

7 August 2024

The Consents Officer
Tasman District Council
Private Bag
Richmond 7050

Earthworks and Building Site Certification Report

La Mer View Subdivision– Stage 2
Redwood Valley,
Tasman

RM220752

Introduction

Swanney Geotechnical and Civil Engineering have been engaged by Merc Developments Ltd to monitor the earthworks and prepare the building site and fill certifications for the 30 lot subdivision on La Mer View, Redwood Valley, Tasman. The 8 lots (lots 5 – 8, 15 & 22 - 24) and associated roading and stormwater services within Stage 2 of the subdivision are now complete.

Stage 2 of the subdivision comprises 250m section of La Mer View road, individual accessways and building platforms on each of the eight new lots and stormwater controls.

The following report and attached certification have been prepared to address the site certification requirements (condition 9) of the Subdivision Consent RM220752.

Site Development Earthworks

The site development earthworks comprised cut-to-fill earthworks to form the roading, and the building platforms and accessways.

Each of the new lots have a specific Building Location Area (BLA) containing a flat building platform. The platforms were formed via cut to fill earthworks, with the extent of cut and fill varying between lots depending on their location on the local topography. Topsoil was re-spread across building platform areas at a nominal depth of 300mm. Topsoil depths over the batters will vary.

The earthworks were carried out by Merc Developments Ltd using excavators, bulldozers, motor scrapers and a self-propelled sheepsfoot roller. All earthworks were inspected after strip-out and during the filling operations by Swanney Geotechnical and Civil Engineering. Nuclear densometer (NDM) testing by Civil Engineering Laboratory Services Ltd were carried out at regular intervals during construction of the fills. The

certified fills attained the design density of 95% MDD. Final NDM test results for building platforms involving certified fill are appended. Roding was tested via Benkleman Beam.

All bulk fill within the BLAs on Lots 5 – 8, 15 & 22 - 24 and the roading works has been placed and compacted in accordance with NZS4431:2022 Engineered fill construction for lightweight structures.

The appended Lot BLA plans and iso-contour plan show the extent of the earthworks, the completed contours of the site and the cut/fill contours.

Building Site Certification

The earthworks to form the building platforms have involved cut to fill earthworks. Certification of the building platforms has been based on our monitoring inspections during construction, the nuclear densometer testing carried out during construction and certification testing on each of the completed building platforms.

A dimensioned Building Location Area (BLA) for each of the new lots has been identified as required by condition 6 of resource consent RM220752. Within each BLA a flat building platform has been constructed. Certification testing on the flat building platform on each site comprised Scala Penetrometer testing across each platform. In areas where a localised weaker layer has been identified via the Scala test (typically within shallow natural ground conditions), the layer has been tested via field shear vane testing, which is a more accurate test of strength in cohesive Moutere soils. The shear vane testing has confirmed an ultimate bearing capacity exceeding 300kPa at the test locations. The certification testing indicates 'good ground' as defined in NZS3604:2011 Timber Framed Buildings is present at shallow depth across the prepared building platforms. This area has been identified on the appended Lot BLA plans as the NZS3604 Build Area. There may be some variation in the depth to 'good ground' and localised minor soft areas across the area.

The area outside of the certified NZS3604 Build Area within the BLA has been zoned as 'Specific Investigation and Design' (SID) areas due to the proximity to the outside edge of fill batters, increased depth to competent ground and potential for foundations and/or excavation to affect the stability of the batters. Development within these areas is to be specifically investigated and designed by a chartered professional engineer.

Please note that the Scala testing in Moutere Clays has been found to be overly conservative in some situations. The field shear vane test provides a more accurate assessment of the shear strength of the soil. It is recommended that any additional testing in these soils for foundation design purposes utilises a field shear vane to obtain the undrained shear strength of the cohesive soils present if Scala testing is not achieving the required blow counts.

The zoning on each BLA and certification test locations and indicative location of cut/fill transition within the BLA is shown on the appended Lot BLA Plans.

Liquefaction Assessment

The elevated site underlain by Moutere Gravel formation has a very low vulnerability to liquefaction. The identified building sites have a very low risk of being adversely affected by liquefaction following strong seismic events.

Conclusions and Recommendations

The recommendations and conclusions contained within this report are based on our construction monitoring and test results from the development of the roading and the building platforms on Lots 5 – 8, 15 & 22 – 24 La Mer View, Redwood Valley, Tasman.

It is our opinion that the identified building location areas (BLA) on Lots 5 – 8, 15 & 22 – 24 of the La Mer View Subdivision are suitable for residential development, subject to the recommendations below.

1. Area within the BLA identified as *NZS3604 Build Area* is suitable for foundation design in accordance with NZS3604:2011 Timber Framed Building.
2. The remaining area within the BLA is identified as *SID Area* and requires specific investigation and design of foundations by a chartered professional engineer.

Based on our testing and monitoring of the works as described above, it is our opinion that the prepared building platforms are suitable for residential development. Cut and fill batters associated with the platform development have been set at conservative angles and are unlikely to be affected by slope instability.

Applicability

This report has been prepared for Merc Developments Ltd for submission to Tasman District Council. The report has been prepared in accordance with the brief provided, and data or opinions contained within may not be used in other contexts or for any other purpose without our prior review and agreement.

Test results indicate the ground conditions at the location and time the tests were conducted. Conditions elsewhere on the site may vary from this. The opinions within this report are based on the landform at the time of issue of title for the lots.

Prepared by:
Jeff Swanney

Swanney Geotechnical and Civil Engineering
PO Box 992
Nelson

Appended: Statement of Professional Opinion on Stability of Land for Building Construction

Lot BLA plans annotated to show build zones and test locations (8 sheets) dated Aug 2024

Asbuilt Plans (3 sheets) dated July 2024

Lot BLA plans dated Jun 2024 (8 sheets)

Iso-contour Plan dated Jun 2024

Certification Test results (6 sheets)

Nuclear densometer test results (8 sheets)

Statement of Professional Opinion on Suitability of Land for Building Construction

**Redvale Road Subdivision,
Redwood Valley, Tasman**

Stage 2 (Lots 5 – 8, 15 & 22 - 24)

Subdivision Consents RM220752

Development: La Mer View Subdivision

Developer: Merc Developments Ltd

Location: La Mer View, Redwood Valley, Tasman

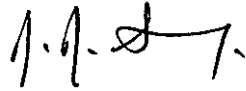
I, Jeff Swanney of Swanney Ltd, 8/209 Trafalgar Street, Nelson

Hereby confirm that:

1. I am a geo-professional as defined in clause 1.2.2 of NZS 4404:2010 and was retained by the developer as the geo-professional on the above development.
2. The extent of construction monitoring and testing are detailed in my report 'Earthworks and Building Site Certification Report, La Mer View Subdivision Stage 2, Redwood Valley, Tasman' dated 7 August 2024.
3. In my professional opinion, not to be construed as a guarantee, I consider that:
 - a) The earth fills within the building locations areas shown on the plans contained in my certification report have been placed in compliance with the requirements of the Tasman District Council.
 - b) The completed works take into account land slope and foundation stability considerations, subject to the appended foundation recommendations.
 - c) Subject to 3a) and 3b) of this Schedule, the original ground and the filled ground is suitable for the erection of residential buildings. Development of the lots is to be in accordance with the building site development recommendations within the certification report.
 - i) Areas zoned 'NZS3604 Build Area' are suitable for foundation design in accordance with NZS3604:2011 Timber Framed Building.
 - ii) Areas zoned 'SID' require specific investigation and design of foundations by a chartered professional engineer.

