LANDER
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Geotechnical Completion Report

55 HAYFIELD WAY, HINGAIA

For

KARAKA WATERS (2016) LIMITED

J00044 | Lander Geotechnical Consultants Limited | 31 May 2018

31 May 2018 Ref No: J00044

Karaka Waters (2016) Limited
C/- Harrison Grierson Consultants Limited
PO Box 276 121
Manukau 2241

Attention: Mr N Smyth

Dear Neville

RE: Geotechnical Completion Report for Karaka Waters (2016) Limited at 55 Hayfield Way, Hingaia

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 Karaka Waters (2016) 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
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1 INTRODUCTION AND DESCRIPTION OF SUBDIVISION

This Geotechnical Completion Report has been prepared for Karaka Waters (2016) Limited as part of the documentation required to be submitted to the Auckland Council following residential development.

It contains our Suitability Statement, relevant test data and the Hall Surveying Limited as-built plan set relating to the 55 Hayfield Way Residential Subdivision as follows:

Table 1: Hall Surveying Limited As-Built Plans

Title	Reference No.	Date Signed
Final Contours Plan	2017-100	29 May 2018
Cut Fill Surface Plan	2017-100	29 May 2018
Asbuilt Stormwater Plan	2017-100	29 May 2018
Cut Fill Surface Plan (9 Sheets)	2017-100	29 May 2018
Asbuilt Waste Water Plan (4 Sheets)	2017-100	29 May 2018
Asbuilt Rain Garden Plan (5 Sheets)	2017-100	29 May 2018
Asbuilt Roading Depths Plan	2017-100	29 May 2018
Asbuilt Roading Works Plan (7 Sheets)	2017-100	29 May 2018
Asbuilt Overland Flow Path Plan (3 Sheets)	2017-100	29 May 2018
Asbuilt Power Plan	2017-100	29 May 2018
Asbuilt Telecom Plan	2017-100	29 May 2018
Asbuilt Watermain Plan (4 Sheets)	2017-100	29 May 2018

This report covers the construction period January 2016 to May 2018. It is intended to be used for certification purposes as follows:

- 59 residential lots numbered 1 to 22, 30 to 38, 44 to 62, 68 to 76,
- 3 new roads named Hayfield Way (part of), Fort Lincoln Loop, and Vincent Mangano Road (part of),
- 1 drainage reserve numbered as lot 500. This lot contains stormwater management infrastructure comprising a overland flow path and wetlands area.

Lander Geotechnical Consultants Limited were not involved in the construction of the wastewater pump station (Lot 501) or any associated earthworks/retaining wall constructions associated with it. Lot 501 is therefore excluded from any comment or certification in this report.

This subdivision is located at 55 Hayfield Way and as can be seen on the fill as-built plan, a total of 45 of the lots have been partly or totally affected by filling, to a maximum depth of approximately 3 metres.

2 RELATED REPORTS

A Geotechnical Investigation Report on the subject land was prepared by this Consultancy, reference J00044, dated 11 May 2015. The conclusions and recommendations of that report have been reviewed during the preparation of this document.

3 EARTHWORKS OPERATIONS

3.1 Plant

The main items of plant used by the Earthworks Contractor, Bob Hick Earthmoving Limited and Kidd Contracting Limited were:

- 3x 20T Excavators,
- 1x Articulated Dump Truck,
- 2x Elevating Scraper,
- 1x CAT 815 Padfoot Compactor.

3.2 Construction Programme

Earthworks operations for this stage commenced in January 2016 with sediment control works involving construction of decants and a silt pond in the south-western portion of the site. Stripping of topsoil from the site and dewatering the existing pond in the north-eastern portion of the site then commenced.

In February 2016, the undercutting of the organic deposits and pre-existing non-engineered fill materials was undertaken within the existing pond area and the pond subgrade was lime-stabilised to enable engineered filling operations to proceed. An underfill drain was trenched through the base of the pond, beneath residential lots 54 to 56 and 62, portions of Fort Lincoln Loop, and outletting into the wetlands reserve area. The underfill drain construction involved a perforated, heavy duty, 175mm diameter drain coil embedded in drainage media and fully wrapped in non-woven geotextile cloth. Clay fill was being imported from nearby subdivisions along with quarry overburden product (i.e. rotten rock and clay). Bulk cut to fill operations also commenced in the western portions of the site.

From March to April 2016, undercutting of non-engineered fill and soft ground encountered along the eastern and southern boundaries of the site occurred and was completed. Bulk clay filling in the pond and eastern portions of the site were then undertaken and completed.

By the end of May 2016, bulk earthworks were completed and the majority of the residential lots were stabilised (with topsoil and mulch). The silt pond was decommissioned and backfilled and civil services construction followed on from this and were mostly completed by June 2017 where roads and footpaths construction began.

From January to March 2018, several decants were decommissioned and backfilled and the wetlands area was re-shaped. The timber boardwalk within lot 500 was also installed with Lander Geotechnical observing ground conditions within the pile hole (refer PS4 attached, Appendix 4)

4 QUALITY ASSURANCE AND CONTROLS

4.1 Inspections

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 development to:

- Observe topsoil stripping of earthworks areas;

- Observed stripping and removal of any underlying unsuitable natural deposits in and near gully and existing pond areas to ensure they had been removed satisfactorily;
- Observe undercutting and removal of pre-existing non-engineer certified fill;
- Determine the location and specifications of the underfill drain within the pond base;
- Observe fill placement and performance periodically throughout the bulk filling works;
- Observe ground conditions within the timber boardwalk pile hole excavations (Lot 500) were in accordance with the design assumptions.

4.2 Quality Control Criteria

4.2.1 Compaction

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

Specification details were as follows:

Minimum Shear Strength and Maximum Air Voids Method

(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	

4.2.2 Compaction Assurance Testing

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. The results of this testing are appended in Appendix 2. The results show that on all occasions the above testing criteria was met.

5 PROJECT EVALUATION

5.1 Bearing Capacity and Settlement of Building Foundations

Following the completion of earthworks operations, we returned to the site on 14 April 2018 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. Our resulting bearing capacity recommendations are presented in the appended Suitability Statement.

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 subsequent to this report, or softened due to ponded rainwater, engineering advice should be sought with a view to affected areas being trimmed back to competent ground and reinstated with compacted hardfill 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

Four 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 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 Expansive Classes for this subdivision range from M (moderate) to H1 (high) and the specific Expansive Class for each residential lot is presented in the Suitability Statement.

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

Individual end users may undertake further testing in their specific lot(s) to validate or amend these site class designations with geotechnical endorsement.

5.3 Slope Stability

As mentioned in our Geotechnical Investigation Report for the subdivision (referenced in Section 2), minimum factors of safety below the Auckland Council standards' criteria are located within the Esplanade areas and are a significant distance away from any residential lots. We are therefore satisfied that the residential lots within this subdivision are not subject to the hazards described in section 71(3) of the Building Act. We understand foreshore regression was addressed by others at Resource Consent stage and understand that all Lots are appropriately setback in this regard.

In addition, it has been confirmed by Harrison Grierson Consultants Limited that slope gradients within the residential lots within this subdivision are 1(v) in 4(h) or flatter, and therefore there are no slope stability ore long term soil creep concerns.

5.4 Fill Induced Settlement

As a result of our pre-fill inspections, the installation of subsoil drainage, fill compaction 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 light building development.

5.5 Underfill Drains

The appended Cut Fill Surface plan shows the location of an underfill drain running through lots 54 to 56 and 62. This was placed at the base of the fill area prior to filling to tap groundwater seepages within the pond and gully inverts to allow engineered fill placement, as required by the project specifications.

The drain was intended to intercept localised groundwater seepages and springs during earthworks and to help provide general control over groundwater levels, not as remedial works for any existing instability and it needs no specific maintenance. This drain also presents no foreseeable constraints for the shallow foundations in the aforementioned affected lots 54 to 56 and 62.

Notwithstanding, it is recommended that future foundations or site development works preserve this drain. In the event that the drain is compromised by any future development of these lots (albeit unlikely given it is a minimum 1.5m deep within the effected lots), it should be reinstated under geotechnical engineering observational guidance. Further details are given in Section 6(3)(c) of this report.

5.6 Service Trenches

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

5.7 Wetlands Reserve Overland Flowpaths

An overland flow path has been formed on lot 500 within the wetlands reserve. This Consultancy was not involved in the design routing or consideration of flow capacities for the overland flow path.

5.8 Topsoil

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

However, lots 36 to 38 encountered topsoil in excess of 300mm as presented in the table below. Site specific findings are presented in the Suitability Statement Summary.

Table 2: Excessive Topsoil Depths

Lot	Depth (mm)
36	250 – 450
37	200 – 450
38	100 – 450

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) Subsequent 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 the subdivision.
2. The extent of preliminary investigations carried out to date are referenced in Section 2 of this report and the conclusions and recommendations of that document have been re-evaluated in the preparation of this report. Details of all tests carried out by Lander Geotechnical Consultants Limited are given in Appendices 2 & 3.
3. In my professional opinion, not to be construed as a guarantee, I consider that:

   (a) With the exception of Lot 501 (excluded from this report), the earth fills shown on the appended cut fill surface as-built plan have been placed in compliance with NZS 4431, Auckland Council's Code of Practice for Land Development and Subdivision, Section 2 Earthworks and Geotechnical Requirements (version 1.6) and related documents.

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

   (c) The function of the underfill drain (beneath lots 54 to 56 and 62) should not be impaired by any building development or landscaping works. In particular, any bored or driven piles (if any) must be positioned to avoid damaging the underfill drains.

   (d) 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, (i.e. outside the limits of NZS 3604, such as when piling is undertaken), further specific site investigation and design of foundations should be carried out prior to building consent application.

(e) The backfilling and compaction of the stormwater and sanitary sewer trenches on this subdivision has where possible been carried out to appropriate standards having regard for the prevailing ground conditions and associated compaction induced pipe loadings.

Nevertheless, no building development should take place within the 45 degree zone of influence of pipe 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.

(f) Subject to the geotechnical limitations, restrictions, recommendations and expansive soil assessments associated with 3(b), 3(c), 3(d) and 3(e) 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) Foundation design may be carried out in accordance with AS 2870 (Class H1) for lots 1 to 22, 30 to 31 and 68 to 76 and in accordance with AS 2870 (Class M) for lots 32 to 38 and 44 to 62. Alternatively, foundation design may be carried out in accordance with NZS 3604 provided that in this latter case the minimum foundation depth below cleared ground level following topsoil removal and benching of building platform areas is 900mm (for Class H1 lots) or 600mm (for Class M lots).

4. Road subgrades (i.e. Hayfield Way (part of), Fort Lincoln Loop, and Vincent Mangano Road (part of)) have been formed having due regard for slope stability and settlement, although available subgrade strengths are dependent on site conditions and on construction trafficking and variable results should be expected.

The professional opinion contained within this report is furnished to the Auckland Council and Karaka Waters (2016) 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.

This opinion does not remove the necessity for the normal inspection of site conditions and the design of foundations as would be made under all normal circumstances.

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:

M.V. Chan

Geotechnical Engineer

C.J. Edwards

Senior Engineering Geologist
MEngNZ.

Reviewed and Authorised by:

S.G. Lander

Principal Geotechnical Engineer
CMEngNZ, CPEng, IntPE(NZ)

Table 3: Suitability Statement Summary

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870 :2011 Class
1	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
2	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	300	H1
3	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	150	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.	200	300	H1
6	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
7	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	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.	200	300	H1
11	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
12	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	250	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.	200	300	H1
16	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	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

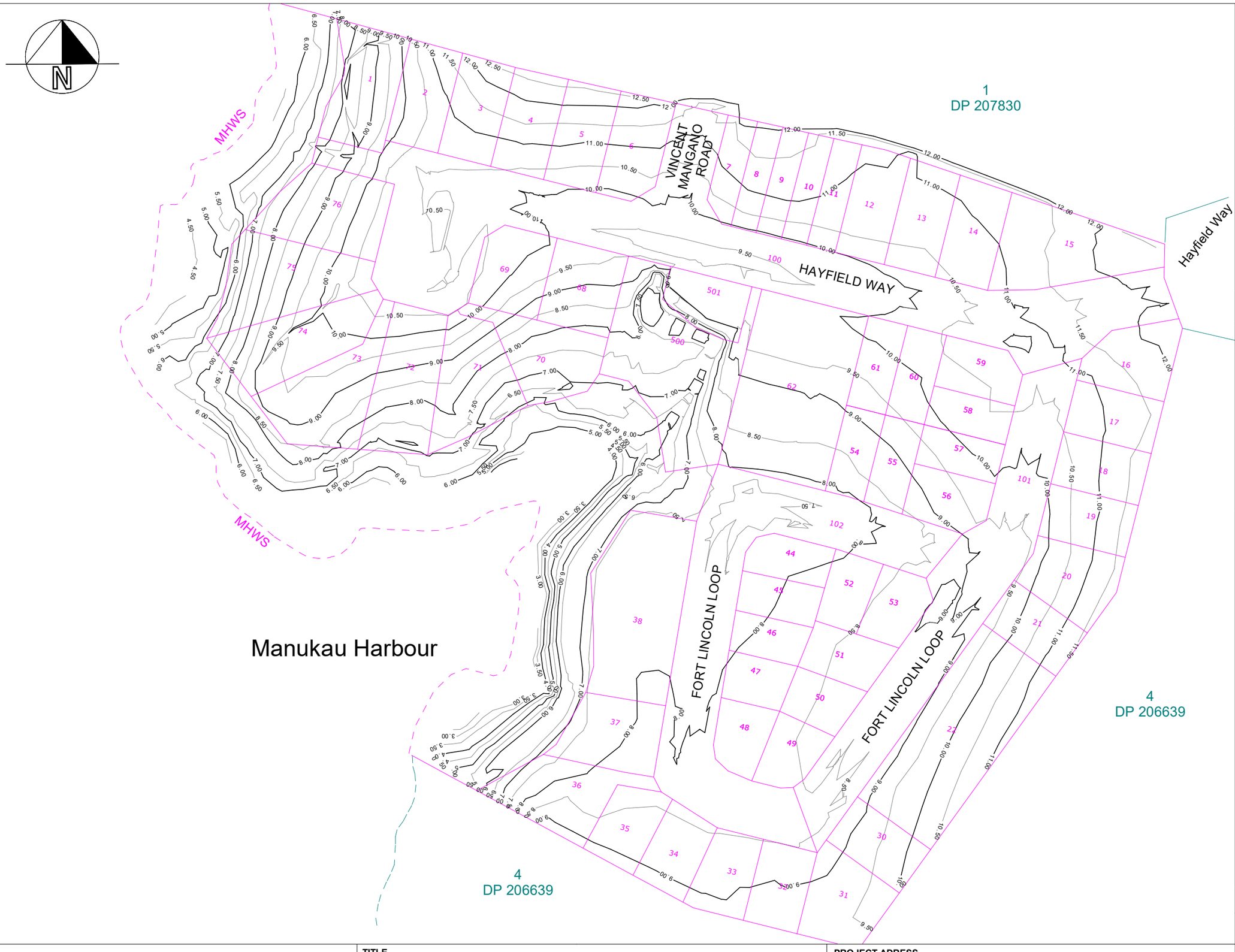
Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870 :2011 Class
20	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
21	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100	300	H1
22	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	100 – 250	300	H1
30	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
31	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
32	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
33	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
34	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250	300	M
35	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
36	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	250 – 450	300	M
37	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200 – 450	300	M
38	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100 – 450	300	M
44	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M
45	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M
46	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M
47	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
48	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
49	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M
50	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M
51	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870 :2011 Class
52	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M
53	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
54	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm. Function of underfill drain to be preserved.	200	300	M
55	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm. Function of underfill drain to be preserved.	150	300	M
56	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm. Function of underfill drain to be preserved.	100	300	M
57	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M
58	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
59	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	200	300	M
60	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	150	300	M
61	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm.	100	300	M
62	AS 2870 foundation design or NZS 3604 with minimum footing depth 600mm. Function of underfill drain to be preserved.	100	300	M
68	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
69	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
70	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	200	300	H1
71	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	250	300	H1
72	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	250	300	H1
73	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	300	300	H1
74	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	250	300	H1

Lot No.	Comments	Topsoil Depth (mm)	Ultimate Bearing (kPa)	AS2870 :2011 Class
75	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	250	300	H1
76	AS 2870 foundation design or NZS 3604 with minimum footing depth 900mm.	300	300	H1

Appendix 1

Hall Surveying Limited
As-Built Plans



I Certify that these Asbuilt plans are an accurate record of the works undertaken and that
- The coordinates (X, Y) are in terms of NZTM on the NZGD (2000) and are within 50mm accuracy.
- The levels (Z) are in terms of Auckland Vertical Datum 1946 (MSL) LINZ Datum (DOSLI datum) and are within 25mm accuracy.

Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

THE INFORMATION PORTYAED ON THIS PLAN IS INTENDED TO BE SOLELY USED AD THE BASE DATA FOR THE PURPOSES OF 224c APPLICATION TO COUNCIL.
HALL SURVEYING LTD ACCEPT NO RESPONSIBILTY FOR ANY BUILDING DESIGN OR CONSTRUCTION WORK BASED ON THIS DRAWING FILE.

- INFORMATION SHOWN IS FROM SURVEYED DATA AND CONTRACTOR RECEIVED DATA

HALL SURVEYING
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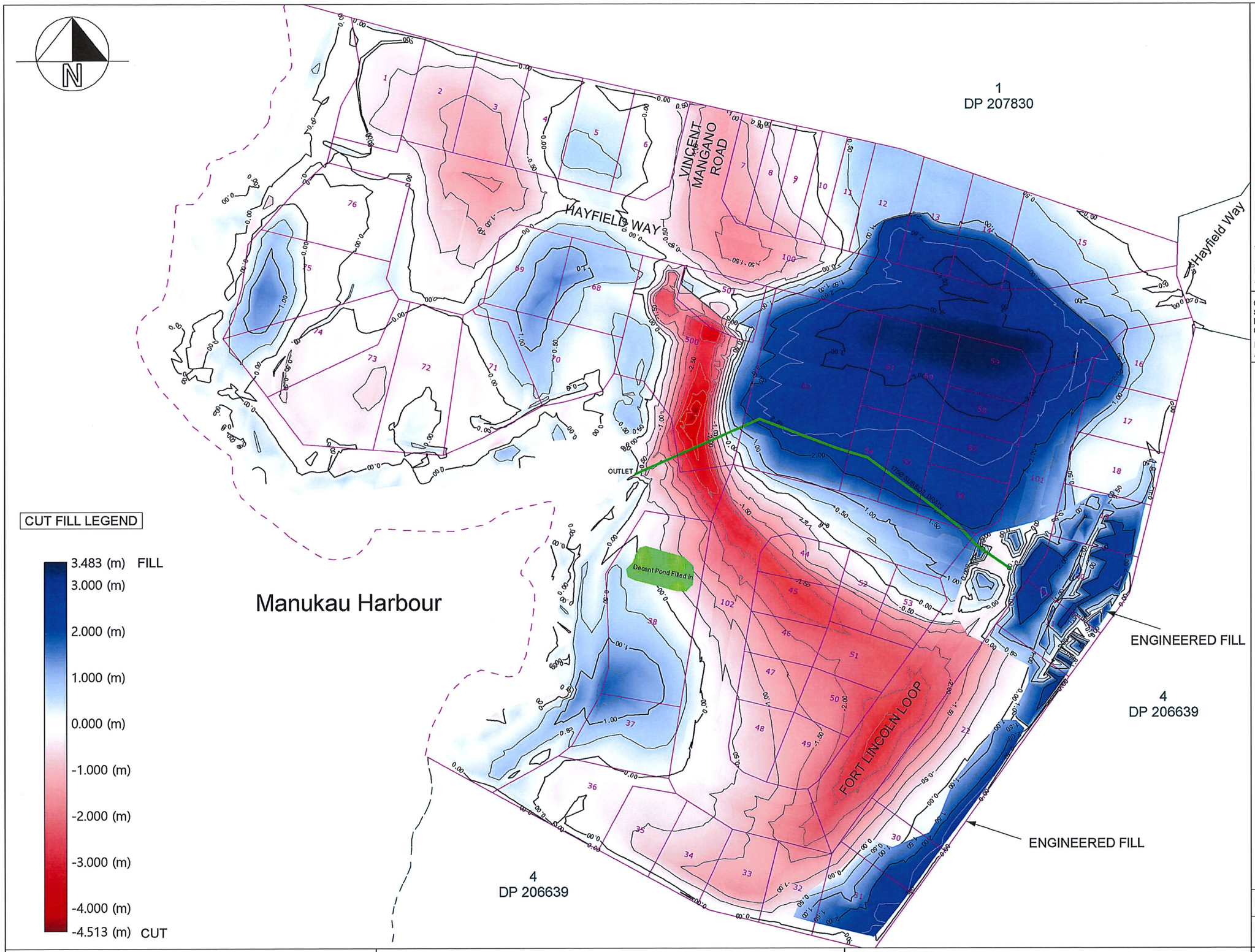
TITLE

FINAL CONTOURS PLAN

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Revision #	A	
Scale:	1 : 1000 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018



CUT FILL LEGEND

- 3.483 (m) FILL
- 3.000 (m)
- 2.000 (m)
- 1.000 (m)
- 0.000 (m)
- -1.000 (m)
- -2.000 (m)
- -3.000 (m)
- -4.000 (m)
- -4.513 (m) CUT

I Certify that these Asbuilt plans are an accurate record of the works undertaken and that
- The coordinates (X, Y) are in terms of NZTM on the NZGD (2000) and are within 50mm accuracy.
- The levels (Z) are in terms of Auckland Vertical Datum 1946 (MSL) LINZ Datum (DOSLI datum) and are within 25mm accuracy.

Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

THE INFORMATION PORTYAED ON THIS PLAN IS INTENDED TO BE SOLELY USED AD THE BASE DATA FOR THE PURPOSES OF 224c APPLICATION TO COUNCIL.
HALL SURVEYING LTD ACCEPT NO RESPONSIBILTY FOR ANY BUILDING DESIGN OR CONSTRUCTION WORK BASED ON THIS DRAWING FILE.

CALCULATIONS ARE FROM BASE TOPOGRAPHICAL SURVEY SUPPLIED BY KIDD CONTRACTING VS HALL SURVEYING TOPOGRPHICAL SURVEY CARRIED OUT AT THE END OF THE JOB.

INFORMATION SHOWN IS FROM SURVEYED DATA AND CONTRACTOR RECEIVED DATA

HALL SURVEYING
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TITLE

CUT FILL SURFACE

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Revision #	C	
Scale:	1 : 1100 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018

I Certify that these Asbuilt plans are an accurate record of the works undertaken and that
- The coordinates (X, Y) are in terms of NZTM on the NZGD (2000) and are within 50mm accuracy.
- The levels (Z) are in terms of Auckland Vertical Datum 1946 (MSL) LINZ Datum (DOSLI datum) and are within 10mm accuracy.

Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

LEGEND:

- NEW STORM WATER LINE
- NEW 100Ø uPVC STORM WATER BYPASS LINE
- NEW STORM WATER MANHOLE
- NEW STORM WATER RAIN GARDEN
- NEW STORM WATER CESSPIT

NOTES

- CO-ORDINATES AND LID LEVELS ARE CENTRE OF CAST IRON LID UNLESS OTHERWISE STATED
- DISTANCES SHOWN NEXT TO CONNECTIONS ARE FROM THE DOWNSTREAM MANHOLE
- INFORMATION SHOWN IS FROM SURVEYED DATA AND CONTRACTOR RECEIVED DATA.

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TITLE

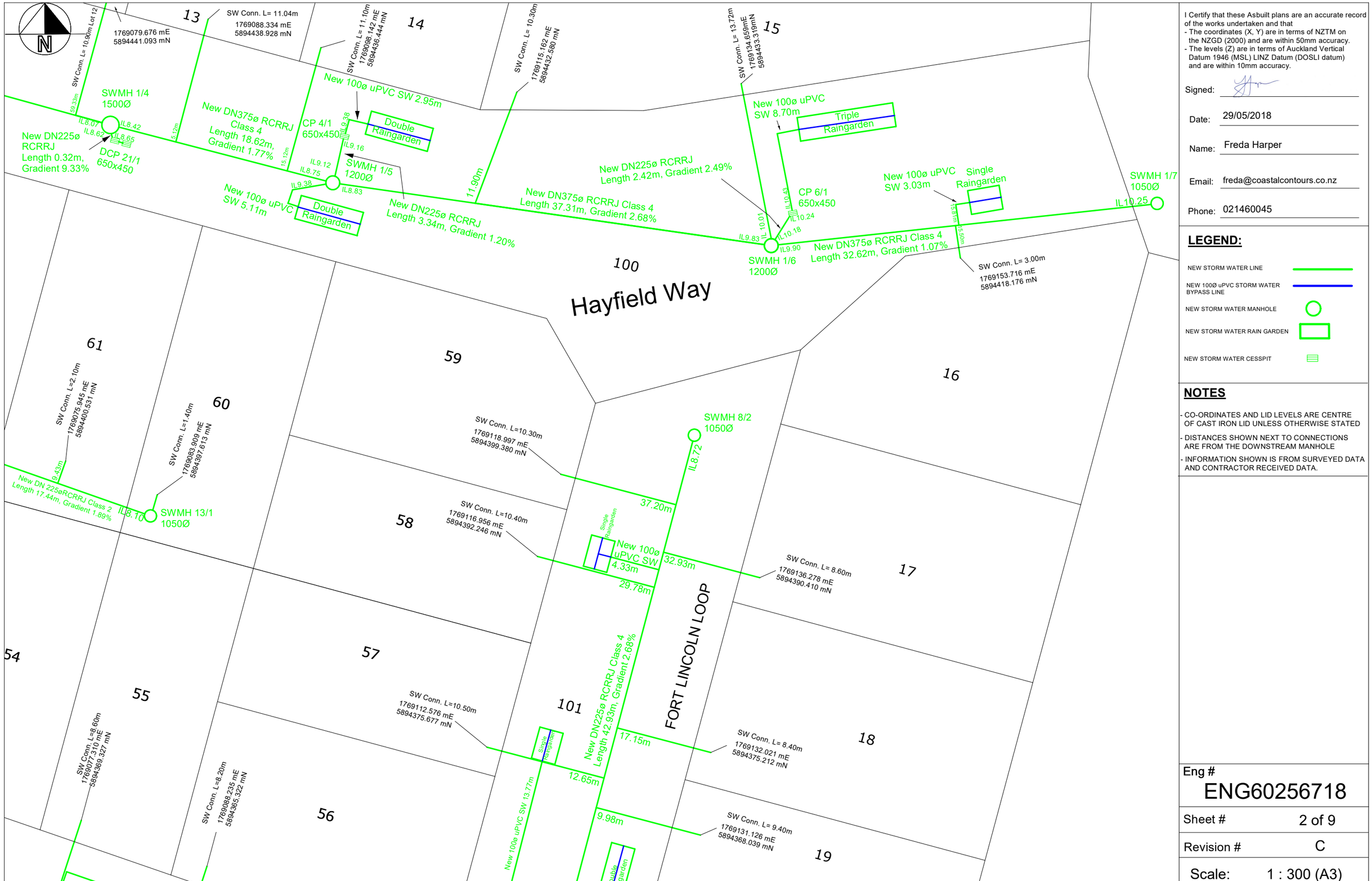
ASBUILT PLAN

STORM WATER

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Eng #	ENG60256718	
Sheet #	1 of 9	
Revision #	C	
Scale:	1 : 1000 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 19/05/218



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Signed: _____

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

LEGEND:

- NEW STORM WATER LINE
- NEW 100Ø uPVC STORM WATER BYPASS LINE
- NEW STORM WATER MANHOLE
- NEW STORM WATER RAIN GARDEN
- NEW STORM WATER CESSPIT

NOTES

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- DISTANCES SHOWN NEXT TO CONNECTIONS ARE FROM THE DOWNSTREAM MANHOLE
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e: tom@hallsurveying.co.nz

TITLE

ASBUILT PLAN

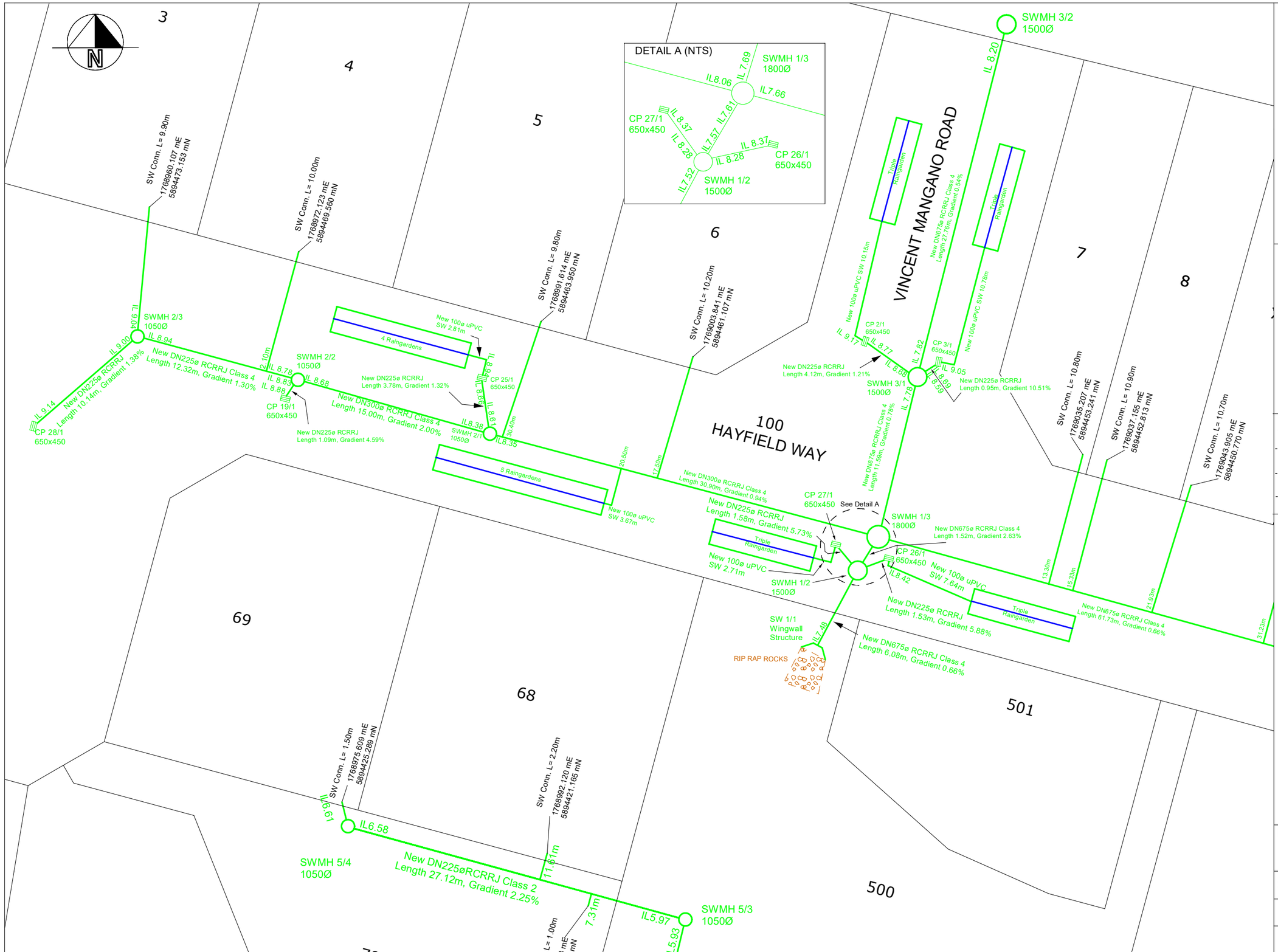
STORM WATER

PROJECT ADRESS

55 HAYFIELD WAY,
HINGAIA.

Eng #	ENG60256718
Sheet #	2 of 9
Revision #	C
Scale:	1 : 300 (A3)
Job #	2017-100

Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 19/05/2018



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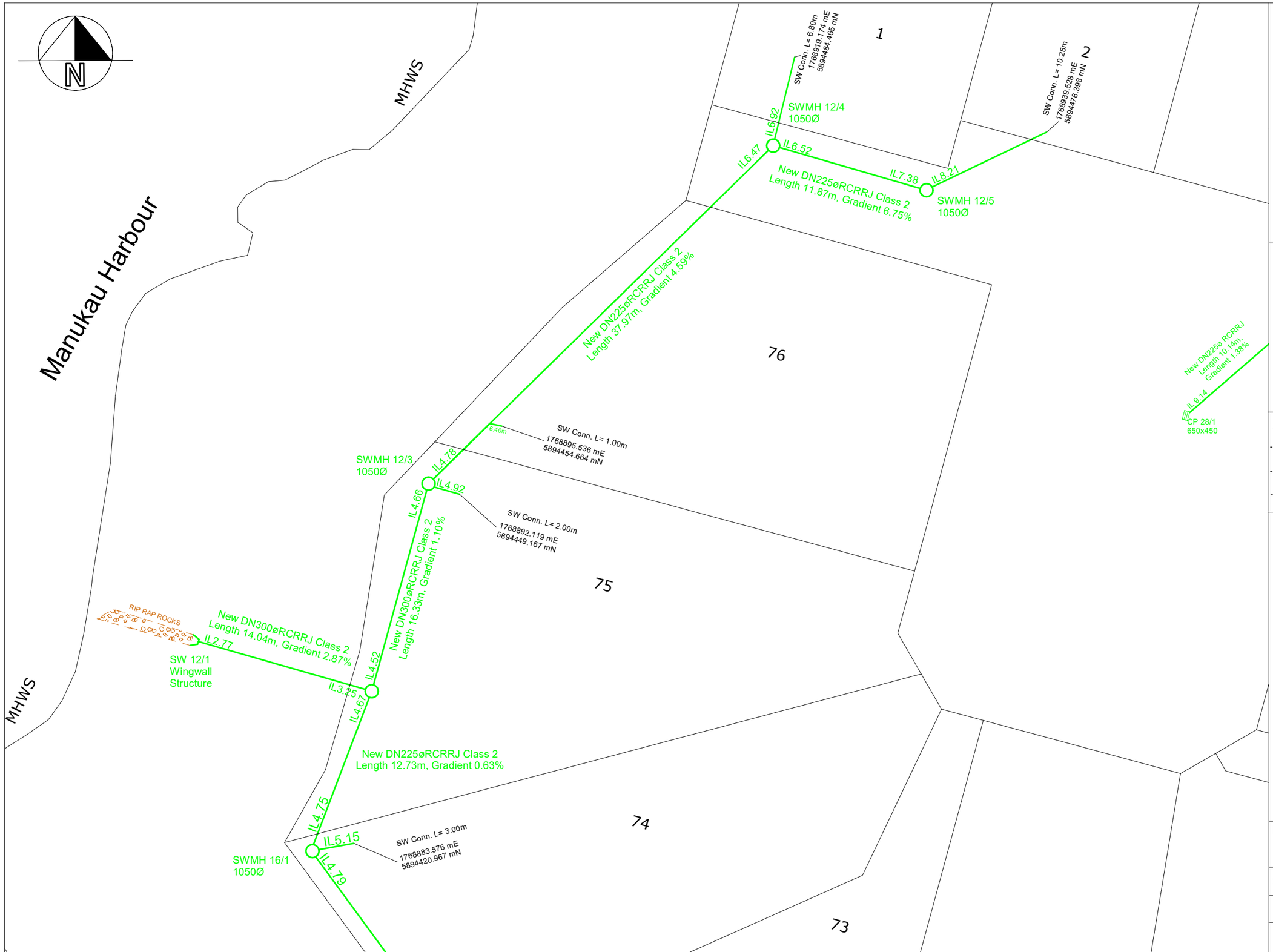
55 HAYFIELD WAY,
HINGAIA.

