Geotechnical Completion Report

99 ESCOTTS ROAD STAGE 1, TUAKAU

For

HUGHES DEVELOPMENTS LIMITED

J00779 | Lander Geotechnical Consultants Limited | 27 June 2019

27 June 2019 Ref No: J00779

Hughes Developments Limited
C/- CivilPlan Consultants Limited
PO Box 97796
Auckland 2241

Attention: Mr R Pitkethley

Dear Ryan

RE: Geotechnical Completion Report for Residential Subdivision at Stage 1 – 99 Escotts Road, Tuakau

This report presents all supporting geotechnical data and our Suitability Statement in relation to land development works undertaken at the above location.

It has been prepared in accordance with instructions received from CivilPlan 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 Lander Geotechnical Consultants Limited

S.G. Lander

Principal Geotechnical Engineer
CMEngNZ, CPEng., IntPE(NZ)

Lander Geotechnical Consultants Limited
Level 3, 3 Osterley Way, P O Box 97 385, Manukau, Auckland 2241
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1 INTRODUCTION AND DESCRIPTION OF SUBDIVISION

This Geotechnical Completion Report has been prepared for Hughes Developments Limited as part of the documentation required to be submitted to the Waikato District Council following residential subdivisional development.

It contains our Suitability Statement, relevant test data and the CivilPlan Consultants Limited as-built plan set relating to Stage 1 of the 99 Escotts Road Residential Subdivision as follows:

Table 1: CivilPlan Consultants Limited As-Built Drawings

Title	Reference No.	Date
Finished Contours Asbuilt Plan	2011-01-AB200	May 2019
Underfill Drains Asbuilt Plan (3 sheets)	2011-01-AB205 to AB207	May 2019
Isopach Asbuilt Plan (2 sheets)	2011-01-AB220 & AB225	May 2019
Retaining Wall Asbuilt Plan (2 sheets)	2011-01-AB270 & AB271	May 2019
Slope Analysis Asbuilt Plan (2 sheets)	2011-01-AB290	May 2019

This report covers the construction period September 2018 to June 2019. It is intended to be used for certification purposes as follows:

- 54 residential lots numbered 1 to 42 and 55 to 66;
- 4 new roads named Road 1, Road 2 (part), Road 3, and Road 4;
- 1 drainage reserve numbered as lot 300. This lot contains a stormwater detention tank and an overland flow path.

This stage of the subdivision is located at 99 Escotts Road and as can be seen on the fill as-built plan, all of the lots have been partly or totally affected by filling, to a maximum depth of approximately 6.5 metres.

2 RELATED REPORTS

A Geotechnical Investigation Report on the subject land was prepared by this Consultancy, reference J00779-Rev1, dated 28 March 2018. In addition, a geotechnical design report (dated 9 May 2018, reference J00779) was prepared for retaining walls 1 to 3. The conclusions and recommendations of these reports have been reviewed during the preparation of this document.

3 EARTHWORKS OPERATIONS

3.1 Plant

The main items of plant used by the Contractor, Twomey Construction Limited were:

- Excavators (various sizes);
- 2x Twin Motorscrapers;
- 1x 4WD Padfoot Compactor;
- 1x Articulated Dump Truck;
- 1x Smooth Drum Roller;
- 1 Bulldozer;
- 1x Tractor with Disc Ploughs.

3.2 Construction Programme

Earthworks operations for this stage commenced in September 2018 with the stripping of topsoil and the mucking out (i.e. removal of organics and soft sediments) of the gully within in the southern portion of Stage 1. An underfill drain was installed in the invert of the gully (its construction is discussed in Section 5.5) and a 0.6m-thick rotten rock mattress was placed in the invert of the gully (over the underfill drain) to elevate the clay fill above the groundwater table and provide a hard base to compact upon. Most of the gully was subsequently filled with compacted clay and a silt retention pond was constructed.

In early October 2018, bulk earthworks commenced in the central portions of Stage 1 and installation of public service lines began in late October 2018. By early November 2018, bulk earthworks within Stage 1 were generally completed and civil construction (i.e. road construction) began.

In late January 2019, the mucking out of the gully continued south (i.e. vicinity of Lot 300) and the underfill drain and rotten rock mattress was extended here. Subsequently, the construction of retaining walls 2 and 3 commenced (details of the construction of these walls, along with Wall 1 in Stage 2, are provided within Appendix 2 along with the contractor's PS3 and our PS4 certificates).

In early May 2019, the silt pond was decommissioned and the stormwater detention tank in Lot 300 was installed. Retaining wall 2 construction was completed once the tank was installed and bulk filling behind the walls was completed and topsoil was then respreads over all lots.

4 QUALITY ASSURANCE AND CONTROLS

4.1 Site Observations

During the earthworks 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 this stage of the development for:

- gully areas prior to the placement of fill materials to ascertain that all mullock and soft inorganic subsoils had been removed to our satisfaction;

- installation of underfill drains;
- all aspects of retaining wall construction for walls 1 to 3 (e.g. pile hole excavations, drainage placement etc.).

4.2 Quality Control Criteria

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

(a)	Air Voids Percentage	
	(As defined in NZS 4402)	
	General Fill	
	Average value less than	10%
	Maximum single value	12%
(b)	Undrained Shear Strength	
	(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	

In addition, for the placement and compaction of GAP65 hardfill (as was used for the base of the stormwater detention tank area in Lot 300), a minimum Clegg Impact Value (CIV) of 15 was specified.

4.3 Quality Assurance Testing

(i) In-situ density monitoring was carried out as for the general fill areas and a series of hand auger boreholes were also drilled at selected locations as an added check on quality control.

(ii) 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.

(iii) Control tests carried out on the filling showed that on some occasions the required compaction standards were not being achieved.

(iv) Results of the test failures were relayed to the site foreman and/or his staff, and to the best of our knowledge the affected areas of fill were re-worked as necessary. In each case, further testing was carried out until compliance with the standards was achieved.

5 PROJECT EVALUATION

5.1 Bearing Capacity and Settlement of Building Foundations

Following the completion of earthworks operations, we returned to the site in April 2019 and drilled a series of hand auger boreholes at appropriate natural ground locations in order to determine representative finished ground conditions and hence evaluate likely foundation options for future building development.

At current subgrade levels all filled and undisturbed natural ground has a geotechnical ultimate bearing capacity of 300 kPa within the influence of conventional shallow residential building foundation loads. Where a geotechnical ultimate bearing capacity greater than 300 kPa is required, further specific site investigation and design of foundations should be carried out prior to building consent application.

Where any building platforms have been rutted by heavy machinery, or softened due to ponded rainwater, they should be trimmed back to competent ground and reinstated with compacted hardfill or recompacted clay fill to meet the subdivision's compaction criteria outlined in Section 4.2 to design subgrade level prior to the commencement of building construction.

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 Expansive soil tests were carried out on samples selected from around the site and within the zone of likely influence of shallow building foundations.

These limit 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 appended.

The AS 2870 Site Class for this subdivision is H1 (high) and a characteristic surface movement (y_s) of up to 60mm can be expected.

We recommend the final building platforms are trimmed and protected immediately using hardfill to minimise desiccation and the potential for post building construction heave beneath the floor slabs / driveways, etc.

5.3 Fill Induced Settlement

As a result of our pre-fill inspections, the installation of subsoil drainage, quality control testing and the elapsed time since the placement of the majority of the filling, 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 development.

5.4 Service Trenches

As is normal on all subdivisions, building developments involving foundations within a 45 degree zone of influence from public service pipe inverts will require Engineering input.

5.5 Underfill Drains

The appended cut-fill contours as-built plans show the positions of a perforated underfill drain that was placed in a mucked out gully invert prior to filling to intercept groundwater seepages, as required by NZS 4431. The drain comprises a 160mm-diameter, perforated, heavy duty drain coil embedded in drainage metal and fully wrapped in non-woven geotextile cloth.

The drain was intended to intercept localised groundwater seepages and springs during earthworks and to help provide general control over groundwater levels and were installed as a precautionary measure, not as remedial works for any existing instability, therefore it needs no specific maintenance. This drain presents no foreseeable constraints for future shallow foundations in the aforementioned lots.

Notwithstanding, it is recommended that future foundations or site development works preserve this drain. In the event that it is compromised by any future development of residential lot 21 (albeit unlikely due to the depth of the drain being deeper than 2.0m below existing ground levels within the lots), it should be reinstated under geotechnical engineering observational guidance. Further details are given in Section 6 (3) (f).

5.6 Stormwater Drainage Reserve Lot 300

A stormwater detention tank and overland flow path has been constructed within Lot 300. We were not involved in the design or construction supervision of the detention tank and its outlet structures/conduits.

5.7 Retaining Walls

Some areas of the site have been stabilised by the construction of boundary retaining walls in the locations shown on the finished contours as-built plans (drawing no. AB200). These walls reach a maximum height of approximately 3.5 metres and were designed and inspected by this Consultancy. A copy of our Producer Statement - Construction Review is appended.

An associated Specific Design Zone is shown on the as-built plan set and details of resulting building and earthworks restrictions within the associated Specific Design Zones of these walls are presented in the Suitability Statement.

5.8 Topsoil

Topsoil depths in likely building platform areas were checked by the drilling of a borehole in the approximate centre of each of the residential lots. Our findings, which are indicative only and subject to variation at other locations, show that likely topsoil depths are between 100mm and 200mm.

Site specific findings are presented in the Suitability Statement Summary.

5.9 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 to (i) and (ii) during the execution of the works,

(iv) The conditions of Resource, Earthworks and Building Consents where applicable,

(v) The relevant Lander Geotechnical Consultants Limited reports, recommendations and site instructions

and that all as-built information and other details provided to the Client and/or Lander Geotechnical Consultants Limited are accurate and correct in all respects.

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

I, S.G. Lander, of Lander Geotechnical Consultants 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 Owner/Developer as the Geotechnical Engineer on Stage 1 of the 99 Escotts Road, Tuakau residential subdivision.
2. The extent of preliminary investigations carried out to date are described in Geotechnical Investigation Report (reference J00779 dated 28 March 2018) and Geotechnical Design Report (reference J00779, dated 9 May 2018) and the conclusions and recommendations of those documents have been re-evaluated in the preparation of this report. 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 fill as-built plan have been placed in compliance with / NZS 4431 and related documents.

   (b) The completed earthworks give due regard to land slope and foundation stability considerations within residential lots.

   (c) A geotechnical ultimate bearing capacity of 300 kPa may be assumed for foundation design on all residential lots.Where a geotechnical bearing capacity greater than 300 kPa is required, (ie. 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.

   (d) The backfilling and compaction of the live 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 beyond the extent of the trench backfill.

   (e) No building construction, including the construction of additional retaining walls and no earthworks should take place should take place within a horizontal distance equal to the wall face height (measured from the top of the wall) behind the cantilever pole retaining walls on lots 58 to

61 (as hatched by the Specific Design Zone on the finished contours plans) unless endorsed by specific designs and by construction inspections undertaken by a Chartered Professional Engineer experienced in geomechanics to ensure that no additional loads are applied to the walls. Specific site investigation should not be required.

(f) The function of the underfill drain which passes through lot 21 must not be impaired by any building development or landscaping works. In particular, any bored or driven piles must be positioned to avoid damaging this drain. The drain is at a minimum depth of 2m below existing ground level and should therefore not pose any risk to shallow building foundations constructed in accordance with the recommendations of this report.

(g) The assessed AS 2870 expansive site Class for all lots is H1 (high) and the characteristic ground surface movement (y_s) is up to 60mm.

(h) Subject to the geotechnical limitations, restrictions, recommendations and expansive soil assessments associated with 3(b), 3(c), 3(d), 3(e), 3(f), and 3(g) above:

(i) The filled and undisturbed original ground within residential lot boundaries is generally suitable for residential buildings constructed in accordance with NZS 3604 and related documents.

(ii) On all lots, foundation design may be carried out in accordance with AS 2870 (Class H1) 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. In this latter case, the minimum recommended foundation depth below cleared ground level following topsoil removal and benching of building platform areas is 900mm.

For buildings having brittle exterior cladding appropriate control joints should also be specifically designed depending on architectural specifications and structural form.

4. Road subgrades (i.e. Roads 1 to 4) within Stage 1 have been formed having due regard for slope stability and settlement, although available subgrade strengths are dependent on site conditions and variable results should be expected.
5. The Stormwater Drainage Reserve (Lot 300) has been formed to a standard suitable for its proposed end use.

The professional opinion contained within this report is furnished to the Waikato District Council and Hughes Developments Limited for their purposes alone on the express condition that it 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 Lander Geotechnical Consultants Limited

Prepared By:

Michael Chan

Geotechnical Project Engineer
NZDE(Civil)

Reviewed and Authorised By:

Chris Edwards

Senior Engineering Geologist
CMEngNZ(PEngGeol)

Authorised By:

Shane Lander

Principal Geotechnical Engineer
CMEngNZ, CPEng., IntPE(NZ)

Table 2: 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 900mm.	100	300	H1
2	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
3	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
4	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
5	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
6	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
7	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
8	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
9	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
10	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
11	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
12	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
13	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
14	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
15	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
16	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
17	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
18	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
19	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870 :2011 Class
20	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
21	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm. Function of the underfill drain must be preserved (refer Section 6 (3) (f) of report)	100	300	H1
22	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
23	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
24	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
25	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
26	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
27	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
28	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
29	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
30	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
31	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
32	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
33	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
34	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
35	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
36	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
37	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
38	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870 :2011 Class
39	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
40	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
41	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
42	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
55	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
56	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
57	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
58	No construction or earthworks within specific design zone unless endorsed by specific foundation designs and construction inspections due to presence of cantilever pole retaining wall. Elsewhere, AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
59	No construction or earthworks within specific design zone unless endorsed by specific foundation designs and construction inspections due to presence of cantilever pole retaining wall. Elsewhere, AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
60	No construction or earthworks within specific design zone unless endorsed by specific foundation designs and construction inspections due to presence of cantilever pole retaining wall. Elsewhere, AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
61	No construction or earthworks within specific design zone unless endorsed by specific foundation designs and construction inspections due to presence of cantilever pole retaining wall. Elsewhere, AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
62	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
63	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870 :2011 Class
64	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
65	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
66	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1

Appendix 1

CivilPlan Consultants Limited
As-Built Drawings

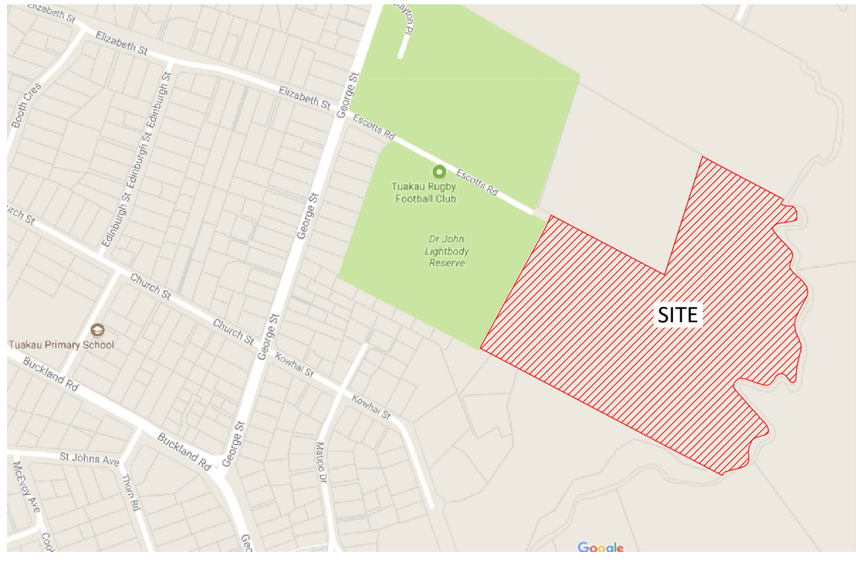
CIVILPLAN CONSULTANTS

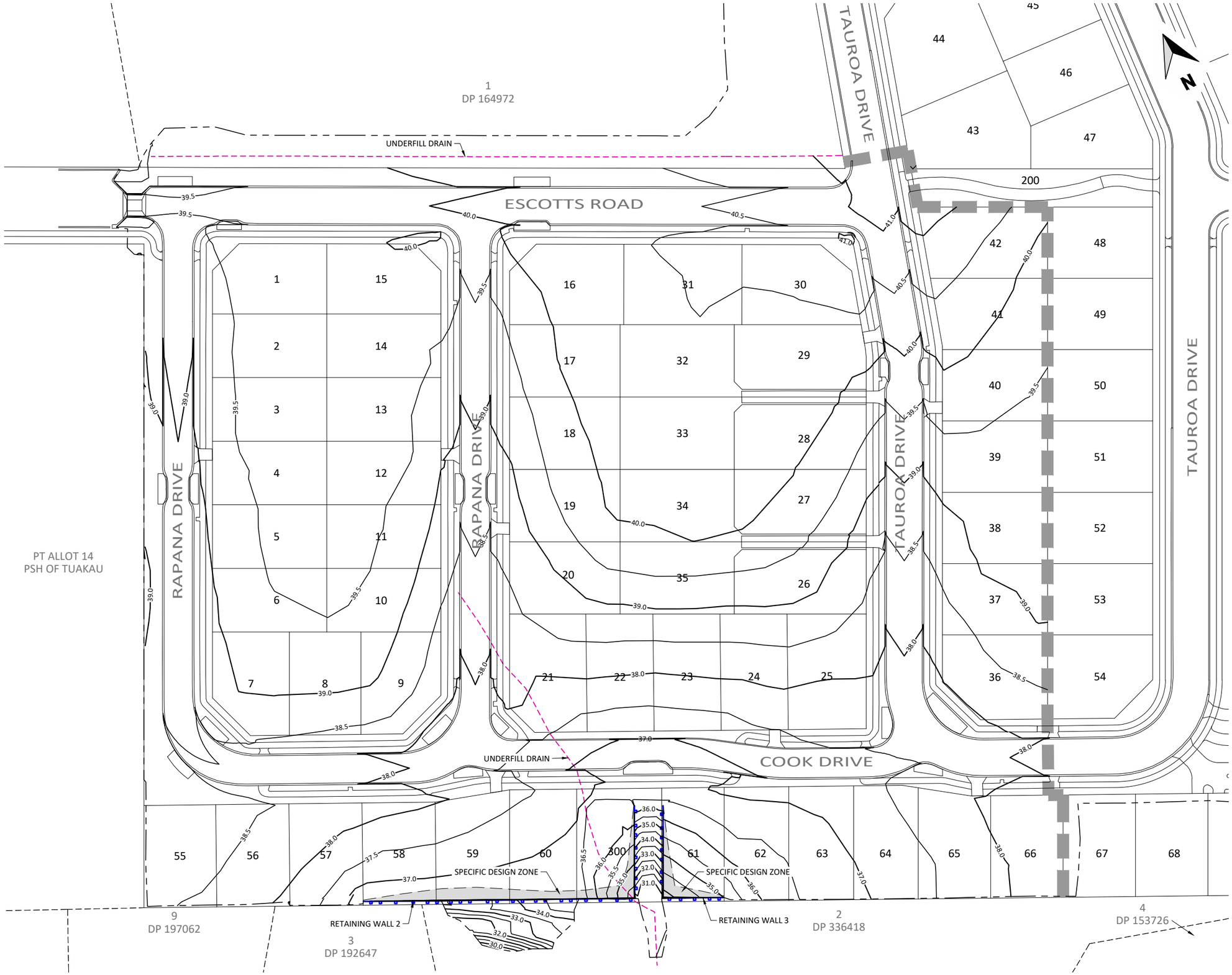
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

PROJECT NUMBER: 2011

AS-BUILT ISSUE
JUNE 2019

Sheet List Table





REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN:	DKP	DATE: 05.2019
CHECKED:	MRR	DATE: 26.06.19
APPROVED:	RJP	DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
FINISHED CONTOURS ASBUILT PLAN
STAGE 1 - SHEET 1
SUB0311/18 & LUC0489/18

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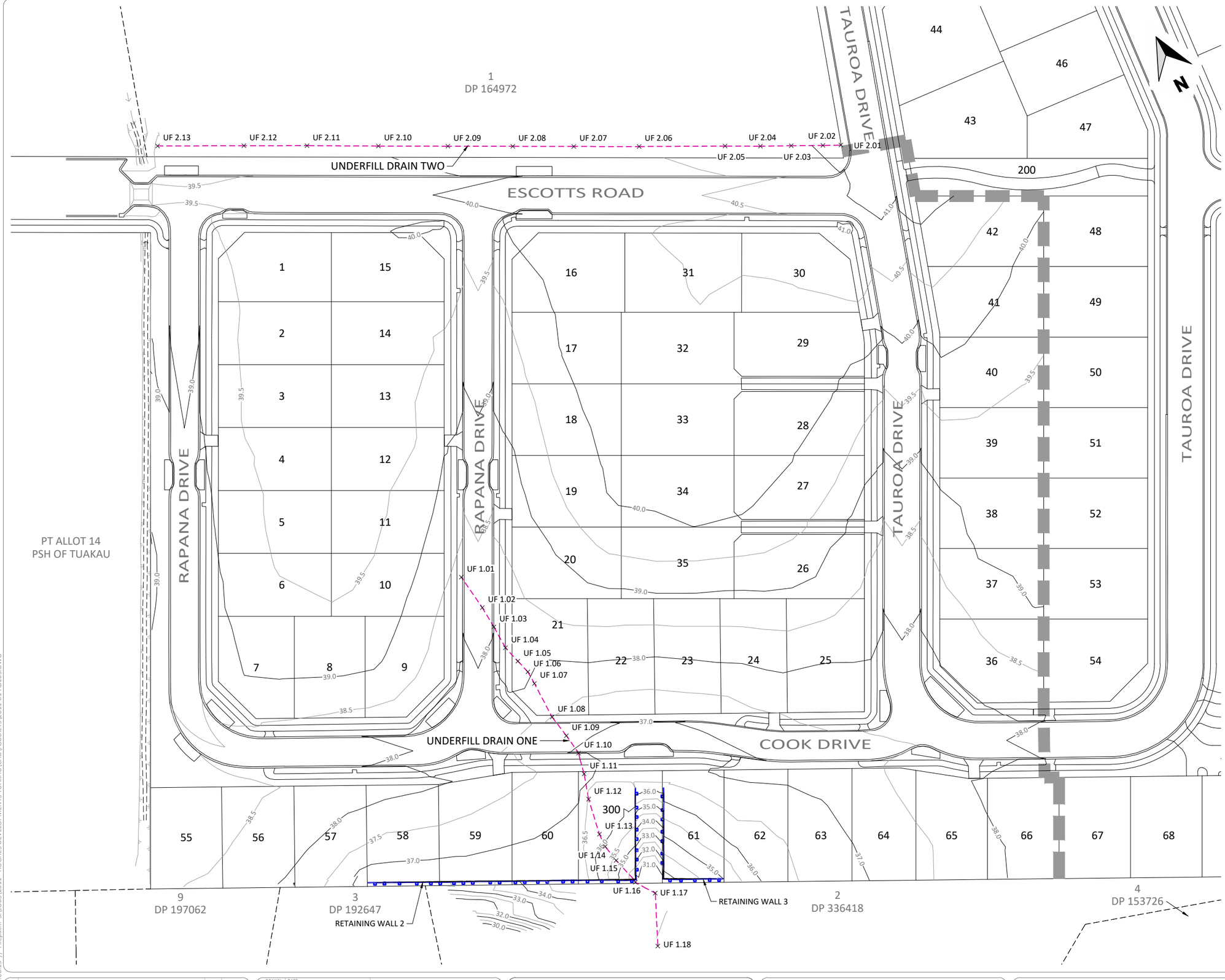

LEGEND

- EXISTING CONTOUR
- ASBUILT MINOR CONTOUR
- 10.0 ASBUILT MAJOR CONTOUR
- EARTHWORK EXTENT
- ASBUILT SUB-SOIL DRAIN
- ASBUILT RETAINING WALL
- STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE UNDERFILL DRAINS SHOWN ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

SCHEDULE OF COORDINATES UNDERFILL DRAIN ONE-GD2000

POINT No.	mE	mN	LEVEL
UF 1.01	416264.59	757138.16	36.74
UF 1.02	416265.71	757128.40	36.37
UF 1.03	416266.01	757122.43	35.93
UF 1.04	416266.12	757116.09	35.39
UF 1.05	416267.35	757111.38	35.20
UF 1.06	416268.35	757107.64	34.96
UF 1.07	416268.44	757104.08	34.80
UF 1.08	416268.38	757094.05	33.86
UF 1.09	416269.39	757087.87	32.78
UF 1.10	416270.08	757082.26	32.08
UF 1.11	416268.77	757076.72	30.84
UF 1.12	416266.65	757070.24	30.81
UF 1.13	416264.82	757060.67	30.72
UF 1.14	416264.61	757057.09	30.75
UF 1.15	416265.44	757052.44	30.81
UF 1.16	416267.21	757044.97	30.41
UF 1.17	416270.53	757039.90	30.15
UF 1.18	416264.51	757027.18	29.43

SCHEDULE OF COORDINATES UNDERFILL DRAIN TWO-GD2000

UF 2.01	416407.56	757191.85	40.63
UF 2.02	416403.32	757194.01	40.34
UF 2.03	416395.84	757197.91	40.20
UF 2.04	416388.58	757201.65	40.09
UF 2.05	416380.32	757206.12	40.02
UF 2.06	416360.13	757216.75	39.72
UF 2.07	416344.82	757224.95	39.62
UF 2.08	416330.55	757232.61	39.48
UF 2.09	416315.37	757240.75	39.38
UF 2.10	416299.11	757249.48	39.24
UF 2.11	416282.42	757258.50	39.13
UF 2.12	416267.64	757266.40	38.97
UF 2.13	416247.37	757277.13	38.80

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN: DKP DATE: 05.2019
CHECKED: MRR DATE: 26.06.19
APPROVED: RJP DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
UNDERFILL DRAINS ASBUILT PLAN
STAGES 1 & 2 - DETAIL SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
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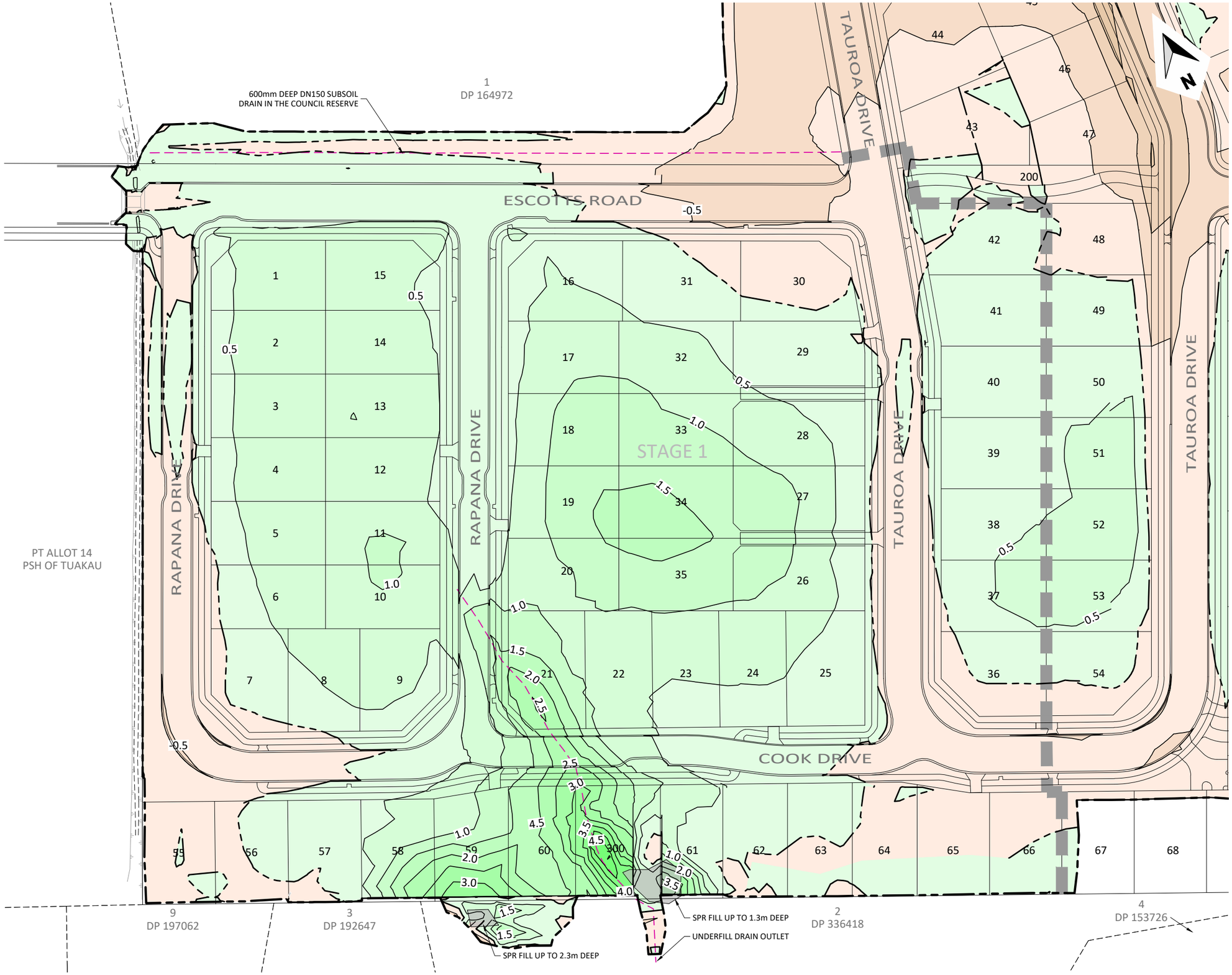
DRAWING NUMBER: 2011-01-AB205 REV: A



LEGEND

- 10.0 — ASBUILT CUT ISOPACH
- 10.0 — ASBUILT FILL ISOPACH
- EARTHWORKS ZERO CUT/FILL LINE
- EARTHWORK EXTENT
- UNDERFILL DRAIN
- COUNTERFORT DRAIN
- STAGE BOUNDARY

CUT — ASBUILT CUT

FILL — ASBUILT FILL

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE CUT/FILL DEPTH CONTOURS SHOWN ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

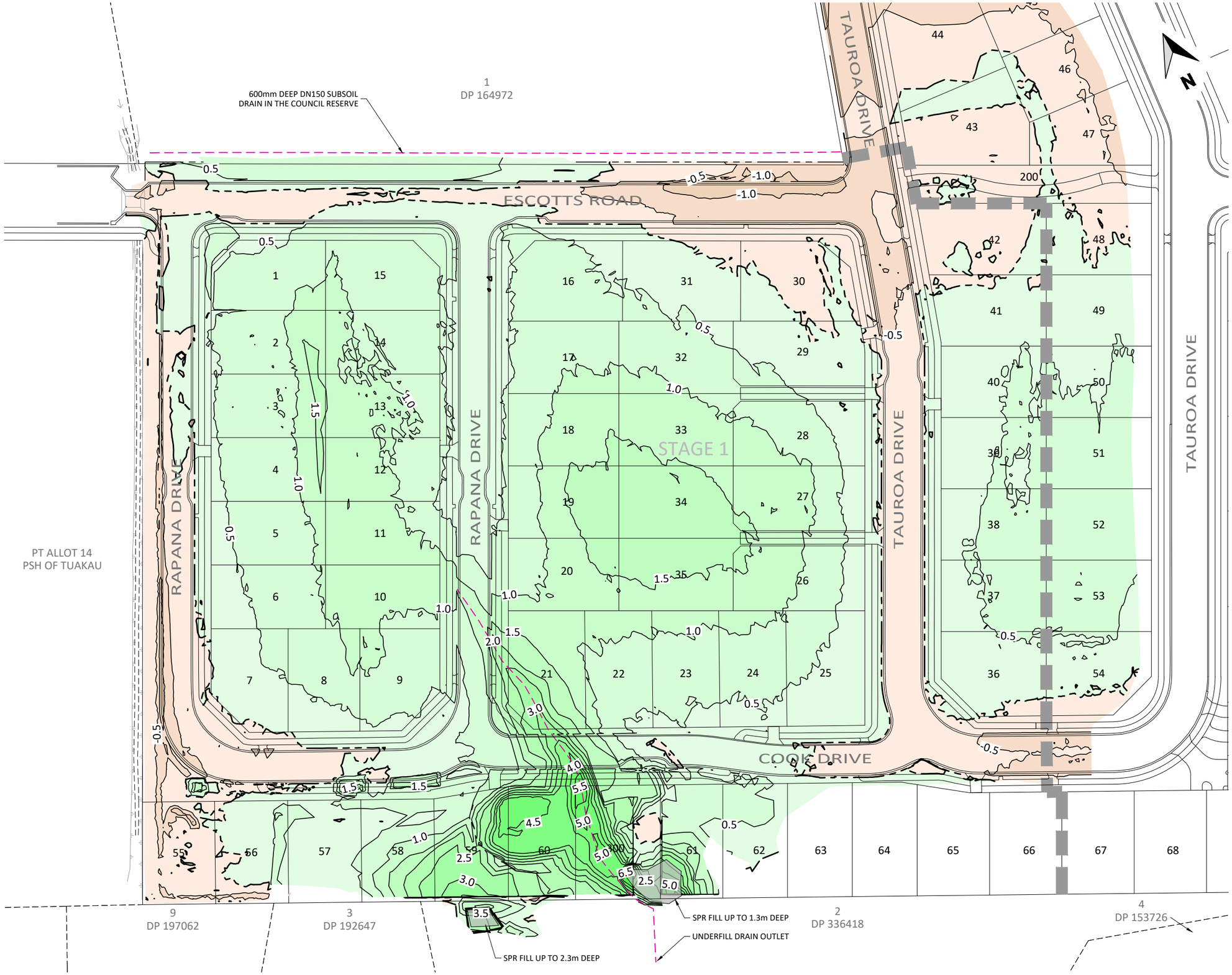
DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
ISOPACH ASBUILT PLAN - STAGE 1
EXISTING SURFACE TO ASBUILT SURFACE
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB220 REV: A



LEGEND

- 10.0 — ASBUILT CUT ISOPACH
- 10.0 — ASBUILT FILL ISOPACH
- EARTHWORKS ZERO CUT/FILL LINE
- EARTHWORK EXTENT
- UNDERFILL DRAIN
- COUNTERFORT DRAIN
- STAGE BOUNDARY

CUT — ASBUILT CUT

FILL — ASBUILT FILL

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE CUT/FILL DEPTH CONTOURS SHOWN ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

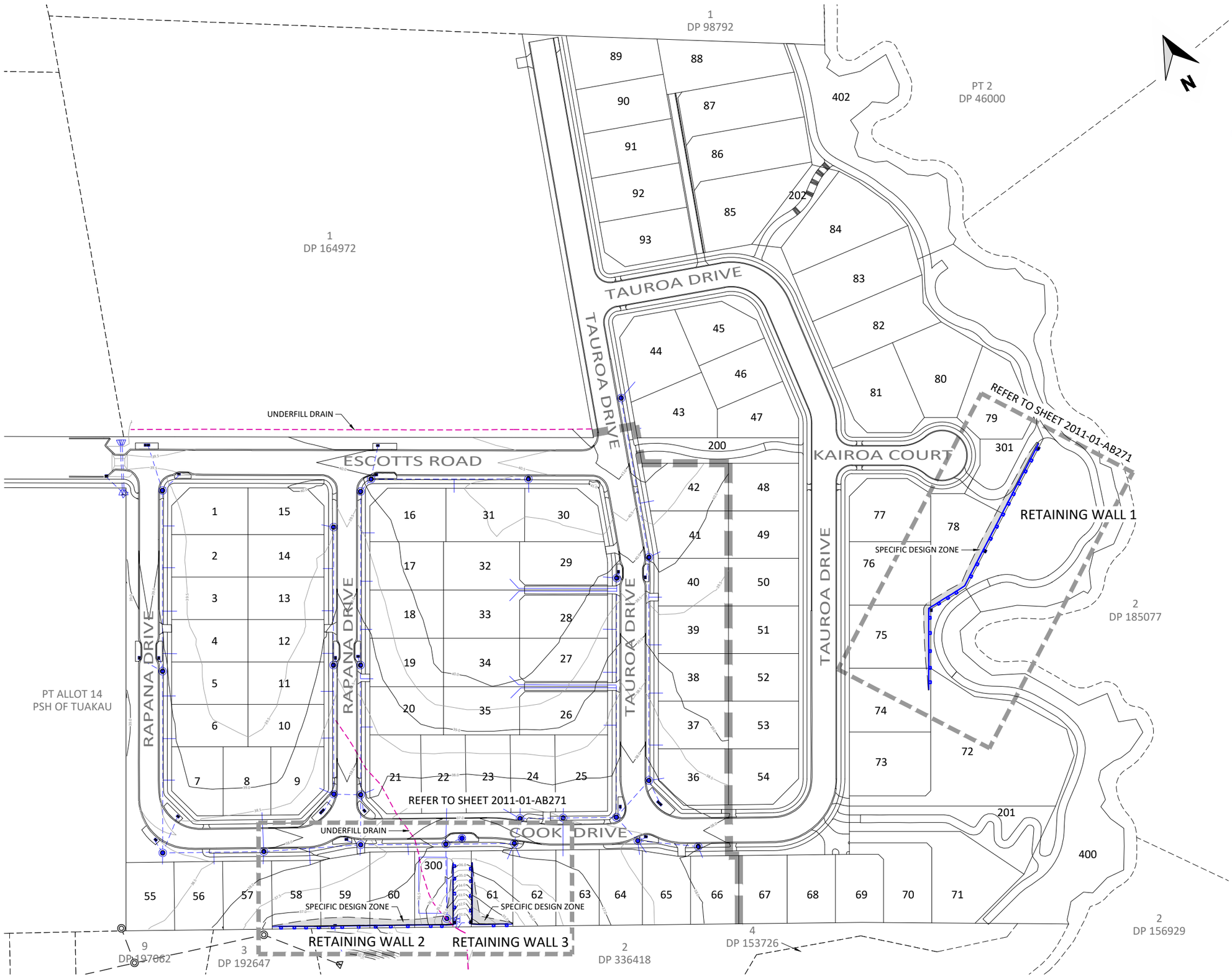
DRAWN:	DKP	DATE: 05.2019
CHECKED:	MRR	DATE: 26.06.19
APPROVED:	RJP	DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
ISOPACH ASBUILT PLAN - STAGE 1
STRIPPED SURFACE TO SUBGRADE SURFACE
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB225 REV: A



LEGEND

- EXISTING CONTOUR
- ASBUILT MINOR CONTOUR
- 10.0 ASBUILT MAJOR CONTOUR
- EARTHWORK EXTENT
- ASBUILT SUB-SOIL DRAIN
- ASBUILT RETAINING WALL
- STAGE BOUNDARY
- STORMWATER LINE AND MANHOLE
- STORMWATER CATCHPIT
- SCRUFFY DOME INLET/OUTLET MANHOLE
- STORMWATER INLET
- STORMWATER OUTLET

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT & NZTM.
2. ALL LEVELS ARE IN METERS AND IN TERMS OF AUCKLAND VERTICAL DATUM.
3. THE SURVEY POSITION OF THE RETAINING WALLS SHOWN HAVE BEEN SUPPLIED BY THE CONTRACTOR.
4. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE RETAINING WALL AND SPOT HEIGHTS SHOWN ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

20.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	AS BUILT	MRR	20.06.19

DRAWN:	DKP	DATE: 05.2019
CHECKED:	MRR	DATE: 19.06.19
APPROVED:	RJP	DATE: 20.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
RETAINING WALL ASBUILT PLAN
STAGES 1 & 2 - OVERALL LAYOUT
SUB0311/18 & LUC0489/18

ISSUE STATUS: AS BUILT
SCALE: (A1/A3) 1:750 / 1:1500
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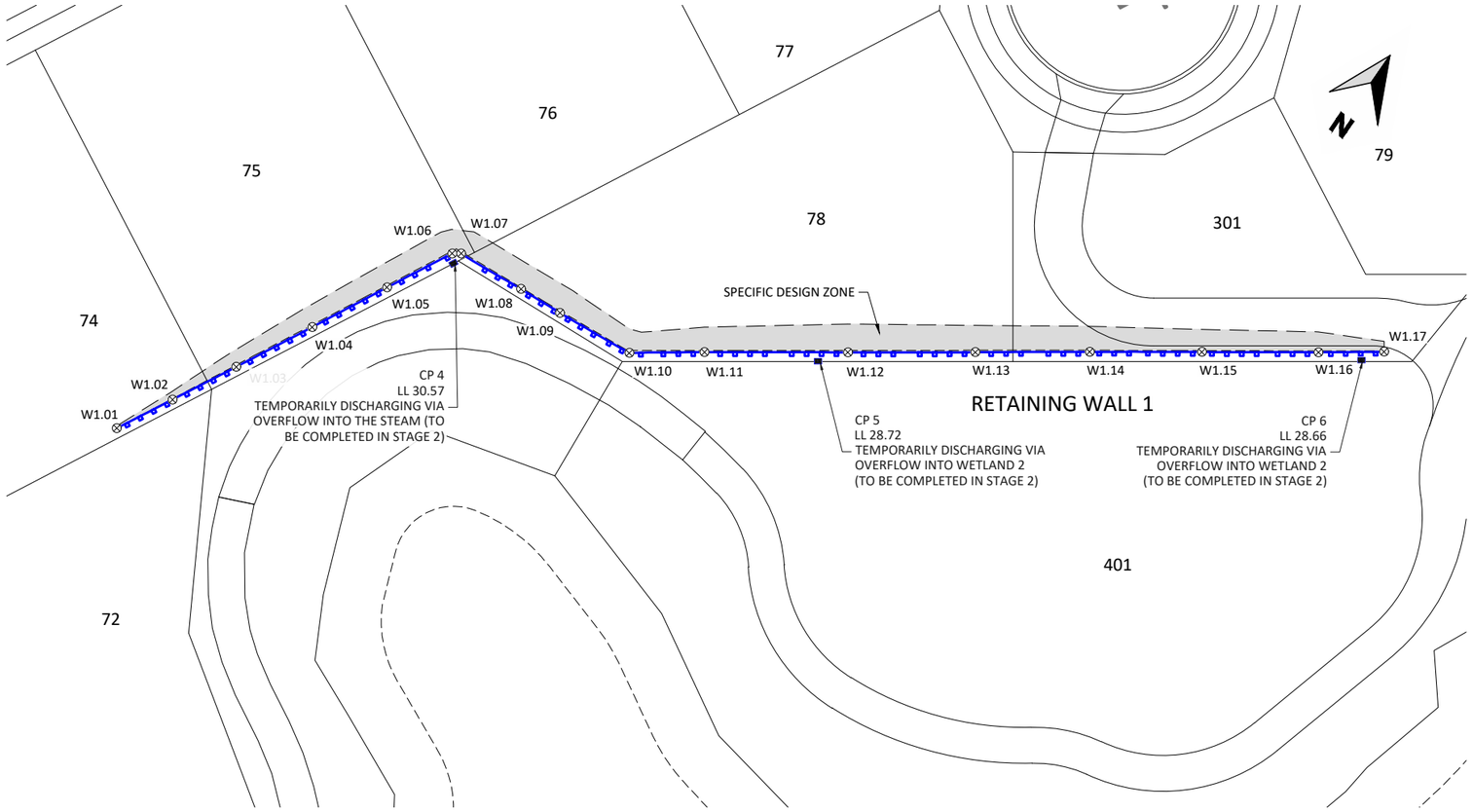
DRAWING NUMBER: 2011-01-AB270 REV: A



NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT & NZTM.
2. ALL LEVELS ARE IN METERS AND IN TERMS OF AUCKLAND VERTICAL DATUM.
3. THE SURVEY POSITION OF THE RETAINING WALLS SHOWN HAVE BEEN SUPPLIED BY THE CONTRACTOR.
4. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE RETAINING WALL AND SPOT HEIGHTS SHOWN ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

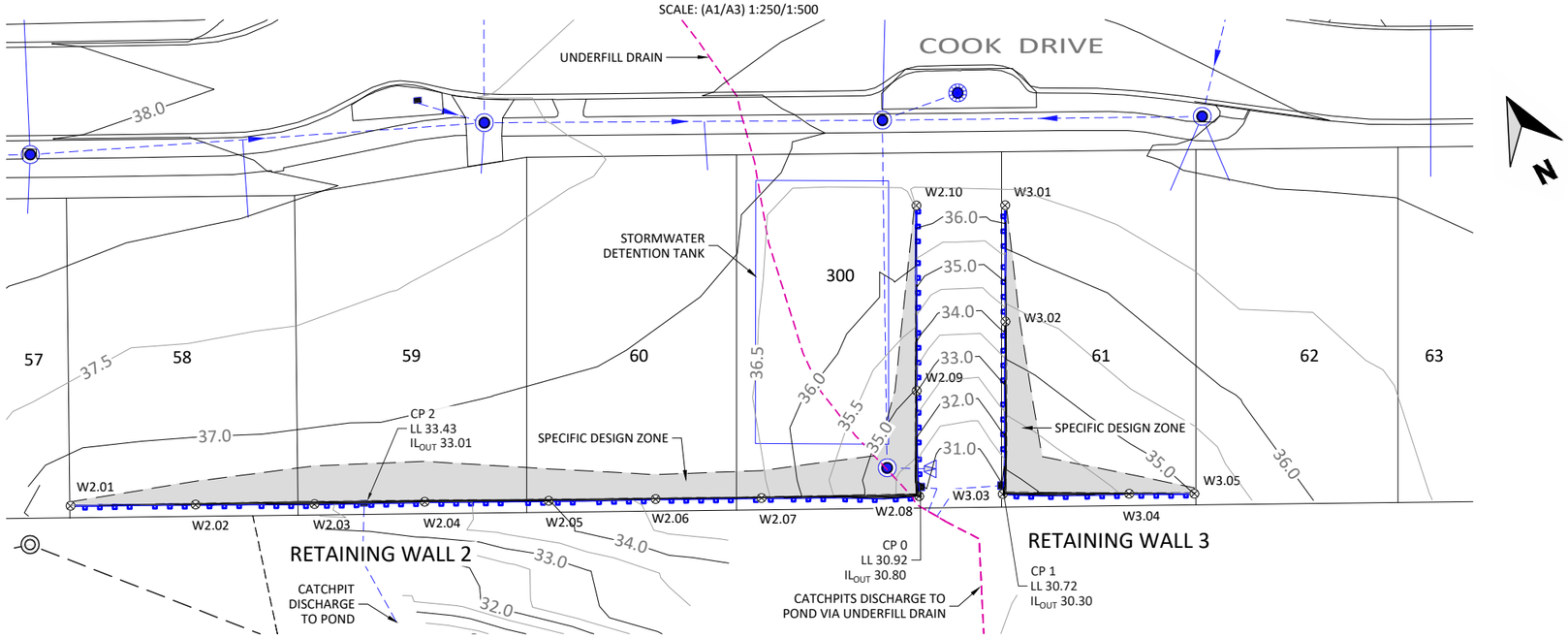
20.06.19
DATE

LEGEND

- EXISTING CONTOUR
- ASBUILT MINOR CONTOUR
- 10.0 ASBUILT MAJOR CONTOUR
- EARTHWORK EXTENT
- ASBUILT SUB-SOIL DRAIN
- ASBUILT RETAINING WALL
- STAGE BOUNDARY
- STORMWATER LINE AND MANHOLE
- STORMWATER CATCHPIT
- SCRUFFY DOME INLET/OUTLET MANHOLE
- STORMWATER INLET
- STORMWATER OUTLET

SCHEDULE OF COORDINATES
RETAINING WALLS 1-3-GD2000

POINT No.	mE	mN	LEVEL BOTTOM	LEVEL TOP	HEIGHT (m)
W1.01	416476.23	757038.70	32.43	32.59	0.16
W1.02	416478.74	757043.31	31.94	32.54	0.60
W1.03	416481.59	757048.59	31.24	32.50	1.26
W1.04	416484.95	757054.93	30.80	32.48	1.68
W1.05	416488.24	757061.22	30.61	32.47	1.86
W1.06	416491.15	757066.64	30.47	32.49	2.02
W1.07	416491.77	757067.07	30.38	32.49	2.11
W1.08	416497.58	757067.45	29.64	31.73	2.09
W1.09	416501.40	757067.65	29.13	31.27	2.14
W1.10	416508.09	757068.15	28.49	30.51	2.02
W1.11	416513.25	757071.77	28.62	30.71	2.09
W1.12	416523.16	757078.54	28.73	31.10	2.37
W1.13	416531.96	757084.58	29.21	31.46	2.25
W1.14	416539.85	757090.02	29.59	31.73	2.14
W1.15	416547.61	757095.32	28.98	30.87	1.89
W1.16	416555.68	757100.82	28.29	30.00	1.71
W1.17	416560.19	757103.96	28.65	29.52	0.87
W2.01	416204.39	757078.34	36.35	36.69	0.34
W2.02	416213.72	757073.48	34.69	36.64	1.95
W2.03	416222.56	757068.80	33.55	36.68	3.13
W2.04	416230.84	757064.59	33.27	36.68	3.41
W2.05	416240.07	757059.76	33.99	36.65	2.66
W2.06	416248.08	757055.66	34.61	36.68	2.07
W2.07	416255.99	757051.54	34.33	36.64	2.31
W2.08	416267.75	757045.43	30.70	34.18	3.48
W2.09	416271.74	757053.33	33.04	34.99	1.95
W2.10	416279.06	757067.09	36.37	36.51	0.14
W3.01	416285.65	757063.58	36.29	36.40	0.11
W3.02	416281.08	757054.94	34.07	35.34	1.27
W3.03	416274.05	757042.27	30.66	33.81	3.15
W3.04	416283.43	757037.28	32.91	34.57	1.66
W3.05	416288.29	757034.70	34.52	35.01	0.49