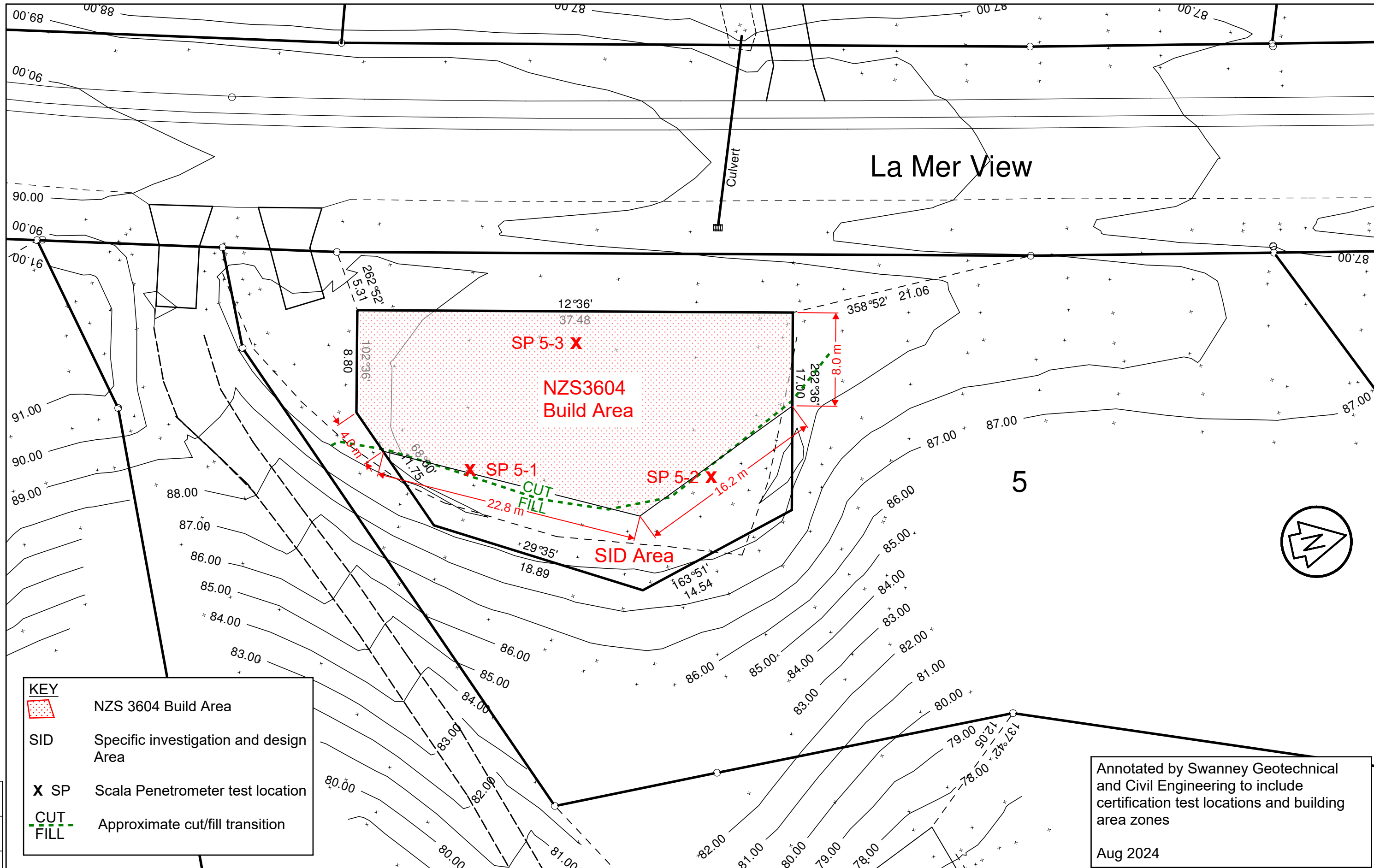
- d) The original ground and filled ground are not subject to erosion, subsidence, or slippage in accordance with the provisions of section 106 of the Resource Management Act:1991.
4. This professional opinion is furnished to the Tasman District Council and Merc Developments Ltd for their purposes alone on the express condition that is will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any building.
5. This certificate shall be read in conjunction with my certification report referred to in clause 2 above and shall not be copied or reproduced except in conjunction with the full certification report.

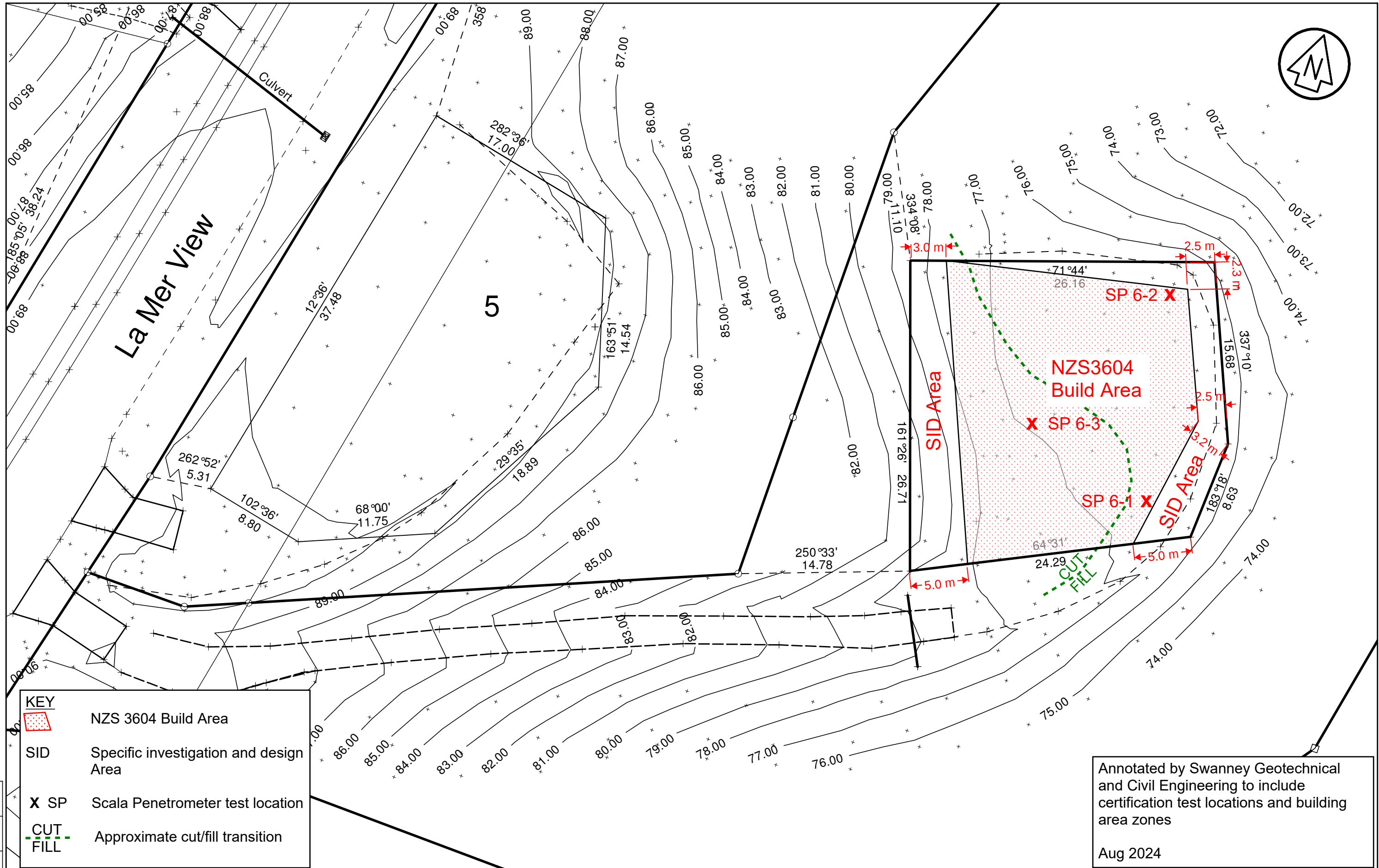
Signed:



Date: 7 August 2024

Jeff Swanney
BE(Nat Res) PG Dip(Eng Geol)
CPEng, CMEngNZ





REV	AMENDMENT	DATE	NOTES	JOB TITLE:	DRAWING TITLE:	DESIGNED:	SCALE:
			(1) VERIFY ALL DIMENSIONS ON SITE. (2) DO NOT SCALE FROM DRAWING. (3) COORDINATES IN TERMS OF NZGD2000 NELSON CIRCUIT (4) LEVELS IN TERMS OF: NZVD 2016 ORIGIN OF LEVELS: AP 1 DP 557817 RL 67.14 SOURCE: ASBUILT PLANS	Merc Developments Ltd La Mer View	Diagram of Lot 6 BLA	SURVEYED:	1:300 @ A3
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						CHECKED:	DATE: Jun 2024
						APPROVED:	REVISION: A
						SHEET NUMBER: 1 OF 1	

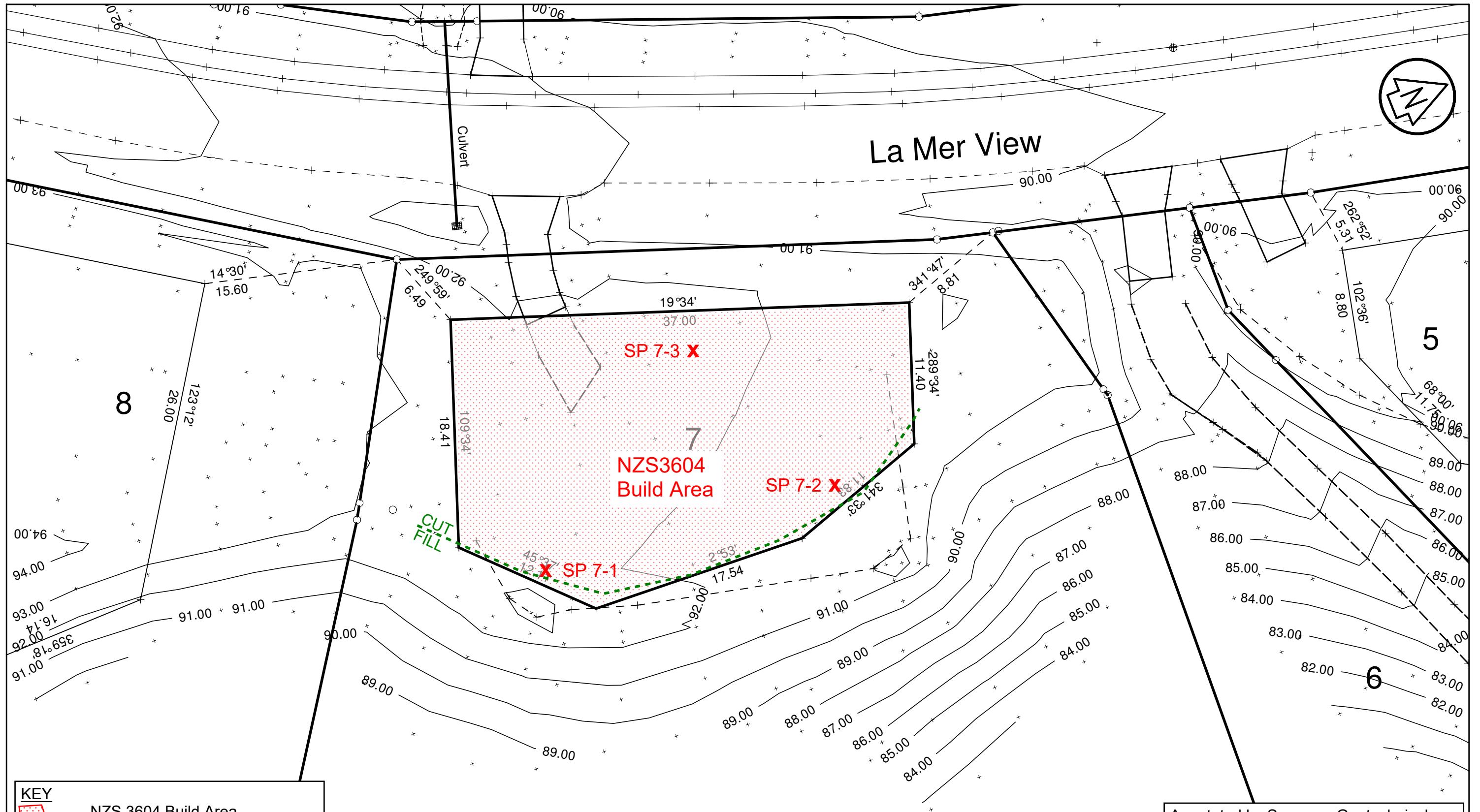


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Surveying and Resource Management

Aug 2024

Annotated by Swanney Geotechnical and Civil Engineering to include certification test locations and building area zones



KEY

NZS 3604 Build Area

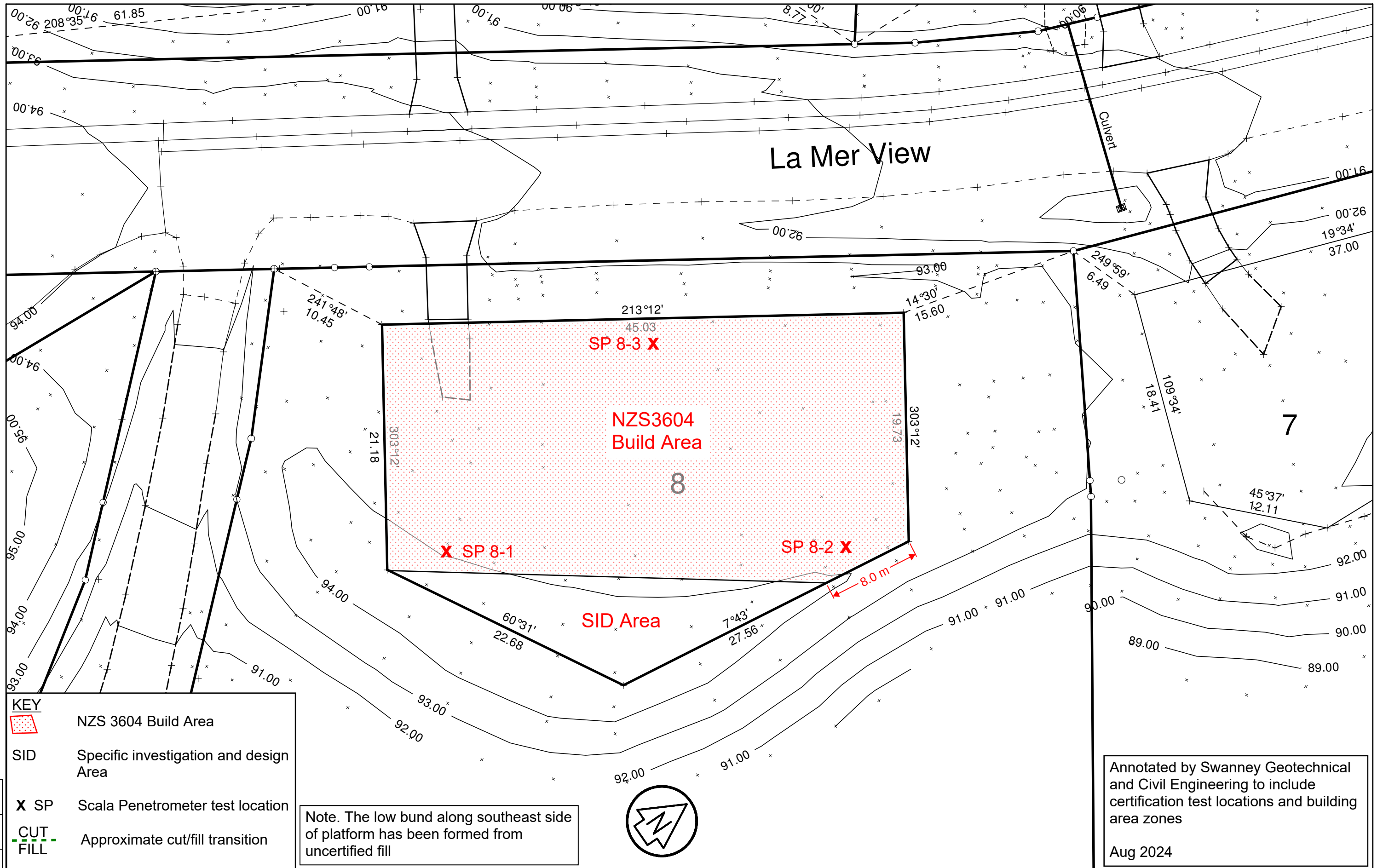
SP Scala Penetrometer test location

CUT/FILL Approximate cut/fill transition

Annotated by Swanney Geotechnical and Civil Engineering to include certification test locations and building area zones