Eng #	ENG60256718	
Sheet #	3 of 9	
Revision #		
Scale:	1 : 300 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date



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STORM WATER

PROJECT ADRESS

55 HAYFIELD WAY,
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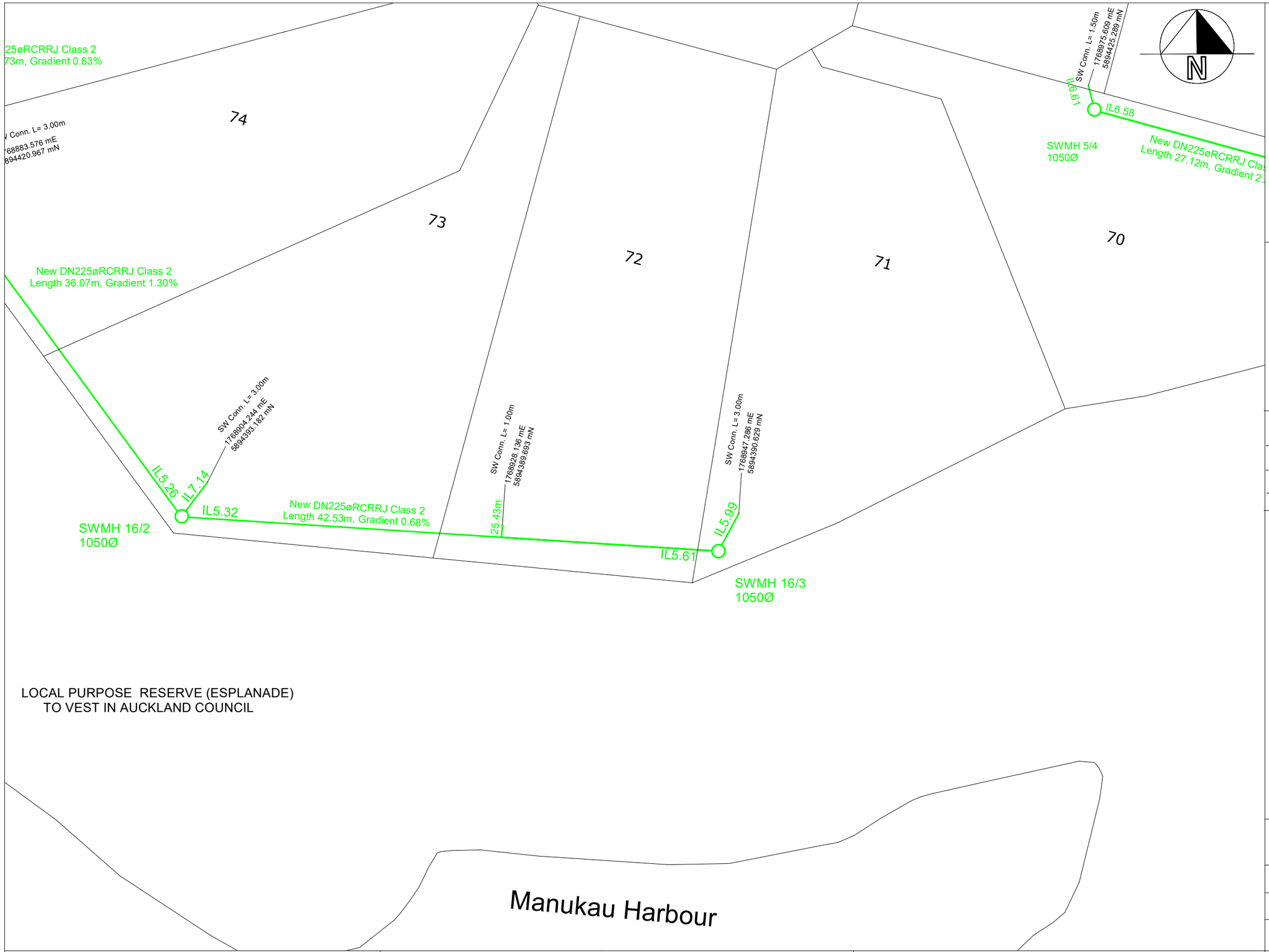
Eng #	ENG60256718	
Sheet #	4 of 9	
Revision #	C	
Scale:	1 : 300 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 19/05/2018



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STORM WATER

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Eng #	ENG60256718	
Sheet #	5 of 9	
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Surveyed	TH	Date 04/04/2018
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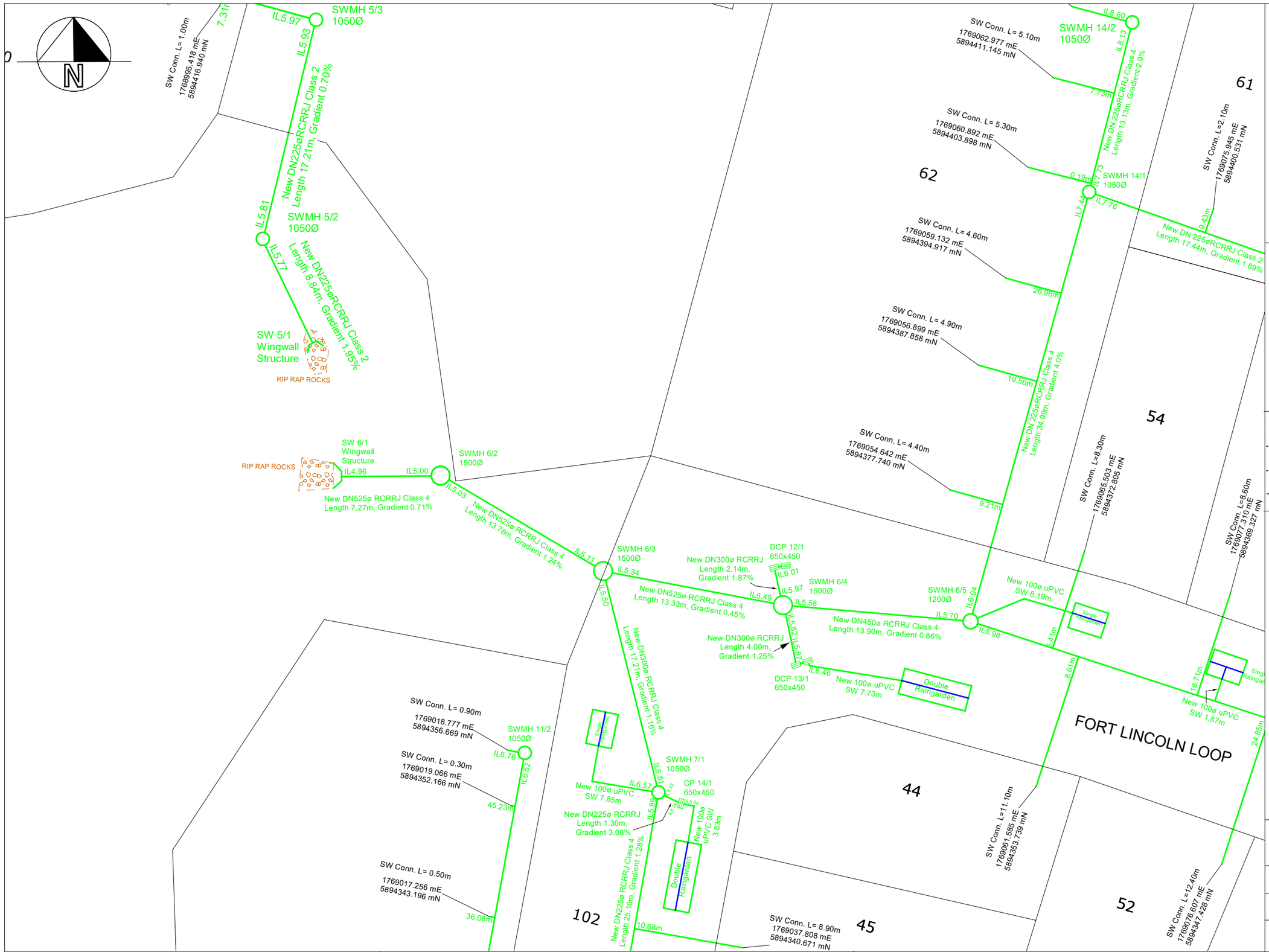

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Eng #	ENG60256718	
Sheet #	6 of 9	
Revision #	C	
Scale:	1 : 300 (A3)	
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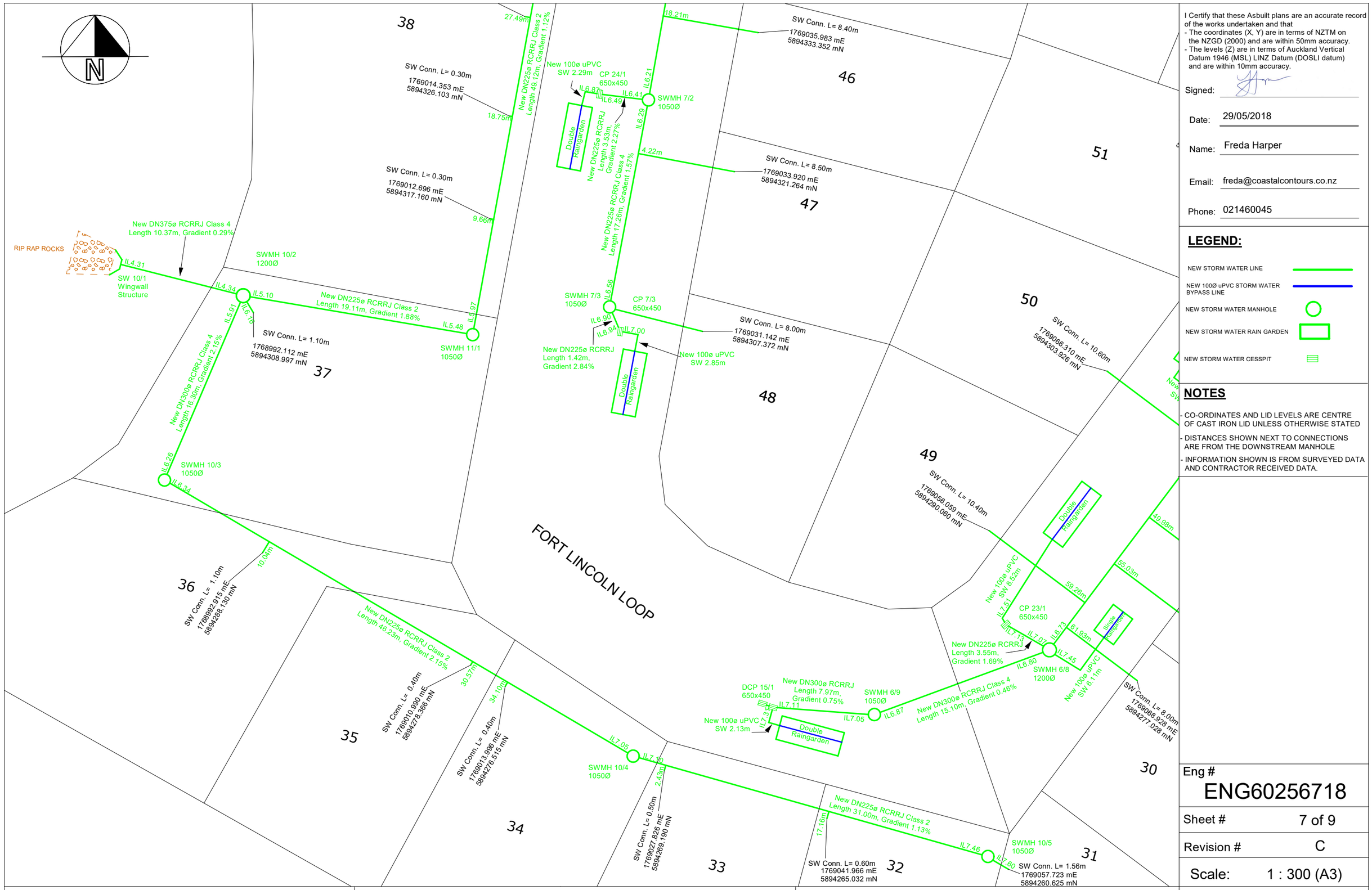

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55 HAYFIELD WAY,
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Eng # ENG60256718

Sheet #	7 of 9	
Revision #	C	
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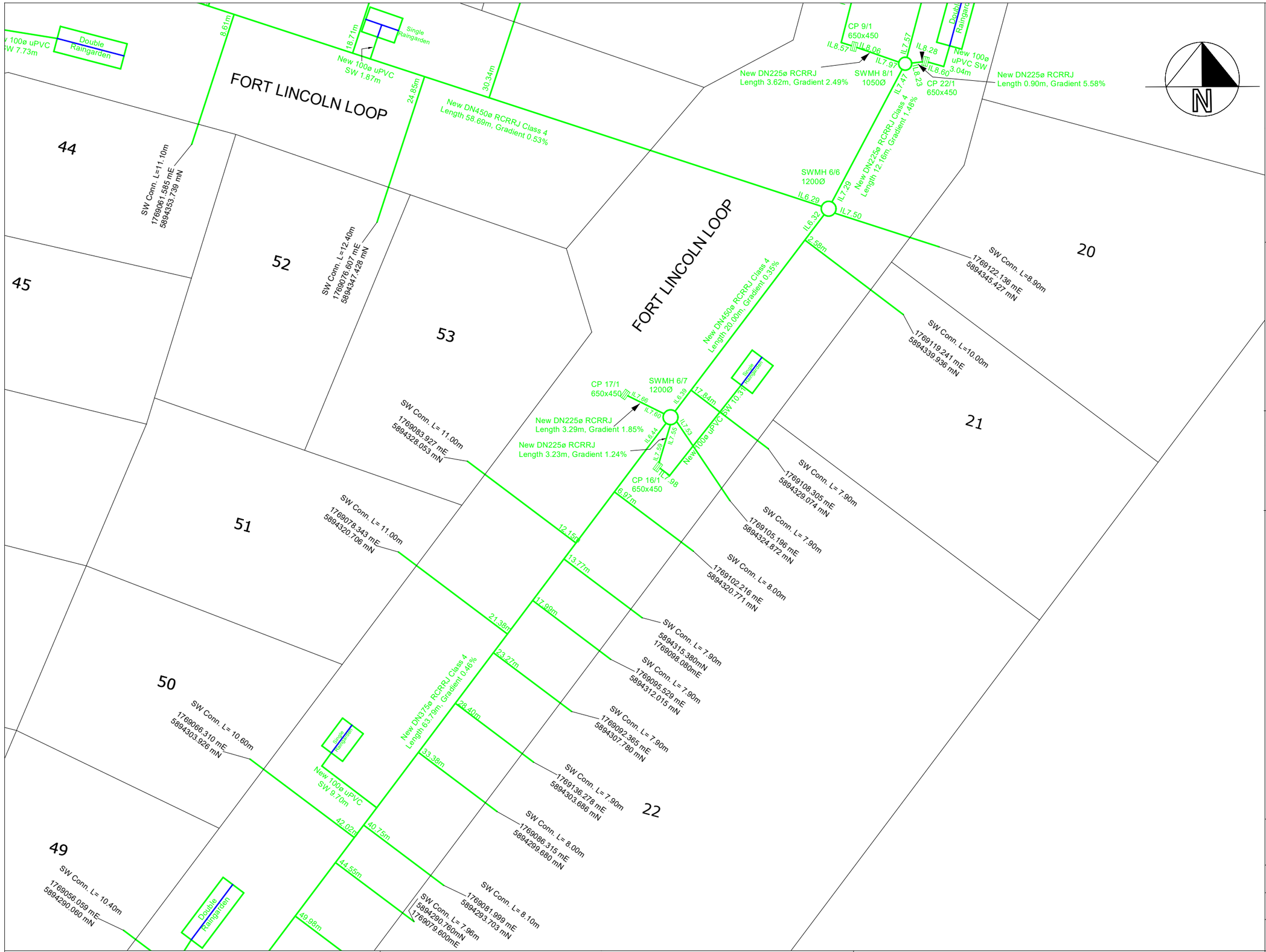
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 19/05/2018



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Manhole #	Northing	Easting	Lid Level	Manhole #	Northing	Easting	Lid Level
SWMH1/7	5894422.92mN	1769170.82mE	11.95	SWMH5/2	5894398.06mN	1768998.80mE	6.73
SWMH1/6	5894419.03mN	1769137.46mE	11.40	SWMH5/3	5894415.92mN	1769003.39mE	7.78
SWMH1/5	5894424.60mN	1769099.21mE	10.28	SW5/1	5894389.66mN	1769002.96mE	
SWMH1/4	5894430.20mN	1769080.02mE	9.79	SWMH11/2	5894356.34mN	1769020.23mE	7.74
SWMH13/1	5894395.68mN	1769083.44mE	9.35	SWMH7/1	5894353.27mN	1769031.10mE	7.53
SWMH8/2	5894402.72mN	1769130.77mE	10.67	DCP12/1 LEFT	5894371.44mN	1769040.38mE	7.33
CP6/1	5894422.00mN	1769139.20mE	11.38	DCP12/1 RIGHT	5894371.54mN	1769041.30mE	7.33
CP4/1	5894428.81mN	1769100.14mE	10.24	DCP13/1 LEFT	5894363.63mN	1769042.10mE	7.35
DCP21/1 LEFT	5894428.46mN	1769080.26mE	9.72	DCP13/1 RIGHT	5894363.89mN	1769043.04mE	7.35
DCP21/1 RIGHT	5894428.21mN	1769081.20mE	9.74	CP14/1	5894352.37mN	1769032.78mE	7.45
SWMH1/3	5894447.02mN	1769018.48mE	9.39	SWMH6/8	5894279.37mN	1769061.36mE	8.42
SWMH3/1	5894459.29mN	1769022.18mE	9.96	SWMH6/9	5894273.95mN	1769046.02mE	8.28
SWMH3/2	5894487.89mN	1769028.85mE	11.46	SWMH10/5	5894261.80mN	1769055.98mE	8.78
SWMH2/1	5894454.76mN	1768987.49mE	9.71	SWMH10/4	5894270.53mN	1769025.02mE	8.52
SWMH2/2	5894459.33mN	1768972.17mE	10.03	SWMH10/3	5894294.40mN	1768984.13mE	7.47
SWMH2/3	5894462.84mN	1768959.09mE	10.23	SWMH10/2	5894310.58mN	1768991.13mE	7.54
SW1/1	5894437.90mN	1769013.87mE		SW 10/1	5894313.20mN	1768980.59mE	
SWMH1/2	5894443.59mN	1769017.33mE	9.43	SWMH11/1	5894306.93mN	1769011.22mE	8.10
SWMH5/4	5894423.28mN	1768976.13mE	8.14	SWMH7/3	5894309.53mN	1769022.95mE	7.87
SWMH5/5	5894415.92mN	1769003.39mE	7.78	SWMH7/2	5894327.46mN	1769026.52mE	7.74
CP26/1	5894444.81mN	1769019.65mE	9.29	CP23/1	5894281.87mN	1769057.45mE	8.35
CP27/1	5894446.01mN	1769015.32mE	9.29	DCP15/1 LEFT	5894275.00mN	1769036.37mE	8.15
CP3/1	5894460.85mN	1769023.64mE	9.98	DCP15/1 RIGHT	5894274.74mN	1769037.20mE	8.16
CP2/1	5894462.31mN	1769017.71mE	10.03	CP7/3	5894307.36mN	1769024.06mE	7.82
CP25/1	5894459.49mN	1768986.95mE	9.74	CP24/1	5894328.05mN	1769022.31mE	6.70
CP19/1	5894457.74mN	1768971.13mE	9.96	SWMH8/1	5894360.07mN	1769119.41mE	9.47
CP28/1	5894455.51mN	1768950.78mE	10.42	SWMH6/6	5894348.71mN	1769113.00mE	9.22
SWMH12/5	5894473.57mN	1768929.79mE	9.91	SWMH6/7	5894331.60mN	1769100.45mE	8.95
SWMH12/4	5894477.55mN	1768917.46mE	8.58	CP9/1	5894361.57mN	1769115.27mE	9.41
SWMH12/3	5894450.20mN	1768889.48mE	6.22	CP22/1	5894360.46mN	1769120.94mE	9.43
SWMH12/2	5894433.26mN	1768885.10mE	6.16	CP17/1	5894333.45mN	1769096.76mE	8.85
SWMH12/1	5894437.26mN	1768871.03mE		CP16/1	5894327.80mN	1769099.34mE	8.84
SWMH16/1	5894420.37mN	1768880.09mE	6.59	SWMH6/5	5894366.86mN	1769056.28mE	7.50
SWMH16/2	5894390.35mN	1768902.14mE	8.86	SWMH6/4	5894368.15mN	1769040.79mE	7.47
SWMH16/3	5894387.58mN	1768945.59mE	7.42	SWMH6/3	5894371.44mN	1769026.51mE	7.58
SWMH14/2	5894415.84mN	1769069.30mE	9.88	SWMH6/2	5894378.85mN	1769012.94mE	5.99
SWMH14/1	5894401.94mN	1769065.79mE	9.03	SW6/1	5894378.84mN	1769005.30mE	

NOTES

- CONNECTIONS SHOWN ARE 100 uPVC SN16.
- CO-ORDINATES FOR END CONNECTIONS ARE AT THE END CAP.
- CO-ORDINATES AND LEVELS SHOWN FOR MANHOLES ARE MIDDLE OF CAST IRON LID.
- CO-ORDINATES AND LEVELS SHOWN FOR CATCHPITS ARE MIDDLE OF CAST IRON LID.
- CO-ORDINATES AND LEVELS SHOWN FOR WINGWALL AND OUTLET STRUCTURES ARE AT THE END OF THE PIPE AND INVERT FOR LEVELS.

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Eng # ENG60256718

Sheet # 9 of 9

Revision # C

Scale: 1 : 300 (A3)

Job # 2017-100

Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 19/05/2018

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STORM WATER

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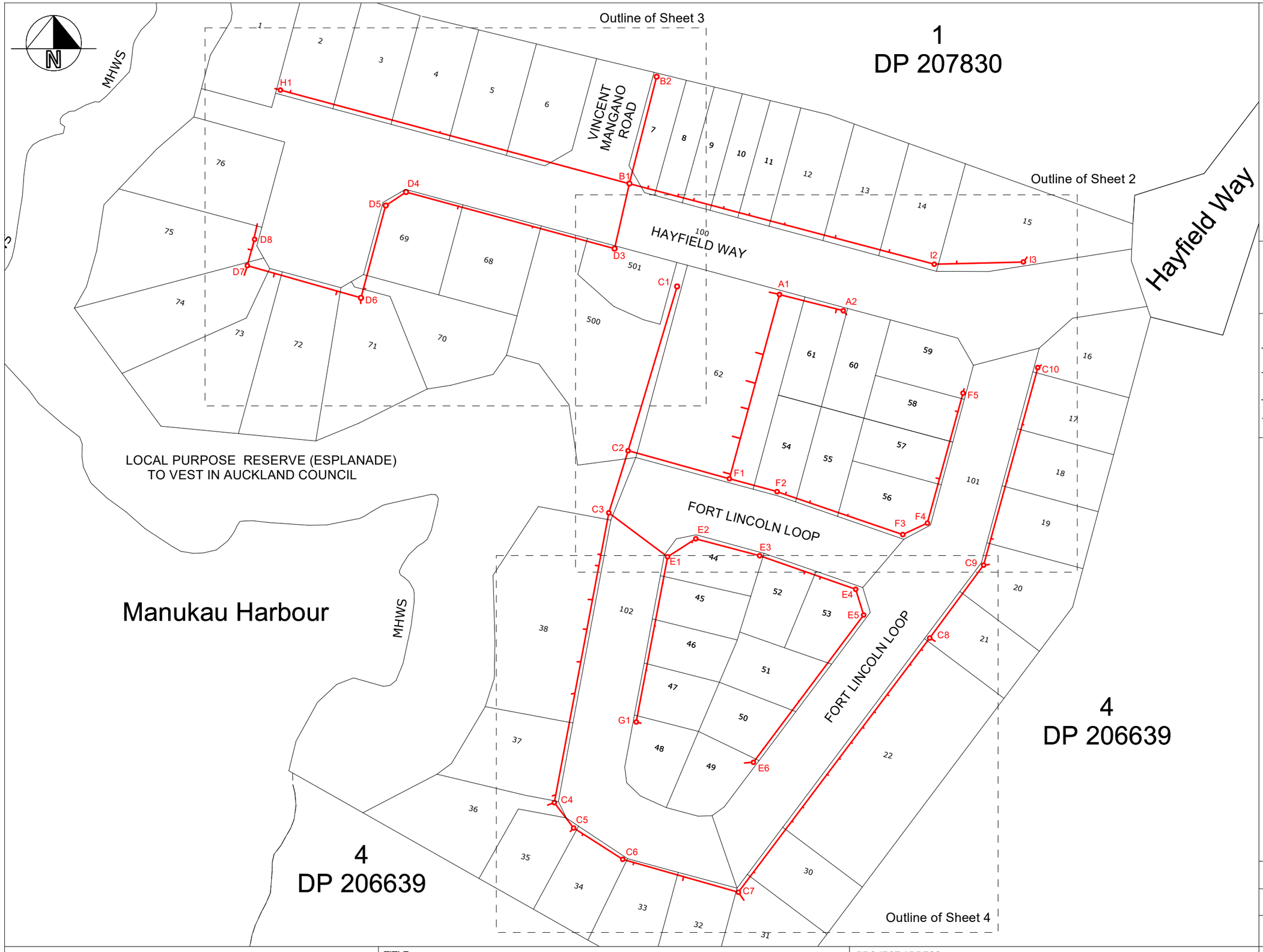

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LEGEND:

NEW WASTE WATER LINE

NEW WASTE WATER MANHOLE

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Sheet #	1 of 4
Revision #	B
Scale:	1 : 1000 (A3)
Job #	2017-100

Surveyed	TH	Date 04/04/2018
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WASTE WATER

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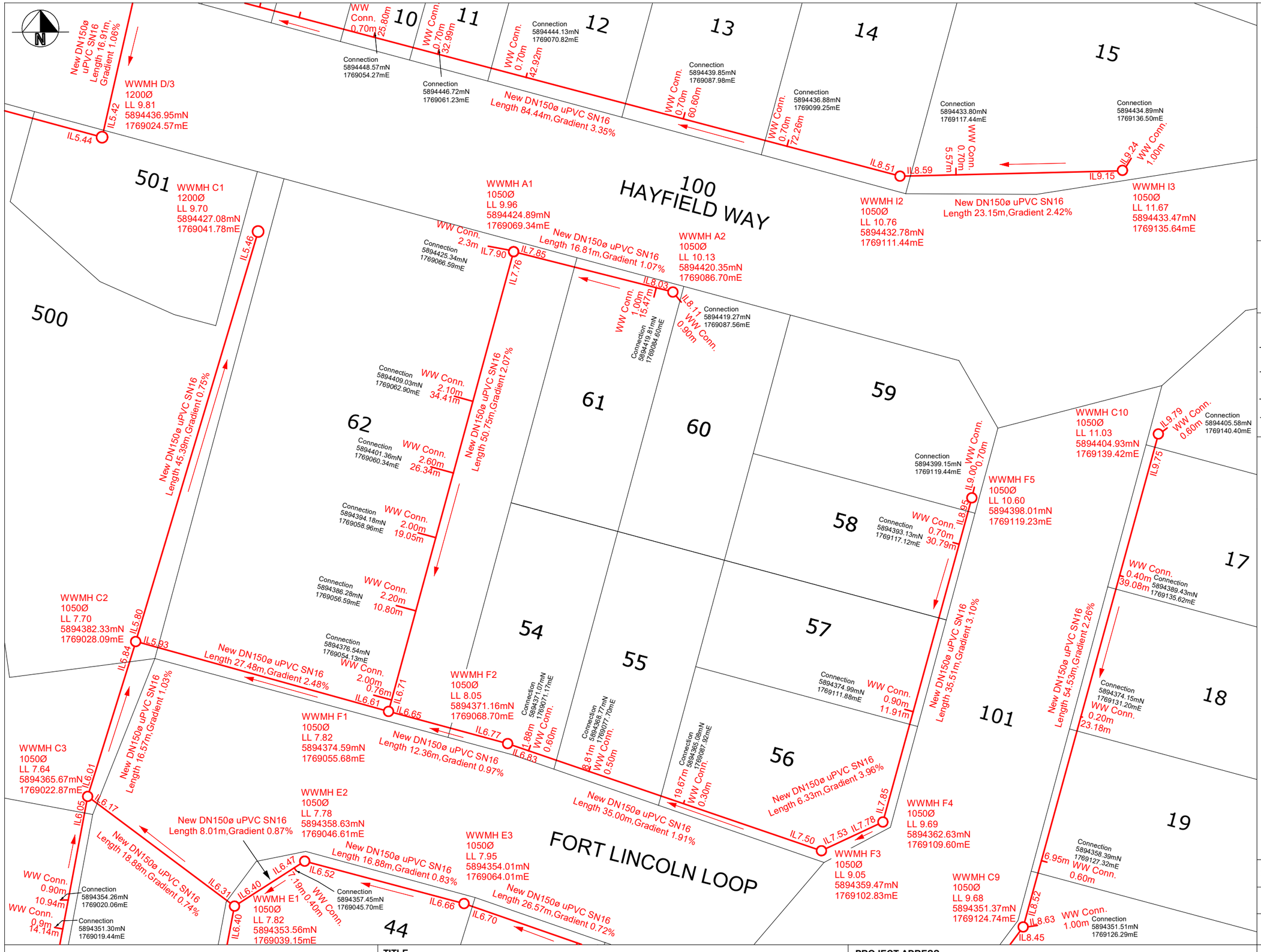

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NEW WASTE WATER LINE

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ASBUILT PLAN

WASTE WATER

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Sheet #	2 of 4	
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Scale:	1 : 400 (A3)	
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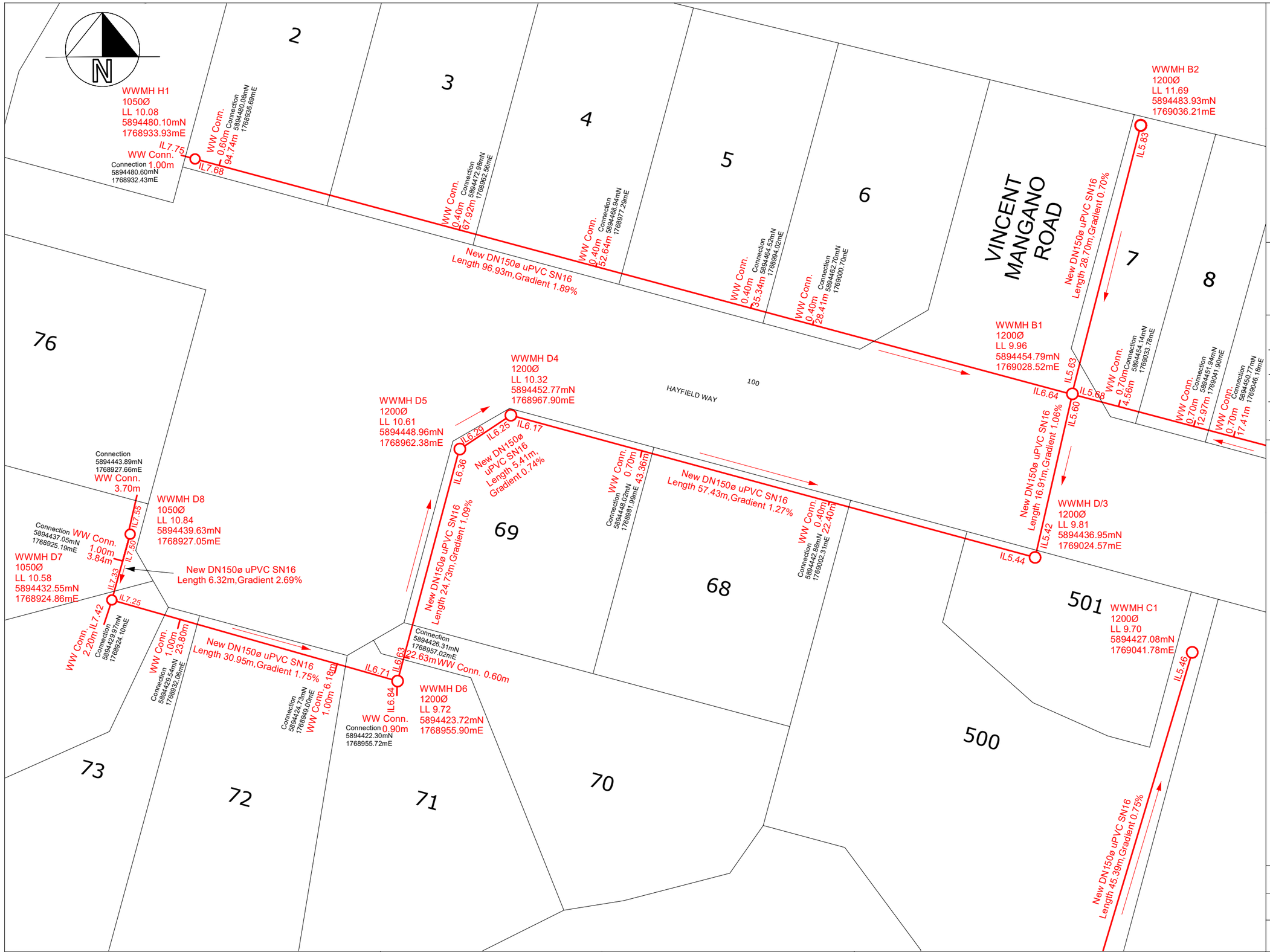

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NEW WASTE WATER LINE

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WASTE WATER

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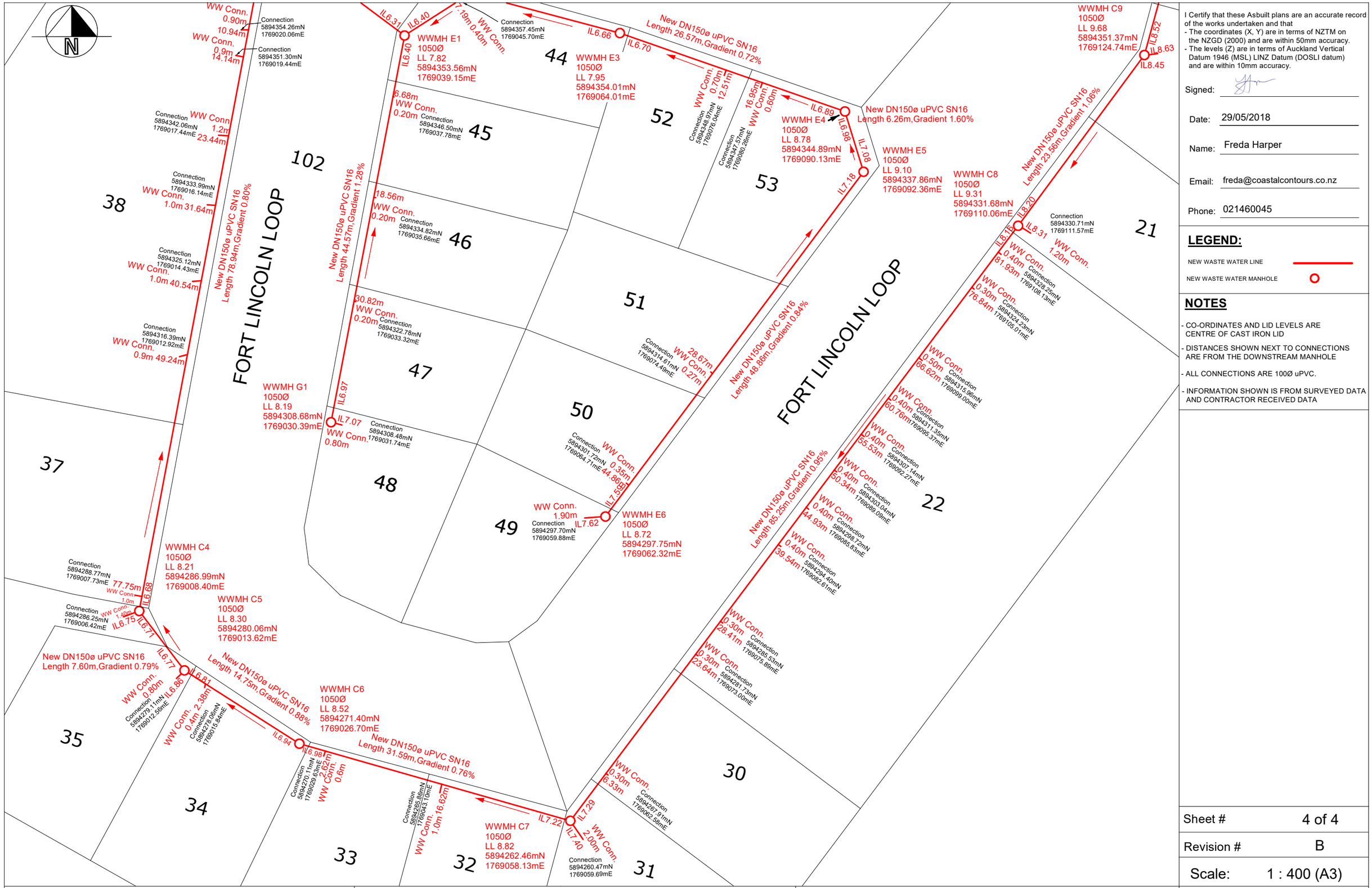
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 16/04/2018



