	191	1.65	31.8	1.25	2.59	12
23/03/2018	ETAM18W01268	BS	152	Fill	Silty CLAY	Lot Fill	1770506	5905194	-	150	700mm to Subgrade Level	220+	220+	UTP	UTP	1.62	37.3	1.18	2.59	10
23/03/2018	ETAM18W01268	BS	153	Fill	Silty CLAY	Lot Fill	1770486	5905199	-	150	700mm to Subgrade Level	UTP	UTP	UTP	UTP	1.62	31.5	1.23	2.59	14

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01268

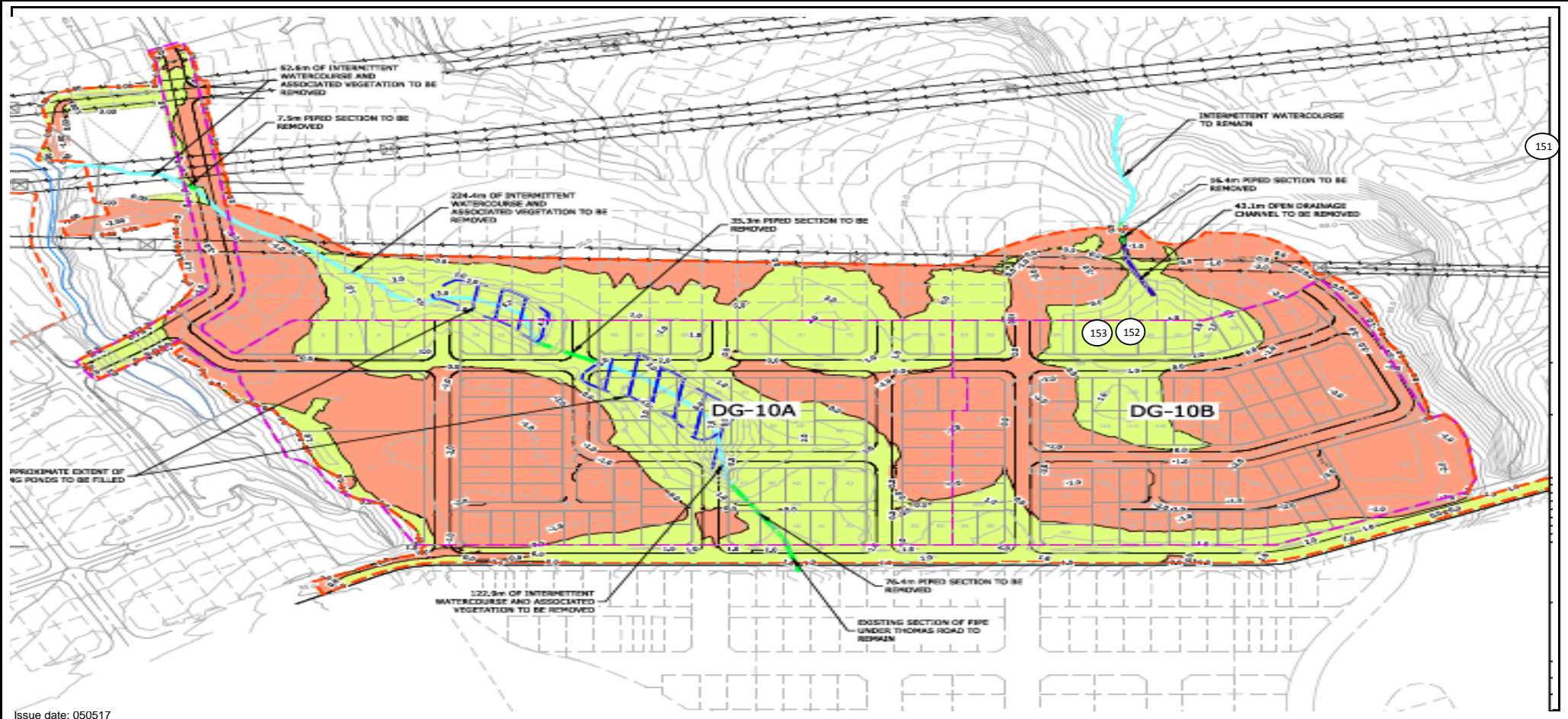
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 23.03.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:

Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2

IANZ

ACCREDITED LABORATORY

Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

13/09/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
26/03/2018	ETAM18W01271	BS	154	Fill	Silty CLAY	Thomas Road Frontage	1770290	5905148	-	150	-	220+	220+	UTP	UTP	1.78	38.1	1.29	2.59	1

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This report replaces all previous reports under Work Order No. ETAM18W01271.
IANZ Accredited Laboratory No:105
LPS-07F11 Issue date 04072016

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01271

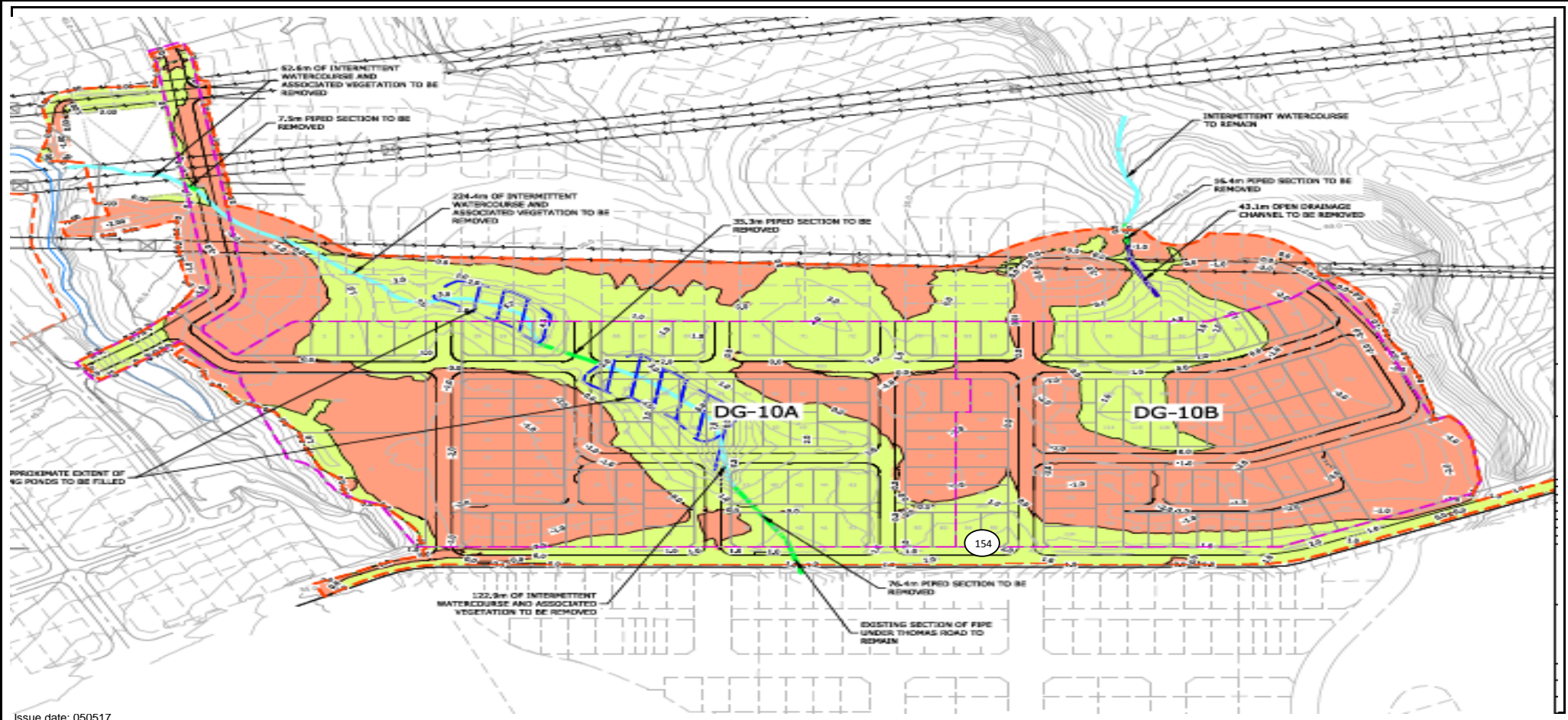
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 26.03.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

13/09/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
27/03/2018	ETAM18W01297	BS/MA	155	Fill	Silty CLAY	Lot Pond A	1770475	5905209	-	150	At Finished Level	UTP	UTP	UTP	217	1.76	37.6	1.28	2.59	2
27/03/2018	ETAM18W01297	BS/MA	156	Fill	Silty CLAY	Lot Pond A	1770494	5905198	-	150	At Finished Level	116	100	132	81	1.60	41.3	1.13	2.59	10

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 This report replaces all previous reports under Work Order No. ETAM18W01297.
 IANZ Accredited Laboratory No:105
 LPS-07F11 Issue date 04072016

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01297

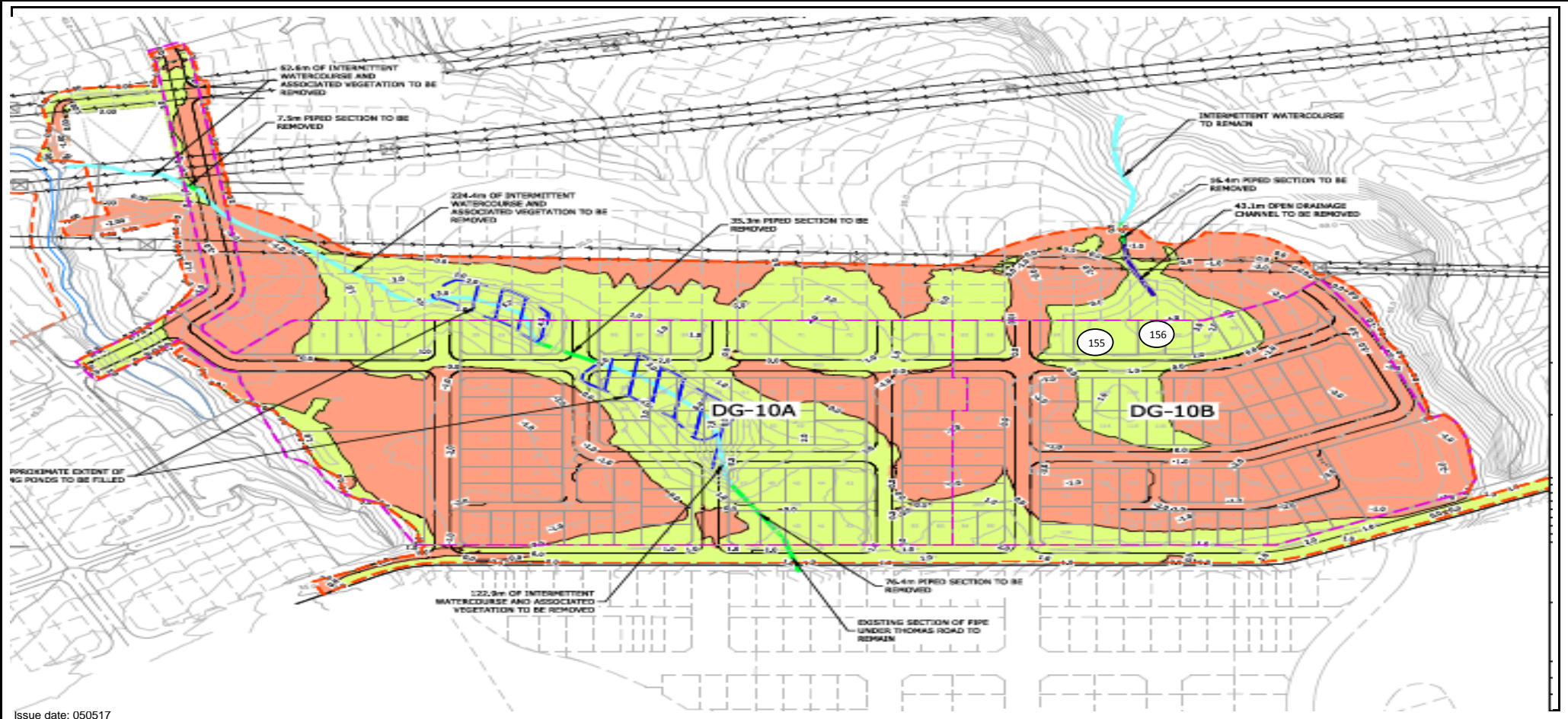
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS/MA

Date tested: 27.03.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

13/09/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
28/03/2018	ETAM18W01315	JJ/MA	157	Fill	Silty CLAY	Eastern Transmission Corridor	1770746	5905239	-	150	At Finished Level	139	UTP	150	154	1.90	29.7	1.46	2.59	0
28/03/2018	ETAM18W01315	JJ/MA	158	Fill	Silty CLAY	Eastern Transmission Corridor	1770709	5905233	-	150	At Finished Level	188	161	UTP	UTP	1.82	34.9	1.35	2.59	1

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 This report replaces all previous reports under Work Order No. ETAM18W01315.
 IANZ Accredited Laboratory No:105
 LPS-07F11 Issue date 04072016

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01315

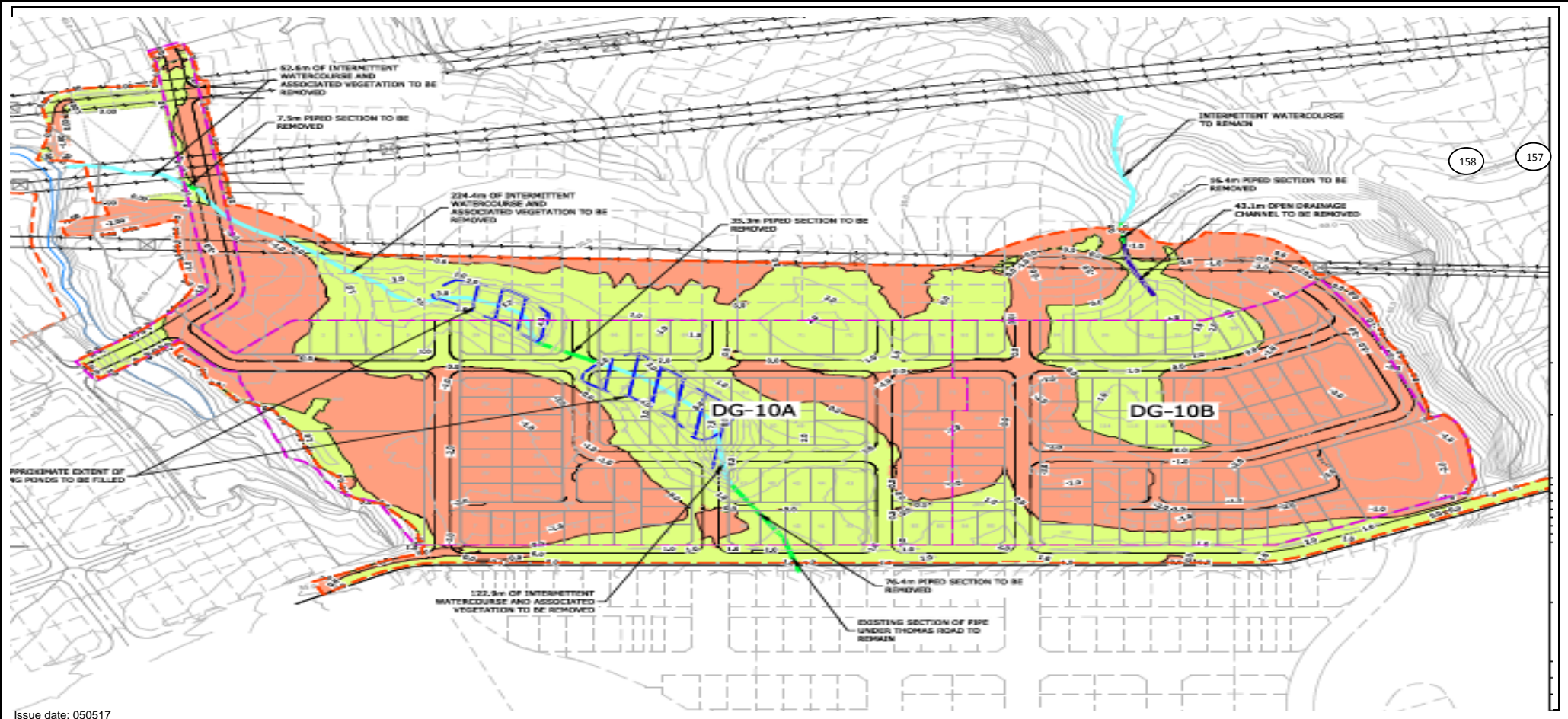
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: JJ/MA

Date tested: 28.03.18



Client: Coffey Services NZ Ltd (Auckland) Address PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush											PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div><div><div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div></div><div><div>Approved Signatory:</div><div>Cesar Pura</div></div><div><div>Issue date:</div><div>9/04/2018</div></div></div>										
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																					
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m ³)	Oven Water Content (%)	Dry Density (T/m ³)	Solid Density (T/m ³) (Measured)	Air Voids (%)	
3/04/2018	ETAM18W01367	FP/MA	159	Fill	Silty CLAY	Lot Fill	1770467	5905225	-	150	At Finished Level	UTP	UTP	UTP	UTP	1.86	32.3	1.40	2.59	0.3	
3/04/2018	ETAM18W01367	FP/MA	160	Fill	Silty CLAY	Lot Fill	1770488	5905210	-	150	At Finished Level	UTP	UTP	UTP	UTP	1.93	37.3	1.40	2.59	0	