Aug 2024

REV	AMENDMENT	DATE	NOTES	JOB TITLE:	DRAWING TITLE:	planscapes (nz) Ltd. 94 Selwyn Place PO Box 99, NELSON 7040 03 539 0281 enquires@planscapes.co.nz www.planscapes.co.nz		DESIGNED:	SURVEYED:	SCALE: 1:300 @ A3
			(1) VERIFY ALL DIMENSIONS ON SITE. (2) DO NOT SCALE FROM DRAWING. (3) COORDINATES IN TERMS OF NZGD2000 NELSON CIRCUIT (4) LEVELS IN TERMS OF: NZVD 2016 ORIGIN OF LEVELS: AP 1 DP 557817 RL 67.14 SOURCE: ASBUILT PLANS	Merc Developments Ltd La Mer View	Diagram of Lot 7 BLA			DRAWN: P Newbury	CHECKED:	JOB NO: 2001
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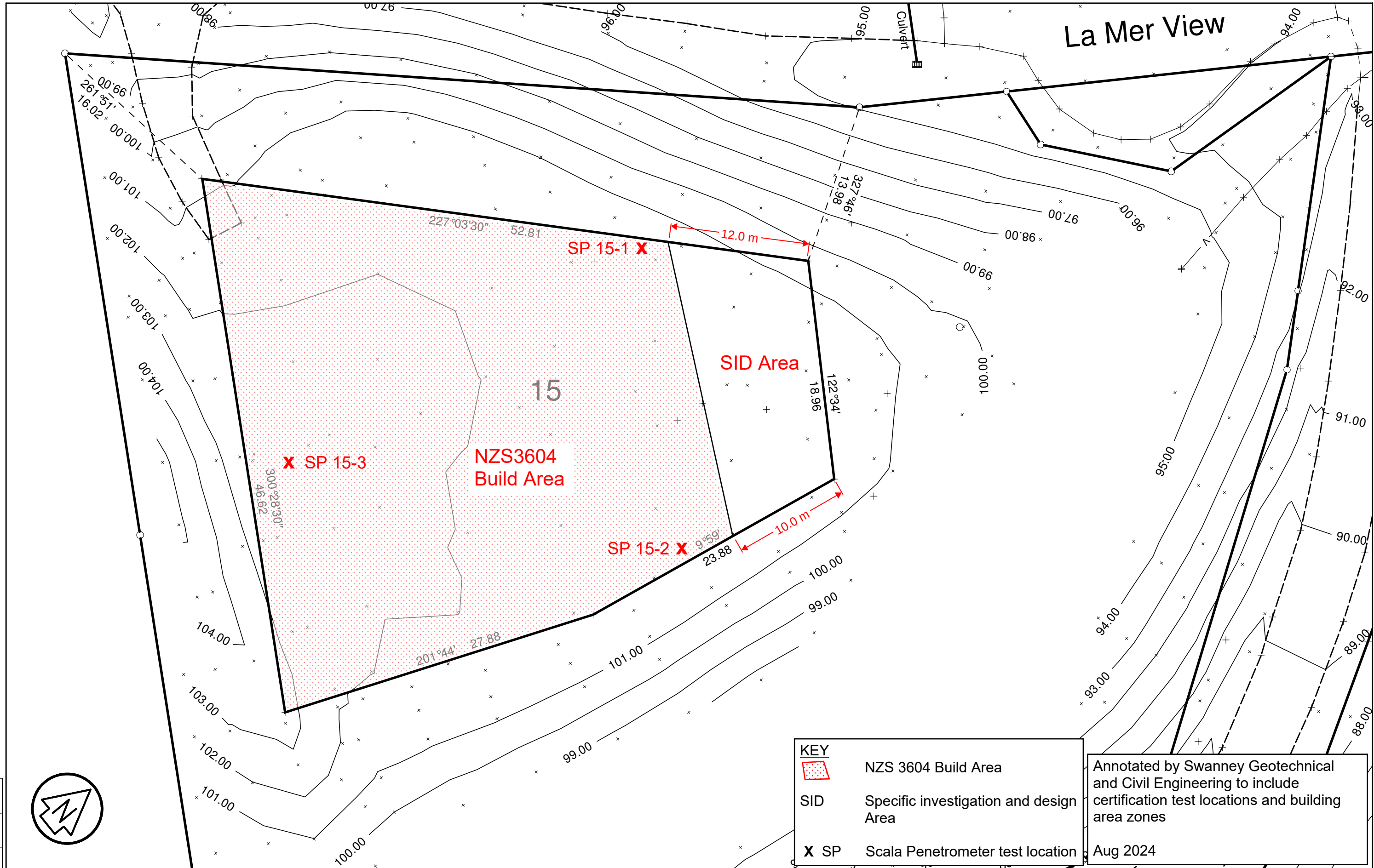
- NZS 3604 Build Area
- SID** Specific investigation and design Area
- X SP** Scala Penetrometer test location
- CUT**
FILL Approximate cut/fill transition

Note. The low bund along southeast side of platform has been formed from uncertified fill