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Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

LEGEND:

NEW WASTE WATER LINE

NEW WASTE WATER MANHOLE

NOTES

- CO-ORDINATES AND LID LEVELS ARE CENTRE OF CAST IRON LID
- DISTANCES SHOWN NEXT TO CONNECTIONS ARE FROM THE DOWNSTREAM MANHOLE
- ALL CONNECTIONS ARE 100Ø uPVC.
- INFORMATION SHOWN IS FROM SURVEYED DATA AND CONTRACTOR RECEIVED DATA

HALL SURVEYING
Hall Surveying Limited
p: 09 428 1359
m: 021 262 6367
w: www.hallsurveying.co.nz
e: tom@hallsurveying.co.nz

TITLE

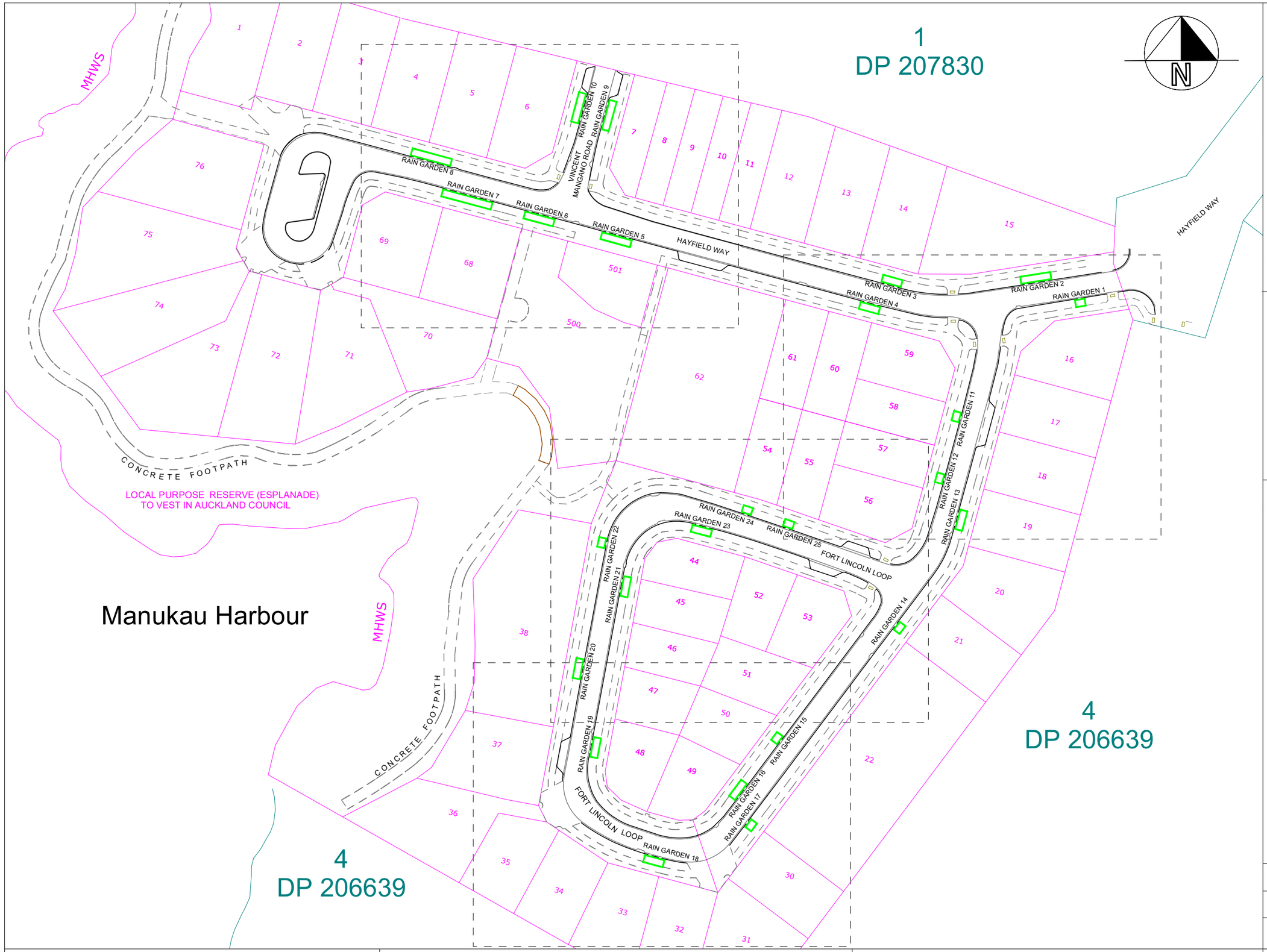
ASBUILT PLAN

WASTE WATER

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Sheet #	4 of 4	
Revision #	B	
Scale:	1 : 400 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 16/04/2018



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LEGEND:

- SITE BOUNDARY
- ADJACENT BOUNDARY
- CONCRETE / PATH
- TOP OF KERBLINE
- LIP OF CHANNEL
- CENTRELINE OF ROAD
- EDGE OF BOARDWALK
- RAIN GARDEN

NOTES

INFORMATION SHOWN IS FROM SURVEYED DATA AND CONTRACTOR RECIVED DATA

Sheet #	1 of 5
Revision #	B
Scale:	1 : 1000 (A3)
Job #	2017-100

Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018

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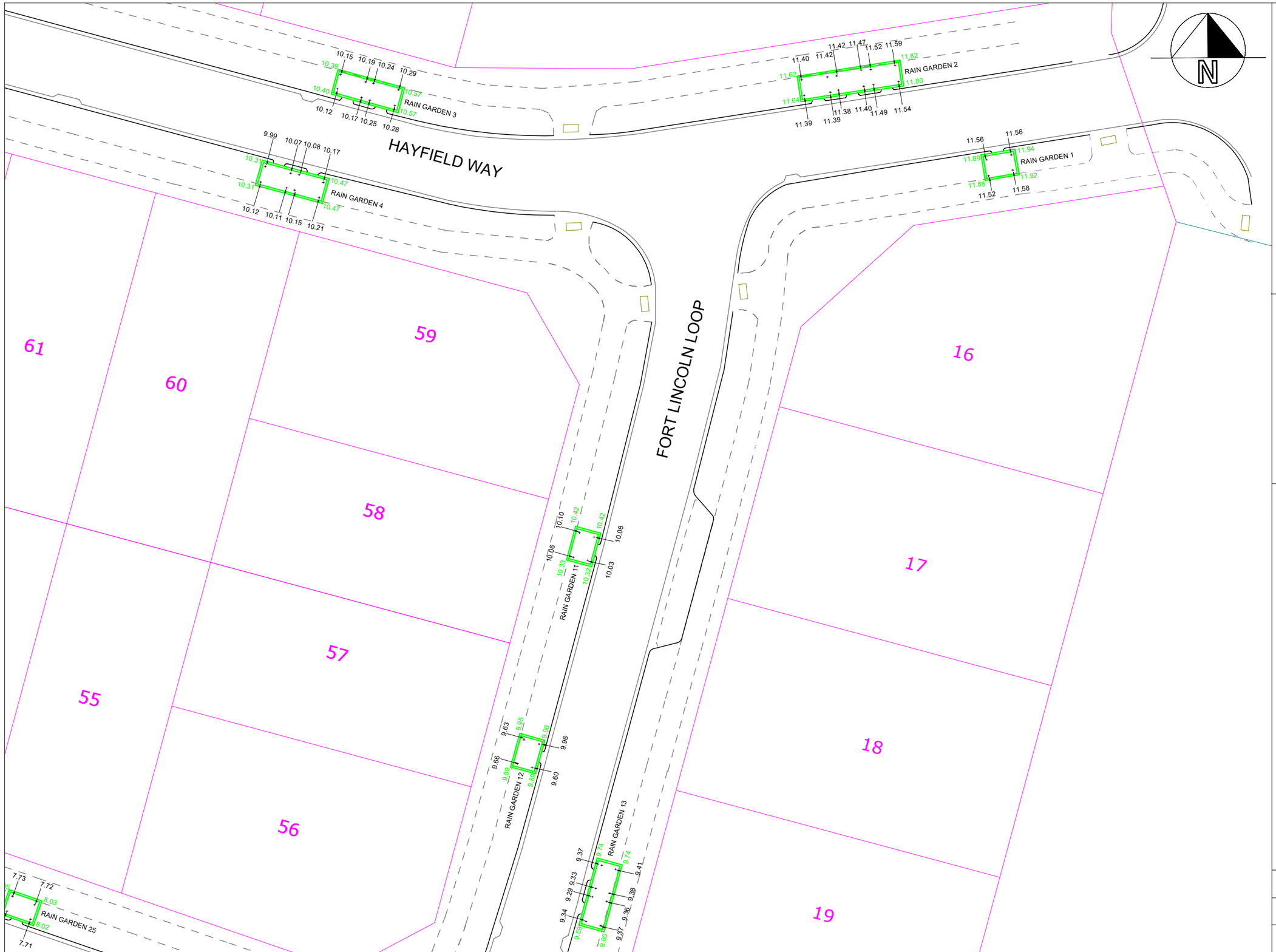
TITLE

ASBUILT PLAN

RAIN GARDEN ASBUILT

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.



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NOTES

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Sheet #	2 of 5
Revision #	B
Scale:	1 : 300 (A3)
Job #	2017-100

Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018

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ASBUILT PLAN

RAIN GARDEN ASBUILT

PROJECT ADRESS

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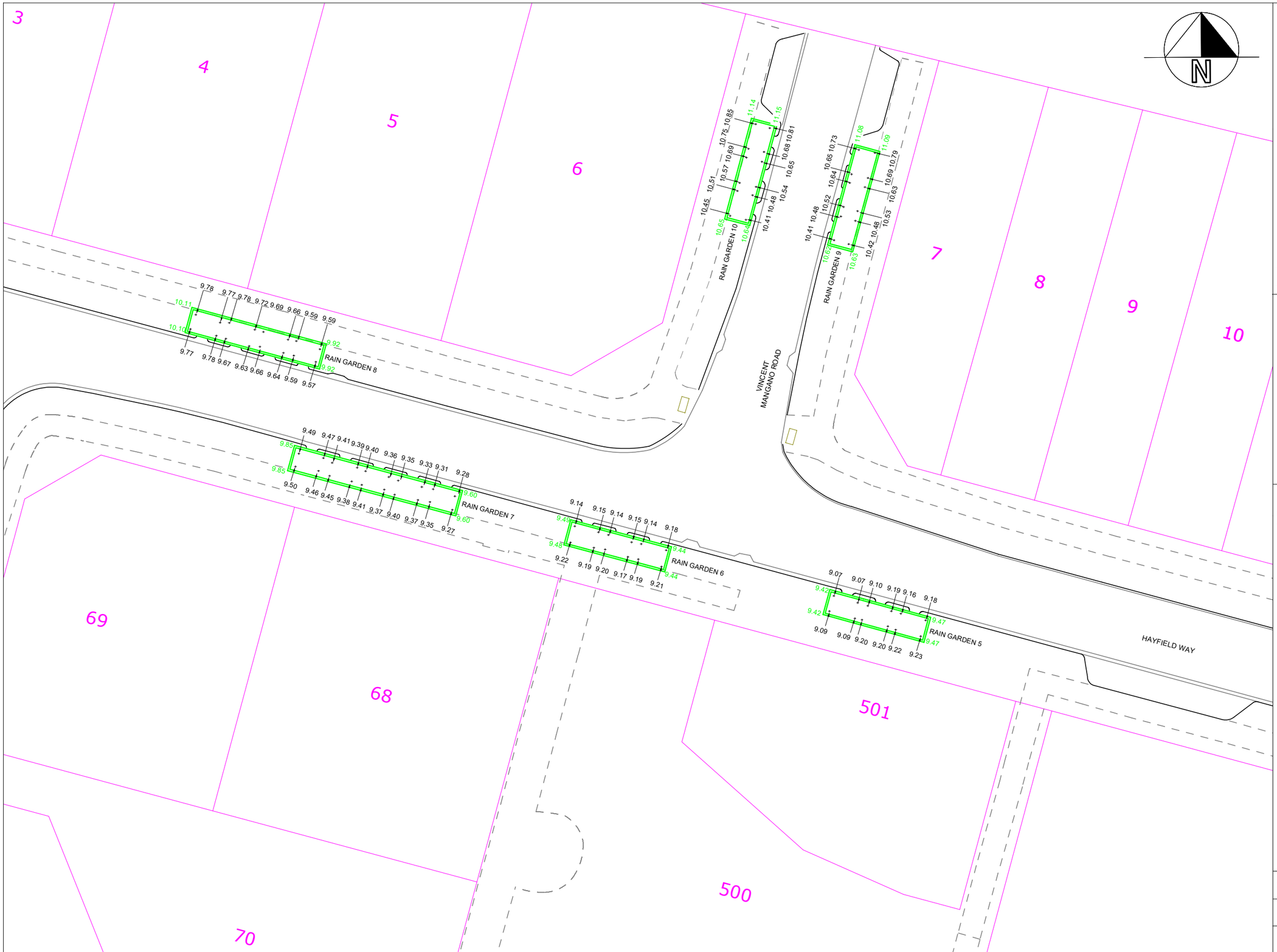
HINGAIA.



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Sheet #	3 of 5
Revision #	B
Scale:	1 : 300 (A3)
Job #	2017-100

Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018

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PROJECT ADRESS

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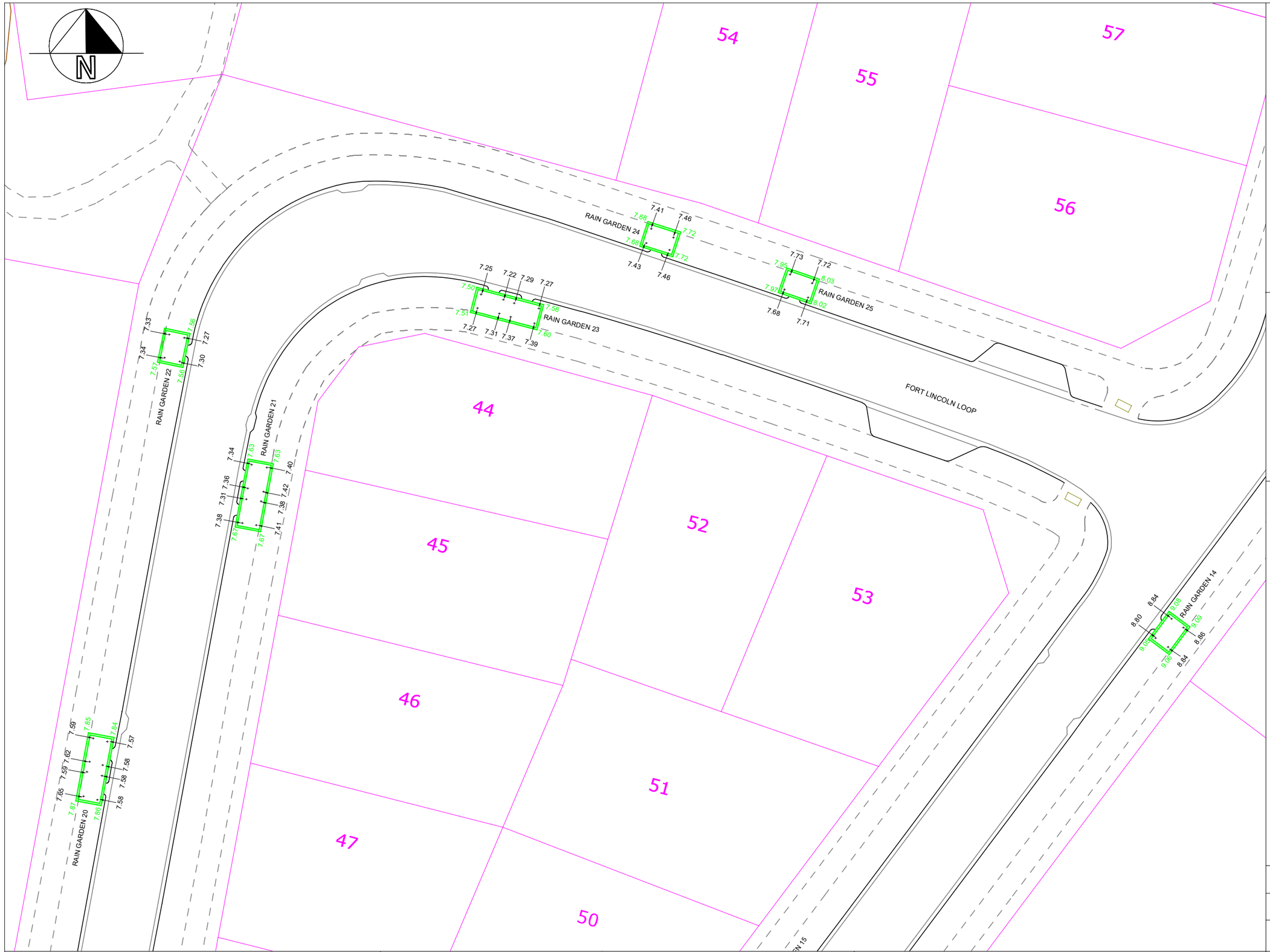

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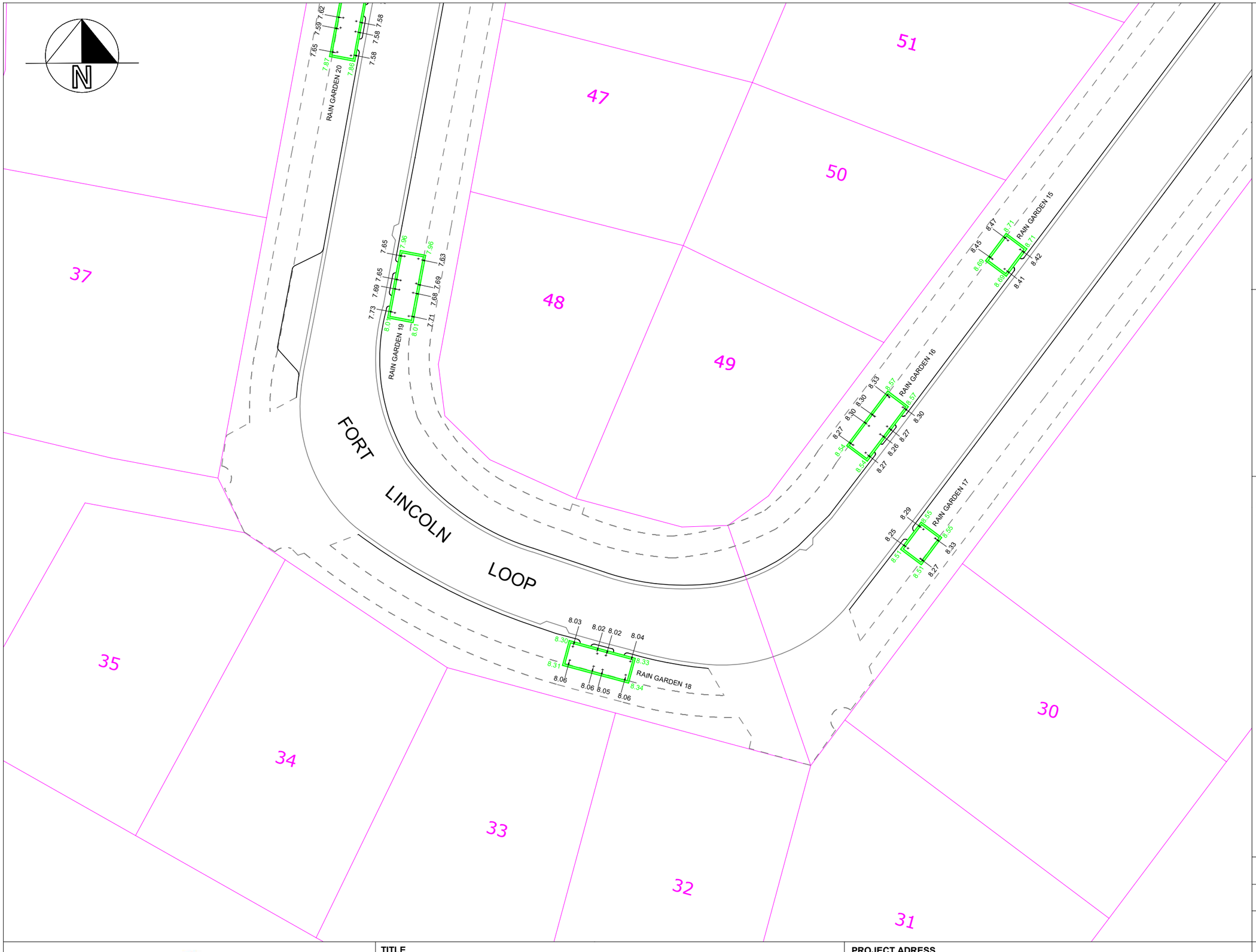
ASBUILT PLAN

RAIN GARDEN ASBUILT

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Sheet #	4 of 5	
Revision #	B	
Scale:	1 : 300 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018



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NOTES

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Sheet #	5 of 5
Revision #	B
Scale:	1 : 300 (A3)
Job #	2017-100

Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018

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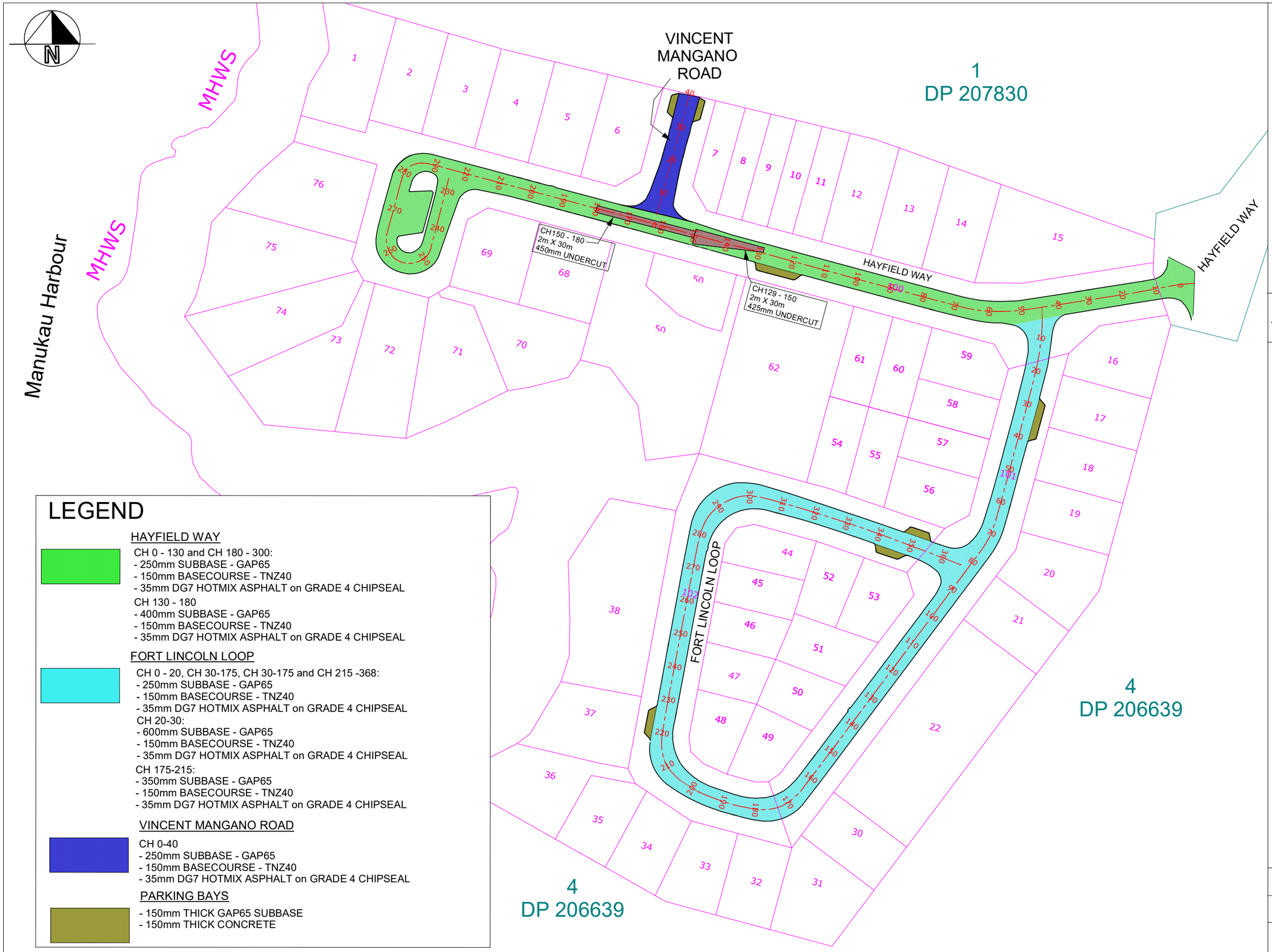
TITLE

ASBUILT PLAN

RAIN GARDEN ASBUILT

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.



LEGEND

HAYFIELD WAY

CH 0 - 130 and CH 180 - 300:
- 250mm SUBBASE - GAP65
- 150mm BASECOURSE - TNZ40
- 35mm DG7 HOTMIX ASPHALT on GRADE 4 CHIPSEAL

CH 130 - 180
- 400mm SUBBASE - GAP65
- 150mm BASECOURSE - TNZ40
- 35mm DG7 HOTMIX ASPHALT on GRADE 4 CHIPSEAL

FORT LINCOLN LOOP

CH 0 - 20, CH 30-175, CH 30-175 and CH 215 -368:
- 250mm SUBBASE - GAP65
- 150mm BASECOURSE - TNZ40
- 35mm DG7 HOTMIX ASPHALT on GRADE 4 CHIPSEAL

CH 20-30:
- 600mm SUBBASE - GAP65
- 150mm BASECOURSE - TNZ40
- 35mm DG7 HOTMIX ASPHALT on GRADE 4 CHIPSEAL

CH 175-215:
- 350mm SUBBASE - GAP65
- 150mm BASECOURSE - TNZ40
- 35mm DG7 HOTMIX ASPHALT on GRADE 4 CHIPSEAL

VINCENT MANGANO ROAD

CH 0-40
- 250mm SUBBASE - GAP65
- 150mm BASECOURSE - TNZ40
- 35mm DG7 HOTMIX ASPHALT on GRADE 4 CHIPSEAL

PARKING BAYS
- 150mm THICK GAP65 SUBBASE
- 150mm THICK CONCRETE

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TITLE

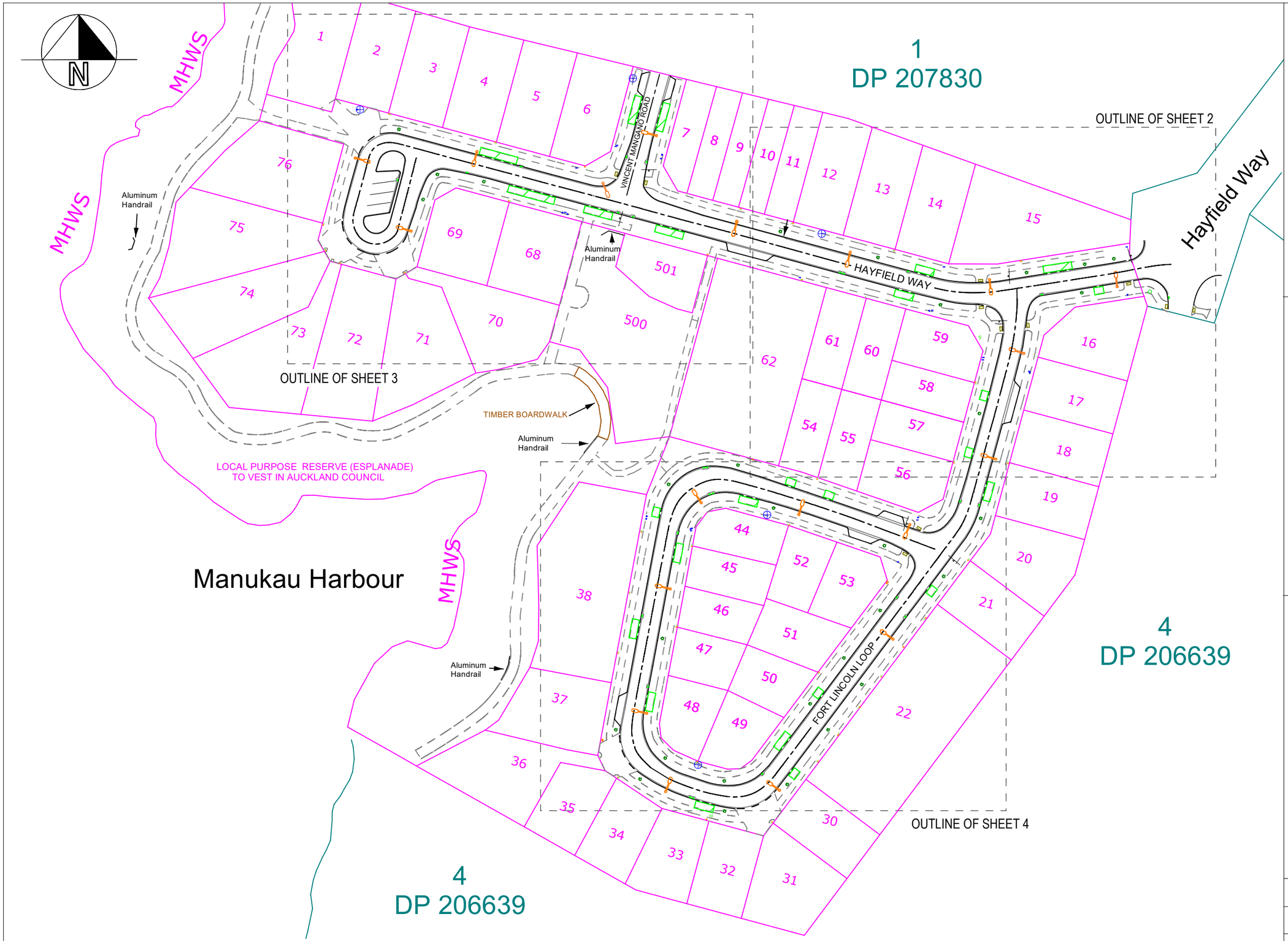
ASBUILT PLAN

ROADING DEPTHS

PROJECT ADRESS

55 HAYFIELD WAY,
HINGAIA.

Sheet #	1 of 1	
Revision #	A	
Scale:	1 : 1100 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 17/05/2018



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- ADJACENT BOUNDARY
- CONCRETE / PATH
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- LIP OF CHANNEL
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- FIRE HYDRANT
- PEET VALVE
- SLUICE VALVE
- TREE
- TELECOM LID
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- CATCHPIT
- RAIN GARDEN
- STREET SIGN
- POWER LINK BOX
- POWER PILLAR BOX
- TACTILE PAVER

NOTES

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Sheet #	1 of 7
Revision #	B
Scale:	1 : 1100 (A3)
Job #	2017-100

Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 19/05/2018

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TITLE

ASBUILT PLAN

ROADING WORKS PLAN

PROJECT ADRESS

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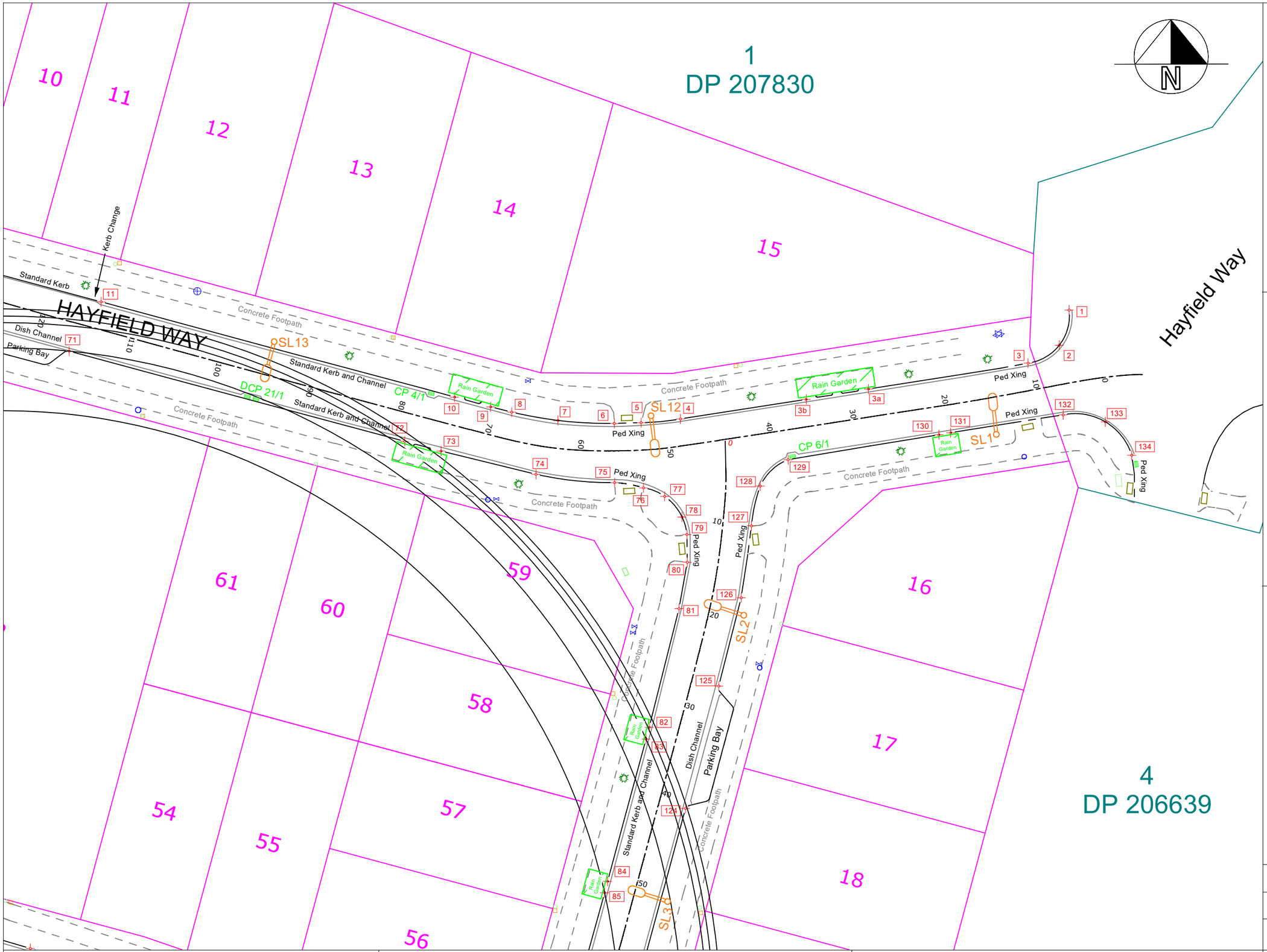

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NOTES

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Sheet #	2 of 7
Revision #	B
Scale:	1 : 400 (A3)
Job #	2017-100

Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018

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ROADING WORKS PLAN

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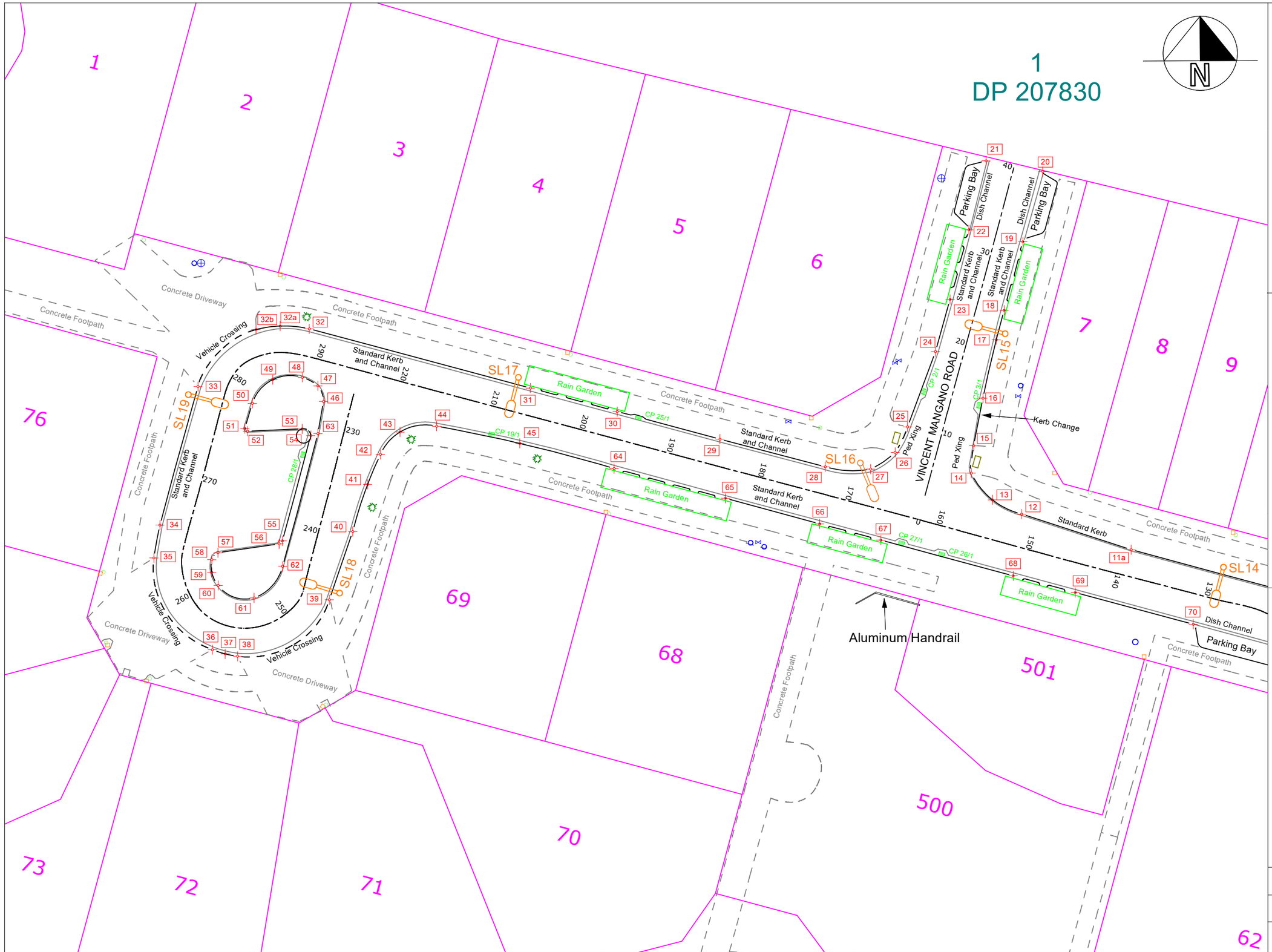

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Sheet #	3 of 7
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Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018

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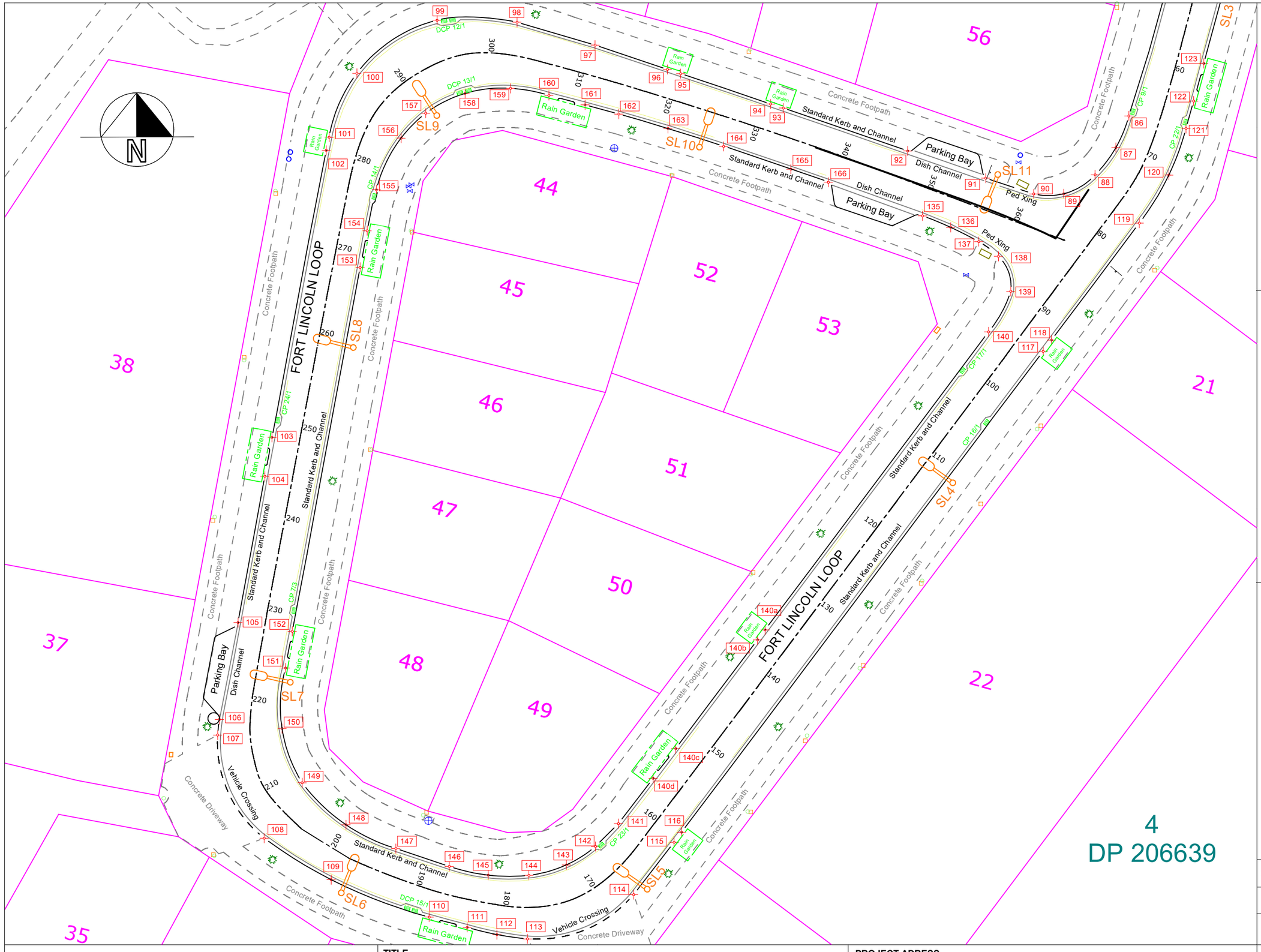

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Sheet #	4 of 7
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Drawn	TH	Date 11/04/2018

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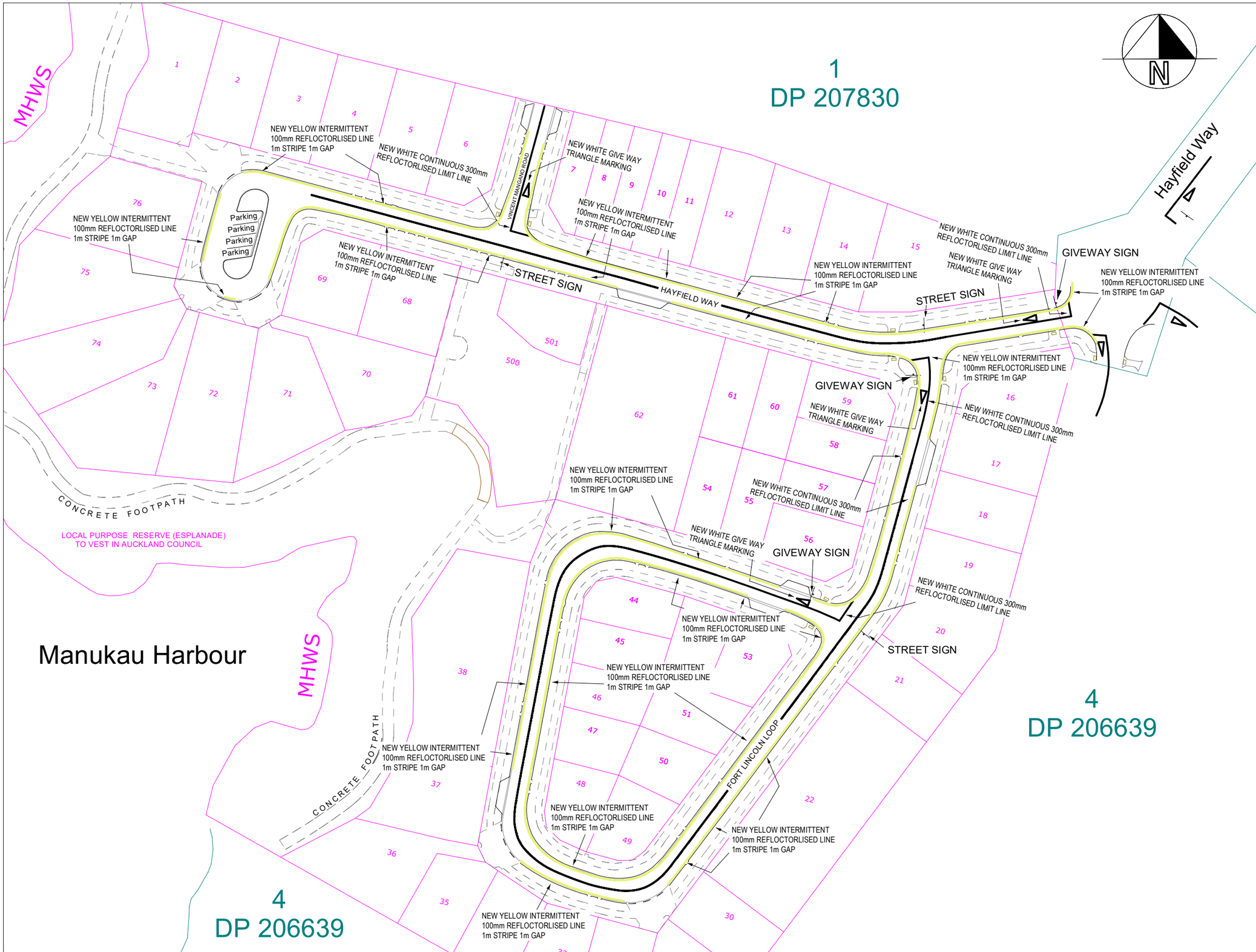

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PROJECT ADRESS

55 HAYFIELD WAY,
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Sheet #	5 of 7	
Revision #	B	
Scale:	1 : 1000 (A3)	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 05/05/2018

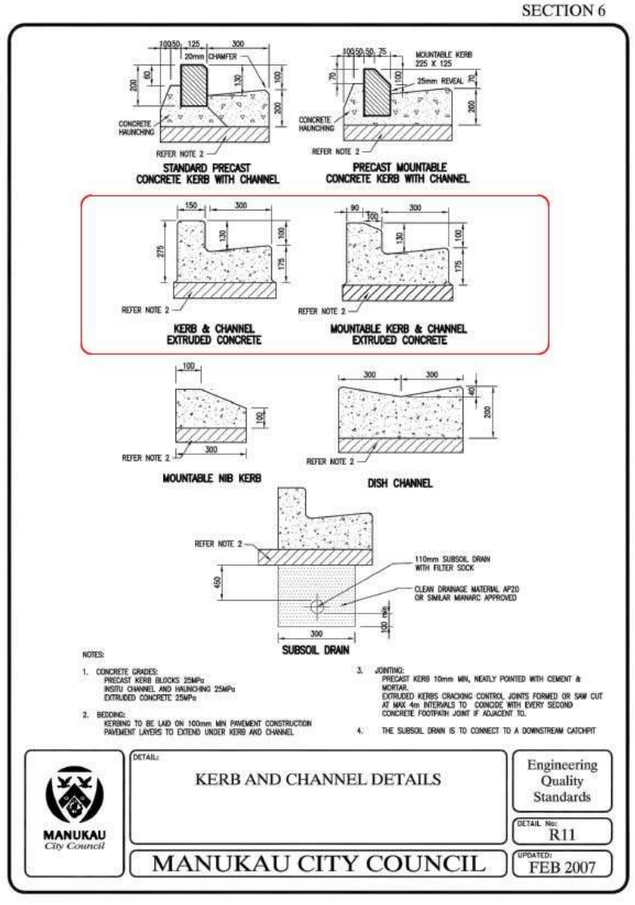
SCHEDULE OF CO-ORDINATES - NEW KERB

Point #	Northing	Easting	Elevation	Point #	Northing	Easting	Elevation
1	5894437.84	1769169.09	12.35	63	5894457.80	1768952.41	10.51
2	5894434.04	1769168.04	12.35	64	5894454.03	1768984.33	9.82
3	5894432.10	1769164.66	12.27	65	5894450.83	1768996.33	9.60
3a	5894429.29	1769147.4	11.82	66	5894448.07	1769006.47	9.48
3b	5894428.18	1769140.67	11.66	67	5894446.32	1769013.08	9.44
4	5894426.07	1769127.07	11.24	68	5894442.48	1769027.35	9.45
5	5894425.66	1769122.82	11.10	69	5894440.68	1769034.04	9.49
6	5894425.58	1769119.92	11.02	70	5894437.25	1769046.76	9.58
7	5894425.90	1769113.83	10.81	71	5894433.40	1769060.99	9.65
8	5894426.80	1769108.83	10.63	72	5894423.65	1769097.27	10.32
9	5894427.37	1769106.56	10.55	73	5894422.59	1769101.20	10.44
10	5894428.43	1769102.66	10.43	74	5894420.08	1769111.46	10.78
11	5894438.72	1769064.45	9.68	75	5894419.18	1769119.95	10.97
11a	5894445.29	1769040.06	9.66	76	5894418.62	1769123.09	10.98
12	5894449.13	1769028.26	9.74	77	5894417.70	1769125.37	10.97
13	5894450.67	1769025.10	9.79	78	5894415.46	1769127.25	10.93
14	5894453.54	1769022.83	9.87	79	5894413.58	1769127.78	10.88
15	5894456.50	1769023.08	9.98	80	5894410.58	1769127.82	10.83
16	5894461.62	1769024.09	10.14	81	5894405.57	1769126.91	10.73
17	5894467.91	1769025.52	10.50	82	5894392.74	1769123.70	10.40
18	5894471.09	1769026.38	10.69	83	5894391.46	1769123.36	10.37
19	5894478.47	1769028.39	11.12	84	5894376.08	1769119.20	9.95
20	5894486.05	1769030.53	11.58	85	5894374.86	1769118.88	9.92
21	5894487.18	1769024.43	11.61	86	5894361.13	1769114.82	9.55
22	5894479.77	1769022.57	11.13	87	5894357.70	1769113.42	9.44
23	5894472.26	1769020.54	10.69	88	5894354.73	1769111.16	9.29
24	5894466.63	1769018.97	10.40	89	5894352.67	1769107.75	9.12
25	5894458.52	1769015.97	10.01	90	5894352.65	1769104.49	8.97
26	5894455.78	1769014.62	9.89	91	5894354.37	1769099.26	8.81
27	5894453.97	1769011.99	9.81	92	5894357.33	1769090.78	8.48
28	5894454.22	1769007.09	9.69	93	5894361.99	1769077.25	8.06
29	5894457.20	1768995.74	9.75	94	5894362.43	1769075.87	8.02
30	5894460.17	1768984.67	9.92	95	5894365.72	1769066.10	7.74
31	5894462.71	1768975.31	10.09	96	5894366.18	1769064.66	7.71
32	5894469.08	1768951.48	10.44	97	5894368.83	1769056.80	7.58
33	5894462.87	1768939.48	10.71	98	5894371.33	1769048.31	7.52
34	5894447.94	1768935.39	10.80	99	5894371.54	1769039.62	7.51
35	5894444.40	1768934.73	10.72	100	5894365.76	1769030.89	7.55
36	5894434.52	1768941.04	10.76	101	5894358.82	1769027.88	7.60
37	5894434.06	1768942.42	10.74	102	5894357.39	1769027.57	7.61
38	5894433.81	1768943.75	10.73	103	5894326.19	1769021.68	7.87
39	5894439.89	1768953.64	10.55	104	5894321.97	1769020.89	7.90
40	5894447.25	1768956.17	10.45	105	5894306.06	1769017.98	8.02
41	5894452.33	1768957.77	10.36	106	5894295.53	1769015.95	8.06
42	5894455.56	1768959.15	10.31	107	5894293.83	1769015.76	8.09
43	5894457.97	1768961.27	10.28	108	5894282.62	1769020.83	8.16
44	5894458.59	1768965.21	10.21	109	5894278.12	1769028.10	8.24
45	5894456.75	1768974.17	10.04	110	5894274.05	1769038.76	8.33
46	5894461.26	1768953.02	10.49	111	5894272.93	1769042.89	8.34
47	5894462.95	1768952.41	10.49	112	5894272.14	1769046.13	8.37
48	5894463.86	1768950.73	10.51	113	5894271.67	1769049.45	8.39
49	5894463.61	1768947.55	10.53	114	5894276.48	1769060.99	8.49
50	5894461.06	1768945.34	10.57	115	5894282.17	1769065.39	8.54
51	5894458.35	1768944.54	10.60	116	5894283.27	1769066.20	8.55
52	5894458.06	1768944.82	10.61	117	5894335.54	1769105.51	9.10
53	5894458.30	1768950.71	10.54	118	5894336.76	1769106.41	9.11
54	5894457.59	1768951.64	10.56	119	5894349.48	1769115.96	9.34
55	5894446.24	1768948.58	10.58	120	5894354.70	1769119.18	9.46
56	5894445.92	1768948.23	10.60	121	5894359.78	1769121.04	9.57
57	5894444.96	1768941.64	10.71	122	5894362.75	1769121.88	9.65
58	5894444.22	1768940.97	10.71	123	5894366.84	1769122.97	9.75
59	5894442.85	1768940.97	10.72	124	5894383.97	1769127.63	10.21
60	5894441.45	1768941.66	10.74	125	5894397.20	1769131.22	10.61
61	5894440.10	1768945.53	10.76	126	5894406.74	1769133.65	10.91
62	5894443.51	1768948.61	10.69	127	5894414.51	1769134.75	11.16

SCHEDULE OF CO-ORDINATES - NEW KERB

Point #	Northing	Easting	Elevation	Point #	Northing	Easting	Elevation
128	5894418.82	1769135.70	11.32	146	5894279.55	1769040.95	8.34
129	5894421.66	1769138.70	11.53	147	5894281.50	1769035.13	8.29
130	5894424.36	1769155.02	11.91	148	5894284.08	1769029.72	8.24
131	5894424.58	1769156.29	11.93	149	5894288.65	1769024.95	8.18
132	5894426.50	1769168.45	12.23	150	5894294.55	1769022.76	8.12
133	5894425.75	1769173.01	12.26	151	5894301.12	1769023.14	8.03
134	5894422.15	1769175.86	12.21	152	5894305.11	1769023.87	7.98
135	5894350.27	1769092.40	8.60	153	5894344.68	1769031.25	7.69
136	5894349.02	1769095.45	8.74	154	5894348.65	1769032.01	7.64
137	5894347.47	1769098.51	8.85	155	5894353.11	1769033.02	7.62
138	5894345.87	1769100.65	8.97	156	5894358.72	1769035.71	7.57
139	5894342.08	1769101.99	9.10	157	5894361.43	1769038.38	7.54
140	5894337.66	1769099.57	9.07	158	5894363.57	1769042.66	7.49
140a	5894305.27	1769075.28	8.73	159	5894364.13	1769047.60	7.52
140b	5894304.19	1769074.46	8.72	160	5894363.37	1769051.78	7.55
140c	5894292.36	1769065.56	8.62	161	5894362.33	1769055.70	7.60
140d	5894289.13	1769063.11	8.58	162	5894361.34	1769059.38	7.67
141	5894284.20	1769059.33	8.54	163	5894359.78	1769064.71	7.79
142	5894281.72	1769056.84	8.50	164	5894357.82	1769070.77	7.95
143	5894279.72	1769053.68	8.48	165	5894355.34	1769078.09	8.14
144	5894278.58	1769049.60	8.44	166	5894353.93	1769082.16	8.29
145	5894278.60	1769045.18	8.38				

SECTION 6



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- The levels (Z) are in terms of Auckland Vertical Datum 1946 (MSL) LINZ Datum (DOSLI datum) and are within 10mm accuracy.

Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

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NOTES

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HALL SURVEYING
Hall Surveying Limited
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TITLE

ASBUILT PLAN

ROADING WORKS PLAN

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Sheet #	6 of 7	
Revision #	B	
Scale:	N/A	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018

SCHEDULE OF CO-ORDINATES - STREET LIGHTS

ASSET NAME	DESCRIPTION	EASTING	NORTHING
SL1	STREET LIGHT	1769161.23	5894424.39
SL2	STREET LIGHT	1769133.92	5894404.84
SL3	STREET LIGHT	1769125.69	5894373.90
SL4	STREET LIGHT	1769095.68	5894321.25
SL5	STREET LIGHT	1769062.47	5894277.07
SL6	STREET LIGHT	1769029.20	5894276.67
SL7	STREET LIGHT	1769023.66	5894299.57
SL8	STREET LIGHT	1769030.51	5894335.95
SL9	STREET LIGHT	1769039.59	5894361.17
SL10	STREET LIGHT	1769068.15	5894357.73
SL11	STREET LIGHT	1769100.58	5894354.76
SL12	STREET LIGHT	1769123.89	5894426.41
SL13	STREET LIGHT	1769083.16	5894434.42
SL14	STREET LIGHT	1769050.01	5894443.40
SL15	STREET LIGHT	1769026.48	5894468.55
SL16	STREET LIGHT	1769010.87	5894454.63
SL17	STREET LIGHT	1768974.02	5894463.85
SL18	STREET LIGHT	1768954.75	5894440.61
SL19	STREET LIGHT	1768938.45	5894461.99

SCHEDULE OF CO-ORDINATES - CATCHPITS

Catchpit #	Northing	Easting	Lid Level
CP6/1	5894422.00mN	1769139.20mE	11.38
CP4/1	5894428.81mN	1769100.14mE	10.24
DCP21/1 LEFT	5894428.46mN	1769080.26mE	9.72
DCP21/1 RIGHT	5894428.21mN	1769081.20mE	9.74
CP26/1	5894444.81mN	1769019.65mE	9.29
CP27/1	5894446.01mN	1769015.32mE	9.29
CP3/1	5894460.85mN	1769023.64mE	9.98
CP2/1	5894462.31mN	1769017.71mE	10.03
CP25/1	5894459.49mN	1768986.95mE	9.74
CP19/1	5894457.74mN	1768971.13mE	9.96
CP28/1	5894455.51mN	1768950.78mE	10.42
DCP12/1 LEFT	5894371.44mN	1769040.38mE	7.33
DCP12/1 RIGHT	5894371.54mN	1769041.30mE	7.33
DCP13/1 LEFT	5894363.63mN	1769042.10mE	7.35
DCP13/1 RIGHT	5894363.89mN	1769043.04mE	7.35
CP14/1	5894352.37mN	1769032.78mE	7.45
CP23/1	5894281.87mN	1769057.45mE	8.35
DCP15/1 LEFT	5894275.00mN	1769036.37mE	8.15
DCP15/1 RIGHT	5894274.74mN	1769037.20mE	8.16
CP7/3	5894307.36mN	1769024.06mE	7.82
CP24/1	5894328.05mN	1769022.31mE	6.70
CP9/1	5894361.57mN	1769115.27mE	9.41
CP22/1	5894360.46mN	1769120.94mE	9.43
CP17/1	5894333.45mN	1769096.76mE	8.85
CP16/1	5894327.80mN	1769099.34mE	8.84

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Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

NOTES

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TITLE

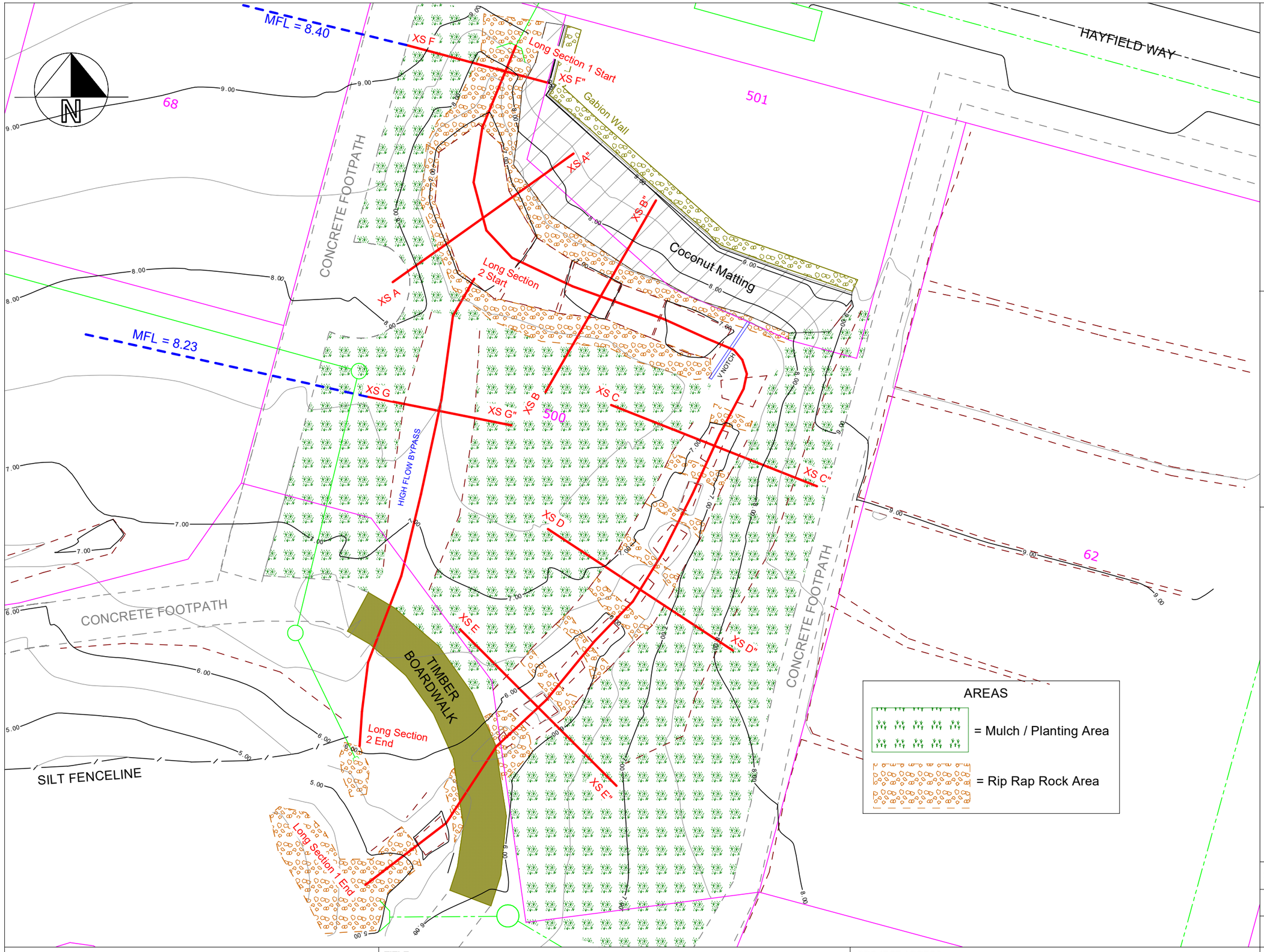
ASBUILT PLAN

ROADING WORKS PLAN

PROJECT ADRESS

55 HAYFIELD WAY,
HINGAIA.

Sheet #	7 of 7	
Revision #	B	
Scale:	N/A	
Job #	2017-100	
Surveyed	TH	Date 04/04/2018
Drawn	TH	Date 11/04/2018



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LEGEND:

- SITE BOUNDARY
- ADJACENT BOUNDARY
- CONCRETE / PATH
- TOP OF KERBLINE
- EDGE OF SLOPE
- CENTRELINE OF ROAD
- GABION WALL
- STORMWATER LINE
- CATCHPIT
- RAIN GARDEN

INFORMATION SHOWN IS FROM SURVEYED DATA AND CONTRACTOR RECIVED DATA

Sheet #	1 of 3
Revision #	C
Scale:	1 : 250 (A3)
Job #	2017-100

Surveyed	TH	Date 09/05/2018
Drawn	TH	Date 16/05/2018

HALL SURVEYING
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TITLE

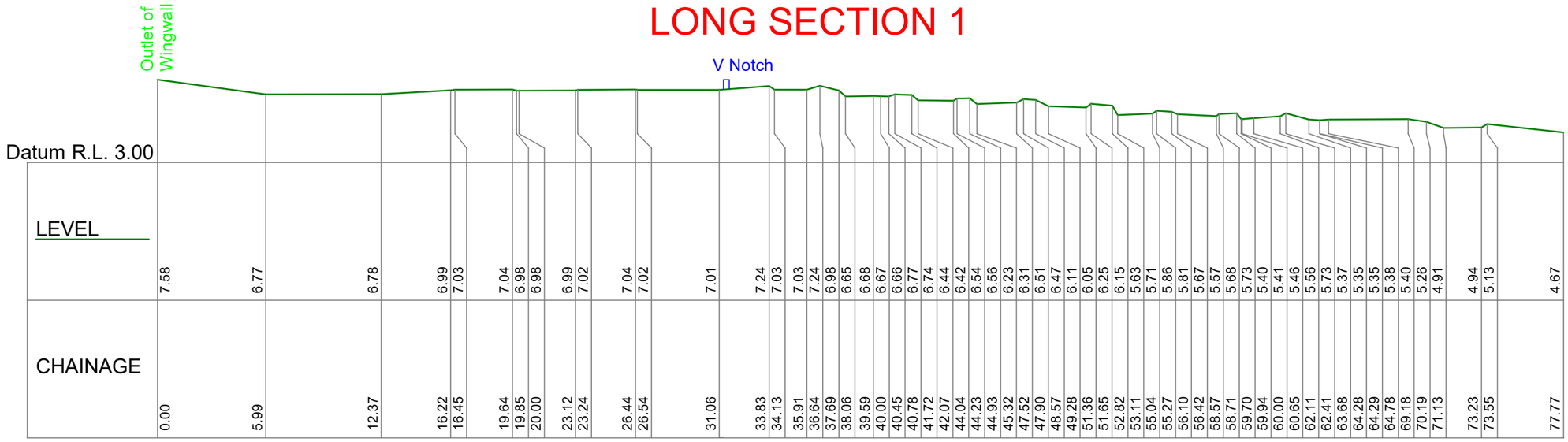
ASBUILT PLAN

OVERLAND FLOWPATH

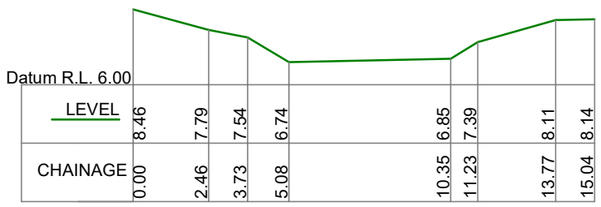
PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

LONG SECTION 1



XSA - XS A"



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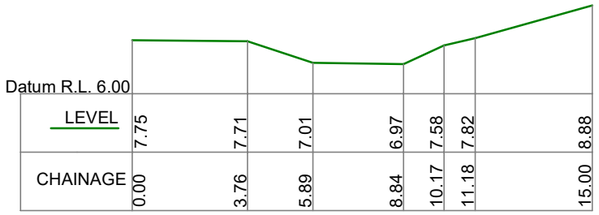

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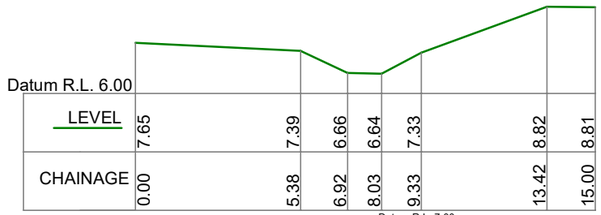

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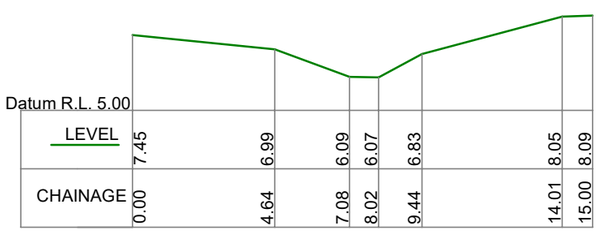

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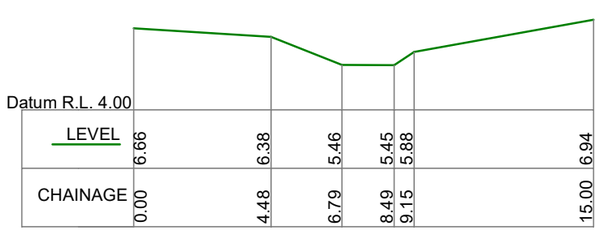

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INFORMATION SHOWN IS FROM SURVEYED DATA AND CONTRACTOR RECIVED DATA

Sheet #	2 of 3
Revision #	C
Scale:	NTS
Job #	2017-100

Surveyed	TH	Date 09/05/2018
Drawn	TH	Date 16/05/2018

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TITLE

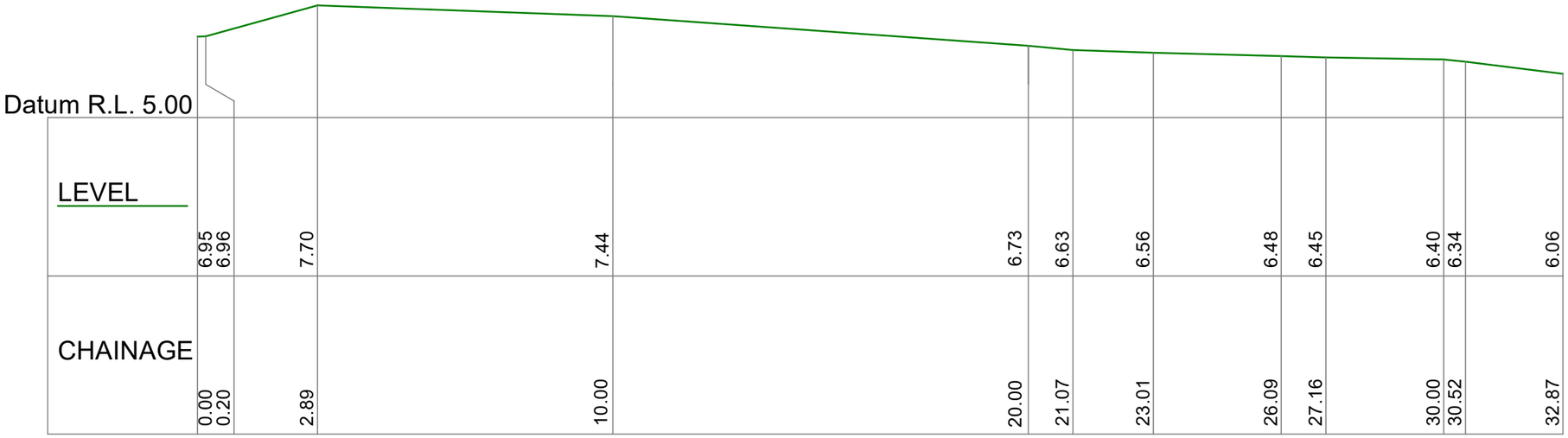
ASBUILT PLAN

OVERLAND FLOWPATH
LONG SECTIONS AND CROSS SECTIONS

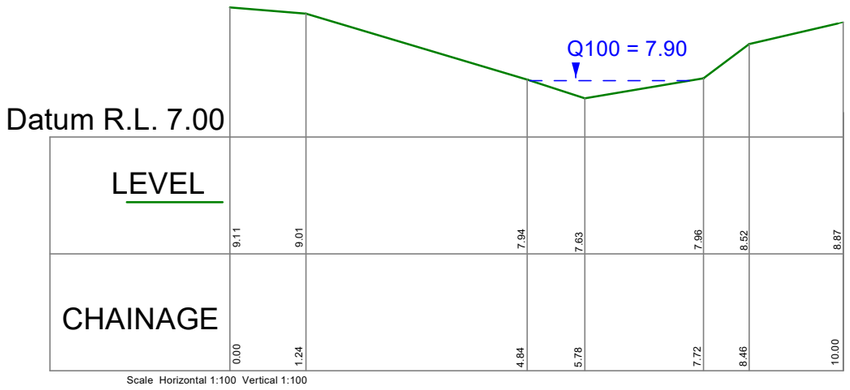
PROJECT ADRESS

55 HAYFIELD WAY,
HINGAIA.

LONG SECTION 2



XSF - XS F"