REV	REVISION DETAILS	BY	DATE
A	AS BUILT	MRR	20.06.19

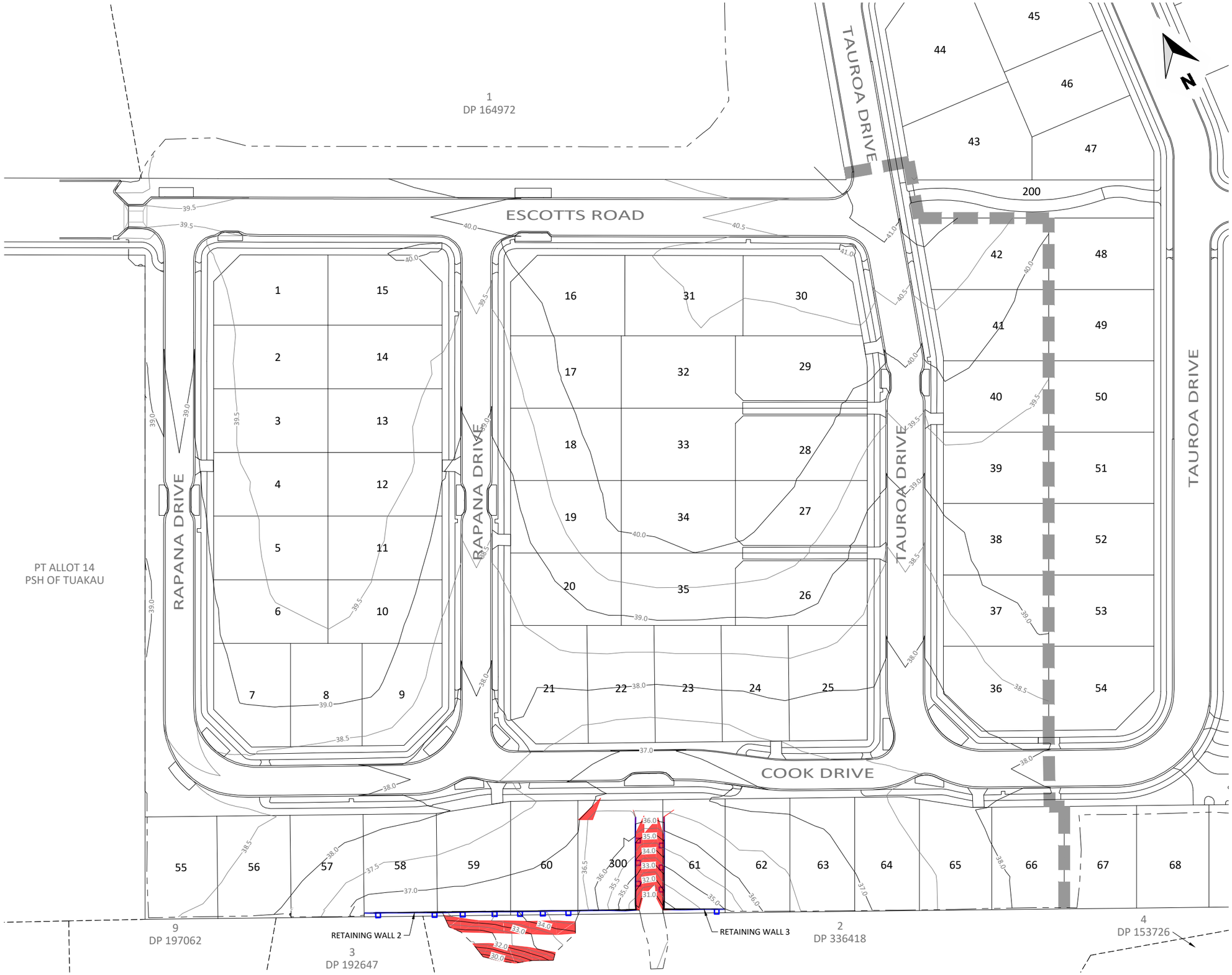
DRAWN:	DKP	DATE: 05.2019
CHECKED:	MRR	DATE: 19.06.19
APPROVED:	RJP	DATE: 20.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
RETAINING WALL ASBUILT PLAN
STAGES 1 & 2 - DETAIL SHEET
SUB0311/18 & LUC0489/18

ISSUE STATUS: AS BUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB271 REV: A



LEGEND

- EXISTING CONTOUR
- ASBUILT MINOR CONTOUR
- ASBUILT MAJOR CONTOUR
- EARTHWORK EXTENT
- ASBUILT SUB-SOIL DRAIN
- SLOPES OVER 1 IN 4
- STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE CONTOURS SHOWN ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

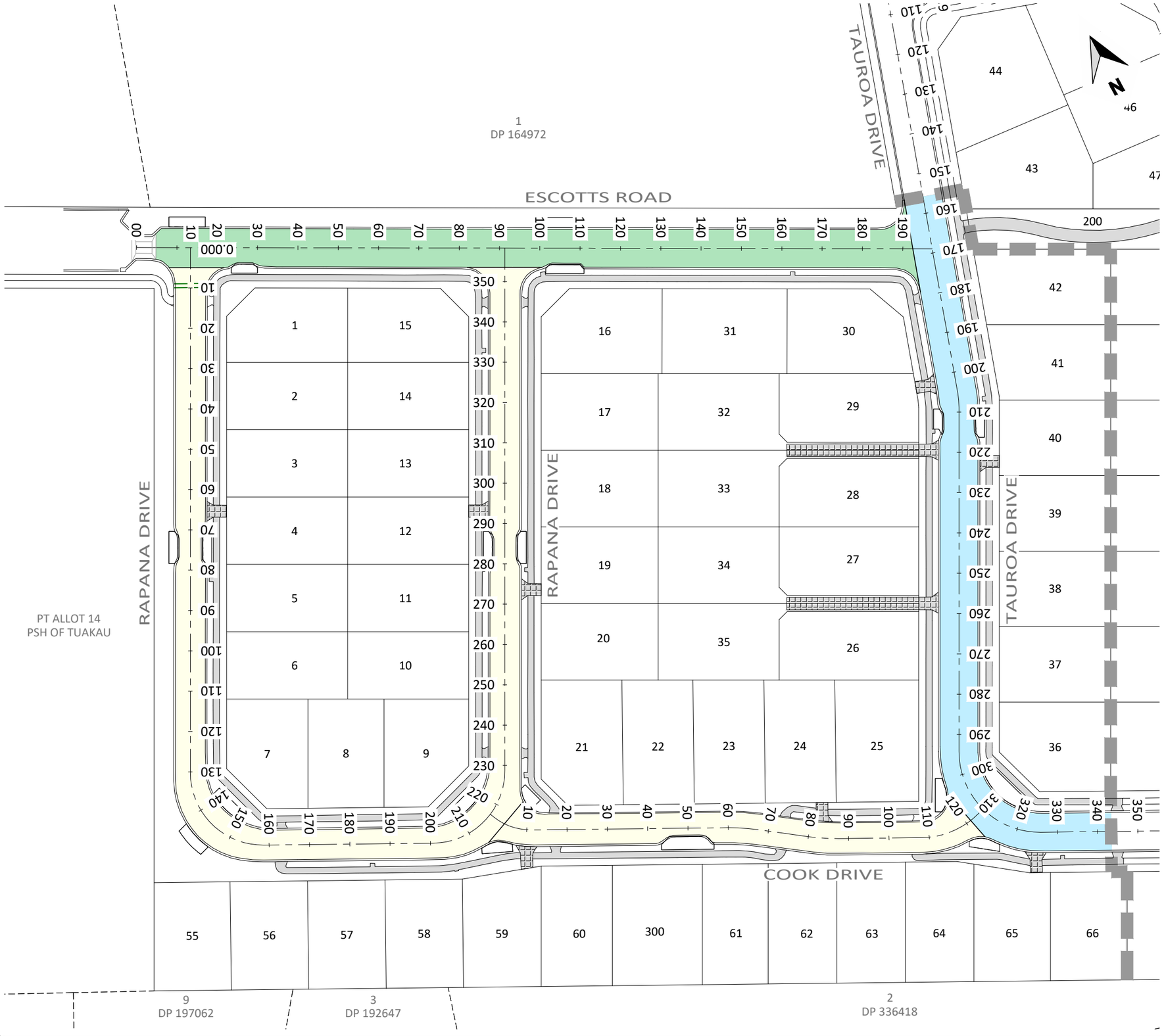
DRAWN:	DKP	DATE: 05.2019
CHECKED:	MRR	DATE: 26.06.19
APPROVED:	RJP	DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
SLOPE ANALYSIS ASBUILT PLAN
STAGE 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB290 REV: A



PAVEMENT CONSTRUCTION SCHEDULE				
ROAD	SUBGRADE STRENGTH	SUBBASE DEPTH (mm)	BASECOURSE DEPTH (mm)	SURFACING DEPTH (mm)
ROAD	CBR	GAP 65	AP40 NZTA M/4	DG10 / AC 14
ESCOTTS ROAD	4%	300	150	30
TAUROA DRIVE	5%	250	150	30
RAPANA DRIVE	4%	300	100	30
COOK DRIVE	4%	300	100	30

OTHER CONCRETE	
FOOTPATHS AND RESERVE PATHS	ROAD CROSSINGS AND ACCESSWAYS
NO REINFORCEMENT	1 LAYERS 665 MESH
100 THICK	150 THICK

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.
3. ALL ROADS ARE STANDARD CONSTRUCTION WITH NO UNDERCUTS OR GEOTEXTILE.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PAVEMENT DEPTHS ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

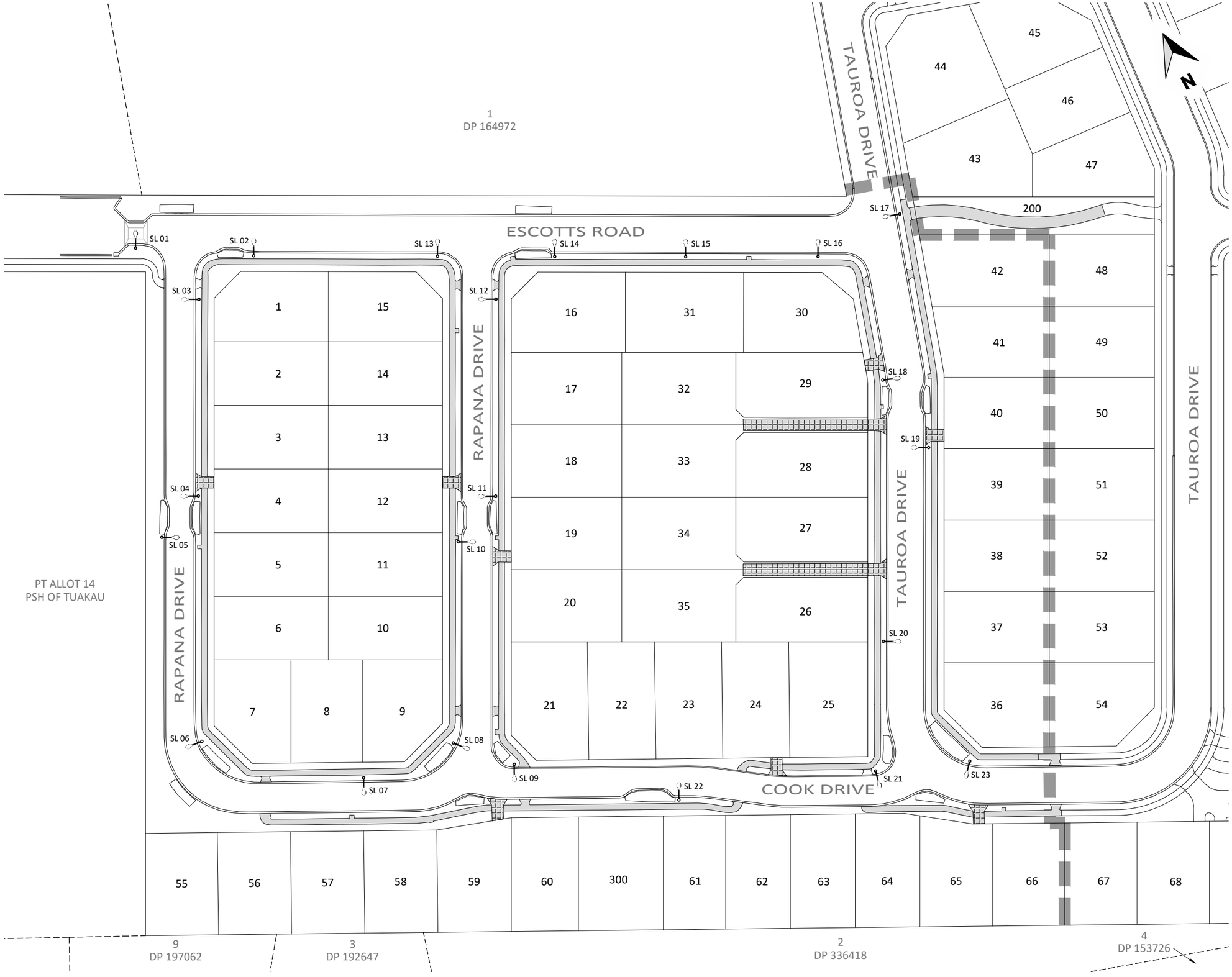
DRAWN: DKP	DATE: 05.2019	
CHECKED: MRR	DATE: 26.06.19	
APPROVED: RJP	DATE: 26.06.19	

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
ROADING PAVEMENT ASBUILT PLAN
STAGE 1 - SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB300 REV: A



LEGEND

ASBUILT

- STREETLIGHT
- SINGLE BLADE ROAD NAME SIGN
- 2 BLADE CROSS ROAD NAME SIGN
- STREET SIGN
- STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.
3. 1-23 STREETLIGHT DETAILS:
   - 3.1. 8m VISULO - MINI STALK (IBEX LIGHTING)
   - 3.2. 1m OUTREACH
   - 3.3. 27.5 WATT EACH
   - 3.4. ZERO DEGREE TILT ANGLE
   - 3.5. CIRCULAR GALVANISED POILE, PAINTED BLACK

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE STREET LIGHTING, SIGN POSITIONS AND ROAD MARKINGS ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK,

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

SCHEDULE OF COORDINATES STREETLIGHTS-GD2000

POINT No.	mE	mN
SL 01	416235.49	757264.41
SL 02	416261.91	757248.07
SL 03	416243.83	757244.74
SL 04	416219.38	757199.30
SL 05	416205.77	757194.23
SL 06	416189.85	757142.04
SL 07	416222.82	757113.61
SL 08	416247.87	757110.57
SL 09	416259.34	757098.11
SL 10	416273.88	757156.56
SL 11	416288.20	757162.50
SL 12	416312.66	757208.04
SL 13	416304.41	757225.23
SL 14	416331.50	757210.67
SL 15	416361.80	757194.42
SL 16	416392.49	757178.08
SL 17	416416.67	757177.82
SL 18	416392.22	757141.48
SL 19	416394.49	757120.19
SL 20	416360.02	757080.89
SL 21	416342.20	757051.87
SL 22	416293.09	757069.48
SL 23	416365.22	757042.47

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

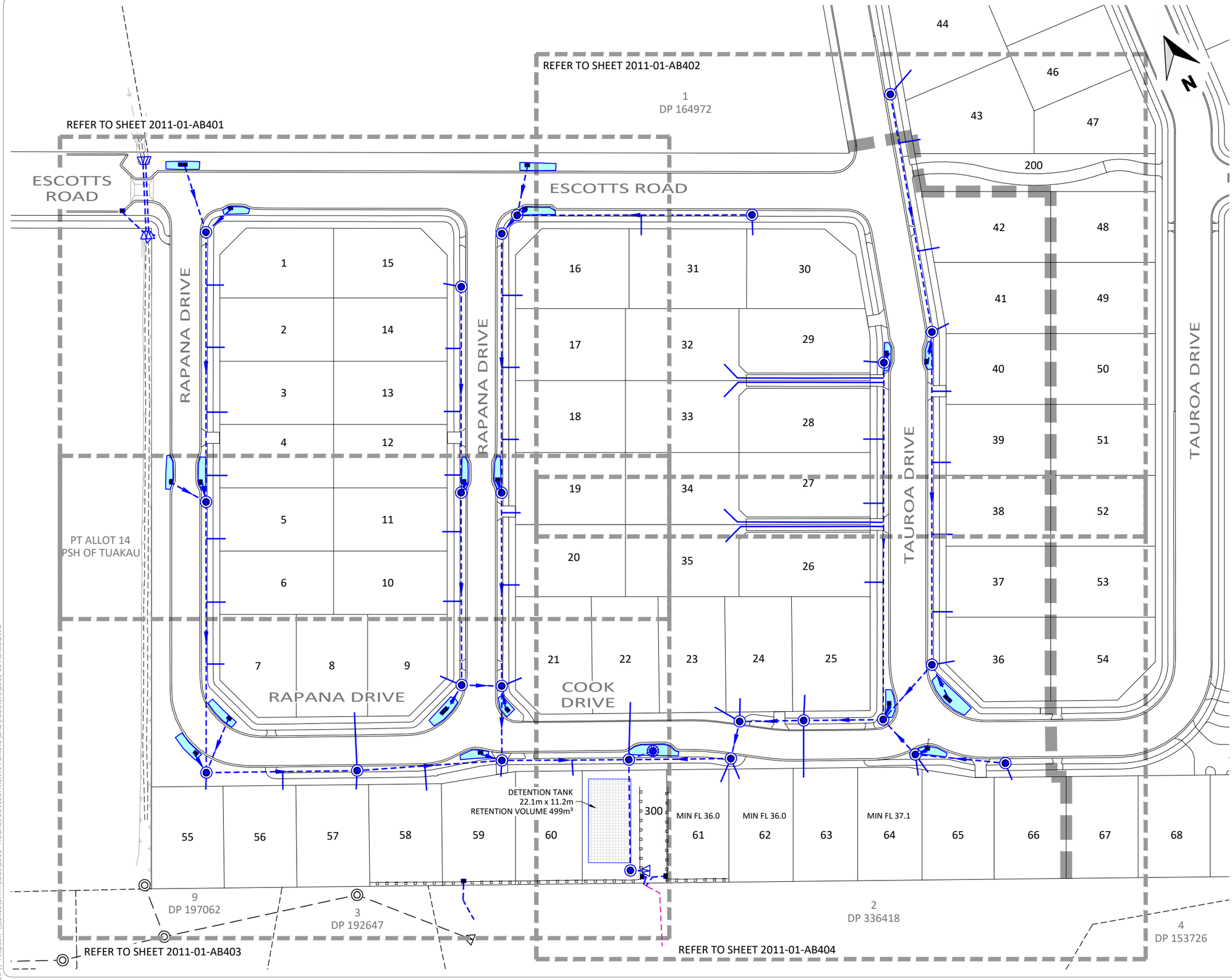
DRAWN: DKP DATE: 05.2019
CHECKED: MRR DATE: 26.06.19
APPROVED: RJP DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
ROADING FEATURES ASBUILT PLAN
STAGE 1 - SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB301 REV: A



LEGEND

EXISTING

- (CR) — PLOTTED FROM COUNCIL RECORDS
- DN1350 SW — STORMWATER LINE AND MANHOLE

ASBUILT

- DN300 — STORMWATER LINE AND MANHOLE
- X.Xm — STORMWATER CONNECTION
- STORMWATER CATCHPIT
- SCRUFFY DOME INLET/OUTLET MANHOLE
- STORMWATER INLET
- STORMWATER OUTLET
- RAIN GARDEN
- RECHARGE PIT
- RAIN GARDEN
- STORMWATER DETENTION TANK
- UNDERFILL DRAIN
- STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL STORMWATER LINES OVER DN150 ARE RCRRJ.
4. ALL DN 100 & DN 150 STORMWATER LINES ARE uPVC DWV SN16 AS/NZ 1260.
5. ALL SINGLE CATCHPIT LEADS ARE DN225 RCRRJ CLASS 4 PIPE.
6. ALL DOUBLE CATCHPIT LEADS ARE DN300 RCRRJ CLASS 4 PIPE.
7. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
8. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
9. SEE SHEET 2011-01-AB405-AB407 FOR RAIN GARDEN DETAILS.
10. SEE SHEET 2011-01-AB407 FOR CO-ORDINATE SCHEDULES.
11. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

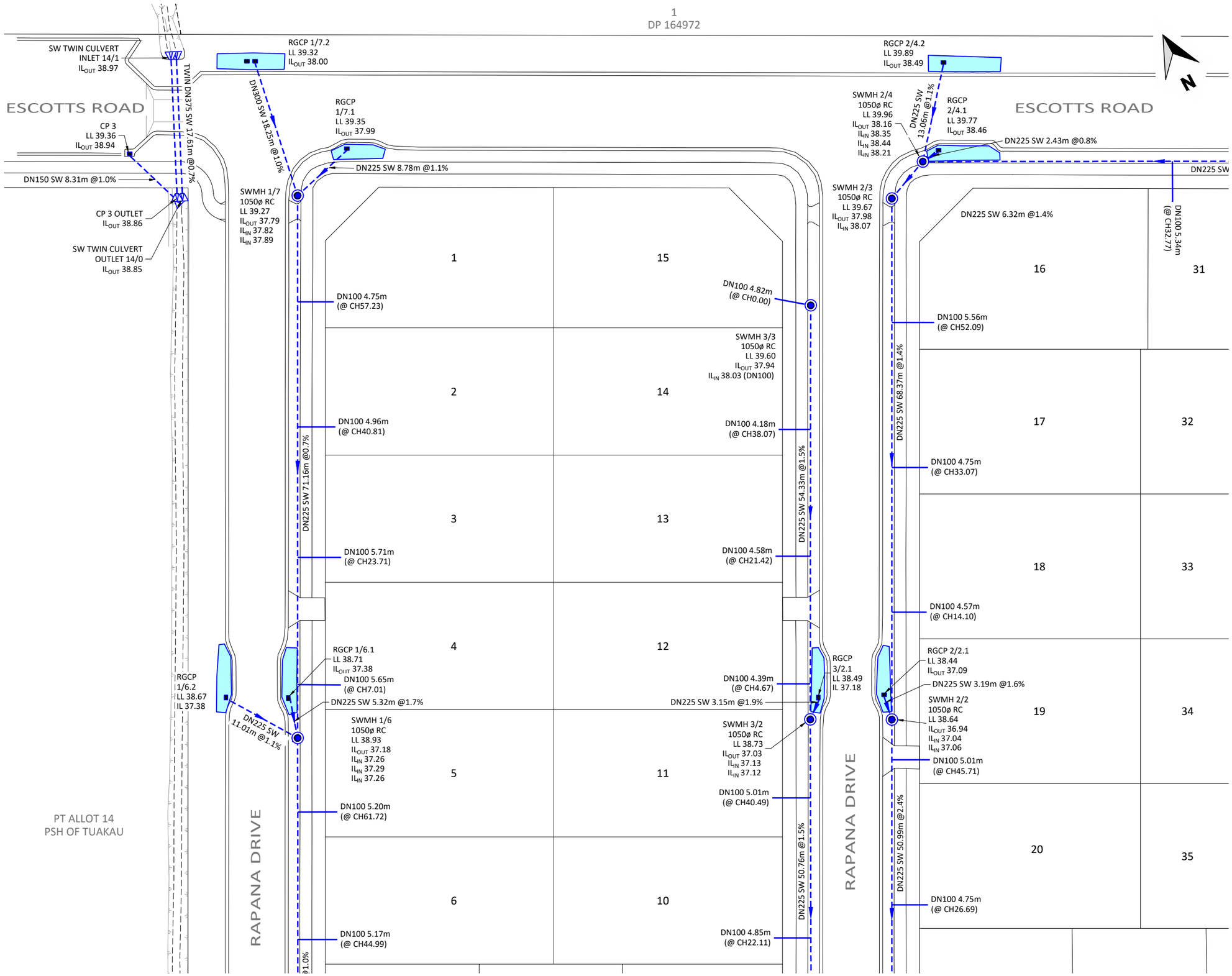
DRAWN: DKP DATE: 05.2019
CHECKED: MRR DATE: 26.06.19
APPROVED: RJP DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
STORMWATER ASBUILT
STAGE 1 - OVERALL LAYOUT
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB400 REV: A



PT ALLOT 14
PSH OF TUAKAU

LEGEND

EXISTING

- (CR) — PLOTTED FROM COUNCIL RECORDS
- DN1350 SW — STORMWATER LINE AND MANHOLE

ASBUILT

- DN300 — STORMWATER LINE AND MANHOLE
- X.Xm — STORMWATER CONNECTION
- STORMWATER CATCHPIT
- SCRUFFY DOME INLET/OUTLET MANHOLE
- STORMWATER INLET
- STORMWATER OUTLET
- RAIN GARDEN
- RECHARGE PIT
- RAIN GARDEN
- STORMWATER DETENTION TANK
- UNDERFILL DRAIN
- STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL STORMWATER LINES OVER DN150 ARE RCRRJ.
4. ALL DN 100 & DN 150 STORMWATER LINES ARE uPVC DWV SN16 AS/NZ 1260.
5. ALL SINGLE CATCHPIT LEADS ARE DN225 RCRRJ CLASS 4 PIPE.
6. ALL DOUBLE CATCHPIT LEADS ARE DN300 RCRRJ CLASS 4 PIPE.
7. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
8. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
9. SEE SHEET 2011-01-AB405-AB407 FOR RAIN GARDEN DETAILS.
10. SEE SHEET 2011-01-AB407 FOR CO-ORDINATE SCHEDULES.
11. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
STORMWATER ASBUILT
STAGE 1 - DETAIL SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB401 REV: A

REFER TO SHEET 2011-01-AB402

1
DP 164972

ESCOTTS ROAD

TAUROA DRIVE

TAUROA DRIVE

SWMH 5/3
1050ø RC
LL 41.24
IL_{OUT} 38.54
IL_{IN} 39.61

DN100 8.47m
(@ CH0.00)

DN100 5.78m
(@ CH50.60)

DN225 SW 63.66m @1.2%

DN100 5.84m
(@ CH21.65)

DN100 5.01m
(@ CH0.00)

SWMH 5/2
1050ø RC
LL 40.03
IL_{OUT} 37.69
IL_{IN} 38.13
IL_{IN} 37.77
IL_{IN} 38.14 (DN100)

DN100 5.15m
(@ CH72.15)

DN100 5.05m
(@ CH53.40)

DN225 SW 87.81m @1.8%

DN100 5.57m

SWMH 2/5
1050ø RC
LL 40.58
IL_{OUT} 38.57
IL_{IN} 38.72 (DN100)

DN225 SW 2.43m @0.8%

DN225 SW 61.97m @0.6%

DN225 SW 6.32m @1.4%

DN100 5.34m
(@ CH32.77)

DN100 5.36m
(@ CH0.00)

SWMH 4/5
1050ø RC
LL 39.82
IL_{OUT} 37.98
IL_{IN} 38.37 (DN100)
IL_{IN} 38.09

RGCP 4/5.1
LL 39.51
IL_{OUT} 38.15

DN225 SW
7.87m @0.6%

RGCP 5/2.1
LL 39.50
IL_{OUT} 38.18

DN225 SW
2.73m @2.2%

DN100 5.37m
(@ CH0.00)

DN100 38.70m
(@ CH90.12)

DN100 38.44m
(@ CH88.94)

DN100 5.41m
(@ CH74.00)

DN100 5.40m
(@ CH57.07)

DN100 38.59m
(@ CH52.06)

DN100 37.67m
(@ CH50.93)

44 46 43 47 200 42 48 41 49 40 50 39 51 38 52 16 31 30 17 32 29 18 33 28 19 34 27

N

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

DN1350 SW STORMWATER LINE AND MANHOLE

ASBUILT

DN300 STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STORMWATER CATCHPIT

SCRUFFY DOME INLET/OUTLET MANHOLE

STORMWATER INLET

STORMWATER OUTLET

RAIN GARDEN

RECHARGE PIT

RAIN GARDEN

STORMWATER DETENTION TANK

UNDERFILL DRAIN

STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL STORMWATER LINES OVER DN150 ARE RCRRJ.
4. ALL DN 100 & DN 150 STORMWATER LINES ARE uPVC DWV SN16 AS/NZ 1260.
5. ALL SINGLE CATCHPIT LEADS ARE DN225 RCRRJ CLASS 4 PIPE.
6. ALL DOUBLE CATCHPIT LEADS ARE DN300 RCRRJ CLASS 4 PIPE.
7. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
8. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
9. SEE SHEET 2011-01-AB405-AB407 FOR RAIN GARDEN DETAILS.
10. SEE SHEET 2011-01-AB407 FOR CO-ORDINATE SCHEDULES.
11. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN: DKP DATE: 05.2019
CHECKED: MRR DATE: 26.06.19
APPROVED: RJP DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
STORMWATER ASBUILT
STAGE 1 - DETAIL SHEET 2
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB402 REV: A

PT ALLOT 14
PSH OF TUAKAU

RAPANA DRIVE

RGCP 1/6.2
LL 38.67
IL 37.38

DN225 SW 11.01m @1.1%

RGCP 1/6.1
LL 38.71
IL_{OUT} 37.38

DN100 5.65m (@ CH7.01)

DN225 SW 5.32m @1.7%

SWMH 1/6
1050ø RC
LL 38.93
IL_{OUT} 37.18
IL_{IN} 37.26
IL_{IN} 37.29
IL_{IN} 37.26

DN100 5.20m (@ CH61.72)

DN100 5.17m (@ CH44.99)

DN300 SW 71.43m @1.0%

DN100 4.82m (@ CH28.66)

RGCP 1/5.2
LL 38.15
IL_{OUT} 36.74

DN225 SW 15.13m @0.8%

RGCP 1/5.1
LL 38.26
IL_{OUT} 36.97

DN225 SW 5.70m @0.7%

RAPANA DRIVE

DN100 4.39m (@ CH4.67)

DN225 SW 3.15m @1.9%

RGCP 3/2.1
LL 38.49
IL 37.18

SWMH 3/2
1050ø RC
LL 38.73
IL_{OUT} 37.03
IL_{IN} 37.13
IL_{IN} 37.12

DN100 5.01m (@ CH40.49)

DN225 SW 50.76m @1.5%

DN100 4.85m (@ CH22.11)

SWMH 3/1
1050ø RC
LL 37.95
IL_{OUT} 36.17
IL_{IN} 36.26
IL_{IN} 36.70
IL_{IN} 36.27

DN100 5.77m (@ CH1.39)

DN225 SW 10.56m @4.0%

DN300 SW 7.70m @0.9%

DN100 15.41m (@ CH0.00)

RGCP 3/1.1
LL 37.67
IL_{OUT} 36.33

DN225 SW 5.83m @0.9%

RGCP 1/3.1
LL 37.55
IL_{OUT} 36.16

DN300 SW 38.29m @1.2%

DN300 SW 39.79m @2.0%

RAPANA DRIVE

RGCP 2/2.1
LL 38.44
IL_{OUT} 37.09

DN225 SW 3.19m @1.6%

SWMH 2/2
1050ø RC
LL 38.64
IL_{OUT} 36.94
IL_{IN} 37.04
IL_{IN} 37.06

DN100 5.01m (@ CH45.71)

DN225 SW 50.99m @2.4%

DN100 4.75m (@ CH26.69)

SWMH 2/1
1050ø RC
LL 37.87
IL_{OUT} 35.60
IL_{IN} 35.75
IL_{IN} 35.74
IL_{IN} 36.56 (DN100)
IL_{IN} 36.18

DN100 5.73m (@ CH0.00)

DN225 SW 6.66m @0.9%

DN100 15.19m (@ CH0.00)

RGCP 2/1.1
LL 37.57
IL_{OUT} 36.24

DN300 SW 19.65m @5.3%

COOK DRIVE

DN375 SW 6.74m @0.9%

DN375 SW 33.50m @1.9%

DN100 4.27m (@ CH0.00)

SWMH 1/3
1050ø RC
LL 37.58
IL_{OUT} 34.43
IL_{IN} 34.55
IL_{IN} 36.11
IL_{IN} 34.56

DN100 4.11m (@ CH14.97)

DETENTION TANK
22.1m x 11.2m
RETENTION
VOLUME 499m³

2 x DN150 SW 29.23m @0.6%
2 x DN150 SW 29.23m @0.6%
2 x DN150 SW 29.23m @0.5%

DN600 SW 3.13m @0.6%

SWMH 1/1
2050ø RC
LL 34.66
LL 34.78
IL_{OUT} 31.32
2xIL_{IN} 31.88
2xIL_{IN} 32.05
2xIL_{IN} 32.25
DN50 ORIFICE IL 31.88
DN300 ORIFICE IL 32.61
DN375 ORIFICE IL 33.33
TOP OF WEIR 34.00
SEE 2011-01-AB407 FOR MANHOLE DETAIL

CP 0
LL 30.92
IL_{OUT} 30.80

SWMH 1/5
1050ø RC
LL 38.60
IL_{OUT} 36.36
IL_{IN} 37.03 (DN100)
IL_{IN} 36.93
IL_{IN} 36.47
IL_{IN} 36.62

DN100 4.49m (@ CH0.00)

DN100 4.78m (@ CH19.65)

DN100 4.96m (@ CH0.00)

SWMH 1/4
1050ø RC
LL 38.13
IL_{OUT} 35.02
IL_{IN} 36.38 (DN100)
IL_{IN} 35.55
IL_{IN} 36.02 (DN100)

DN100 6.56m (@ CH20.35)

CP 2
LL 33.43
IL_{OUT} 33.01

DISCHARGE TO POND

4 5 6 7 8 9 10 11 12 19 20 21 22 35 55 56 57 58 59 60 300

9
DP 197062

3
DP 192647

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS
DN1350 SW STORMWATER LINE AND MANHOLE

ASBUILT

DN300 STORMWATER LINE AND MANHOLE
X.Xm STORMWATER CONNECTION
STORMWATER CATCHPIT
SCRUFFY DOME INLET/OUTLET MANHOLE
STORMWATER INLET
STORMWATER OUTLET
RAIN GARDEN
RECHARGE PIT
RAIN GARDEN
STORMWATER DETENTION TANK
UNDERFILL DRAIN
STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL STORMWATER LINES OVER DN150 ARE RCRRJ.
4. ALL DN 100 & DN 150 STORMWATER LINES ARE uPVC DWV SN16 AS/NZ 1260.
5. ALL SINGLE CATCHPIT LEADS ARE DN225 RCRRJ CLASS 4 PIPE.
6. ALL DOUBLE CATCHPIT LEADS ARE DN300 RCRRJ CLASS 4 PIPE.
7. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
8. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
9. SEE SHEET 2011-01-AB405-AB407 FOR RAIN GARDEN DETAILS.
10. SEE SHEET 2011-01-AB407 FOR CO-ORDINATE SCHEDULES.
11. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

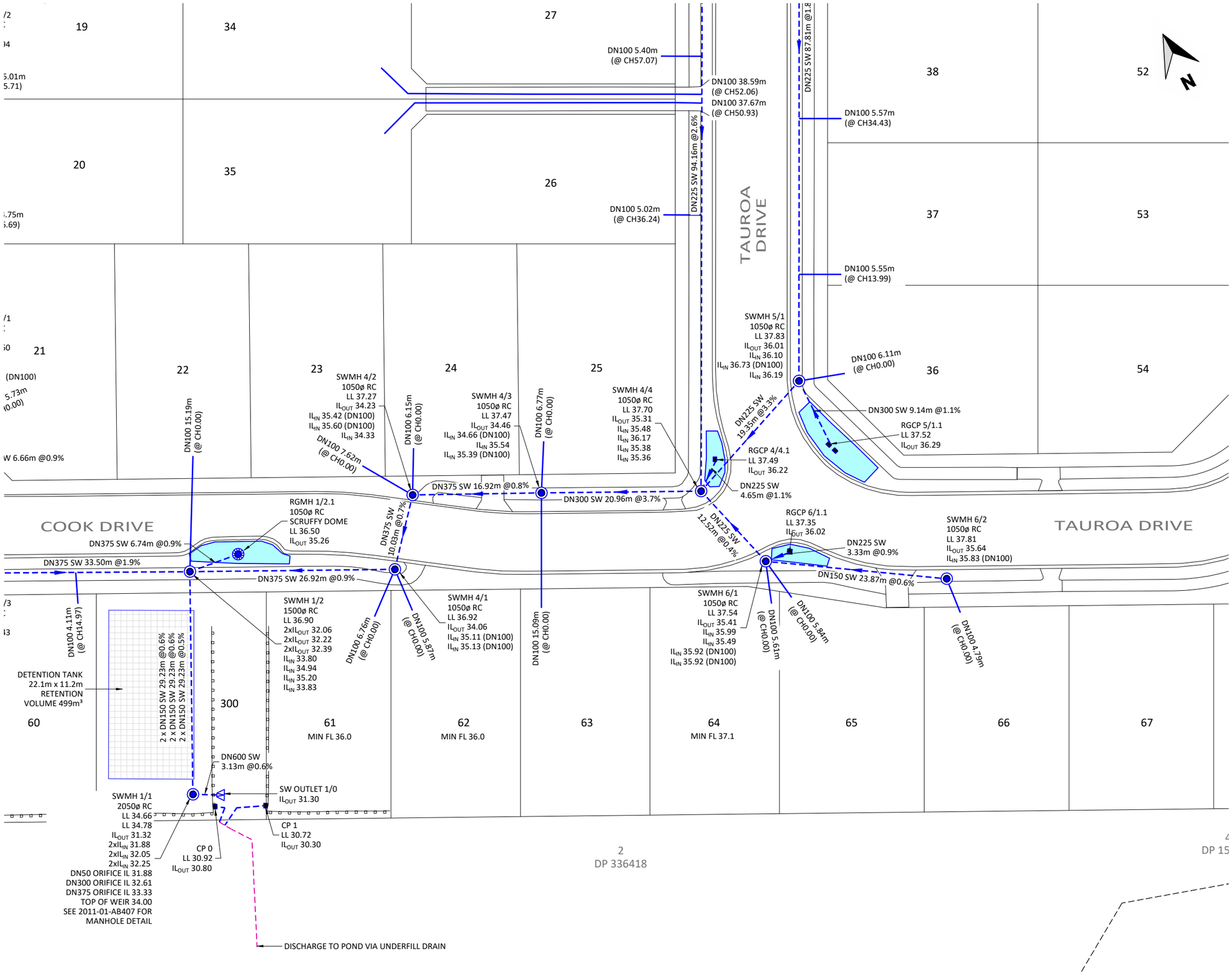
DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
STORMWATER ASBUILT
STAGE 1 - DETAIL SHEET 3
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB403 REV: A



LEGEND

EXISTING

- (CR) — PLOTTED FROM COUNCIL RECORDS
- DN1350 SW — STORMWATER LINE AND MANHOLE

ASBUILT

- DN300 — STORMWATER LINE AND MANHOLE
- X.Xm — STORMWATER CONNECTION
- STORMWATER CATCHPIT
- SCRUFFY DOME INLET/OUTLET MANHOLE
- STORMWATER INLET
- STORMWATER OUTLET
- RAIN GARDEN
- RECHARGE PIT
- RAIN GARDEN
- STORMWATER DETENTION TANK
- UNDERFILL DRAIN
- STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
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3. ALL STORMWATER LINES OVER DN150 ARE RCRRJ.
4. ALL DN 100 & DN 150 STORMWATER LINES ARE uPVC DWV SN16 AS/NZ 1260.
5. ALL SINGLE CATCHPIT LEADS ARE DN225 RCRRJ CLASS 4 PIPE.
6. ALL DOUBLE CATCHPIT LEADS ARE DN300 RCRRJ CLASS 4 PIPE.
7. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
8. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
9. SEE SHEET 2011-01-AB405-AB407 FOR RAIN GARDEN DETAILS.
10. SEE SHEET 2011-01-AB407 FOR CO-ORDINATE SCHEDULES.
11. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

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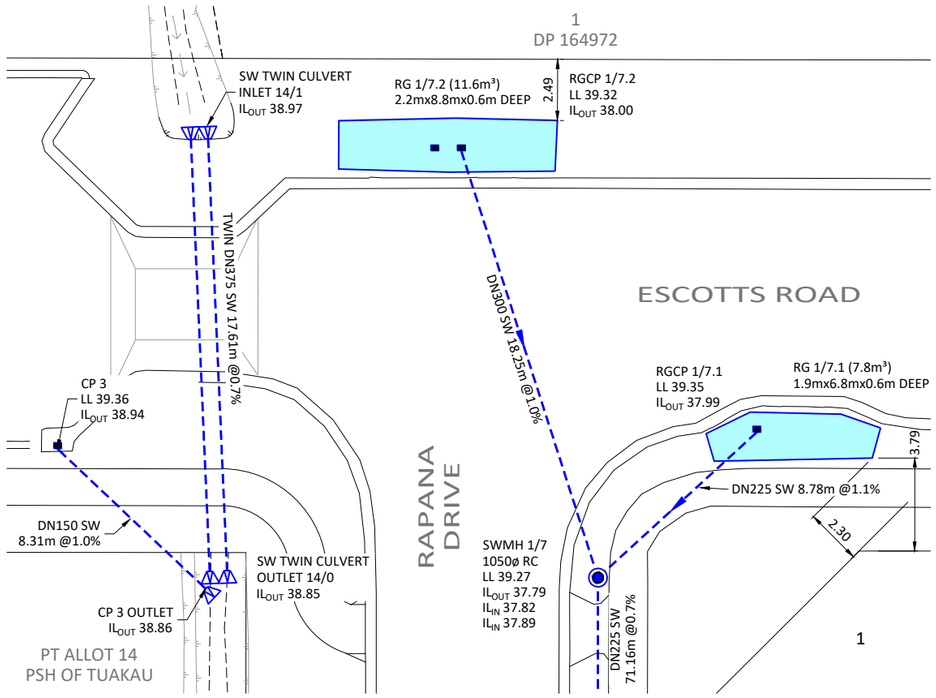
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

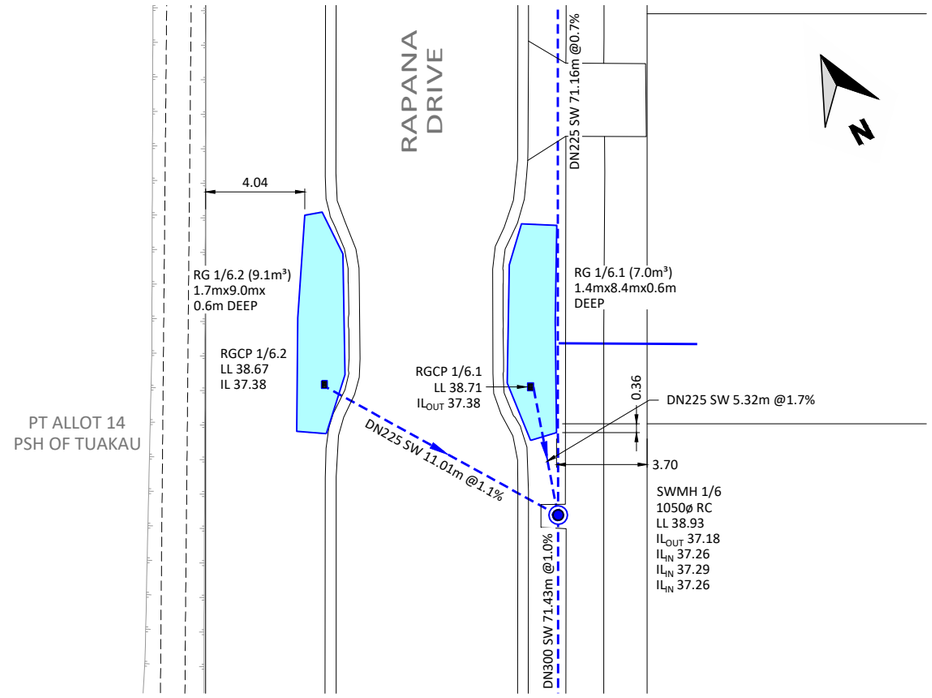
SHEET TITLE:
STORMWATER ASBUILT
STAGE 1 - DETAIL SHEET 4
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB404 REV: A



RAIN GARDEN DETAIL 1

SCALE: (A1/A3) 1:125/1:250



RAIN GARDEN DETAIL 2

SCALE: (A1/A3) 1:125/1:250

LEGEND

EXISTING

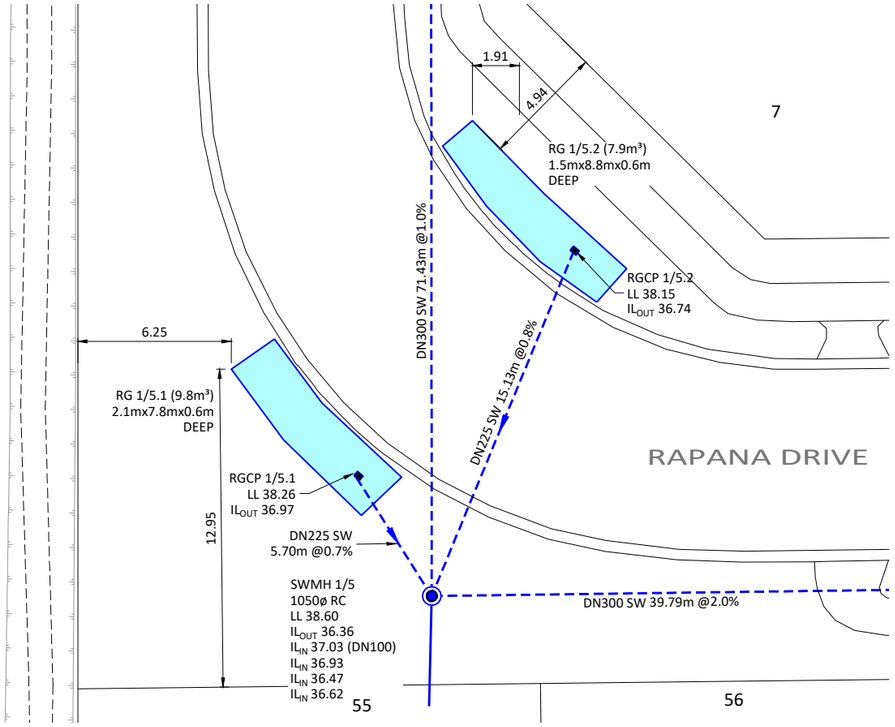
- (CR) — PLOTTED FROM COUNCIL RECORDS
- DN1350 SW — STORMWATER LINE AND MANHOLE

ASBUILT

- DN300 — STORMWATER LINE AND MANHOLE
- X.Xm — STORMWATER CONNECTION
- STORMWATER CATCHPIT
- SCRUFFY DOME INLET/OUTLET MANHOLE
- STORMWATER INLET
- STORMWATER OUTLET
- RAIN GARDEN
- RECHARGE PIT
- RAIN GARDEN
- STORMWATER DETENTION TANK
- UNDERFILL DRAIN
- STAGE BOUNDARY

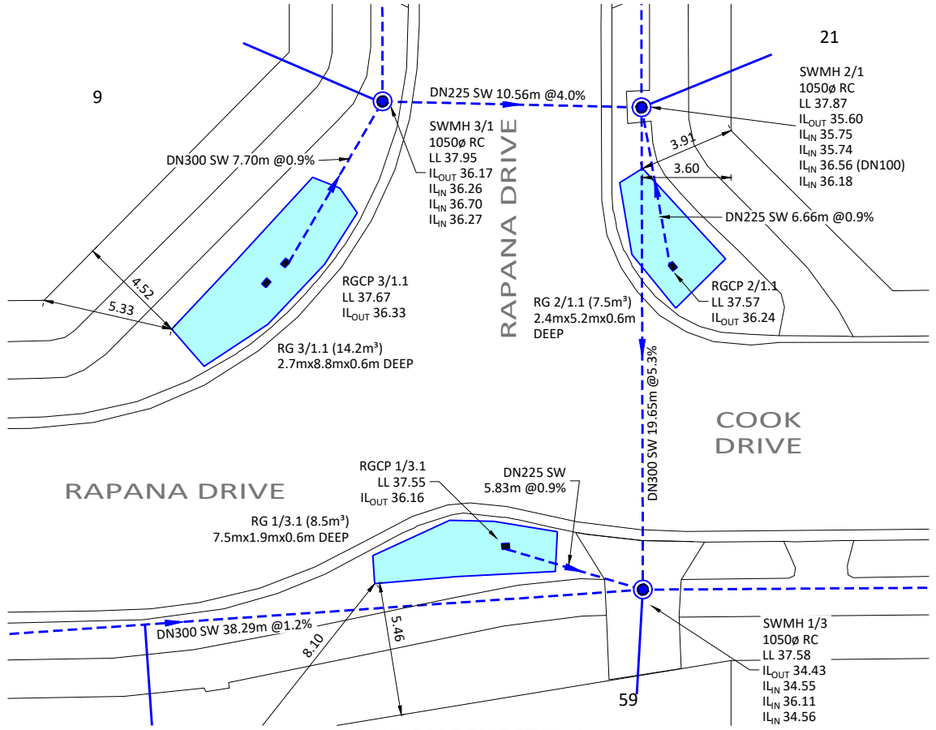
NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL STORMWATER LINES OVER DN150 ARE RCRRJ.
4. ALL DN 100 & DN 150 STORMWATER LINES ARE uPVC DWV SN16 AS/NZ 1260.
5. ALL SINGLE CATCHPIT LEADS ARE DN225 RCRRJ CLASS 4 PIPE.
6. ALL DOUBLE CATCHPIT LEADS ARE DN300 RCRRJ CLASS 4 PIPE.
7. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
8. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
9. SEE SHEET 2011-01-AB405-AB407 FOR RAIN GARDEN DETAILS.
10. SEE SHEET 2011-01-AB407 FOR CO-ORDINATE SCHEDULES.
11. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.