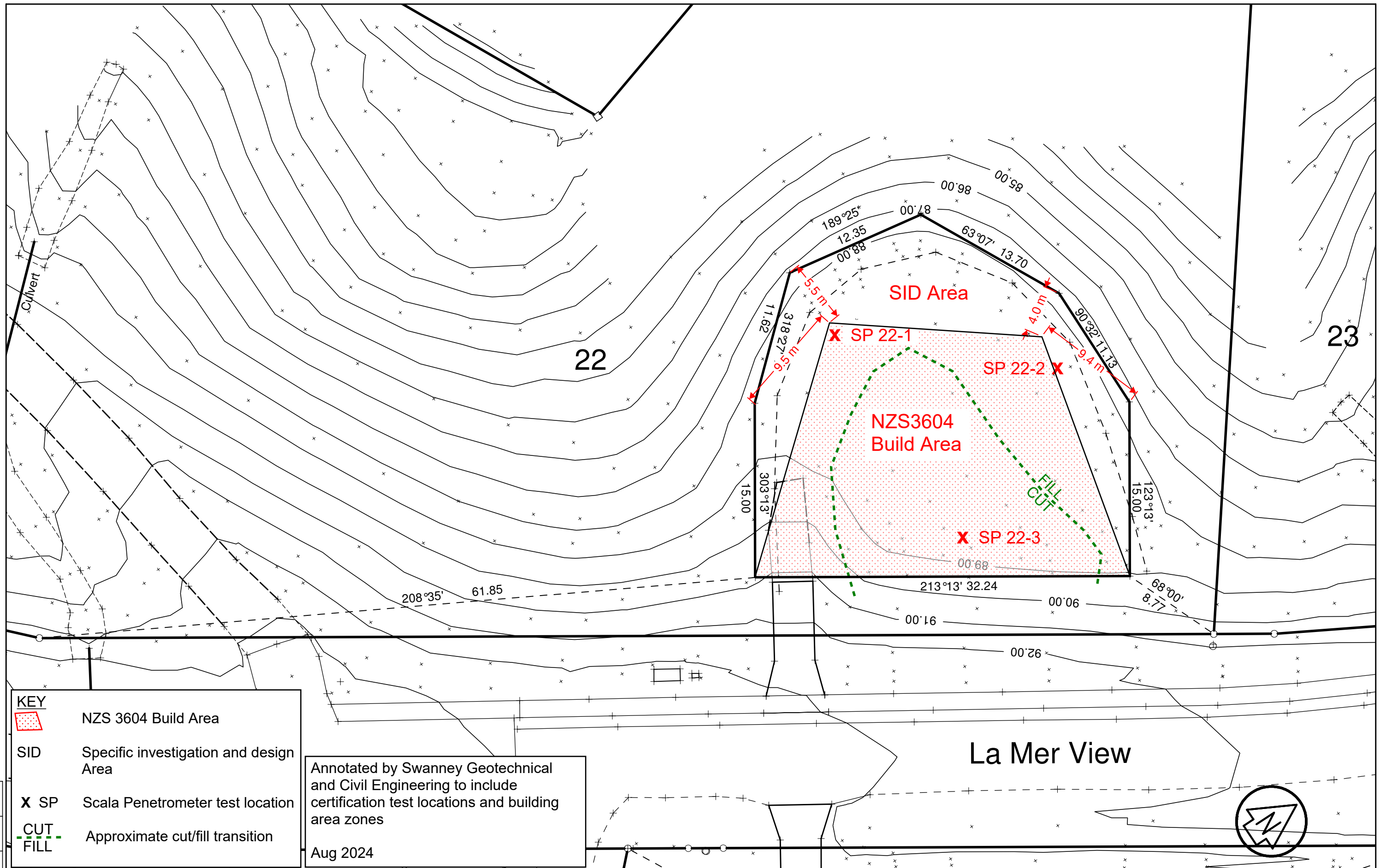
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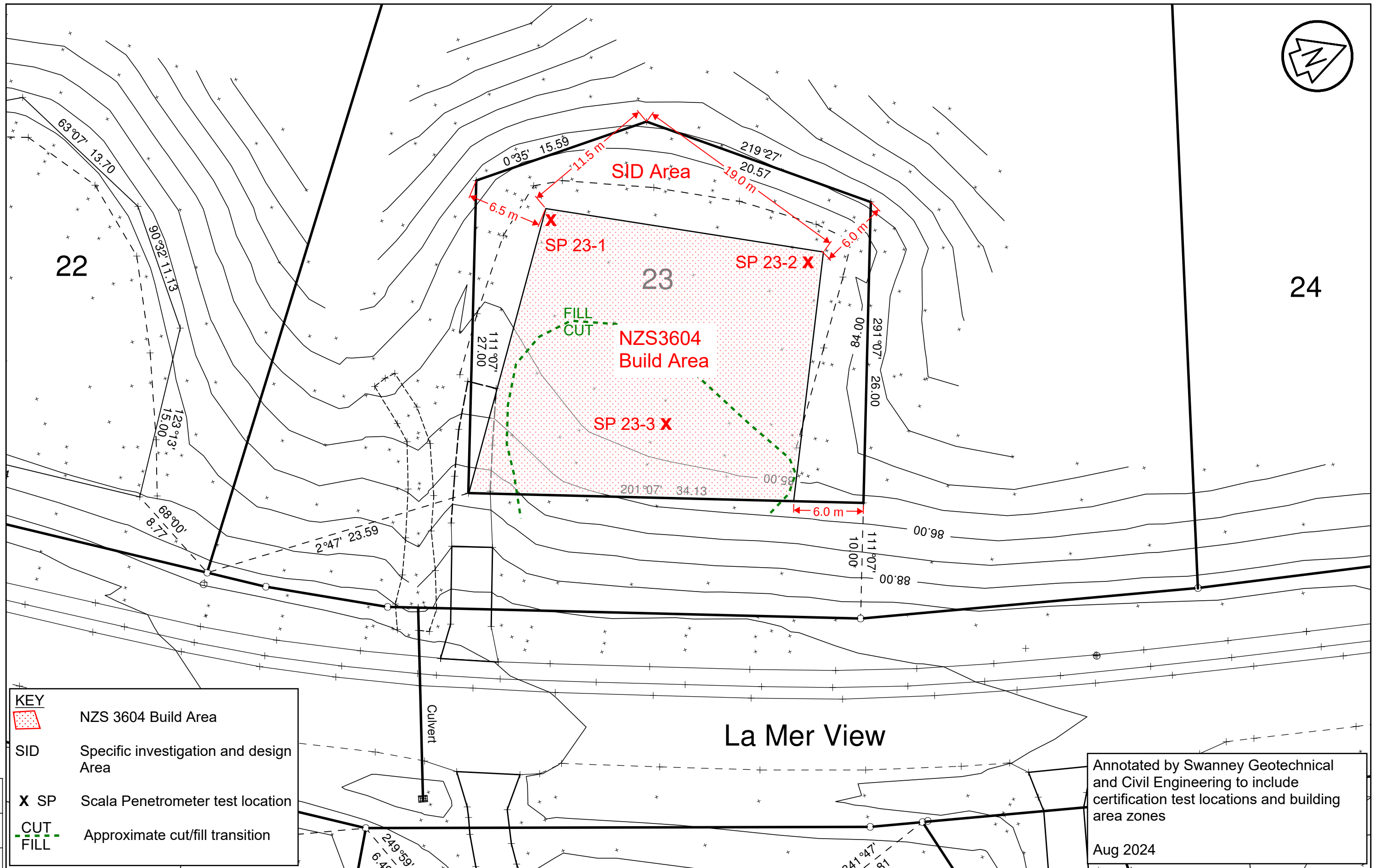


KEY	
	NZS 3604 Build Area
SID	Specific investigation and design Area
X SP	Scala Penetrometer test location
	Approximate cut/fill transition

Annotated by Swanney Geotechnical and Civil Engineering to include certification test locations and building area zones