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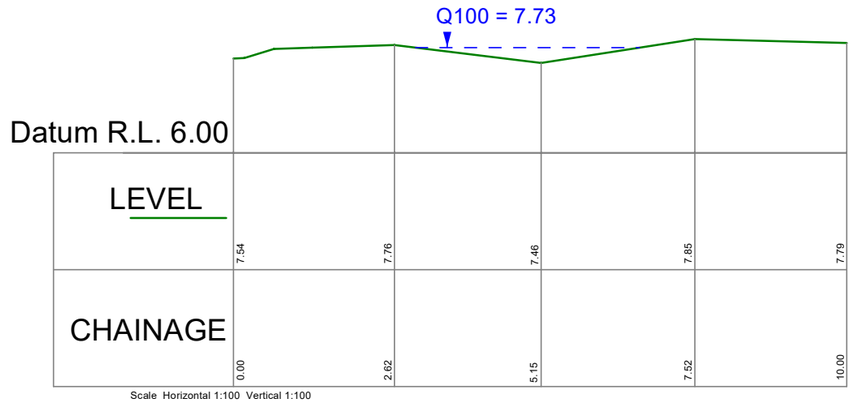
XSG - XS G"



Scale Horizontal 1:100 Vertical 1:100

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Sheet #	3 of 3
Revision #	C
Scale:	NTS
Job #	2017-100

Surveyed	TH	Date 09/05/2018
Drawn	TH	Date 16/05/2018

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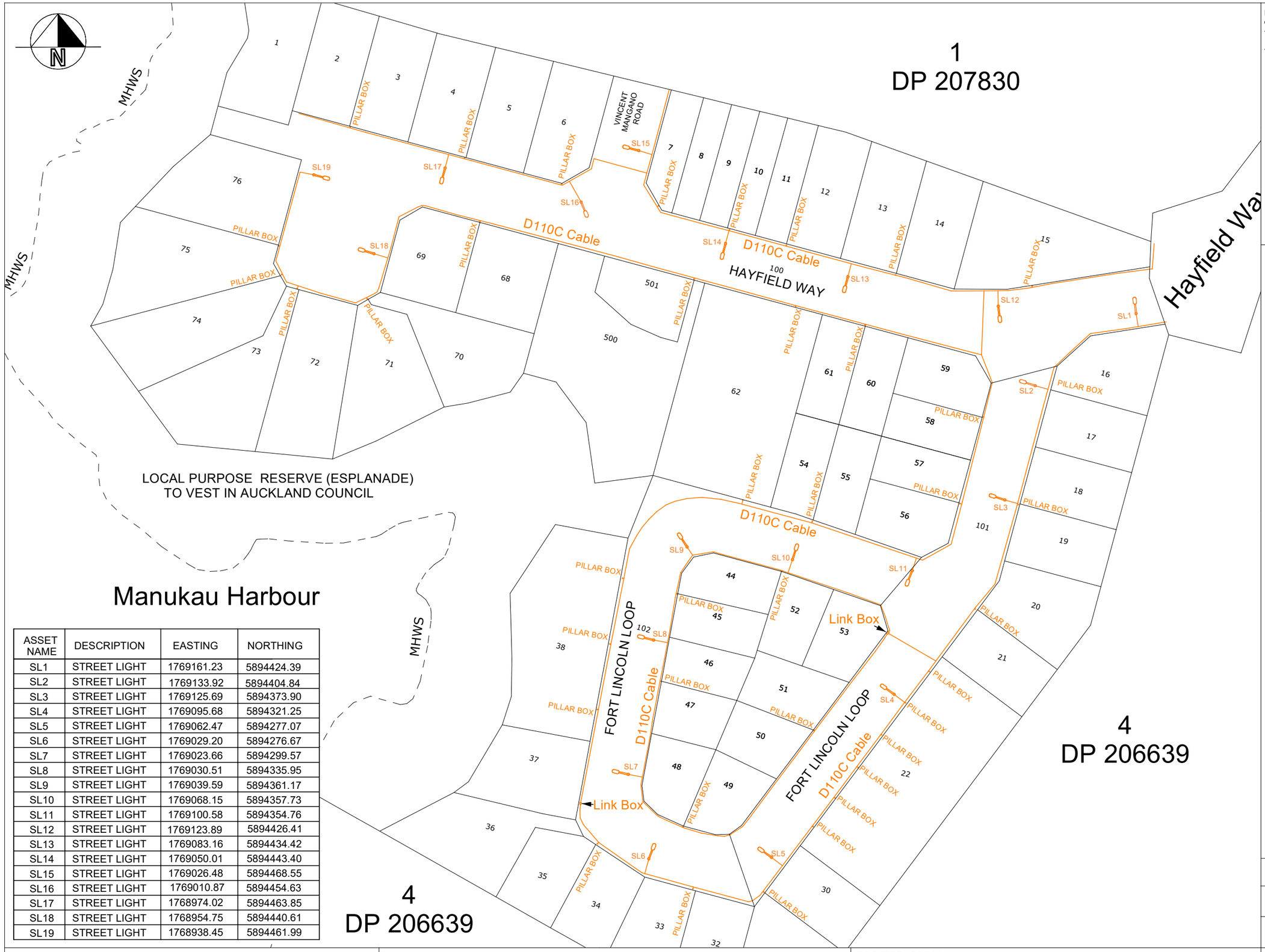
ASBUILT PLAN

OVERLAND FLOWPATH
LONG SECTIONS AND CROSS SECTIONS

PROJECT ADRESS

55 HAYFIELD WAY,
HINGAIA.



ASSET NAME	DESCRIPTION	EASTING	NORTHING
SL1	STREET LIGHT	1769161.23	5894424.39
SL2	STREET LIGHT	1769133.92	5894404.84
SL3	STREET LIGHT	1769125.69	5894373.90
SL4	STREET LIGHT	1769095.68	5894321.25
SL5	STREET LIGHT	1769062.47	5894277.07
SL6	STREET LIGHT	1769029.20	5894276.67
SL7	STREET LIGHT	1769023.66	5894299.57
SL8	STREET LIGHT	1769030.51	5894335.95
SL9	STREET LIGHT	1769039.59	5894361.17
SL10	STREET LIGHT	1769068.15	5894357.73
SL11	STREET LIGHT	1769100.58	5894354.76
SL12	STREET LIGHT	1769123.89	5894426.41
SL13	STREET LIGHT	1769083.16	5894434.42
SL14	STREET LIGHT	1769050.01	5894443.40
SL15	STREET LIGHT	1769026.48	5894468.55
SL16	STREET LIGHT	1769010.87	5894454.63
SL17	STREET LIGHT	1768974.02	5894463.85
SL18	STREET LIGHT	1768954.75	5894440.61
SL19	STREET LIGHT	1768938.45	5894461.99

I Certify that these Asbuilt plans are an accurate record of the works undertaken and that
- The coordinates (X, Y) are in terms of NZTM on the NZGD (2000) and are within 50mm accuracy.
- The levels (Z) are in terms of Auckland Vertical Datum 1946 (MSL) LINZ Datum (DOSLI datum) and are within 10mm accuracy.

Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

LEGEND:

- LP = Lamp Post
- PB = Pillar Box
- LB = Link Box

HALL SURVEYING

Hall Surveying Limited
p: 09 428 1359
m: 021 262 6367
w: www.hallsurveying.co.nz
e: tom@hallsurveying.co.nz

TITLE

ASBUILT PLAN

POWER

PROJECT ADRESS

55 HAYFIELD WAY,
HINGAIA.

Sheet #	1 of 1	
Revision #	C	
Scale:	1 : 1000 (A3)	
Job #	2017-100	
Surveyed	TH	Date 31/01/2018
Drawn	TH	Date 31/01/2018

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- The levels (Z) are in terms of Auckland Vertical Datum 1946 (MSL) LINZ Datum (DOSLI datum) and are within 10mm accuracy.

Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

Engineering Approval No.

PAK40706

Sheet #	1 of 1	
Revision #	A	
Scale:	1 : 1000 (A3)	
Job #	2017-100	
Surveyed	TH	Date 31/01/2018
Drawn	TH	Date 31/01/2018

HALL SURVEYING
Hall Surveying Limited
p: 09 428 1359
m: 021 262 6367
w: www.hallsurveying.co.nz
e: tom@hallsurveying.co.nz

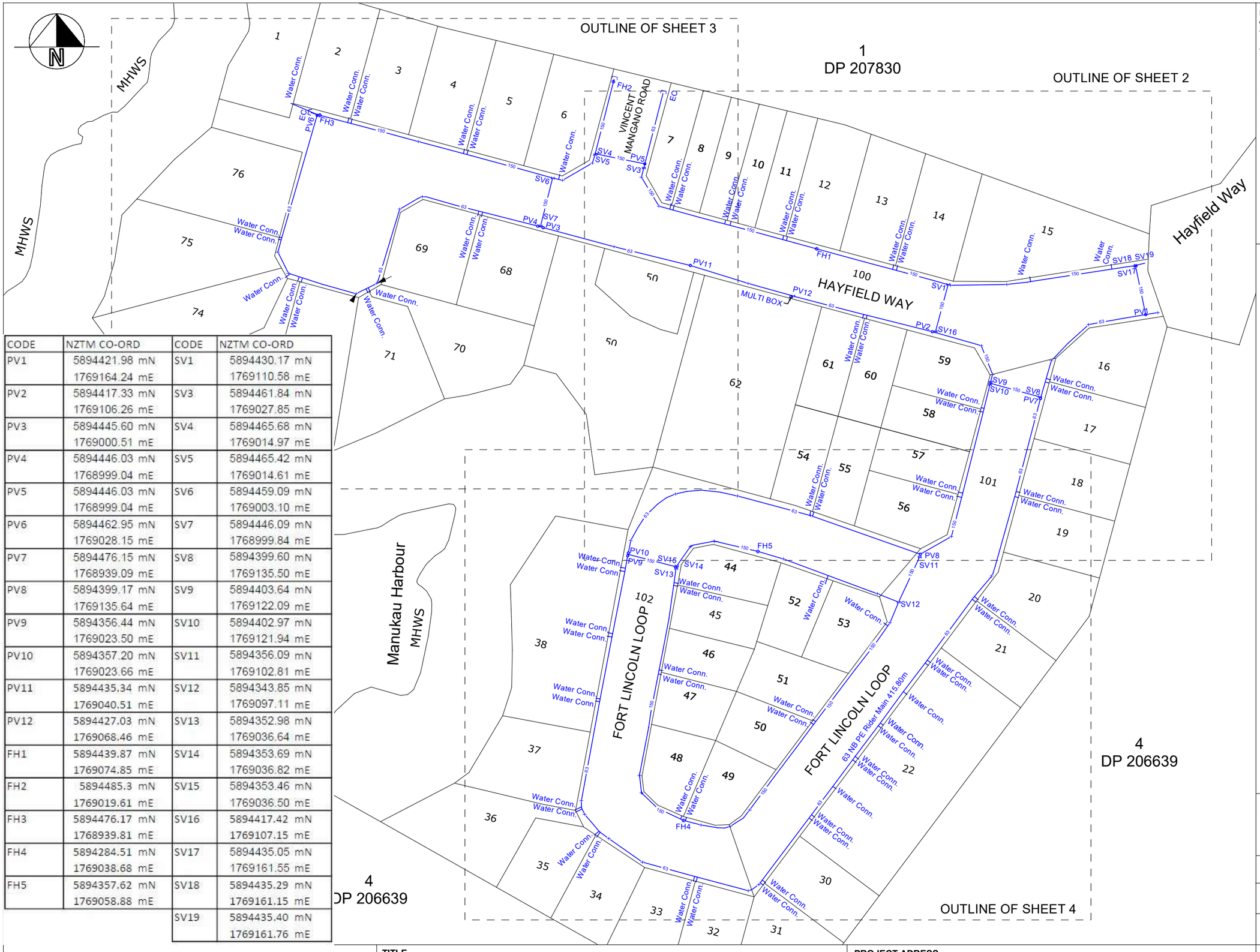
TITLE

ASBUILT PLAN

TELECOM ASBUILT

PROJECT ADRESS

55 HAYFIELD WAY,
HINGAIA.



CODE	NZTM CO-ORD	CODE	NZTM CO-ORD
PV1	5894421.98 mN 1769164.24 mE	SV1	5894430.17 mN 1769110.58 mE
PV2	5894417.33 mN 1769106.26 mE	SV3	5894461.84 mN 1769027.85 mE
PV3	5894445.60 mN 1769000.51 mE	SV4	5894465.68 mN 1769014.97 mE
PV4	5894446.03 mN 1768999.04 mE	SV5	5894465.42 mN 1769014.61 mE
PV5	5894446.03 mN 1768999.04 mE	SV6	5894459.09 mN 1769003.10 mE
PV6	5894462.95 mN 1769028.15 mE	SV7	5894446.09 mN 1768999.84 mE
PV7	5894476.15 mN 1768939.09 mE	SV8	5894399.60 mN 1769135.50 mE
PV8	5894399.17 mN 1769135.64 mE	SV9	5894403.64 mN 1769122.09 mE
PV9	5894356.44 mN 1769023.50 mE	SV10	5894402.97 mN 1769121.94 mE
PV10	5894357.20 mN 1769023.66 mE	SV11	5894356.09 mN 1769102.81 mE
PV11	5894435.34 mN 1769040.51 mE	SV12	5894343.85 mN 1769097.11 mE
PV12	5894427.03 mN 1769068.46 mE	SV13	5894352.98 mN 1769036.64 mE
FH1	5894439.87 mN 1769074.85 mE	SV14	5894353.69 mN 1769036.82 mE
FH2	5894485.3 mN 1769019.61 mE	SV15	5894353.46 mN 1769036.50 mE
FH3	5894476.17 mN 1768939.81 mE	SV16	5894417.42 mN 1769107.15 mE
FH4	5894284.51 mN 1769038.68 mE	SV17	5894435.05 mN 1769161.55 mE
FH5	5894357.62 mN 1769058.88 mE	SV18	5894435.29 mN 1769161.15 mE
		SV19	5894435.40 mN 1769161.76 mE

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Signed:

Date: 29/05/2018

Name: Freda Harper

Email: freda@coastalcontours.co.nz

Phone: 021460045

LEGEND:

- ⊕ FH = Fire Hydrant
- O PV = Peet Valve
- ⋈ SV = Sluice Valve
- ⌴ EC = End Cap

150 = 150ø uPVC pipe.

100 = 100ø PE pipe.

63 = 63ø PE pipe.

all connections are 20ø PE pipe.

HALL SURVEYING

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p: 09 428 1359
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TITLE

ASBUILT PLAN

WATERMAIN

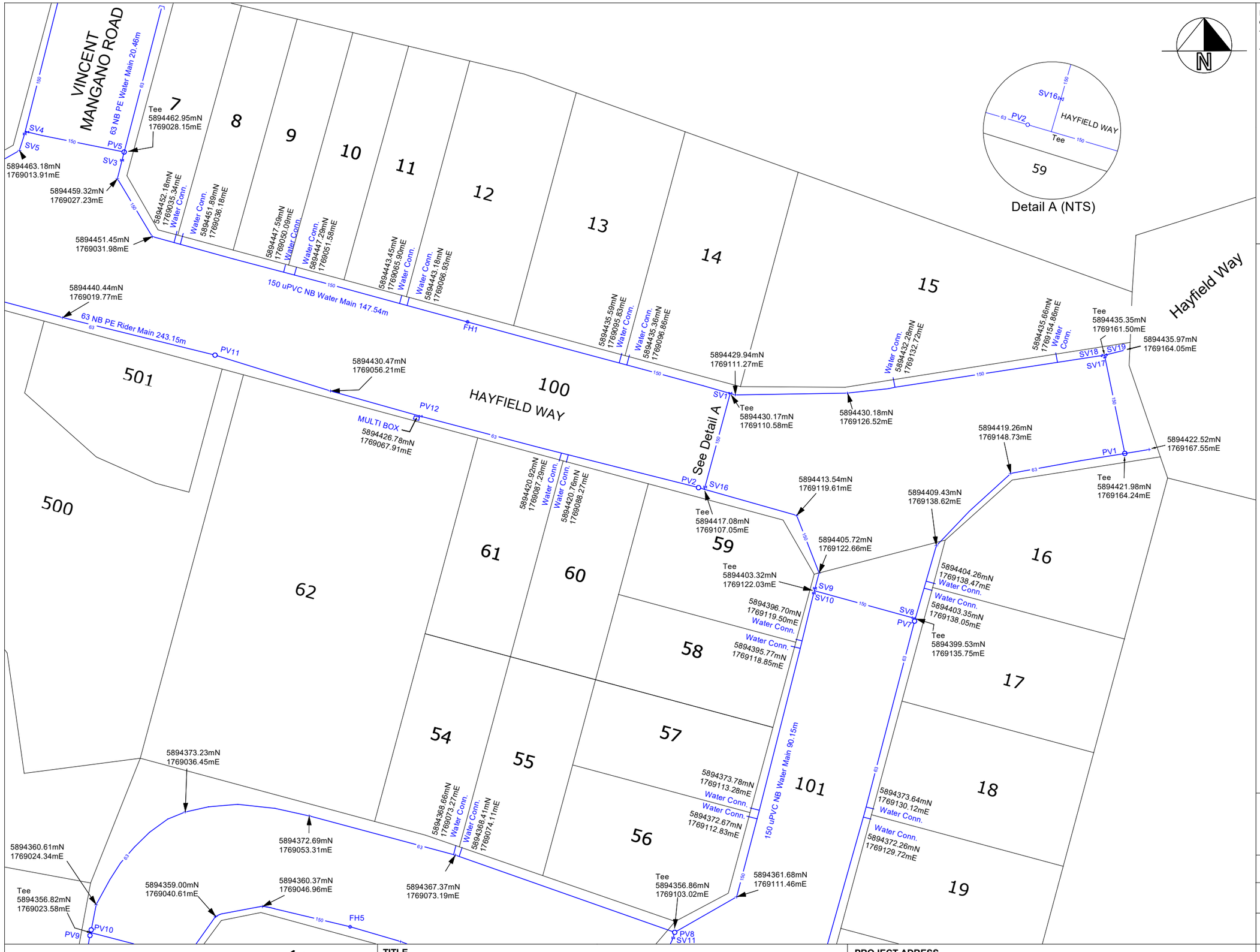
PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Engineering Approval No.

ENG60256718

Sheet #	1 of 4	
Revision #	D	
Scale:	1 : 1000 (A3)	
Job #	2017-100	
Surveyed	TH	Date 31/01/2018
Drawn	TH	Date 25/05/2018



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LEGEND:

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150 = 150ø uPVC pipe.

100 = 100ø PE pipe.

63 = 63ø PE pipe.

all connections are 20ø PE pipe.

Engineering Approval No.

ENG60256718

Sheet #	2 of 4	
Revision #	D	
Scale:	1 : 500 (A3)	
Job #	2017-100	
Surveyed	TH	Date 31/01/2018
Drawn	TH	Date 25/05/2018

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m: 021 262 6367
w: www.hallsurveying.co.nz
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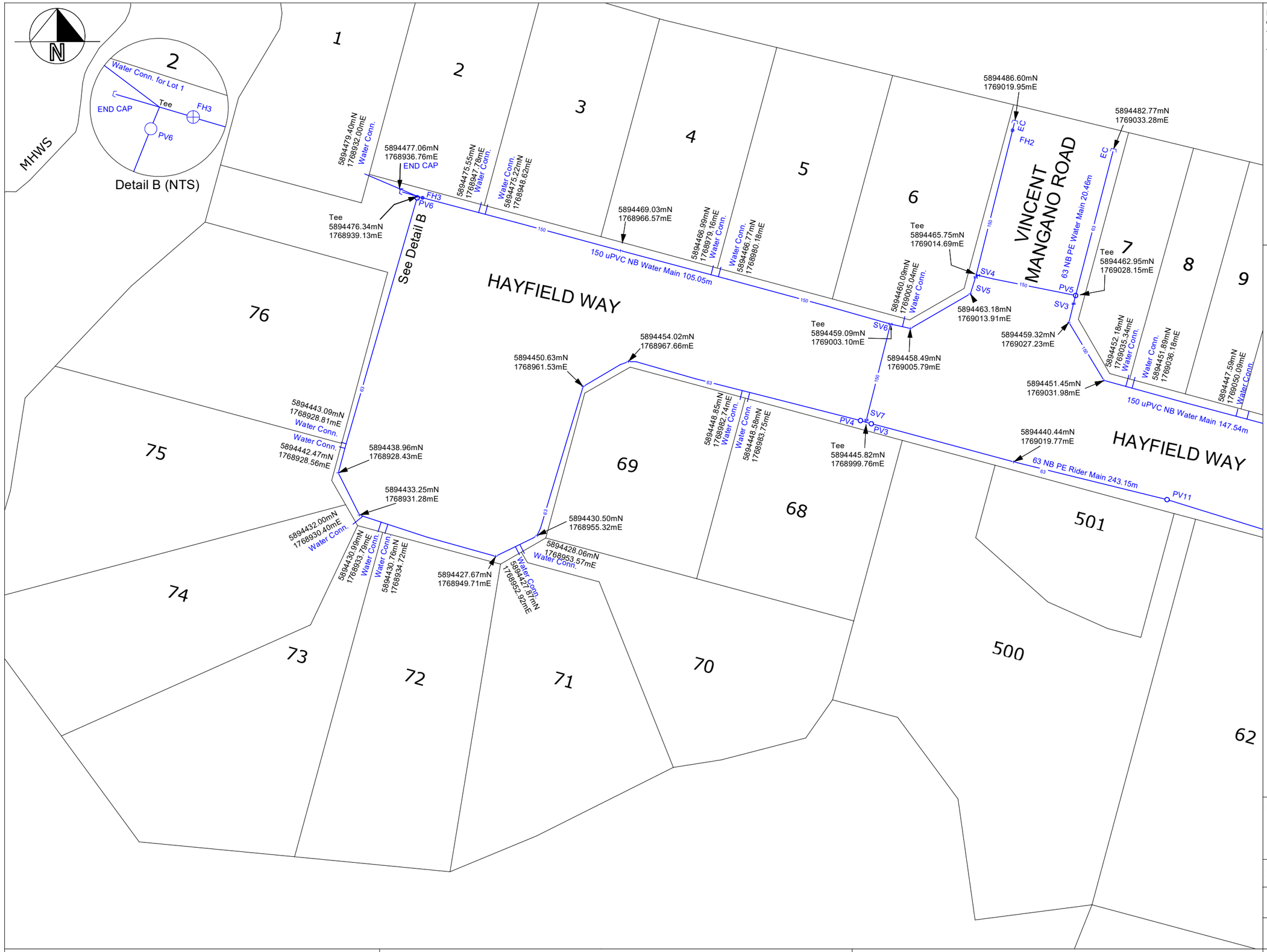
TITLE

ASBUILT PLAN

WATERMAIN

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.



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all connections are 20ø PE pipe.

Engineering Approval No.

ENG60256718

Sheet #	3 of 4	
Revision #	D	
Scale:	1 : 500 (A3)	
Job #	2017-100	
Surveyed	TH	Date 31/01/2018
Drawn	TH	Date 25/05/2018

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w: www.hallsurveying.co.nz
e: tom@hallsurveying.co.nz

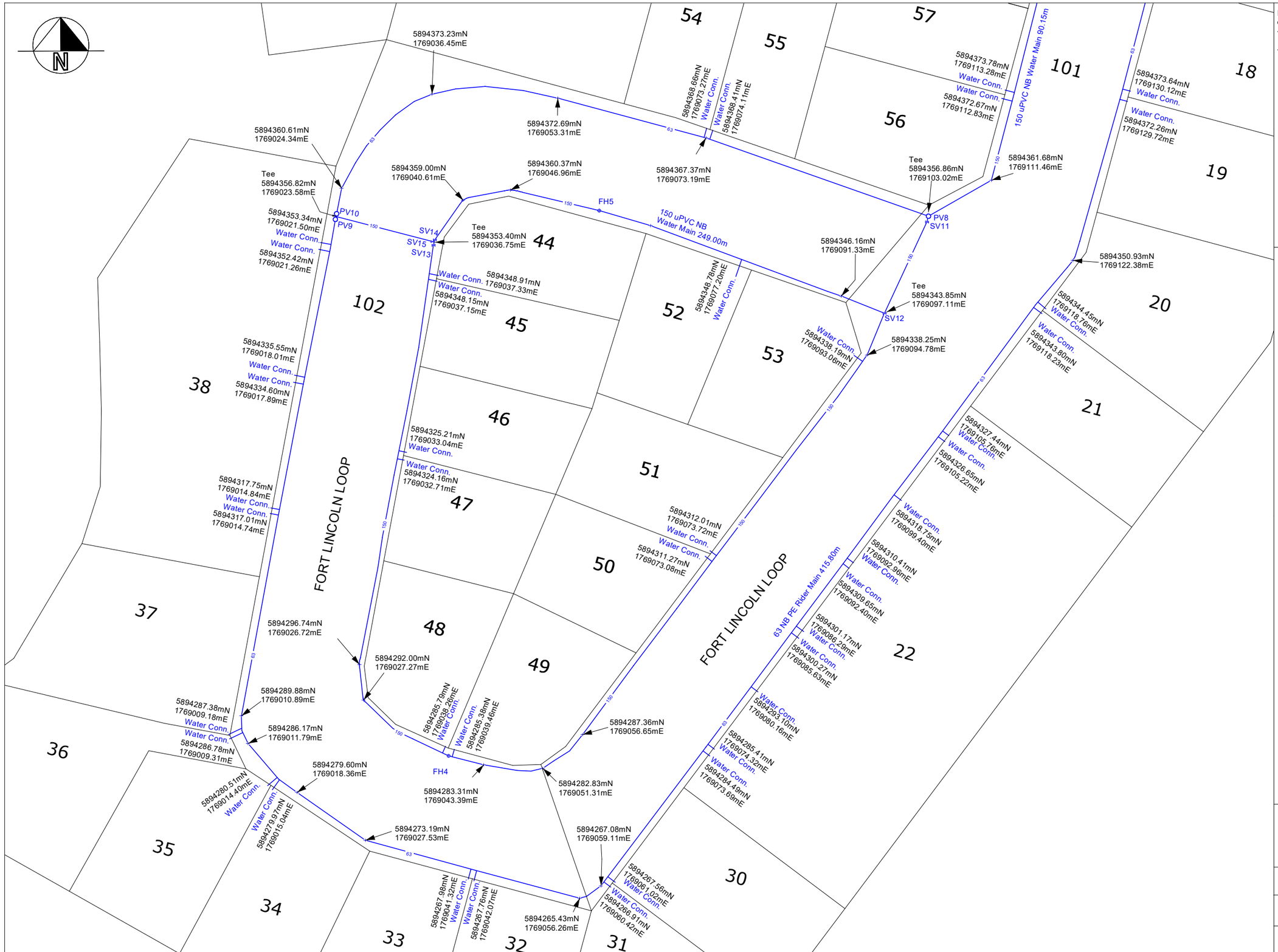
TITLE

ASBUILT PLAN

WATERMAIN

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.



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Engineering Approval No.

ENG60256718

Sheet #	4 of 4	
Revision #	D	
Scale:	1 : 500 (A3)	
Job #	2017-100	
Surveyed	TH	Date 31/01/2018
Drawn	TH	Date 25/05/2018

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TITLE

ASBUILT PLAN

WATERMAIN

PROJECT ADRESS

55 HAYFIELD WAY, HINGAIA.

Appendix 2

Field Density Test Summary Sheets

Coffey Geotechnics 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

EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia
-

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 23/02/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
15/02/2016	ETAM16W00457	AB	**1**	1.85	28.4	1.44	2.7	5.6	UTP	UTP	UTP	UTP	General Fill	1768986	5894427	-	Clay	0.4m to Subgrade
15/02/2016	ETAM16W00457	AB	**2**	1.89	29.6	1.46	2.7	3.0	UTP	UTP	UTP	UTP	General Fill	1768897	5894430	-	Clay	at Subgrade

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

Coffey Geotechnics NZ Ltd
144A Cryers Road, East Tamaki, Auckland 2103, New Zealand
PO Box 58 877, Botany, Manukau 2163, New Zealand
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SITE PLAN

NOT TO SCALE

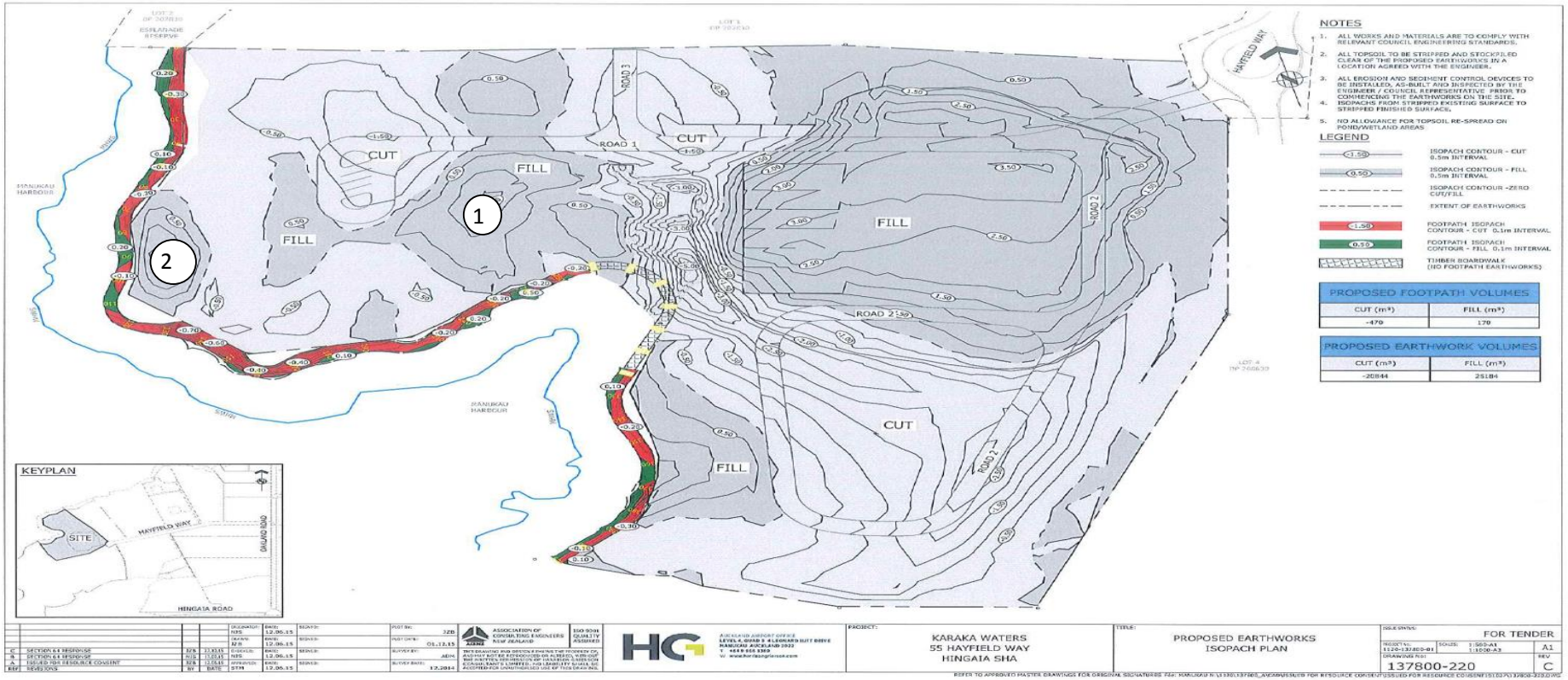
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00457
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 15/02/2016



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PO Box 58 877, Botany, Manukau 2163, New Zealand
t+64 9 272 3375 f+64 9 272 3378 www.coffey.com

EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia
-

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 1/03/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
26/02/2016	ETAM16W00524	AB	**3**	1.76	37.3	1.28	2.7	4.5	158	200	216+	216+	General Fill	1769085	5894354		Clay	~1.5m to subgrade
26/02/2016	ETAM16W00524	AB	**4**	1.76	36.4	1.29	2.7	5.2	183	170	216+	216+	General Fill	1769094	5894376		Clay	~2.5m to subgrade
26/02/2016	ETAM16W00524	AB	**5**	1.78	38.0	1.29	2.7	3.2	165	187	196	214	General Fill	1769103	5894387		Clay	~2.5m to subgrade
26/02/2016	ETAM16W00524	AB	**6**	1.73	42.2	1.22	2.7	3.4	150	187	UTP	UTP	General Fill	1769096	5894423		Clay	~2.0m to subgrade

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

Coffey Geotechnics NZ Ltd
144A Cryers Road, East Tamaki, Auckland 2103, New Zealand
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SITE PLAN

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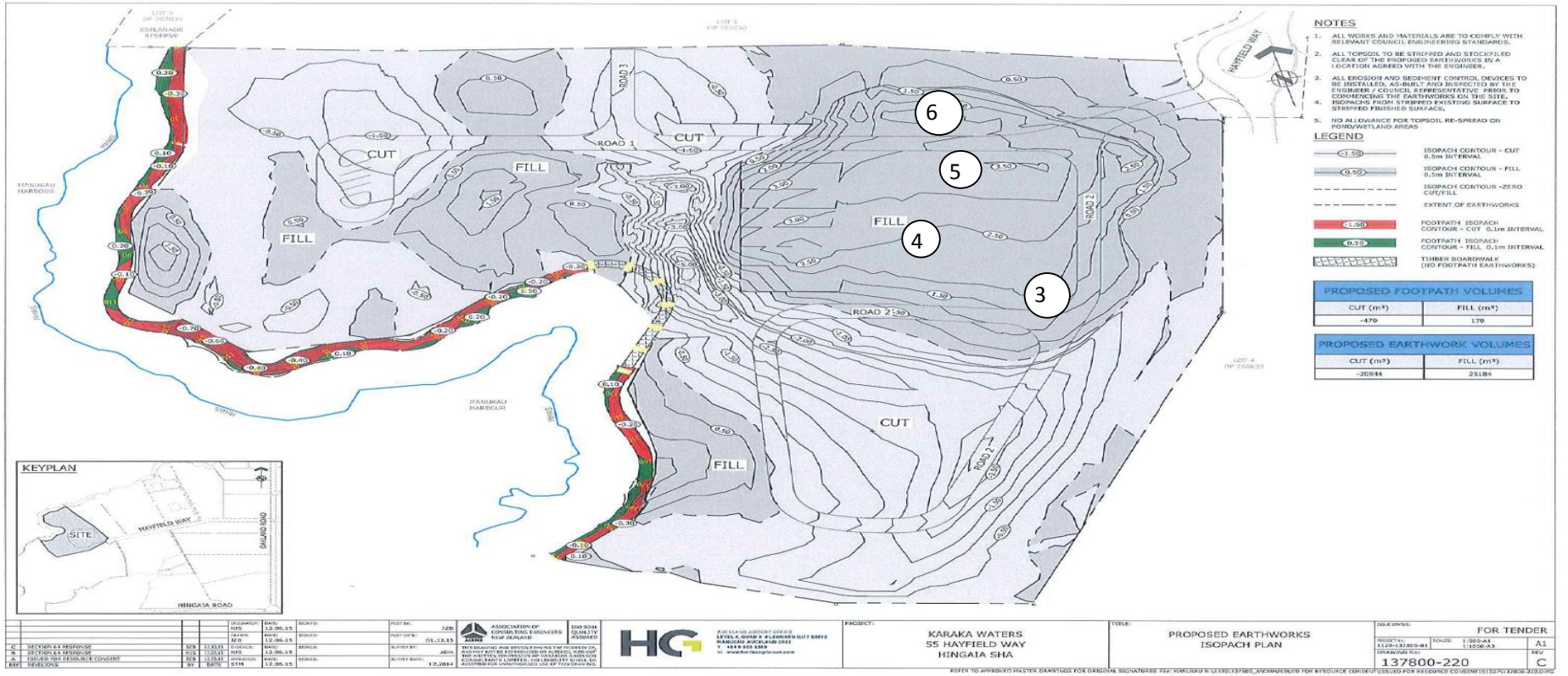
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00524
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 26/02/2016