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01367

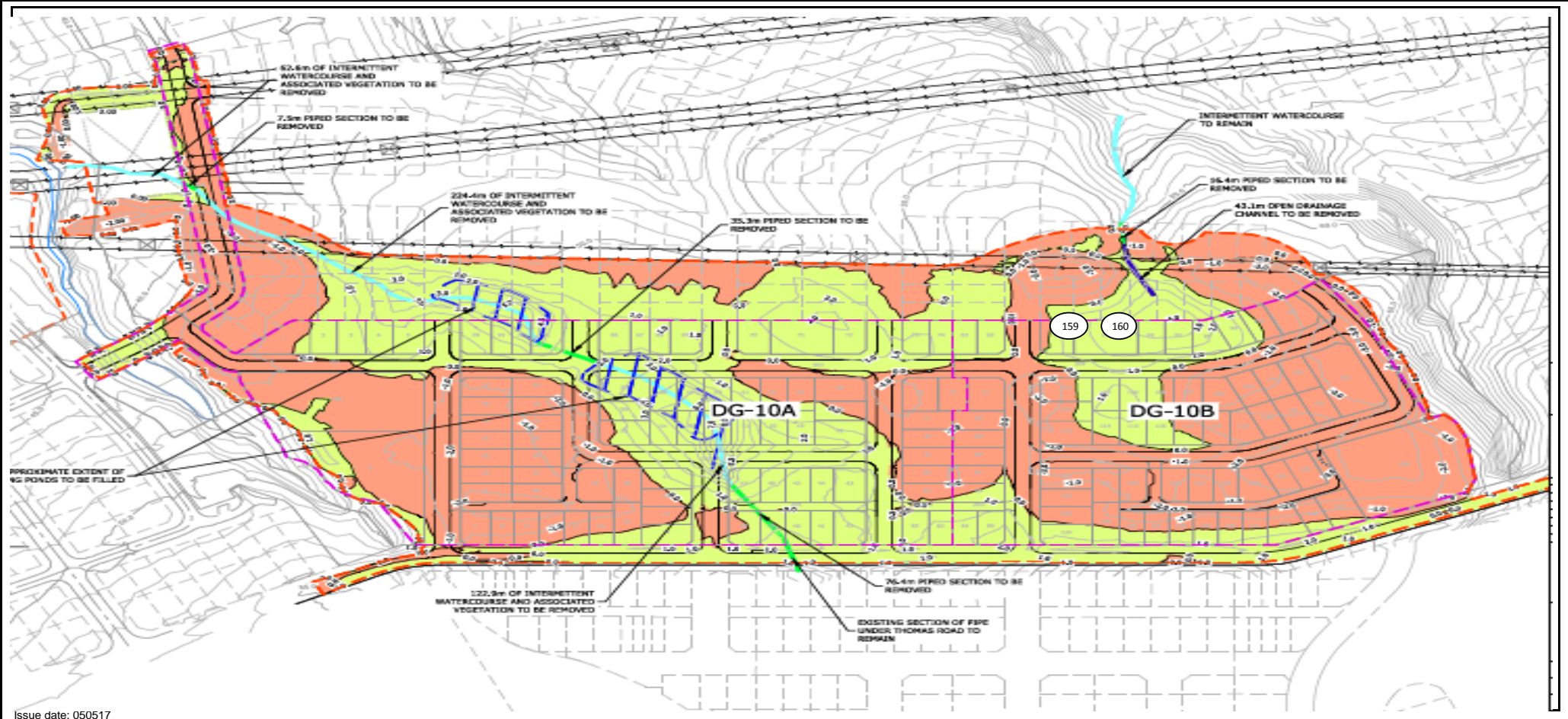
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: FP/MA

Date tested: 03.04.18



Client: Coffey Services NZ Ltd (Auckland) Address PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush											PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div><div><div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div></div><div><div>Approved Signatory:</div><div>Cesar Pura</div></div><div><div>Issue date:</div><div>10/04/2018</div></div></div>										
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																					
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m ³)	Oven Water Content (%)	Dry Density (T/m ³)	Solid Density (T/m ³) (Measured)	Air Voids (%)	
4/04/2018	ETAM18W01384	MA/FC	161	Fill	Silty CLAY	Thomas Road	1770285	5905154	-	150	-	UTP	UTP	UTP	UTP	1.94	28.3	1.51	2.59	0	
4/04/2018	ETAM18W01384	MA/FC	162	Fill	Silty CLAY	Gully Fill	1770200	5905486	-	150	-	162	214+	UTP	UTP	1.92	29.4	1.48	2.59	0	

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01384

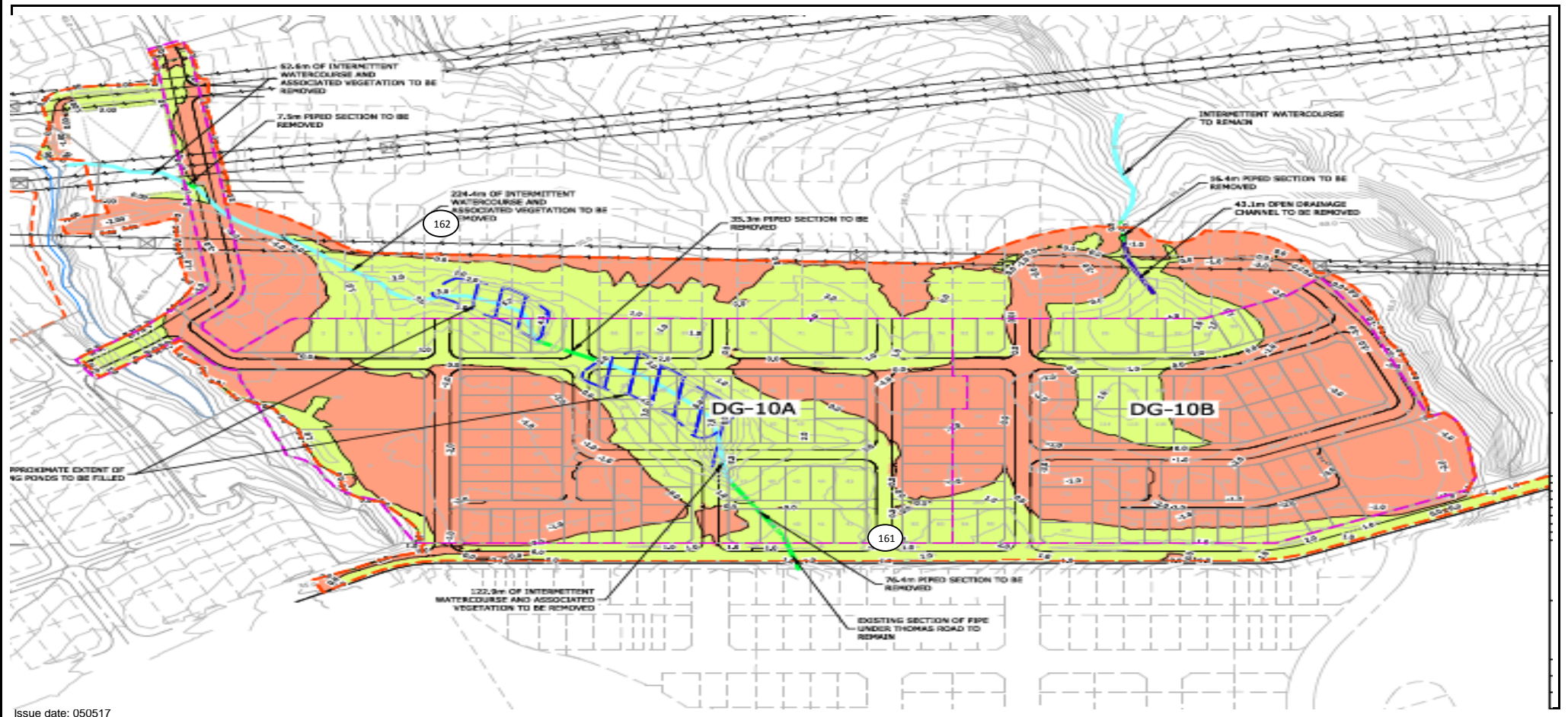
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: MA & FC

Date tested: 04.04.18



Client: Coffey Services NZ Ltd (Auckland)										PROJECT CODE: 773-ETAM00525AA										
Address PO Box 8261, Symonds Street, Auckland 1150										Page: 1 of 2										
Attention: Ray Berry										<div><div>IANZ</div><div>ACCREDITED LABORATORY</div></div> <div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div> <div><div>Approved Signatory:</div><div>Issue date:</div></div> <div><div></div><div>Cesar Pura</div><div>18/04/2018</div></div>										
c.c: -																				
Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush																				
Location: Flat Bush																				
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³)	Air Voids (%)
5/04/2018	ETAM18W01397	MA/CP	163	Fill	Silty CLAY	Gully	1770207	5905471	-	150	~2m below Finished Level	UTP	UTP	UTP	UTP	1.79	36.1	1.32	2.59	1.7
5/04/2018	ETAM18W01397	MA/CP	164	Fill	Silty CLAY	Gully	1770196	5905492	-	150	~2m below Finished Level	152	214+	UTP	UTP	1.80	38.7	1.29	2.59	0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01397

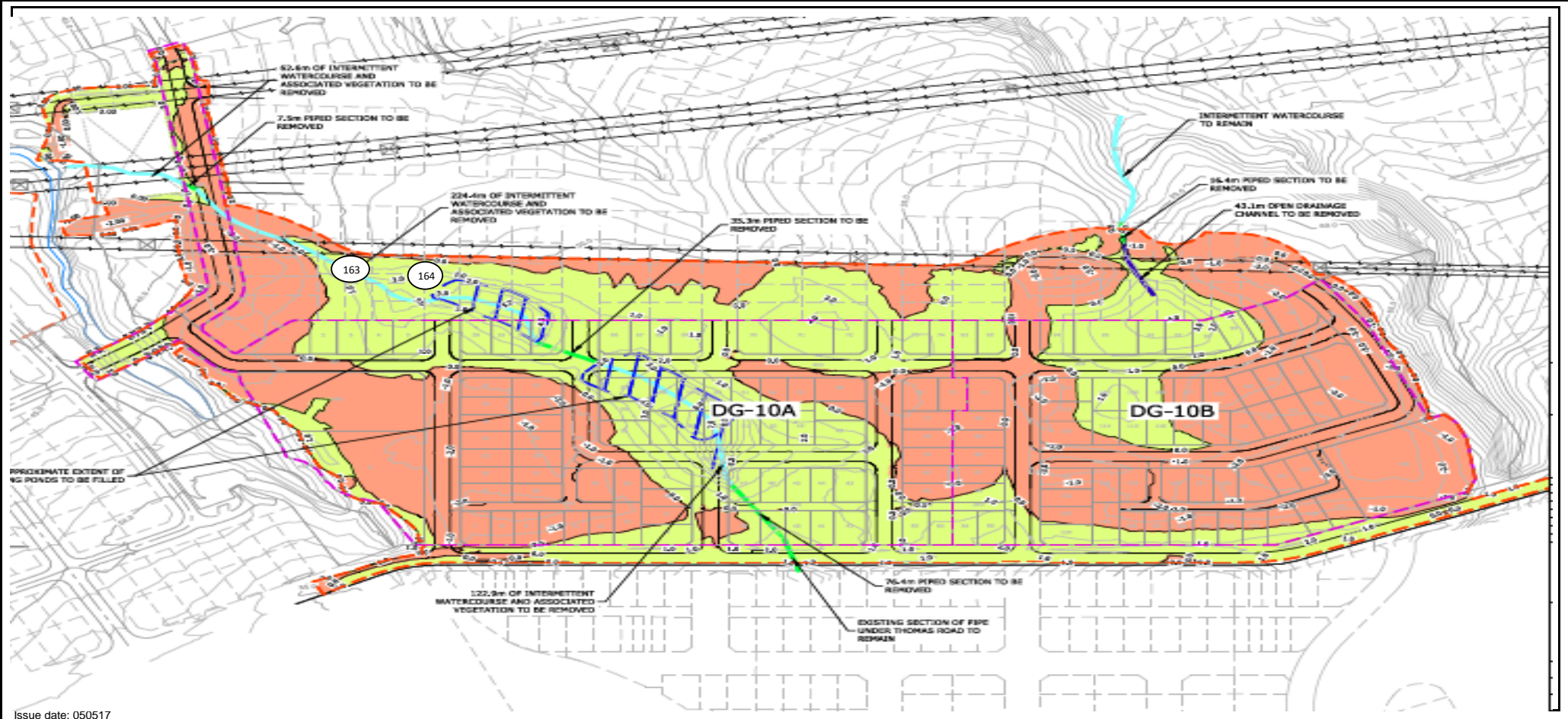
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: MA/CP

Date tested: 05.04.18



Client: Coffey Services NZ Ltd (Auckland)										PROJECT CODE: 773-ETAM00525AA										
Address PO Box 8261, Symonds Street, Auckland 1150										Page: 1 of 2										
Attention: Ray Berry										<div><div>IANZ</div><div>ACCREDITED LABORATORY</div></div> <div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div> <div><div>Approved Signatory:</div><div>Issue date:</div></div> <div><div>Cesar Pura</div><div>18/04/2018</div></div>										
c.c: -																				
Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush																				
Location: Flat Bush																				
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m ³)	Oven Water Content (%)	Dry Density (T/m ³)	Solid Density (T/m ³) (Measured)	Air Voids (%)
6/04/2018	ETAM18W01453	FP/MA	165	Fill	Silty CLAY	Gully	1770204	5905486	-	150	1.8m below Finished Level	214+	214+	195	UTP	1.84	42.4	1.29	2.59	0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01453

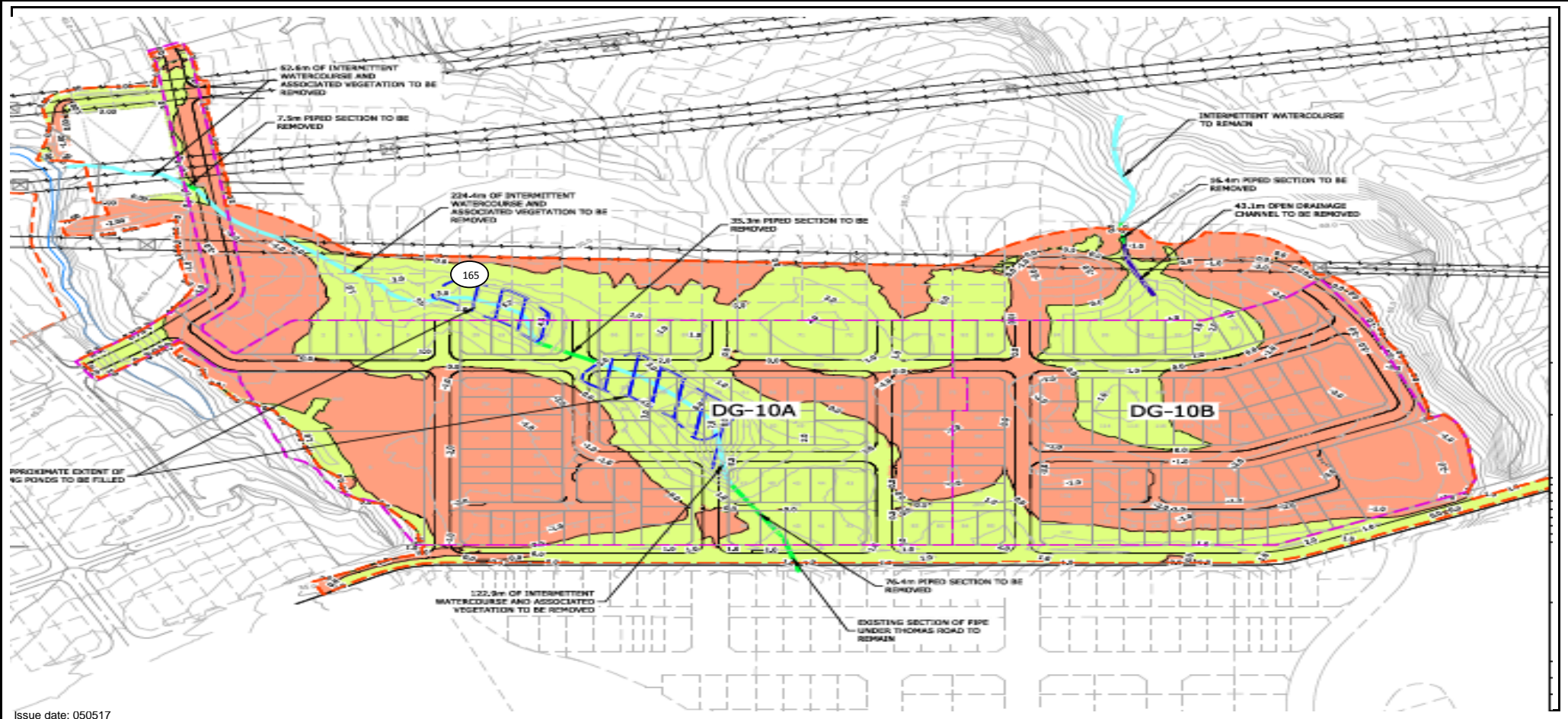
Page No: 2 of 2



Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: FP/MA

Date tested: 06.04.18



Client: Coffey Services NZ Ltd (Auckland) Address: PO Box 8261, Symonds Street, Auckland 1150 Attention: Ray Berry c.c.: - Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush Location: Flat Bush										PROJECT CODE: 773-ETAM00525AA Page: 1 of 2 <div>  <div> Tests indicated as not accredited are outside the scope of the laboratory's accreditation <div>  <div> Approved Signatory: Cesar Pura Issue date: 18/04/2018 </div> </div> </div> </div>										
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m ³)	Oven Water Content (%)	Dry Density (T/m ³)	Solid Density (T/m ³) (Measured)	Air Voids (%)
9/04/2018	ETAM18W01454	JJ	166	Fill	Silty CLAY	Western Transmission Gully	1770154	5905582	-	150	Undercut Area	77	86	69	103	1.79	42.0	1.26	2.59	0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01454