Aug 2024

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							REVISION: A



KEY

NZS 3604 Build Area

SID

 Specific investigation and design Area

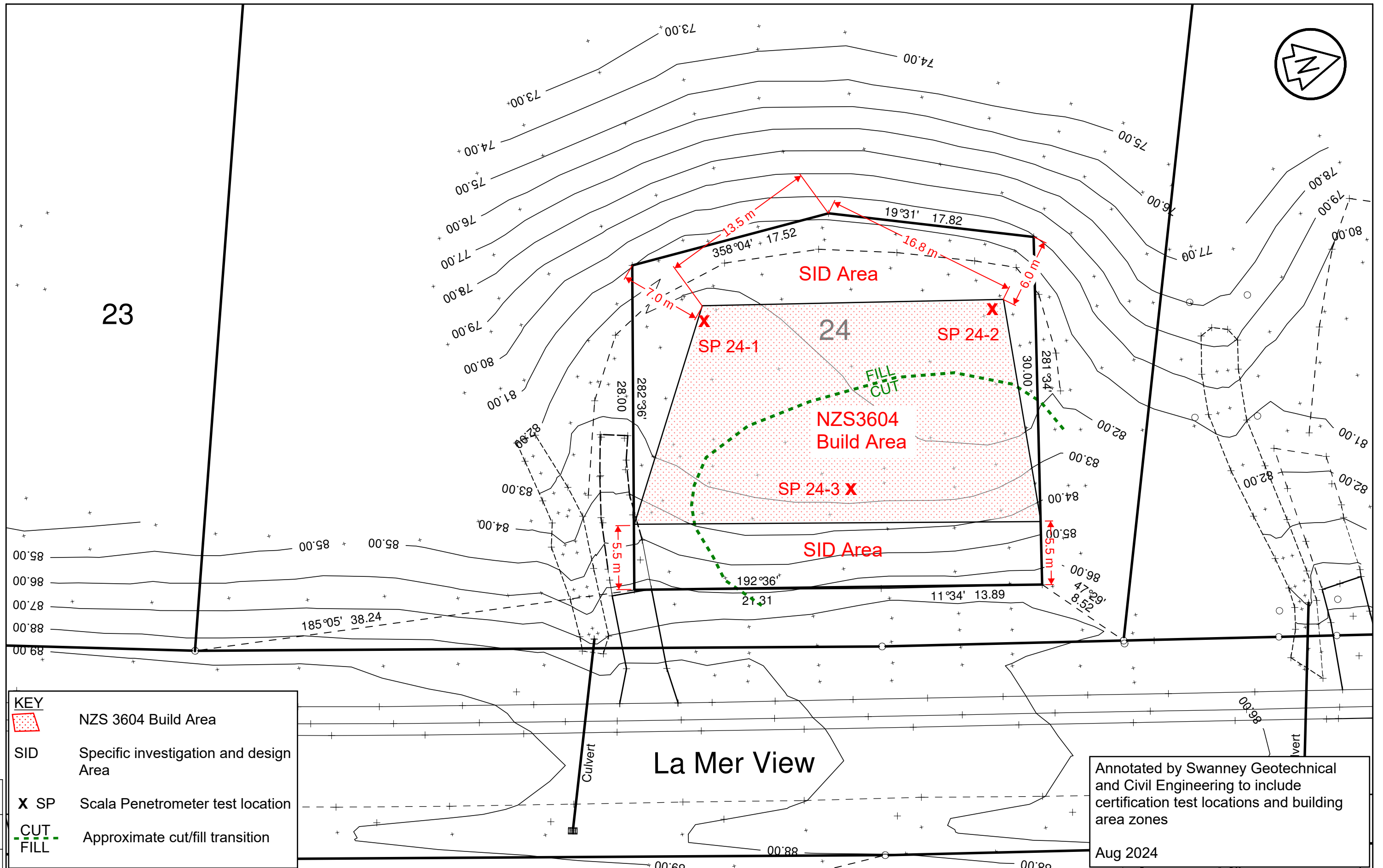
X SP

 Scala Penetrometer test location

CUT
FILL

 Approximate cut/fill transition

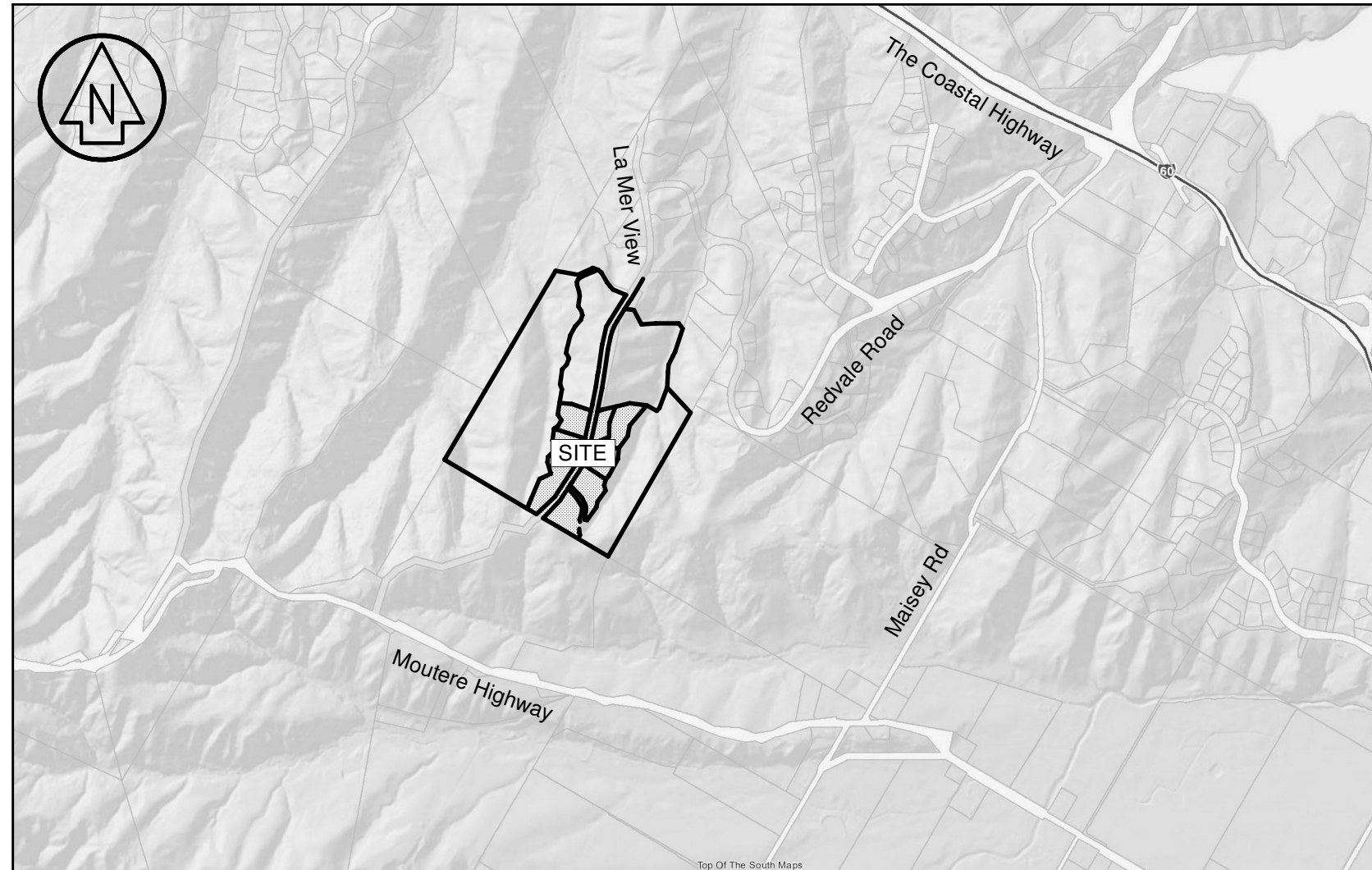
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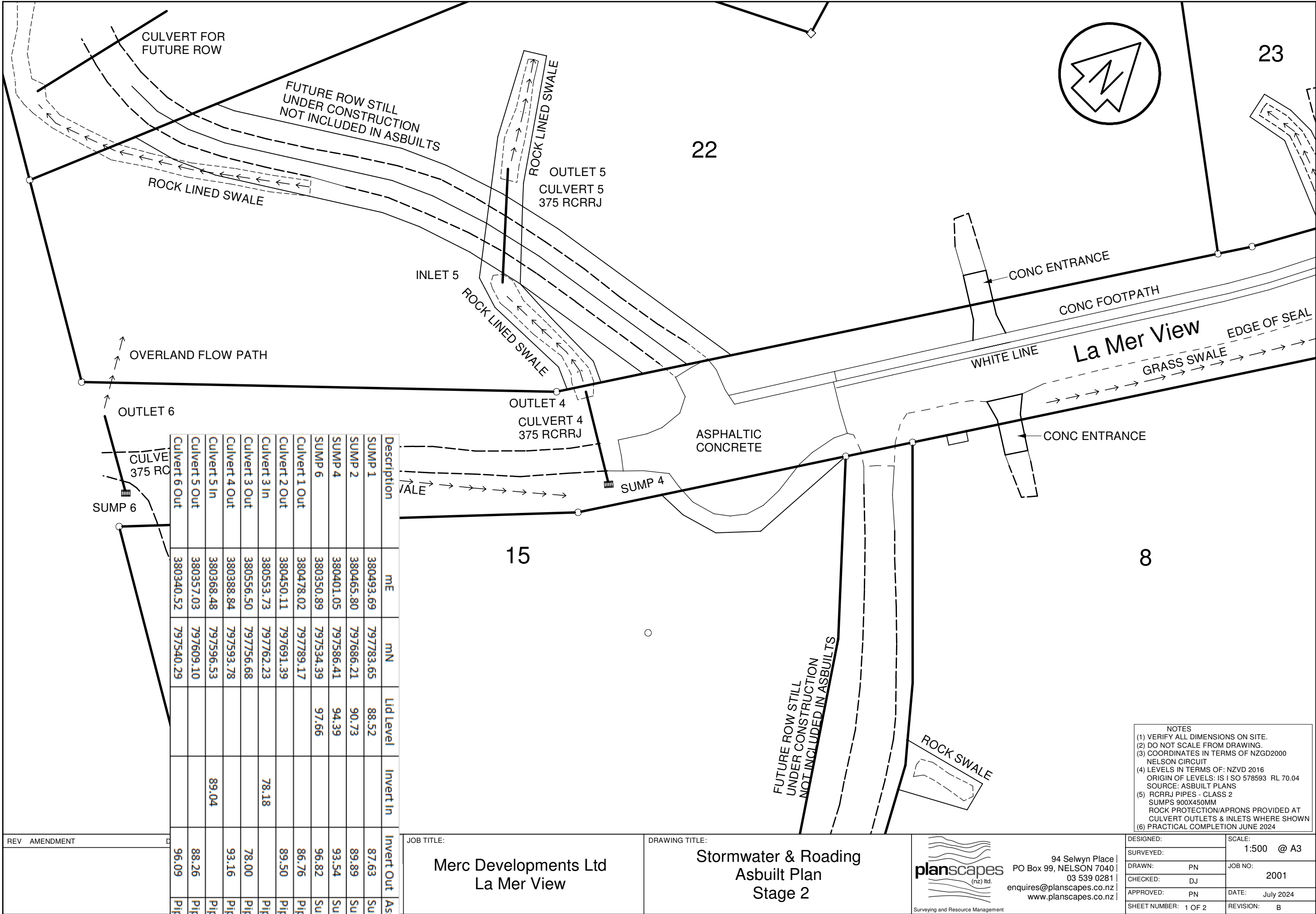