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EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia
-

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 8/03/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
3/03/2016	ETAM16W00657	AB	**7**	1.76	42.4	1.24	2.7	1.6	170	200	216+	216+	General Fill	1769101	5894421	-	Silty Clay	0.7m from base of fill
3/03/2016	ETAM16W00657	AB	**8**	1.82	48.6	1.23	2.7	0.0	200	158	162	216+	General Fill	1769096	5894436	-	Silty Clay	1.0m from base of fill
3/03/2016	ETAM16W00657	AB	**9**	1.84	33.0	1.39	2.7	3.0	158	142	142	154	General Fill	1769083	5894460	-	Silty Clay	0.7m below subgrade
3/03/2016	ETAM16W00657	AB	**10**	1.84	34.4	1.37	2.7	2.4	146	154	150	150	General Fill	1769094	5894459	-	Silty Clay	0.5m below subgrade

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

NOT TO SCALE

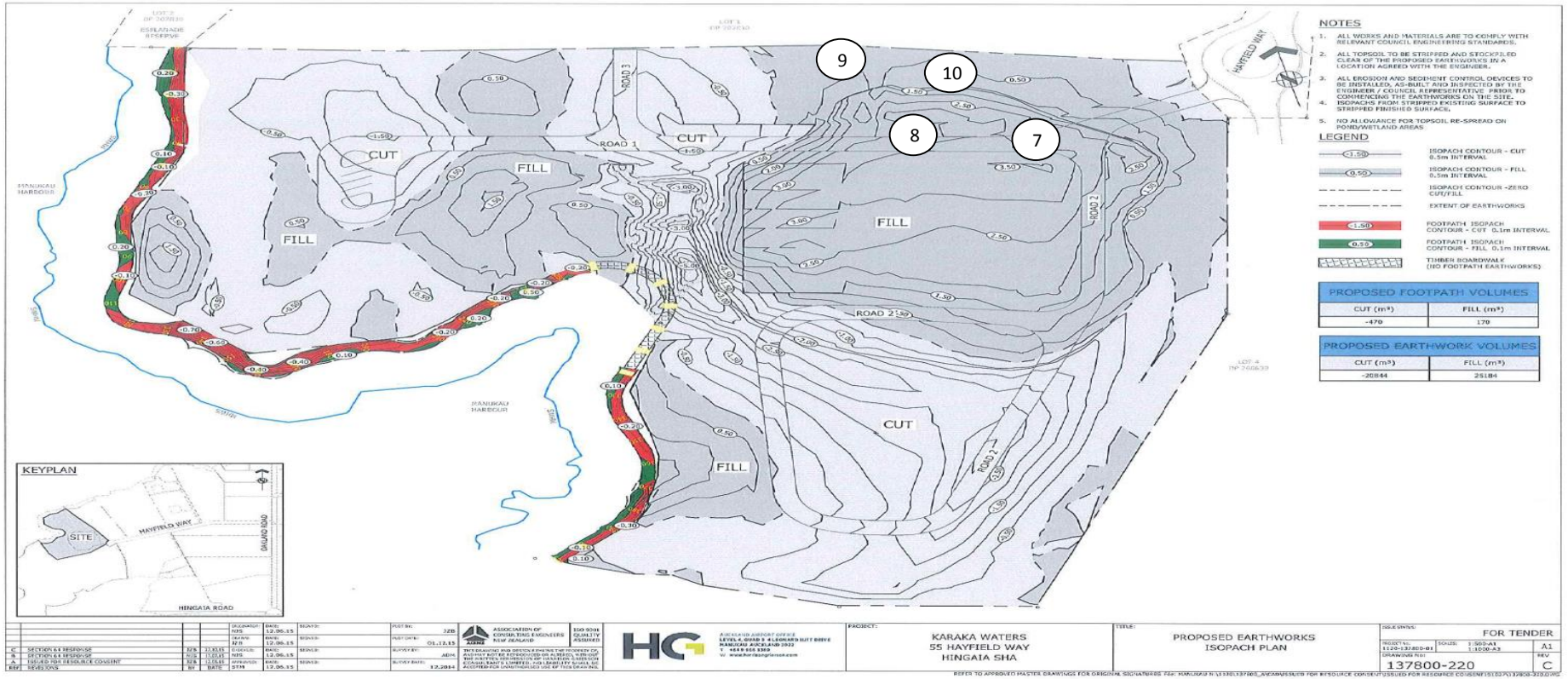
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00657
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 03.03.16



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Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 20/03/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
7/03/2016	ETAM16W00680	AB	**11**	1.83	36.0	1.34	2.7	1.9	UTP	UTP	UTP	UTP	General fill	1769132	5894440	-	Clay	Subgrade level
7/03/2016	ETAM16W00680	AB	**12**	1.73	43.3	1.20	2.7	3.3	187	183	150	142	General fill	1769075	5894441	-	Clay	~2.0m to subgrade
7/03/2016	ETAM16W00680	AB	**13**	1.78	40.8	1.26	2.7	1.8	146	154	142	142	General fill	1769070	5894374	-	Clay	~2.0m to subgrade
7/03/2016	ETAM16W00680	AB	**14**	1.87	33.0	1.40	2.7	1.8	187	154	UTP	UTP	General fill	1769106	5894367	-	Clay	~1.5m to subgrade
8/03/2016	ETAM16W00697	AB	**15**	1.82	47.3	1.24	2.7	0.0	165	170	187	158	General fill	1769072	5894385	-	Clay	Subgrade level
8/03/2016	ETAM16W00697	AB	**16**	1.77	39.8	1.27	2.7	2.5	UTP	UTP	UTP	UTP	General fill	1769082	5894418	-	Clay	~2.0m to subgrade
8/03/2016	ETAM16W00697	AB	**17**	1.88	32.1	1.42	2.7	1.9	142	150	165	146	General fill	1769108	5894440	-	Clay	~1.0m to subgrade
8/03/2016	ETAM16W00697	AB	**18**	1.88	34.7	1.39	2.7	0.1	158	154	146	162	General fill	1769094	5894445	-	Clay	~1.0m to subgrade
10/03/2016	ETAM16W00843	AB	**19**	1.82	33.7	1.36	2.7	3.9	142	142	158	174	General fill	1769121	5894409	-	Clay	~1.0m to subgrade
10/03/2016	ETAM16W00843	AB	**20**	1.90	32.1	1.44	2.7	0.6	216+	216+	UTP	UTP	General fill	1764089	5894408	-	Clay	~1.0m to subgrade
11/03/2016	ETAM16W00844	AB	**21**	1.92	40.6	1.36	2.7	0.0	146	150	142	162	General fill	1769118	5894420	-	Silty CLAY	0.5m to subgrade
11/03/2016	ETAM16W00844	AB	**22**	1.84	35.3	1.36	2.7	1.5	150	170	142	200	General fill	1769123	5894346	-	Silty CLAY	~1.5m to subgrade
14/03/2016	ETAM16W00845	AB	**23**	1.88	28.3	1.46	2.7	4.5	UTP	UTP	UTP	UTP	General fill	1769083	5894447	-	Silty CLAY	Subgrade level
14/03/2016	ETAM16W00845	AB	**24**	1.93	26.4	1.52	2.7	3.3	UTP	UTP	UTP	UTP	General fill	1769112	5894438	-	Silty CLAY	Subgrade level

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

NOT TO SCALE

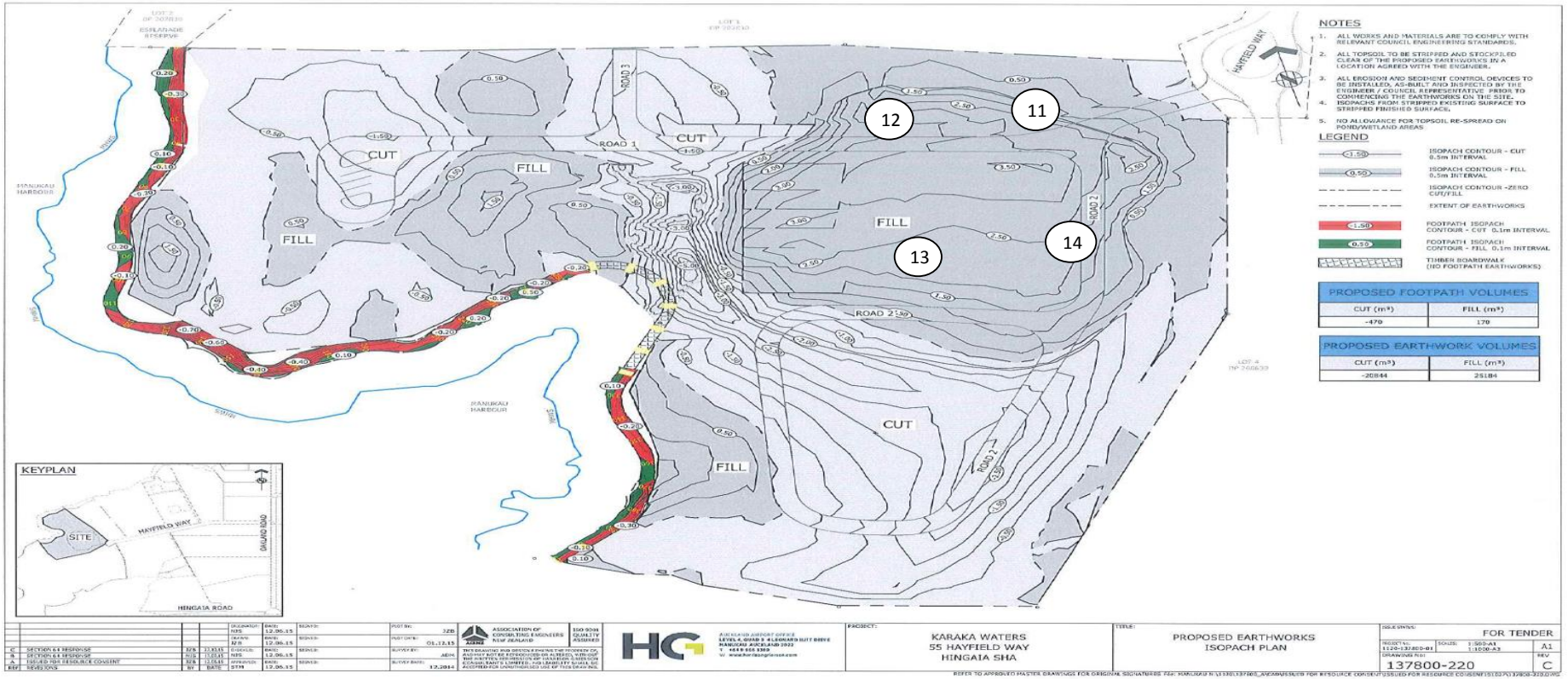
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00680
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 7/03/2016



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SITE PLAN

NOT TO SCALE

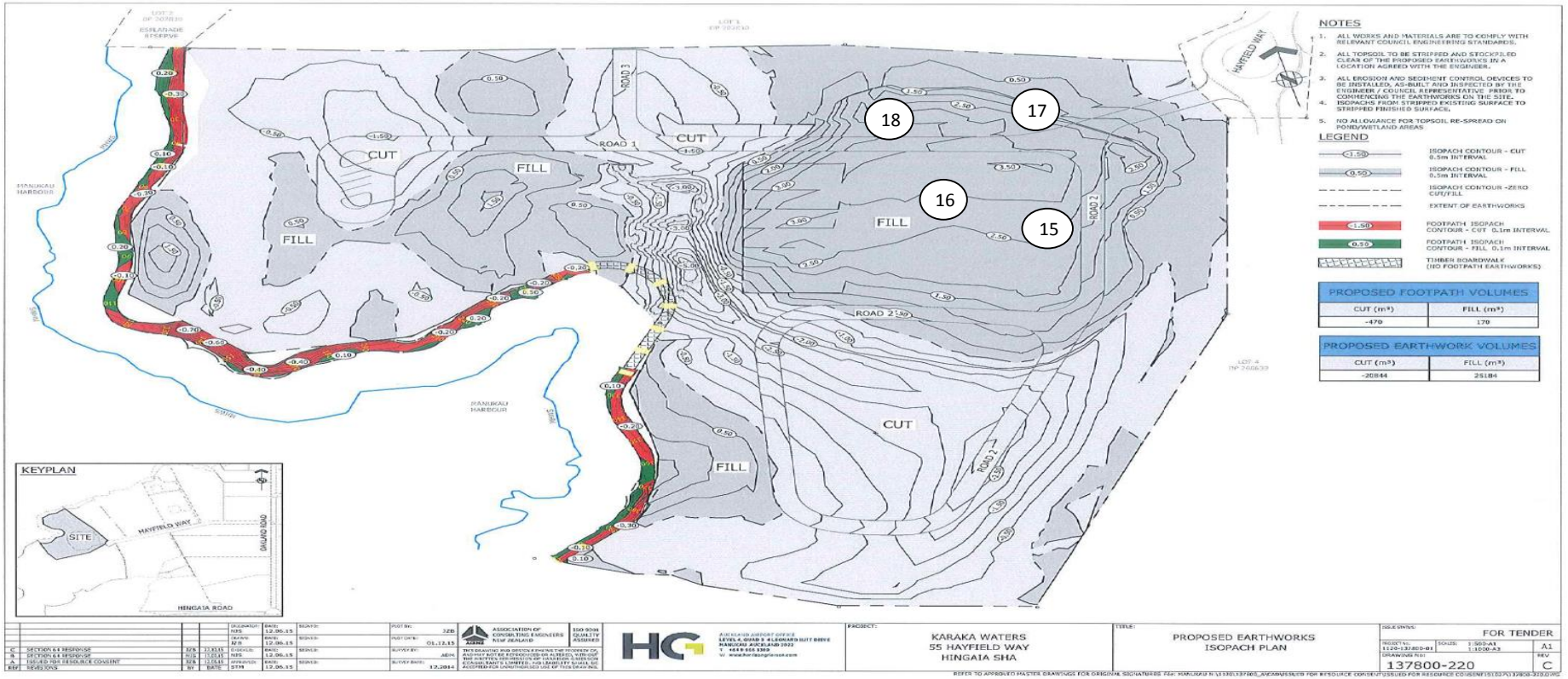
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00697
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 8/03/2016



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SITE PLAN

NOT TO SCALE

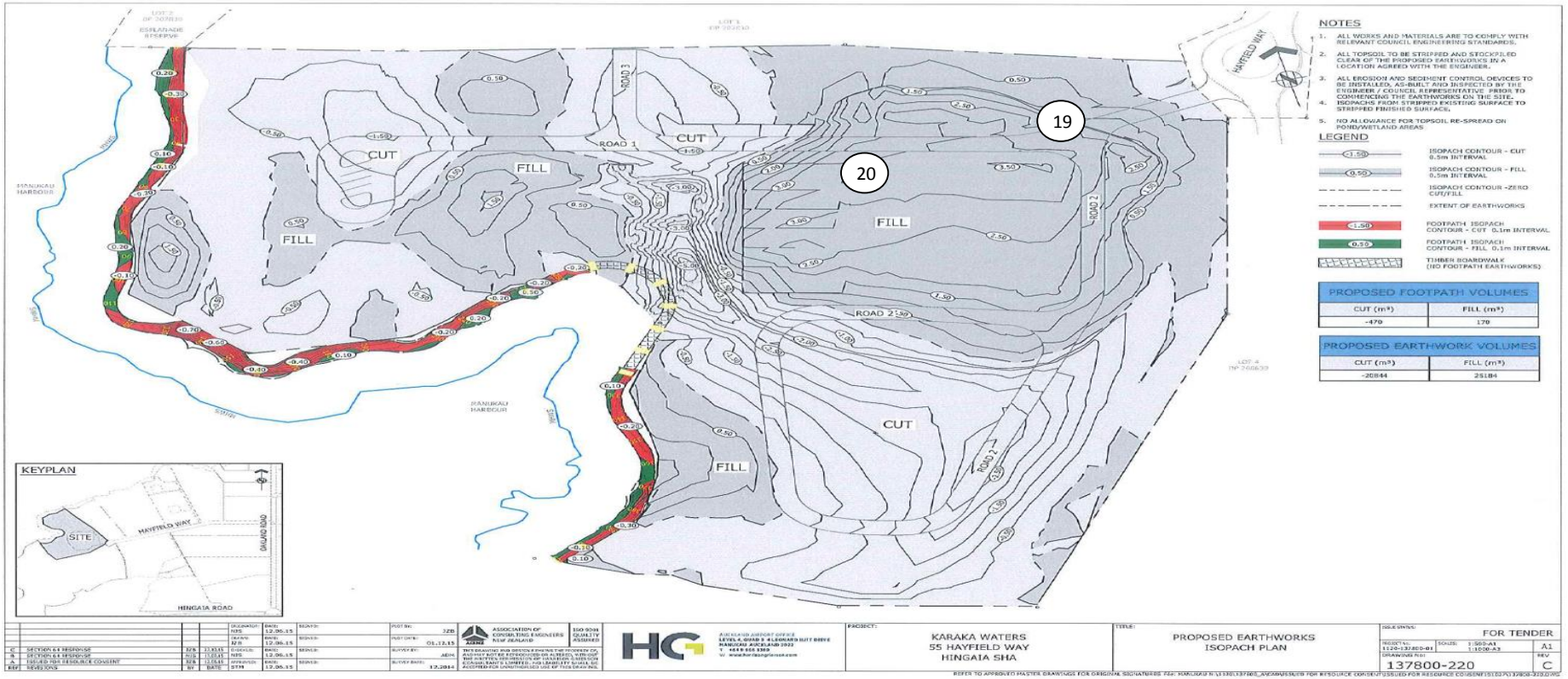
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00843
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 10/03/2016



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SITE PLAN

NOT TO SCALE

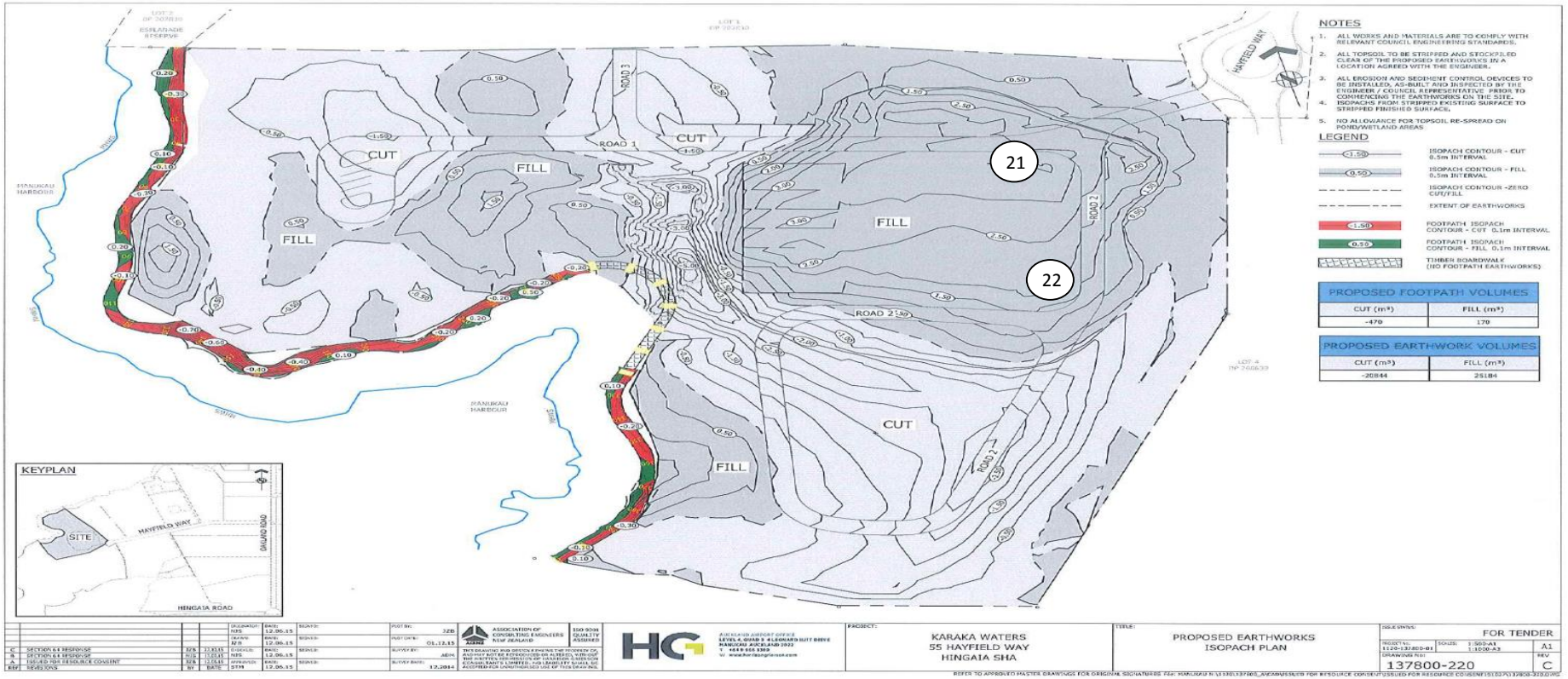
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00844
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 11/03/2016



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SITE PLAN

NOT TO SCALE

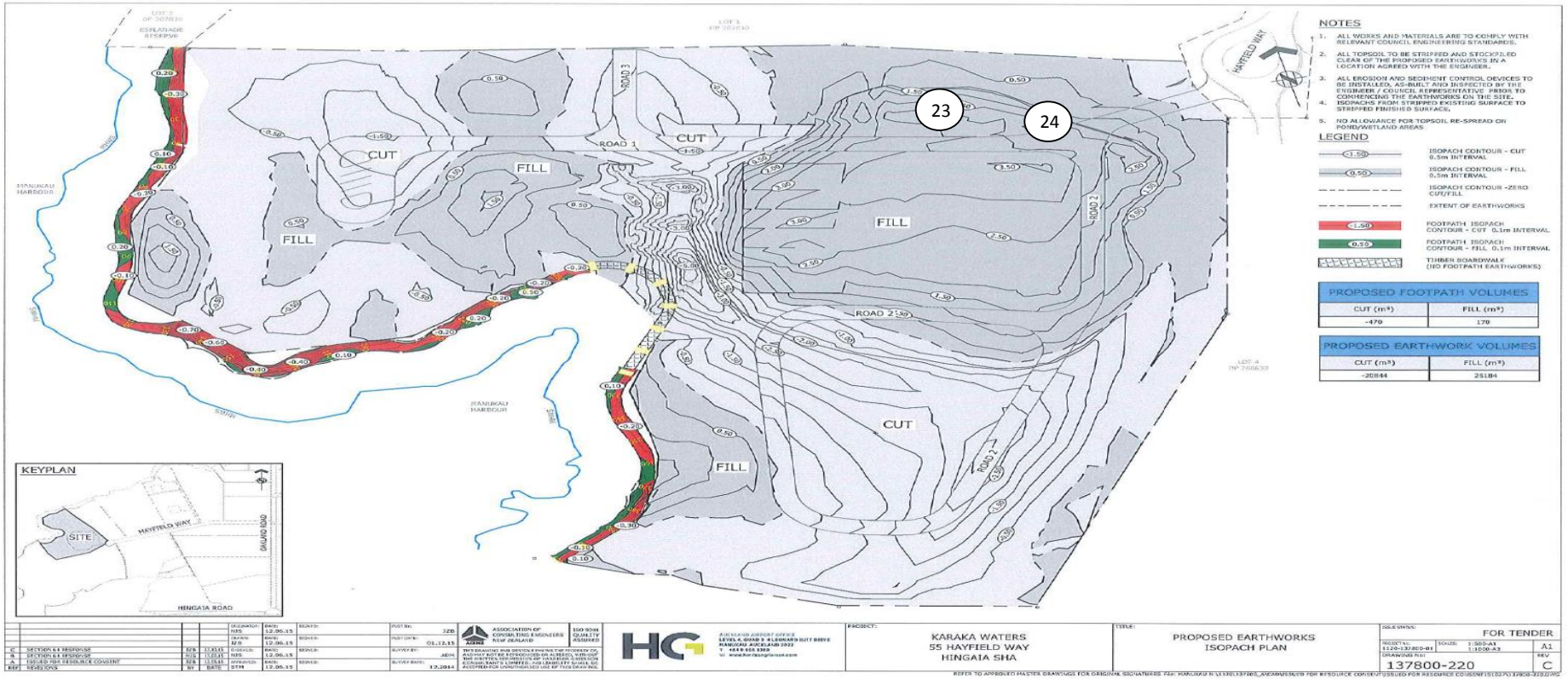
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00845
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 14/03/2016



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EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 25/03/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
22/03/2016	ETAM16W00945	AB	**25**	1.89	32.0	1.43	2.7	1.3	146	154	162	142	General fill	1769070	5894420	-	Silty CLAY	~1.0m to FL
22/03/2016	ETAM16W00945	AB	**26**	1.83	40.6	1.30	2.7	0.0	142	146	170	146	General fill	1769100	5894411	-	Silty CLAY	~1.0m to FL
22/03/2016	ETAM16W00945	AB	**27**	1.74	38.3	1.26	2.7	5.1	150	158	150	165	General fill	1769130	5894416	-	Silty CLAY	~1.0m to FL
22/03/2016	ETAM16W00945	AB	**28**	1.70	43.0	1.19	2.7	4.6	150	142	146	142	General fill	169131	5894345	-	Silty CLAY	~1.5m to FL

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

NOT TO SCALE

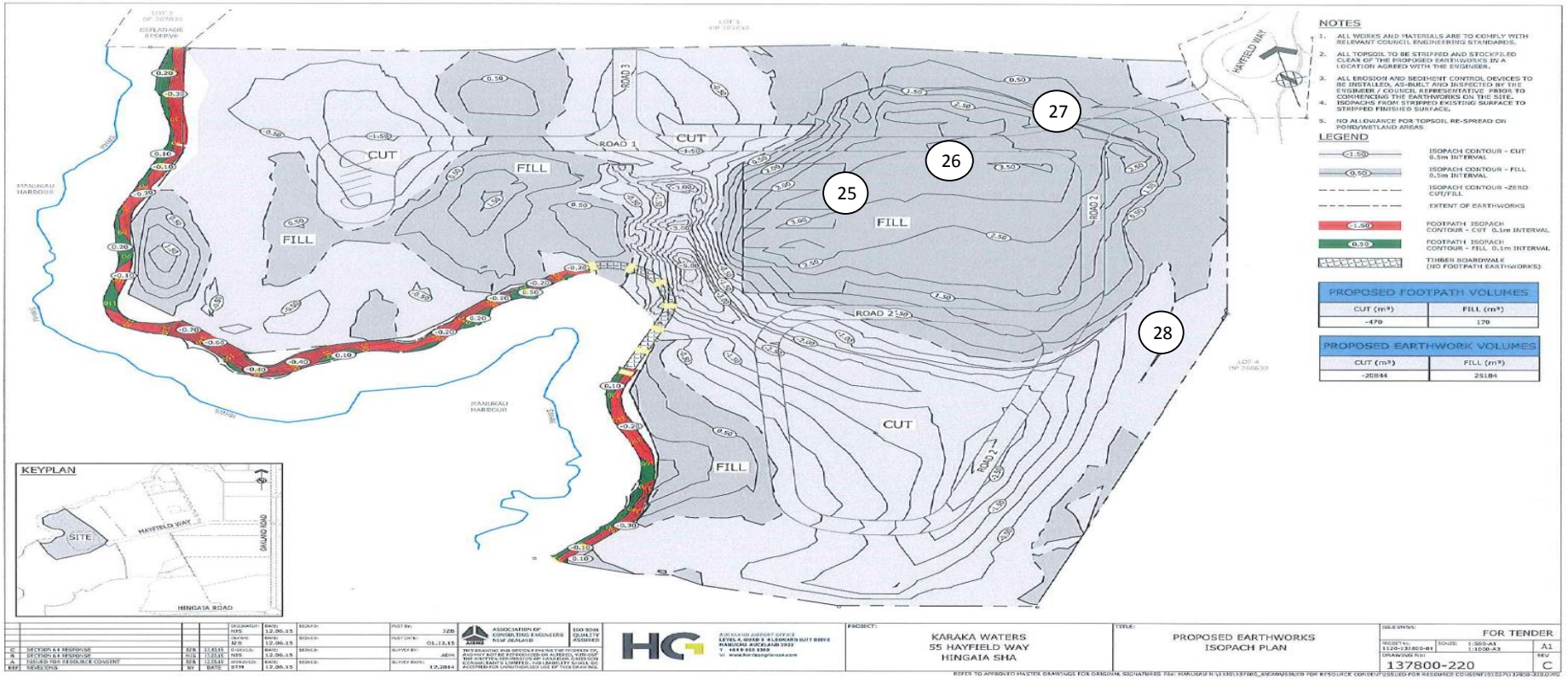
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W00945
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 22/03/2016



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EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 14/04/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
4/04/2016	ETAM16W01070	AB	**29**	1.81	32.1	1.37	2.7	5.1	UTP	UTP	UTP	UTP	General fill	1769139	5894420	-	Clay	0.5m to FL
4/04/2016	ETAM16W01070	AB	**30**	1.91	28.1	1.49	2.7	2.9	UTP	UTP	UTP	UTP	General fill	1769146	5894403	-	Clay	0.5m to FL
4/04/2016	ETAM16W01070	AB	**31**	1.78	44.0	1.23	2.7	0.0	183	187	150	154	General fill	1769125	5894324	-	Clay	0.5m to FL
4/04/2016	ETAM16W01070	AB	**32**	1.72	44.6	1.19	2.7	3.0	146	183	216+	216+	General fill	1769130	5894351	-	Clay	0.7m to FL
8/04/2016	ETAM16W01195	AB	**33**	1.87	28.9	1.45	2.7	4.1	154	187	150	165	General fill	1769137	5894340	-	Silty CLAY	Subgrade level
8/04/2016	ETAM16W01195	AB	**34**	1.78	39.6	1.27	2.7	2.5	146	154	142	150	General fill	1769152	5894400	-	Silty CLAY	Subgrade level

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

NOT TO SCALE

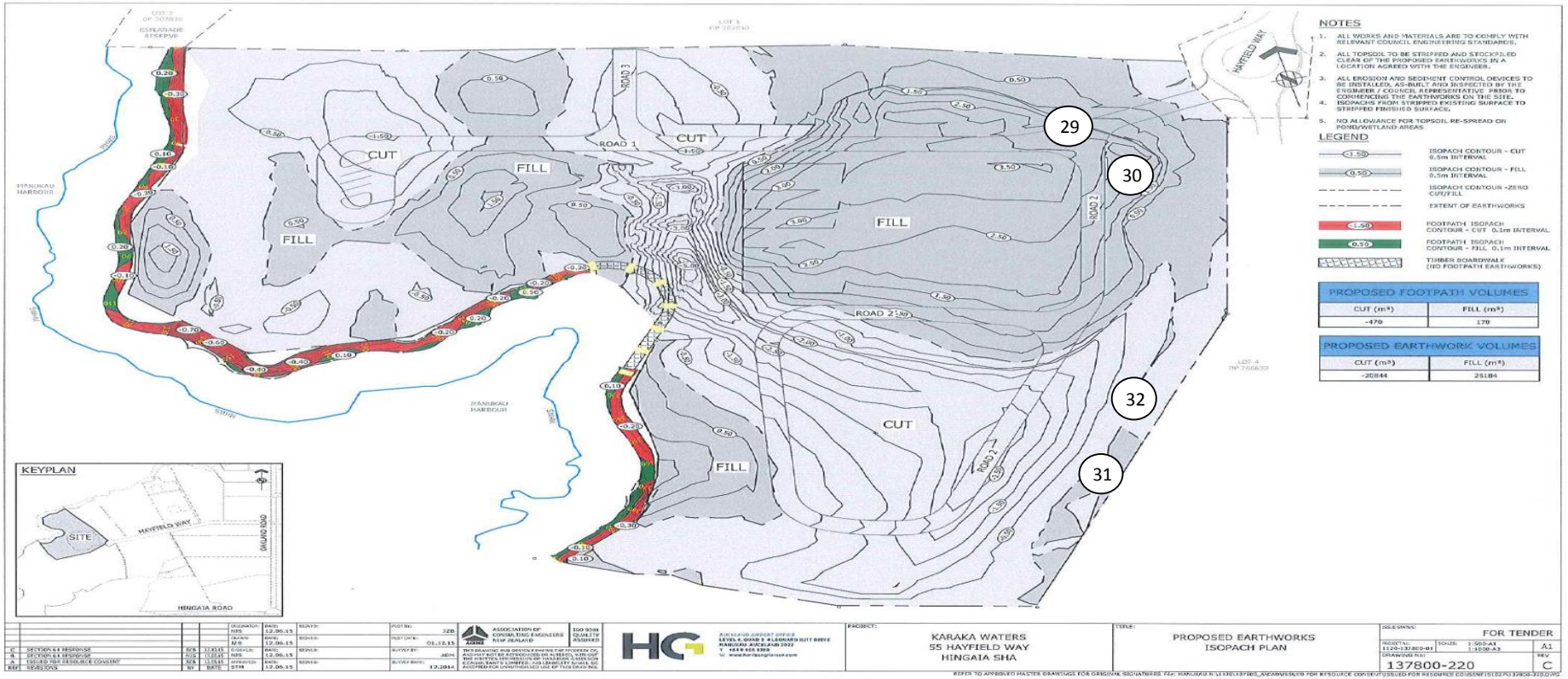
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01070
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 4/04/2016



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SITE PLAN

NOT TO SCALE

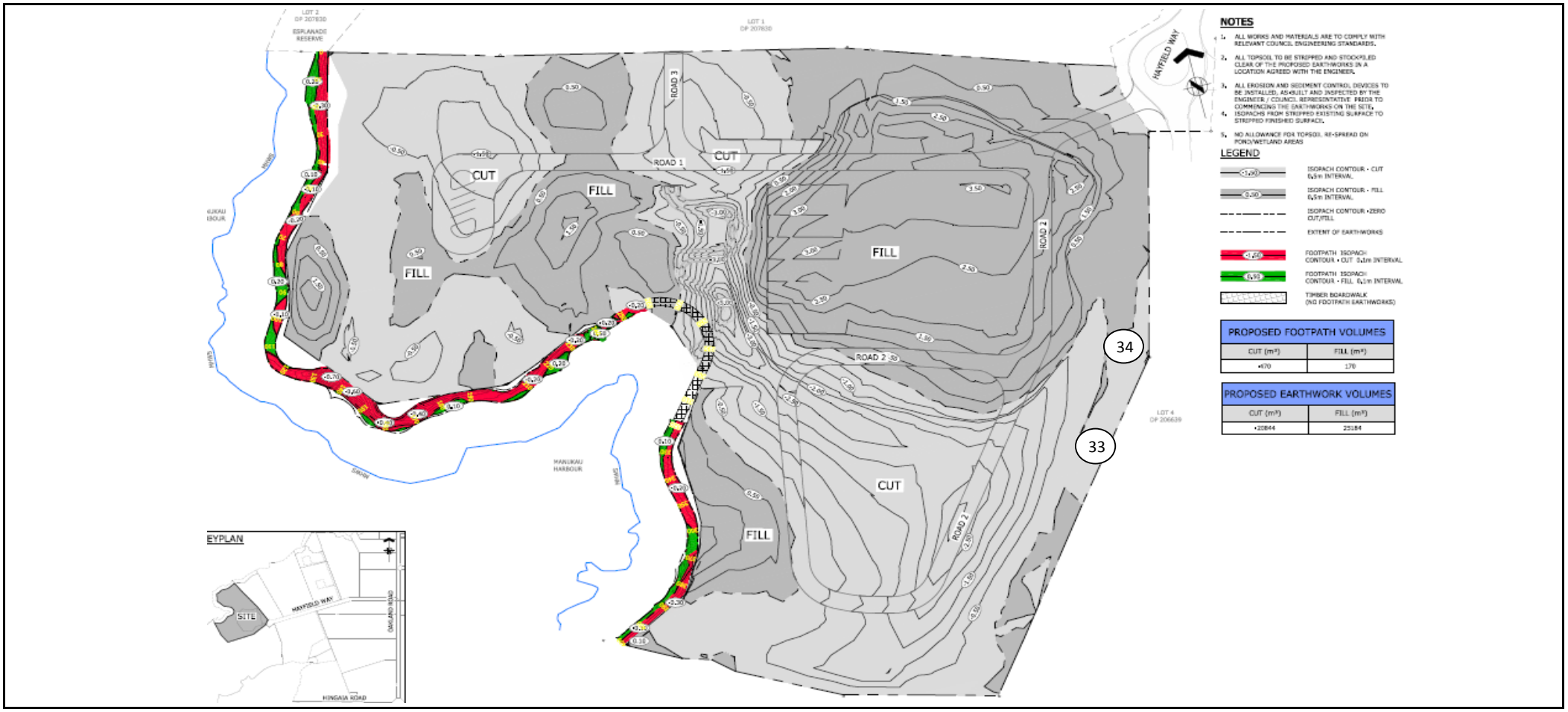
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01195
Page:	2 of 2