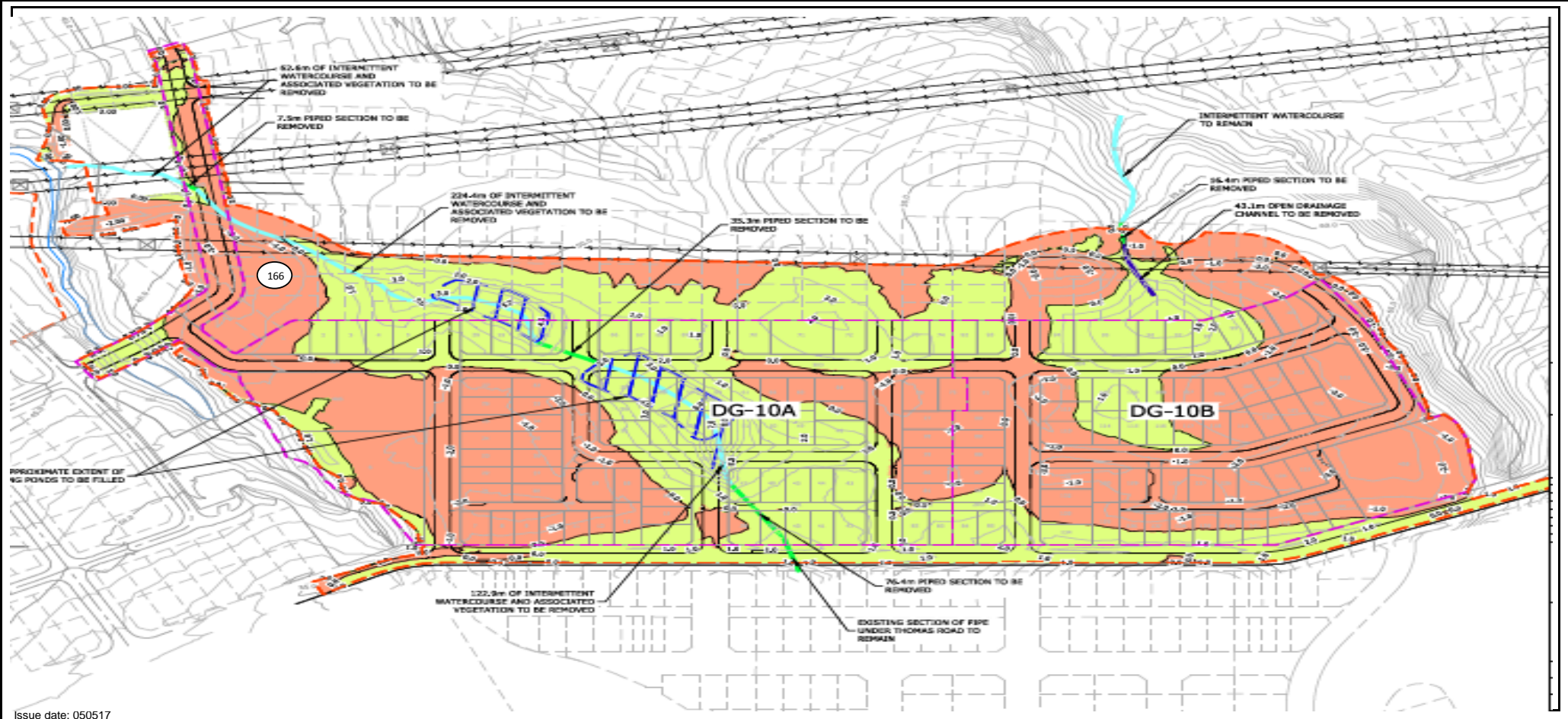
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: JJ

Date tested: 09.04.18



Client: Coffey Services NZ Ltd (Auckland)										PROJECT CODE: 773-ETAM00525AA										
Address PO Box 8261, Symonds Street, Auckland 1150										Page: 1 of 2										
Attention: Ray Berry										<div><div>IANZ</div><div>ACCREDITED LABORATORY</div></div> <div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div> <div><div>Approved Signatory:</div><div>Cesar Pura</div></div> <div><div>Issue date:</div><div>7/05/2018</div></div>										
c.c.: -																				
Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush																				
Location: Flat Bush																				
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³)	Air Voids (%)
26/04/2018	ETAM18W01719	MA	167	Fill	CLAY	Gully	2680607	6467174	-	150	1.2m below Finished Level	UTP	UTP	UTP	UTP	1.98	21.3	1.63	2.59	2.4
26/04/2018	ETAM18W01719	MA	168	Fill	CLAY	Gully	2680610	6467156	-	150	1.2m below Finished Level	UTP	UTP	UTP	UTP	1.87	23.9	1.51	2.59	5.5

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W01719

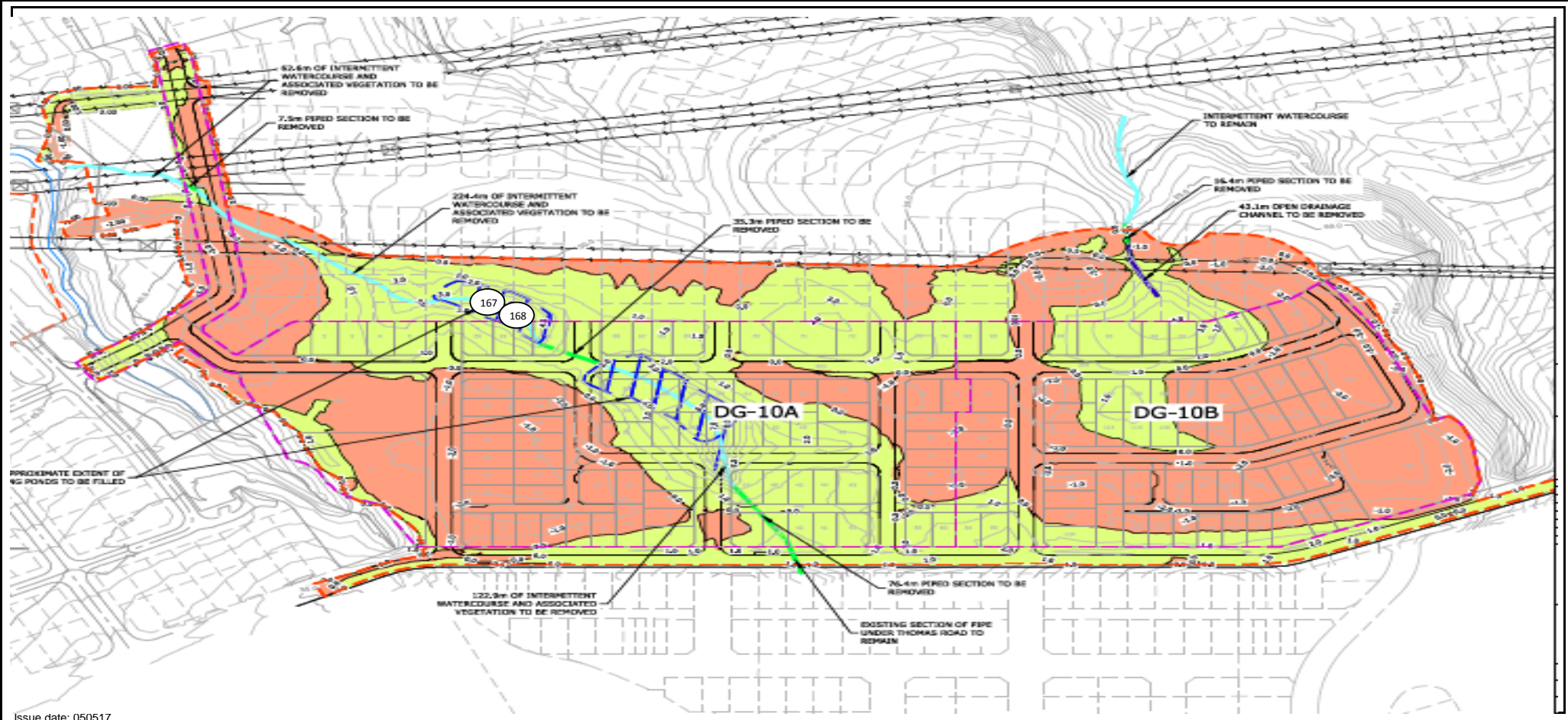
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: MA

Date tested: 26.04.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

21/05/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³)	Air Voids (%)
4/05/2018	ETAM18W02047	BS	169	Fill	Silty CLAY	Main Gully	1770197	5905502	-	150	0.5m to Finished Level	178	178	178	170	1.89	19.9	1.58	2.59	8
4/05/2018	ETAM18W02047	BS	170	Fill	Silty CLAY	Main Gully	1770189	5905533	-	150	0.5m to Finished Level	214+	178	178	158	2.00	26.4	1.58	2.59	0
4/05/2018	ETAM18W02047	BS	171	Fill	Silty CLAY	Main Gully	1770167	5905567	-	150	0.5m to Finished Level	195	195	178	178	1.93	23.8	1.56	2.59	3

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W02047

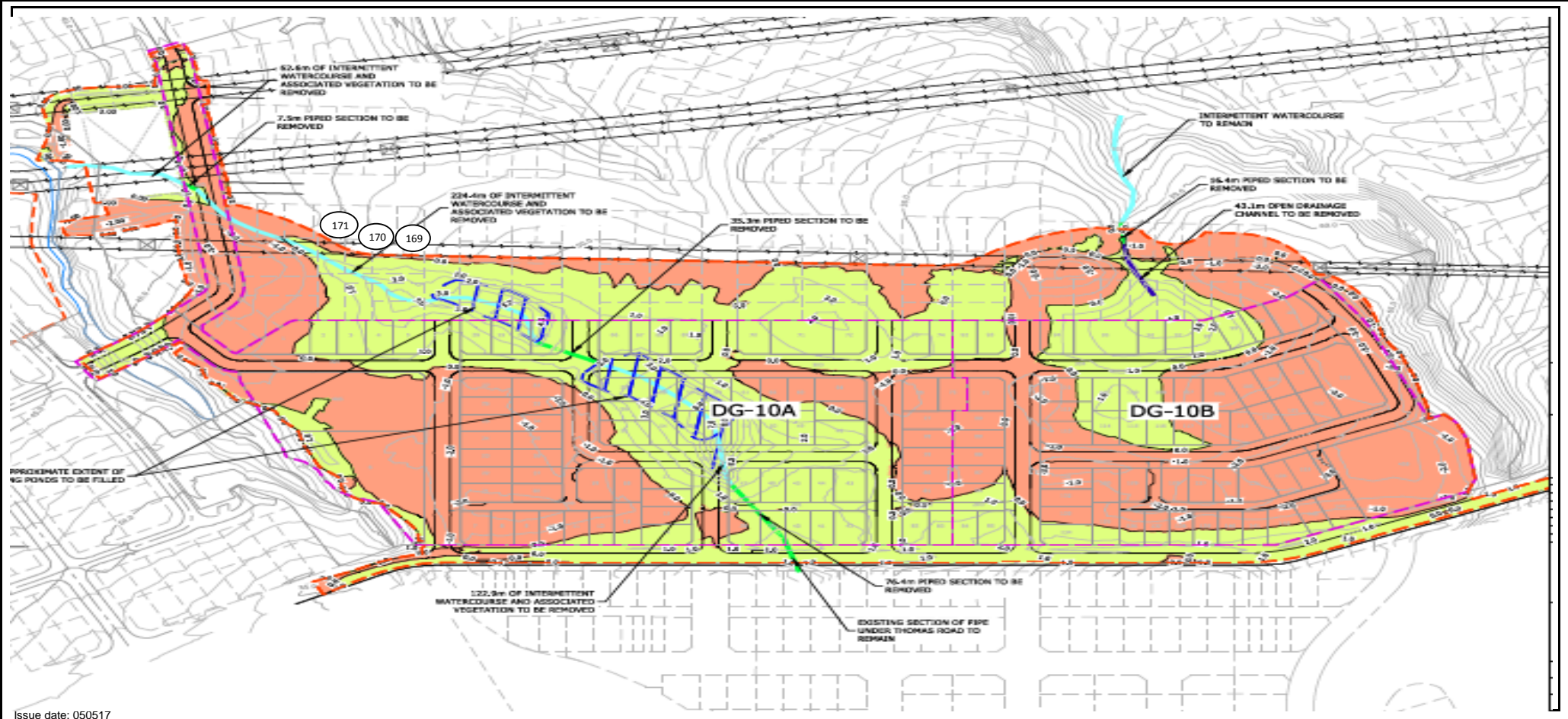
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: BS

Date tested: 4.05.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

21/05/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³)	Air Voids (%)
9/05/2018	ETAM18W02053	MA&FC	172	Fill	CLAY	Lot 82	1770361	5905085	-	150	Finished Level	214+	214+	214+	214+	1.88	28.6	1.46	2.59	2
9/05/2018	ETAM18W02053	MA&FC	173	Fill	CLAY	Lot 85	1770324	5905125	-	150	Finished Level	108	104	104	101	1.89	31.3	1.44	2.59	0

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 This report relates only to the positions tested.
 IANZ Accredited Laboratory No:105
 LPS-07F11 Issue date 04072016

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W02053

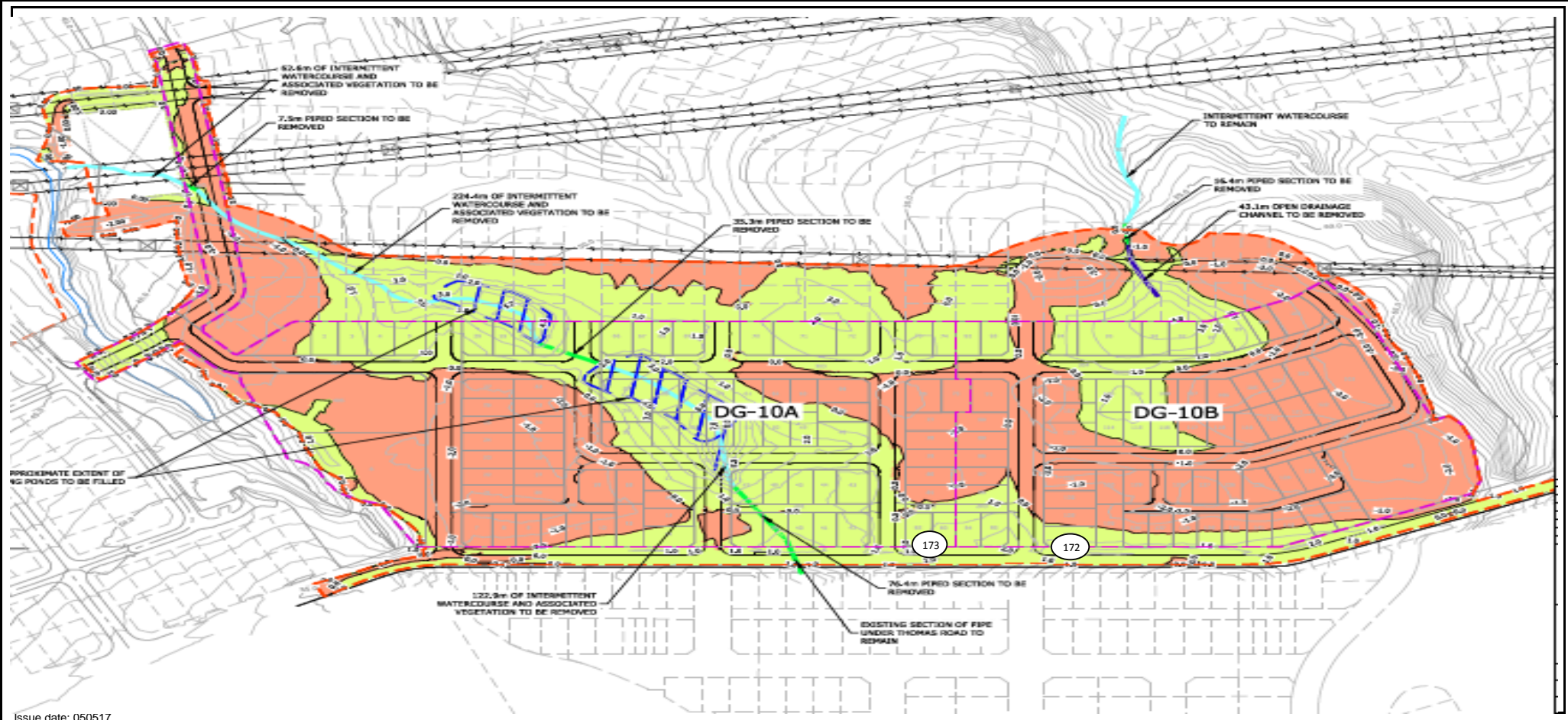
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: MA & FC

Date tested: 9.05.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

22/05/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³)	Air Voids (%)
10/05/2018	ETAM18W02055	MA	174	Fill	CLAY	Gully Pond B	1770361	5905416	-	150	2m to Finished Level	164	135	143	160	1.88	39.9	1.34	2.59	0
10/05/2018	ETAM18W02055	MA	175	Fill	CLAY	Gully Pond B	1770367	5905410	-	150	2m to Finished Level	178	168	155	158	1.82	35.7	1.34	2.59	0

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 This report relates only to the positions tested.
 IANZ Accredited Laboratory No:105
 LPS-07F11 Issue date 04072016