Index
1 & 2 Stormwater & Rooding

LOCALITY DIAGRAM

Merc Developments Ltd La Mer View Stage 2

REVISION: B
DATE : July 2024
RM220752



REV	AMENDMENT	Description	mE	mN	Lid Level	Invert In	Invert Out	Asset Type
		SUMP 1	380493.69	797783.65	88.52		87.63	Sump
		SUMP 2	380465.80	797686.21	90.73		89.89	Sump
		SUMP 4	380401.05	797586.41	94.39		93.54	Sump
		SUMP 6	380350.89	797534.39	97.66		96.82	Sump
		Culvert 1 Out	380478.02	797789.17			86.76	Pipe
		Culvert 2 Out	380450.11	797691.39			89.50	Pipe
		Culvert 3 In	380553.73	797762.23		78.18		Pipe
		Culvert 3 Out	380556.50	797756.68			78.00	Pipe
		Culvert 4 Out	380388.84	797593.78			93.16	Pipe
		Culvert 5 In	380368.48	797596.53		89.04		Pipe
		Culvert 5 Out	380357.03	797609.10			88.26	Pipe
		Culvert 6 Out	380340.52	797540.29			96.09	Pipe

JOB TITLE:

Merc Developments Ltd
La Mer View

DRAWING TITLE:

Stormwater & Roading
Asbuilt Plan
Stage 2



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DESIGNED:

SURVEYED:

DRAWN: PN

CHECKED: DJ

APPROVED: PN

SHEET NUMBER: 1 OF 2

SCALE:
1:500 @ A3

JOB NO:
2001

DATE:
July 2024

REVISION:
B

NOTES

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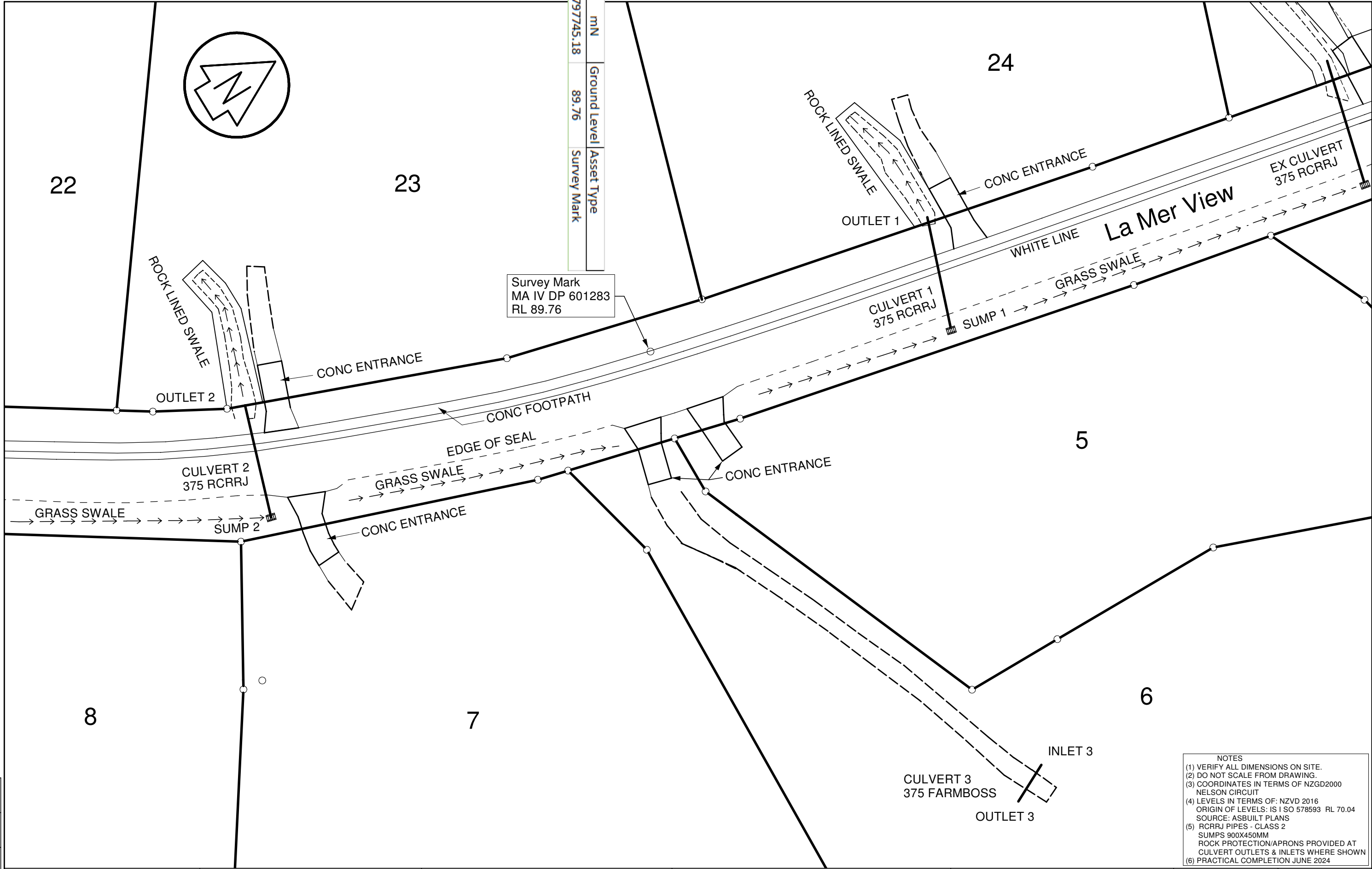
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(4) LEVELS IN TERMS OF: NZVD 2016
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SOURCE: ASBUILT PLANS