Project: J00044- 55 Hayfield Way Hingaia

Location: General Fill

Tested by: AB

Date tested: 8/04/2016



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EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 19/04/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
12/04/2016	ETAM16W01249	AB	**35**	1.78	38.9	1.28	2.7	2.9	165	150	158	178	General fill	1769104	5894393	-	Silty CLAY	Subgrade level
12/04/2016	ETAM16W01249	AB	**36**	1.86	34.6	1.38	2.7	1.0	UTP	UTP	UTP	UTP	General fill	1769089	5894414	-	Silty CLAY	Subgrade level

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

NOT TO SCALE

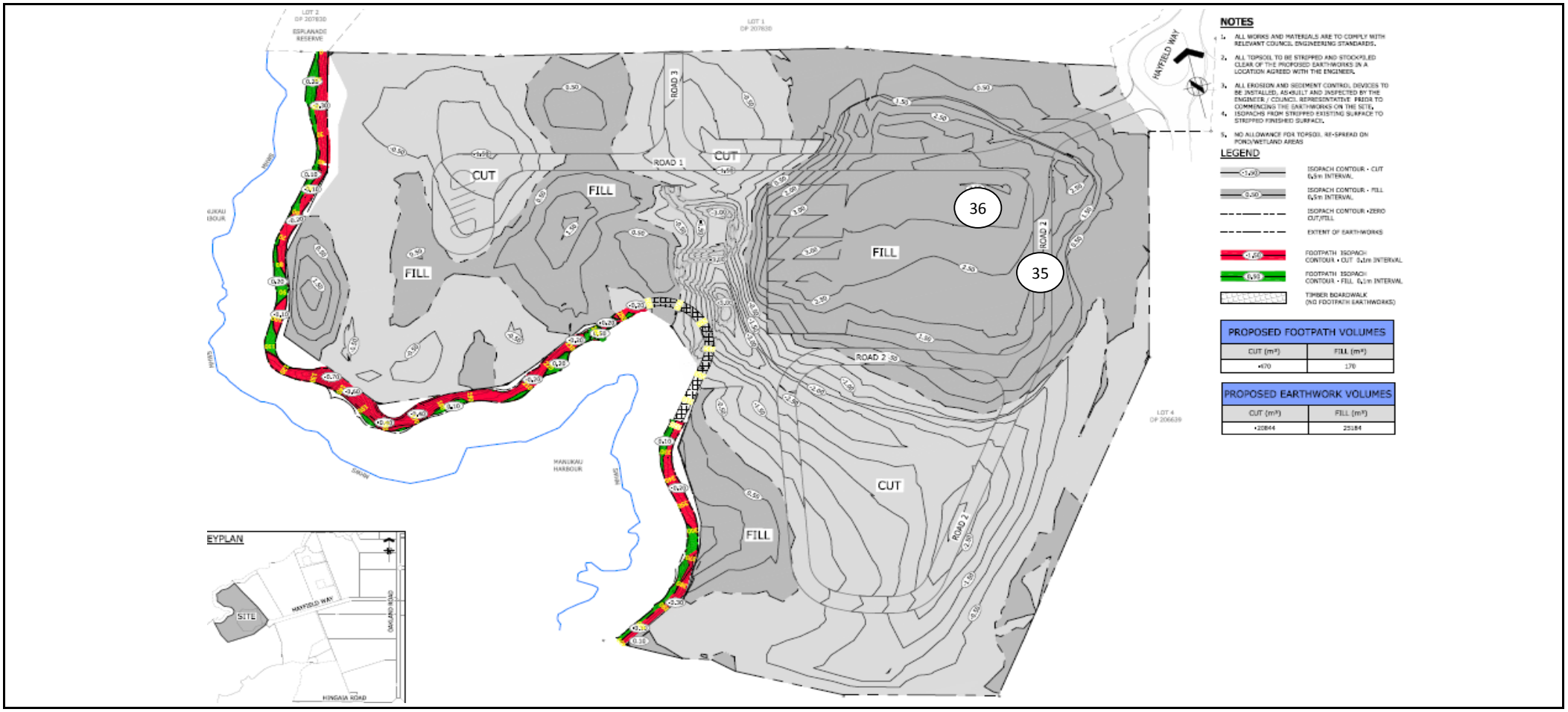
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01249
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: General fill

Tested by: AB

Date tested: 12/04/2016



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EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 28/04/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
19/04/2016	ETAM16W01297	AB	**37**	1.78	38.4	1.28	2.7	3.2	146	154	142	146	General fill	1769050	5894395	-	Silty CLAY	~2.0m to subgrade
19/04/2016	ETAM16W01297	AB	**38**	1.86	38.6	1.34	2.7	0.0	183	150	142	165	General fill	1769041	5894395	-	Silty CLAY	~2.5m to subgrade
19/04/2016	ETAM16W01297	AB	**39**	1.83	36.6	1.34	2.7	1.6	146	142	142	158	General fill	1769049	5894412	-	Silty CLAY	~0.8m to subgrade
19/04/2016	ETAM16W01297	AB	**40**	1.84	37.2	1.34	2.7	0.7	146	154	142	150	General fill	1769063	5894421	-	Silty CLAY	~0.3m to subgrade
20/04/2016	ETAM16W01344	AB	**41**	1.77	32.1	1.34	2.7	7.4	183	196	UTP	UTP	General fill	1769047	5894389	-	Silty CLAY	0.9m to subgrade
20/04/2016	ETAM16W01344	AB	**42**	1.76	33.8	1.32	2.7	6.7	154	158	170	150	General fill	1769057	5894392	-	Silty CLAY	0.3m to subgrade
21/04/2016	ETAM16W01393	AB	**43**	1.79	34.4	1.33	2.7	5.0	150	158	146	158	Undercut backfill	1769112	5894296	-	Clay	~2.0m below FL
21/04/2016	ETAM16W01393	AB	**44**	1.83	27.7	1.44	2.7	7.1	158	165	146	142	Undercut backfill	1769083	5894261	-	Clay	~2.0m below FL
22/04/2016	ETAM16W01394	AB	**45**	1.82	34.2	1.35	2.7	3.6	200	200	196	150	Undercut backfill	1769109	5894300	-	Clay	~0.5m to subgrade
22/04/2016	ETAM16W01394	AB	**46**	1.82	38.7	1.31	2.7	0.7	156	150	142	150	Undercut backfill	1769068	5894242	-	Clay	~1.0m to subgrade

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

NOT TO SCALE

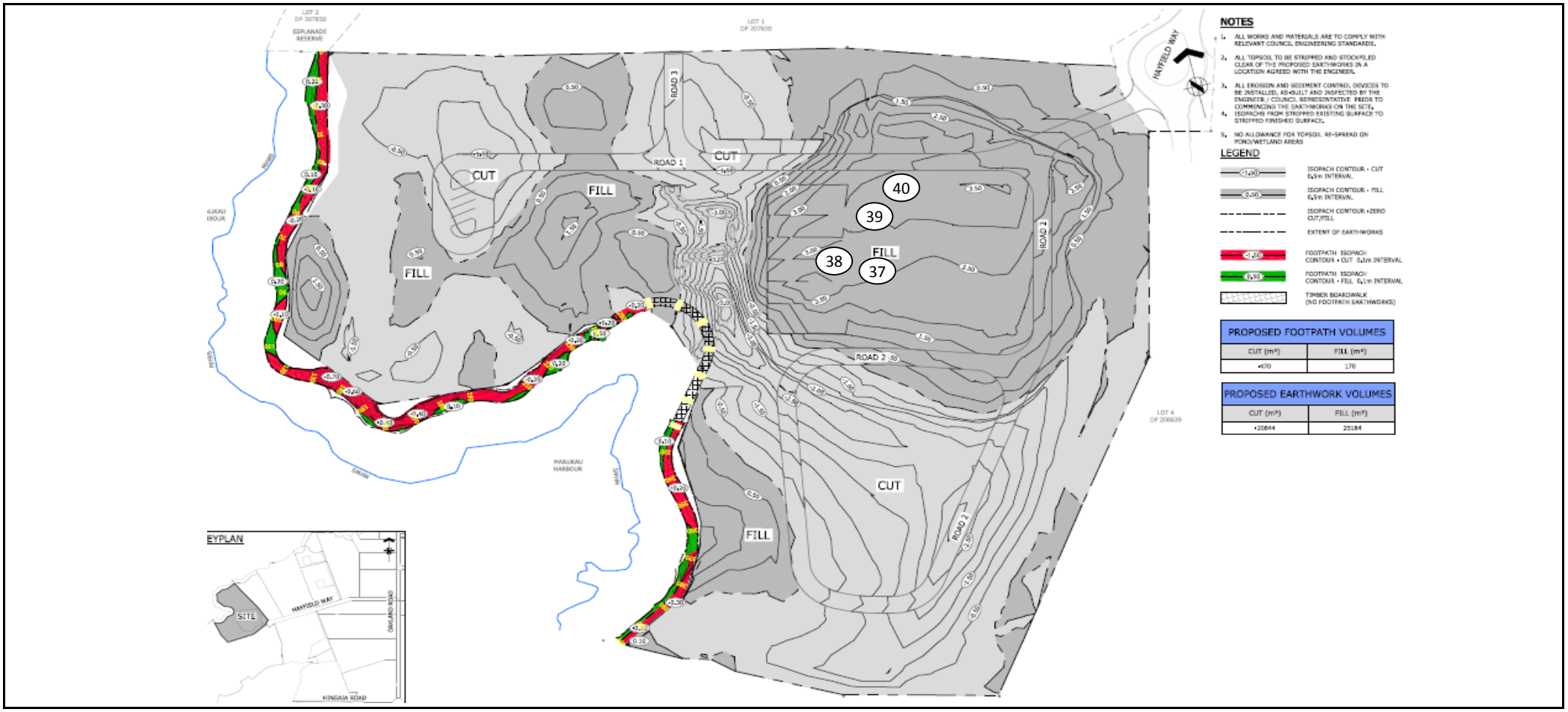
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01297
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: General fill

Tested by: AB

Date tested: 19/04/2016



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SITE PLAN

NOT TO SCALE

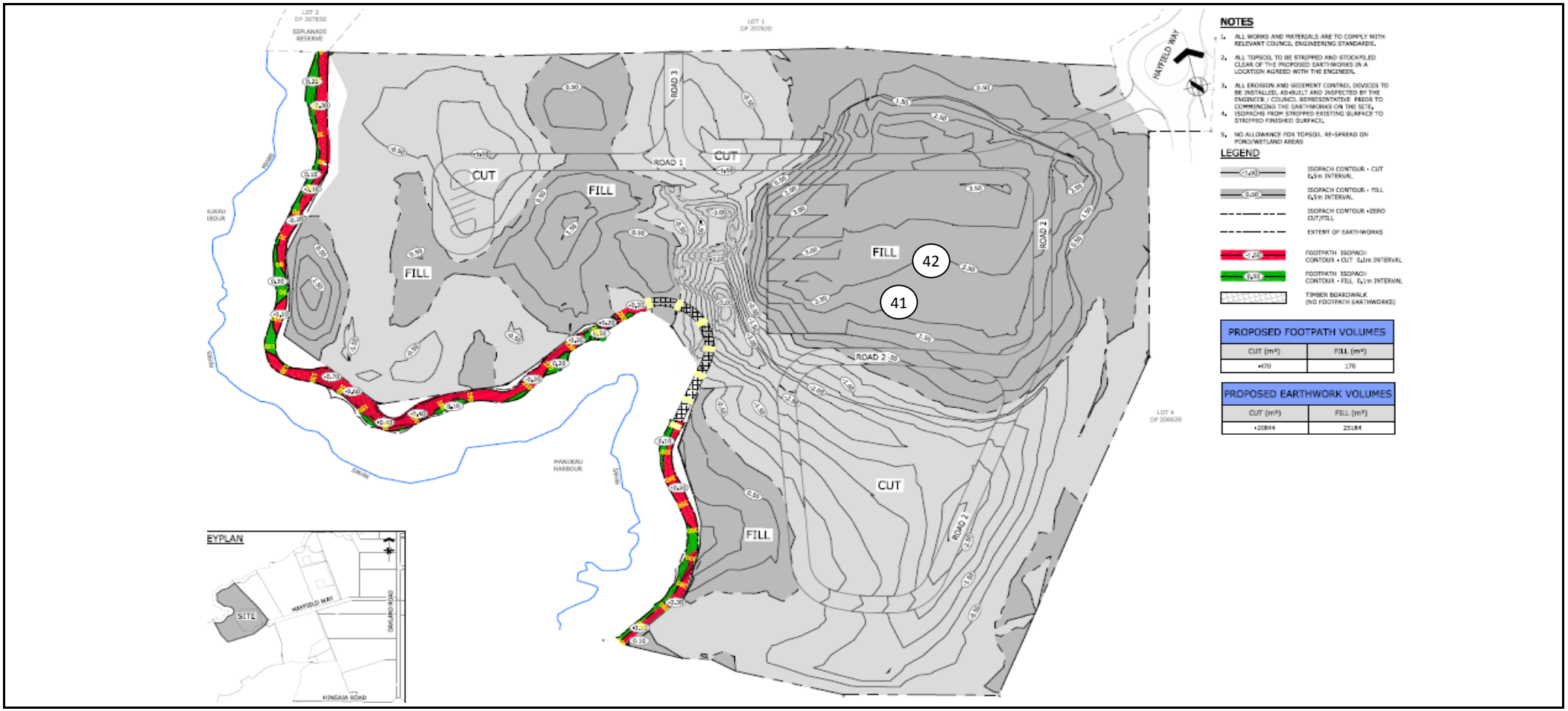
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01344
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: General fill

Tested by: AB

Date tested: 20/04/2016



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SITE PLAN

NOT TO SCALE

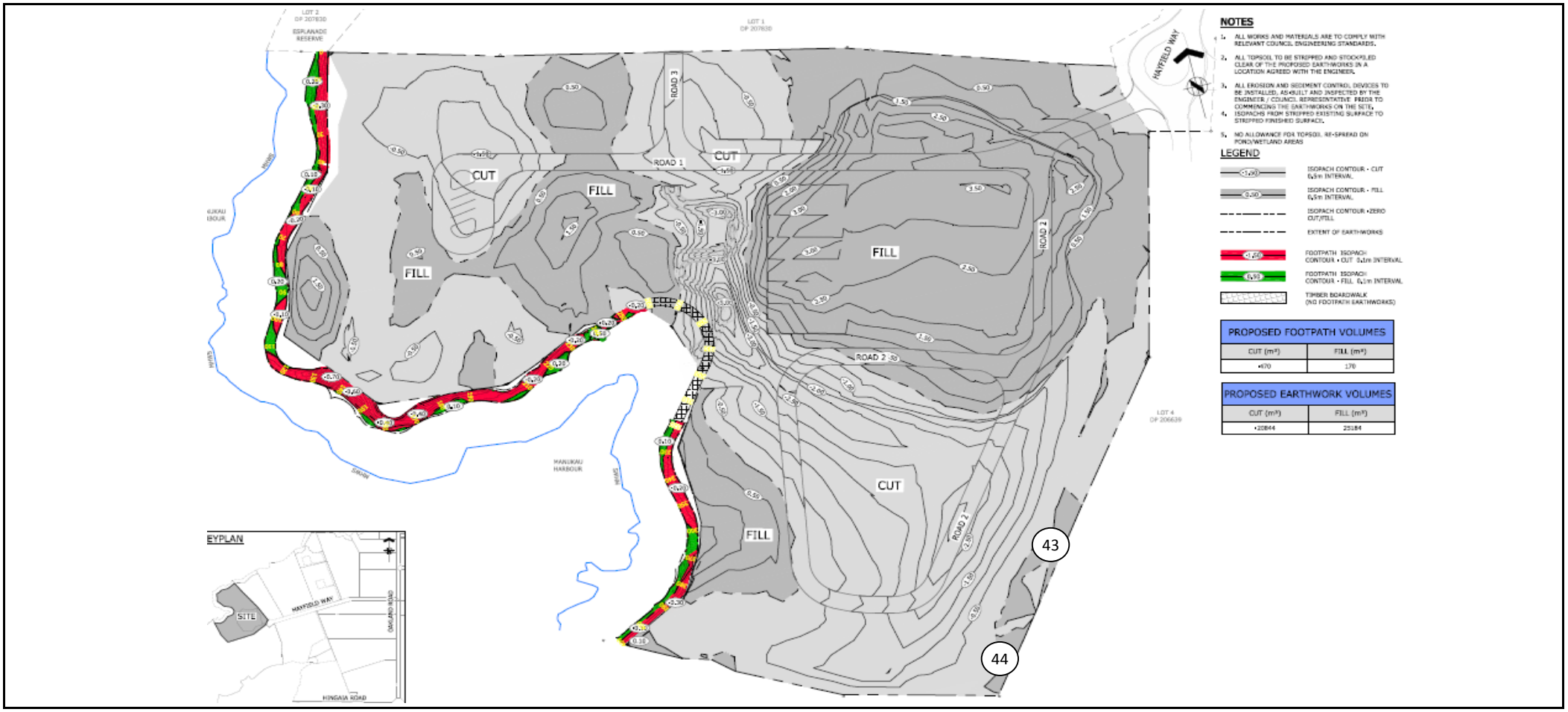
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01393
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: Undercut Backfill

Tested by: AB

Date tested: 21/04/2016



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SITE PLAN

NOT TO SCALE

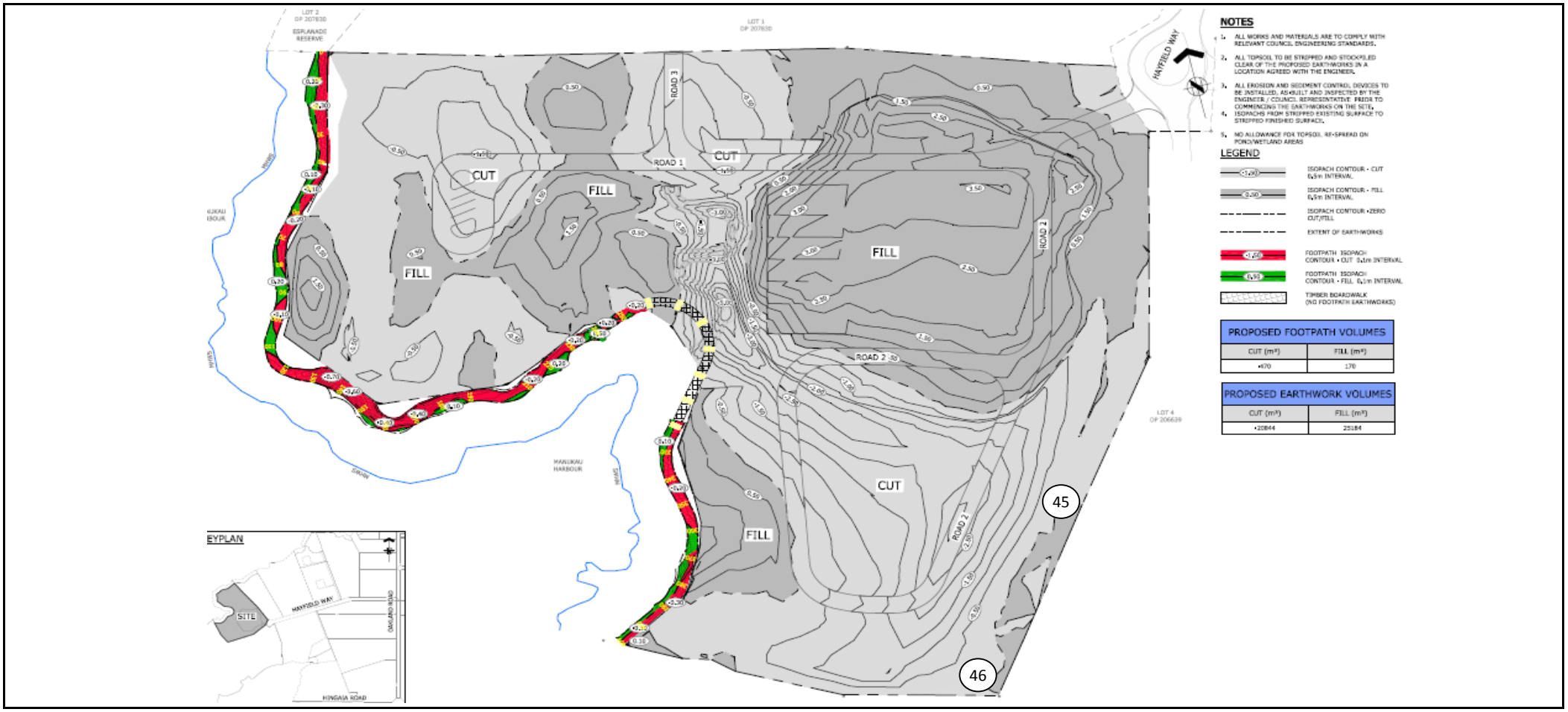
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01394
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: Undercut Backfill

Tested by: AB

Date tested: 22/04/2016



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EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 30/04/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
27/04/2016	ETAM16W01444	AB	**47**	1.77	43.9	1.23	2.7	0.3	150	154	146	150	Undercut backfill	1769105	5894296	-	Clay	at Subgrade
27/04/2016	ETAM16W01444	AB	**48**	1.78	38.5	1.28	2.7	3.1	142	150	142	150	Undercut backfill	1769062	5894249	-	Clay	at Subgrade

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

NOT TO SCALE

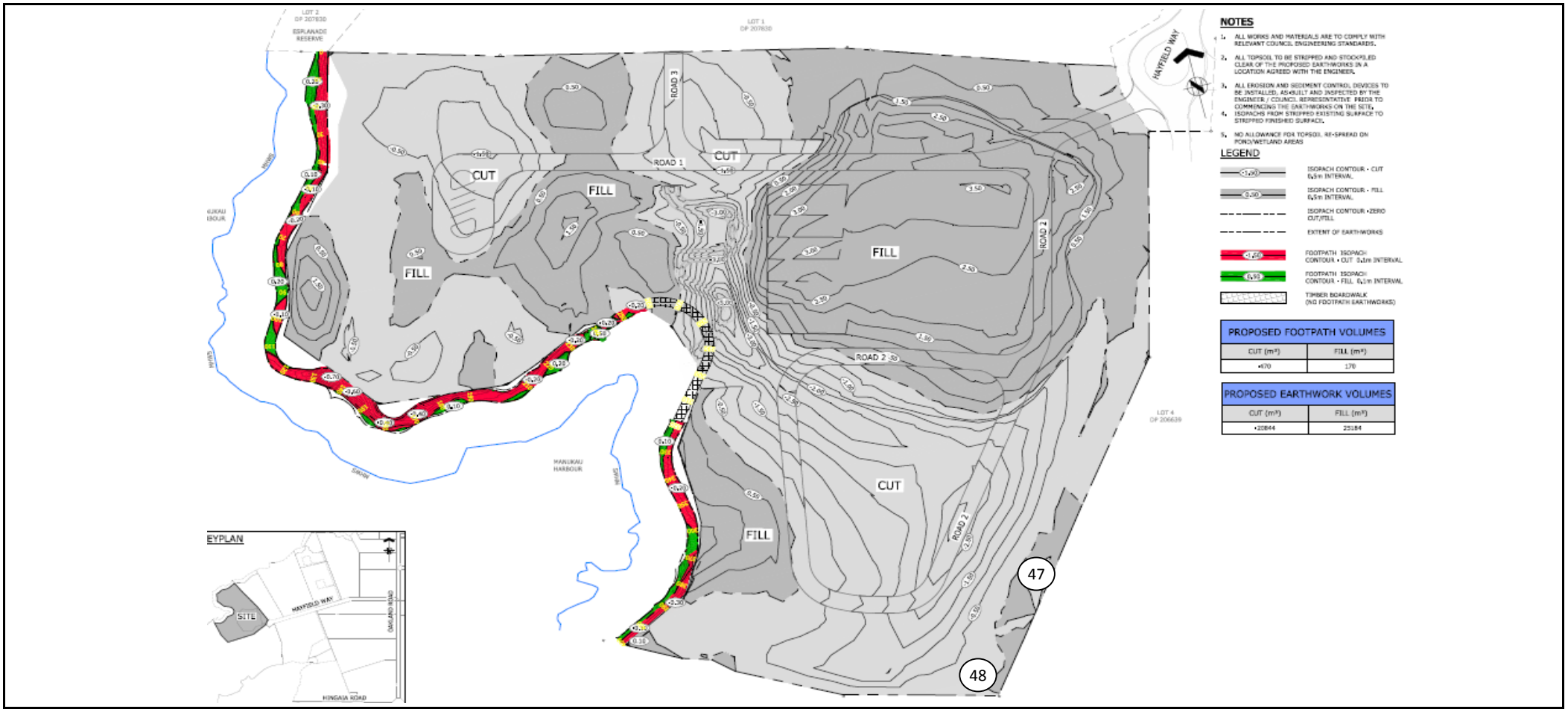
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01444
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: Undercut Backfill

Tested by: AB

Date tested: 27/04/2016



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EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 11/05/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
2/05/2016	ETAM16W01540	AB	**49**	1.80	36.4	1.32	2.7	3.2	150	154	142	146	Pond backfill	1769007	5894328	-	Clay	~1.0m to subgrade
2/05/2016	ETAM16W01540	AB	**50**	1.79	35.3	1.32	2.7	4.3	150	158	170	178	Pond backfill	1769002	5894307	-	Clay	~1.0m to subgrade
4/05/2016	ETAM16W01582	AB	**51**	1.75	37.6	1.27	2.7	5.1	142	150	146	174	Pond backfill	1769010	5894329	-	Silty CLAY	0.5m to subgrade
4/05/2016	ETAM16W01582	AB	**52**	1.78	38.8	1.28	2.7	3.0	142	170	196	146	Pond backfill	1769005	5894311	-	Silty CLAY	0.5m to subgrade

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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144A Cryers Road, East Tamaki, Auckland 2103, New Zealand
PO Box 58 877, Botany, Manukau 2163, New Zealand
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SITE PLAN

NOT TO SCALE

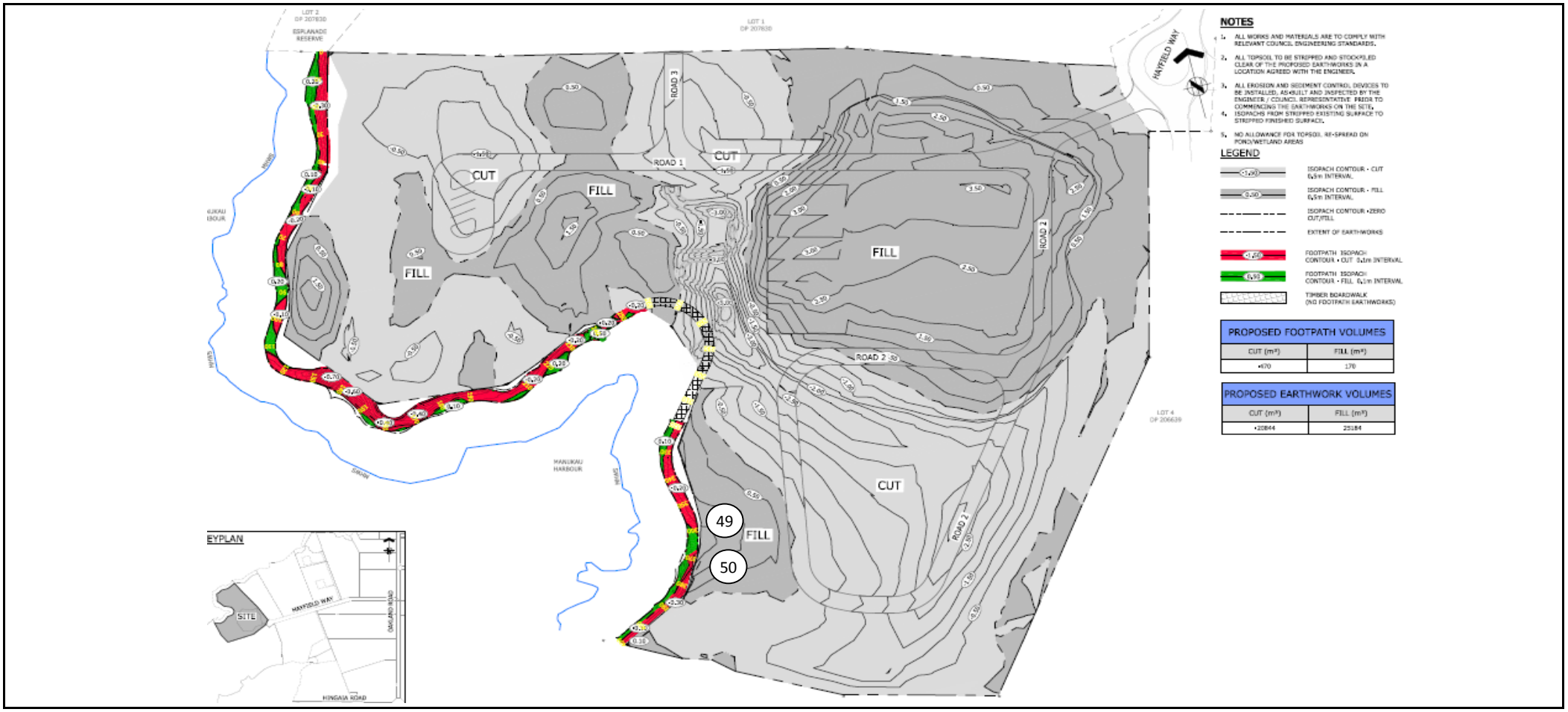
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01540
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: Pond Backfill

Tested by: AB

Date tested: 2/05/2016



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PO Box 58 877, Botany, Manukau 2163, New Zealand
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SITE PLAN

NOT TO SCALE

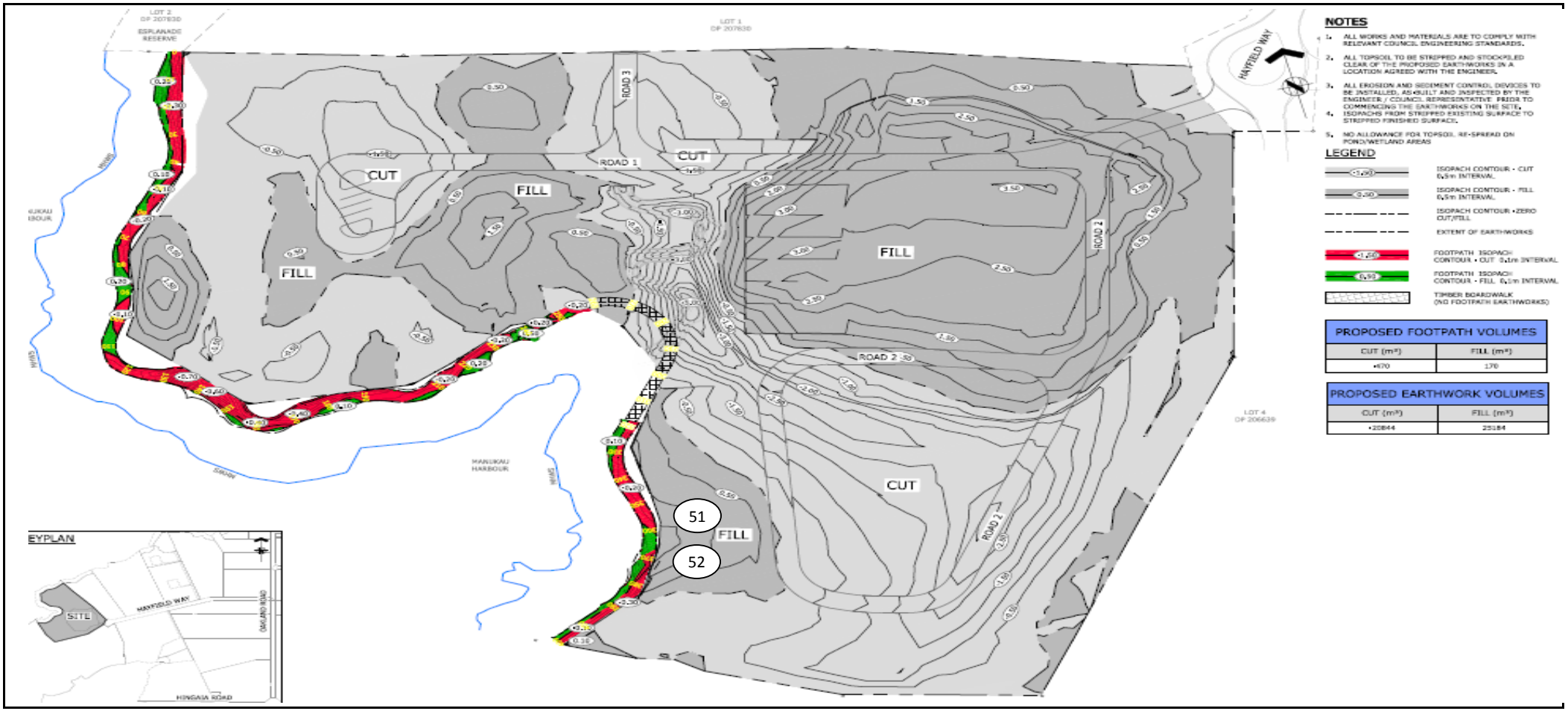
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01582
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: Pond backfill

Tested by: AB and FP

Date tested: 4/05/2016



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PO Box 58 877, Botany, Manukau 2163, New Zealand
t+64 9 272 3375 f+64 9 272 3378 www.coffey.com

EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: Shane Lander

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory: Eric Paton (Laboratory Manager)

Approved Signatory Signature: E. Paton

Date of Issue: 17/05/2016

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Material Tested	Comments
9/05/2016	ETAM16W01645	AB	**53**	1.71	39.6	1.22	2.7	6.3	158	183	146	150	Pond backfill	1769004	5894317	-	Clay	0.2m to subgrade. Lime stabilised
9/05/2016	ETAM16W01645	AB	**54**	1.74	37.9	1.26	2.7	5.4	216+	216+	216+	216+	Pond backfill	1768996	5894318	-	Clay	~1.4m to subgrade. Lime stabilised
9/05/2016	ETAM16W01645	AB	**55**	1.72	38.8	1.24	2.7	6.1	183	205	196	183	Pipeline backfill	1768995	5894266	-	Silty CLAY	Subgrade level
9/05/2016	ETAM16W01646	AB	**56**	1.77	39.8	1.26	2.7	2.9	200	165	216+	UTP	Pond backfill	1768995	5894306	-	Clay	0.5m to subgrade. Lime stabilised
10/05/2016	ETAM16W01654	AB	**57**	1.80	35.0	1.33	2.7	3.9	205	UTP	UTP	UTP	Pond backfill	1768998	5894330	-	Silty CLAY	Subgrade level. Lime stabilised
10/05/2016	ETAM16W01654	AB	**58**	1.76	39.5	1.26	2.7	3.3	174	158	162	170	Pond backfill	1768996	5894312	-	Silty CLAY	Subgrade level. Lime stabilised