RAIN GARDEN DETAIL 3

SCALE: (A1/A3) 1:125/1:250



RAIN GARDEN DETAIL 4

SCALE: (A1/A3) 1:125/1:250

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

KEYPLAN

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

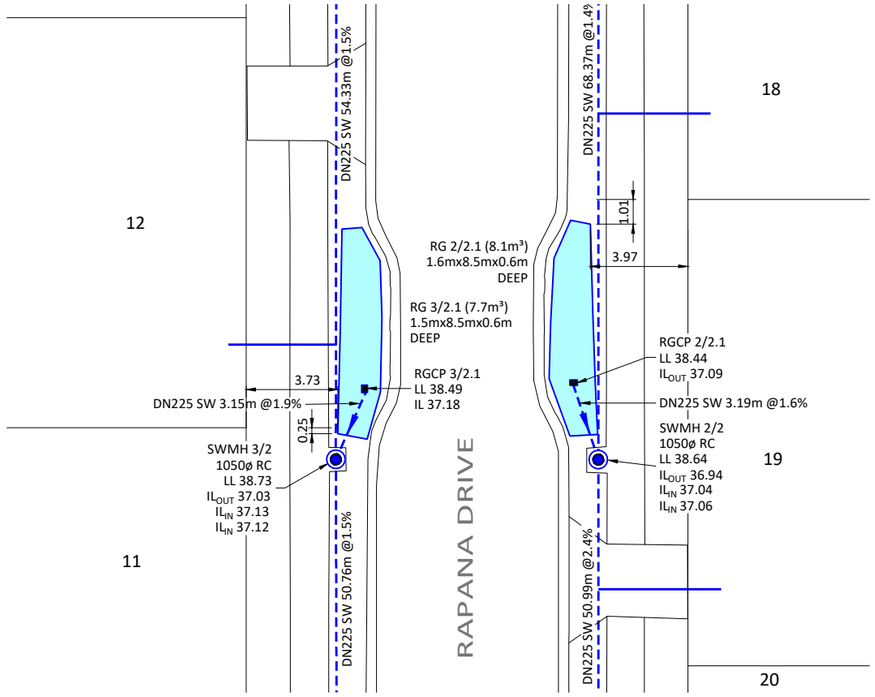
DRAWN: DKP DATE: 05.2019
CHECKED: MRR DATE: 26.06.19
APPROVED: RJP DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

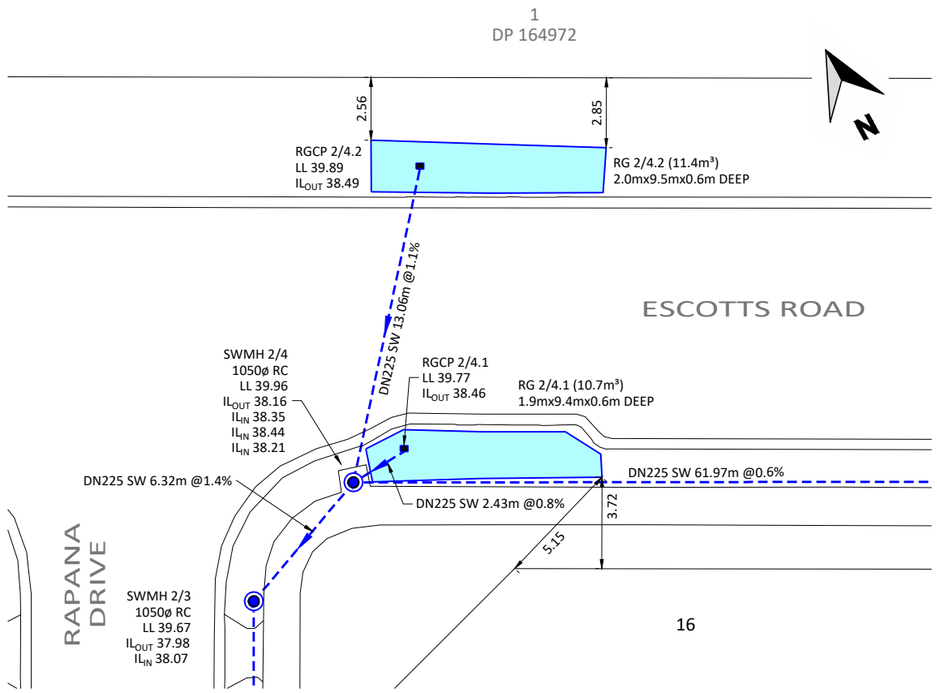
SHEET TITLE:
STORMWATER ASBUILT
STAGE 1 - RAIN GARDEN - DETAIL SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:125 / 1:250
SCALE BAR 1:250@A3 0 2.5 5 7.5 10 12.5m
DRAWING NUMBER: 2011-01-AB405 REV: A



RAIN GARDEN DETAIL 5

SCALE: (A1/A3) 1:125/1:250



RAIN GARDEN DETAIL 6

SCALE: (A1/A3) 1:125/1:250

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

DN1350 SW STORMWATER LINE AND MANHOLE

ASBUILT

DN300 STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STORMWATER CATCHPIT

SCRUFFY DOME INLET/OUTLET MANHOLE

STORMWATER INLET

STORMWATER OUTLET

RAIN GARDEN

RECHARGE PIT

RAIN GARDEN

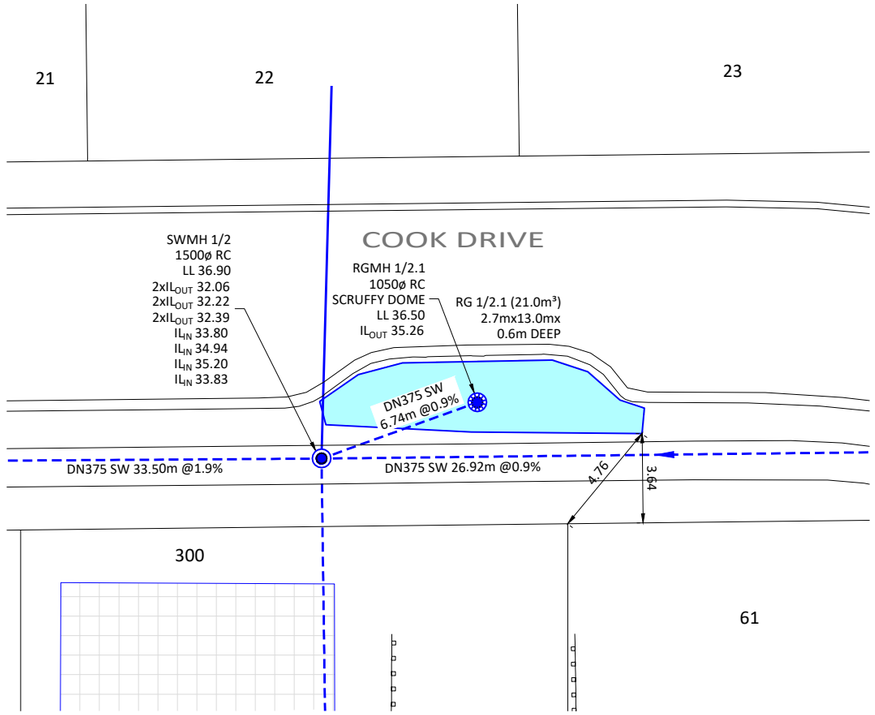
STORMWATER DETENTION TANK

UNDERFILL DRAIN

STAGE BOUNDARY

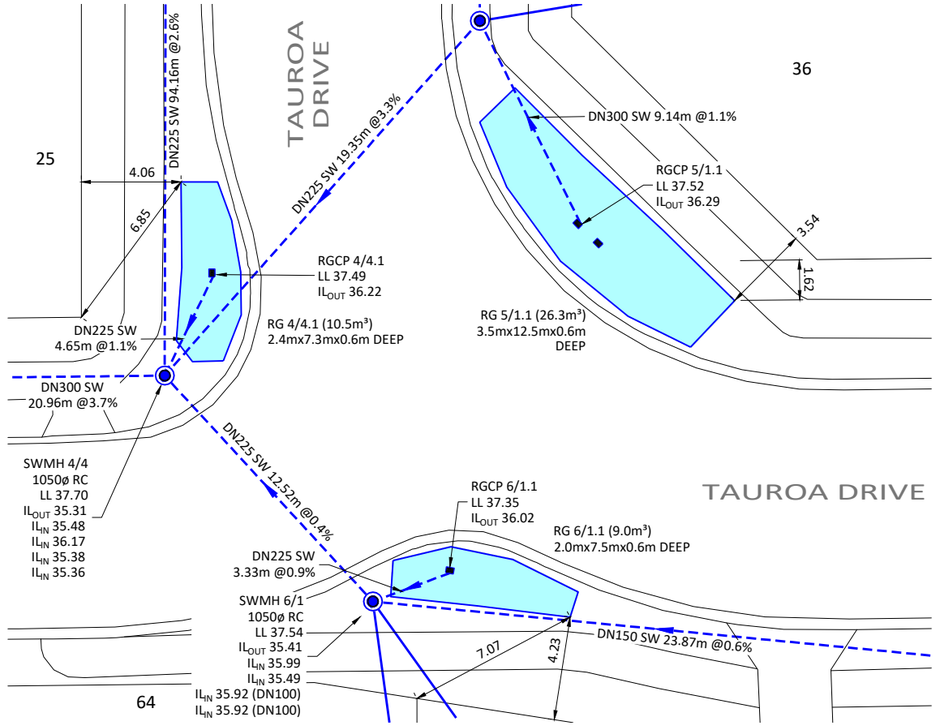
NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL STORMWATER LINES OVER DN150 ARE RCRRJ.
4. ALL DN 100 & DN 150 STORMWATER LINES ARE uPVC DWV SN16 AS/NZ 1260.
5. ALL SINGLE CATCHPIT LEADS ARE DN225 RCRRJ CLASS 4 PIPE.
6. ALL DOUBLE CATCHPIT LEADS ARE DN300 RCRRJ CLASS 4 PIPE.
7. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
8. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
9. SEE SHEET 2011-01-AB405-AB407 FOR RAIN GARDEN DETAILS.
10. SEE SHEET 2011-01-AB407 FOR CO-ORDINATE SCHEDULES.
11. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.



RAIN GARDEN DETAIL 7

SCALE: (A1/A3) 1:125/1:250



RAIN GARDEN DETAIL 8

SCALE: (A1/A3) 1:125/1:250

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

KEYPLAN

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

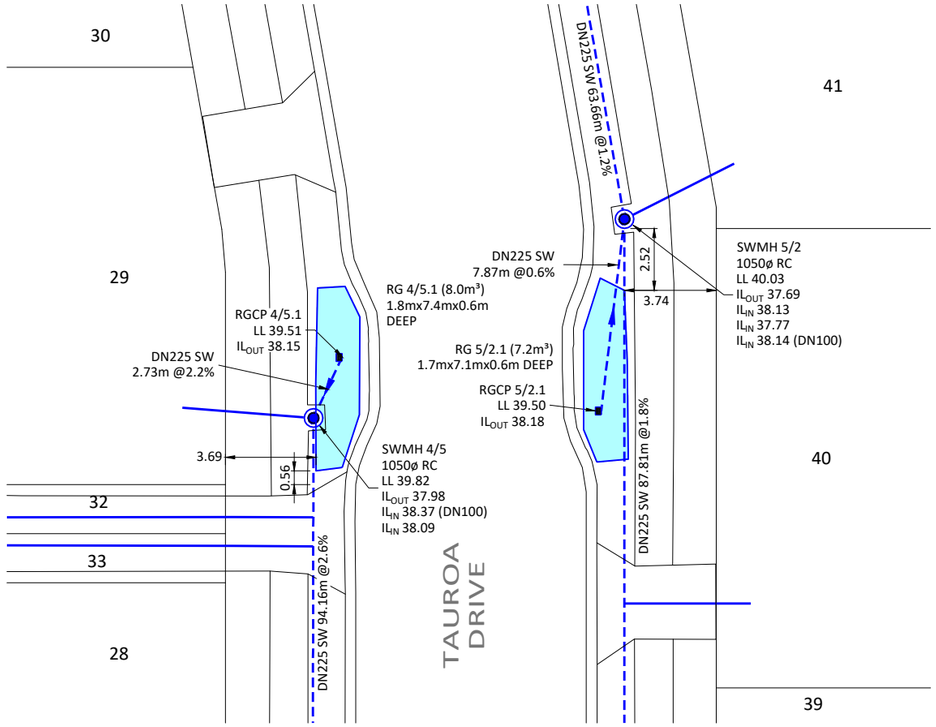
DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

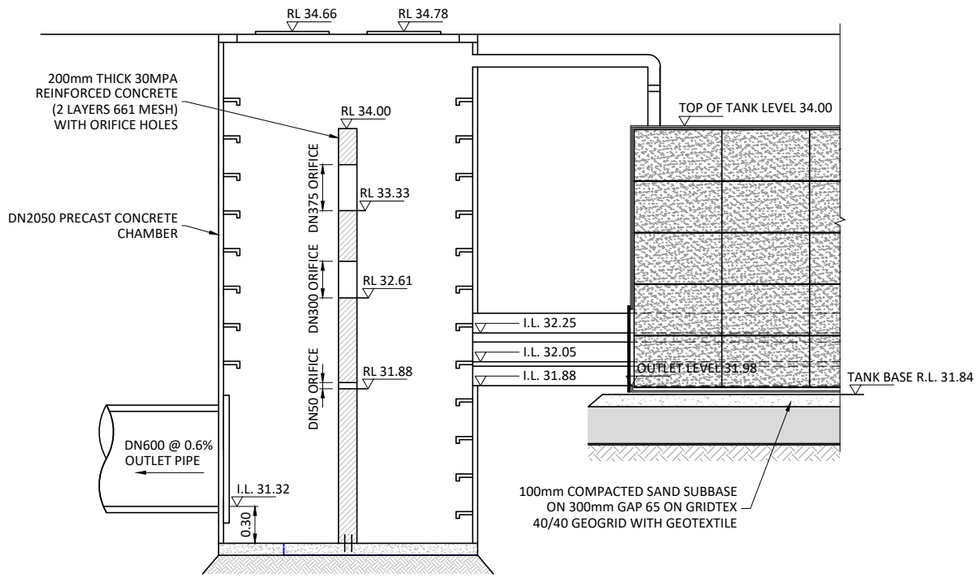
SHEET TITLE:
STORMWATER ASBUILT
STAGE 1 - RAIN GARDEN - DETAIL SHEET 2
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:125 / 1:250
SCALE BAR 1:250@A3 0 2.5 5 7.5 10 12.5m
DRAWING NUMBER: 2011-01-AB406 REV: A



RAIN GARDEN DETAIL 9

SCALE: (A1/A3) 1:125/1:250



STORMWATER MANHOLE 1/1 DETAIL

SCALE: (A1/A3) 1:125/1:250

SCHEDULE OF COORDINATES SW MANHOLES-GD2000		
POINT No.	mE	mN
SWMH 1/0	416269.23	757047.26
SWMH 1/1	416266.50	757048.79
SWMH 1/2	416279.91	757074.76
SWMH 1/3	416250.26	757090.35
SWMH 1/4	416215.31	757105.98
SWMH 1/5	416179.97	757124.26
SWMH 1/6	416213.56	757187.29
SWMH 1/7	416247.07	757250.07
SWMH 2/1	416259.47	757107.71
SWMH 2/2	416283.49	757152.69
SWMH 2/3	416315.70	757212.99
SWMH 2/4	416321.57	757215.35
SWMH 2/5	416376.27	757186.22
SWMH 3/1	416250.27	757112.89
SWMH 3/2	416274.06	757157.74
SWMH 3/3	416299.70	757205.63
SWMH 4/1	416303.80	757062.35
SWMH 4/2	416310.45	757069.87
SWMH 4/3	416325.50	757062.14
SWMH 4/4	416344.09	757052.47
SWMH 4/5	416388.61	757135.44
SWMH 5/1	416362.23	757059.17
SWMH 5/2	416403.61	757136.62
SWMH 5/3	416423.48	757197.10
SWMH 6/1	416347.23	757040.35
SWMH 6/2	416367.11	757027.14

SCHEDULE OF COORDINATES RAINGARDEN CATCHPITS-GD2000		
POINT No.	mE	mN
RG 1/2.1	416286.58	757073.79
RG 1/3.1	416246.12	757094.44
RG 1/5.1	416179.53	757129.94
RG 1/5.2	416191.64	757133.89
RG 1/6.1	416215.14	757192.38
RG 1/6.2	416207.56	757196.53
RG 1/7.1	416255.58	757252.25
RG 1/7.2	416250.35	757268.04
RG 2/1.1	416257.43	757101.37
RG 2/2.1	416284.02	757155.83
RG 2/4.1	416323.99	757215.49
RG 2/4.2	416329.98	757225.34
RG 3/1.1	416243.72	757108.85
RG 3/2.1	416276.54	757159.67
RG 4/4.1	416347.86	757055.20
RG 4/5.1	416390.80	757137.07
RG 5/1.1	416361.97	757050.03
RG 5/2.1	416399.09	757130.17
RG 6/1.1	416350.53	757039.90

SCHEDULE OF COORDINATES CATCHPITS-GD2000		
POINT No.	mE	mN
CP 0	416268.13	757046.12
CP 1	416274.42	757042.89
CP 2	416226.18	757066.69

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

DN1350 SW STORMWATER LINE AND MANHOLE

ASBUILT

DN300 STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STORMWATER CATCHPIT

SCRUFFY DOME INLET/OUTLET MANHOLE

STORMWATER INLET

STORMWATER OUTLET

RAIN GARDEN

RECHARGE PIT

RAIN GARDEN

STORMWATER DETENTION TANK

UNDERFILL DRAIN

STAGE BOUNDARY

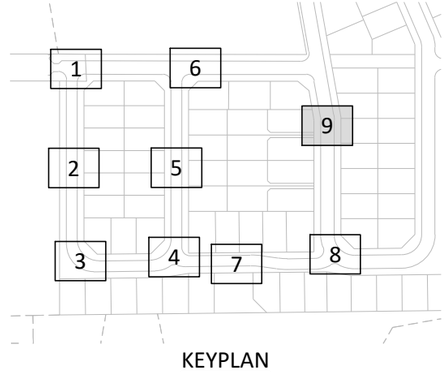
NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL STORMWATER LINES OVER DN150 ARE RCRRJ.
4. ALL DN 100 & DN 150 STORMWATER LINES ARE uPVC DWV SN16 AS/NZ 1260.
5. ALL SINGLE CATCHPIT LEADS ARE DN225 RCRRJ CLASS 4 PIPE.
6. ALL DOUBLE CATCHPIT LEADS ARE DN300 RCRRJ CLASS 4 PIPE.
7. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
8. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
9. SEE SHEET 2011-01-AB405-AB407 FOR RAIN GARDEN DETAILS.
10. SEE SHEET 2011-01-AB407 FOR CO-ORDINATE SCHEDULES.
11. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE



KEYPLAN

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

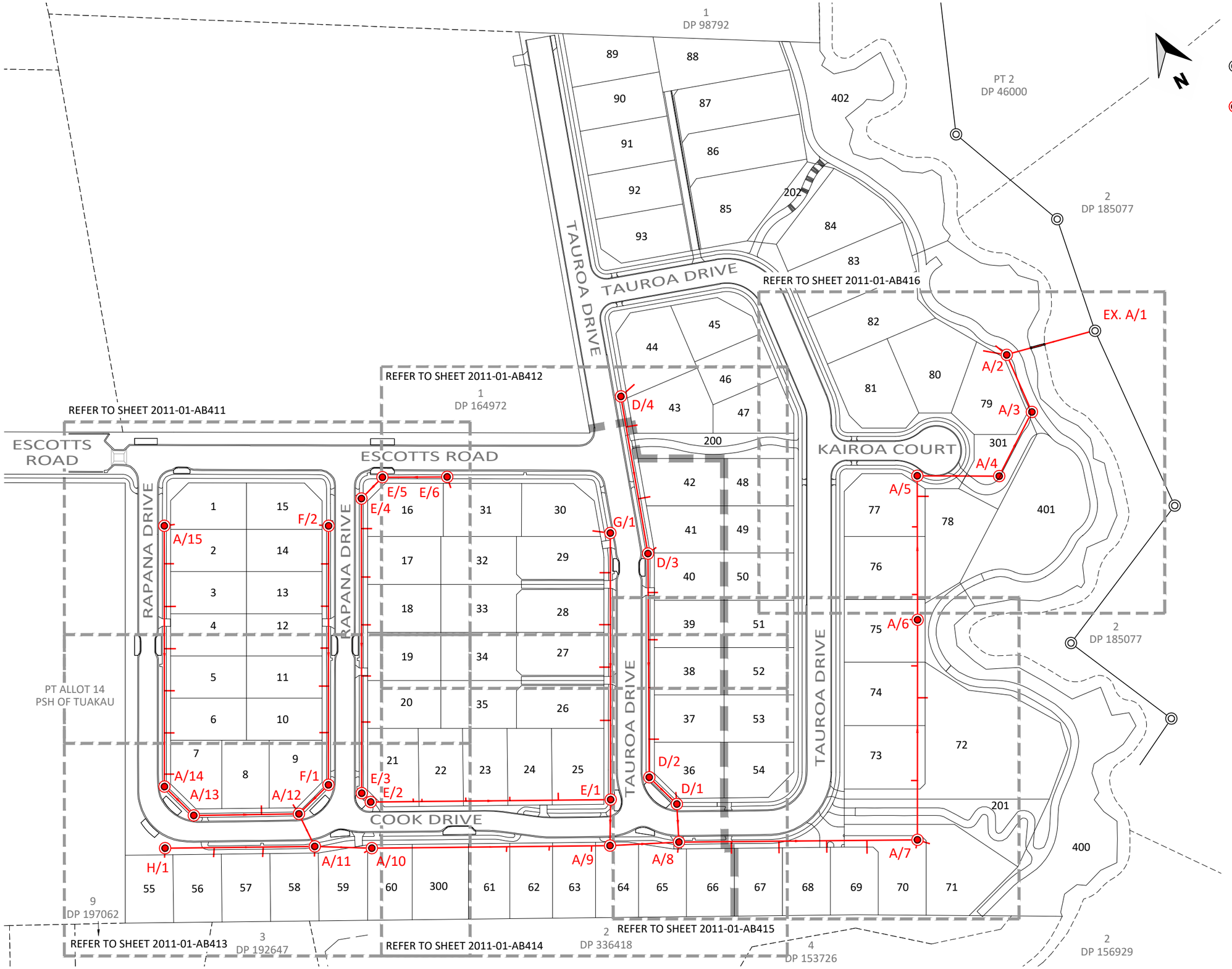
DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
STORMWATER ASBUILT
STAGE 1 - RAIN GARDEN - DETAIL SHEET 3
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:125 / 1:250
SCALE BAR 1:250@A3 0 2.5 5 7.5 10 12.5m
DRAWING NUMBER: 2011-01-AB407 REV: A



LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

STORMWATER LINE AND MANHOLE

ASBUILT

STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL WASTEWATER LINES ARE DN150 uPVC SN16 TO AS/NZS1260.
4. ALL WASTEWATER CONNECTIONS ARE DN100 uPVC SN16 TO AS/NZS1260.
5. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
6. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
7. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

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RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

SCHEDULE OF COORDINATES
WW MANHOLES-GD2000

POINT No.	mE	mN
EX WWMH A/01	416602.21	757129.97
WWMH A/02	416566.83	757138.00
WWMH A/03	416564.89	757113.33
WWMH A/04	416541.54	757097.02
WWMH A/05	416512.97	757112.47
WWMH A/06	416486.18	757062.08
WWMH A/07	416445.12	756985.27
WWMH A/08	416361.37	757028.99
WWMH A/09	416336.60	757040.63
WWMH A/10	416252.92	757084.18
WWMH A/11	416233.29	757095.45
WWMH A/12	416233.82	757109.74
WWMH A/13	416196.79	757128.86
WWMH A/14	416191.95	757144.37
WWMH A/15	416240.55	757235.50
WWMH D/1	416367.75	757042.67
WWMH D/2	416363.07	757057.17
WWMH D/3	416404.36	757135.53
WWMH D/4	416424.22	757195.46
WWMH E/1	416345.41	757056.57
WWMH E/2	416261.11	757100.52
WWMH E/3	416259.64	757105.26
WWMH E/4	416314.48	757208.23
WWMH E/5	416325.81	757211.74
WWMH E/6	416348.47	757199.82
WWMH F/1	416249.56	757114.38
WWMH F/2	416297.90	757204.81
WWMH G/1	416395.02	757149.75
WWMH H/1	416180.64	757122.77

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APPROVED: RJP 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WASTEWATER ASBUILT
STAGE 1 - OVERALL LAYOUT
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:750 / 1:1500
SCALE BAR 1:1500@A3 0 15 30 45 60 75m
DRAWING NUMBER: 2011-01-AB410 REV: A

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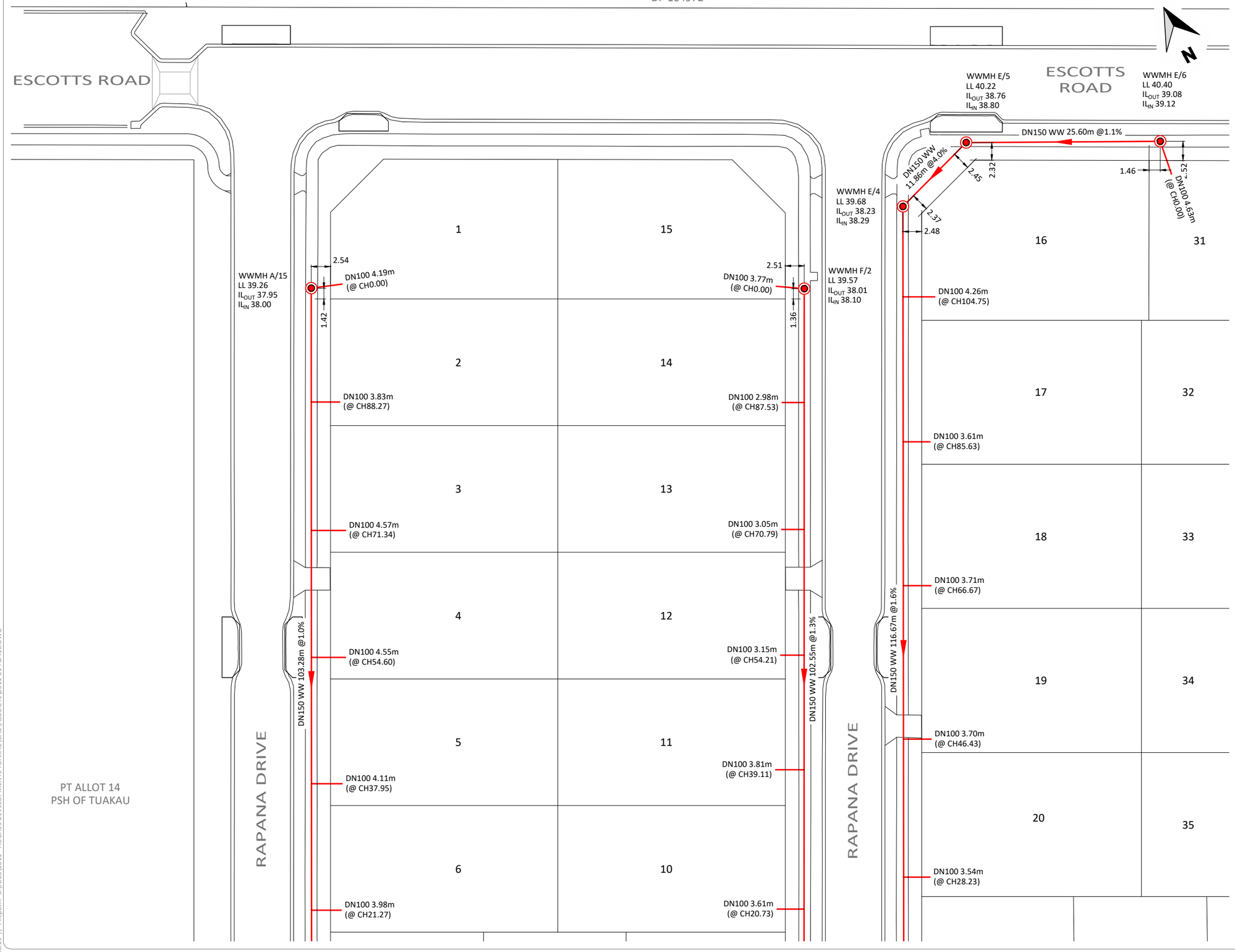

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

STORMWATER LINE AND MANHOLE

ASBUILT

STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL WASTEWATER LINES ARE DN150 uPVC SN16 TO AS/NZS1260.
4. ALL WASTEWATER CONNECTIONS ARE DN100 uPVC SN16 TO AS/NZS1260.
5. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
6. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
7. SEE SHEET 2011-01-AB410 FOR CO-ORDINATE SCHEDULE.
8. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
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CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WASTEWATER ASBUILT
STAGE 1 - DETAIL SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
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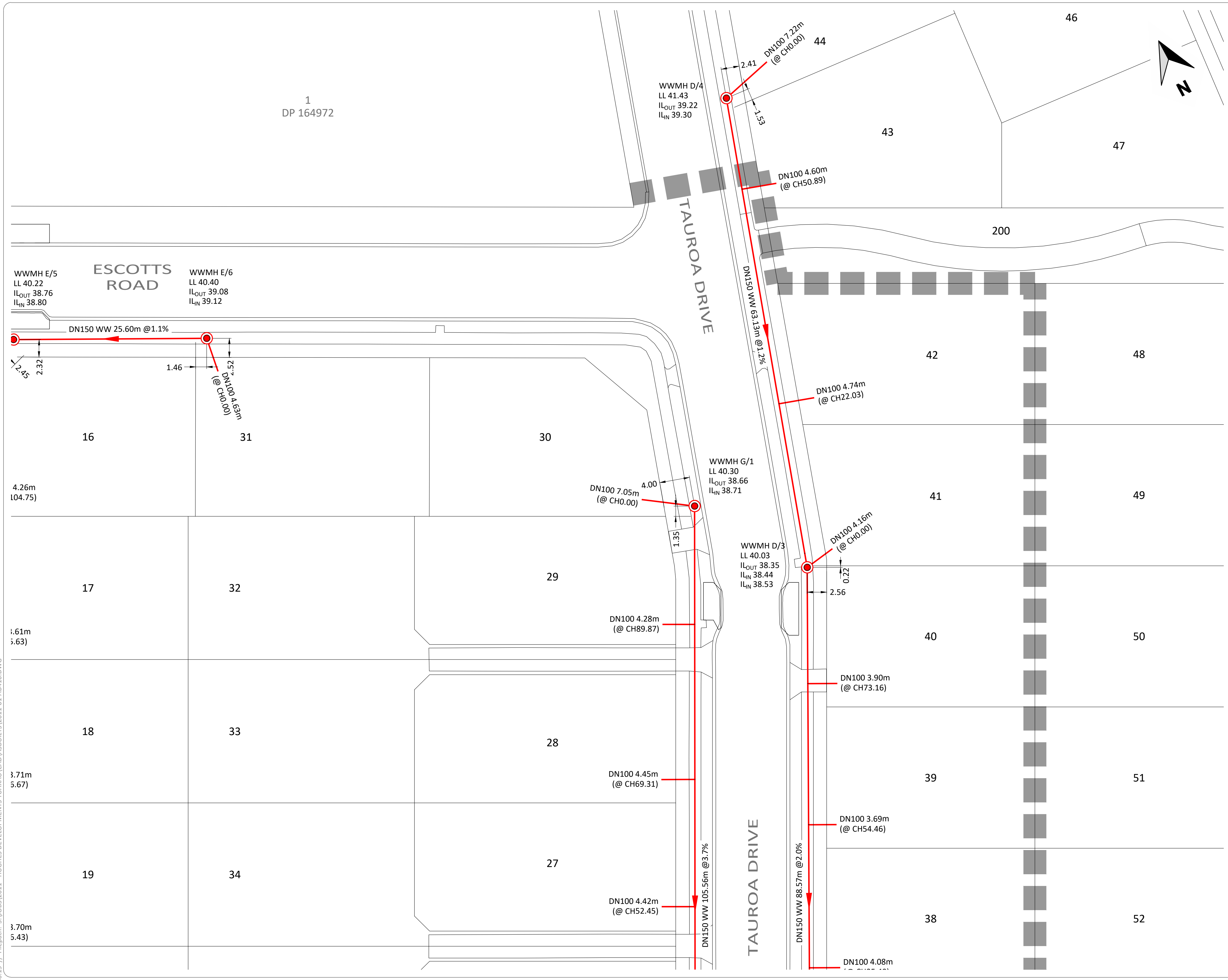

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

STORMWATER LINE AND MANHOLE

ASBUILT

STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
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8. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

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RYAN JAMES PITKETHLEY 26.06.2019
CMENGNZ CPENG DATE

Printed by: DARREN@27.06.19 // Filepath: S:\JOBS\2011 - HUGHES DEVELOPMENTS TUAKAU\CAD\ASBUILTS\2011-01-AB410.DWG

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

	DATE:
DRAWN: DKP	05.2019
CHECKED: MRR	26.06.19
APPROVED: RJP	26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WASTEWATER ASBUILT
STAGE 1 - DETAIL SHEET 2
SUB0311/18 & LUC0489/18

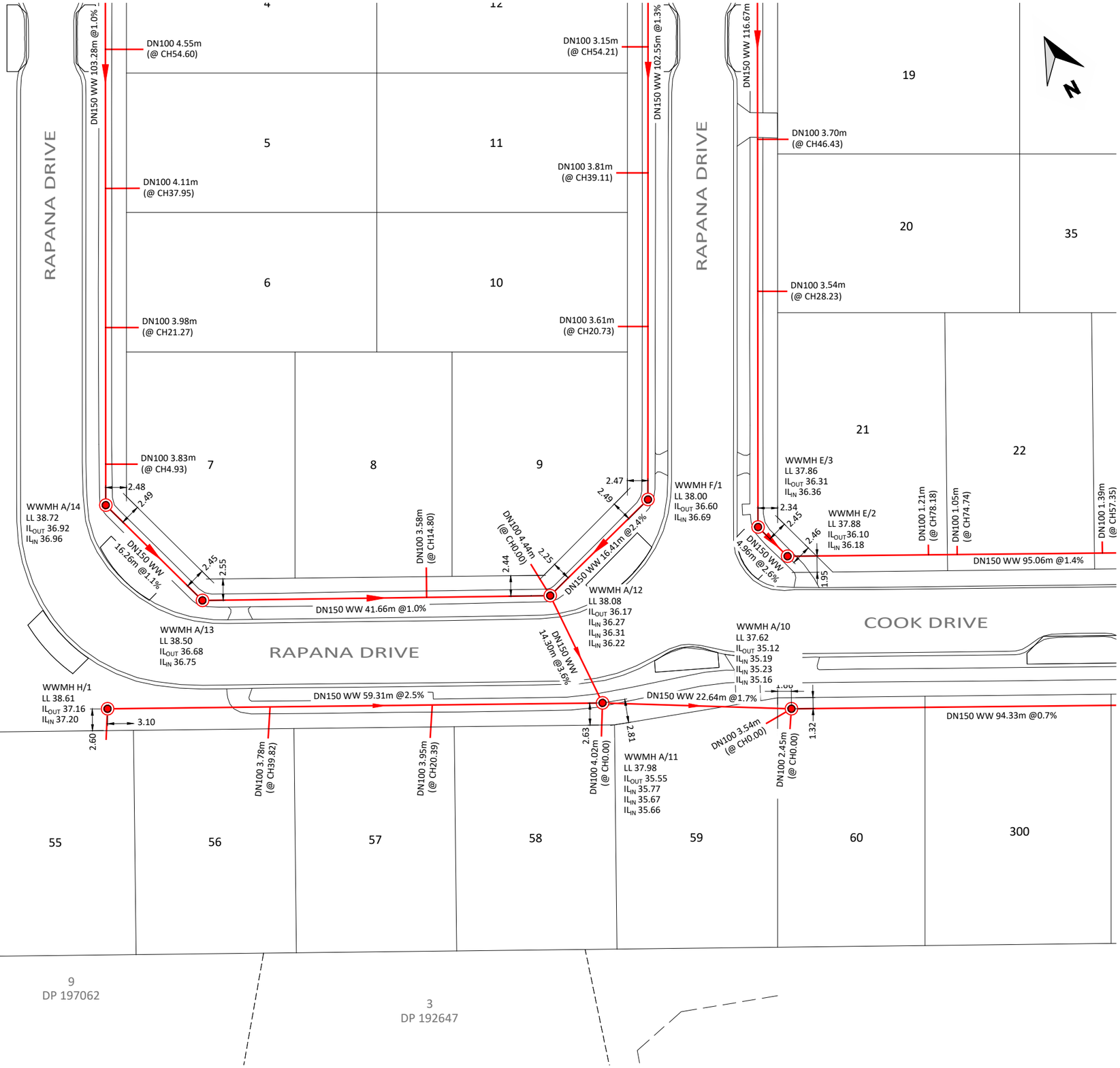
ISSUE STATUS: ASBUILT

SCALE: (A1/A3) 1:250 / 1:500

SCALE BAR 1:500@A3 0 5 10 15 20 25m

DRAWING NUMBER: 2011-01-AB412 REV: A

PT ALLOT 14
PSH OF TUAKAU



LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

STORMWATER LINE AND MANHOLE

ASBUILT

STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STAGE BOUNDARY

NOTES

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4. ALL WASTEWATER CONNECTIONS ARE DN100 uPVC SN16 TO AS/NZS1260.
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8. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS, SCHEDULE OF CO-ORDINATES AND LID LEVELS, ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

REV	REVISION DETAILS	BY	DATE
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CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WASTEWATER ASBUILT
STAGE 1 - DETAIL SHEET 3
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
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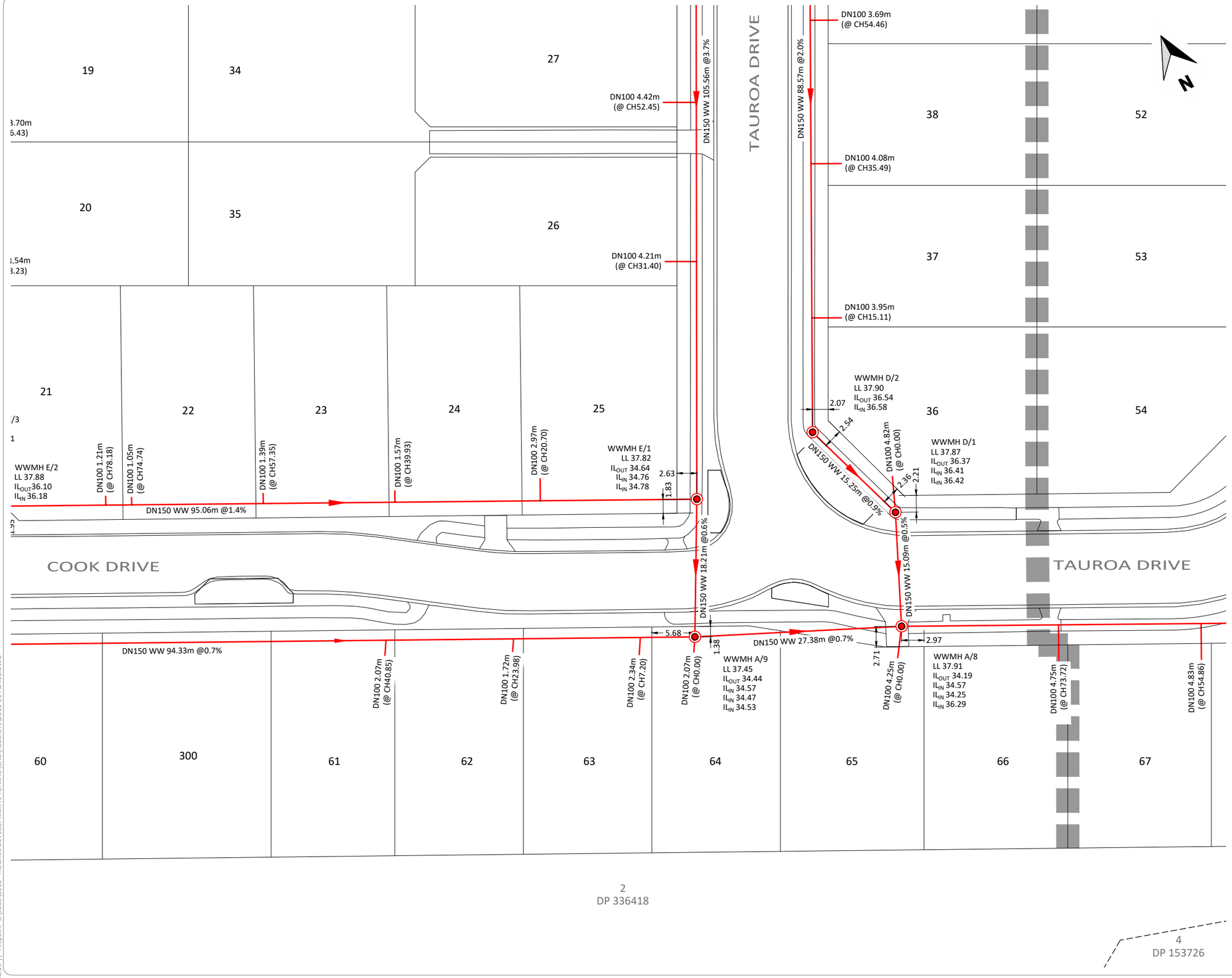

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

STORMWATER LINE AND MANHOLE

ASBUILT

STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
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7. SEE SHEET 2011-01-AB410 FOR CO-ORDINATE SCHEDULE.
8. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

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RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

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CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WASTEWATER ASBUILT
STAGE 1 - DETAIL SHEET 4
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
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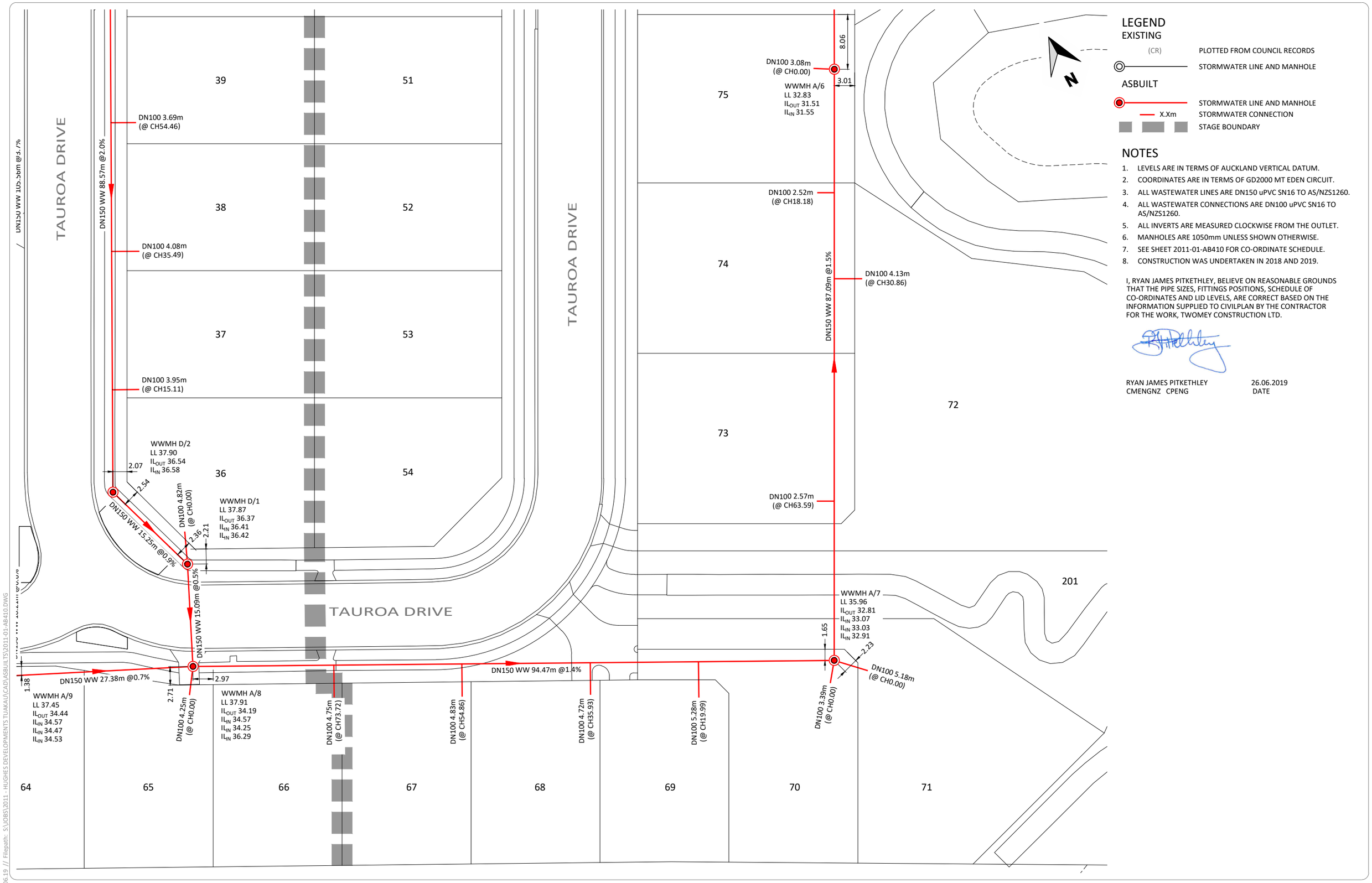

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

STORMWATER LINE AND MANHOLE

ASBUILT

STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
2. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
3. ALL WASTEWATER LINES ARE DN150 uPVC SN16 TO AS/NZS1260.
4. ALL WASTEWATER CONNECTIONS ARE DN100 uPVC SN16 TO AS/NZS1260.
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6. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
7. SEE SHEET 2011-01-AB410 FOR CO-ORDINATE SCHEDULE.
8. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

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RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

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CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WASTEWATER ASBUILT
STAGE 1 - DETAIL SHEET 5
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
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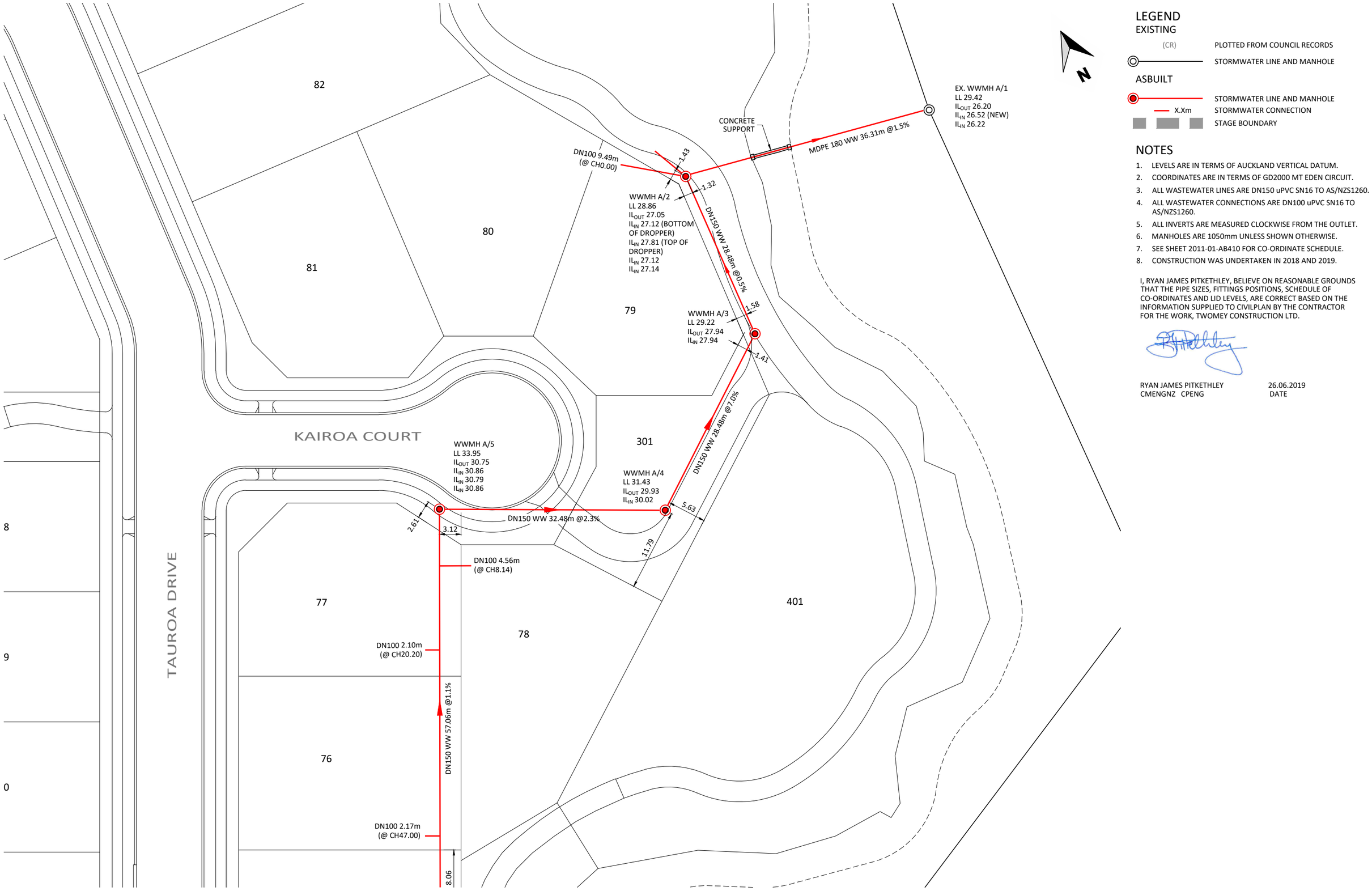