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W02055

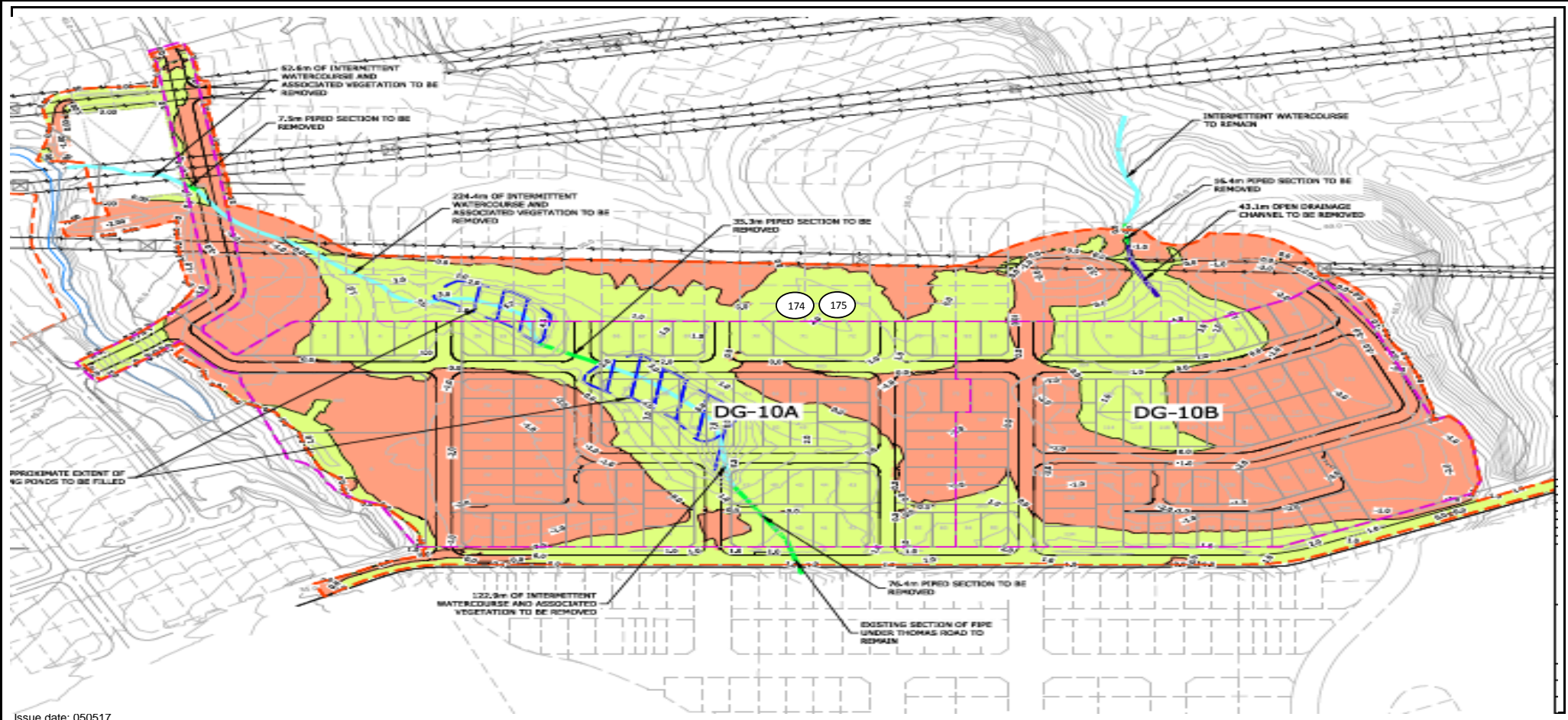
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: MA

Date tested: 10.05.18



Client:

Coffey Services NZ Ltd (Auckland)

Address

PO Box 8261, Symonds Street, Auckland 1150

Attention:

Ray Berry

c.c:

-

Project:

773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location:


Flat Bush

PROJECT CODE:

773-ETAM00525AA

Page:

1 of 2



Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Approved Signatory:

Cesar Pura

Issue date:

24/05/2018

Test method:

Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.

Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³)	Air Voids (%)
11/05/2018	ETAM18W02116	AB	176	Fill	CLAY	General Fill	1770375	5905416	-	150	At Finihed Level	154	151	165	175	1.86	39.4	1.33	2.59	0
11/05/2018	ETAM18W02116	AB	177	Fill	Silty CLAY	General Fill	1770314	5905453	-	150	At Finihed Level	205	UTP	UTP	UTP	1.85	36.7	1.35	2.59	0

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 This report relates only to the positions tested.
 IANZ Accredited Laboratory No:105
 LPS-07F11 Issue date 04072016

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W02116

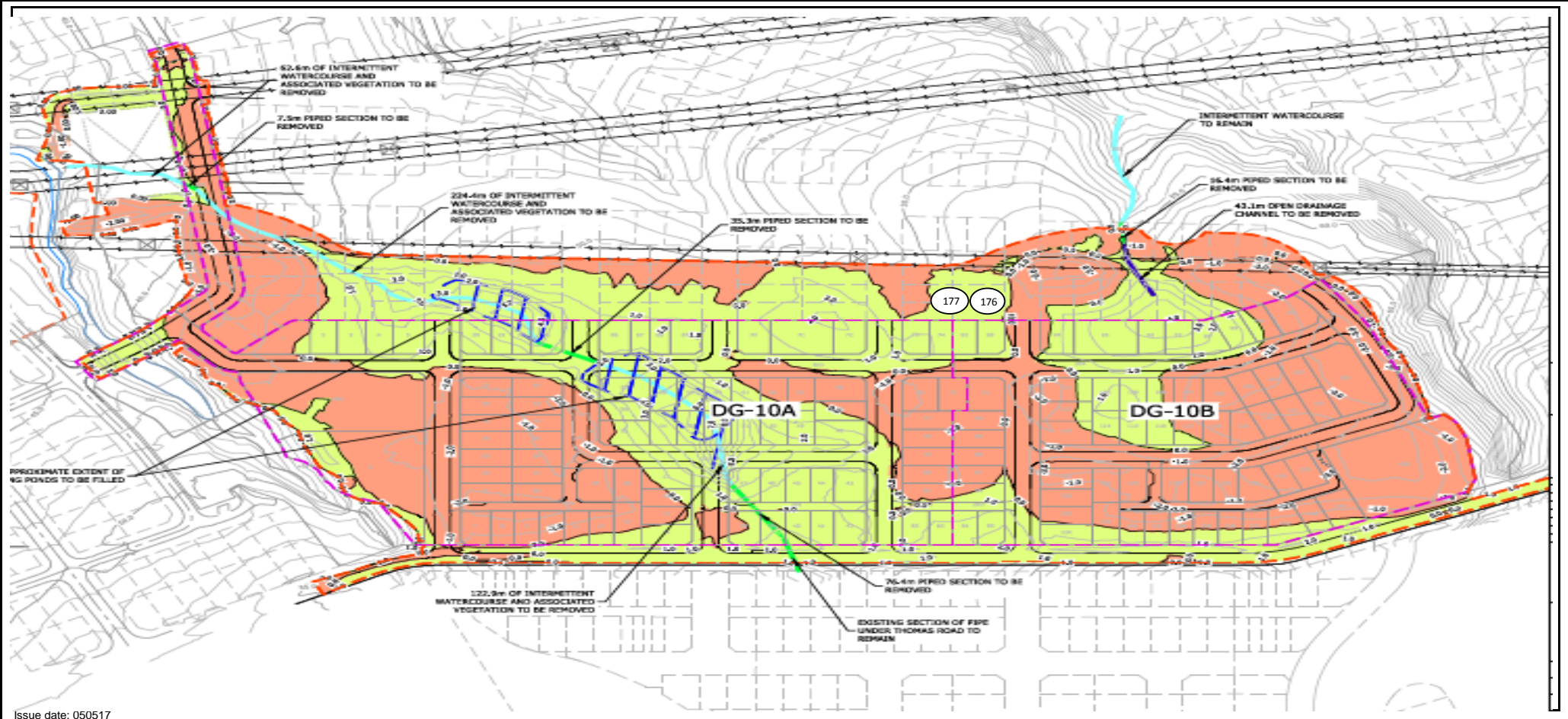
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: AB

Date tested: 11.05.18



Client:	Coffey Services NZ Ltd (Auckland)	PROJECT CODE: 773-ETAM00525AA																		
Address	PO Box 8261, Symonds Street, Auckland 1150	Page: 1 of 2																		
Attention:	Ray Berry	<div><div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div><div>Approved Signatory: Cesar Pura</div><div>Issue date: 5/06/2018</div></div>																		
c.c:	-																			
Project:	773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush																			
Location:	Flat Bush																			
Test method:	Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																			
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
30/05/2018	ETAM18W02405	SC	178	Fill	Silty CLAY	General Fill	1770133	5905618	48.50	150	-	187	180	72	172	1.91	24.5	1.53	2.59	3

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W02405

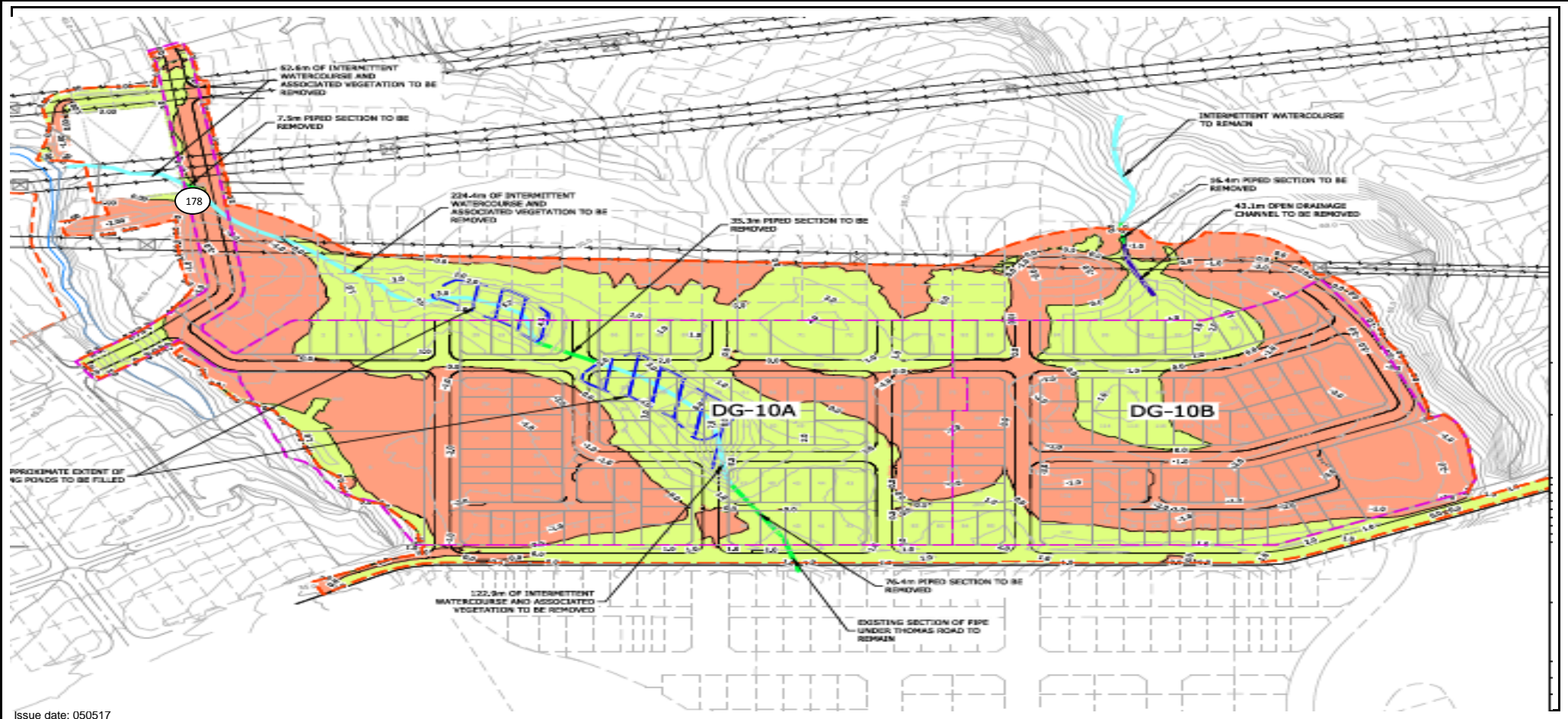
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: SC

Date tested: 30.05.18



Client: Coffey Services NZ Ltd (Auckland)										PROJECT CODE: 773-ETAM00525AA										
Address PO Box 8261, Symonds Street, Auckland 1150										Page: 1 of 2										
Attention: Ray Berry										<div><div><div>IANZ</div><div>ACCREDITED LABORATORY</div></div><div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div></div> <div><div>Approved Signatory:</div><div>Cesar Pura</div></div>										
c.c: -																				
Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush										Issue date: 5/06/2018										
Location: Flat Bush																				
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
1/06/2018	ETAM18W02424	JJ	179	Fill	Silty CLAY	General Fill	1770133	5905618	48.50	150	Retest of Test No.178	150	168	123	146	2.18	24.0	1.76	2.59	0
1/06/2018	ETAM18W02424	JJ	180	Fill	Silty CLAY	Old Pond	1770228	5905393	-	150	Retest of Test No.147	UTP	UTP	UTP	UTP	1.89	31.0	1.44	2.59	0
1/06/2018	ETAM18W02424	JJ	181	Fill	Silty CLAY	Pond B	1770381	5905265	-	150	Retest of Test No.149	UTP	UTP	UTP	UTP	1.86	30.8	1.42	2.59	2
1/06/2018	ETAM18W02424	JJ	182	Fill	Silty CLAY	Pond B	1770369	5905278	-	150	Retest of Test No.150	UTP	UTP	UTP	UTP	1.72	27.4	1.35	2.59	11
1/06/2018	ETAM18W02424	JJ	183	Fill	Silty CLAY	Eastern Transmission	1770709	5905231	-	150	Retest of Test No.151, 200mm to Finished Level	UTP	UTP	UTP	UTP	1.80	45.0	1.24	2.59	0
1/06/2018	ETAM18W02424	JJ	184	Fill	Silty CLAY	Lot Fill	1770486	5905199	-	150	Retest of Test No.153, 700mm to Finished Level	UTP	UTP	UTP	UTP	1.92	50.2	1.28	2.59	0
1/06/2018	ETAM18W02424	JJ	185	Fill	Silty CLAY	Western Transmission Gully	1770154	5905582	-	150	Retest of Test No.166	UTP	UTP	UTP	UTP	1.86	40.5	1.33	2.59	0
1/06/2018	ETAM18W02424	JJ	186	Fill	Silty CLAY	Lot 85	1770324	5905125	-	150	Retest of Test No.173	UTP	UTP	UTP	UTP	1.80	38.3	1.30	2.59	0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W02424

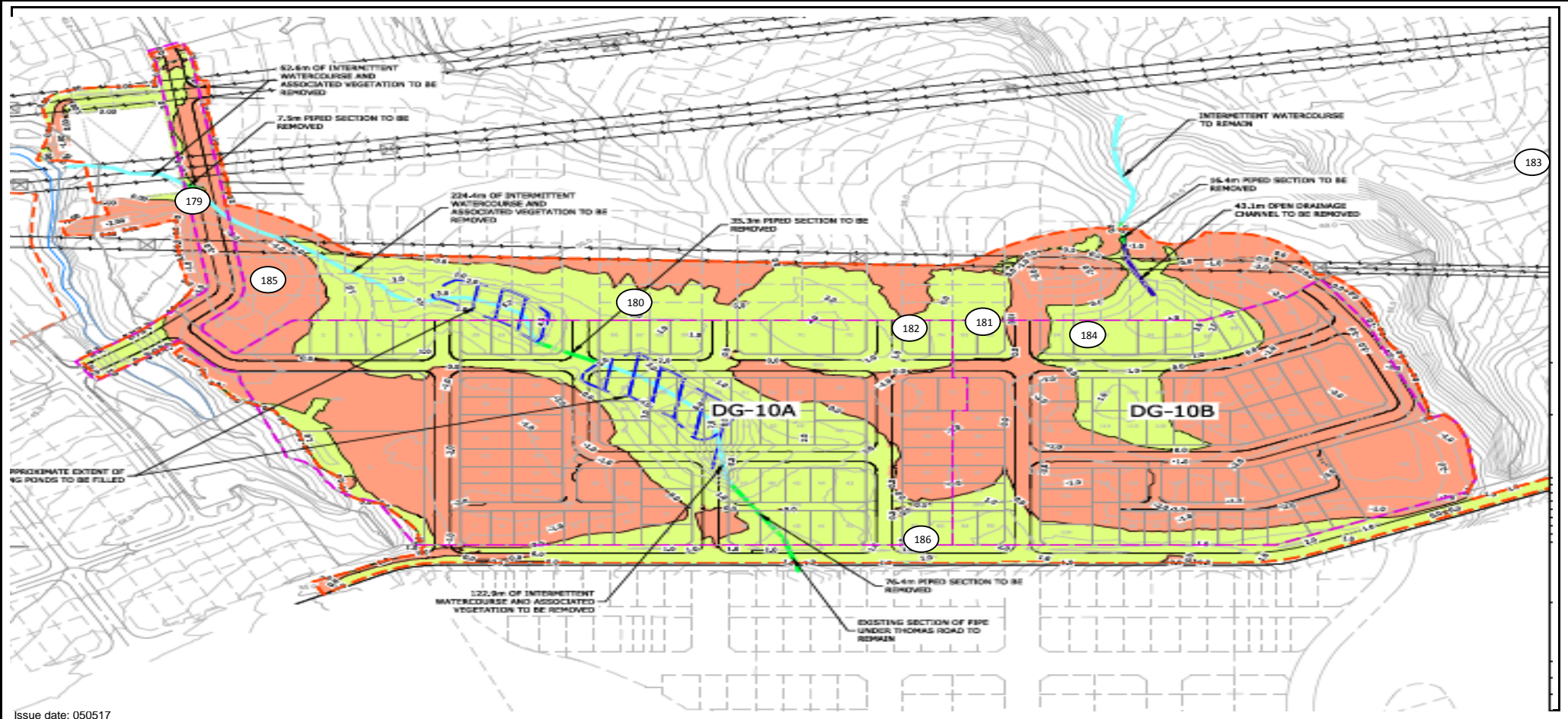
Page No: 2 of 2


Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: JJ

Date tested: 1.06.18



Client:	Coffey Services NZ Ltd (Auckland)	PROJECT CODE:	773-ETAM00525AA																		
Address	PO Box 8261, Symonds Street, Auckland 1150	Page:	1 of 2																		
Attention:	Ray Berry	 <div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div>																Approved Signatory:		Cesar Pura	
c.c:	-																	Issue date:		16/07/2018	
Project:	773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush																				
Location:	Flat Bush																				
Test method:	Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)	
13/07/2018	ETAM18W03163	MA	187	Fill	CLAY	Transmission Pad	1770146	5905620	-	150	At Finished Level	120	101	86	91	1.92	29.9	1.48	2.59	0	
13/07/2018	ETAM18W03163	MA	188	Fill	CLAY	Transmission Pad	1770157	5905638	-	150	At Finished Level	77	86	91	84	1.72	49.2	1.15	2.59	0	