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

NOT TO SCALE

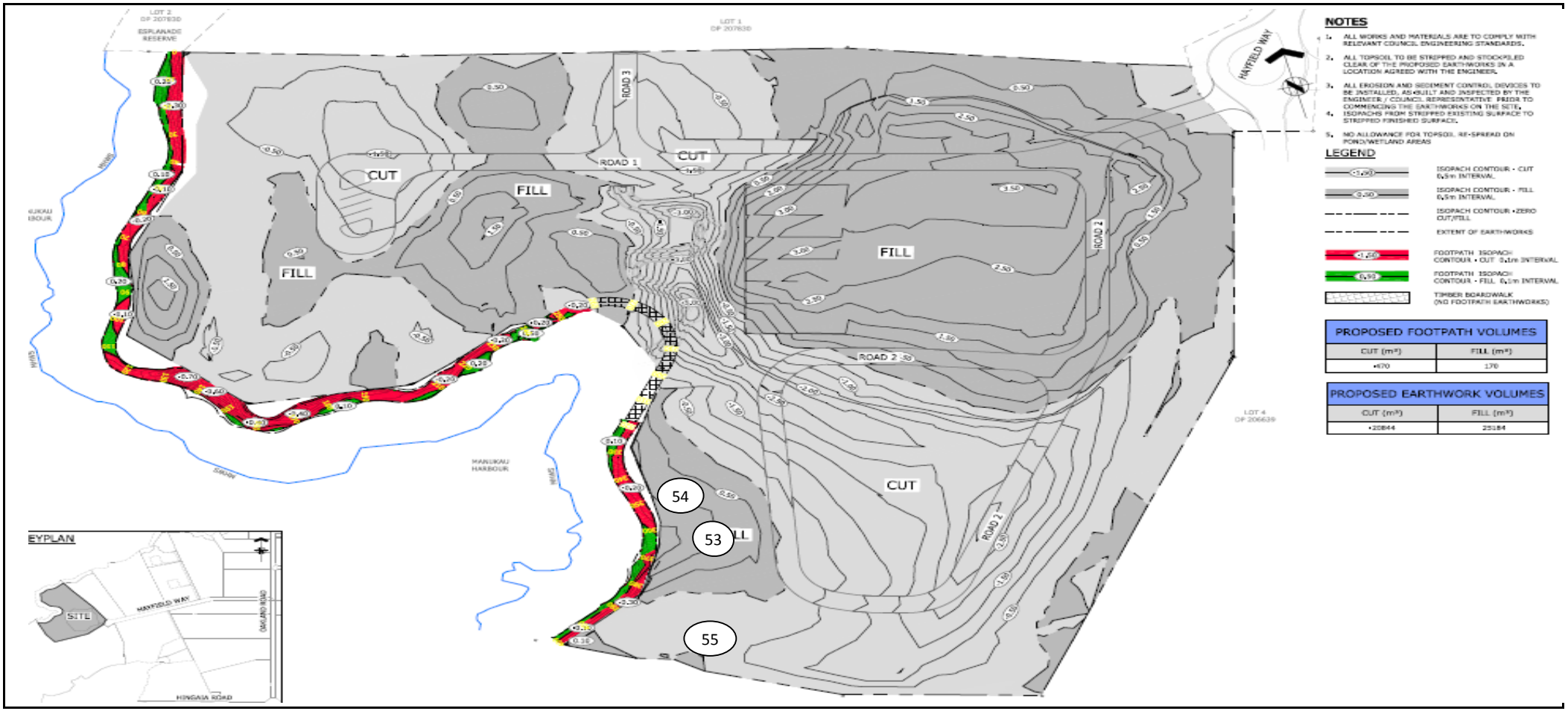
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01645
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: Pond and pipeline backfill

Tested by: AB

Date tested: 9/05/2016



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SITE PLAN

NOT TO SCALE

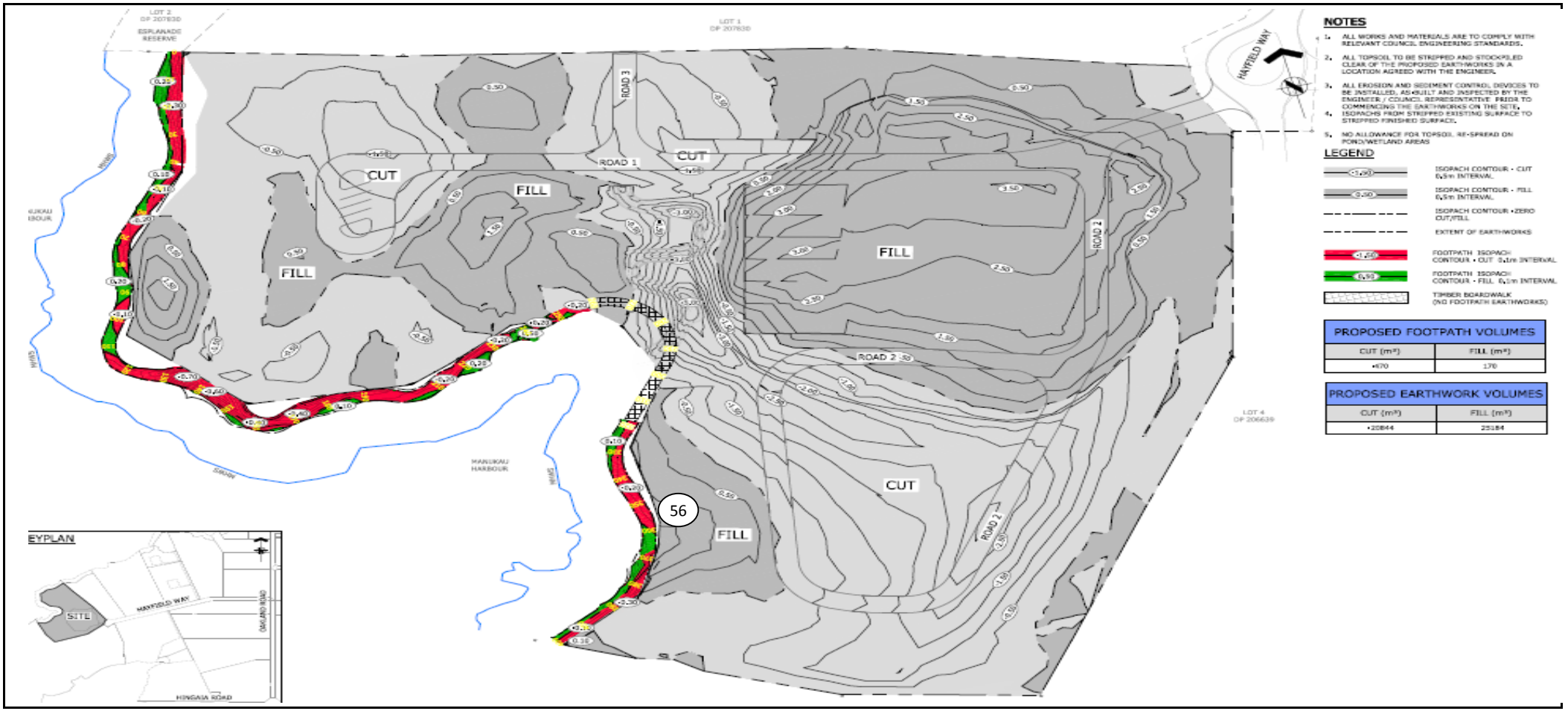
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01646
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: Pond backfill

Tested by: AB

Date tested: 9/05/2016



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SITE PLAN

NOT TO SCALE

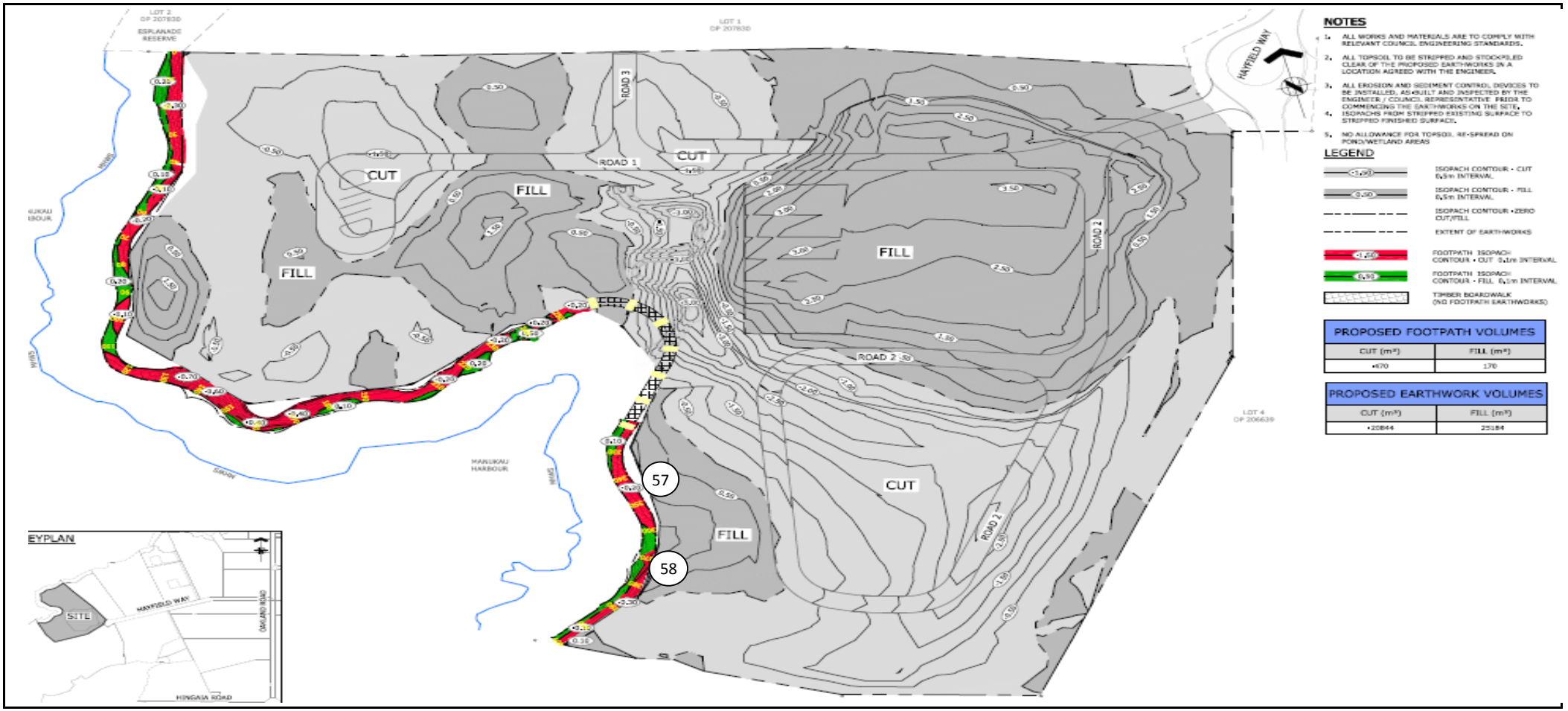
Project No:	**GENZETAM01450AA**
Work Order No:	ETAM16W01654
Page:	2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: Pond backfill

Tested by: AB

Date tested: 10/05/2016



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EARTHWORKS FILL REPORT

Test Methods : Shear Strength (using field Shear vane in accordance with NZGS 2001):Nuclear Densometer Testing (in accordance with NZS 4407:1991 Test 4.2.1): Water Content Testing (in accordance with NZS 4402:1986 Test 2.1): Density Calculations (in accordance with NZS 4402:1986 Tests 4.1.1.5(b))

Project No: GENZETAM01450AA

Page: 1 of 2

Client: Lander Geotechnical Consultants Limited
PO Box 97 385,
Manukau 2241

Principal: Chris Edwards

c.c. to: -

Project: J00044 - 55 Hayfield Way Hingaia

Project Location: 55 Hayfield Way Hingaia

IANZ ACCREDITED LABORATORY

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

Approved Signatory:

Approved Signatory Signature: Cesar Pura

Date of Issue: 30/01/2018

IANZ Accredited Laboratory Number:105

Date	Work Order :	Tested By	Test No.	Wet Density (t/m^3)	Oven Water Content (%)	Dry Density (t/m^3)	Solid Density (t/m^3)	Air Voids %	Field Shear Strength in kPa (UTP = Unable to penetrate)				Test Location	Easting	Northing	RL (m)	Probe Test Depth (mm) FL = Finished level	Material Tested	Comments
25/01/2018	ETAM18W00237	BS	**59**	1.60	46.2	1.09	2.7	9.0	208	208	213	213	Footpath	1768975	5894300	-	150	Silty CLAY	At Subgrade Level
25/01/2018	ETAM18W00237	BS	**60**	1.85	32.3	1.40	2.7	3.2	220+	220+	220+	220+	Footpath	1768983	5894316	-	150	Silty CLAY	At Subgrade Level
25/01/2018	ETAM18W00237	BS	**61**	1.62	43.5	1.13	2.7	9.0	159	159	166	166	Reserve	1769014	5894390	-	150	Silty CLAY	At Subgrade Level
25/01/2018	ETAM18W00237	BS	**62**	1.84	48.5	1.24	2.7	0.0	220+	220+	220+	220+	Pit 4	1768919	5894495	-	150	Silty CLAY	At Subgrade Level
25/01/2018	ETAM18W00237	BS	**63**	1.48	59.8	0.93	2.7	10.1	220+	220+	220+	220+	Pit 5	1768933	5894391	-	150	Silty CLAY	At Subgrade Level
25/01/2018	ETAM18W00237	BS	**64**	1.72	38.6	1.24	2.7	6.2	159	159	152	152	Pit 6	1768971	5894408	-	150	Silty CLAY	At Subgrade Level

(Please note that Air Void calculations are not IANZ endorsed as part of this report)

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SITE PLAN

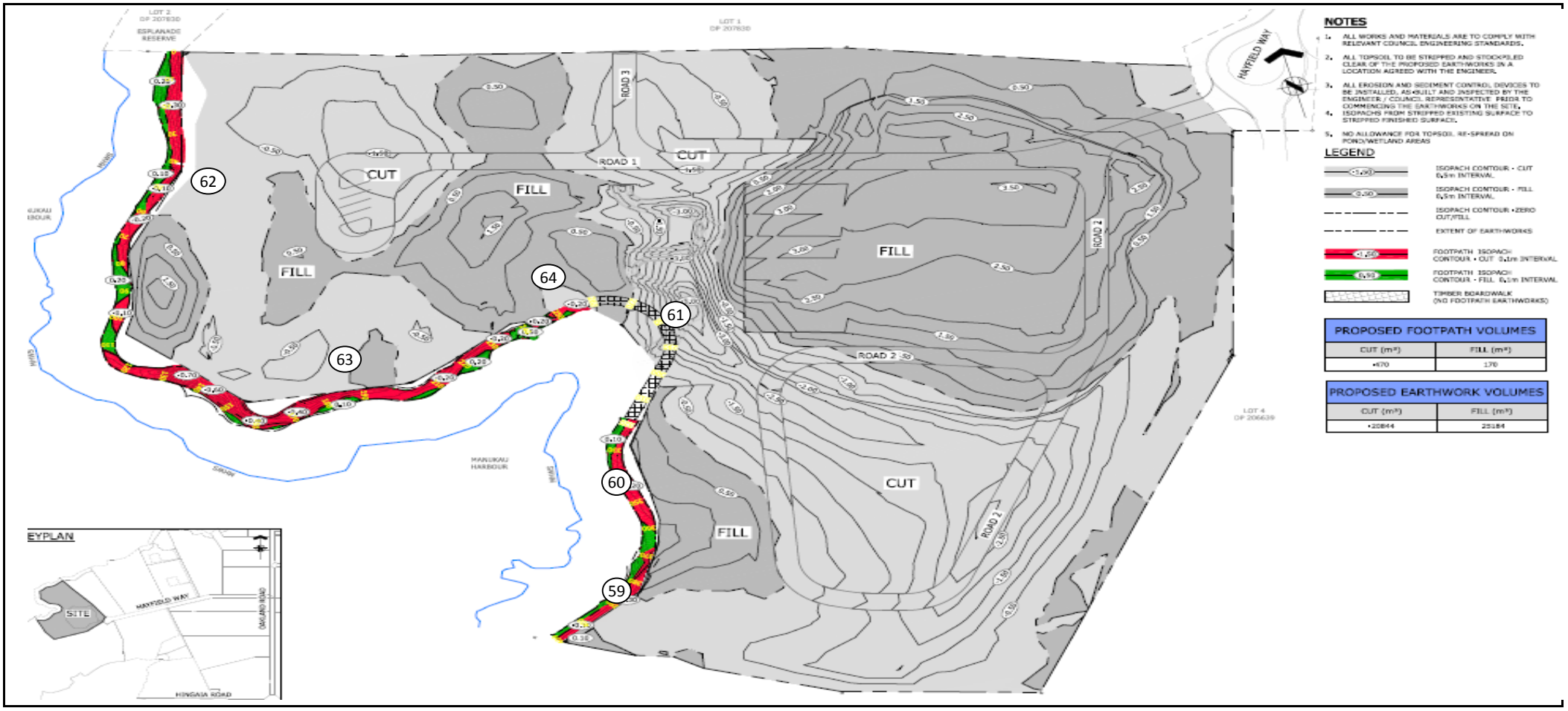
NOT TO SCALE

Project No: GENZETAM01450AA
Work Order No: ETAM18W00237
Page: 2 of 2

Project: J00044 - 55 Hayfield Way Hingaia

Location: As below

Tested by: BS
Date tested: 25/01/2018



Appendix 3

Classification Test Data

East Tamaki Laboratory

Coffey Services (NZ) Limited

144A Cryers Road, East Tamaki NZ 2013
PO Box 58877, Botany, Manukau NZ 2163
Phone: +64 9 272 3375
Fax: +64 9 272 3378

Report No: CLAS:ETAM18S-04585
Issue No:1
This report replaces all previous issues of Report No. CLAS:ETAM18S-04585

Atterberg Classification Test Report

Client: Lander Geotechnical Consultants Limited
PO Box 97 385 Manukau
Auckland 2241

Principal: -
Project No.: GENZETAM01450AA
Project Name: J00044 - 55 Hayfield Way, Hingaia

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

Approved Signatory: James McKelvey
Senior Technician
IANZ Accredited Laboratory Number: 105
Date of Issue: 01/05/2018

Sample Details

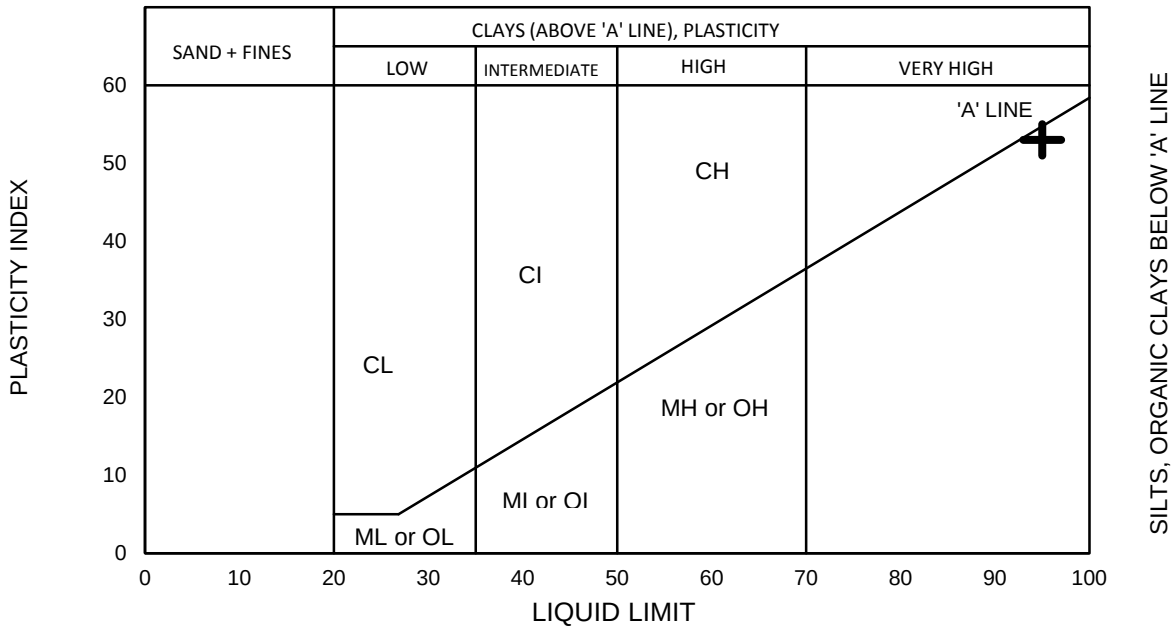
Sample Number: ETAM18S-04585
Project Location: 55 Hayfield Way, Hingaia
Sample Location: HA2, 0.5 - 1.0 m
Laboratory test Procedures: *Atterberg Limits [NZS 4402 Test 2.2, 2.3, 2.4, 2.6], Moisture Content [NZS 4402:1986 Test 2.1]*
Sampling Method: *Unknown (Not IANZ Endorsed)*

Date Sampled: 17/04/2018
Date Tested: 24/04/2018
Tested by: Caminio Talaboc

Laboratory Data

Liquid Limit	**95**	**Sample History:**	Natural state
Plastic Limit:	**42**	**Fraction Tested:**	Passing 425µm sieve
Plasticity Index:	**53**	**Material Description:**	Disturbed Soil
Linear Shrinkage:	**21**		
#Liquidity Index (w-PL)/PI	**0.1**	**Moisture Content (%)**	45.0

CASAGRANDE PLASTICITY CHART



Comments:

Form Number: R027A Issue Date: 19/09/2017

East Tamaki Laboratory

Coffey Services (NZ) Limited

144A Cryers Road, East Tamaki NZ 2013
PO Box 58877, Botany, Manukau NZ 2163
Phone: +64 9 272 3375
Fax: +64 9 272 3378

Report No: CLAS:ETAM18S-04586
Issue No:1
This report replaces all previous issues of Report No. CLAS:ETAM18S-04586

Atterberg Classification Test Report

Client: Lander Geotechnical Consultants Limited
PO Box 97 385 Manukau
Auckland 2241

Principal: -
Project No.: GENZETAM01450AA
Project Name: J00044 - 55 Hayfield Way, Hingaia

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

Approved Signatory: James McKelvey
Senior Technician
IANZ Accredited Laboratory Number: 105
Date of Issue: 01/05/2018

Sample Details

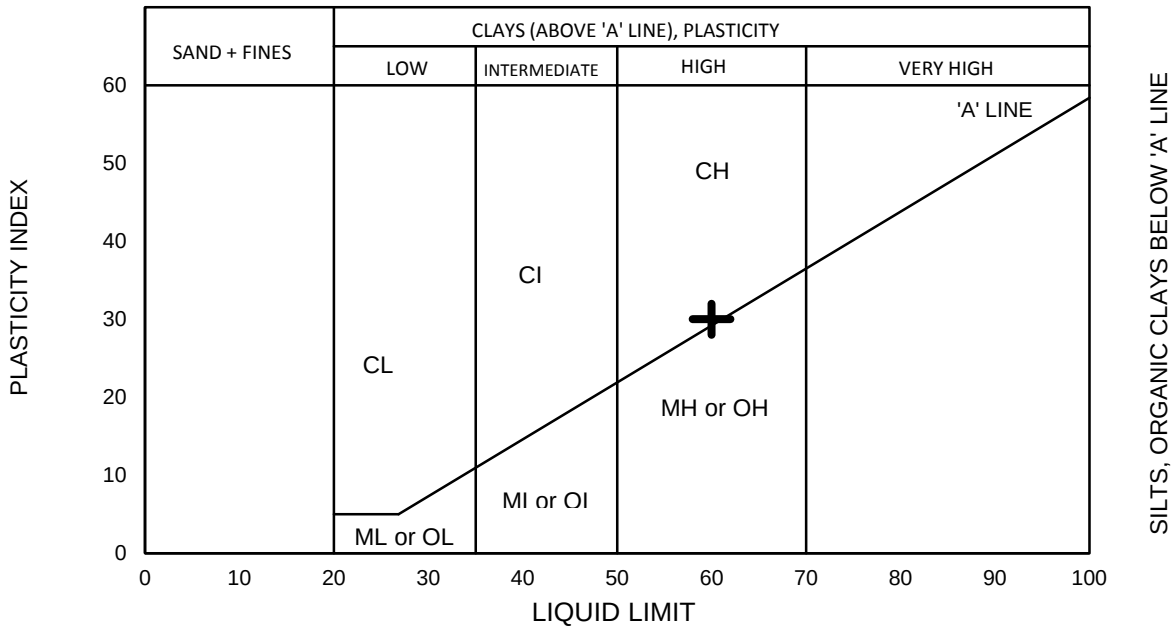
Sample Number: ETAM18S-04586
Project Location: 55 Hayfield Way, Hingaia
Sample Location: HA5, 0.5 - 1.0 m
Laboratory test Procedures: *Atterberg Limits [NZS 4402 Test 2.2, 2.3, 2.4, 2.6], Moisture Content [NZS 4402:1986 Test 2.1]*
Sampling Method: *Unknown (Not IANZ Endorsed)*

Date Sampled: 17/04/2018
Date Tested: 28/04/2018
Tested by: James McKelvey

Laboratory Data

Liquid Limit	**60**	**Sample History:**	Natural state
Plastic Limit:	**30**	**Fraction Tested:**	Passing 425µm sieve
Plasticity Index:	**30**	**Material Description:**	Disturbed Soil
Linear Shrinkage:	**15**		
#Liquidity Index (w-PL)/PI	**0.2**	**Moisture Content (%)**	35.8

CASAGRANDE PLASTICITY CHART



Comments:

Form Number: R027A Issue Date: 19/09/2017

East Tamaki Laboratory

Coffey Services (NZ) Limited

144A Cryers Road, East Tamaki NZ 2013
PO Box 58877, Botany, Manukau NZ 2163
Phone: +64 9 272 3375
Fax: +64 9 272 3378

Report No: CLAS:ETAM18S-04587
Issue No:1
This report replaces all previous issues of Report No. CLAS:ETAM18S-04587

Atterberg Classification Test Report

Client:	Lander Geotechnical Consultants Limited PO Box 97 385 Manukau Auckland 2241
Principal:	-
Project No.:	GENZETAM01450AA
Project Name:	J00044 - 55 Hayfield Way, Hingaia

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

Approved Signatory: James McKelvey
Senior Technician
IANZ Accredited Laboratory Number: 105
Date of Issue: 01/05/2018

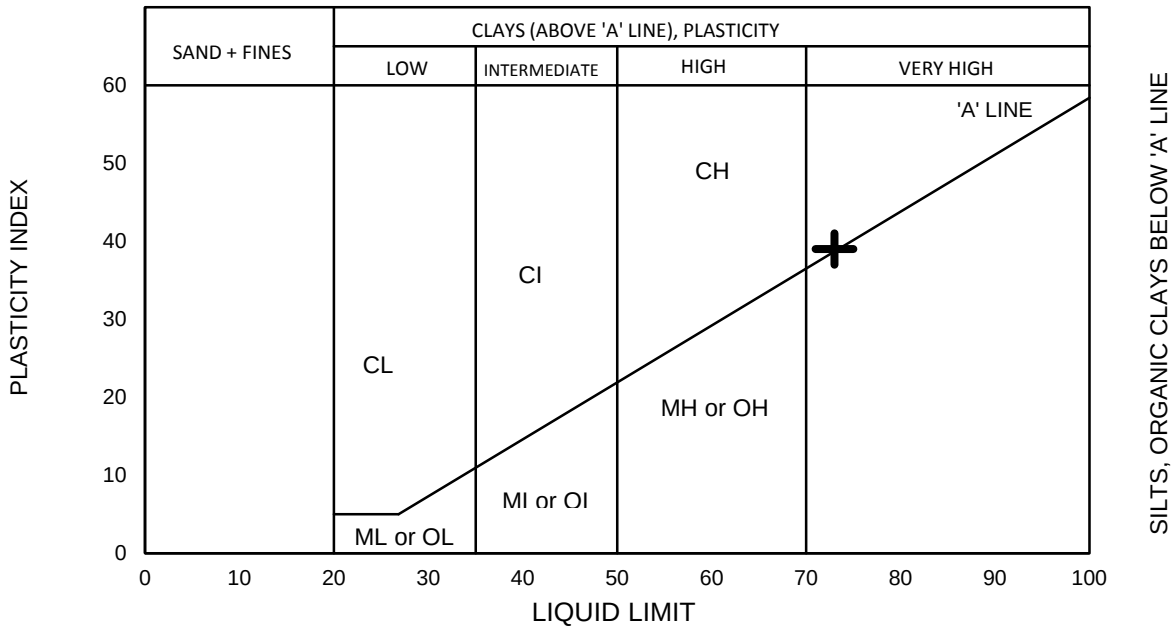
Sample Details

Sample Number:	ETAM18S-04587	**Date Sampled:**	17/04/2018
Project Location:	55 Hayfield Way, Hingaia	**Date Tested:**	26/04/2018
Sample Location:	HA7, 0.5 - 1.0 m	**Tested by:**	Fred Perese
Laboratory test Procedures:	*Atterberg Limits [NZS 4402 Test 2.2, 2.3, 2.4, 2.6], Moisture Content [NZS 4402:1986 Test 2.1]*		
Sampling Method:	*Unknown (Not IANZ Endorsed)*		

Laboratory Data

Liquid Limit	**73**	**Sample History:**	Natural state
Plastic Limit:	**34**	**Fraction Tested:**	Passing 425µm sieve
Plasticity Index:	**39**	**Material Description:**	Disturbed Soil
Linear Shrinkage:	**17**		
#Liquidity Index (w-PL)/PI	**0.1**	**Moisture Content (%)**	36.4

CASAGRANDE PLASTICITY CHART



Comments:

Form Number: R027A Issue Date: 19/09/2017

East Tamaki Laboratory

Coffey Services (NZ) Limited

144A Cryers Road, East Tamaki NZ 2013
PO Box 58877, Botany, Manukau NZ 2163
Phone: +64 9 272 3375
Fax: +64 9 272 3378

Report No: CLAS:ETAM18S-04588
Issue No:1
This report replaces all previous issues of Report No. CLAS:ETAM18S-04588

Atterberg Classification Test Report

Client:	Lander Geotechnical Consultants Limited PO Box 97 385 Manukau Auckland 2241
Principal:	-
Project No.:	GENZETAM01450AA
Project Name:	J00044 - 55 Hayfield Way, Hingaia

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

Approved Signatory: James McKelvey
Senior Technician
IANZ Accredited Laboratory Number: 105
Date of Issue: 01/05/2018

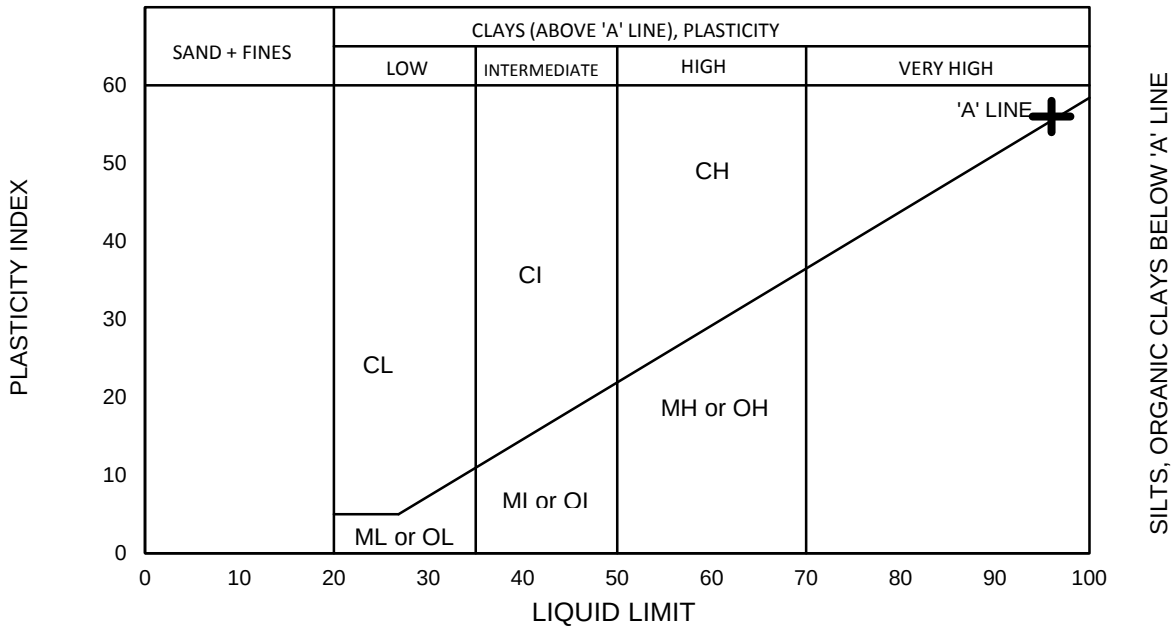
Sample Details

Sample Number:	ETAM18S-04588	**Date Sampled:**	17/04/2018
Project Location:	55 Hayfield Way, Hingaia	**Date Tested:**	27/04/2018
Sample Location:	HA9, 0.5 - 1.0 m	**Tested by:**	Fred Perese
Laboratory test Procedures:	*Atterberg Limits [NZS 4402 Test 2.2, 2.3, 2.4, 2.6], Moisture Content [NZS 4402:1986 Test 2.1]*		
Sampling Method:	*Unknown (Not IANZ Endorsed)*		

Laboratory Data

Liquid Limit	**96**	**Sample History:**	Natural state
Plastic Limit:	**40**	**Fraction Tested:**	Passing 425µm sieve
Plasticity Index:	**56**	**Material Description:**	Disturbed Soil
Linear Shrinkage:	**23**		
#Liquidity Index (w-PL)/PI	**0.0**	**Moisture Content (%)**	40.9

CASAGRANDE PLASTICITY CHART



Comments:

Form Number: R027A Issue Date: 19/09/2017

Appendix 4

Producer Statement – Construction Review (PS4)

Producer statement construction review (PS4)

Auckland Council
Te Kaunihera o Tāmaki Makaurau

TO BE COMPLETED BY THE DESIGN PROFESSIONAL WHO HAS BEEN ENGAGED TO OBSERVE CONSTRUCTION

Author name:	Shane Lander	Author number:	1682
Author company:	Lander Geotechnical Consultants Limited		
Building consent Nº:	BCO10260503		
Site address:	55 Hayfield Way, Hingaia		
Legal description:			
Engaged by:	Karaka Waters (2016) Limited	*(Owner's name)*	

I confirm that I have sighted the above building consent and read the attached conditions of consent. Further, based upon my observations and information supplied by the contractor during the course of construction I believe on reasonable grounds that the building work has been completed in accordance with the building consent and consented plans.

NB *Engineer must leave inspection records on site following inspection*

Description of building work observed: Ground conditions within pile hole excavations for timber boardwalk (within Lot 500)

NZBC clauses: (select as applicable)

NB: all statements must include B2

B1 ✓	B2	C1	C2	C3	C4	C5	C6	D1	D2	E1	E2	E3
F1	F2	F3	F4	F5	F6	F7	F8	G1	G2	G3	G4	G5
G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	H1		

I understand that this producer statement, if accepted, will be relied upon by Council for the purposes of establishing compliance with the above building consent.

Signature:		Date:	31/5/18
Address:	Level 3, 3 Osterley Way, Manukau	Postcode:	2241
Business:	09 262 1528	Fax:	
Mobile:	027 488 6882	Email:	shane@landergeotechnical.co.nz

COUNCIL USE ONLY

☐ Central ☐ Henderson ☐ Manukau ☐ Orewa ☐ Papakura ☐ Pukekohe ☐ Takapuna

Received by:		Register checked:	YES ☐	NO ☐
Signature:		Registration current:	YES ☐	NO ☐
Producer statement accepted as establishing compliance with the consented plans:			YES ☐	NO ☐

Producer statements are accepted solely at Auckland Council's discretion; please refer to the Producer Statement Policy which can be found on Councils website for further details http://www.aucklandcouncil.govt.nz/EN/ratesbuildingproperty/consents/Consent%20documents/ac2301producerstatementpolicy.pdf