LEGEND

EXISTING

(CR) PLOTTED FROM COUNCIL RECORDS

STORMWATER LINE AND MANHOLE

ASBUILT

STORMWATER LINE AND MANHOLE

X.Xm STORMWATER CONNECTION

STAGE BOUNDARY

NOTES

1. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM.
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4. ALL WASTEWATER CONNECTIONS ARE DN100 uPVC SN16 TO AS/NZS1260.
5. ALL INVERTS ARE MEASURED CLOCKWISE FROM THE OUTLET.
6. MANHOLES ARE 1050mm UNLESS SHOWN OTHERWISE.
7. SEE SHEET 2011-01-AB410 FOR CO-ORDINATE SCHEDULE.
8. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

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RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.2019
DATE

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A	ASBUILT ISSUED	RJP	26.06.19

		DATE:
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CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WASTEWATER ASBUILT
STAGE 1 - DETAIL SHEET 6
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
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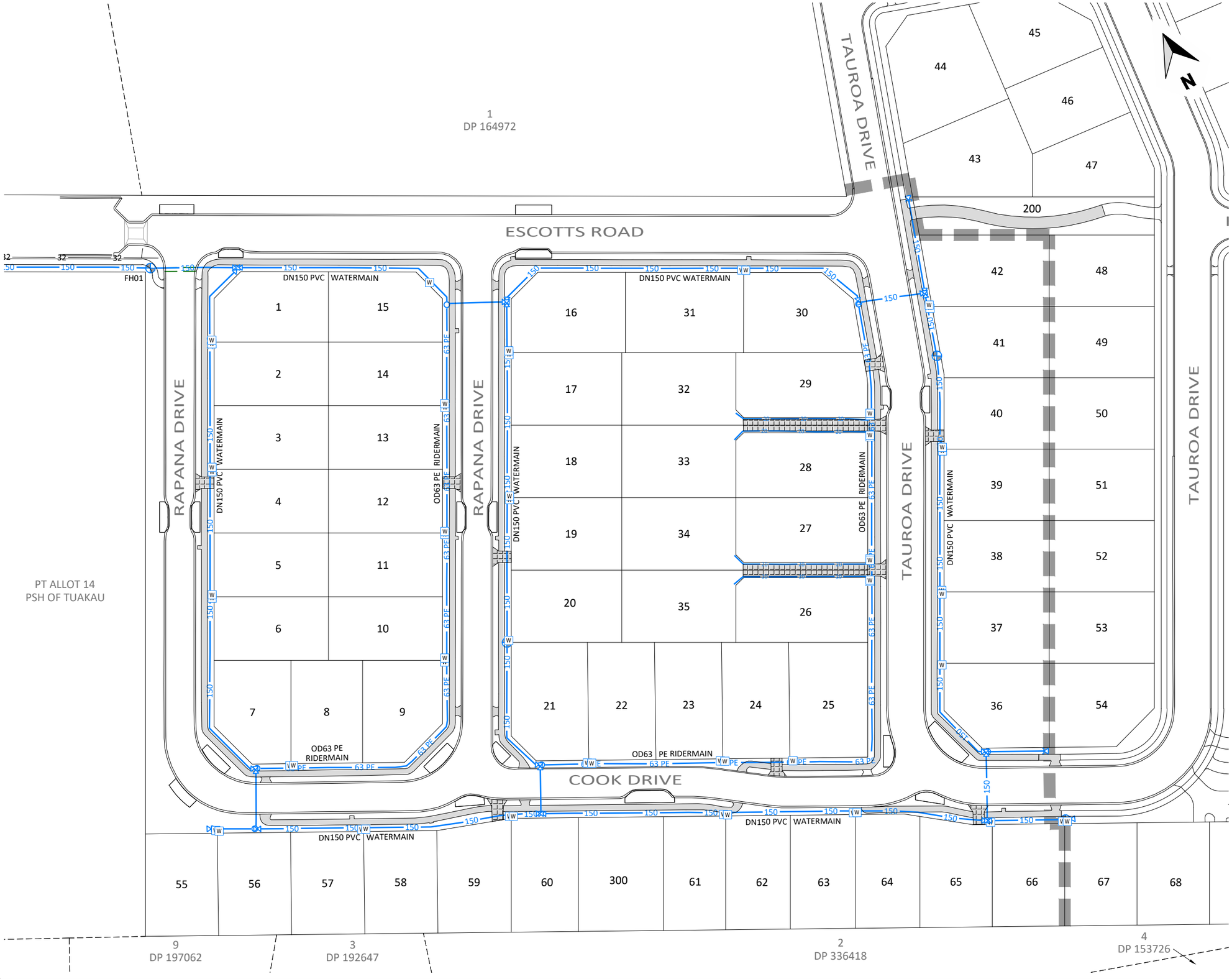

LEGEND

EXISTING

(CR)	PLOTTED FROM COUNCIL RECORDS
32	DN32 RIDERMAIN
100	DN100 WATERMAIN
200	DN200 WATERMAIN
	FIRE HYDRANT
	SLUICE VALVE
	PEET VALVE
	BLANK CAP

ASBUILT

20	DN20 PE HOUSE CONNECTION
63 PE	OD63 PE RIDERMAIN
100	DN100 WATERMAIN
150	DN150 WATERMAIN
200	DN200 WATERMAIN
FH	FIRE HYDRANT
SV	SLUICE VALVE
PV	PEET VALVE
BC	BLANK CAP (WITH THRUST BLOCK)
W	WATER METER
	STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
3. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.
4. SEE 2011-01-AB506 FOR COORDINATE SCHEDULES.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS AND SCHEDULE OF CO-ORDINATES ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY — 26.06.19
CMENGNZ CPENG — DATE

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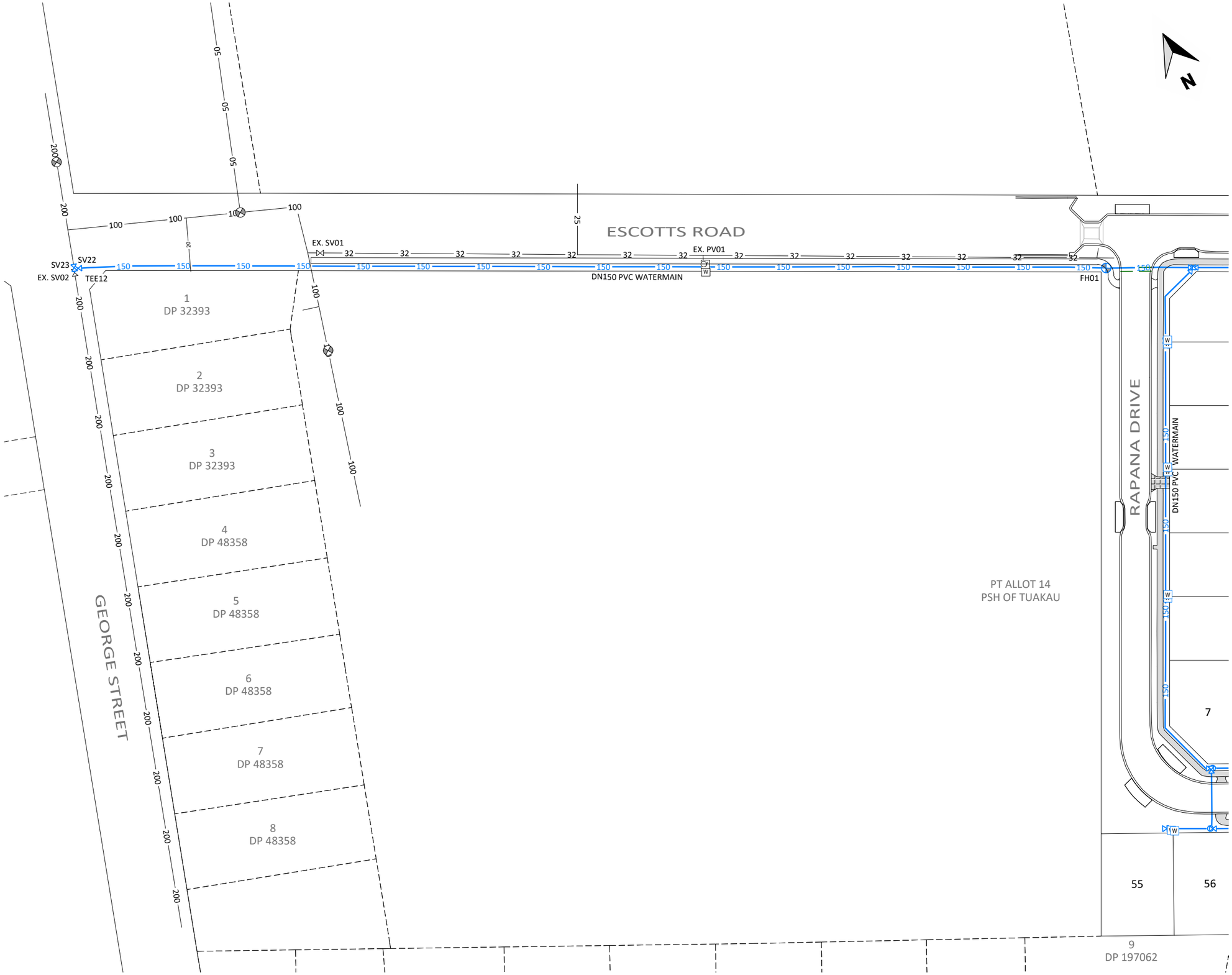
CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WATER SUPPLY ASBUILT PLAN
STAGE 1 - SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB500 REV: A



LEGEND

EXISTING

(CR)	PLOTTED FROM COUNCIL RECORDS
32	DN32 RIDERMAIN
100	DN100 WATERMAIN
200	DN200 WATERMAIN
	FIRE HYDRANT
	SLUICE VALVE
	PEET VALVE
	BLANK CAP

ASBUILT

20	DN20 PE HOUSE CONNECTION
63 PE	OD63 PE RIDERMAIN
100	DN100 WATERMAIN
150	DN150 WATERMAIN
200	DN200 WATERMAIN
FH	FIRE HYDRANT
SV	SLUICE VALVE
PV	PEET VALVE
BC	BLANK CAP (WITH THRUST BLOCK)
W	WATER METER
	STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
3. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.
4. SEE 2011-01-AB506 FOR COORDINATE SCHEDULES.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS AND SCHEDULE OF CO-ORDINATES ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

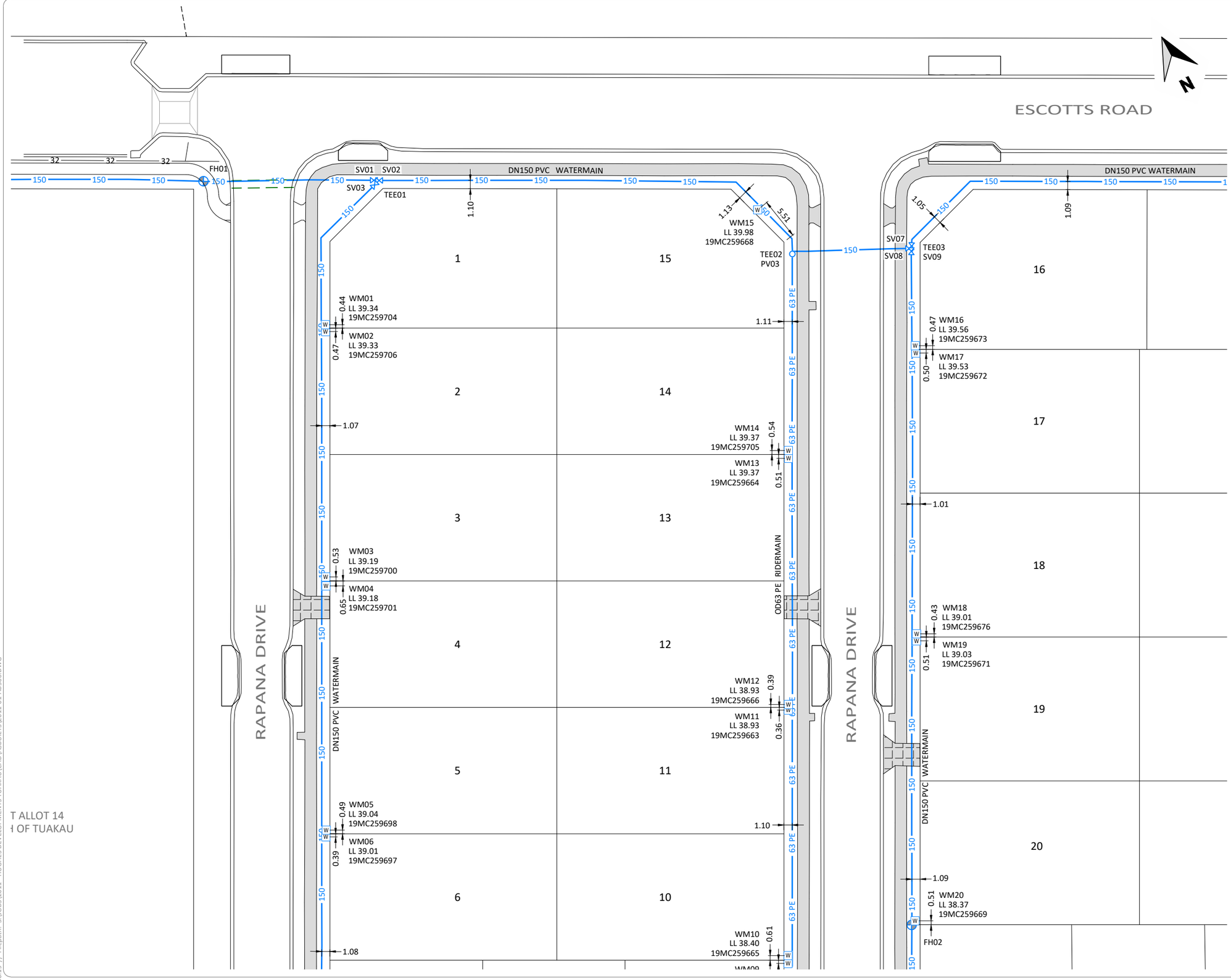
DRAWN:	DKP	DATE: 05.2019
CHECKED:	MRR	DATE: 26.06.19
APPROVED:	RJP	DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WATER SUPPLY ASBUILT PLAN
STAGE 1 - SHEET 2
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB501 REV: A



T ALLOT 14
OF TUAKAU

LEGEND

EXISTING

(CR)	PLOTTED FROM COUNCIL RECORDS
32	DN32 RIDERMAIN
100	DN100 WATERMAIN
200	DN200 WATERMAIN
	FIRE HYDRANT
	SLUICE VALVE
	PEET VALVE
	BLANK CAP

ASBUILT

20	DN20 PE HOUSE CONNECTION
63 PE	OD63 PE RIDERMAIN
100	DN100 WATERMAIN
150	DN150 WATERMAIN
200	DN200 WATERMAIN
FH	FIRE HYDRANT
SV	SLUICE VALVE
PV	PEET VALVE
BC	BLANK CAP (WITH THRUST BLOCK)
W	WATER METER
	STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
3. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.
4. SEE 2011-01-AB506 FOR COORDINATE SCHEDULES.

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RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

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A	ASBUILT ISSUED	RJP	26.06.19

DRAWN:	DKP	DATE: 05.2019
CHECKED:	MRR	DATE: 26.06.19
APPROVED:	RJP	DATE: 26.06.19

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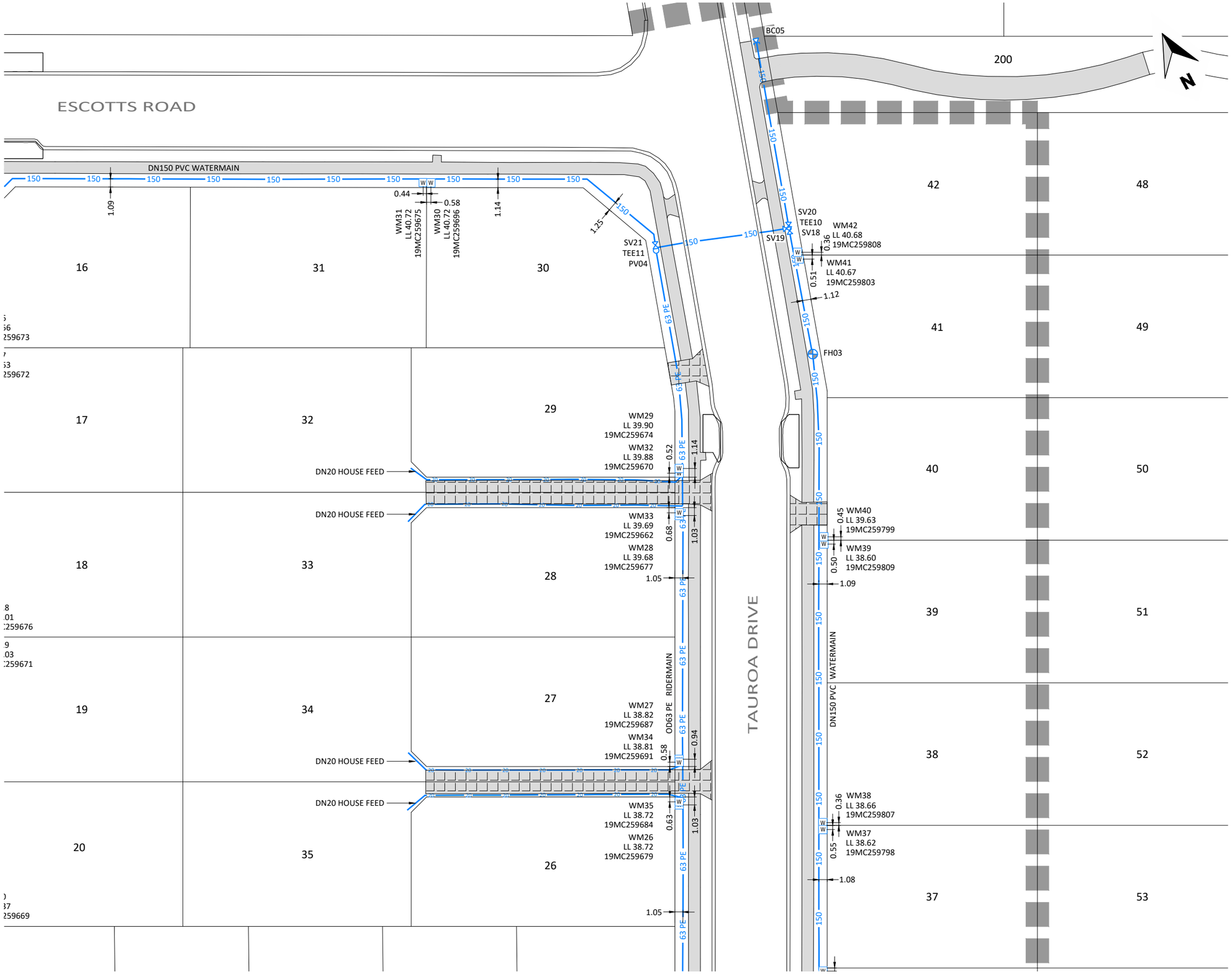
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WATER SUPPLY ASBUILT PLAN
STAGE 1 - DETAIL SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB502 REV: A



LEGEND

EXISTING

(CR)	PLOTTED FROM COUNCIL RECORDS
32	DN32 RIDERMAIN
100	DN100 WATERMAIN
200	DN200 WATERMAIN
	FIRE HYDRANT
	SLUICE VALVE
	PEET VALVE
	BLANK CAP

ASBUILT

20	DN20 PE HOUSE CONNECTION
63 PE	OD63 PE RIDERMAIN
100	DN100 WATERMAIN
150	DN150 WATERMAIN
200	DN200 WATERMAIN
FH	FIRE HYDRANT
SV	SLUICE VALVE
PV	PEET VALVE
BC	BLANK CAP (WITH THRUST BLOCK)
W	WATER METER
	STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
3. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.
4. SEE 2011-01-AB506 FOR COORDINATE SCHEDULES.

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RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

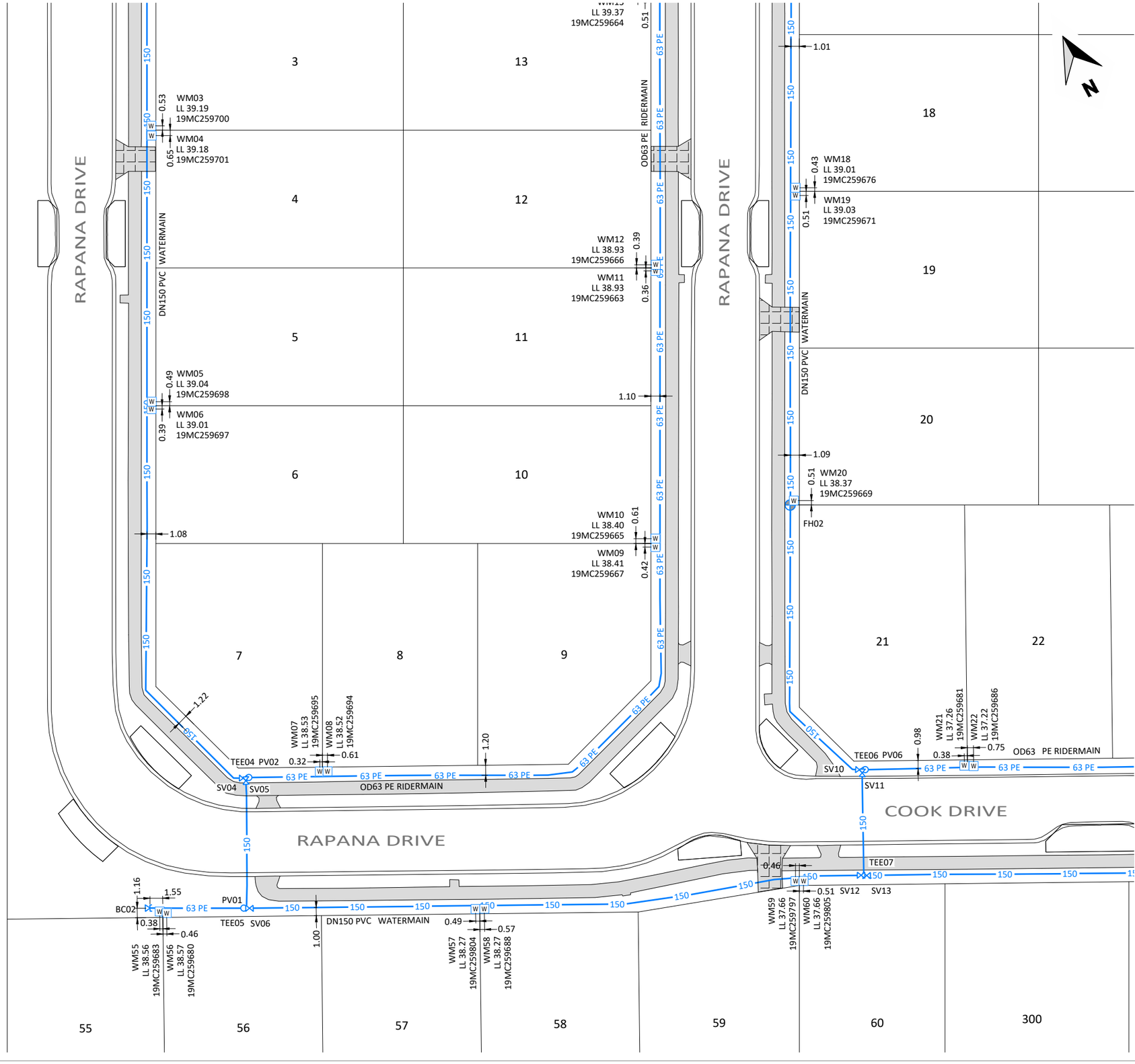
CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WATER SUPPLY ASBUILT PLAN
STAGE 1 - DETAIL SHEET 2
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB503 REV: A

T ALLOT 14
H OF TUAKAU



LEGEND

EXISTING

(CR)	PLOTTED FROM COUNCIL RECORDS
32	DN32 RIDERMAIN
100	DN100 WATERMAIN
200	DN200 WATERMAIN
	FIRE HYDRANT
	SLUICE VALVE
	PEET VALVE
	BLANK CAP

ASBUILT

20	DN20 PE HOUSE CONNECTION
63 PE	OD63 PE RIDERMAIN
100	DN100 WATERMAIN
150	DN150 WATERMAIN
200	DN200 WATERMAIN
FH	FIRE HYDRANT
SV	SLUICE VALVE
PV	PEET VALVE
BC	BLANK CAP (WITH THRUST BLOCK)
W	WATER METER
	STAGE BOUNDARY

NOTES

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2. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
3. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.
4. SEE 2011-01-AB506 FOR COORDINATE SCHEDULES.

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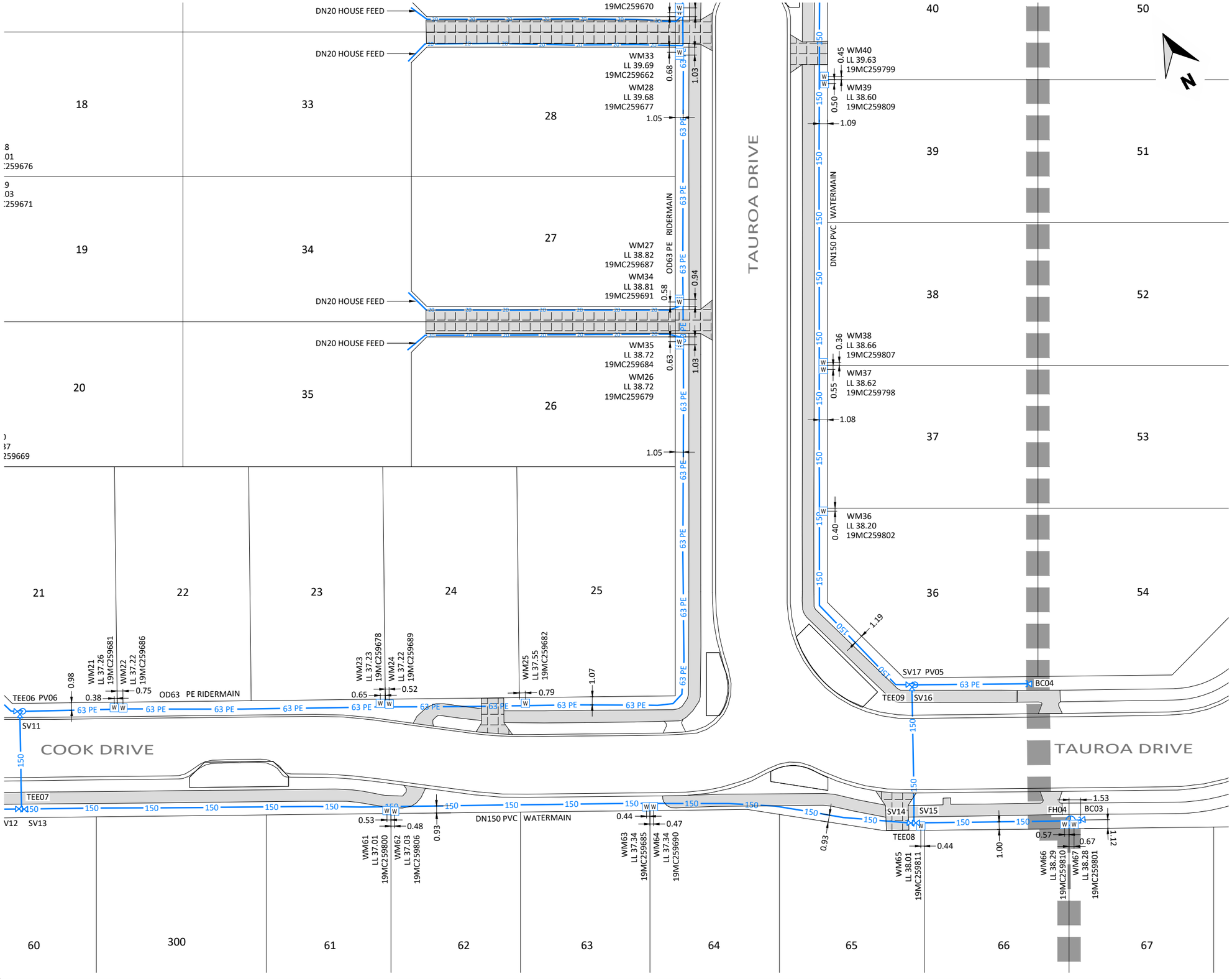
PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WATER SUPPLY ASBUILT PLAN
STAGE 1 - DETAIL SHEET 3
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB504 REV: A



LEGEND

EXISTING

(CR)	PLOTTED FROM COUNCIL RECORDS
32	DN32 RIDERMAIN
100	DN100 WATERMAIN
200	DN200 WATERMAIN
	FIRE HYDRANT
	SLUICE VALVE
	PEET VALVE
	BLANK CAP

ASBUILT

20	DN20 PE HOUSE CONNECTION
63 PE	OD63 PE RIDERMAIN
100	DN100 WATERMAIN
150	DN150 WATERMAIN
200	DN200 WATERMAIN
FH	FIRE HYDRANT
SV	SLUICE VALVE
PV	PEET VALVE
BC	BLANK CAP (WITH THRUST BLOCK)
W	WATER METER
	STAGE BOUNDARY

NOTES

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2. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
3. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.
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RYAN JAMES PITKETHLEY CMENGNZ CPENG — 26.06.19 DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WATER SUPPLY ASBUILT PLAN
STAGE 1 - DETAIL SHEET 4
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:250 / 1:500
SCALE BAR 1:500@A3 0 5 10 15 20 25m
DRAWING NUMBER: 2011-01-AB505 REV: A

SCHEDULE OF COORDINATES SLUICE VALVES-GD2000

POINT No.	mE	mN
EX. SV01	416056.39	757358.71
EX. SV02	415997.12	757384.53
SV01	416256.45	757247.54
SV02	416257.04	757247.19
SV03	416256.24	757246.95
SV04	416198.72	757129.33
SV05	416198.88	757128.92
SV06	416191.97	757115.07
SV07	416315.01	757206.40
SV08	416314.60	757206.26
SV09	416314.68	757205.81
SV10	416265.08	757095.04
SV11	416265.22	757094.56
SV12	416259.25	757083.67
SV13	416259.83	757083.33
SV14	416361.61	757026.90
SV15	416362.23	757026.59
SV16	416370.15	757042.54
SV17	416370.02	757042.98
SV18	416412.68	757156.20
SV19	416412.48	757156.64
SV20	416412.89	757156.82
SV21	416396.26	757162.81
SV22	415998.45	757385.06
SV23	415997.59	757385.71

SCHEDULE OF COORDINATES PEET VALVES-GD2000

POINT No.	mE	mN
EX. PV01	416143.80	757308.68
PV01	416191.37	757115.40
PV02	416199.36	757129.09
PV03	416300.62	757212.90
PV04	416396.00	757162.16
PV05	416370.64	757042.63
PV06	416265.71	757094.73

SCHEDULE OF COORDINATES FIRE HYDRANTS-GD2000

POINT No.	mE	mN
FH01	416236.51	757258.03
FH02	416272.80	757127.29
FH03	416407.74	757140.46
FH04	416380.26	757017.28

SCHEDULE OF COORDINATES TEES-GD2000

POINT No.	mE	mN
TEE01	416256.74	757247.37
TEE02	416300.81	757213.20
TEE03	416314.90	757206.09
TEE04	416199.06	757129.22
TEE05	416191.66	757115.23
TEE06	416265.40	757094.89
TEE07	416259.53	757083.50
TEE08	416361.98	757026.70
TEE09	416370.33	757042.79
TEE10	416412.84	757156.51
TEE11	416396.14	757162.48
TEE12	415997.48	757385.42

SCHEDULE OF COORDINATES BLANK CAPS-GD2000

POINT No.	mE	mN
BC02	416181.35	757120.77
BC03	416381.48	757016.75
BC04	416383.73	757035.79
BC05	416420.50	757179.99

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946.
3. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS AND SCHEDULE OF CO-ORDINATES ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN: DKP DATE: 05.2019
CHECKED: MRR DATE: 26.06.19
APPROVED: RJP DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
WATER SUPPLY ASBUILT PLAN
STAGE 1 - COORDINATE SCHEDULES
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) NOT TO SCALE
SCALE BAR N.T.S.
DRAWING NUMBER: 2011-01-AB506 REV: A

LEGEND

ASBUILT

- PILLAR BOX
- HV POWER CABLE
- LV POWER CABLE
- HOUSE POWER CABLE
- DN100 PVC DUCT
- STREETLIGHT
- LINK BOX
- RING MAIN UNIT
- TRANSFORMER
- STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

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RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

SCHEDULE OF COORDINATES LINK PILLAR & PILLAR BOXES-GD2000

POINT No.	mE	mN
LP01	416299.38	757219.59
LP02	416379.74	757016.92
PB01	416309.23	757194.10
PB02	416291.42	757160.39
PB03	416273.43	757126.99
PB04	416256.05	757131.03
PB05	416271.79	757160.43
PB06	416287.51	757189.84
PB07	416241.75	757233.25
PB08	416226.03	757203.77
PB09	416210.37	757174.33
PB10	416182.39	757119.36
PB11	416207.76	757125.65
PB12	416216.52	757101.60
PB13	416277.27	757089.27
PB14	416308.29	757073.38
PB15	416324.19	757064.90
PB16	416332.43	757044.76
PB17	416362.87	757025.56
PB18	416371.18	757068.62
PB19	416379.96	757085.10
PB20	416364.56	757097.35
PB21	416366.68	757101.17
PB22	416384.58	757134.63
PB23	416382.48	757130.84
PB24	416397.59	757118.11
PB25	416412.34	757152.70
PB26	416302.20	757060.39
PB27	416252.21	757086.39
PB28	416373.59	757183.99

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

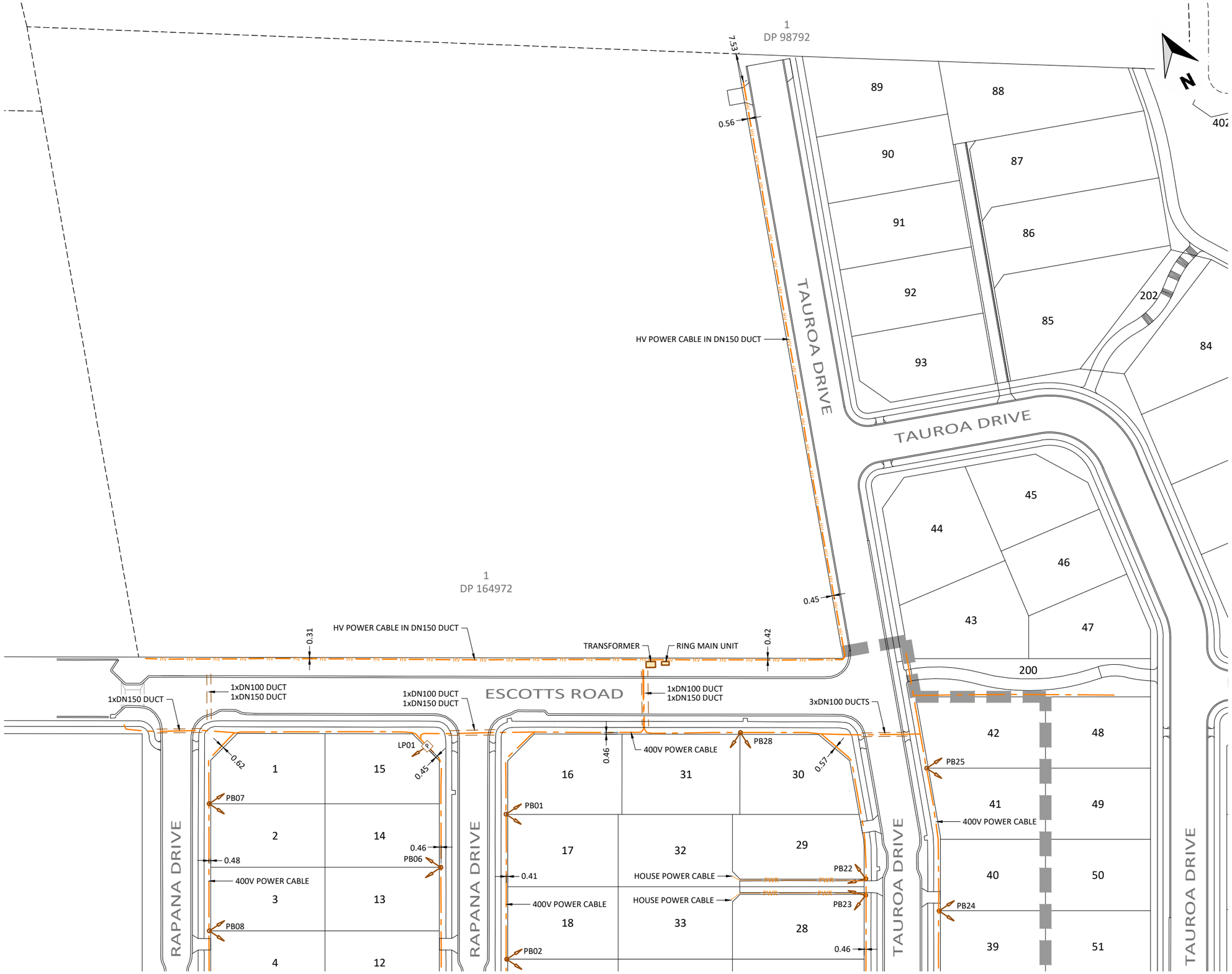
DRAWN: DKP 05.2019
CHECKED: MRR 26.06.19
APPROVED: RJP 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
POWER SUPPLY ASBUILT PLAN
STAGE 1 - SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB600 REV: A



LEGEND

ASBUILT

- PILLAR BOX
- HV POWER CABLE
- LV POWER CABLE
- HOUSE POWER CABLE
- DN100 PVC DUCT
- STREETLIGHT
- LINK BOX
- RING MAIN UNIT
- TRANSFORMER
- STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS AND SCHEDULE OF CO-ORDINATES ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

26.06.19
DATE

REV	REVISION DETAILS	BY	DATE
A	ASBUILT ISSUED	RJP	26.06.19

DRAWN:	DKP	DATE: 05.2019
CHECKED:	MRR	DATE: 26.06.19
APPROVED:	RJP	DATE: 26.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
POWER SUPPLY ASBUILT PLAN
STAGE 1 - SHEET 2
SUB0311/18 & LUC0489/18

ISSUE STATUS: ASBUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB601 REV: A

LEGEND

ASBUILT

- HANDHOLE & HOUSE LEADS
- 1 WAY RIBBONET
- 4 WAY RIBBONET
- 12 WAY RIBBONET
- 26 WAY RIBBONET
- 4 WAY MICRONET
- DN100 PVC DUCT
- STAGE BOUNDARY

NOTES

1. COORDINATES ARE IN TERMS OF GD2000 MT EDEN CIRCUIT.
2. CONSTRUCTION WAS UNDERTAKEN IN 2018 AND 2019.

I, RYAN JAMES PITKETHLEY, BELIEVE ON REASONABLE GROUNDS THAT THE PIPE SIZES, FITTINGS POSITIONS AND SCHEDULE OF CO-ORDINATES ARE CORRECT BASED ON THE INFORMATION SUPPLIED TO CIVILPLAN BY THE CONTRACTOR FOR THE WORK, TWOMEY CONSTRUCTION LTD.

RYAN JAMES PITKETHLEY
CMENGNZ CPENG

20.06.19
DATE

SCHEDULE OF COORDINATES HANDHOLES-GD2000

POINT No.	mE	mN
HH 01	416241.34	757233.43
HH 02	416225.76	757203.95
HH 03	416210.10	757174.48
HH 04	416207.67	757125.25
HH 05	416182.78	757120.02
HH 06	416216.58	757101.87
HH 07	416252.40	757086.70
HH 08	416276.98	757088.76
HH 09	416307.95	757072.90
HH 10	416302.19	757060.80
HH 11	416323.88	757064.51
HH 12	416332.56	757045.03
HH 13	416363.44	757026.12
HH 14	416379.83	757017.29
HH 15	416370.82	757068.96
HH 16	416379.43	757085.22
HH 17	416364.97	757097.18
HH 18	416367.03	757100.95
HH 19	416397.23	757118.37
HH 20	416383.24	757130.70
HH 21	416385.04	757134.36
HH 22	416411.96	757152.83
HH 23	416373.91	757184.47
HH 24	416299.68	757220.50
HH 25	416309.20	757194.23
HH 26	416288.03	757189.59
HH 27	416290.88	757160.67
HH 28	416272.20	757160.25
HH 29	416273.26	757127.25
HH 30	416256.47	757130.86

REV	REVISION DETAILS	BY	DATE
B	AS BUILT	MRR	20.06.19
A	AS BUILT	MRR	18.06.19

DRAWN: DKP 05.2019
CHECKED: MRR 19.06.19
APPROVED: RJP 20.06.19

CIVILPLAN CONSULTANTS
Level 3, 3 Osterley Way, Manukau, Auckland. Phone: 09 222 2445

PROJECT TITLE:
HUGHES DEVELOPMENTS LIMITED
99 ESCOTTS ROAD
TUAKAU

SHEET TITLE:
CHORUS ASBUILT PLAN
STAGE 1 - SHEET 1
SUB0311/18 & LUC0489/18

ISSUE STATUS: AS BUILT
SCALE: (A1/A3) 1:500 / 1:1000
SCALE BAR 1:1000@A3 0 10 20 30 40 50m
DRAWING NUMBER: 2011-01-AB610 REV: B

Appendix 2

Contractor's PS3 (Construction)

Lander Geotechnical Consultants Limited PS4 (Construction Review)

SIXTH SCHEDULE

(NZS 3910:2003)

FORM OF PRODUCER STATEMENT CONSTRUCTION

ISSUED BY **ICB Retaining & Construction Limited**
(Contractor)

TO **Twomey Construction Ltd**
(Principal)

IN RESPECT OF **Steel UB and Timber Pole Retaining Walls, Wall 1,2,3 at 99 Escotts Road Tuakau, Auckland**
(Description of Contract Works)

AT **99 Escotts Road Tuakau, Auckland**
(Address)

ICB Retaining & Construction Ltd
(Contractor)

has contracted to **Twomey Construction Ltd**
(Principal)

to carry out and complete certain building works in accordance with a contract, titled

Supply and Installation of Steel UB and Timber Pole Retaining Walls, Wall 1,2,3 at 99 Escotts Road Tuakau, Auckland for hughes developments limited *(The Contract)*
(The Project)

I, ***Regan Burke*** a duly authorised
(Duly Authorised Agent)

representative of **ICB Retaining & Construction Limited**
(Contractor)

Believe on reasonable grounds that **ICB Retaining & Construction Limited**
(Contractor)

has carried out and completed:
☑ All ☐ Part only as specified in the attached particulars of the building works in accordance with the Building Consent (BLD 0360/19) and any Authorised Instruction / Variations that have been issued during the course of the work.

(Signature of Authorised Agent on Behalf of)

29 January 2019
(Date)

ICB Construction Limited
(Contractor)

PO Box 303 340, North Harbour, Auckland
(Address)

13 June 2019 Ref No: J00779

Hughes Developments Limited
C/- CivilPlan Consultants Limited
PO Box 97796
Auckland 2241

Attention: Mr R Pitkethley

Dear Ryan

RE: Producer Statement – Construction Review (PS4) for Walls 1 to 3, 99 Escotts Road, Tuakau

This is to confirm Lander Geotechnical Consultants Limited visited the above site on several occasions to observe ground conditions and retaining wall construction for Walls 1 to 3 of the Geotechnical Design Report (GDR; reference J00779, dated 9 May 2018).

Wall 1 construction commenced in late November 2018 with the trenching excavation of the basalt floaters in the alignment of the wall between points W1.3 to W1.5 (pre-emptively, as pile boring was unlikely to penetrate through the larger boulders). The trench excavations encountered a mantle of weathered silty clays (volcanic ash deposits) and loose rubbly basalt beneath this. The trench extended to the full embedment depths of the piles and was backfilled with engineer-certified clay fill. No significant groundwater was noted within the trench excavation. Following this, pile boring commenced, and the piles were all installed by early January 2019. Wall 1 was lagged and backfilled in February 2019.

Construction of Walls 2 and 3 commenced concurrently in January 2019 with the mucking out of the gully in the approximate alignment of the walls. Groundwater seepages were observed in the invert of the gully and an underfill drain and rotten rock blanket was placed and compacted here. A sump pit was formed and pumped/dewatered while the gully was filled with engineer-certified clay fill. Pile boring for both walls subsequently commenced and several of the holes were cased to prevent collapse due to the groundwater conditions at the base of the wall. Both walls were lagged and backfilled by late May 2019.

All clay fills associated with the undercuts along the wall alignments are presented in Appendix 4 of the overarching Geotechnical Completion Report for Stage 1, 99 Escotts Road.

Based on our site observations, we are satisfied that Walls 1 to 3 were constructed in accordance with the wall designs outlined in the Geotechnical Design Report (reference J00779 dated 9 May 2018) and that the ground conditions for the walls are in keeping with the assumed design parameters.

Lander Geotechnical Consultants Limited
Level 3, 3 Osterley Way, P O Box 97 385, Manukau, Auckland 2241
Phone: (09) 262 1528; (09) 262 1526
Email: contactus@landergeotechnical.co.nz www.landergeotechnical.co.nz

If you have any queries or require further information, please do not hesitate to contact the undersigned.

For and on behalf of Lander Geotechnical Consultants Limited

Prepared By:

Michael Chan
Geotechnical Project Engineer
NZDE(Civil)

Reviewed and Authorised By:

Chris Edwards
Senior Engineering Geologist
CMEngNZ(PEngGeol)

Building Code Clause(s) B1

PRODUCER STATEMENT – PS4 – CONSTRUCTION REVIEW

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY: Lander Geotechnical Consultants Limited
(Construction Review Firm)

TO: Hughes Developments Limited
(Owner/Developer)

TO BE SUPPLIED TO: Waikato District Council
(Building Consent Authority)

IN RESPECT OF: Retaining Walls 1, 2 and 3 outlined in Lander Geotechnical Design Report dated 9 May 2019 ref. J00779
(Description of Building Work)

AT: 99 Escotts Road, Tuakau
(Address)

Town/City: Waikato (Address) **LOT** 1 **DP** 169701 **SO**

We Lander Geotechnical Consultants Limited (Construction Review Firm) have been engaged by Hughes Developments Limited

To provide ☐ CM1 ☐ CM2 ■ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ observation as per agreement with owner/developer. Hughes Developments Limited

or ☐ other ..... (Extent of Engagement) services

in respect of clause(s) B1 of the Building Code for the building work described in documents relating to Building Consent No. BLD0360/19 and those relating to Building Consent Amendment(s) Nos. ..... issued during the course of the works. We have sighted these Building Consents and the conditions of attached to them.

Authorised instructions/variations(s) No. ..... (copies attached) or by the attached Schedule ☐ have been issued during the course of the works.

On the basis of ☐ this review ■ these review(s) and information supplied by the contractor during the course of the works and **on behalf of the firm** undertaking this Construction Review, **I believe on reasonable grounds** that ☐ All or ■ Part only of the building works have been completed in accordance with the relevant requirements of the Building Consent and Building Consent Amendments identified above, with respect to Clause(s) B1 of the Building Code. I also believe on reasonable grounds that the persons who have undertaken this construction review have the necessary competency to do so.

I, Shane Lander (Name of Construction Review Professional) am: ■ CPEng 219353 # ☐ Reg Arch ..... #

I am a member of: ■ Engineering New Zealand ☐ NZIA and hold the following qualifications BE(Hons), NZCE

The Construction Review Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.

The Construction Review Firm is a member of ACENZ: ☐

SIGNED BY Shane Lander (Name of Construction Review Professional) (Signature) .....

ON BEHALF OF Lander Geotechnical Consultants Limited (Construction Review Firm) Date 17/06/19

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Forms 6 or 8 of the Building (Form) Regulations 2004** for the issue of a Code Compliance Certificate.

Appendix 3

Classification Test Data

GEOTECHNICS

Our Ref: 1009521.0220/Rep1
Customer Ref: J00779
17 April 2019

Lander Geotechnical Consultants Limited
Level 3
3 Osterley Way
Manukau 2104

Attention: Shane Lander

99 Escotts Road, Tuakau

Laboratory Test Report

Samples from the above mentioned site have been tested as received according to your instructions. Test results are included in this report.

Samples not destroyed during testing will be retained for one month from the date of this report before being discarded.

Descriptions are enclosed for your information, but are not covered under the IANZ endorsement of this report.

Please reproduce this report in full when transmitting to others or including in internal reports.

If we can be of any further assistance, feel free to get in touch. Contact details are provided at the bottom of this page.

GEOTECHNICS LTD

Report prepared by:

.....
Brendon Kingham
Laboratory Technician
Approved Signatory

Authorised for Geotechnics by:

Paul Burton
I have reviewed this document
2019.04.17 16:19:24 +12'00'

.....
Paul Burton
Project Director

Report checked by:

.....
Ryan Milligan
Project Manager

IANZ ACCREDITED LABORATORY

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

17-Apr-19
\\ttgroup.local\corporate\geotechnicsgroup\projects\1009521\1009521.0220\workingmaterial\20190417.brk.99 escotts rd.rep1.docx

GEOTECHNICS

Tauranga
15C Amber Crescent
Judea
Tauranga 3110
New Zealand

p: +64 7 571 0280

Report No: MAT:S19TG000162
Issue No: 1

Material Test Report

Customer: Lander Geotechnical
Address:

Project: 99 Escotts Road Tuakau - Lab
Project No.: 1009521.0220
Customer Reference No.: J00779
Report Authorised By : Tylah Wardrope

IANZ ACCREDITED LABORATORY

Tests indicated as not accredited (#) are outside the scope of the laboratory's accreditation.

Tests indicated as not accredited (#) are outside the scope of the laboratory's accreditation.