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W03163

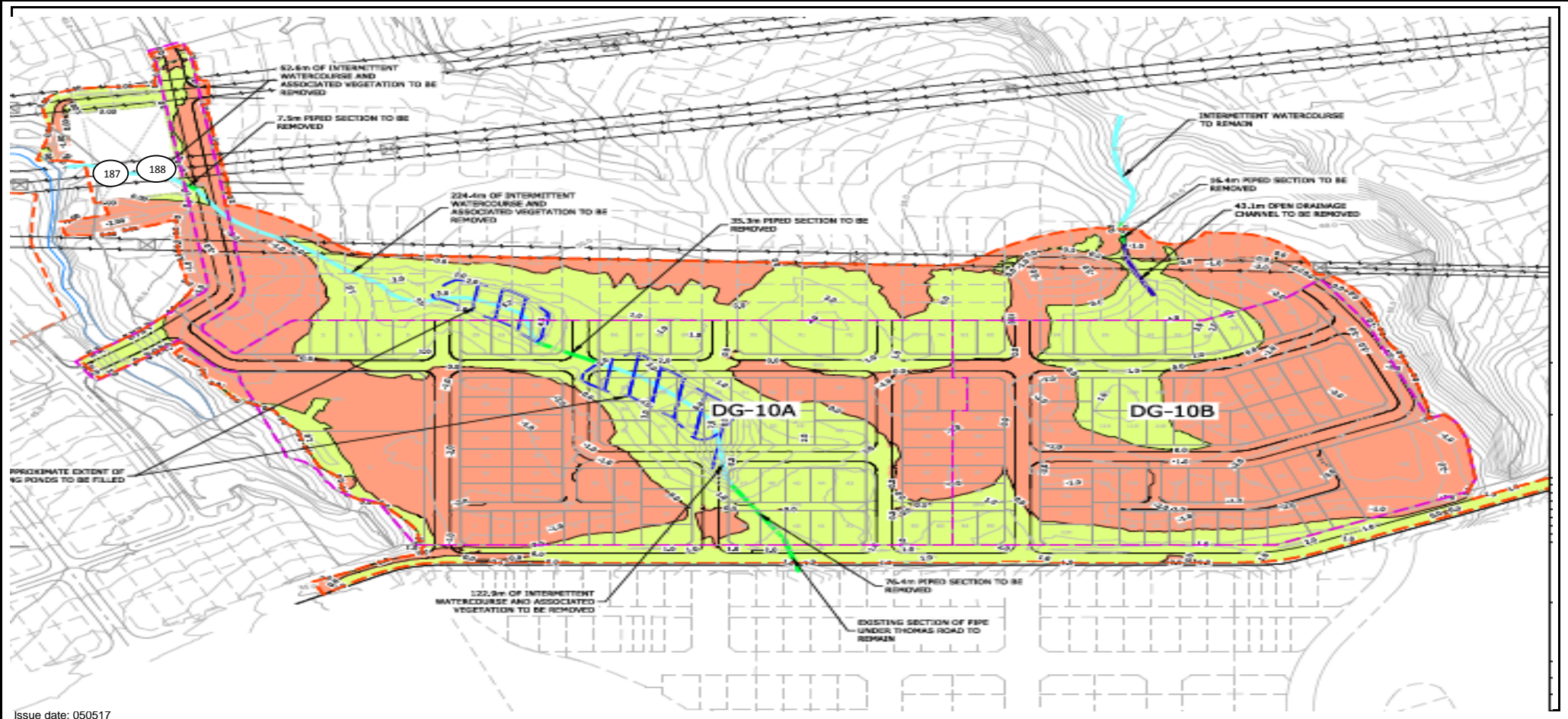
Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: As below

Tested by: MA

Date tested: 13.07.18



Client: Coffey Services NZ Ltd (Auckland)										PROJECT CODE: 773-ETAM00525AA										
Address PO Box 8261, Symonds Street, Auckland 1150										Page: 1 of 2										
Attention: Ray Berry										<div><div>IANZ ACCREDITED LABORATORY</div><div>Tests indicated as not accredited are outside the scope of the laboratory's accreditation</div><div><div>Approved Signatory:</div><div>Issue date:</div></div><div><div>Cesar Pura</div><div>14/09/2018</div></div></div>										
c.c.: -																				
Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush																				
Location: Flat Bush																				
Test method: Test Methods in accordance with: *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): Moisture contents and dry densities are corrected against oven dried moisture content testing.																				
Date	Work Order No: ETAM...	Tested by	Test No.	Layer	Material tested	Location	Easting	Northing	RL (m)	Probe Test Depth (mm)	Comments	Field Shear Strength in kPa UTP = Unable to penetrate				Wet Density (T/m³)	Oven Water Content (%)	Dry Density (T/m³)	Solid Density (T/m³) (Measured)	Air Voids (%)
13/09/2018	ETAM18W03950	BS	189	Fill	Silty CLAY	General Fill	1770516	5905198	-	150	300mm below Subgrade Level, Retest of Test No. 52	UTP	UTP	158	158	1.95	47.5	1.32	2.59	0

SITE PLAN

NOT TO SCALE

Project No: 773-ETAM00525AA

Work Order No: ETAM18W03950

Page No: 2 of 2

Project: 773-GENZETAM16856AB Donegal Subdivision - Stage 10, Flat Bush

Location: Refer to plan

Tested by: BS

Date tested: 13.09.2018



Appendix C - Field Density Test Summary



A TETRA TECH COMPANY

East Tamaki Laboratory

Coffey Services (NZ) Limited

144A Cryers Road, East Tamaki NZ 2013
PO Box 58877, Botany, Manukau NZ 2163

Phone: +64 9 272 3375

Fax: +64 9 272 3378

Report No: ASM:ETAM18W01277

Issue No: 1

Material Test Report

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Tests indicated as not accredited are outside the scope of the laboratory's accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: Ramir Casidsid
(Laboratory Team Leader)
IANZ Accredited Laboratory Number:105
Date of Issue: 4/04/2018

Material Details

Source	Unknown (Sampled by Client)	Sampled From	Unknown
Description	Disturbed Soil	Location	84 Thomas Road, Flat Bush
Specification	No Specification	Sampling Method	Unknown (Not IANZ Endorsed)

Sample Details

Sample ID	ETAM18S-03799	ETAM18S-03800
Field Sample ID	Cut	Fill
Date Sampled	27/03/2018	23/03/2018
Date Submitted:	27/03/2018	27/03/2018
Sample Location:	Cut	Fill

Other Test Results

Description	Method	Results	Limits
Solid Particle Density (t/m ³)	NZS 4402:1986 Test 2.7.2	2.55 2.59	
History	Natural	Natural	
Test Performed on Fraction	Passing 19 mm Sieve	Passing 19 mm Sieve	
Allophane Content	NZS 4402:1986 Test 3.4	5 - 7 % 5 - 7 %	

Comments

Tested By : CT
28/03/2018 - 03/4/2018



A TETRA TECH COMPANY

East Tamaki Laboratory

Coffey Services (NZ) Limited

144A Cryers Road, East Tamaki NZ 2013
PO Box 58877, Botany, Manukau NZ 2163

Phone: +64 9 272 3375

Fax: +64 9 272 3378

Report No: ETAM18S-06637-1

Issue No: 1

Material Test Report

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

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.}

IANZ
ACCREDITED LABORATORY

Approved Signatory: James McKelvey
(Senior Technician)
IANZ Accredited Laboratory Number: 105
Date of Issue: 28/05/2018

Sample Details

Sample ID: ETAM18S-06637

Client Sample: -

Date Sampled: 17/05/2018

Source: Unknown (Sampled by Client)

Material: Disturbed Soil

Specification: No Specification

Sampling Method: Unknown (Not IANZ Endorsed)

Project Location: 84 Thomas Road, Flat Bush

Sample Location: Lot 4 / 5
0.4 - 0.8 m

Test Results

Description	Method	Result	Limits
Liquid Limit	NZS 4402:1986 Test 2.2	85	
Plastic Limit	NZS 4402:1986 Test 2.3	Not Tested	
Plasticity Index	NZS 4402:1986 Test 2.4	Not Tested	
Linear Shrinkage	NZS 4402:1986 Test 2.6	18	
Curling		No	
Cracking		No	
Sample History		Natural state	
Fraction Tested		Passing 425µm sieve	
Date Tested		25/05/2018	
Moisture Content (%)	NZS 4402:1986 Test 2.1	33.2	
Date Tested		22/05/2018	

Comments

N/A



A TETRA TECH COMPANY

East Tamaki Laboratory

Coffey Services (NZ) Limited

144A Cryers Road, East Tamaki NZ 2013
PO Box 58877, Botany, Manukau NZ 2163

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Report No: ETAM18S-06638-1

Issue No: 1

Material Test Report

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

Principal: Ray Berry

Project No.: 773-ETAM00525AA

Project Name: 773-GENZAUCK16856AB - Donegal Stage 10

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

Tests indicated as not accredited are outside the scope of the laboratory's accreditation.
{This document may not be altered or reproduced except in full. This report relates only to the positions tested.}



Approved Signatory: James McKelvey
(Senior Technician)
IANZ Accredited Laboratory Number: 105
Date of Issue: 28/05/2018

Sample Details

Sample ID: ETAM18S-06638

Client Sample: -

Date Sampled: 17/05/2018

Source: Unknown (Sampled by Client)

Material: Disturbed Soil

Specification: No Specification

Sampling Method: Unknown (Not IANZ Endorsed)

Project Location: 84 Thomas Road, Flat Bush

Sample Location: Lot 79
0.4 - 0.8 m

Test Results

Description	Method	Result	Limits
Liquid Limit	NZS 4402:1986 Test 2.2	88	
Plastic Limit	NZS 4402:1986 Test 2.3	Not Tested	
Plasticity Index	NZS 4402:1986 Test 2.4	Not Tested	
Linear Shrinkage	NZS 4402:1986 Test 2.6	20	
Curling		No	
Cracking		No	
Sample History		Natural state	
Fraction Tested		Passing 425µm sieve	
Date Tested		25/05/2018	
Moisture Content (%)	NZS 4402:1986 Test 2.1	58.8	
Date Tested		22/05/2018	

Comments

Work Order: ETAM18W02168
Tested By: FP

Appendix D – Slope Stability Assessment for East and Western Boundary

Memorandum

To	William Platts	From	James Livingston / Ray Berry
Email address	w.platts@harrisingrierson.com	Date	16 April 2018
Company	Hugh Green Limited	Reference	GENZAUCK16856AB
cc	matthew@hgg.co.nz	Pages	1 of 18
Subject	Donegal Stud Stage 10 – Slope Stability Assessment for Eastern and Western Boundary Gully Flanks		

1. Introduction and Scope of Memo

This memo summaries the results of our recent hand auger borehole investigation and slope stability analysis conducted on the gully flanks that form the eastern and western site boundaries of the Donegal Stud Stage 10 subdivision, Flat Bush. The work was undertaken in accordance with the variation to contract V01, dated 16 January 2018 and arises from the recommendations given in our earlier Geotechnical Investigation Report (GIR) reference GENZAUCK16856AA, dated 11 May 2017.

As you are aware, computer based slope stability modelling conducted for our GIR confirmed that the steep slopes confined to the gully flanks on the eastern and western boundaries were potentially unstable, particularly during short term storm events when groundwater levels are elevated. Due to the results of our analysis we categorised the site into areas that meet the Auckland Council definition of “good ground” and in-lieu of further site specific investigation and analysis, proposed that Specific Design Zones should be imposed in areas where slip surfaces encroaching into land containing residential dwellings and / or roads.

Therefore, the scope of this report is to re-examine the geotechnical suitability and stability of the land in these areas only in closer detail having regard for the nature of the current subdivision earthworks proposals, and to provide recommendations on the works as necessary to improve the slope stability of these areas.

2. Fieldwork

Our fieldwork for this memo was undertaken on 23 January and involved the drilling of nine hand auger boreholes (HA1 and HA2 to HA10) in the positions shown on the attached site plan. Four cross-sections (AA to DD) were also measured and these are attached. The inferred stratigraphy from the boreholes has been superimposed onto the cross-sections.

3. Investigation Findings

Typical ground conditions are summarised on the attached cross-sections. Details are as follows:

Topsoil was encountered to depths of up 0.6 metres in areas adjacent to the bunds at the edge of the site boundary, however, generally topsoil depths ranged between 0.1 and 0.3 metres.

Underlying the topsoil silty clays, clayey silts and mixtures of silts and sands of the alluvial Puketoka Formation were encountered. Shear strengths within these materials ranged from 65 kPa to 200 kPa indicating a stiff to very stiff material.

Underlying the Puketoka Formation soils, residual silts and sands of the East Coast Bays Formation were encountered. Shear strengths measured within these materials ranged from 57 kPa to in excess of 200 kPa. As the hand augers were progressed, Transitional Zone substrata (intermediate between the residual soils and the underlying Waitemata Group bedrock). The hand auger boreholes could not penetrate these materials and were terminated a short depth into them. Dynamic Cone Penetrometer (DCP) Testing performed from the bases of the boreholes met refusal indicating dense material.

Colluvial soils (slip debris) were inferred underlying the topsoil within borehole HA10, this hand auger was drilled at mid slope where we have inferred a historic slip has occurred. Shear strengths within these soils ranged from 57 to 96 kPa.

Although not encountered in our boreholes, mullock and soft saturated alluvial soils deposited during recent and successive flood events typically extend from the embankment toes to the current stream inverts. This material should not be relied on for toe support in the design of the slope stabilisation works.

There is also a layer of wet, lower strength material from 1.7 to 2.4m depth (below existing ground level) at the location of hand auger borehole HA01-18. Any shear keys constructed in this part of the site should extend below this layer.

4. Stability Analysis

4.1. Methodology

The four measured cross-sections (AA to DD) have been chosen for our analysis because they represent the 'worst case' for stability analysis, having a combination of the steepest slopes, greatest distance between crest and toe, and low strength soils.

Theoretical failure of the slope occurs when the Factor of Safety (FOS) is 1.0, while increasing values above 1.0 indicate improved stability. We have assessed the slopes against a minimum FOS of 1.5 for prevailing or existing groundwater conditions, and 1.3 under temporary elevated groundwater conditions. For slopes requiring geotechnical treatment a FOS of 1.5 for both elevated and prevailing groundwater conditions was required.

The slope stability assessment has been undertaken using the software SLIDE (RocScience version 7), using the GLE/Morgenstern Price method.

Factors of safety were initially assessed for the existing slope and proposed slope (in the case of section AA). Where the FOS did not meet the required criteria or failure surfaces encroached beyond the site boundary and into roads or building platforms then geotechnical remedial earthworks were

modelled. The proposed remedial earthworks include re-grading of the existing slope, and / or the construction of a shear key at the base of the slope.

The table below presents the assumed soil parameters used in our analyses:

Table 1: Material Properties

Material	Unit Weight γ (kN/m ³)	Cohesion c' (kPa)	Internal Friction Angle ϕ' (degrees)
Colluvium	17	0	25
Puketoka Formation	17	5	28
Residual ECBF	17	5	28
Transitional ECBF	18.5	7	32
Shear Key Fill (Certified clay fill)	18	5	28
Shear Key Fill (SPR)	19	1	38
Reserve Fill (Section AA)	17.5	3	28
Low Strength PKF (Section AA)	17	3	26

4.2. Stability Results

The table below presents the results of our stability analysis, outputs from SLIDE are also attached.

Cross Section	Prevailing Groundwater FoS	Elevated Groundwater FoS	Minimum Factor of Safety Satisfied
Section AA	1.39	1.17	No
Section AA – Proposed Slope	1.33	1.20	No
Section AA – Proposed Slope with Shear Key and Drainage Blanket	>1.5	>1.5	Yes
Section BB	1.38	1.19	No
Section BB – Regraded Slope	>1.5	>1.5	Yes
Section CC	1.5	1.15	No
Section CC – Regraded Slope (1V:3H)	>1.5	>1.5	Yes
Section DD	0.33	0.23	No
Section DD – With Clay Fill Shear Key	>1.5	>1.5	Yes
Section DD – With SPR Shear Key and Regraded Slope	>1.5	>1.5	Yes

4.3. Evaluation and Recommendations

Based on our site observations, geological appraisal, review of existing geotechnical data, and the results of our recent hand auger borehole investigation and stability analyses as described herein, we have assessed that the existing gully slopes located along the eastern and western boundaries of the

Donegal Stud Stage 10 subdivision do not have the required minimum factors of safety against instability and have the potential to become unstable, particularly when groundwater levels are elevated during short term storm events.

In order to achieve the required minimum FOS, particularly under elevated groundwater conditions, a range of geotechnical measures will need to be implemented. The extent of these measures is shown on the attached Earthworks Plan (Figures 6 and 7). The approximate dimensions of shear keys and location of drainage blankets and underfill drains are shown on the attached stability outputs.

Specific comments and recommendations follow:

4.3.1. Cross Section A-A

Factors of safety for Section A-A initially did not meet the required criteria. To achieve the required criteria a shear key was modelled at the base of the proposed fill embankment. The shear key at this location should be at least 4 metres in width, 3 metres deep and founded within competent very stiff natural soils. The shear key should be constructed in either compacted Soft Pit Run (SPR), or GAP65 hardfill, or suitable rock boulder fill.

Following the construction of the shear key a drainage blanket should be placed on the existing ground surface behind the shear key. The drainage blanket should comprise a 300mm thickness of compacted hardfill (GAP65). Following the construction of the drainage blanket, reserve fill may be placed to form the proposed batter, which should be no steeper than 18 degrees (1V:3H)

We understand that the batter is to be mulched and planted out on completion.

4.3.2. Cross Section B-B

Factors of safety for Section B-B initially did not meet the required criteria, however, the effect of re-grading the slope from its existing gradient to approximately 14 degrees should be effective in achieving the required minimum factor of safety. To achieve this outcome our analysis indicated that the existing slope from the tree drip line to the edge of the adjacent reserve area should be trimmed to form an even grade of approximately 14 degrees or 1V:5H.

4.3.3. Cross Section C-C

Factors of safety for Section C-C initially did not meet the required criteria. As discussed above for section B-B, the effect of re-grading the slope to an even grade to approximately 15 degrees should be effective in achieving the required minimum, factor of safety. As with cross section B-B, our analysis indicated that the existing slope from the tree drip line to the edge of the adjacent road reserve and reserve area should be trimmed to form an even grade of approximately 14 degrees or 1V:5H.

4.3.4. Cross Section D-D

Factors of safety for Section D-D initially did not meet the required criteria and accordingly two shear key options were then modelled with both achieving acceptable factors of safety. Both options comprise a 5m wide shear key that should expose very stiff soils at the base:

1. Option 1 involves the construction of a shear key using Engineer certified clay fill. Underfill drainage will be required to run through the shear key outletting at the edge of the watercourse. The underfill drains should comprise perforated Hiway grade drain coil placed in 300mm deep trenches fully lined with Bidim A19 geotextile cloth and filled with drainage metal (e.g 20/7 scoria

or SAP50 scoria) spaced at 5 metre centres. The underfill drains will need to be installed part way through the backfilling of the shear key at a level to be confirmed by Coffey during construction. Depending on site and groundwater conditions it may be necessary to form the lower half of the shear key with SPR.

2. Option 2 involves the construction of a shear key using Soft-Pit-Run (SPR) and regrading the slope with reserve (lower spec) fill. Prior to placement of the reserve fill, underfill drains spaced at 5 metres centres should be installed, these should comprise perforated Hiway grade drain coils placed in 300mm deep trenches fully lined with Bidim A19 geotextile cloth and filled with drainage metal (e.g 20/7 or SAP50 scoria).

4.4. Earthworks Operations

4.4.1. Site Preparation

Topsoil and uncertified fill should be stripped from all cut and fill areas. Stripping operations should be planned to extend well beyond cut and fill lines to avoid peripheral fill contamination and stockpiles of topsoil and unsuitable materials should be sited well clear of the works on suitable.

4.4.2. Material Suitability

Earthworks operations involving materials from the benching and undercutting works should be relatively straightforward. The material used to form the final slope may comprise relatively clean, organic alluvial clayey silts and silty clays containing minor amounts of basalt rock (up to 100mm diameter) provided that the fill does not encroach into road reserves or building platforms.

These materials will likely to be wet of optimum and appropriate conditioning (ie. discing, mixing, drying, etc.) will be required to achieve the compaction specification.

This material cannot be classified as Class A fill due to its variable content, however, provided it is placed to a corrected undrained shear vane of 80kPa (minimum) we envisage the final material (Reserve Fill) will allow for lightweight structures such as footpaths to be formed across it. Therefore, the extent and location of this fill material must be accurately surveyed and should be shown on the final as-built drawings.

4.4.3. Benching of Slopes

Benching of the existing slope as part of reforming the slope in Engineered fill should be conducted in accordance with the normal requirements of NZS 4404 and related documents. All slope benching should be the subject of Engineering inspections prior to the placement of any filling.

Groundwater seepages/springs are likely to be exposed during the benching of the slope and additional subsoil/underfill drainage works such as the installation of additional subsoil/underfill drainage measures may be needed.

4.4.4. Existing Filling

Existing filling may be encountered as the site is being stripped of topsoil and benched ready to receive filling. The nature and quality of this filling is unknown, and it may be required to be reworked.

4.4.5. Unsuitables

Any identifiable deposits of unsuitable materials that are considered unfit for reworking should be undercut and disposed of off the site or on topsoil stockpiles if appropriate.

4.4.6. Vegetation Cover

The regraded slopes and fill batters should be vegetated with new plantings. The contribution of appropriate vegetation cover to slope stability and erosion control should not be underestimated.

5. Limitations

This memo has been prepared solely for the use of our client, Hugh Green Limited, and their professional advisers in relation to the specific project described herein. No liability is accepted in respect of its use for any other purpose or by any other person or entity. All future owners of this property should seek professional geotechnical advice to satisfy themselves as to its ongoing suitability for their intended use.

For and on behalf of Coffey

Prepared By:



James Livingston
Geotechnical Engineer



Ray Berry
Associate Engineering Geologist

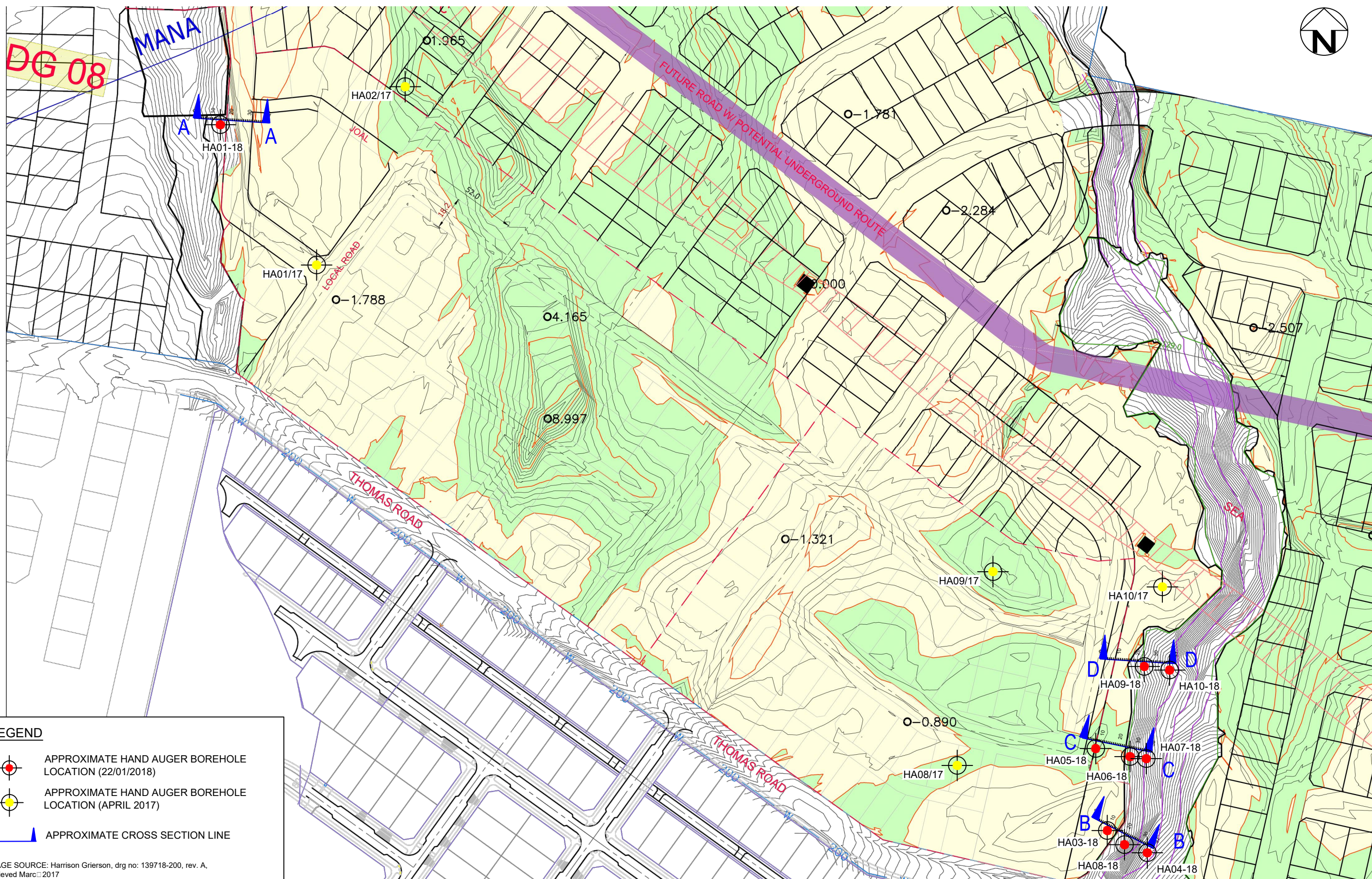
Reviewed and Authorised By:



Peter Bosselmann
Senior Principal

Attachments – Geotechnical Drawings and Cross-Sections
– Slope Stability Test Results

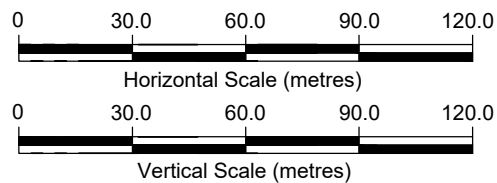
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- APPROXIMATE HAND AUGER BOREHOLE LOCATION (22/01/2018)
 - APPROXIMATE HAND AUGER BOREHOLE LOCATION (APRIL 2017)
 - APPROXIMATE CROSS SECTION LINE

IMAGE SOURCE: Harrison Grierson, drg no: 139718-200, rev. A, retrieved March 2017

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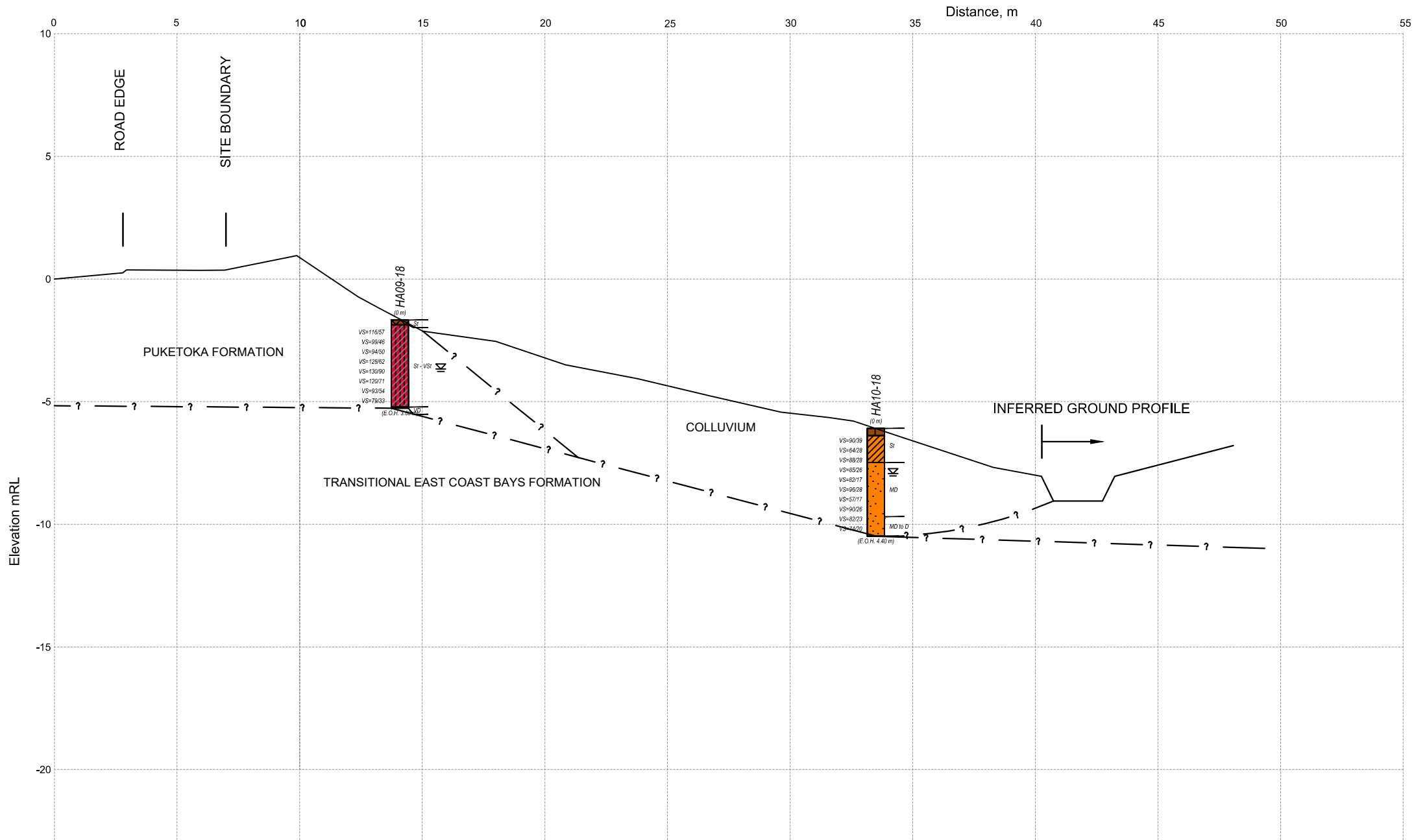


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approved	RB
date	23/01/2018
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original size	A3



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project:	DONEGAL STUD STAGE 10 64 THOMAS ROAD, FLAT BUSH		
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project no:	GENZAUCK16856AB	figure no:	01
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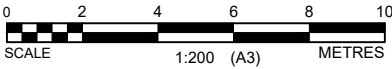
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- GROUND WATER LEVEL
- ? —

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- HA

 COFFEY HAND AUGER BOREHOLE
- PROJECT UNIT

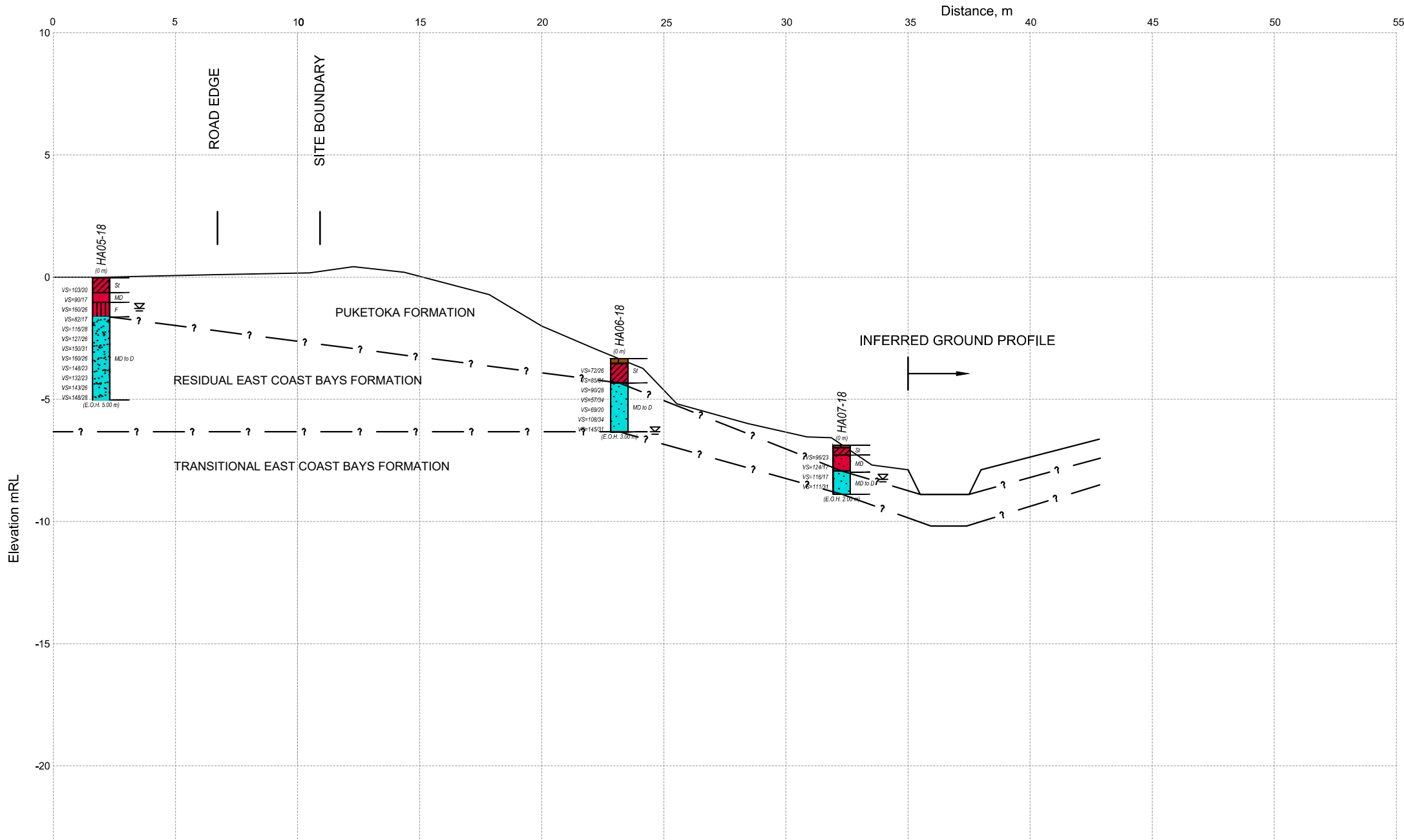
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- PUKETOKA FORMATION
- RESIDUAL EAST COAST BAYS FORMATION
- TRANSITIONAL EAST COAST BAYS FORMATION
- MATERIAL GRAPHIC

TOPSOIL
- SILTY CLAY
- CLAYEY SILT
- SILT
- SANDY SILT
- SAND



client:	HUGH GREEN GROUP LIMITED		
project:	DONEGAL STUD STAGE 10 64 THOMAS ROAD FLAT BUSH		
title:	CROSS SECTION DD		
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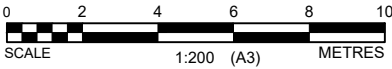