Approved By:
Brendon Kingham
(Geotechnical Technician)
Date of Issue: 17/04/2019

Sample Details

Location	99 Escotts Road, Tuakau
Geotechnics ID	S19TG000162
Sample Reference	Lot 3
Sample Description	SILT, with some clay and some sand, trace gravel; orange brown. Moist.
Sample Depth	0.50m
Bottom Depth	1.0m

Test Results

Description	Method	Result	Limits
Moisture Content (%)	NZS 4402:1986 Test 2.1	52.8	
Date Tested		12/04/2019	

Comments

N/A

If samples have been taken, and were not destroyed during testing, they will be retained for one month from the date of this report before being discarded.

Our Ref: 1009521.0220/Rep1

GEOTECHNICS
15C Amber Crescent
Judea
Tauranga 3110
New Zealand
p: +64 7 571 0280

Geotechnics Project Number	1009521.0220
QESTLab Work Order ID	W19TG-0043
Customer Project ID	J00779

Determination of Liquid & Plastic Limit, Plasticity Index - NZS 4402: 1986 Tests 2.2 (4 Point), 2.3 & 2.4

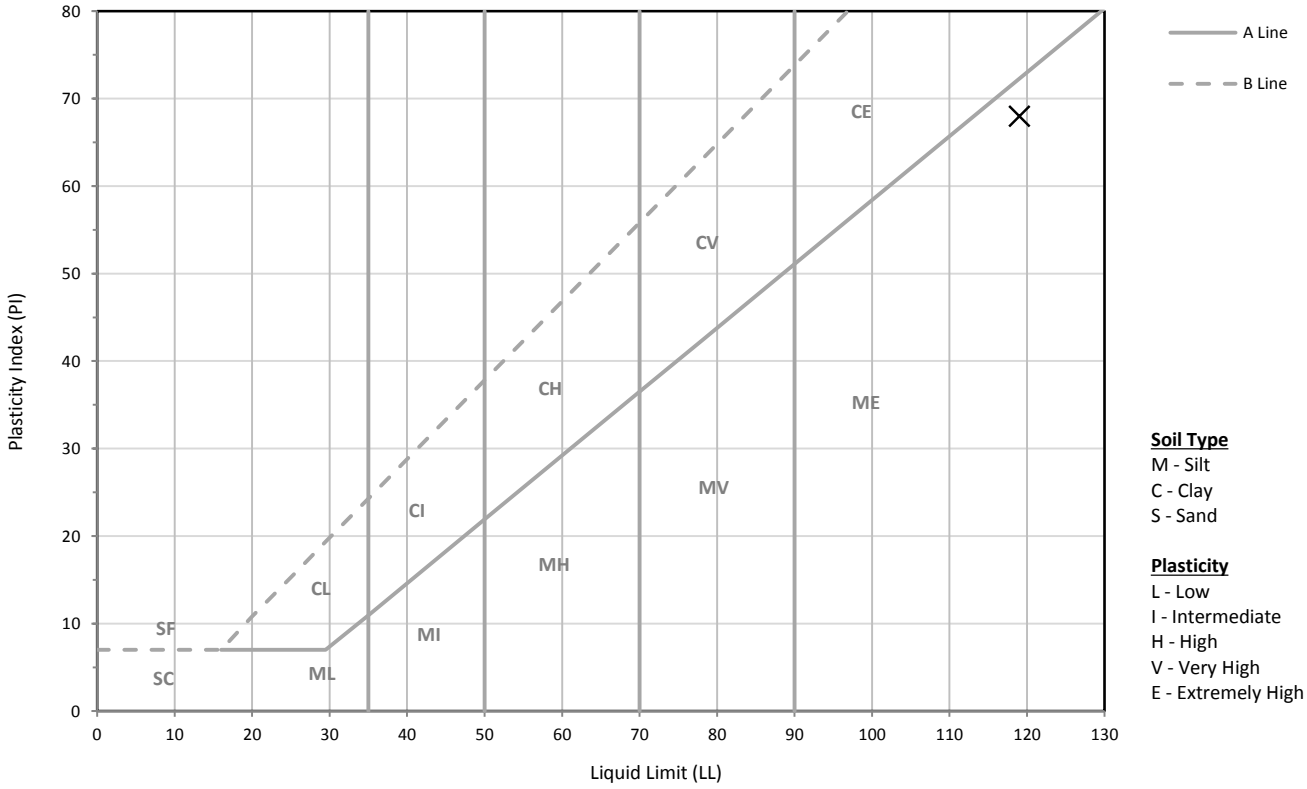
TEST DETAILS

LOCATION	**Description**	99 Escotts Road, Tuakau		
	Data	N/A		
SAMPLE	**Geotechnics ID**	S19TG000162		
	Reference	Lot 3	**Top Depth**	0.50m
	Sampled By	Others, Tested As Received	**Bottom Depth**	1.0m
	Description	SILT, with some clay and some sand, trace gravel; orange brown. Moist.		
SPECIMEN	**Reference**	N/A	**Depth**	N/A
	Description	N/A		

TEST RESULTS

Liquid Limit	**119**
Plastic Limit	**51**
Plasticity Index	**68**

Plasticity Chart - BS 5930:1999



The plasticity chart is provided for your inference only and is not covered under our scope of IANZ accreditation. Due to the nature of classifications it is possible to have discrepancies between observational behaviour descriptions and measured parameters

TEST REMARKS

• The material used for testing was natural, fraction passing a 425um sieve. • Results apply only to sample tested. • This report may be reproduced only in full.

Approved By	Brendon Kingham
Date	17/04/2019

IANZ ACCREDITED LABORATORY

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GEOTECHNICS

15C Amber Crescent
Judea
Tauranga 3110
New Zealand
p: +64 7 571 0280

Geotechnics Project Number	1009521.0220
QESTLab Work Order ID	W19TG-0043
Customer Project ID	J00779

Determination of Linear Shrinkage - Determination of the Linear Shrinkage - NZS 4402:1986 Test 2.6

TEST DETAILS

LOCATION	**Description**	99 Escotts Road, Tuakau		
	Data	N/A		
SAMPLE	**Geotechnics ID**	S19TG000162		
	Reference	Lot 3	**Top Depth**	0.50m
	Sampled By	Others, Tested As Received	**Bottom Depth**	1.0m
	Description	SILT, with some clay and some sand, trace gravel; orange brown. Moist.		
SPECIMEN	**Reference**		**Depth**	
	Description			

Linear Shrinkage **26%**

TEST REMARKS

• Results apply only to sample tested. • This report may be reproduced only in full.

Approved By Brendon Kingham

Date 17/04/2019

IANZ ACCREDITED LABORATORY

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GEOTECHNICS

Tauranga
15C Amber Crescent
Judea
Tauranga 3110
New Zealand

p: +64 7 571 0280

Report No: MAT:S19TG000163
Issue No: 1

Material Test Report

Customer: Lander Geotechnical
Address:

Project: 99 Escotts Road Tuakau - Lab
Project No.: 1009521.0220
Customer Reference No.: J00779
Report Authorised By : Tylah Wardrope

IANZ ACCREDITED LABORATORY

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Approved By:
Brendon Kingham
(Geotechnical Technician)
Date of Issue: 17/04/2019

Sample Details

Location	99 Escotts Road, Tuakau
Geotechnics ID	S19TG000163
Sample Reference	Lot24
Sample Description	SILT, with some sand, minor to some clay, trace gravel and trace rootelts; orange brown. Moist.
Sample Depth	0.50m
Bottom Depth	1.0m

Test Results

Description	Method	Result	Limits
Moisture Content (%)	NZS 4402:1986 Test 2.1	46.4	
Date Tested		12/04/2019	

Comments

N/A

If samples have been taken, and were not destroyed during testing, they will be retained for one month from the date of this report before being discarded.

GEOTECHNICS
15C Amber Crescent
Judea
Tauranga 3110
New Zealand
p: +64 7 571 0280

Geotechnics Project Number	1009521.0220
QESTLab Work Order ID	W19TG-0043
Customer Project ID	J00779

Determination of Liquid & Plastic Limit, Plasticity Index - NZS 4402: 1986 Tests 2.2 (4 Point), 2.3 & 2.4

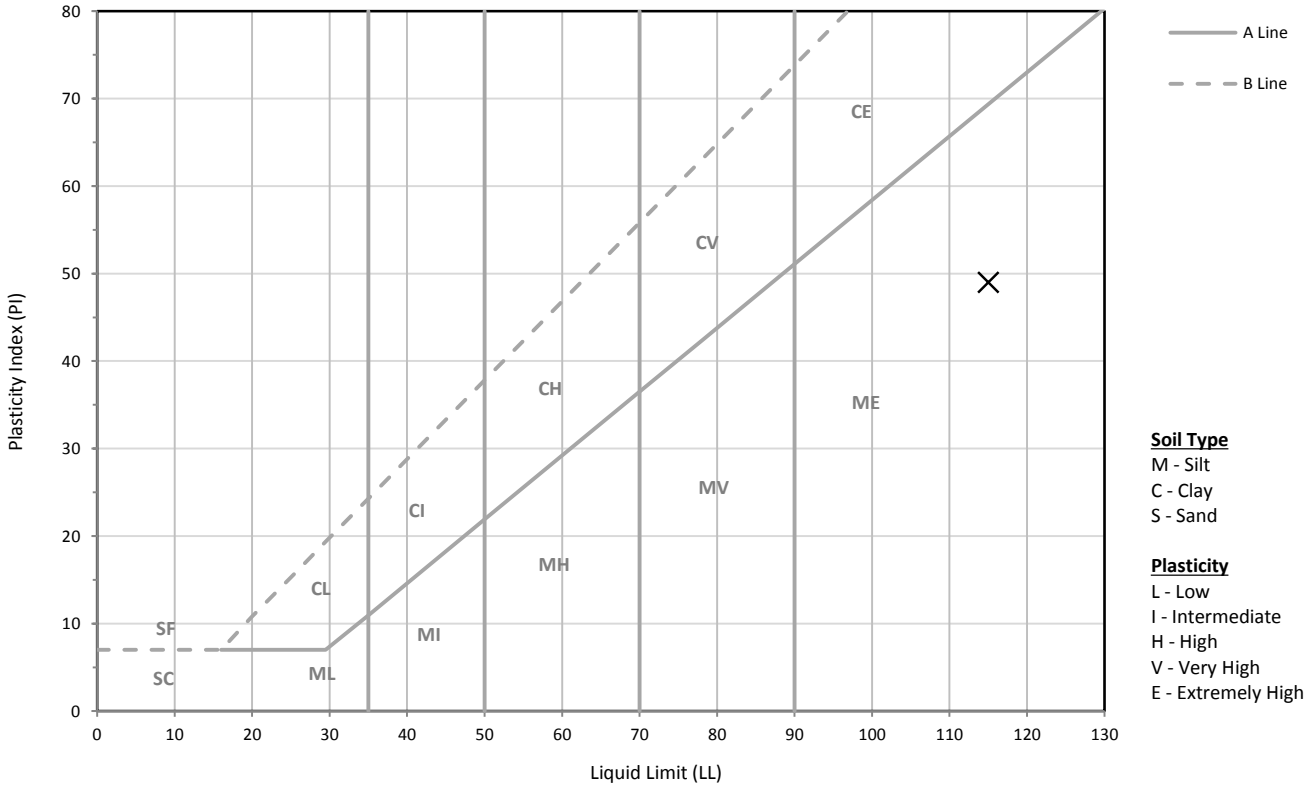
TEST DETAILS

LOCATION	**Description**	99 Escotts Road, Tuakau		
	Data	N/A		
SAMPLE	**Geotechnics ID**	S19TG000163		
	Reference	Lot24	**Top Depth**	0.50m
	Sampled By	Others, Tested As Received	**Bottom Depth**	1.0m
	Description	SILT, with some sand, minor to some clay, trace gravel and trace rootelts; orange brown. Moist.		
SPECIMEN	**Reference**	N/A	**Depth**	N/A
	Description	N/A		

TEST RESULTS

Liquid Limit	**115**
Plastic Limit	**66**
Plasticity Index	**49**

Plasticity Chart - BS 5930:1999



The plasticity chart is provided for your inference only and is not covered under our scope of IANZ accreditation. Due to the nature of classifications it is possible to have discrepancies between observational behaviour descriptions and measured parameters

TEST REMARKS

• The material used for testing was natural, fraction passing a 425um sieve. • Results apply only to sample tested. • This report may be reproduced only in full.

Approved By	Brendon Kingham
Date	17/04/2019

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GEOTECHNICS

15C Amber Crescent
Judea
Tauranga 3110
New Zealand
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Geotechnics Project Number	1009521.0220
QESTLab Work Order ID	W19TG-0043
Customer Project ID	J00779

Determination of Linear Shrinkage - Determination of the Linear Shrinkage - NZS 4402:1986 Test 2.6

TEST DETAILS

LOCATION	**Description**	99 Escotts Road, Tuakau		
	Data	N/A		
SAMPLE	**Geotechnics ID**	S19TG000163		
	Reference	Lot24	**Top Depth**	0.50m
	Sampled By	Others, Tested As Received	**Bottom Depth**	1.0m
	Description	SILT, with some sand, minor to some clay, trace gravel and trace rootelts; orange brown. Moist.		
SPECIMEN	**Reference**		**Depth**	
	Description			

Linear Shrinkage **26%**

TEST REMARKS

• Results apply only to sample tested. • This report may be reproduced only in full.

Approved By Brendon Kingham

Date 17/04/2019

IANZ ACCREDITED LABORATORY

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Appendix 4

Field Density Test Summary Sheets

Coffey Services NZ Ltd
144A Cryers Road, East Tamaki, Auckland 2103
PO Box 58877, Botany, Manukau, Auckland 2163
t +64 92723375 f +92723378
www.coffey.com

Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	27/09/2018

IANZ ACCREDITED LABORATORY

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

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
17/09/2018	ETAM18W04157	SC	**1**	Fill	Silty CLAY	As per plan	1772688	5873804	35.2	150		160	160	155	151	1.66	60.2	1.03	2.70	0
17/09/2018	ETAM18W04157	SC	**2**	Fill	Silty CLAY	As per plan	1772690	5873811	34.9	150		151	147	160	155	1.68	50.7	1.12	2.70	2

Coffey Services NZ Ltd
144A Cryers Road, East Tamaki, Auckland 2103, New Zealand
PO Box 58 877, Botany, Manukau 2163, New Zealand
t+64 9 272 3375 f+64 9 272 3378 www.coffey.com

SITE PLAN

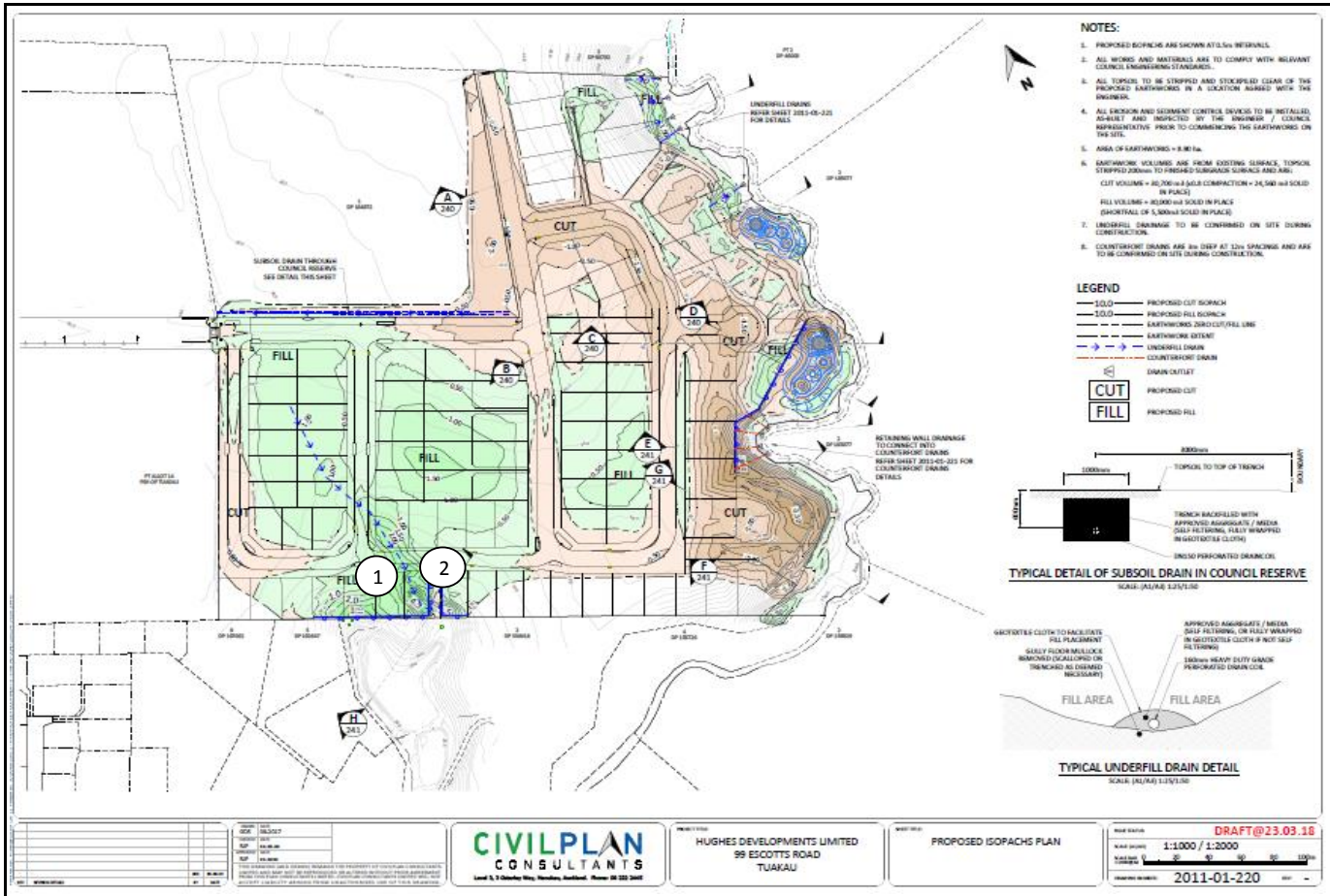
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W04157
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 17/09/2018



Issue date: 050517

Coffey Services NZ Ltd
144A Cryers Road, East Tamaki, Auckland 2103
PO Box 58877, Botany, Manukau, Auckland 2163
t +64 92723375 f +92723378
www.coffey.com

Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	31/10/2018

IANZ ACCREDITED LABORATORY

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

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
9/10/2018	ETAM18W04590	BS	**3**	Fill	Silty CLAY	Refer to Site Plan	1772674	5873934	-	150	1.0 m below Finished Level	UTP	UTP	UTP	UTP	1.60	39.2	1.15	2.70	12
9/10/2018	ETAM18W04590	BS	**4**	Fill	Silty CLAY	Refer to Site Plan	1772658	5873882	-	150	1.0 m below Finished Level	UTP	237+	237+	237+	1.57	56.1	1.00	2.70	6
9/10/2018	ETAM18W04590	BS	**5**	Fill	Silty CLAY	Refer to Site Plan	1772649	5873852	-	150	1.0 m below Finished Level	UTP	UTP	UTP	UTP	1.58	44.4	1.09	2.70	11
9/10/2018	ETAM18W04590	BS	**6**	Fill	Silty CLAY	Refer to Site Plan	1772672	5873874	-	150	1.0 m below Finished Level	UTP	UTP	UTP	UTP	1.62	53.3	1.05	2.70	5
9/10/2018	ETAM18W04590	BS	**7**	Fill	Silty CLAY	Refer to Site Plan	1772712	5873912	-	150	1.0 m below Finished Level	UTP	UTP	UTP	UTP	1.63	54.4	1.06	2.70	3
9/10/2018	ETAM18W04590	BS	**8**	Fill	Silty CLAY	Refer to Site Plan	1772706	5873873	-	150	1.0 m below Finished Level	UTP	UTP	UTP	UTP	1.70	43.3	1.19	2.70	5

Coffey Services NZ Ltd
144A Cryers Road, East Tamaki, Auckland 2103, New Zealand
PO Box 58 877, Botany, Manukau 2163, New Zealand
t+64 9 272 3375 f+64 9 272 3378 www.coffey.com

SITE PLAN

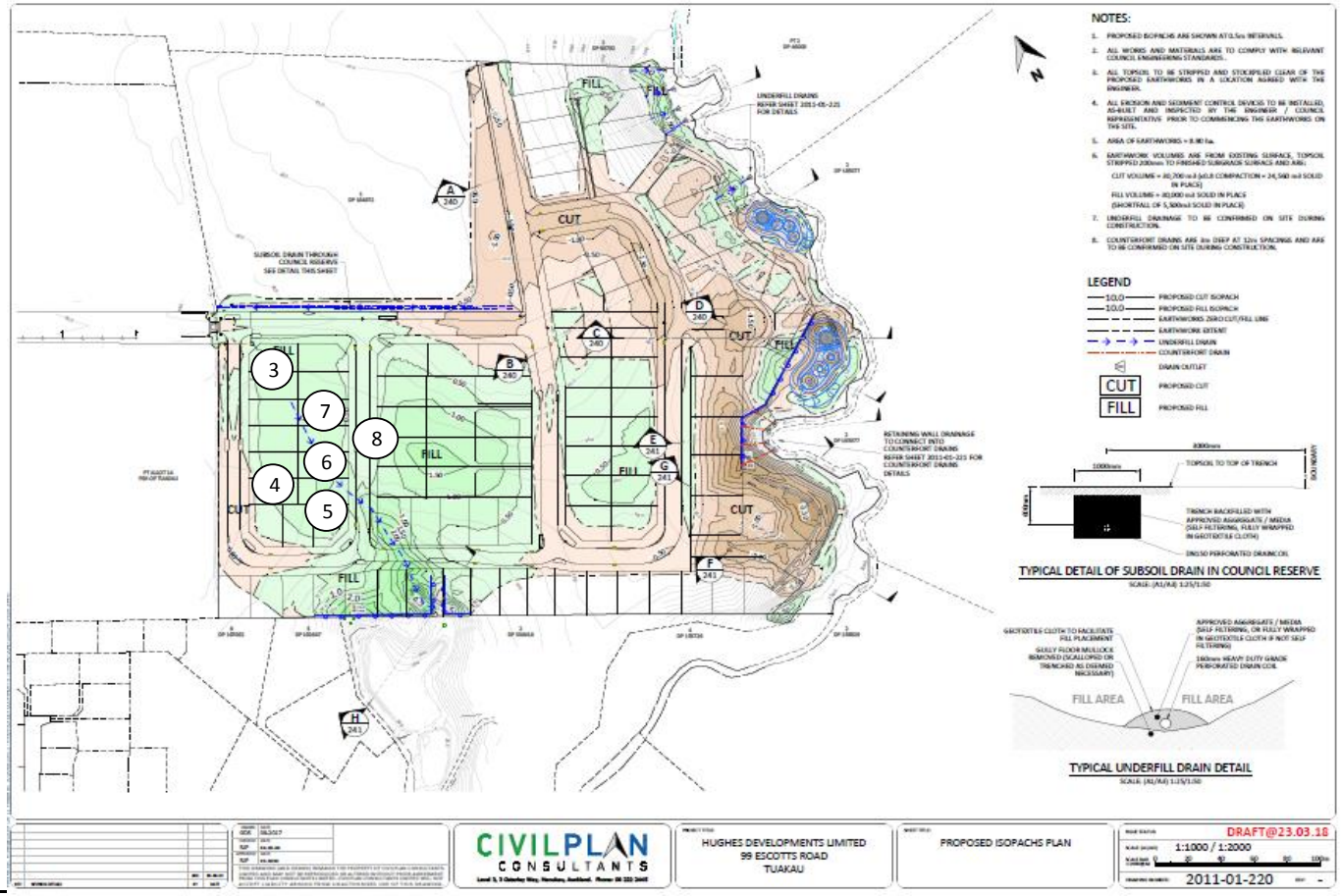
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W04590
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: BS
Date tested: 9/10/2018



Issue date: 050517

Coffey Services NZ Ltd
144A Cryers Road, East Tamaki, Auckland 2103
PO Box 58877, Botany, Manukau, Auckland 2163
t +64 92723375 f +92723378
www.coffey.com

Client: Lander Geotechnical Consultants Limited

Address PO Box 97 385, Manukau 2241

Attention: Michael Chan

c.c: -

Project: J00779 - 99 Escotts Road Tuakau

Location: Tuakau

PROJECT CODE: 773-ETAM00829AA

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: 31/10/2018

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
10/10/2018	ETAM18W04592	BS	**9**	Fill	Silty CLAY	Refer to Site Plan	1772704	5873929	39.1	150	-	188	188	218	233	1.62	61.7	1.00	2.70	1
10/10/2018	ETAM18W04592	BS	**10**	Fill	Silty CLAY	Refer to Site Plan	1772679	5873874	38.7	150	-	237+	237+	218	UTP	1.60	60.6	1.00	2.70	3
10/10/2018	ETAM18W04592	BS	**11**	Fill	Silty CLAY	Refer to Site Plan	1772718	5873848	37.9	150	-	237+	237+	237+	237+	1.61	54.6	1.04	2.70	4
10/10/2018	ETAM18W04592	BS	**12**	Fill	Silty CLAY	Refer to Site Plan	1772751	5873902	39.1	150	-	237+	237+	237+	237+	1.60	45.2	1.10	2.70	9
10/10/2018	ETAM18W04592	BS	**13**	Fill	Silty CLAY	Refer to Site Plan	1772762	5873892	39.5	150	-	163	188	170	144	1.60	52.7	1.05	2.70	6
10/10/2018	ETAM18W04592	BS	**14**	Fill	Silty CLAY	Refer to Site Plan	1772739	5873842	38.1	150	-	144	237+	237+	198	1.62	47.0	1.10	2.70	8

Coffey Services NZ Ltd
144A Cryers Road, East Tamaki, Auckland 2103, New Zealand
PO Box 58 877, Botany, Manukau 2163, New Zealand
t+64 9 272 3375 f+64 9 272 3378 www.coffey.com

SITE PLAN

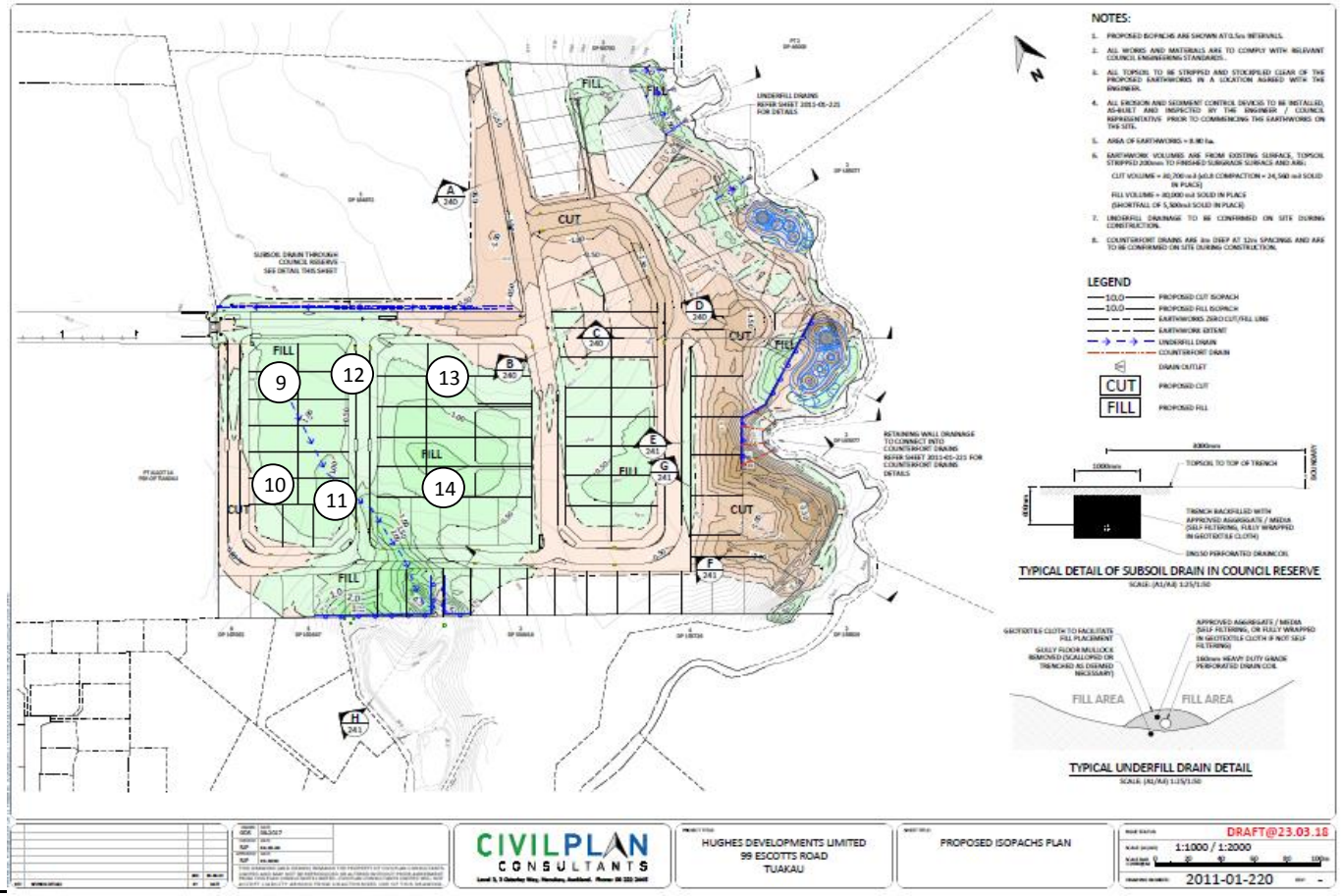
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W04592
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: BS
Date tested: 10/10/2018



Issue date: 050517

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t +64 92723375 f +92723378
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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau		

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Cesar Pura

Issue date: 31/10/2018

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
11/10/2018	ETAM18W04593	BS	**15**	Fill	Silty CLAY	Refer to Site Plan	1772676	5873933	-	150	Retest of Test No. 3	UTP	UTP	UTP	UTP	1.68	50.7	1.12	2.70	2
11/10/2018	ETAM18W04593	BS	**16**	Fill	Silty CLAY	Refer to Site Plan	1772649	5873852	-	150	Retest of Test No. 5	UTP	UTP	UTP	UTP	1.60	51.9	1.05	2.70	7
11/10/2018	ETAM18W04593	BS	**17**	Fill	Silty CLAY	Refer to Site Plan	172712	5873836	-	150	1.0 m below Finished Level	UTP	UTP	237+	237+	1.71	47.2	1.16	2.70	2
11/10/2018	ETAM18W04593	BS	**18**	Fill	Silty CLAY	Refer to Site Plan	1772767	5873868	-	150	1.0 m below Finished Level	237+	225	198	233	1.60	62.6	0.99	2.70	2
11/10/2018	ETAM18W04593	BS	**19**	Fill	Silty CLAY	Refer to Site Plan	1772741	5873822	-	150	1.0 m below Finished Level	237+	UTP	UTP	UTP	1.60	43.3	1.11	2.70	11
11/10/2018	ETAM18W04593	BS	**20**	Fill	Silty CLAY	Refer to Site Plan	1772756	5873789	-	150	1.0 m below Finished Level	UTP	UTP	UTP	UTP	1.67	46.7	1.14	2.70	5

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SITE PLAN

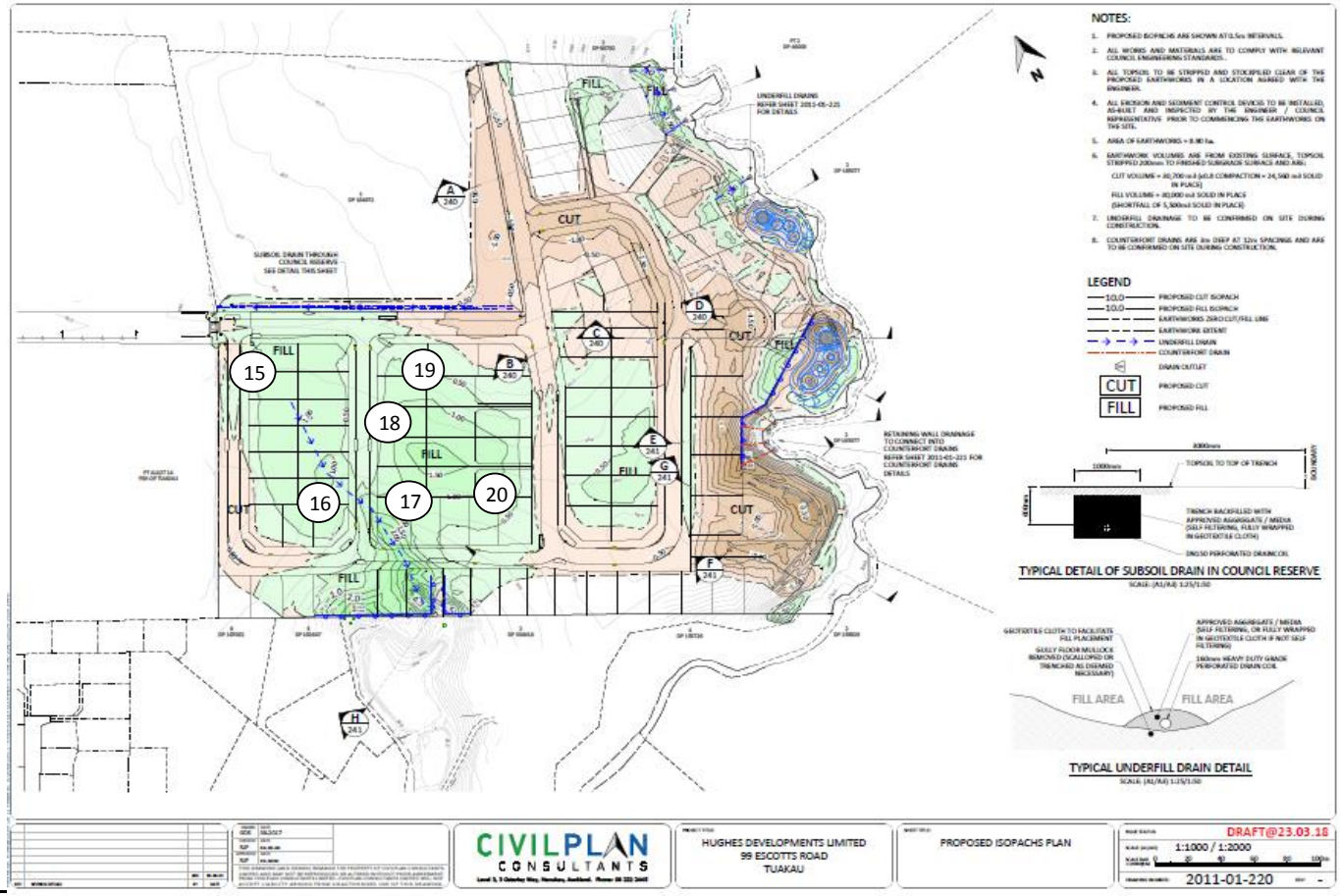
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W04593
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: BS
Date tested: 11/10/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau		

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Cesar Pura

Issue date: 31/10/2018

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
15/10/2018	ETAM18W04594	SC	**21**	Fill	Silty CLAY	Refer to Site Plan	1772741	5873822	-	150	Retest of Test No. 19	UTP	UTP	231+	231+	1.60	49.1	1.07	2.70	8
15/10/2018	ETAM18W04594	SC	**22**	Fill	Silty CLAY	Refer to Site Plan	1772768	5873871	-	150	0.5 m below Finished Level	231+	231+	UTP	UTP	1.63	60.1	1.02	2.70	1
15/10/2018	ETAM18W04594	SC	**23**	Fill	Silty CLAY	Refer to Site Plan	1772756	5873908	-	150	0.5 m below Finished Level	231+	231+	UTP	UTP	1.59	57.3	1.01	2.70	5
15/10/2018	ETAM18W04594	SC	**24**	Fill	Silty CLAY	Refer to Site Plan	1772732	5873880	-	150	0.5 m below Finished Level	UTP	UTP	231+	231+	1.55	56.7	0.99	2.70	7
15/10/2018	ETAM18W04594	SC	**25**	Fill	Silty CLAY	Refer to Site Plan	1772726	5878836	-	150	0.5 m below Finished Level	231+	231+	UTP	UTP	1.69	56.1	1.09	2.70	0

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SITE PLAN

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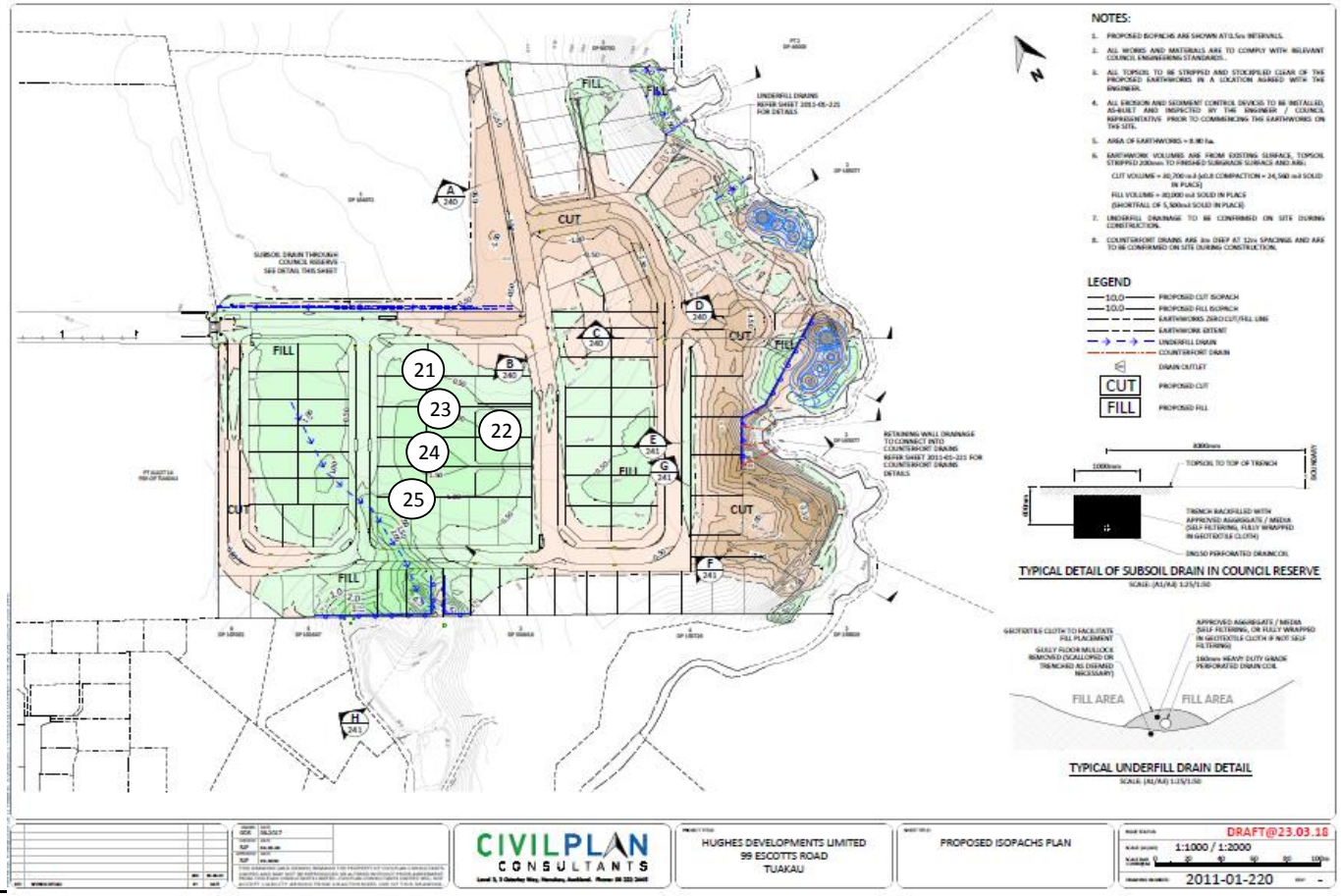
Project No: 773-ETAM00829AA
Work Order No: ETAM18W04595
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 15/10/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	31/10/2018

IANZ ACCREDITED LABORATORY — Tests indicated as not accredited are outside the scope of the laboratory's accreditation

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
16/10/2018	ETAM18W04596	SC	**26**	Fill	Silty CLAY	Refer to Site Plan	1772760	5873880	-	150	0.3 m below Finished Level	231+	179	UTP	UTP	1.67	57.2	1.06	2.70	0
16/10/2018	ETAM18W04596	SC	**27**	Fill	Silty CLAY	Refer to Site Plan	1772735	5873836	-	150	0.3 m below Finished Level	206	231+	UTP	UTP	1.60	69.5	0.94	2.70	0
16/10/2018	ETAM18W04596	SC	**28**	Fill	Silty CLAY	Refer to Site Plan	1772763	5873820	-	150	0.3 m below Finished Level	231+	231+	231+	231+	1.65	59.5	1.03	2.70	0
16/10/2018	ETAM18W04596	SC	**29**	Fill	Silty CLAY	Refer to Site Plan	1772757	5873867	-	150	0.3 m below Finished Level	231+	231+	206	231+	1.65	73.7	0.95	2.70	0

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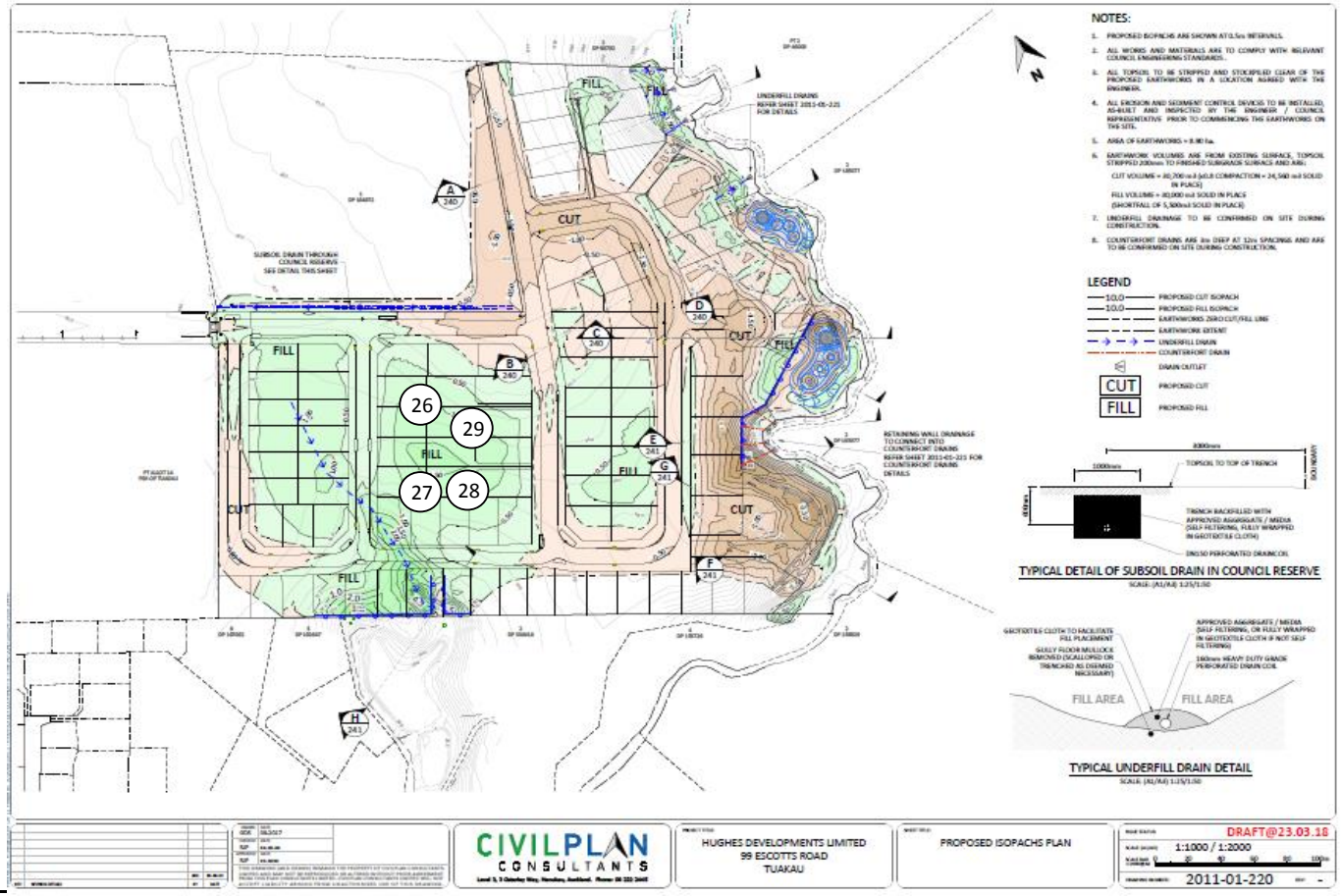
Project No: 773-ETAM00829AA
Work Order No: ETAM18W04596
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 16/10/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	31/10/2018

IANZ ACCREDITED LABORATORY

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

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
17/10/2018	ETAM18W04597	SC	**30**	Fill	Silty CLAY	Refer to Site Plan	1772773	5873941	-	150	-	231+	231+	231+	231+	1.67	44.1	1.16	2.7	6
17/10/2018	ETAM18W04597	SC	**31**	Fill	Silty CLAY	Refer to Site Plan	1772734	5873962	-	150	-	231+	231+	231+	231+	1.58	44.9	1.09	2.7	10

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SITE PLAN

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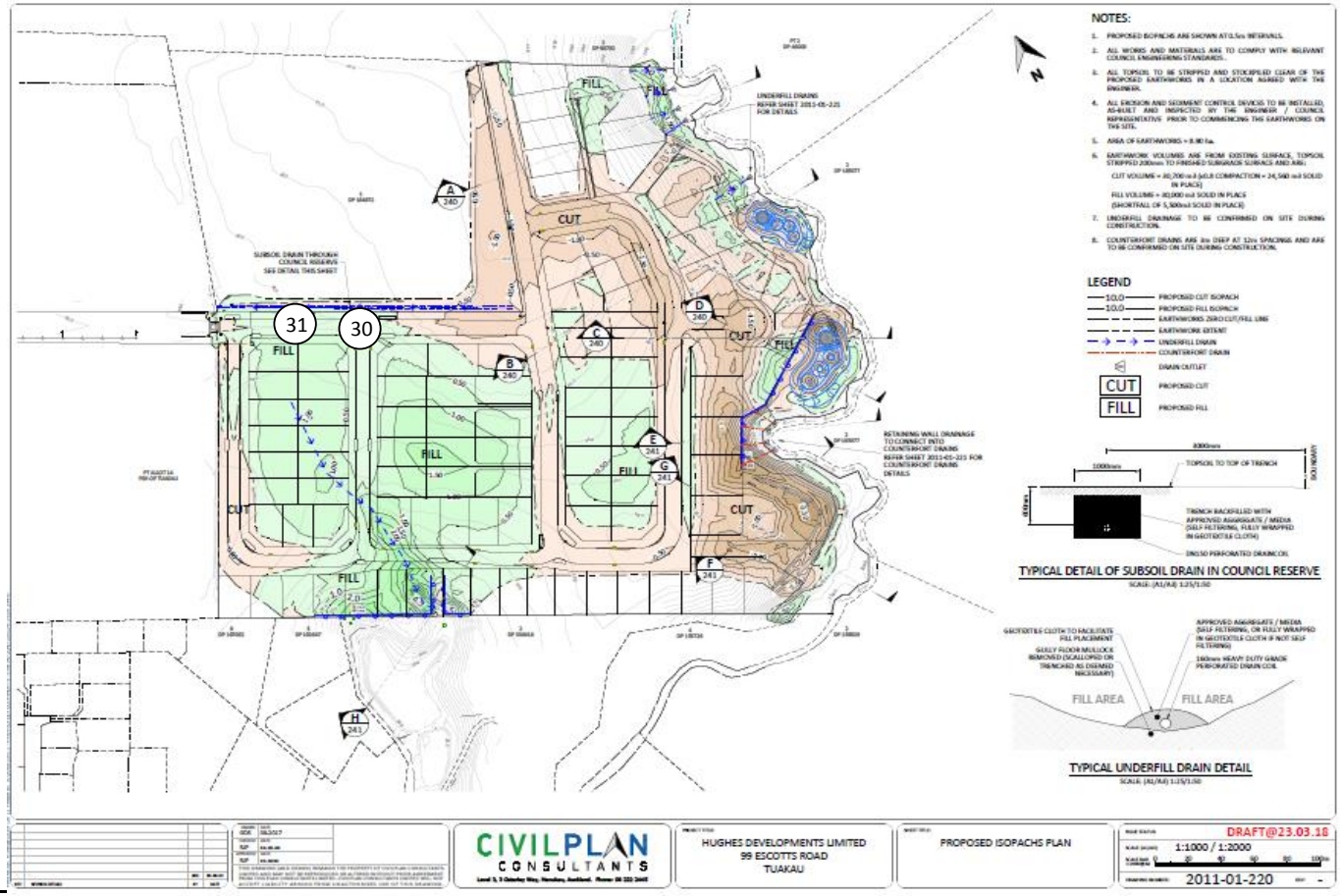
Project No: 773-ETAM00829AA
Work Order No: ETAM18W04597
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 17/10/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	31/10/2018