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- EXISTING GROUND LEVEL
- GROUND WATER LEVEL
- INFERRED LITHOLOGICAL BOUNDARY
- COFFEY HAND AUGER BOREHOLE

- PROJECT UNIT
- TOP SOIL
 - COLLUVIUM
 - PUKETOKA FORMATION
 - RESIDUAL EAST COAST BAYS FORMATION
 - TRANSITIONAL EAST COAST BAYS FORMATION

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- TOPSOIL
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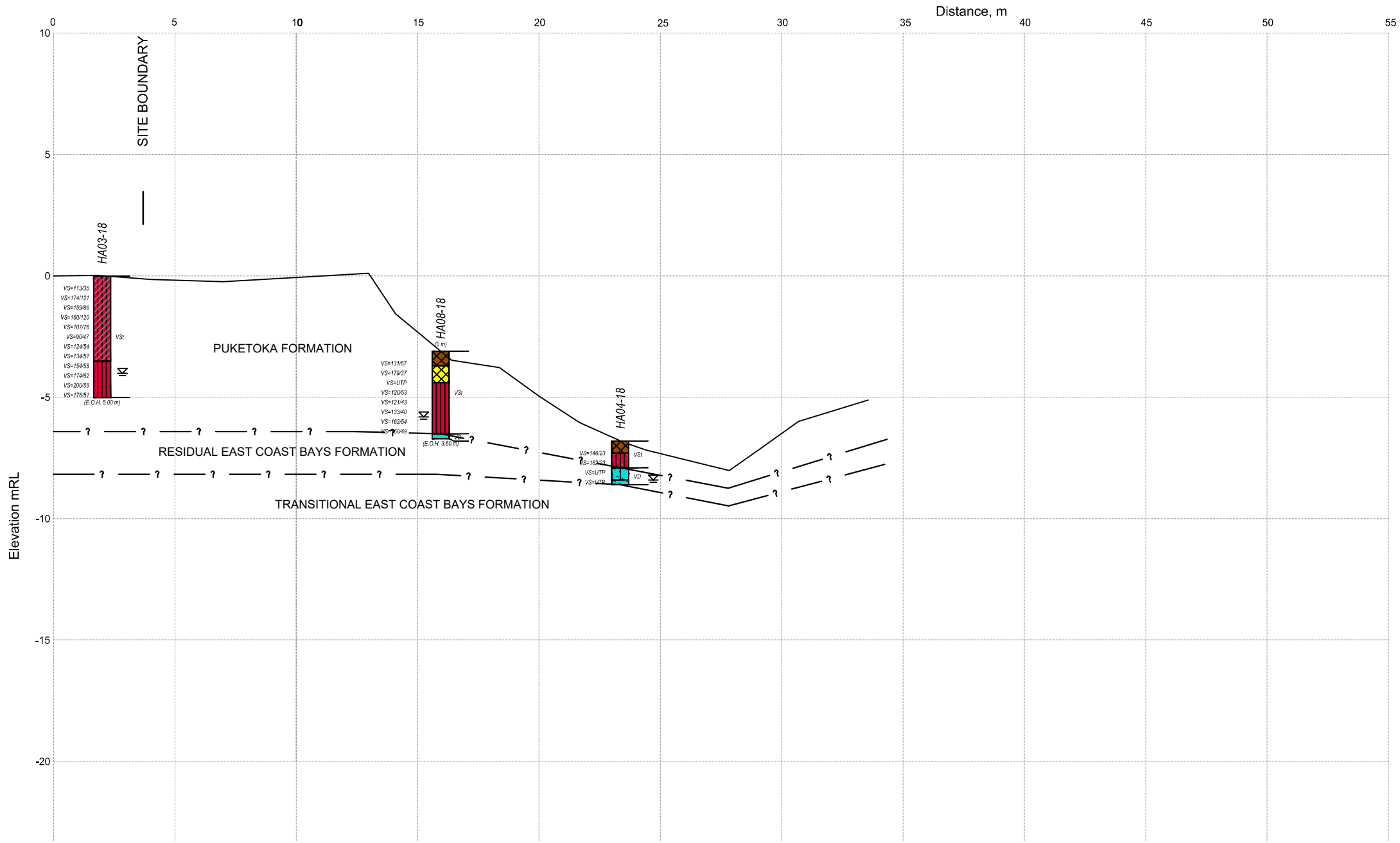


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approved	RB
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project:	DONEGAL STUD STAGE 10 64 THOMAS ROAD FLAT BUSH		
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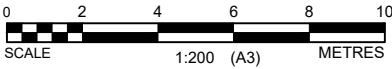


LEGEND

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- GROUND WATER LEVEL
- INFERRED LITHOLOGICAL BOUNDARY
- COFFEY HAND AUGER BOREHOLE

- PROJECT UNIT
- TOP SOIL
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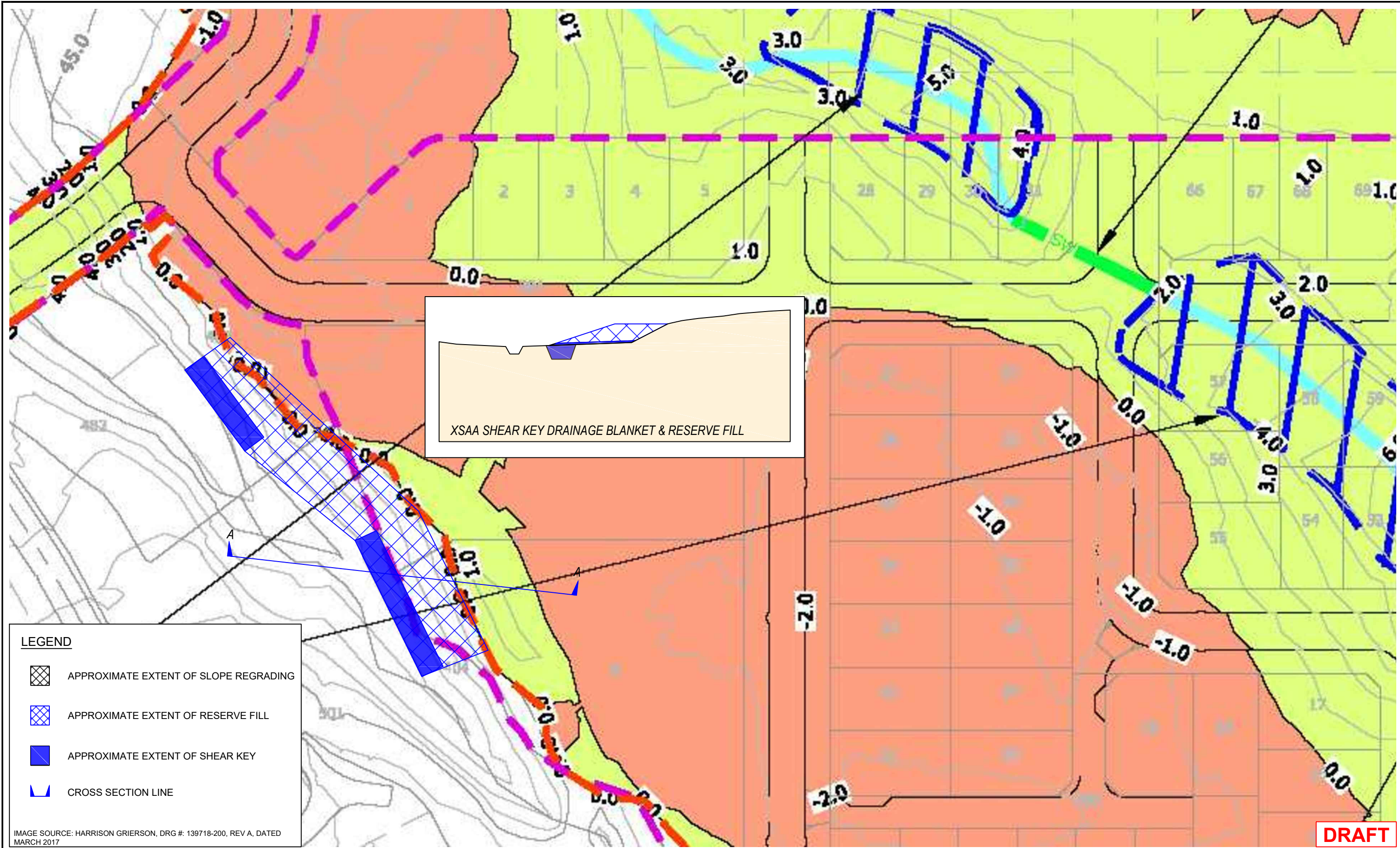
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revision	no.	description	drawn	approved	date

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approved	RB
date	31/01/2018
scale	1:200
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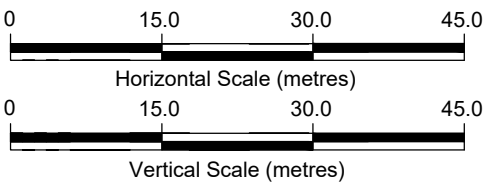


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- APPROXIMATE EXTENT OF RESERVE FILL
- APPROXIMATE EXTENT OF SHEAR KEY
- CROSS SECTION LINE

IMAGE SOURCE: HARRISON GRIERSON, DRG # 139718-200, REV A, DATED MARCH 2017

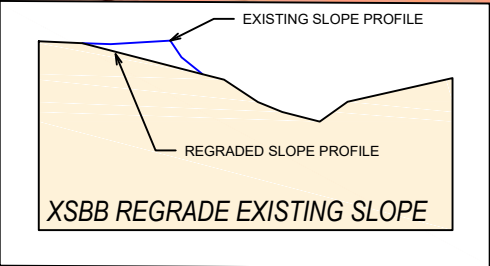
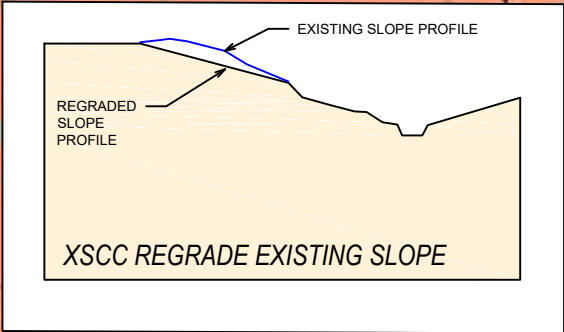
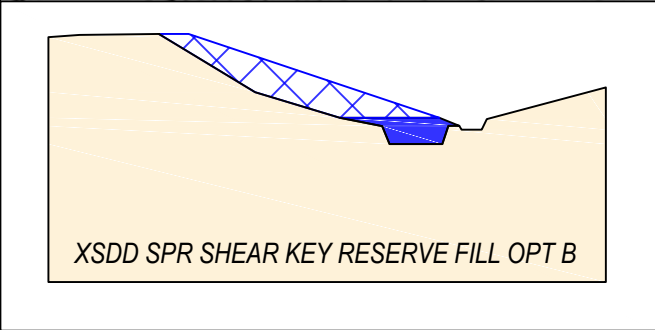
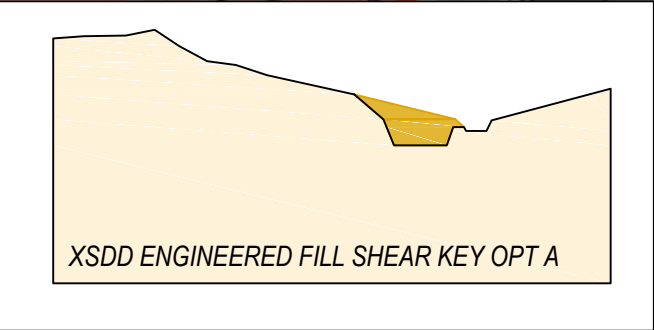
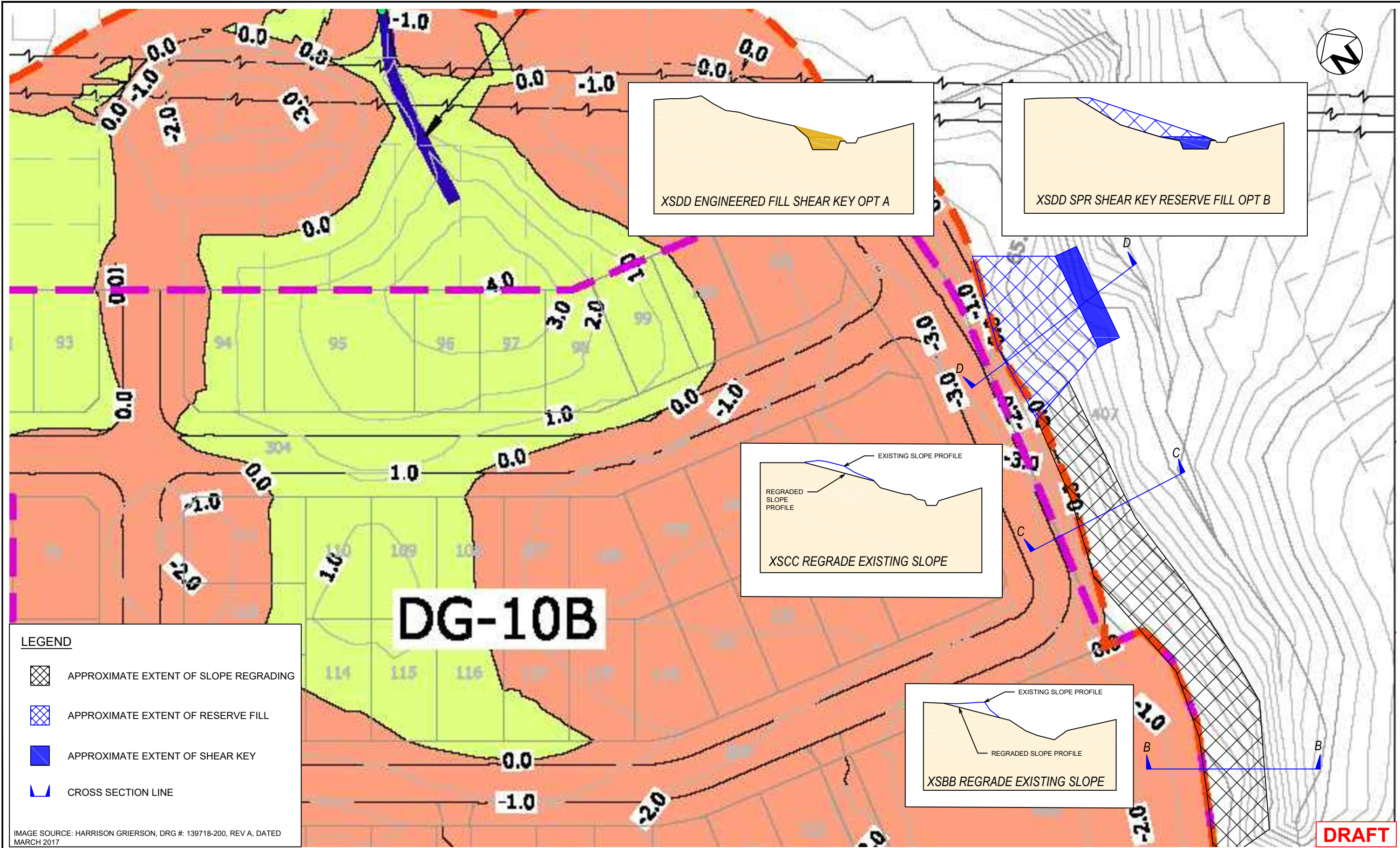
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date	10/02/18
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client:	HUGH GREEN LIMITED		
project:	DONEGAL STUD STAGE 10 THOMAS ROAD AUCKLAND		
title:	EARTHWORK PLAN - EASTERN BOUNDARY		
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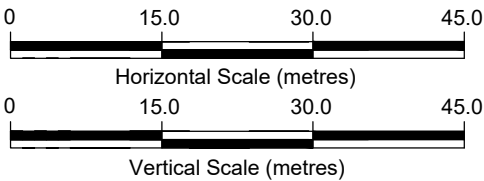


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 - APPROXIMATE EXTENT OF RESERVE FILL
 - APPROXIMATE EXTENT OF SHEAR KEY
 - CROSS SECTION LINE