IANZ ACCREDITED LABORATORY

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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): 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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
19/10/2018	ETAM18W04598	SC	**32**	Fill	Silty CLAY	Refer to Site Plan	1772734	5873962	-	150	Retest of Test No.31	231+	231+	231+	231+	1.67	47.3	1.13	2.7	5
19/10/2018	ETAM18W04598	SC	**33**	Fill	Silty CLAY	Refer to Site Plan	1772738	5893845	-	150	At Finished Level	231+	231+	231+	231+	1.59	45.1	1.09	2.7	10
19/10/2018	ETAM18W04598	SC	**34**	Fill	Silty CLAY	Refer to Site Plan	1772752	5893874	-	150	At Finished Level	UTP	UTP	231+	231+	1.72	48.6	1.16	2.7	1
19/10/2018	ETAM18W04598	SC	**35**	Fill	Silty CLAY	Refer to Site Plan	1772756	5893898	-	150	At Finished Level	231+	231+	UTP	UTP	1.63	58.3	1.03	2.7	2

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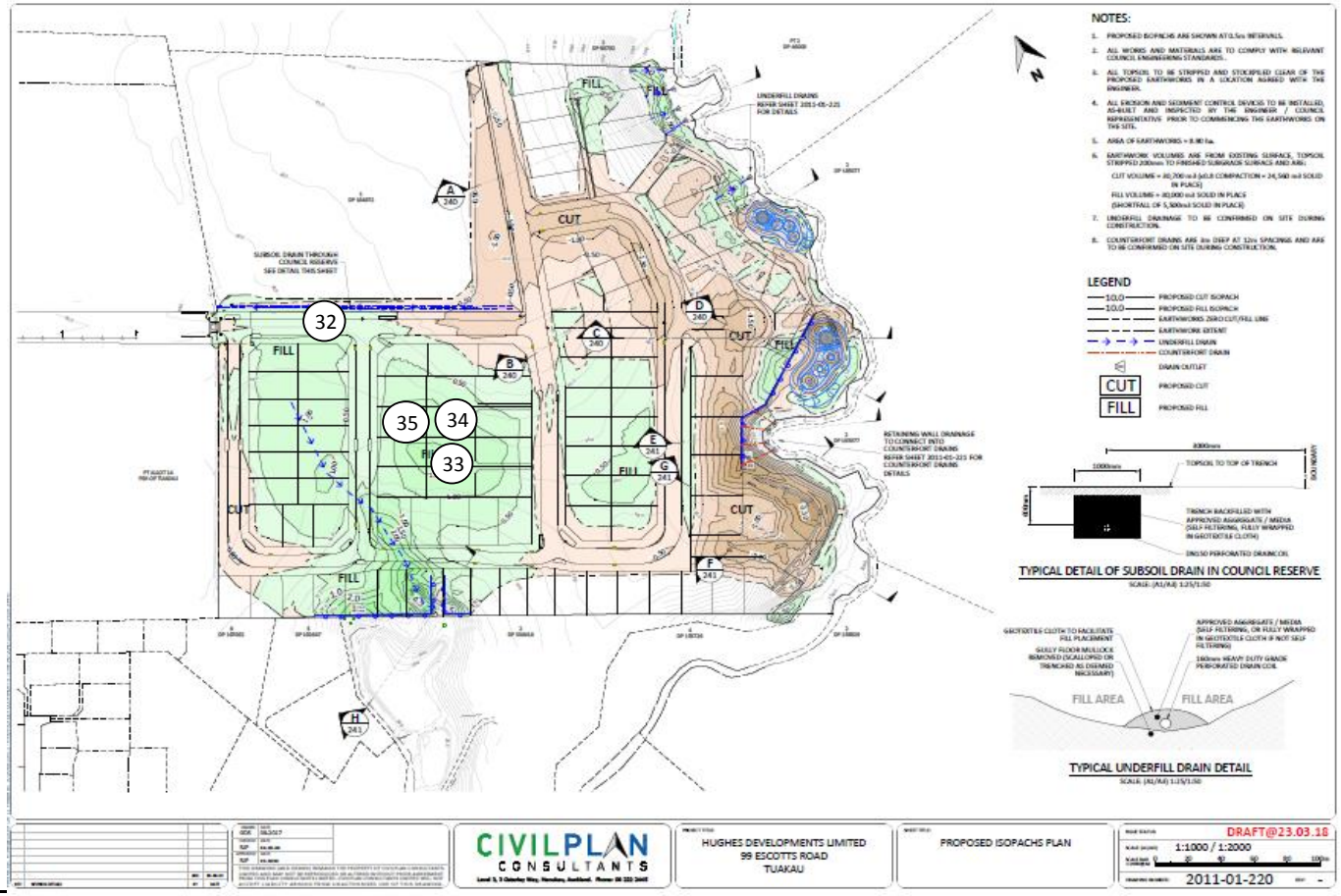
Project No: 773-ETAM00829AA
Work Order No: ETAM18W04598
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 19/10/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	2/11/2018

IANZ ACCREDITED LABORATORY

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

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
26/10/2018	ETAM18W04729	SC	**36**	Fill	Silty CLAY	Refer to Site Plan	1772738	5873845	-	150		UTP	UTP	231+	231+	1.69	40.9	1.20	2.7	7
26/10/2018	ETAM18W04729	SC	**37**	Fill	Silty CLAY	Refer to Site Plan	1772779	5873842	-	150		231+	231+	UTP	UTP	1.66	53.7	1.08	2.7	2

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SITE PLAN

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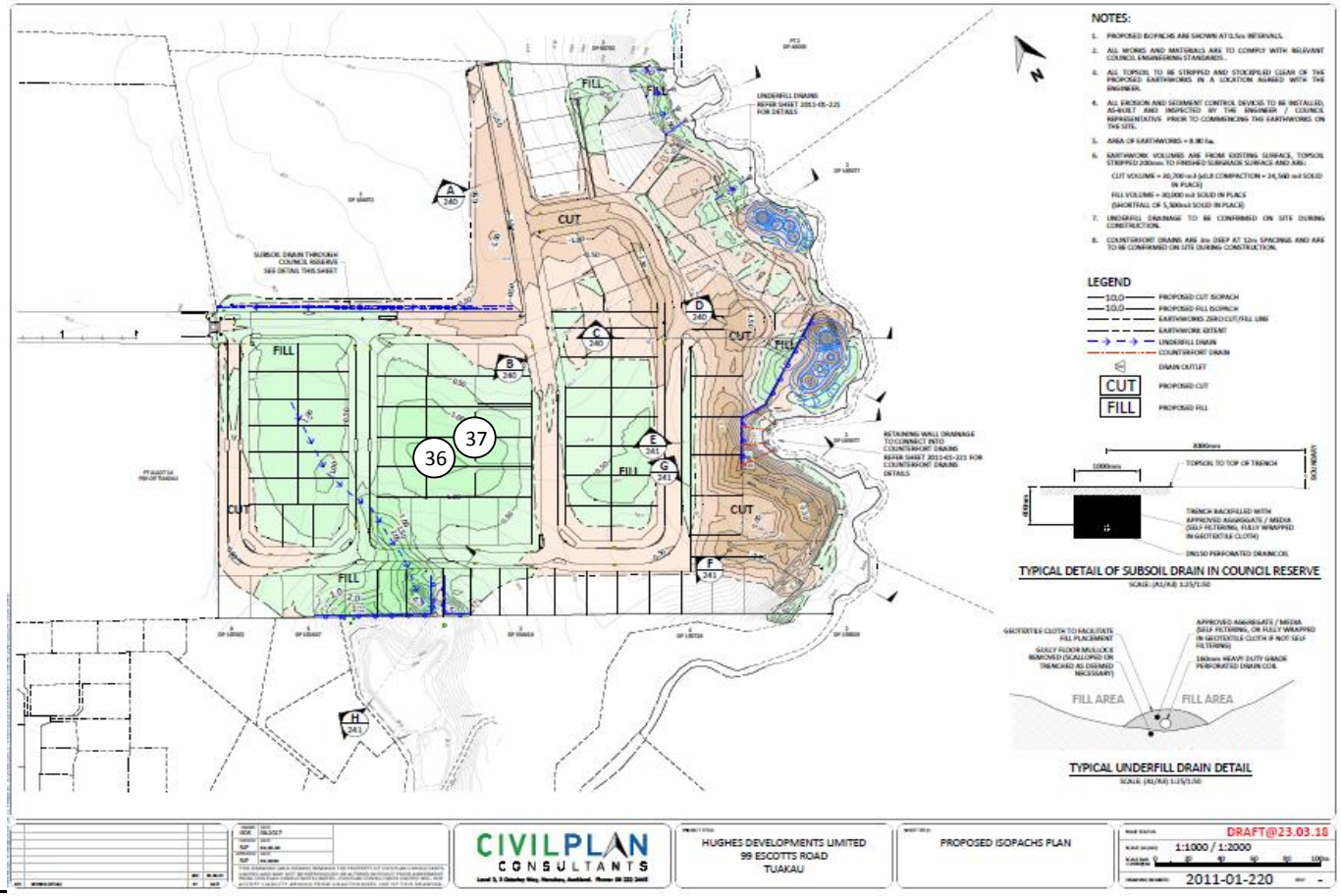
Project No: 773-ETAM00829AA
Work Order No: ETAM18W04729
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 26/10/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau		

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Cesar Pura

Issue date: 4/12/2018

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
28/11/2018	ETAM18W05320	SC	**38**	Fill	Silty CLAY	Retaining Wall Backfill	1772932	3893787	-	150	3m below Finished Level	231+	231+	231+	231+	1.66	49.5	1.11	2.7	4
28/11/2018	ETAM18W05320	SC	**39**	Fill	Silty CLAY	Retaining Wall Backfill	1772941	5893795	-	150	3m below Finished Level	231+	231+	231+	231+	1.62	51.6	1.07	2.7	5

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SITE PLAN

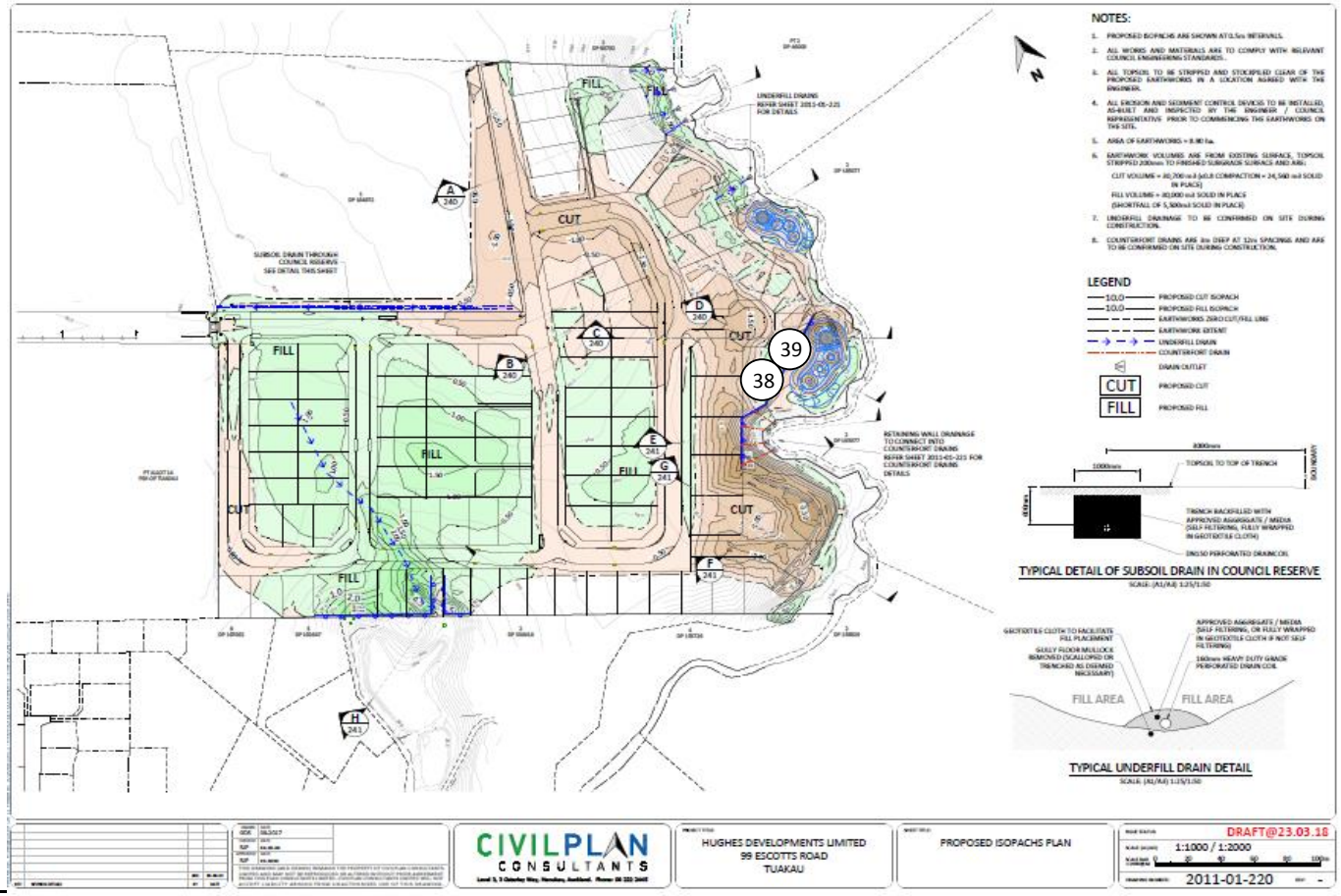
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05320
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 28/11/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau		

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Cesar Pura

Issue date: 4/12/2018

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
29/11/2018	ETAM18W05326	SC	**40**	Fill	Silty CLAY	Retaining Wall Backfill	1772937	5873791	-	150	2m below Finished Level	206	206	191	191	1.64	48.3	1.11	2.7	5
29/11/2018	ETAM18W05326	SC	**41**	Fill	Silty CLAY	Retaining Wall Backfill	1772946	5873793	-	150	2m below Finished Level	206	206	191	191	1.70	48.7	1.15	2.7	2

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SITE PLAN

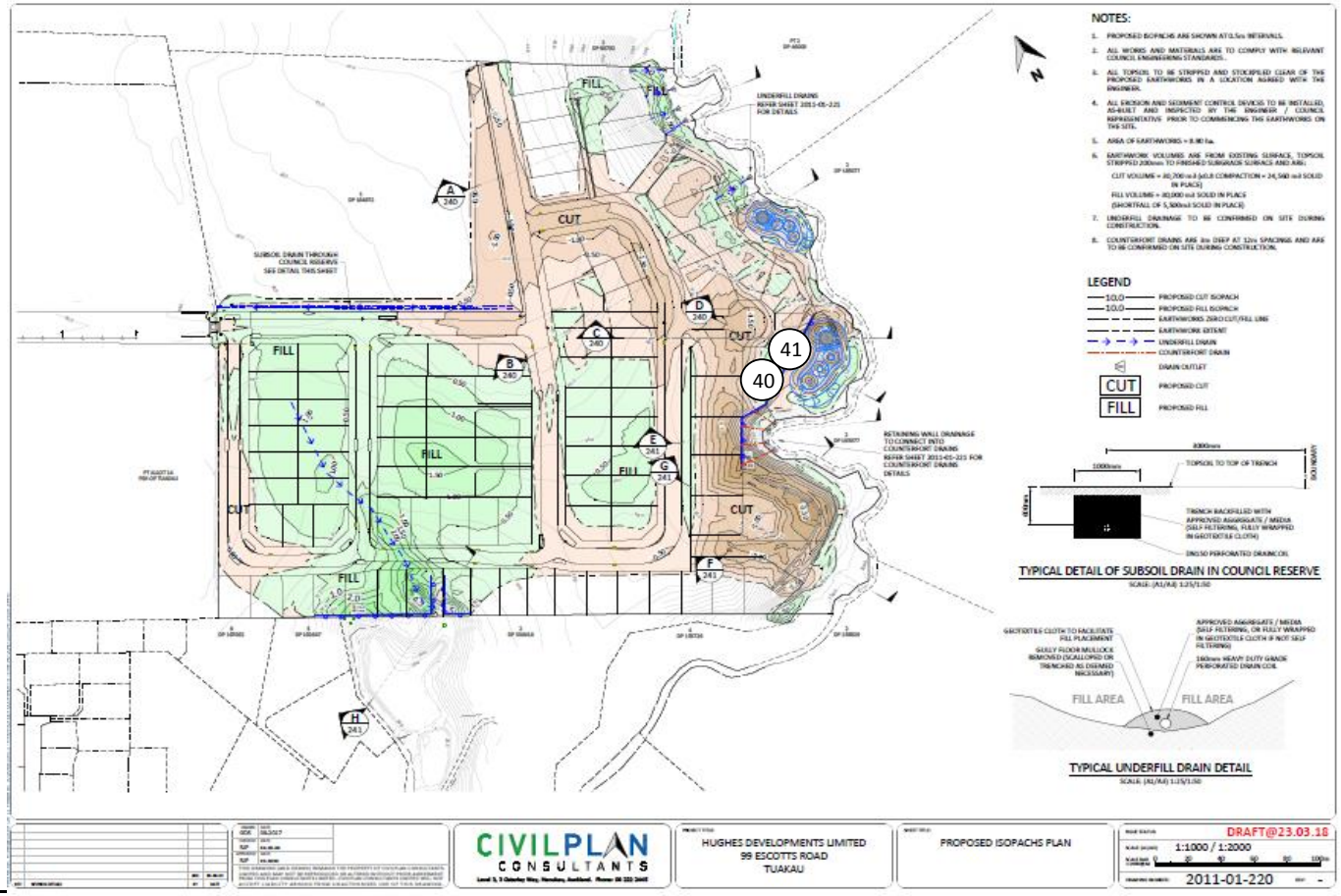
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05326
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 29/11/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau		

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Cesar Pura

Issue date: 5/12/2018

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
29/11/2018	ETAM18W05352	SC	**42**	Fill	Silty CLAY	Retaining Wall Backfill	1772957	5873803	-	150	3m below Finished Level	191	191	231+	231+	1.71	45.8	1.17	2.7	3
29/11/2018	ETAM18W05352	SC	**43**	Fill	Silty CLAY	Retaining Wall Backfill	1772959	5873804	-	150	3m below Finished Level	206	206	206	206	1.77	46.3	1.21	2.7	0

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SITE PLAN

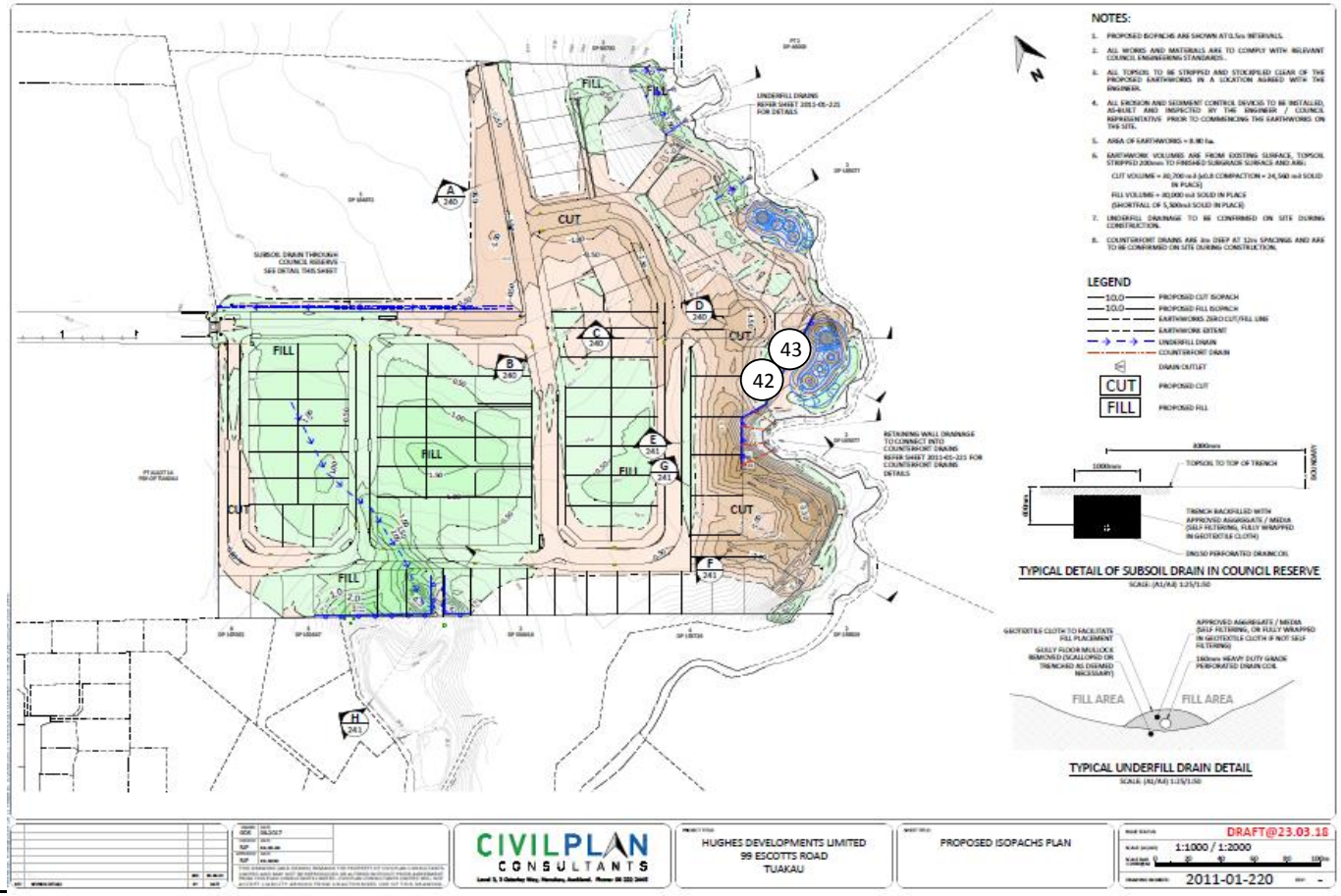
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05352
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 29/11/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau		

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Cesar Pura

Issue date: 5/12/2018

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
30/11/2018	ETAM18W05369	SC	**44**	Fill	Silty CLAY	Retaining Wall Backfill	1772936	5873790	-	150	1m below Finished Level	206	206	206	206	1.71	49.3	1.15	2.7	1
30/11/2018	ETAM18W05369	SC	**45**	Fill	Silty CLAY	Retaining Wall Backfill	1772954	5873802	-	150	1m below Finished Level	191	170	170	170	1.68	51.6	1.11	2.7	2

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SITE PLAN

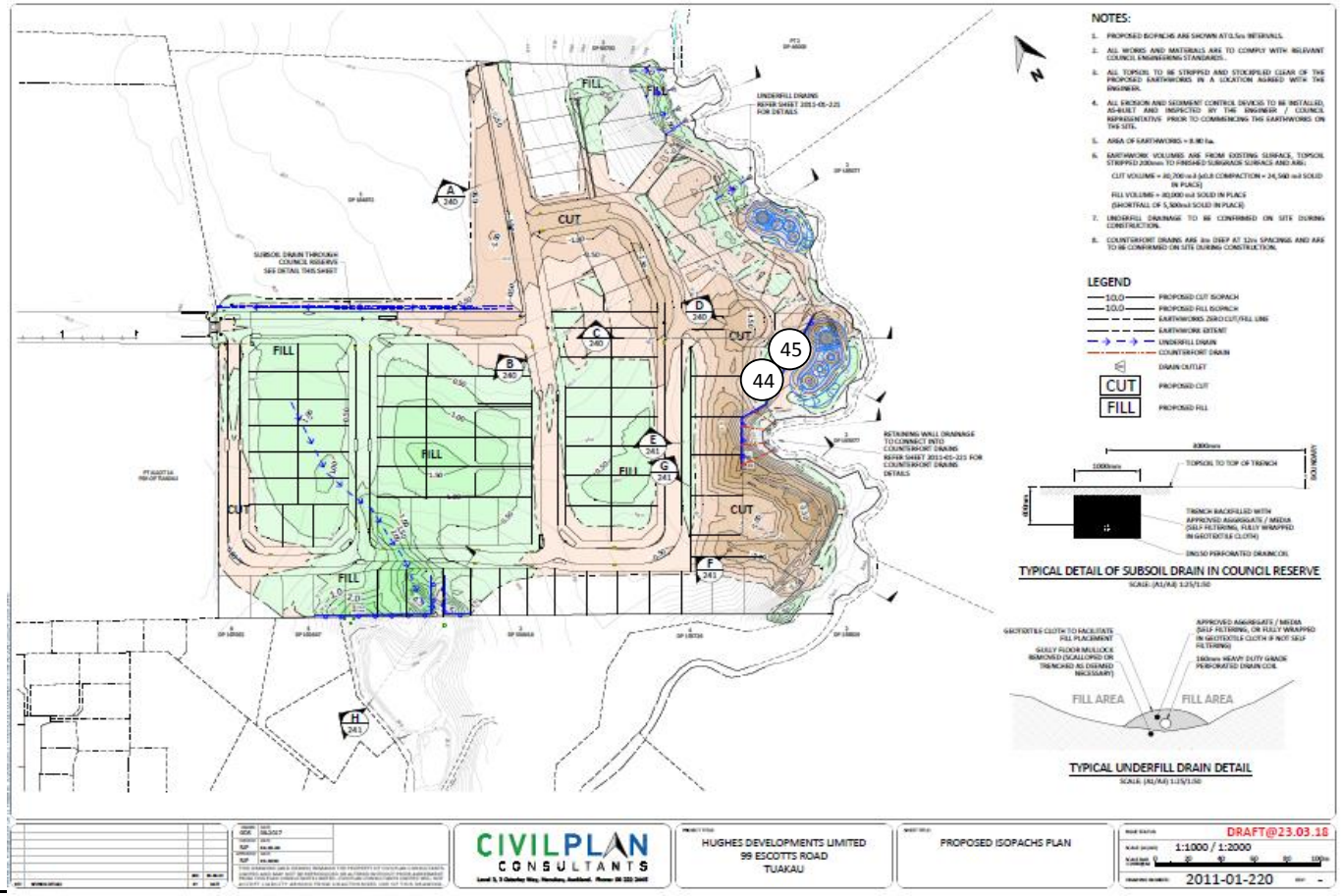
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05369
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 30/11/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau		

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Cesar Pura

Issue date: 11/12/2018

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
7/12/2018	ETAM18W05478	SC	**46**	Fill	Silty CLAY	Retaining Wall Fill	1772968	5873804	-	150	1.5m below Finished Level	119	124	114	124	1.74	47.6	1.18	2.7	0
7/12/2018	ETAM18W05478	SC	**47**	Fill	Silty CLAY	Retaining Wall Fill	1772973	5873811	-	150	1.5m below Finished Level	114	114	119	124	1.65	64.1	1.00	2.7	0

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SITE PLAN

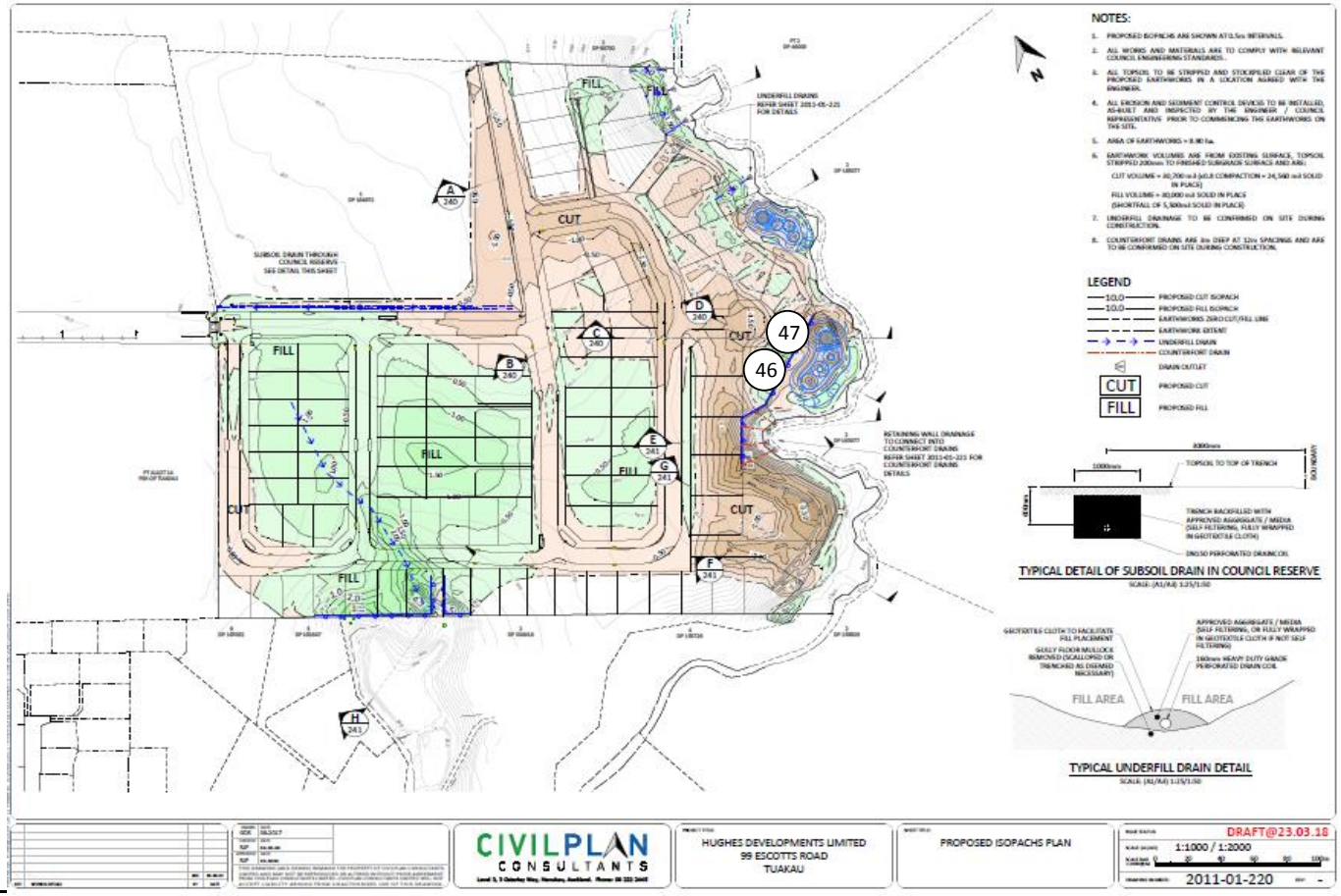
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05478
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 7/12/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	11/12/2018

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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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
7/12/2018	ETAM18W05480	SC	**48**	Fill	Silty CLAY	Retaining Wall Fill	1772968	5873804	-	150	Retest of Test No. 46	231+	231+	231+	231+	1.71	49.2	1.14	2.7	1
7/12/2018	ETAM18W05480	SC	**49**	Fill	Silty CLAY	Retaining Wall Fill	1772973	5873811	-	150	Retest of Test No. 47	231+	231+	231+	231+	1.67	49.8	1.12	2.7	3

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SITE PLAN

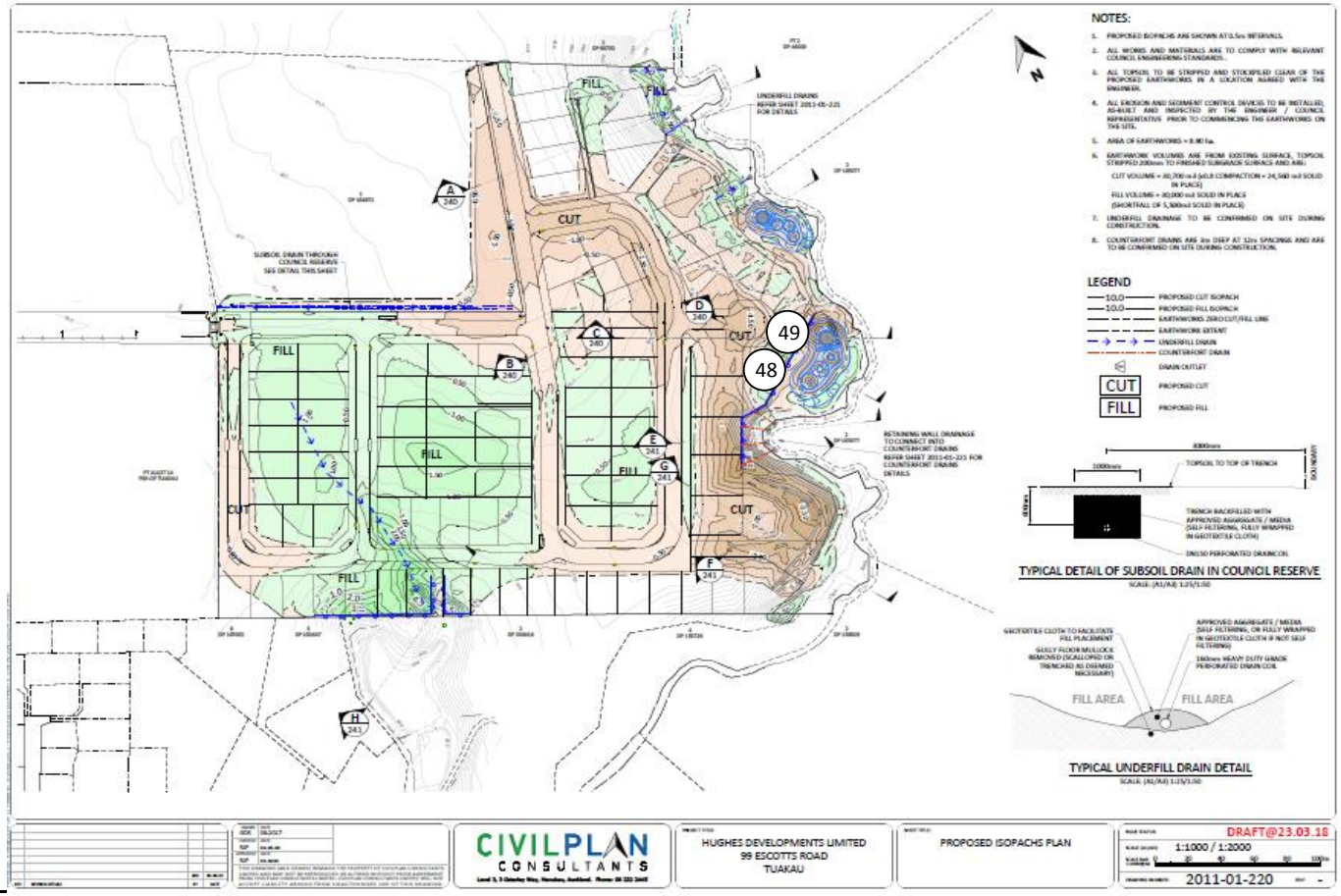
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05480
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 7/12/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	12/12/2018

IANZ ACCREDITED LABORATORY

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

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m3) Assumed	Air Voids (%)
10/12/2018	ETAM18W05504	SC	**50**	Fill	Silty CLAY	Retaining Wall Fill	1772944	5873792	-	150	At Finished Level	231+	231+	231+	231+	1.64	48.8	1.10	2.7	6
10/12/2018	ETAM18W05504	SC	**51**	Fill	Silty CLAY	Retaining Wall Fill	1772959	5873806	-	150	At Finished Level	231+	231+	231+	231+	1.64	54.0	1.07	2.7	3

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SITE PLAN

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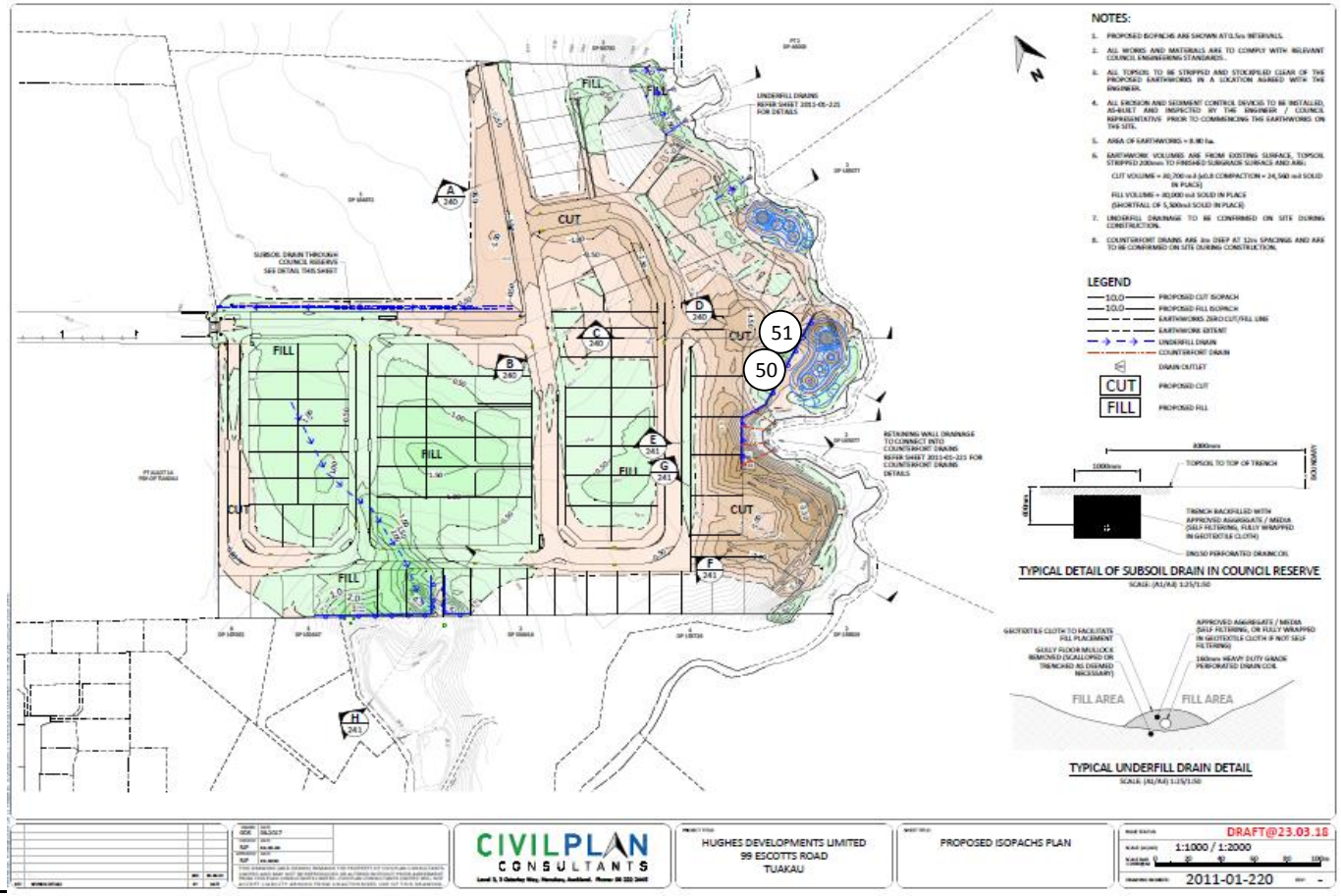
Project No: 773-ETAM00829AA
Work Order No: ETAM18W05504
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 10/12/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	14/12/2018

IANZ ACCREDITED LABORATORY

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

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m^3) Assumed	Air Voids (%)
11/12/2018	ETAM18W05592	SC	**52**	Fill	Silty CLAY	Retaining Wall Fill	1772928	5873784	-	150	1.0m below Finished Level	231+	231+	231+	231+	1.76	43.4	1.23	2.70	1
11/12/2018	ETAM18W05592	SC	**53**	Fill	Silty CLAY	Retaining Wall Fill	1772920	5873786	-	150	1.0m below Finished Level	231+	231+	231+	231+	1.75	40.5	1.24	2.70	3

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SITE PLAN

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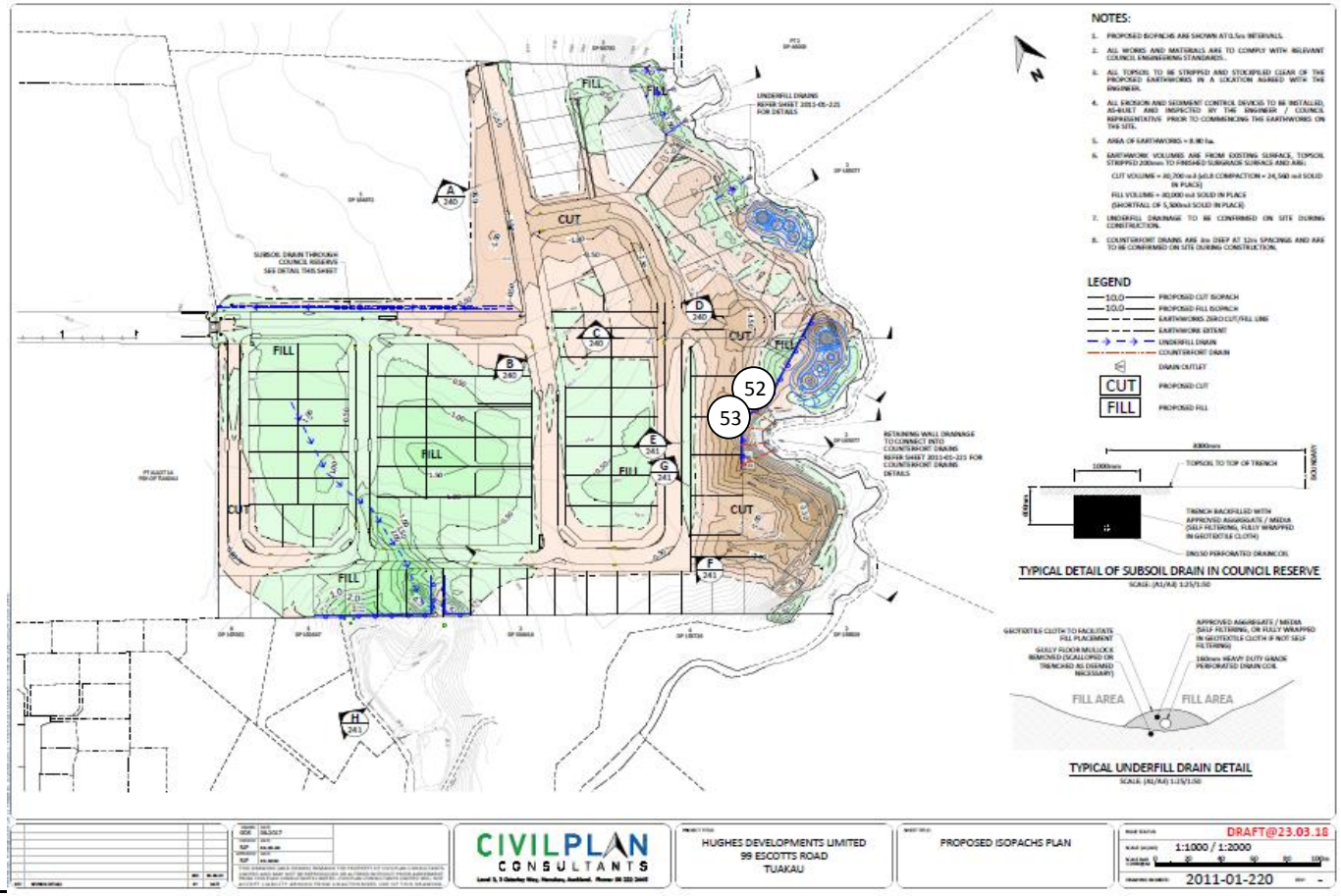
Project No: 773-ETAM00829AA
Work Order No: ETAM18W05592
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 11/12/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	17/12/2018

IANZ ACCREDITED LABORATORY

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

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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m^3) Assumed	Air Voids (%)
12/12/2018	ETAM18W05606	SC	**54**	Fill	Silty CLAY	Retaining Wall Fill	1772919	5873787	-	150	At Finished Level	231+	231+	231+	231+	1.74	43.8	1.21	2.70	2
12/12/2018	ETAM18W05606	SC	**55**	Fill	Silty CLAY	Retaining Wall Fill	1772927	5873786	-	150	At Finished Level	231+	231+	231+	231+	1.70	40.0	1.21	2.70	7

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SITE PLAN

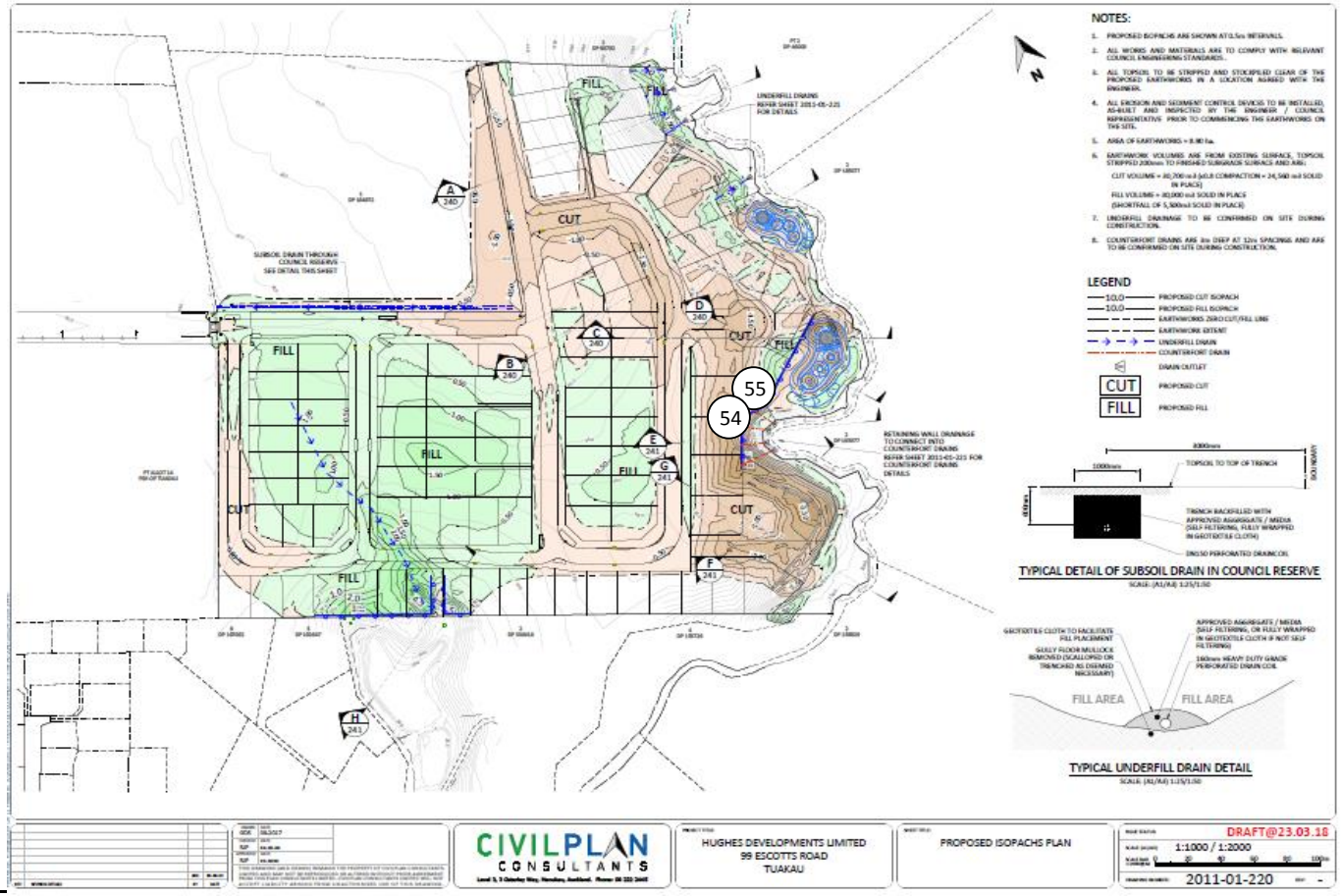
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05606
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 12/12/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	18/12/2018

IANZ ACCREDITED LABORATORY

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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): 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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m^3) Assumed	Air Voids (%)
14/12/2018	ETAM18W05627	SC	**56**	Fill	Silty CLAY	General Fill	1772645	5873820	-	150	At Finished Level	UTP	UTP	231+	231+	1.65	44.9	1.14	2.70	7
14/12/2018	ETAM18W05627	SC	**57**	Fill	Silty CLAY	General Fill	1772642	5873808	-	150	At Finished Level	UTP	UTP	231+	231+	1.61	49.4	1.08	2.70	7

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SITE PLAN

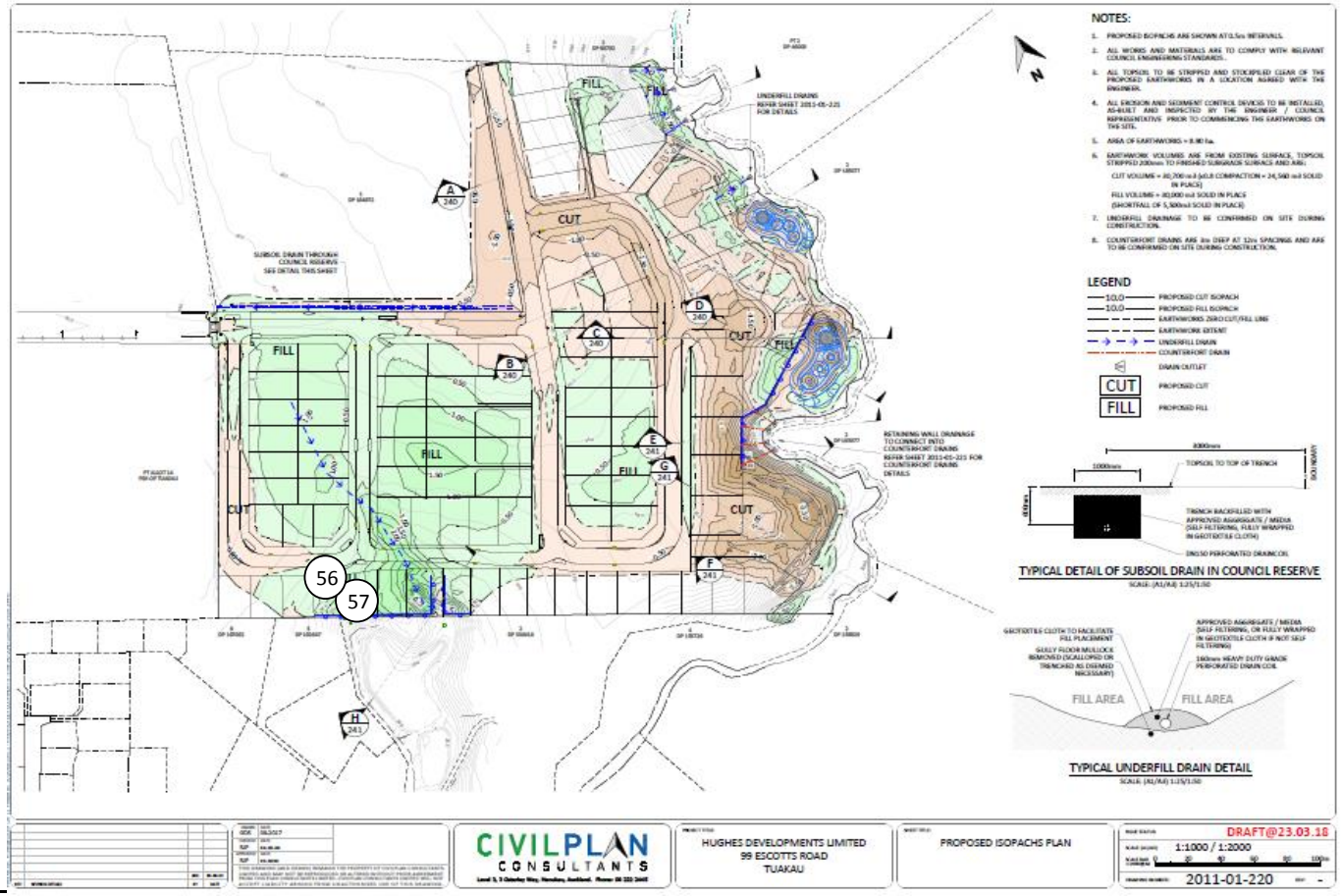
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05627
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 14/12/2018



Issue date: 050517

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Client:	Lander Geotechnical Consultants Limited	**PROJECT CODE:**	773-ETAM00829AA
Address	PO Box 97 385, Manukau 2241	Page:	1 of 2
Attention:	Michael Chan		
c.c:	-		
Project:	J00779 - 99 Escotts Road Tuakau		
Location:	Tuakau	Approved Signatory:	Cesar Pura
		Issue date:	7/01/2019

IANZ ACCREDITED LABORATORY

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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): 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/m^3)	Oven Water Content (%)	Dry Density (T/m3)	Solid Density (T/m^3) Assumed	Air Voids (%)
18/12/2018	ETAM18W05761	SC	**58**	Fill	Silty CLAY	Refer to Site Plan	1772689	5873801	-	150	1.5m below Finished Level	206	206	231+	231+	1.61	49.8	1.07	2.70	7
18/12/2018	ETAM18W05761	SC	**59**	Fill	Silty CLAY	Refer to Site Plan	1772848	5873791	-	150	1.5m below Finished Level	231+	231+	231+	231+	1.85	33.9	1.38	2.70	2
18/12/2018	ETAM18W05761	SC	**60**	Fill	Silty CLAY	Refer to Site Plan	1772847	5873832	-	150	1.5m below Finished Level	231+	231+	231+	231+	1.86	40.1	1.33	2.70	0
18/12/2018	ETAM18W05761	SC	**61**	Fill	Silty CLAY	Refer to Site Plan	1772812	5873803	-	150	1.5m below Finished Level	231+	231+	231+	231+	1.74	47.2	1.19	2.70	0

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SITE PLAN

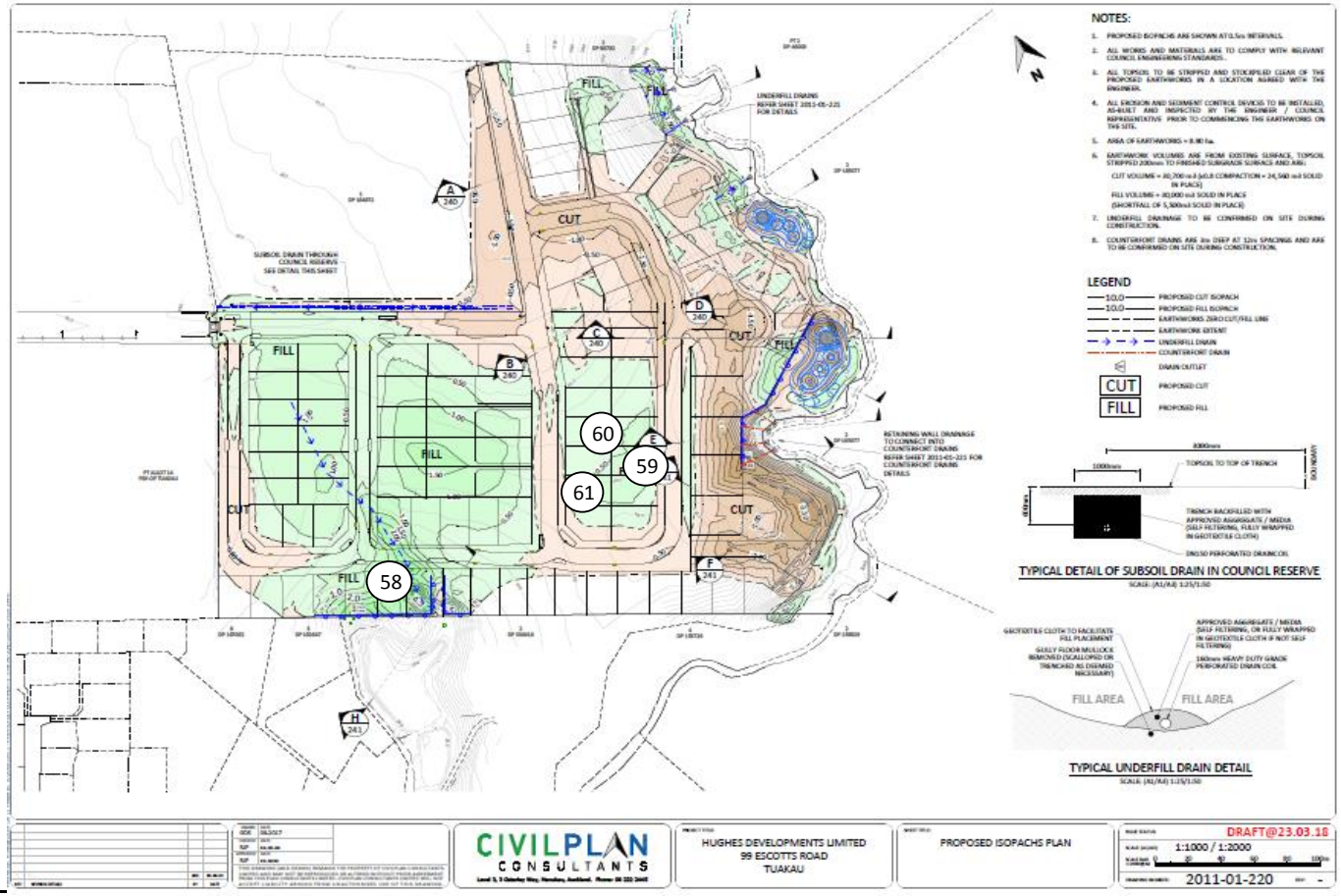
NOT TO SCALE

Project No: 773-ETAM00829AA
Work Order No: ETAM18W05761
Page No: 2 of 2

Project: J00779 - 99 Escotts Road Tuakau

Location: As below

Tested by: SC
Date tested: 18/12/2018



Issue date: 050517

GEOTECHNICS

Our Ref: 1009213.0070.0.0/1
Customer Ref: J00779
5 June 2019

Lander Geotechnical Ltd
PO Box 97 385
Manukau
Auckland 2241

Attention: Shane Lander

Dear Shane

99 Escotts Road, Tuakau

Site Report

Customer's Instructions

We were instructed to:

Complete nuclear densometer, shear vane and impact hammer testing at the above mentioned site when requested and report the results.

Specifications

As per email from Mike (Lander Geotechnical) on the 8/01/2019 the specification for Earthworks Testing was as follows;

- Average air voids <10% with maximum air voids 12%.
- Average shear strength >140 kPa with minimum single value 120 kPa.
- Average value to be determined over 10 consecutive tests.

Dates of Procedures

Testing was carried out from the 16/1/2019 to the 8/05/2019.

Locations

Testing was carried out as instructed by the contractor on site. Test locations were selected on site by the Geotechnics technician on behalf of the customer.

The attached plan provides indicative locations only and is not to scale. All other information we provide regarding location should be referenced to the asset owner.

Samples

Samples taken for moisture content verification purposes were disposed of 24 hours after testing.

Methods

NZGS 8:2001 - Test method for determining the vane shear strength of a cohesive soil using a hand held shear vane.

NZS 4407:1991 Test 4.2.1 - Method using a nuclear surface moisture-density gauge (Direct Transmission Mode) – NDM

NZS 4402:1986 Test 2.1 - Determination of water content

ASTM D 5874-16 - Standard test method for determination of the impact value (IV) of a soil – Impact Test

Material Description

Material descriptions are provided in the attached results.

Results

The following is attached:

Earthworks testing results, impact hammer results and testing location plans.

Test Remarks

Shear Vane

Shear Vane tests are potentially unsuitable for material described in the earthworks summary as 'Clay SILT w gravels' or 'Clay Strippings'. Tests in these materials may not be compliant with the stated test method and results are therefore not covered under the IANZ endorsement of this report. Results are provided for your own interpretation and inference.

NDM – Direct Transmission

The test method may not be appropriate for materials containing a nominal maximum particle size of >40 mm.

Nuclear densometers are calibrated for a bulk density range of 1,728 kg/m^3 to 2,756 kg/m^3. Test results outside of these bulk density limits are not covered under the IANZ endorsement of this report.

An assumed solid density value of 2.70t/m^3 was agreed with the customer. We do not take responsibility for misrepresentation or misinterpretation arising from the use of this assumed value to calculate air voids.

Oven calculated air voids (%) have been reported as zero if negative. The calculation of air voids is based on wet density, moisture content and the solid density. The wet density is measured by the nuclear densometer and the moisture content by oven drying. The calculation of air voids is not part of the test in NZS 4407 and is therefore not covered under the IANZ endorsement of this report.

Determination of Water Content

Samples used for the determination of the water content were taken in conjunction with nuclear densometer testing and disposed of after 24 hours.

Impact Value

Field procedure A was used. The test method is appropriate for materials having a maximum particle size of less than 37.5 mm. Results of tests that were performed on materials containing larger particle sizes, are not covered under the IANZ endorsement of this report.

Calculations of equivalent CBR are based on CBR = IV^{2}x0.07.

Pass/Fail Criteria

We accept no liability for any circumstances that may arise due to the inclusion of the pass/fail criteria or the use of this information by third parties. Pass/fail criteria are based solely on numerical values with no consideration given to uncertainty and are not covered under the IANZ endorsement of these results.

General Remarks

This report has been prepared for the benefit of Lander Geotechnical Ltd, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement. The inherent uncertainties of site investigation work, mean the nature and continuity of subsoil away from the test location could vary from the data logged.

We provide the results for your interpretation and inference.

Descriptions are enclosed for your information, but are not covered under the IANZ endorsement of this report.

Sample(s) not destroyed during testing will be retained for one month from the date of this report before being discarded.

Please reproduce this report in full when transmitting to others or including in internal reports.

If we can be of any further assistance, feel free to get in touch. Contact details are provided at the bottom of the letterhead page.

GEOTECHNICS LTD

Report prepared by:

.....
Josh Allan
Project Manager

Authorised for Geotechnics by:

.....
Steven Anderson
Project Director
Approved Signatory

Report checked by:

.....
Daniel Brasting
CMT Field Coordinator

IANZ ACCREDITED LABORATORY

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

5-Jun-19

t:\geotechnicsgroup\projects\1009213\1009213.0070 - 99 escotts road, tuakau\workingmaterial\20190605 jra rpt1.docx

GEOTECHNICS

Job: 99 Escotts Road, Tuakau

Client: Lander Geotechnical Ltd.

Job #	1009213.0070.0.0/1
Entered By	JRA
Checked By	VIVE / SEBA
Approved By	SJA

URN	Tech.	Date	Location	Layer	Material	Test Type	NDM 0°			NDM 90°			AVERAGE NDM			Solid Density (t/m³) Assumed	Oven Moisture content (%)	Final Corrected		Average Air Voids (10 X Tests)	Shear Vane Reading (kPa)						Retest URN	PASS / FAIL	Comments
						NDM / SV	Wet Density (t/m³)	Moisture Content (%)	Air Voids (%)	Wet Density (t/m³)	Moisture Content (%)	Air Voids (%)	Wet Density (t/m³)	Moisture Content (%)	Air Voids (%)			Oven Dry Density (t/m³)	Average Air Voids (%)		Reading 1	Reading 2	Reading 3	Reading 4	Average SV (4 x Tests)	Average SV (10 X Sets)		(P) Pass / (F) Fail	
1.1	JRA	16/01/2019	Retaining Wall Backfill	~1m below FL	Clay SILT	NDM / SV	1.63	41.9	9.1	1.66	39.6	8.7	**1.65**	**40.8**	**8.9**	2.70	52.3	1.08	**3.3**	-	154	136	121	124	134	-	-	P
1.2						NDM / SV	1.63	48.7	6.2	1.63	48.0	6.4	**1.63**	**48.4**	**6.3**	2.70	51.6	1.07	**4.8**	-	184	163	136	199	171	-	-	P
2.1	JRA	24/01/2019	North East Fill - See Site Plan	RL 29.8	Clay SILT w gravels	NDM / SV	1.79	37.3	3.1	1.78	38.0	3.2	**1.78**	**37.7**	**3.2**	2.70	43.2	1.25	**0.0**	-	187	211	166	211	194	-	-	P
2.2				RL 29.7		NDM / SV	1.81	35.9	3.1	1.80	36.7	3.0	**1.80**	**36.3**	**3.0**	2.70	41.0	1.28	**0.3**	-	211	211	193	208	206	-	-	P
3.1	JRA	30/01/2019	South Retaining Wall Fill - See Site Plan	RL 30.4	Clay SILT	NDM / SV	1.54	51.6	9.8	1.54	52.2	9.7	**1.54**	**51.9**	**9.7**	2.70	51.9	1.01	**9.7**	-	166	130	157	181	159	-	-	P
3.2			South East Fill - See Site Plan	RL 37.6		NDM / SV	1.60	44.8	9.6	1.60	42.6	10.9	**1.60**	**43.7**	**10.2**	2.70	41.2	1.13	**11.5**	-	211	211	UTP	UTP	211	-	-	P
4.1	JRA	1/02/2019	South Retaining Wall Fill - See Site Plan	~FL	Clay SILT	NDM / SV	1.59	58.6	4.3	1.59	59.2	3.8	**1.59**	**58.9**	**4.1**	2.70	67.0	0.95	**1.0**	-	195	196	169	211	193	-	-	P
4.2						NDM / SV	1.57	52.3	8.0	1.57	52.0	8.3	**1.57**	**52.2**	**8.2**	2.70	50.7	1.04	**8.8**	-	178	163	196	166	176	-	-	P
5.1	JRA	9/02/2019	South Retaining Wall Fill - See Site Plan	~1m below FL	Clay SILT	NDM / SV	1.63	51.6	4.8	1.63	51.9	4.8	**1.63**	**51.8**	**4.8**	2.70	51.9	1.07	**4.7**	-	175	208	211	196	198	-	-	P	Retests after fill from URN 3 & 4 was removed and replaced
5.2						NDM / SV	1.66	51.9	2.9	1.66	49.9	3.6	**1.66**	**50.9**	**3.2**	2.70	48.5	1.12	**4.3**	4.8	199	211	211	193	204	184	-	P	
6.1	JRA	2/03/2019	South Retaining Wall Fill	~2m below FL	Clay SILT	NDM / SV	1.68	40.9	7.1	1.67	40.2	7.7	**1.68**	**40.6**	**7.4**	2.70	36.2	1.23	**9.8**	5.5	185	185	UTP	185	185	189	-	P	
6.2			North East Fill	~FL		NDM / SV	1.73	39.8	5.1	1.72	41.6	4.4	**1.72**	**40.7**	**4.7**	2.70	39.0	1.24	**5.7**	5.6	185	185	185	UTP	185	191	-	P	
7.1	JRA	8/03/2019	South Retaining Wall Fill	~1m below FL	Clay SILT	NDM / SV	1.66	42.2	7.6	1.66	39.2	9.3	**1.66**	**40.7**	**8.5**	2.70	39.6	1.19	**9.0**	6.5	185	UTP	UTP	182	184	190	-	P	
7.2						NDM / SV	1.80	38.1	1.9	1.80	37.0	2.6	**1.80**	**37.6**	**2.3**	2.70	34.6	1.34	**4.1**	6.9	185	185	185	164	180	187	-	P	
8.1	JRA	13/03/2019	South Retaining Wall Fill	~FL	Clay SILT	NDM / SV	1.72	50.5	0.1	1.72	48.8	0.8	**1.72**	**49.7**	**0.4**	2.70	44.9	1.19	**2.8**	6.2	185	185	185	185	185	190	-	P	
8.2						NDM / SV	1.73	45.0	2.1	1.73	45.1	2.2	**1.73**	**45.1**	**2.1**	2.70	41.5	1.22	**4.0**	5.4	185	185	185	185	185	187	-	P	
9.1	JRA	14/03/2019	South Retaining Wall Fill	Base of RW	Clay SILT	NDM / SV	1.66	50.0	3.5	1.65	50.3	4.0	**1.66**	**50.2**	**3.8**	2.70	51.4	1.09	**3.2**	5.6	185	142	185	145	164	184	-	P	
9.2				Toe of Batter		NDM / SV	1.68	47.7	3.5	1.68	48.9	3.2	**1.68**	**48.3**	**3.4**	2.70	46.7	1.14	**4.1**	5.2	185	185	161	148	170	184	-	P	
10.1	JRA	19/03/2019	North East Fill - See Site Plan	~0.3m below FL	Clay SILT	NDM / SV	1.79	36.2	3.8	1.79	37.5	3.0	**1.79**	**36.9**	**3.4**	2.70	35.8	1.32	**4.0**	5.1	185	185	148	185	176	182	-	P	
10.2						NDM / SV	1.71	41.3	5.2	1.71	41.7	5.0	**1.71**	**41.5**	**5.1**	2.70	38.1	1.24	**7.0**	5.4	185	185	185	185	185	180	-	P	
11.1	VIVE	27/03/2019	North East Fill - See Site Plan	~1m placed	Clay SILT	NDM / SV	1.79	34.1	5.1	1.77	34.8	5.8	**1.78**	**34.5**	**5.5**	2.70	48.1	1.20	**0.0**	4.4	160	211	196	211	195	181	-	P	
11.2						NDM / SV	1.55	33.2	18.4	1.54	31.9	19.3	**1.55**	**32.6**	**18.8**	2.70	36.1	1.14	**16.9**	-	178	163	211	205	189	-	**20.2**	F	
12.1	JRA	5/04/2019	South Retaining Wall Fill	~1.5m below top of RW	Clay SILT w gravels	NDM / SV	1.84	36.8	0.7	1.84	36.7	0.9	**1.84**	**36.8**	**0.8**	2.70	38.5	1.33	**0.0**	4.6	185	185	185	185	185	181	-	P	
12.2				~1m below top of RW		NDM / SV	1.92	30.5	0.9	1.88	32.6	1.2	**1.90**	**31.6**	**1.0**	2.70	34.1	1.42	**0.0**	4.2	185	185	185	185	185	182	-	P	
13.1	JRA	9/04/2019	Old SILT Pond & South Retaining Wall Fill	~1.5m below top of RW	Clay SILT w gravels	NDM / SV	1.77	41.9	1.6	1.76	40.9	2.5	**1.77**	**41.4**	**2.1**	2.70	40.7	1.25	**2.5**	4.2	185	161	185	171	176	181	-	P	
13.2				~2m below top of RW		NDM / SV	1.78	39.2	2.7	1.78	40.1	1.9	**1.78**	**39.7**	**2.3**	2.70	40.1	1.27	**2.0**	4.0	148	185	174	145	163	179	-	P	
15.1	VIVE	16/04/2019	Fill Area-See Site Plan	~0.7m Placed	Clay SILT w gravels	NDM / SV	1.71	38.2	6.9	1.72	37.9	6.7	**1.71**	**38.1**	**6.8**	2.70	42.4	1.20	**4.4**	4.1	211	211	211	181	204	183	-	P	
15.2						NDM / SV	1.68	38.2	8.8	1.71	40.2	5.9	**1.69**	**39.2**	**7.3**	2.70	37.3	1.23	**8.4**	4.5	181	169	166	133	162	182	-	P	
16.1	VIVE	17/04/2019	Fill Area-See Site Plan	~1.2m Placed	Clay SILT w gravels	NDM / SV	1.73	35.7	7.4	1.75	35.9	6.1	**1.74**	**35.8**	**6.7**	2.70	33.6	1.30	**8.1**	4.9	178	181	175	142	169	181	-	P	
16.2						NDM / SV	1.65	47.5	5.6	1.66	43.7	6.9	**1.65**	**45.6**	**6.2**	2.70	56.4	1.06	**1.3**	4.4	211	184	211	211	204	183	-	P	
17.1	VIVE	26/04/2019	South Retaining Wall Fill	~1.5m below top of RW	Clay SILT	NDM / SV	1.67	45.1	5.6	1.66	47.5	4.6	**1.67**	**46.3**	**5.1**	2.70	49.3	1.12	**3.6**	4.7	136	157	136	133	141	178	-	P	
17.2				~1m below top of RW		NDM / SV	1.68	48.7	3.4	1.66	50.5	3.4	**1.67**	**49.6**	**3.4**	2.70	55.3	1.07	**0.8**	3.1	166	208	136	181	173	176	-	P	
18.1	VIVE	1/05/2019	South Retaining Wall Fill	~1m below top of RW	Clay SILT	NDM / SV	1.68	43.9	5.5	1.68	46.8	4.3	**1.68**	**45.4**	**4.9**	2.70	52.3	1.10	**1.6**	3.3	154	142	181	154	158	173	-	P	
18.2						NDM / SV	1.87	21.3	10.0	1.89	20.9	9.4	**1.88**	**21.1**	**9.7**	2.70	20.9	1.56	**9.9**	4.3	211	211	181	211	204	175	-	P	
19.1	JRA	3/05/2019	South Retaining Wall Fill	~0.5m below FL	Clay Strippings	NDM / SV	1.97	18.0	8.1	1.99	17.6	7.8	**1.98**	**17.8**	**7.9**	2.70	16.8	1.69	**8.8**	4.9	UTP	UTP	UTP	UTP	UTP	175	-	P	
19.2						NDM / SV	1.91	19.1	9.9	1.92	18.3	10.3	**1.91**	**18.7**	**10.1**	2.70	20.9	1.58	**8.2**	5.5	UTP	UTP	UTP	UTP	UTP	177	-	P	
20.1	JRA	8/05/2019	South Retaining Wall Fill	Top of RW (~FL)	Clay Strippings	NDM / SV	1.88	28.7	4.2	1.88	27.6	4.8	**1.88**	**28.2**	**4.5**	2.70	38.3	1.36	**0.0**	5.1	185	UTP	UTP	UTP	185	174	-	P	
20.2			North East Fill - See Site Plan	~1m placed	Clay SILT	NDM / SV	1.76	31.9	7.9	1.77	32.9	7.0	**1.77**	**32.4**	**7.4**	2.70	33.9	1.32	**6.5**	4.9	185	185	UTP	185	185	177	-	P	Retest of URN 11.2

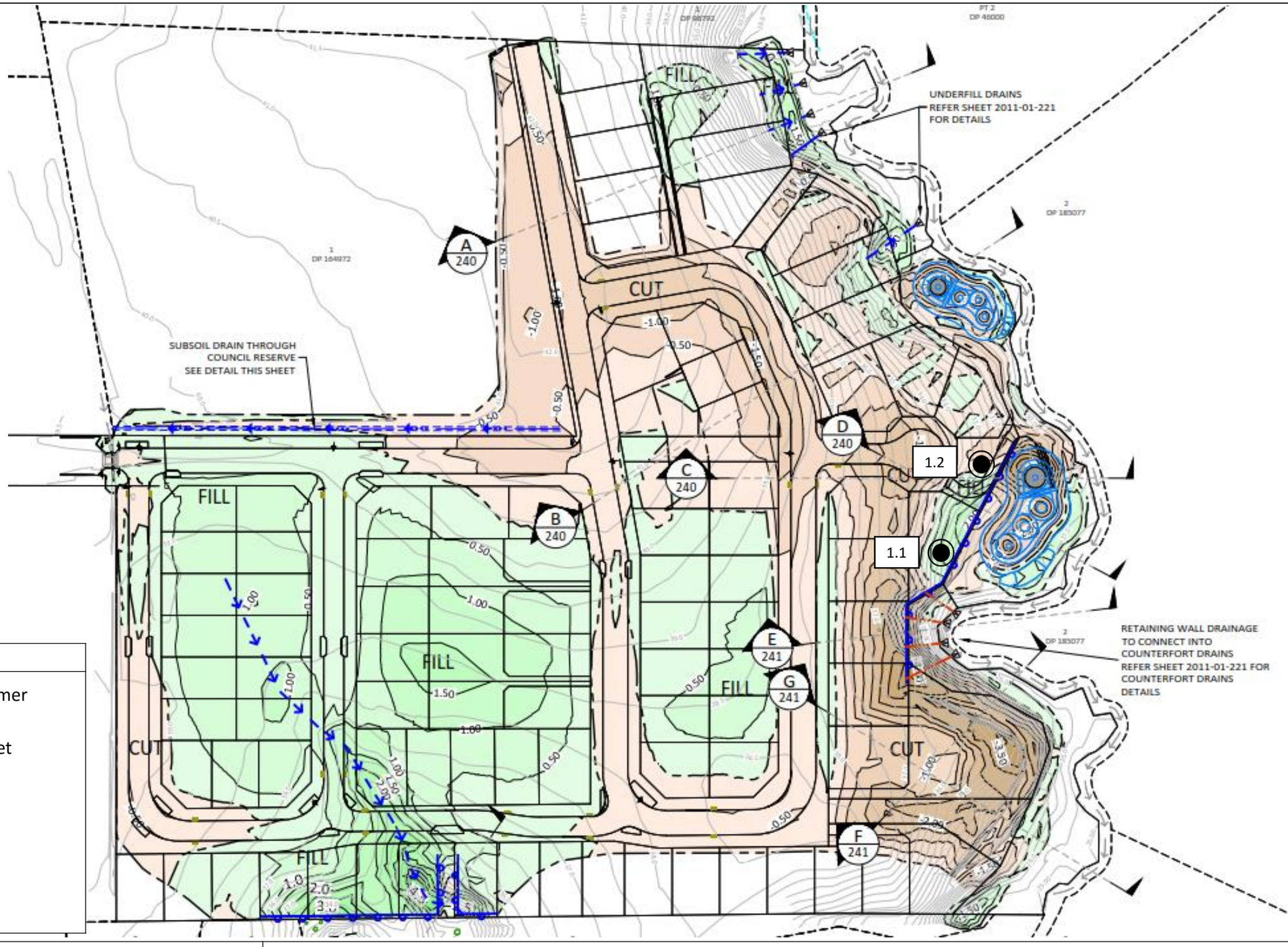
GEOTECHNICS

Job : **99 Escotts Road, Tuakau**

Customer: **Lander Geotechnical Ltd.**

Job #	**1009213.0070.0.0/1**
Entered By	**VIVE**
Checked By	**SEBA**
Approved By	**JRA**

URN	Tech.	Date	Material Type	Location	Layer	Chainage	Offset	Nuclear Density (Backscatter)								Impact Value 1	Retest URN	PASS / FAIL	Comments
								Wet Density	Dry Density (t/m^3)	Moisture Content (%)	Maximum Dry Density (t/m^3)	% Maximum Dry Density	Solid Density (t/m^3)	% Solid Density	% Total Voids			(P) Pass (F) Fail	
14.1	VIVE	13/04/2019	GAP 65	Old SILT Pond Area - See Site Plan	Subgrade Improvement	-	-	-	-	-	-	-	-	-	-	**16**	-	**P**	**Impact value > 15 required for backfill as informed by Jock (Twomey).**
14.2						-	-	-	-	-	-	-	-	-	-	**16**	-	**P**	
14.3						-	-	-	-	-	-	-	-	-	-	**29**	-	**P**	
14.4						-	-	-	-	-	-	-	-	-	-	**20**	-	**P**	
14.5						-	-	-	-	-	-	-	-	-	-	**27**	-	**P**	
14.6						-	-	-	-	-	-	-	-	-	-	**18**	-	**P**	



Legend:

- Impact Hammer
- NDM & SV Set
- Shear Vane
- Scala
- Hand Auger

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Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	16/1/19
Location:	Retaining Wall Backfill	Job No.:	1009213.0070.0.0/1	URN:	1	Date:	16/1/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

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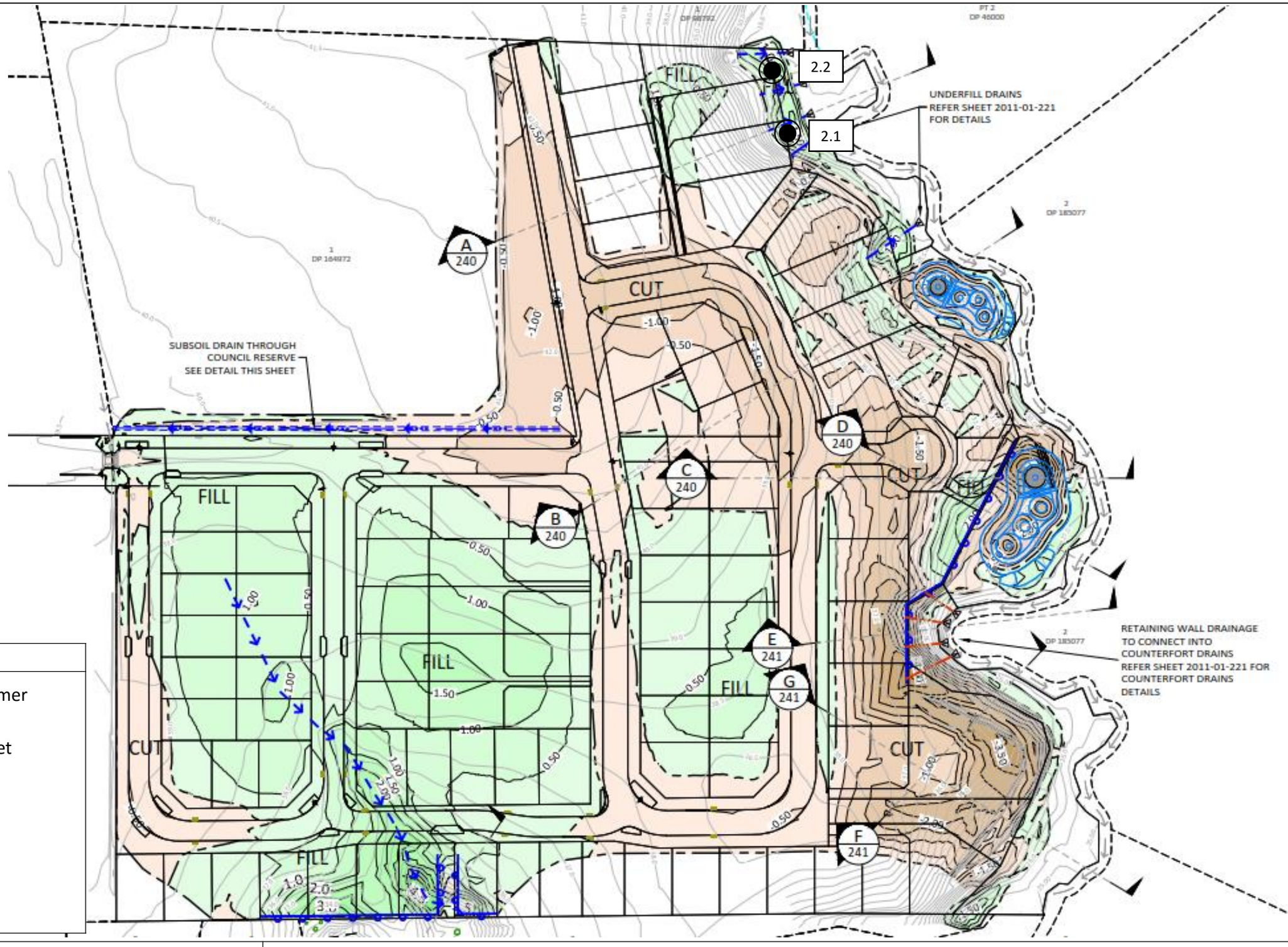

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Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	24/1/19
Location:	Stage 2- Fill Area	Job No.:	1009213.0070.0.0/1	URN:	2	Date:	24/1/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

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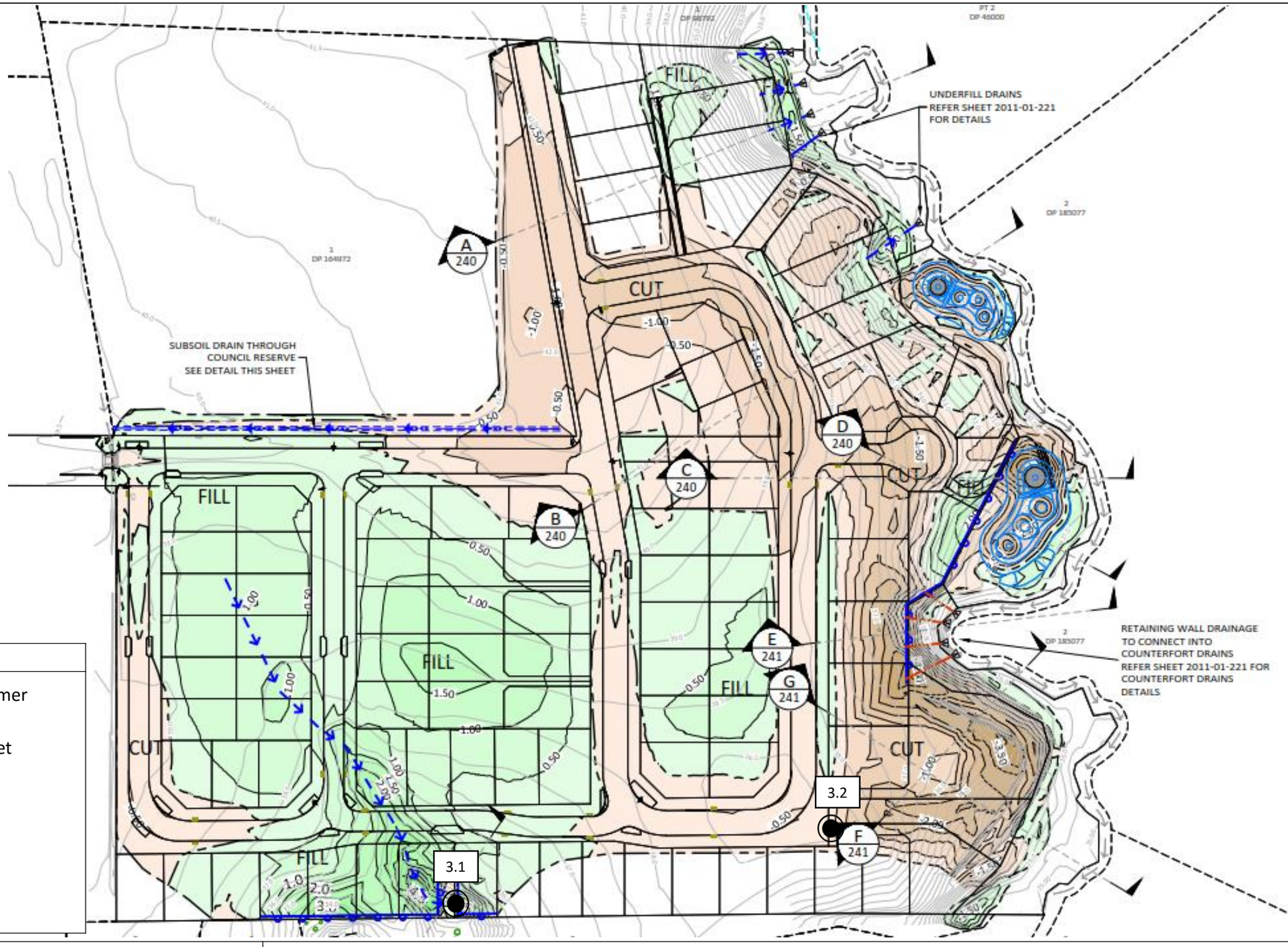

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Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	30/1/19
Location:	Fill Areas	Job No.:	1009213.0070.0.0/1	URN:	3	Date:	30/1/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

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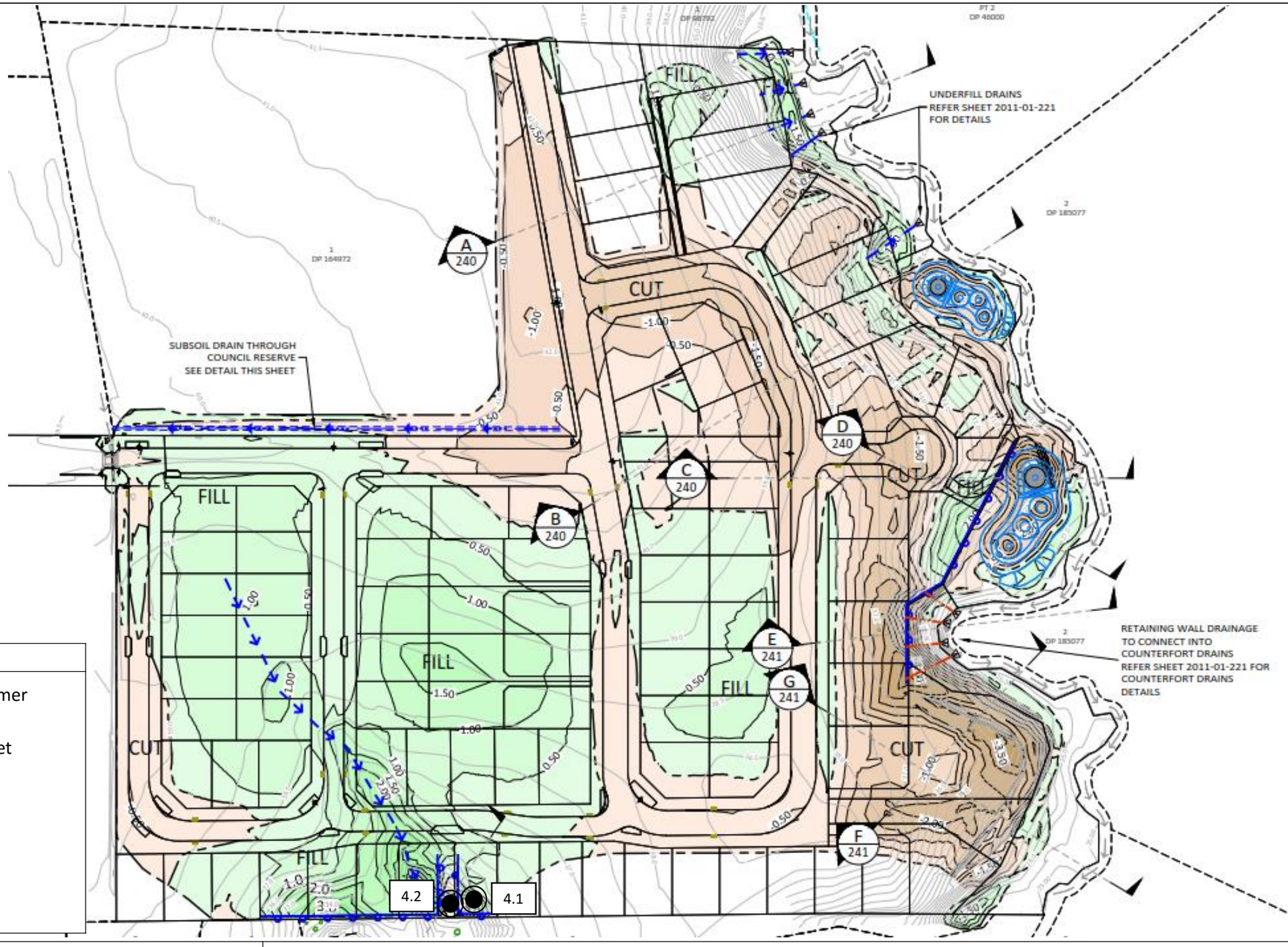

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Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	1/2/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	4	Date:	1/2/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N

Legend:

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Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	9/2/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	5	Date:	9/2/19
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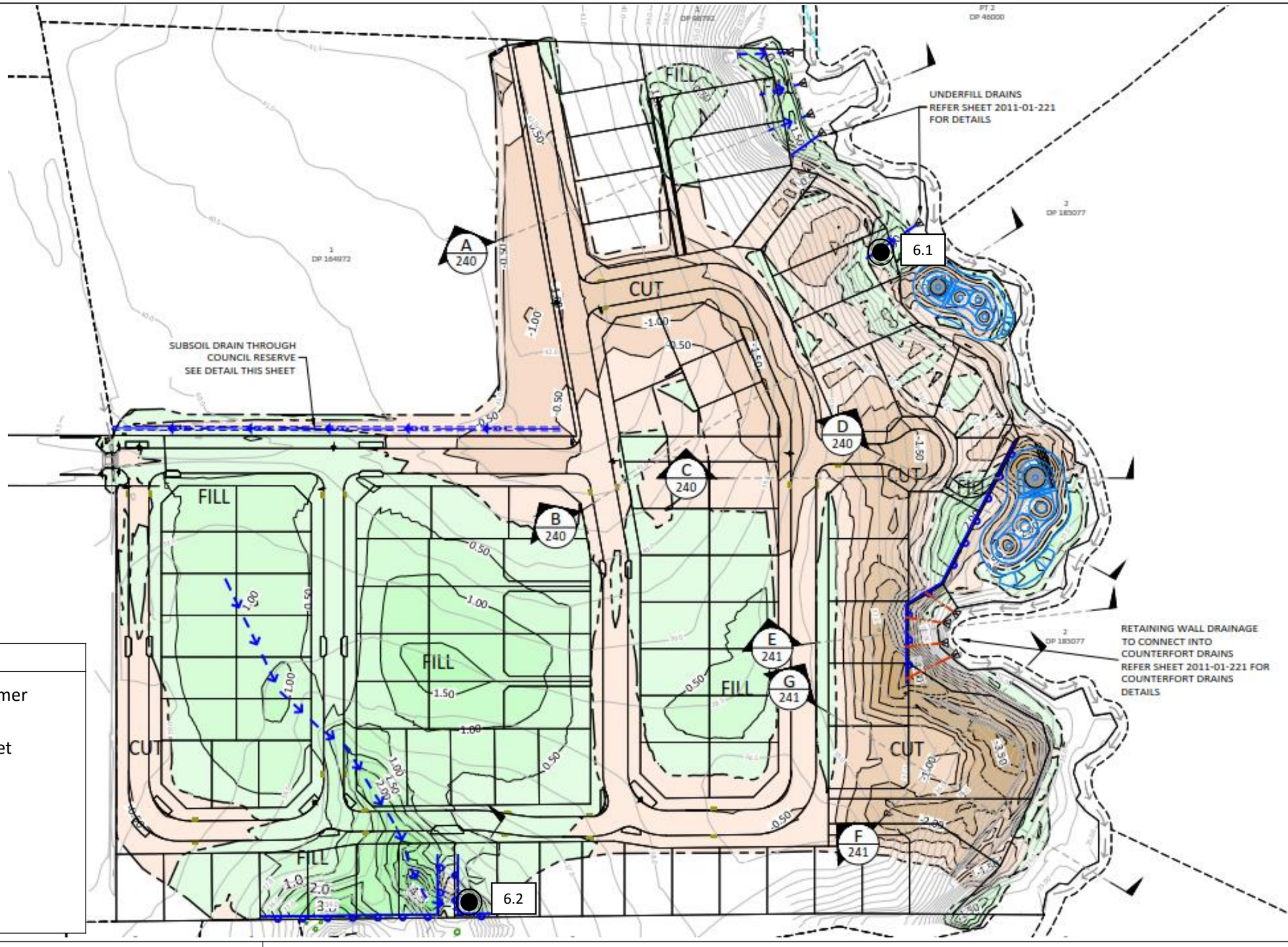

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Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	2/3/19
Location:	Fill Area	Job No.:	1009213.0070.0.0/1	URN:	6	Date:	2/3/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

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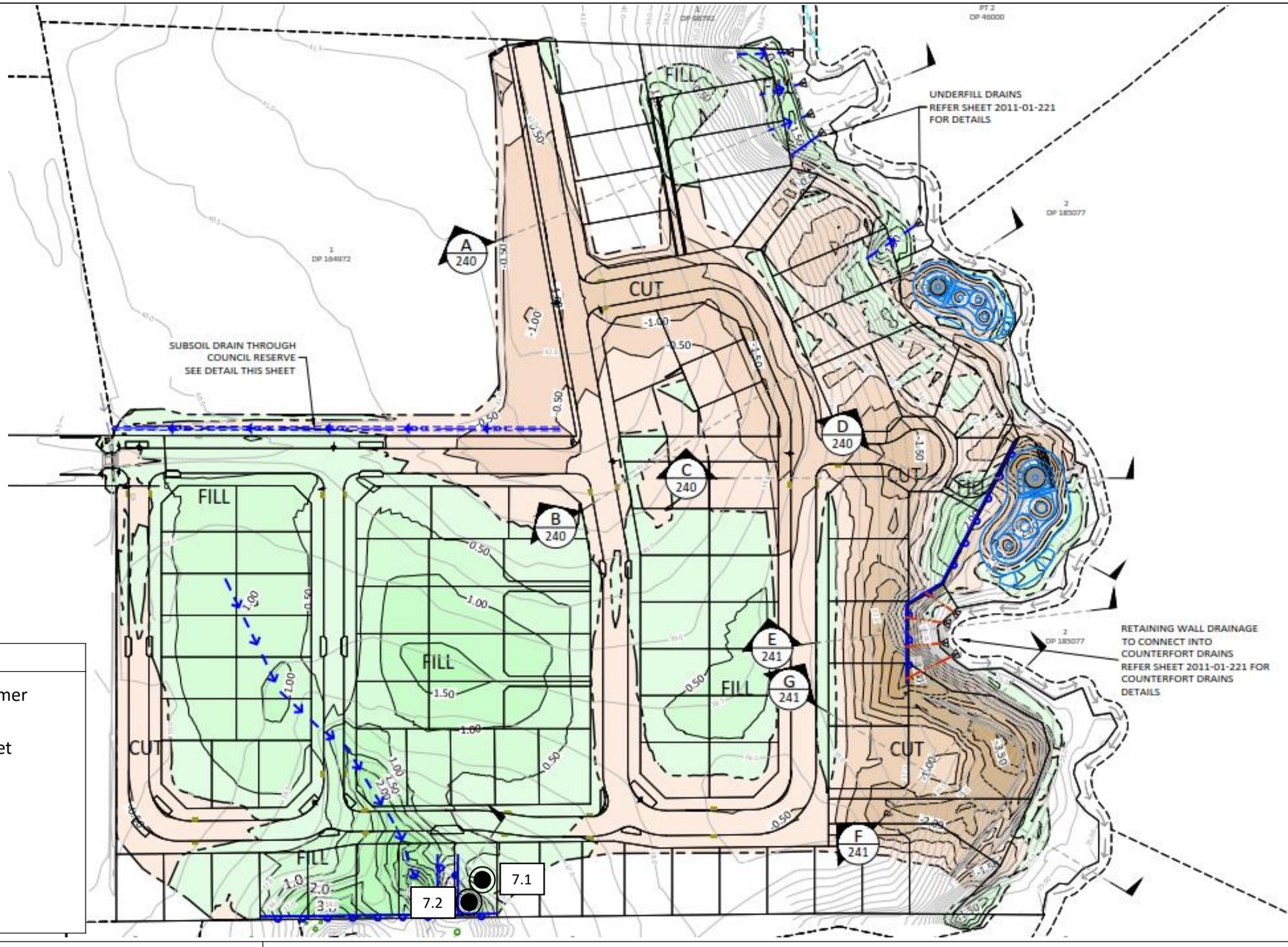

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Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	8/3/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	7	Date:	8/3/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