IMAGE SOURCE: HARRISON GRIERSON, DRG #: 139718-200, REV A, DATED MARCH 2017

DRAFT

revision	no.	description			drawn	approved	date
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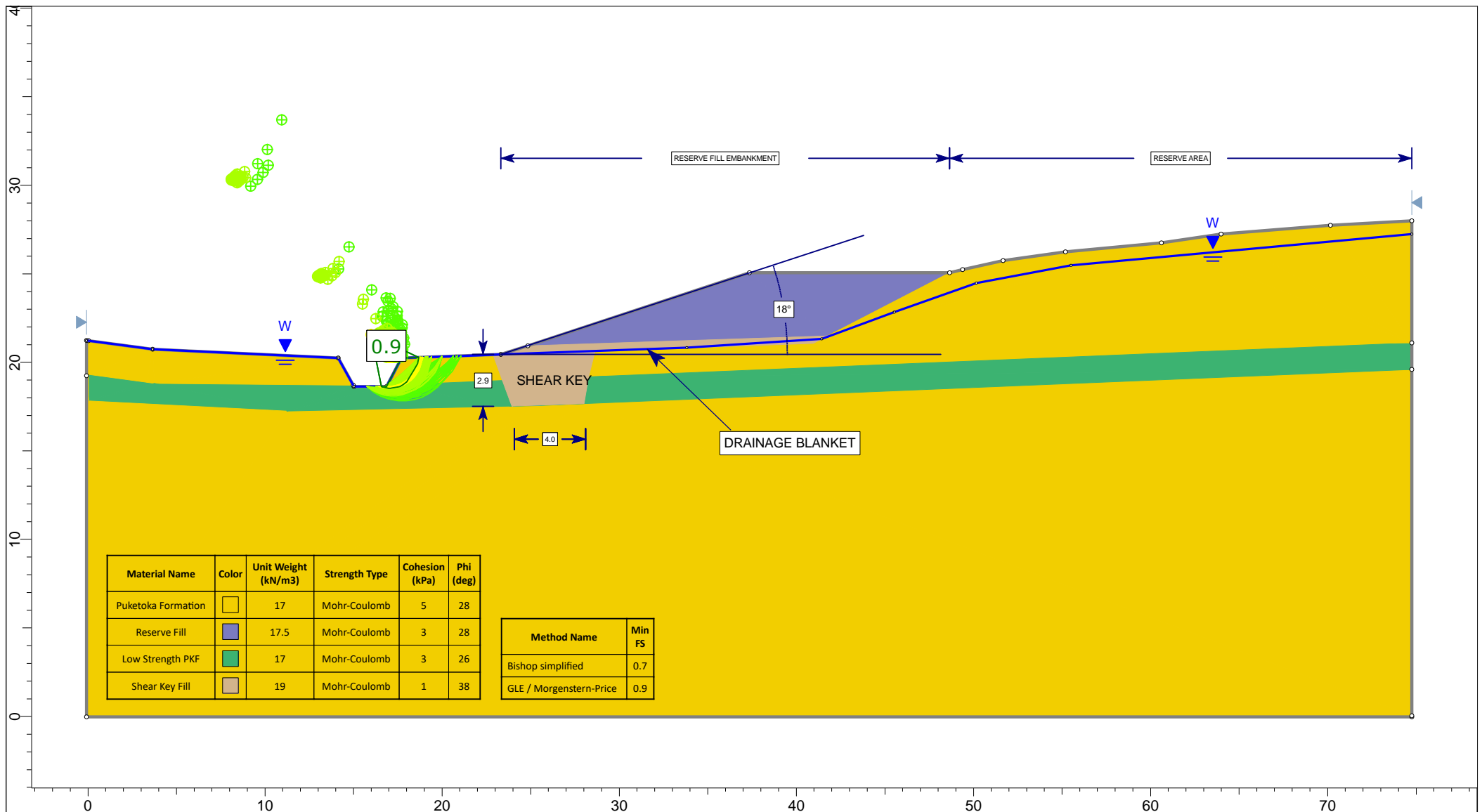


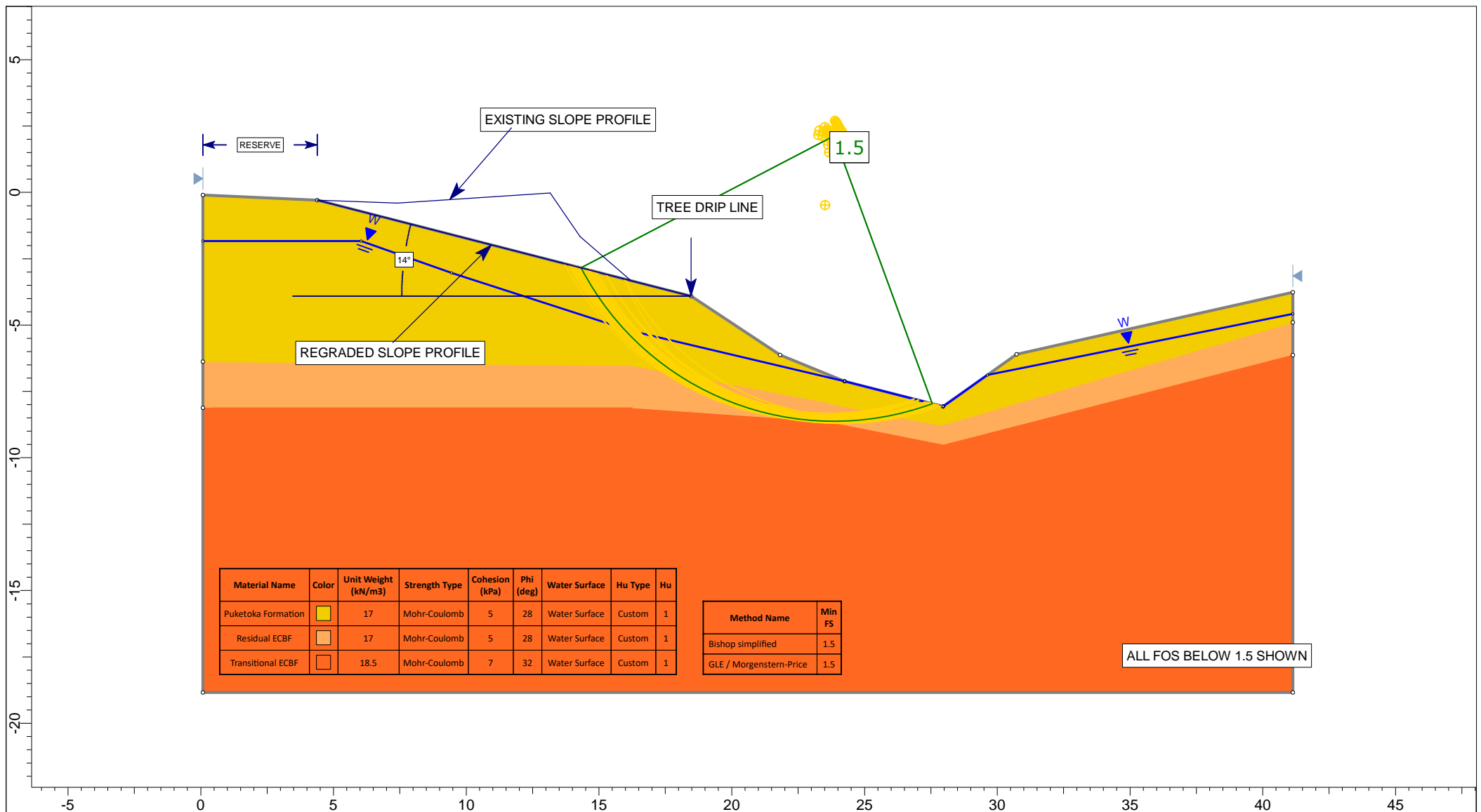
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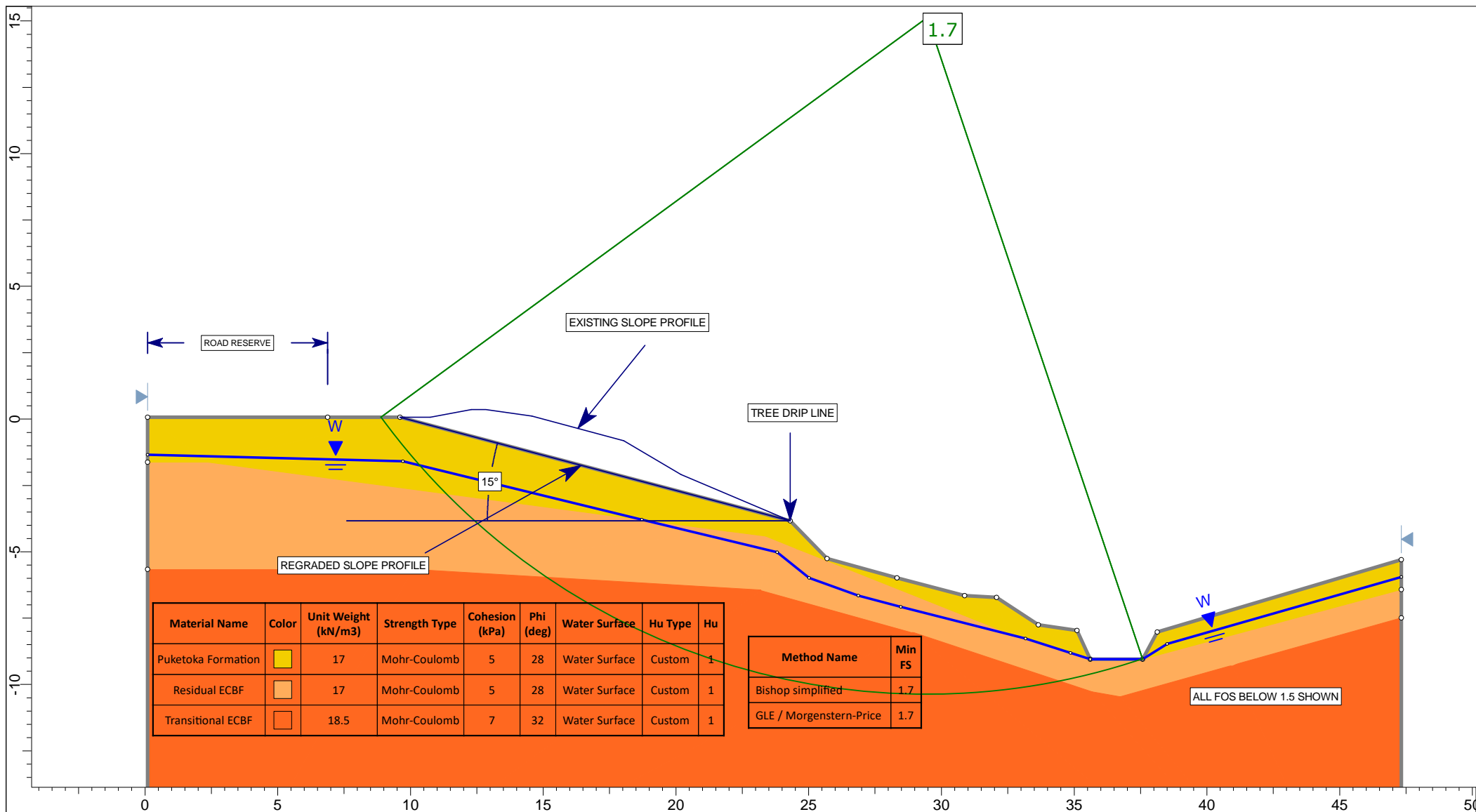


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project:	DONEGAL STUD STAGE 10 THOMAS ROAD AUCKLAND		
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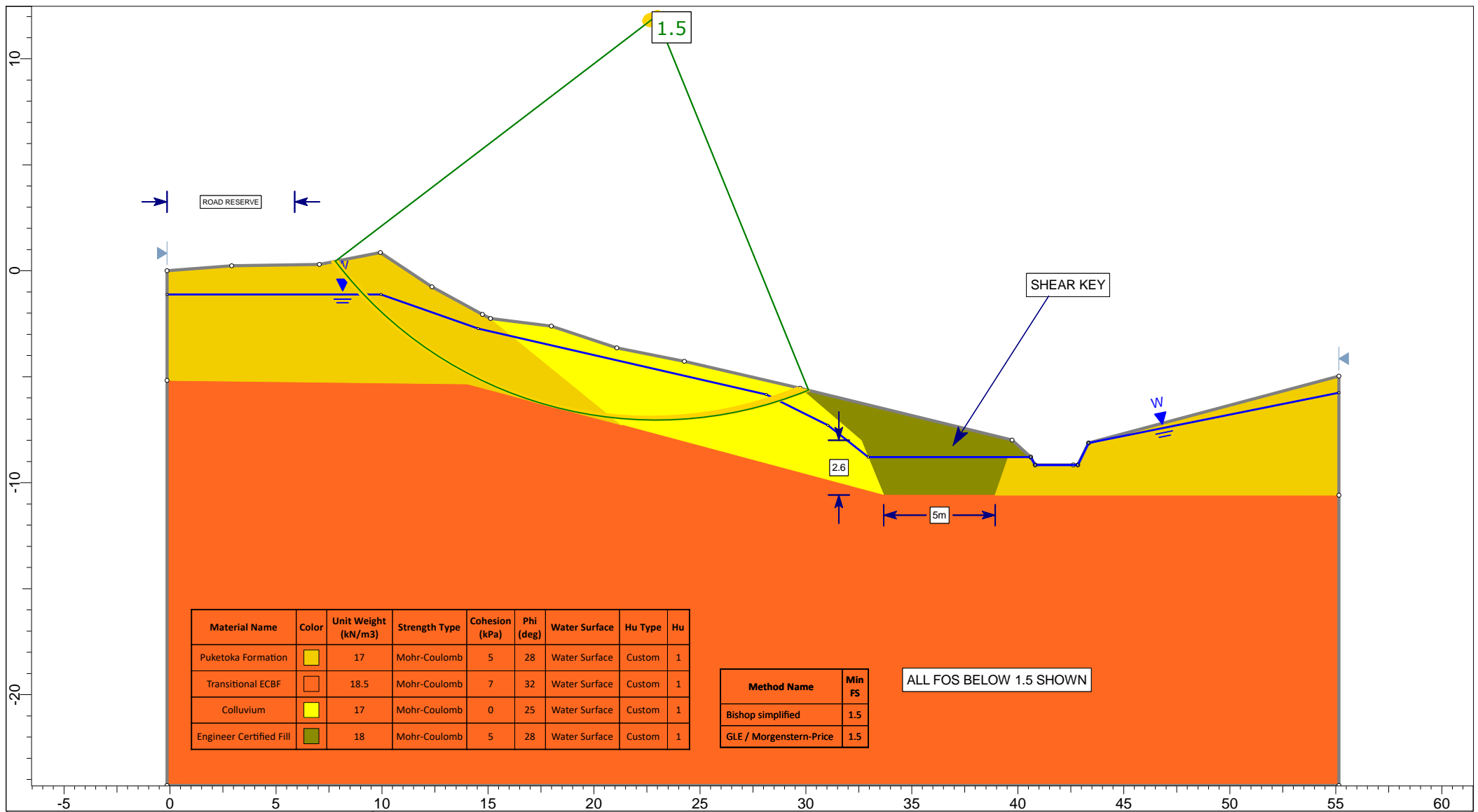
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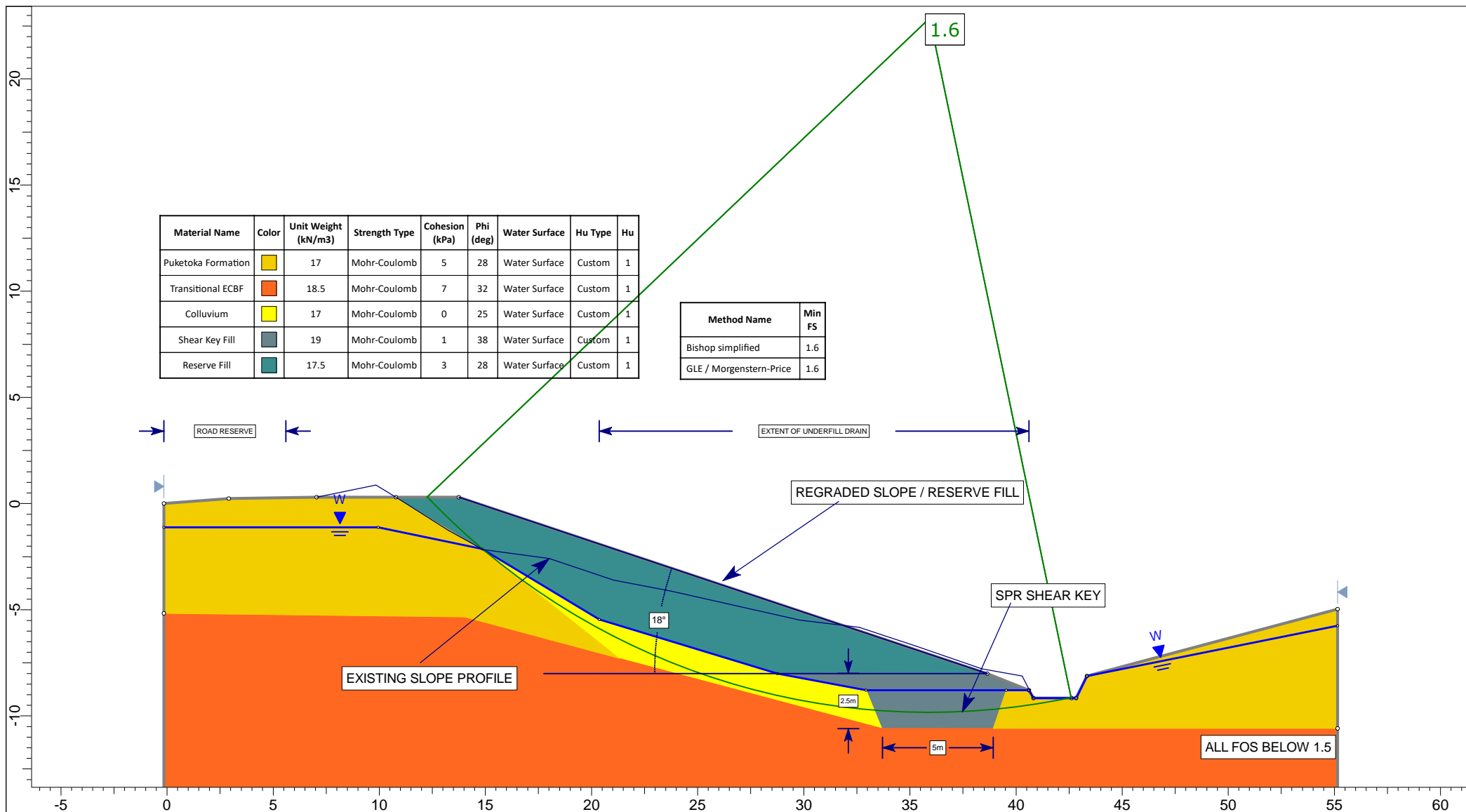






Project		DONEGAL STUD STAGE 10	
Analysis Description		CROSS SECTION CC REGRADED SLOPE PROFILE ELEVATED GROUNDWATER CONDITIONS	
Drawn By	JL	Scale	1:200
Date		Company	HUGH GREEN LIMITED
30/01/2018		File Name	Section CC RB.slmd





Project			
DONEGAL STUD STAGE 10			
Analysis Description			
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Drawn By	JL	Scale	1:250
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