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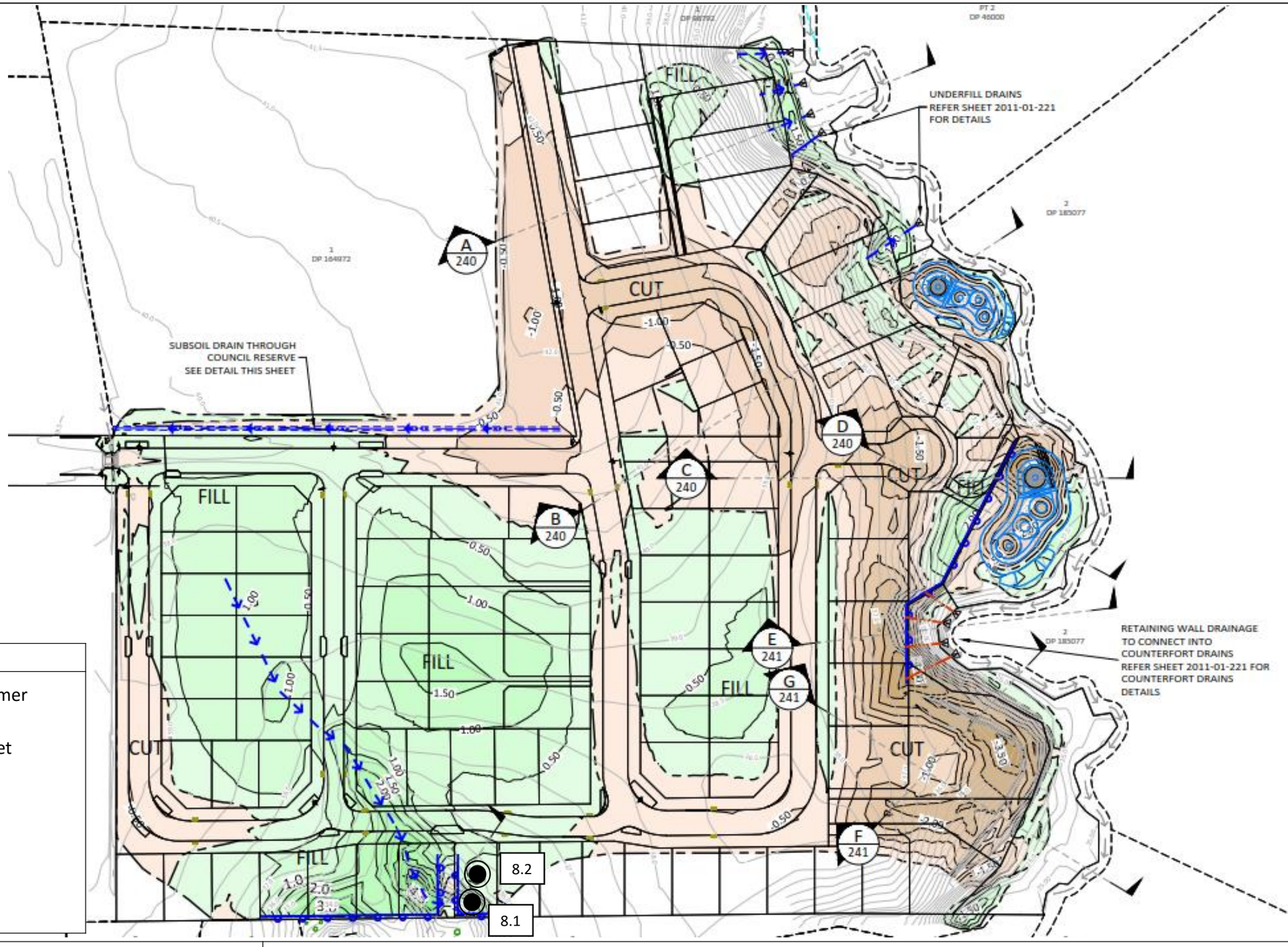

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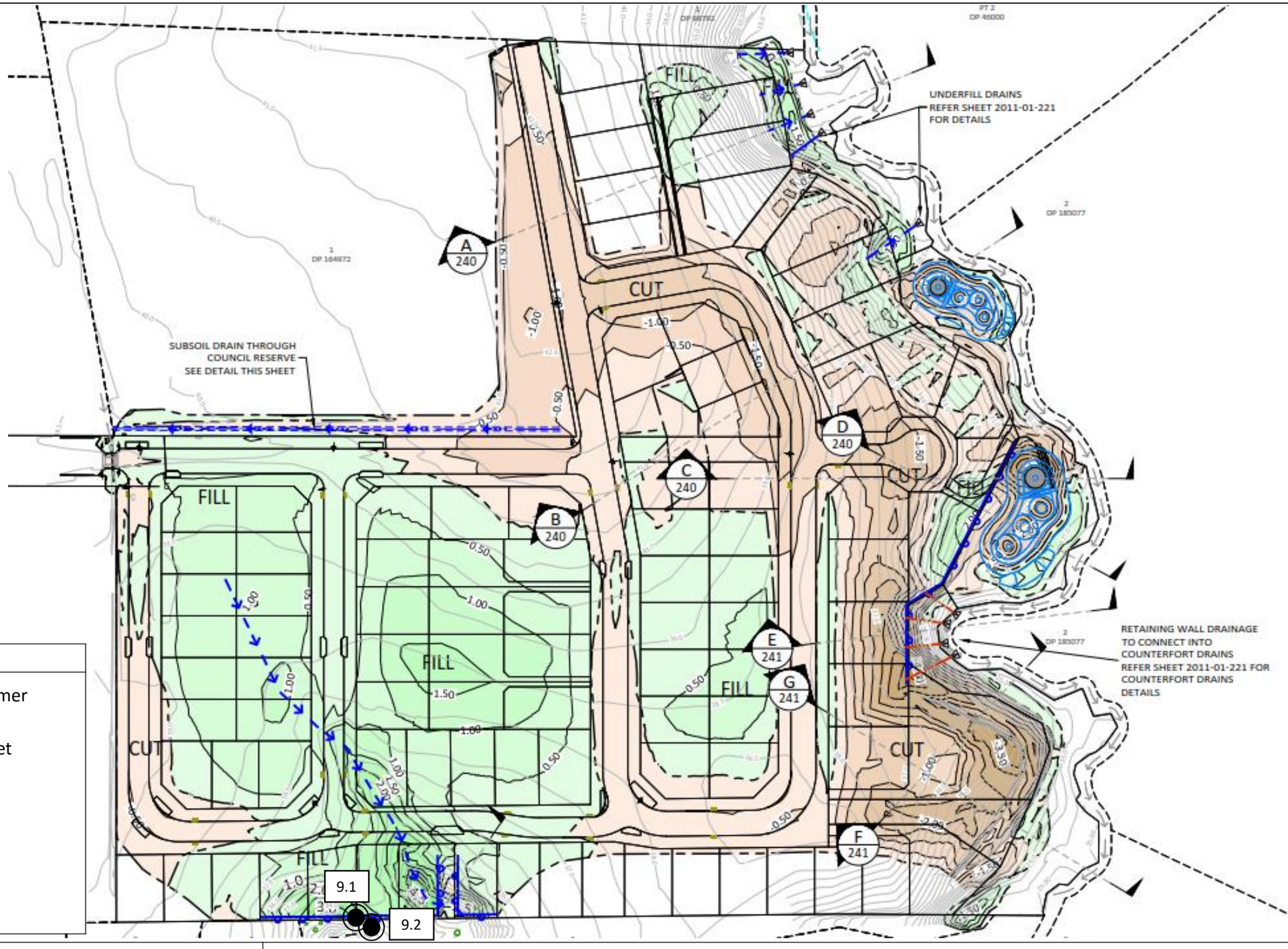
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	13/3/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	8	Date:	13/3/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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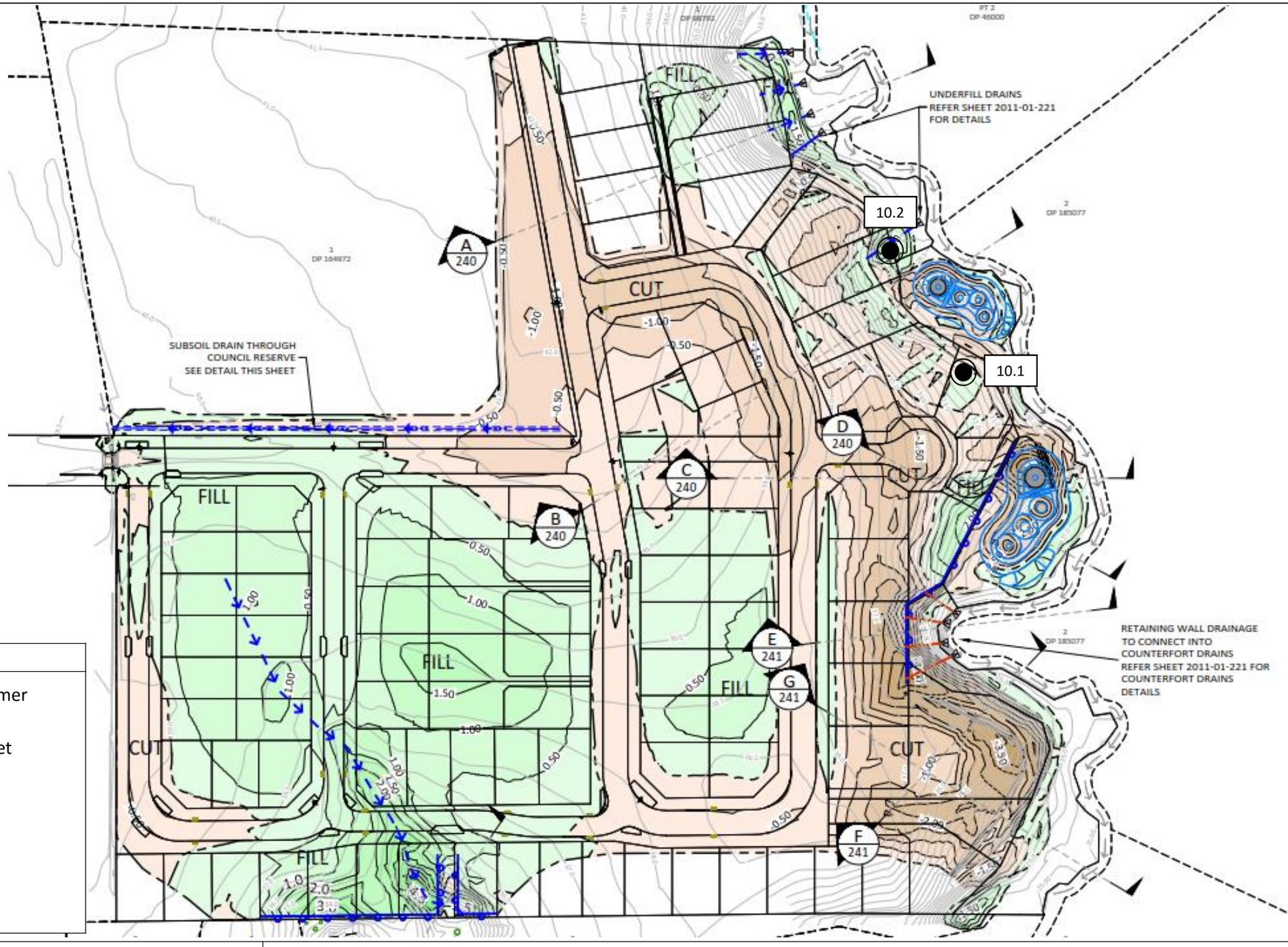
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	14/3/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	9	Date:	14/3/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



Legend:

- Impact Hammer
- NDM & SV Set
- Shear Vane
- Scala
- Hand Auger

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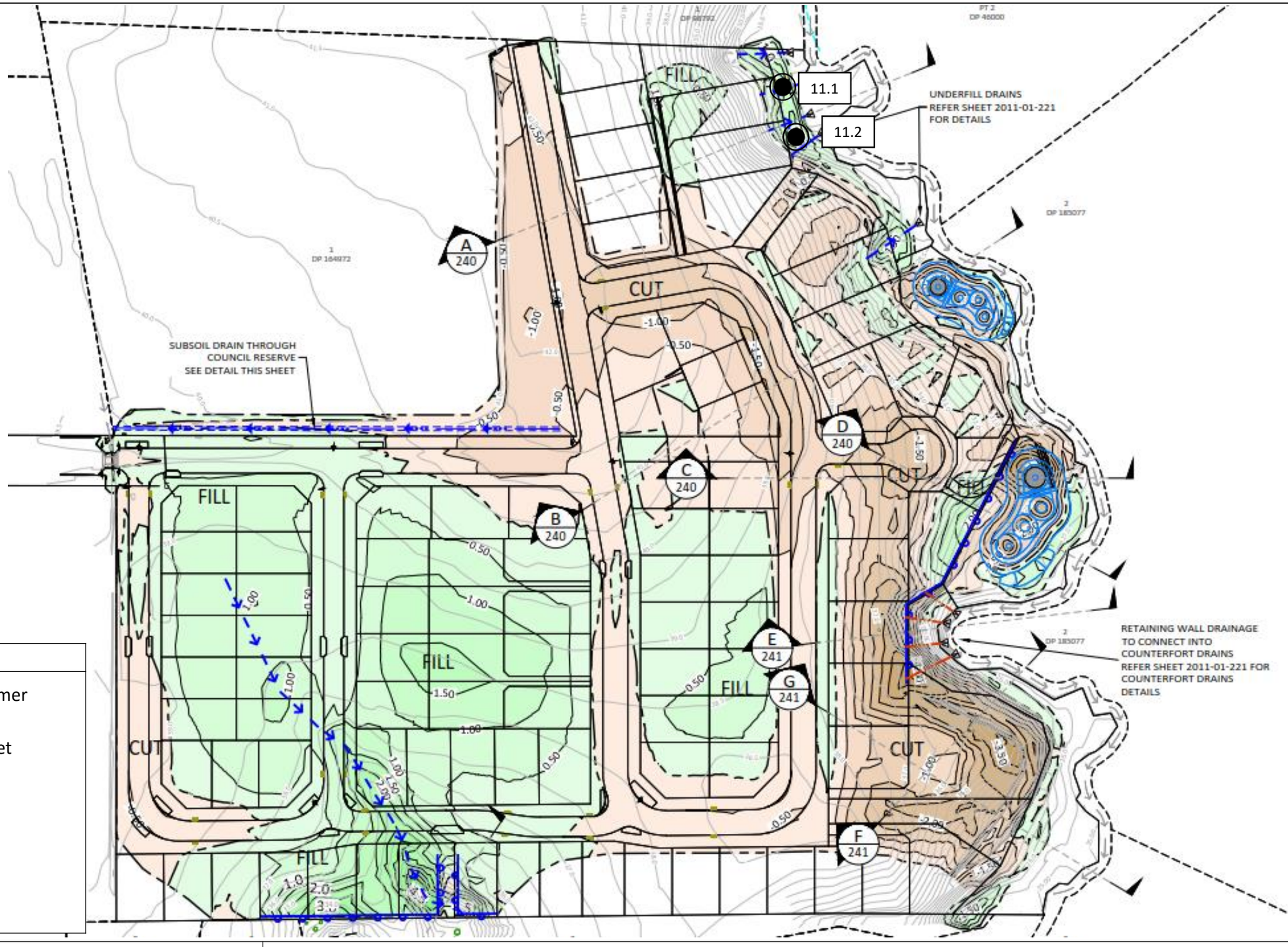
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	19/3/19
Location:	Stage 2 Fill Area	Job No.:	1009213.0070.0.0/1	URN:	10	Date:	19/3/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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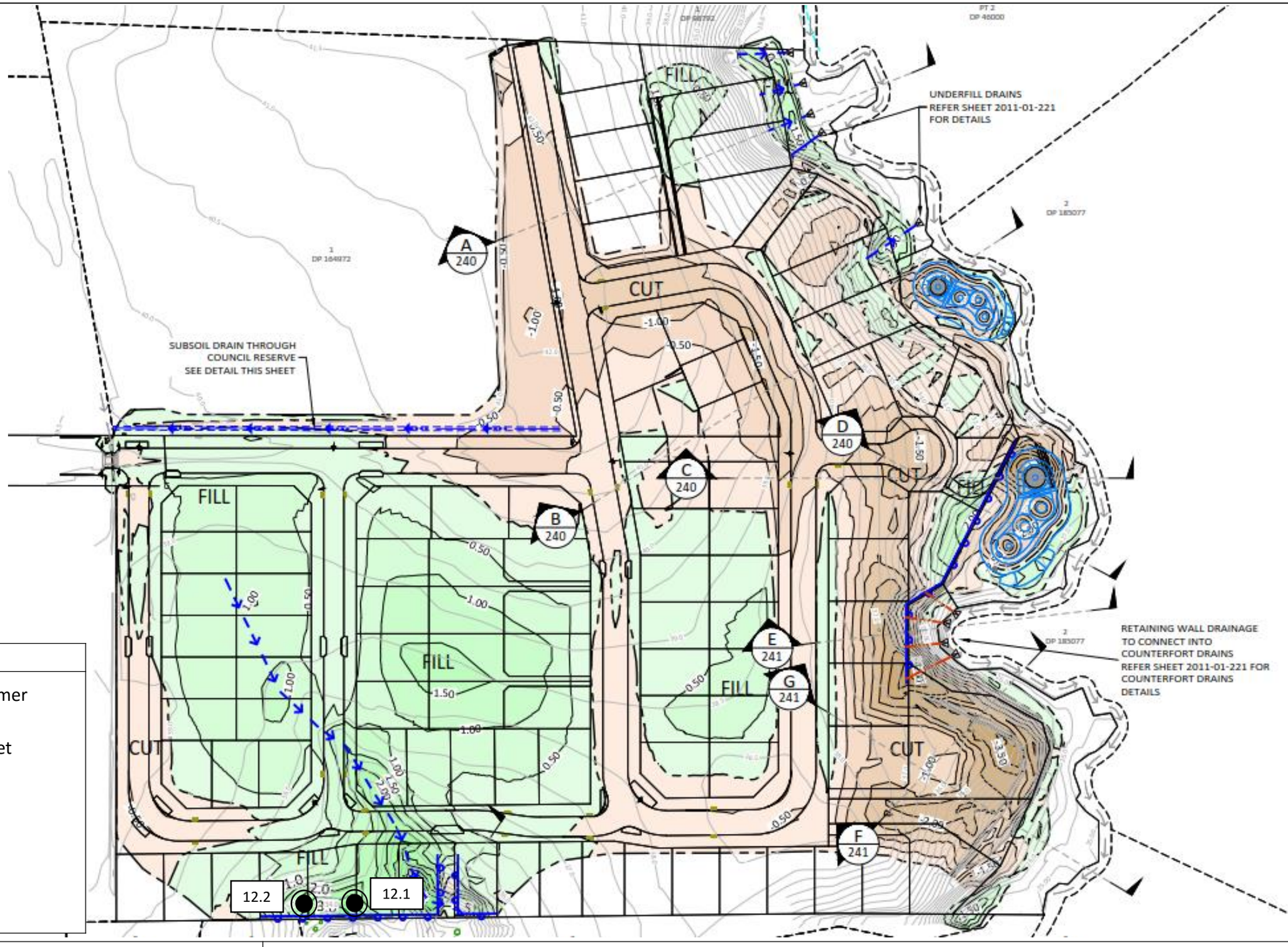
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	VIVE	Date:	27/3/19
Location:	Stage 2 Fill Area	Job No.:	1009213.0070.0.0/1	URN:	11	Date:	27/3/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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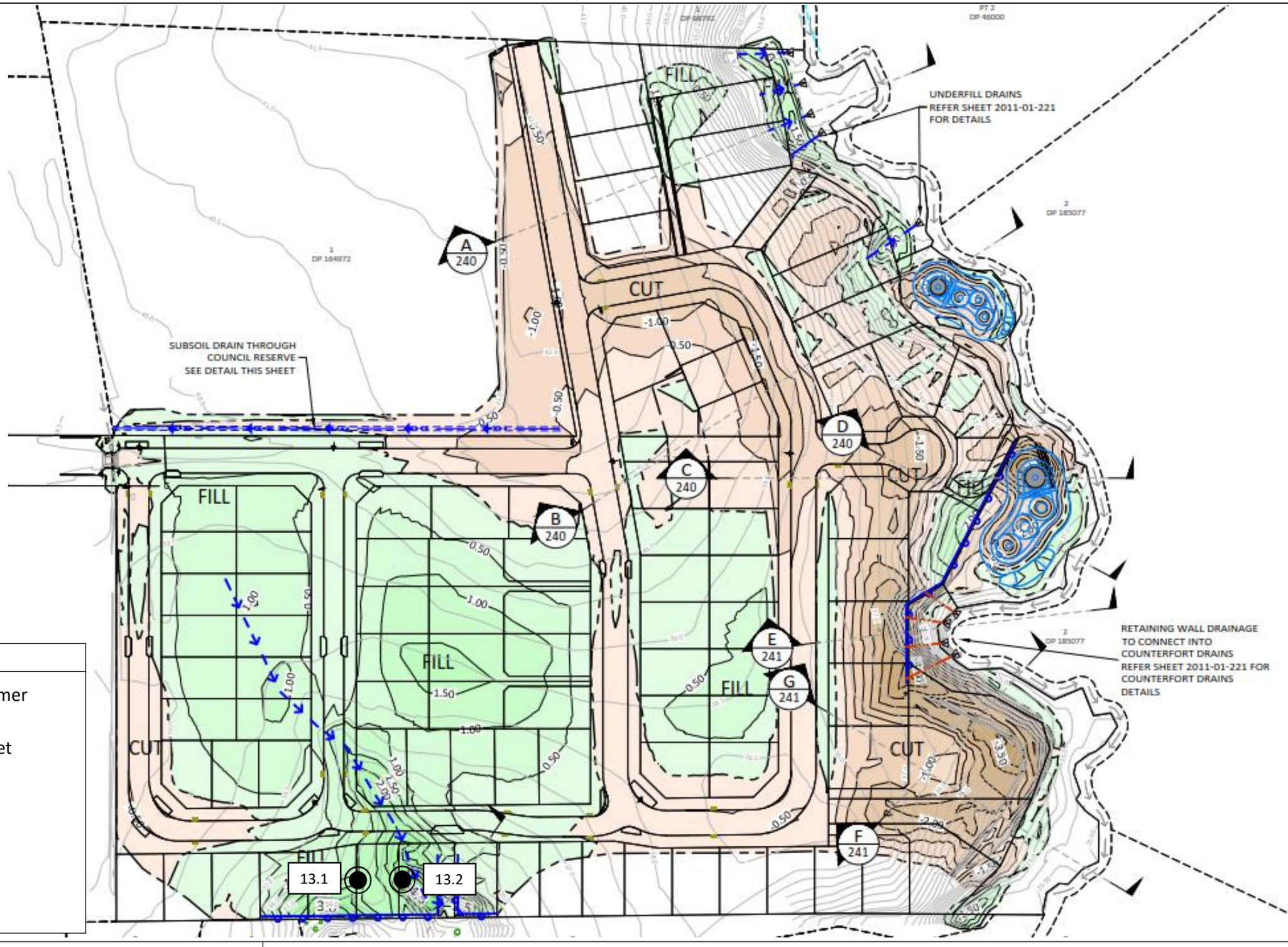
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	5/4/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	12	Date:	5/4/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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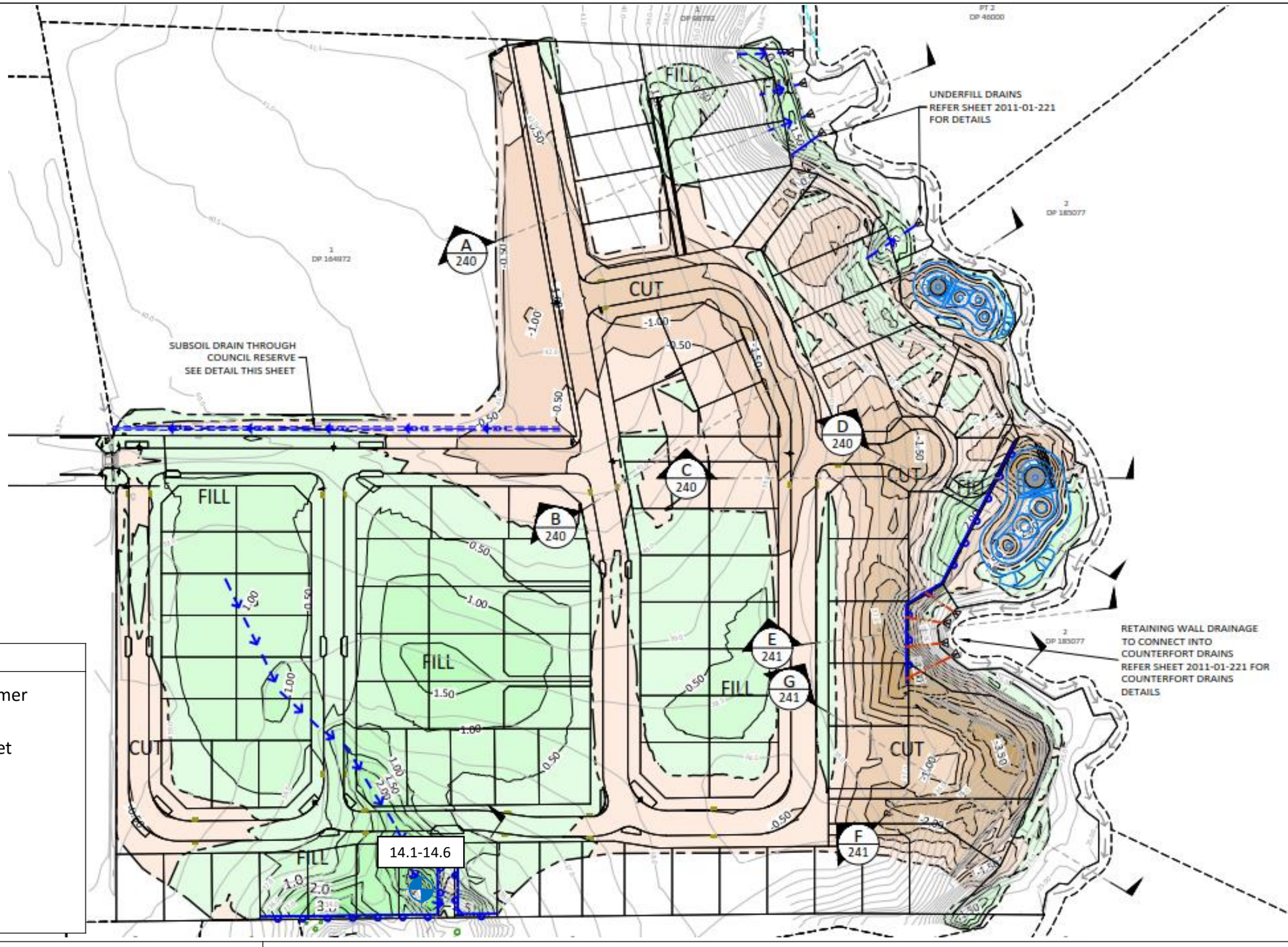
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	9/4/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	13	Date:	9/4/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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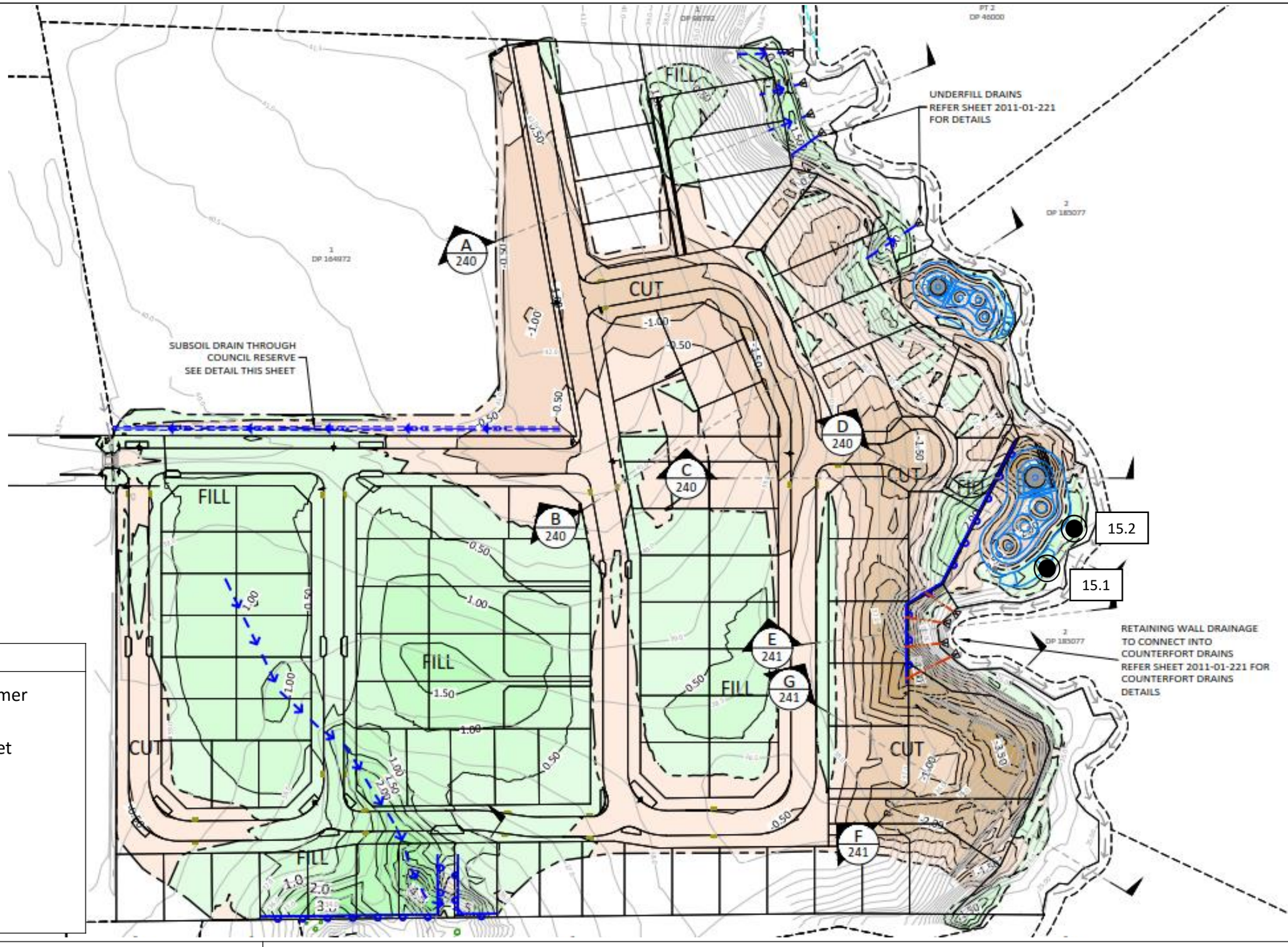
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	VIVE	Date:	13/4/19
Location:	Subgrade Improvement @ Detention Tank Area	Job No.:	1009213.0070.0.0/1	URN:	14	Date:	13/4/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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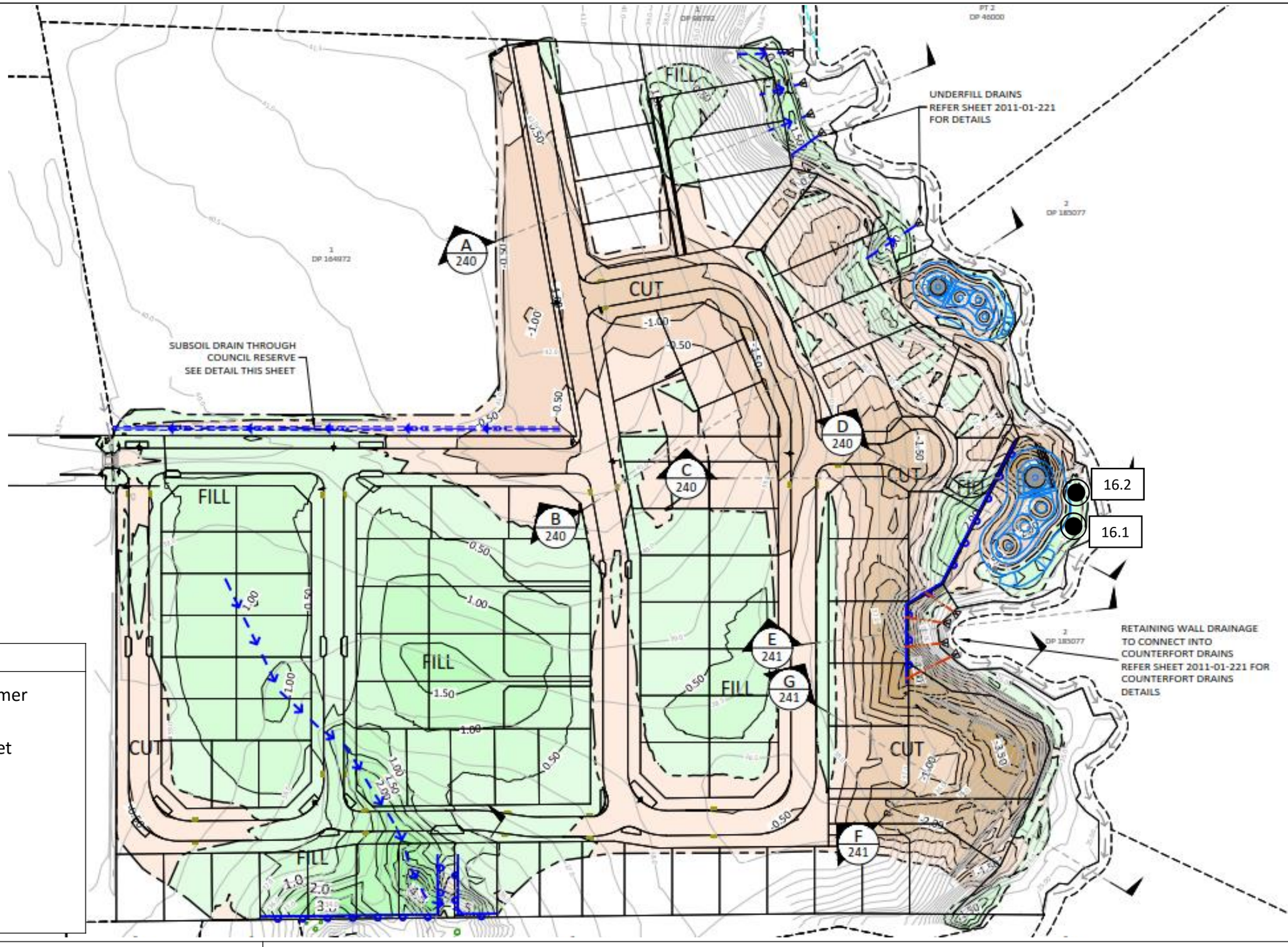
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	VIVE	Date:	16/4/19
Location:	Stage 2 Fill Area	Job No.:	1009213.0070.0.0/1	URN:	15	Date:	16/4/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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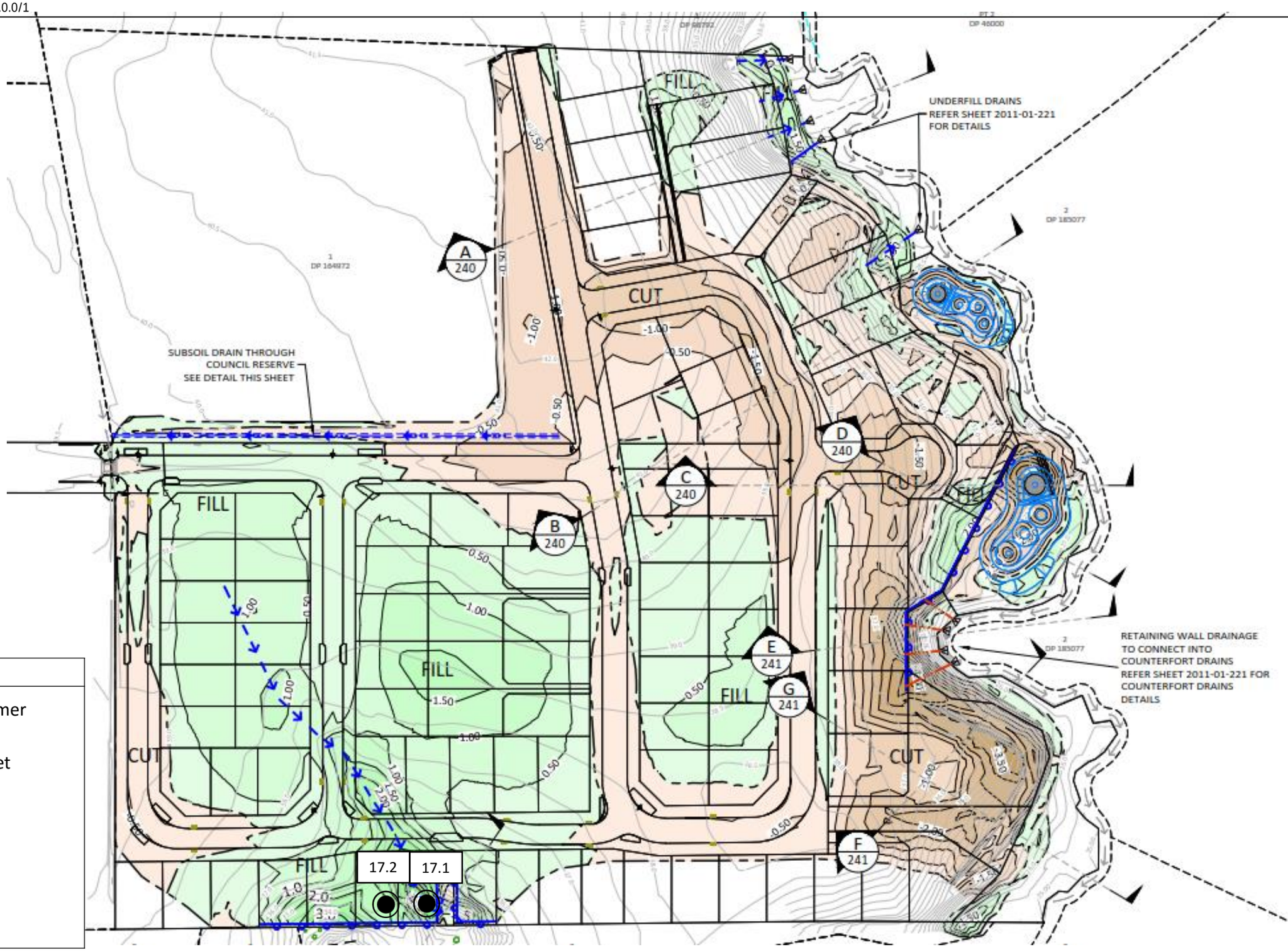
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	VIVE	Date:	17/4/19
Location:	Stage 2 Fill Area	Job No.:	1009213.0070.0.0/1	URN:	16	Date:	17/4/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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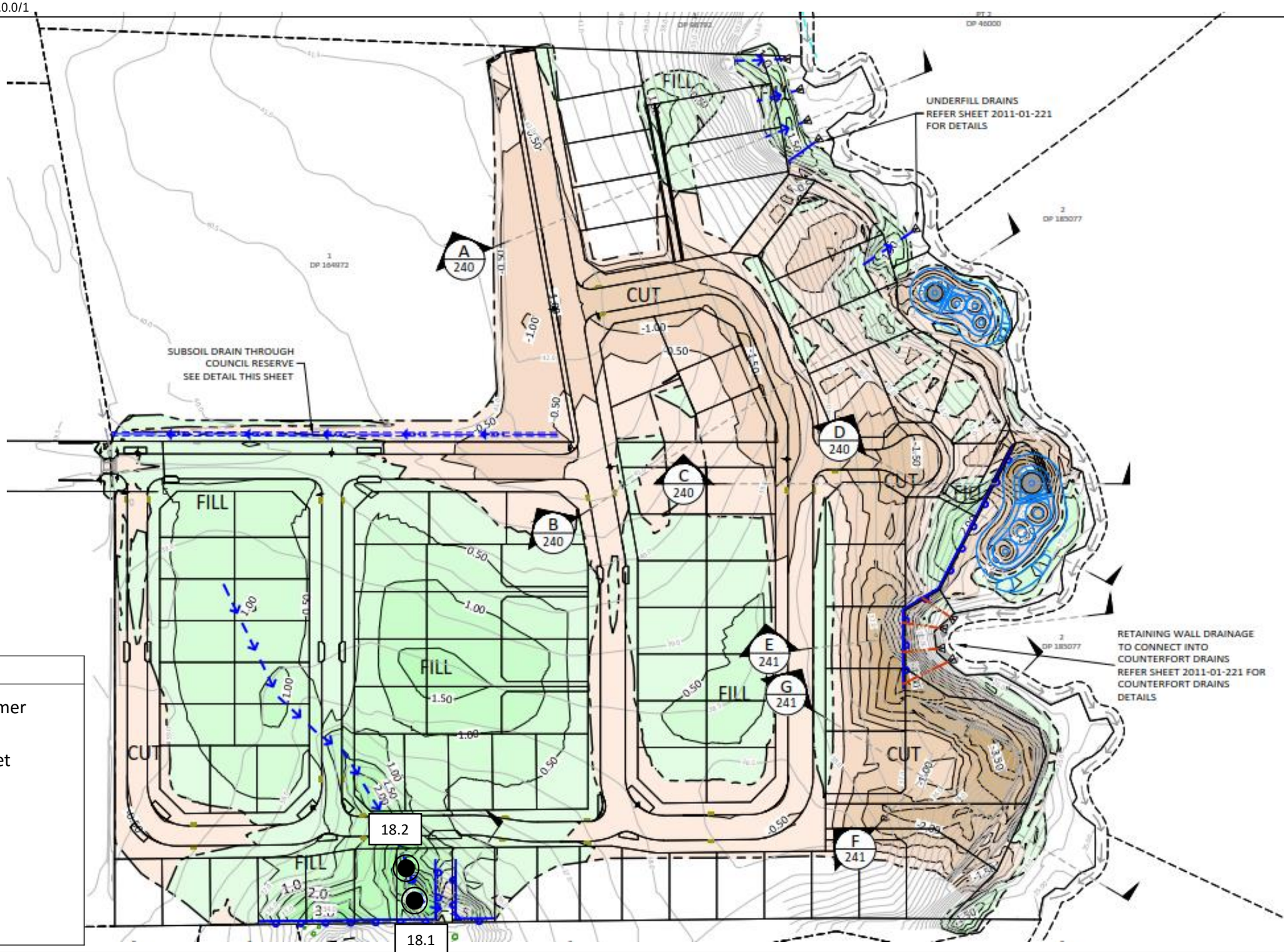
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	VIVE	Date:	26/4/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	17	Date:	26/4/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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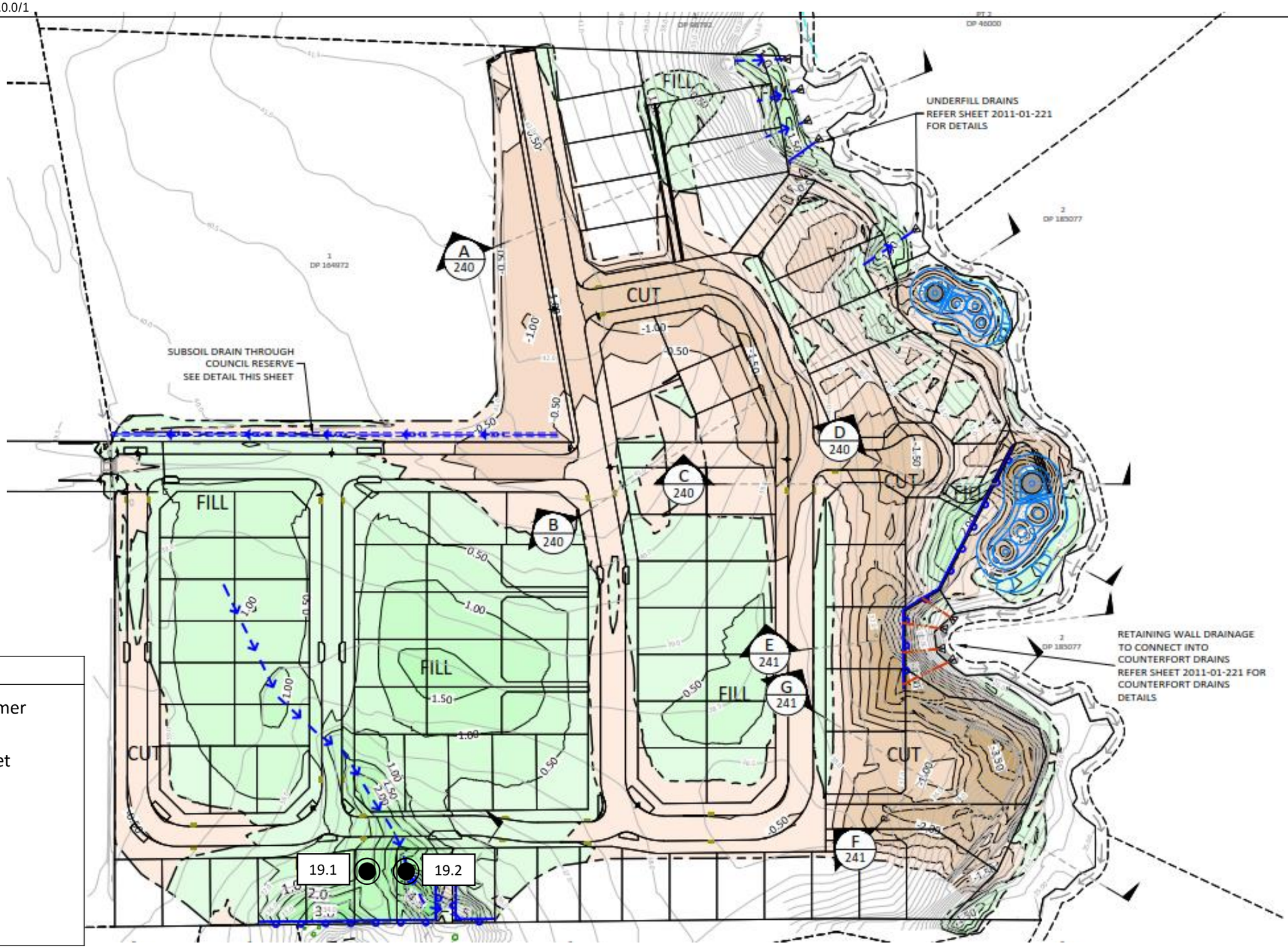
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	VIVE	Date:	01/05/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	18	Date:	01/05/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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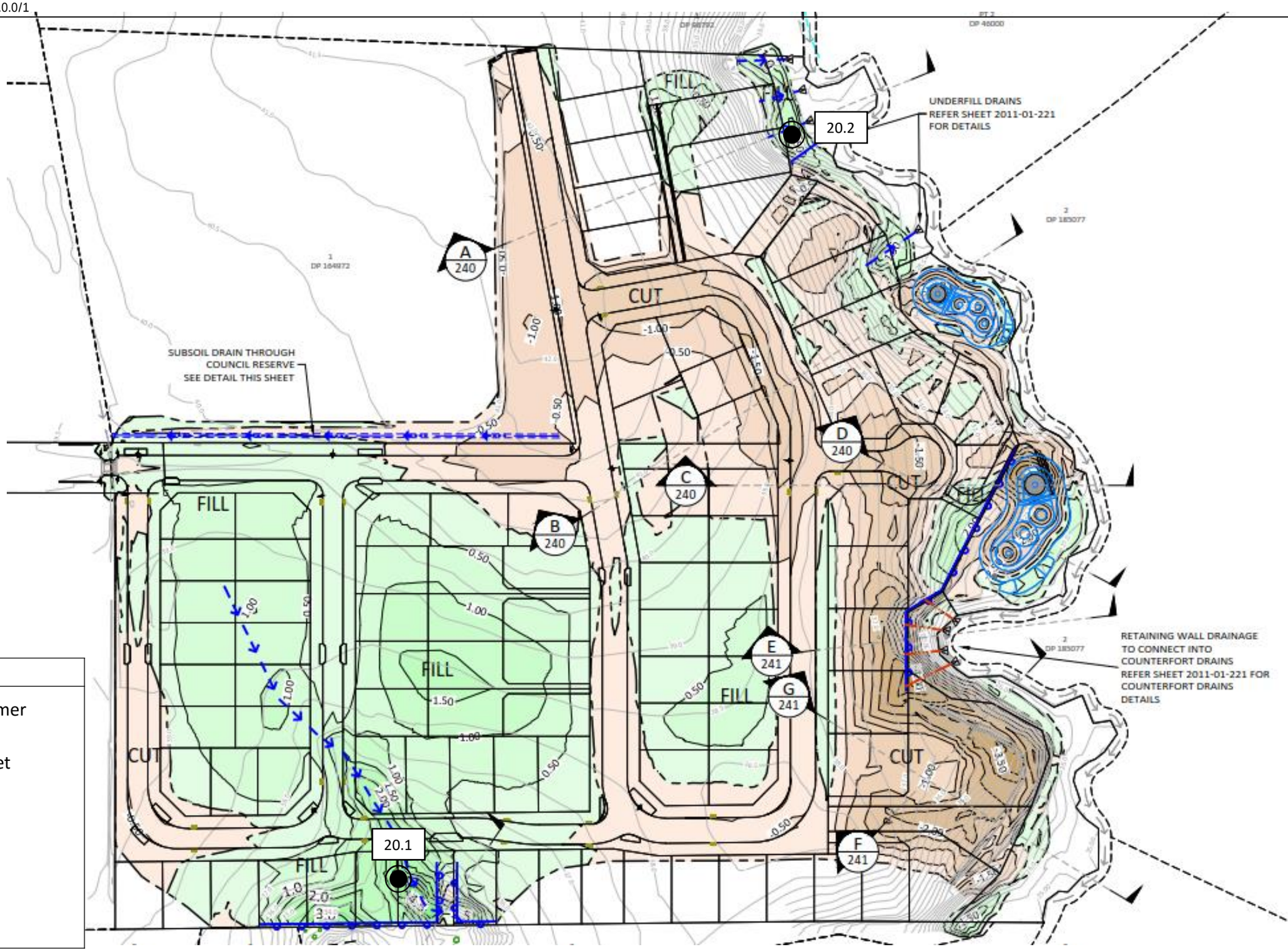
Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	3/05/19
Location:	South RW Fill Area	Job No.:	1009213.0070.0.0/1	URN:	19	Date:	3/05/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N



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Test Location Plan

Site:	99 Escott's Road, Tuakau	Job Name:	99 Escott's Road, Tuakau	Drawn:	JRA	Date:	8/05/19
Location:	South RW Fill Area & Stage 2 North Fill	Job No.:	1009213.0070.0.0/1	URN:	20	Date:	8/05/19
		Lab Ref:	- N/A	Scale:	Not to Scale	Rev.:	1

N