(5) RCRRJ PIPES - CLASS 2
SUMPS 900X450MM
ROCK PROTECTION/APRONS PROVIDED AT CULVERT OUTLETS & INLETS WHERE SHOWN

(6) PRACTICAL COMPLETION JUNE 2024

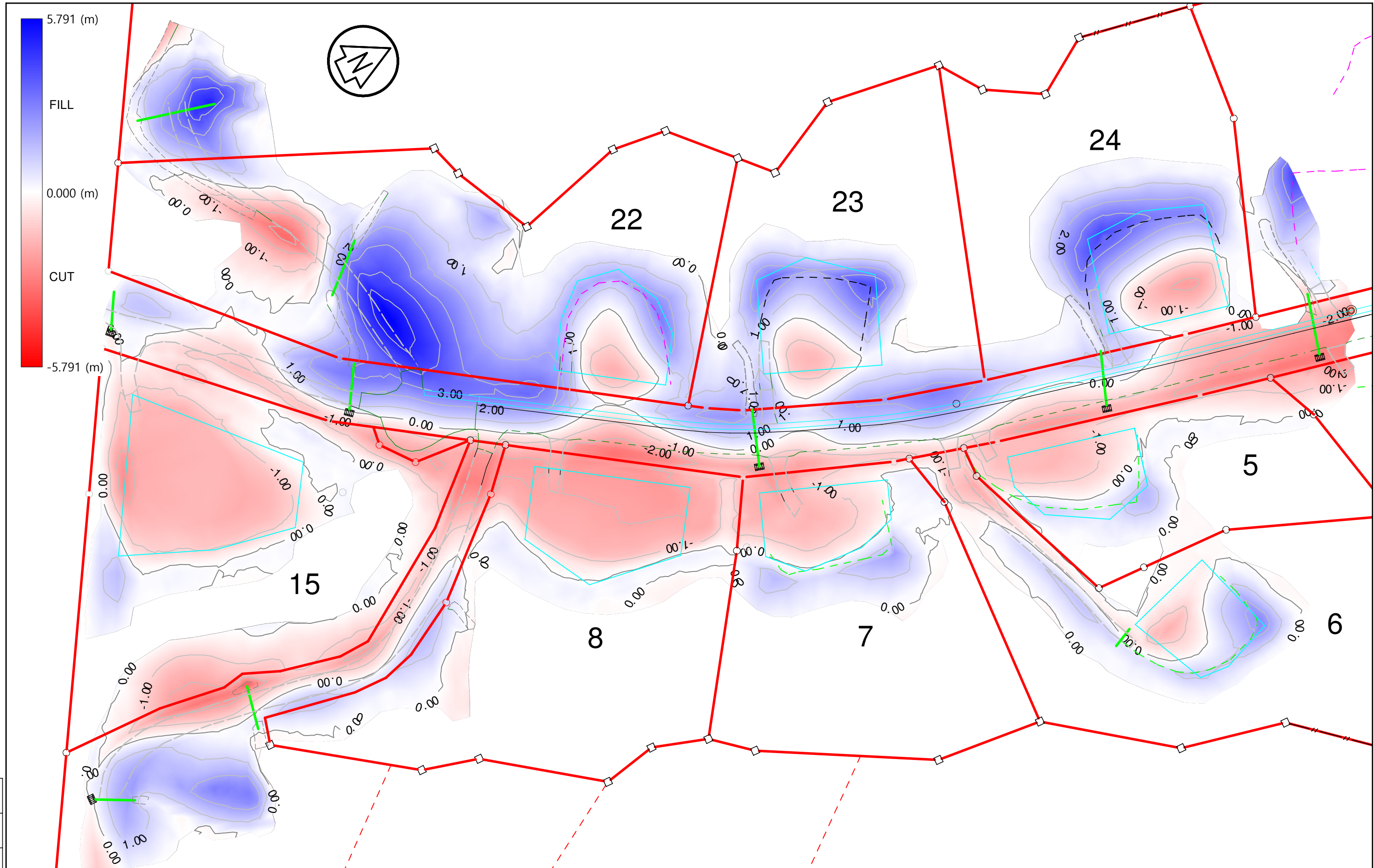


E	mN	Ground Level	Asset Type
3.81	797745.18	89.76	Survey Mark

Survey Mark
MA IV DP 601283
RL 89.76

- NOTES
- (1) VERIFY ALL DIMENSIONS ON SITE.
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SUMPS 900X450MM
ROCK PROTECTION/APRONS PROVIDED AT
CULVERT OUTLETS & INLETS WHERE SHOWN
 - (6) PRACTICAL COMPLETION JUNE 2024

REV	AMENDMENT	DATE	 tasman district council	Te Kaunihera o te tai o Aorere Plan No. _____ Sheet No. _____ Engineering Manager. Date. RM No. BM220752	JOB TITLE: Merc Developments Ltd La Mer View	DRAWING TITLE: Stormwater & Roading Asbuilt Plan Stage 2	 planscapes (nz) ltd. Surveying and Resource Management	94 Selwyn Place PO Box 99, NELSON 7040 03 539 0281 enquires@planscapes.co.nz www.planscapes.co.nz	DESIGNED: SURVEYED: DRAWN: PN CHECKED: DJ APPROVED: PN SHEET NUMBER: 2 OF 2	SCALE: 1:500 @ A3 JOB NO: 2001 DATE: Jul 2024 REVISION: A
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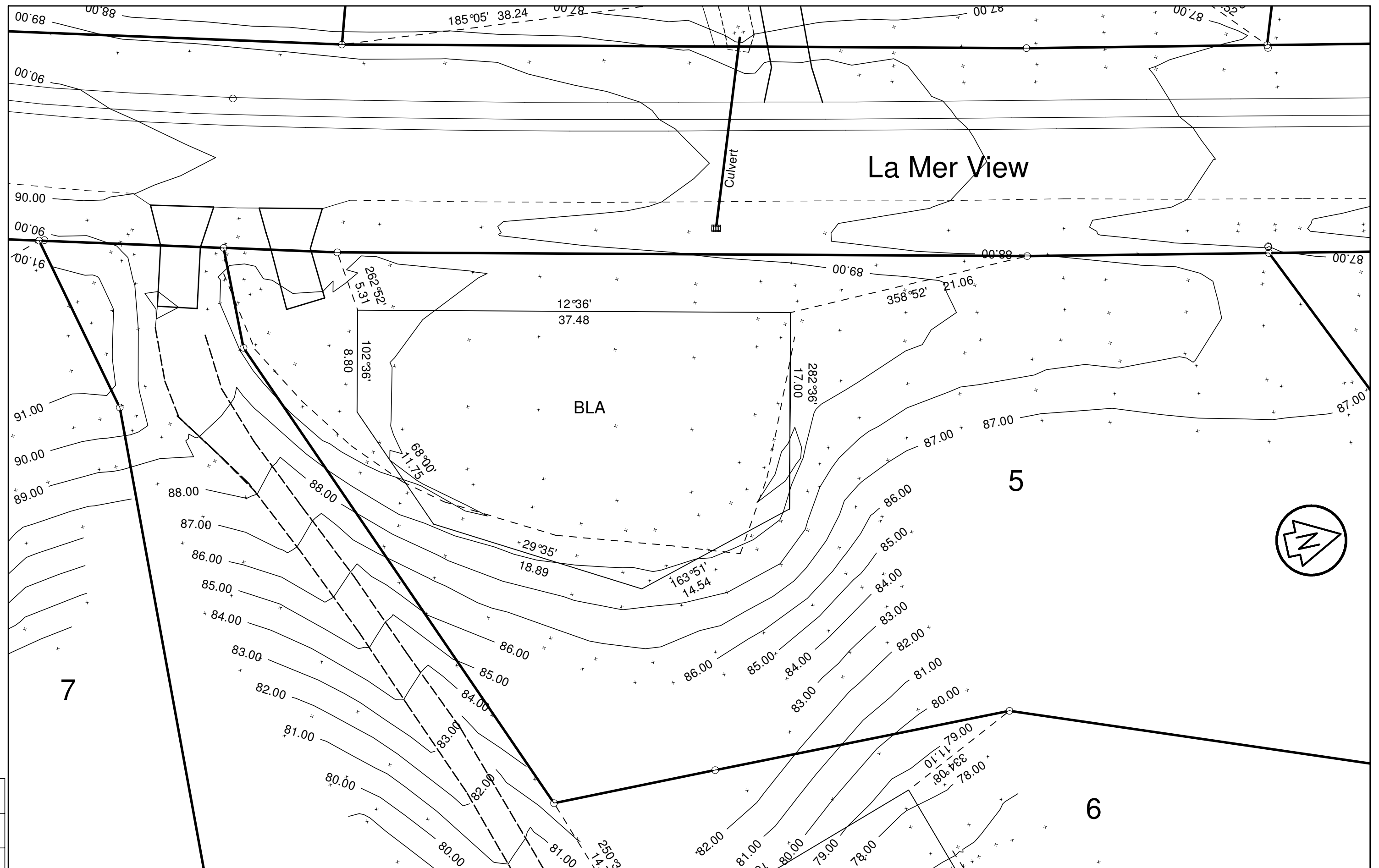


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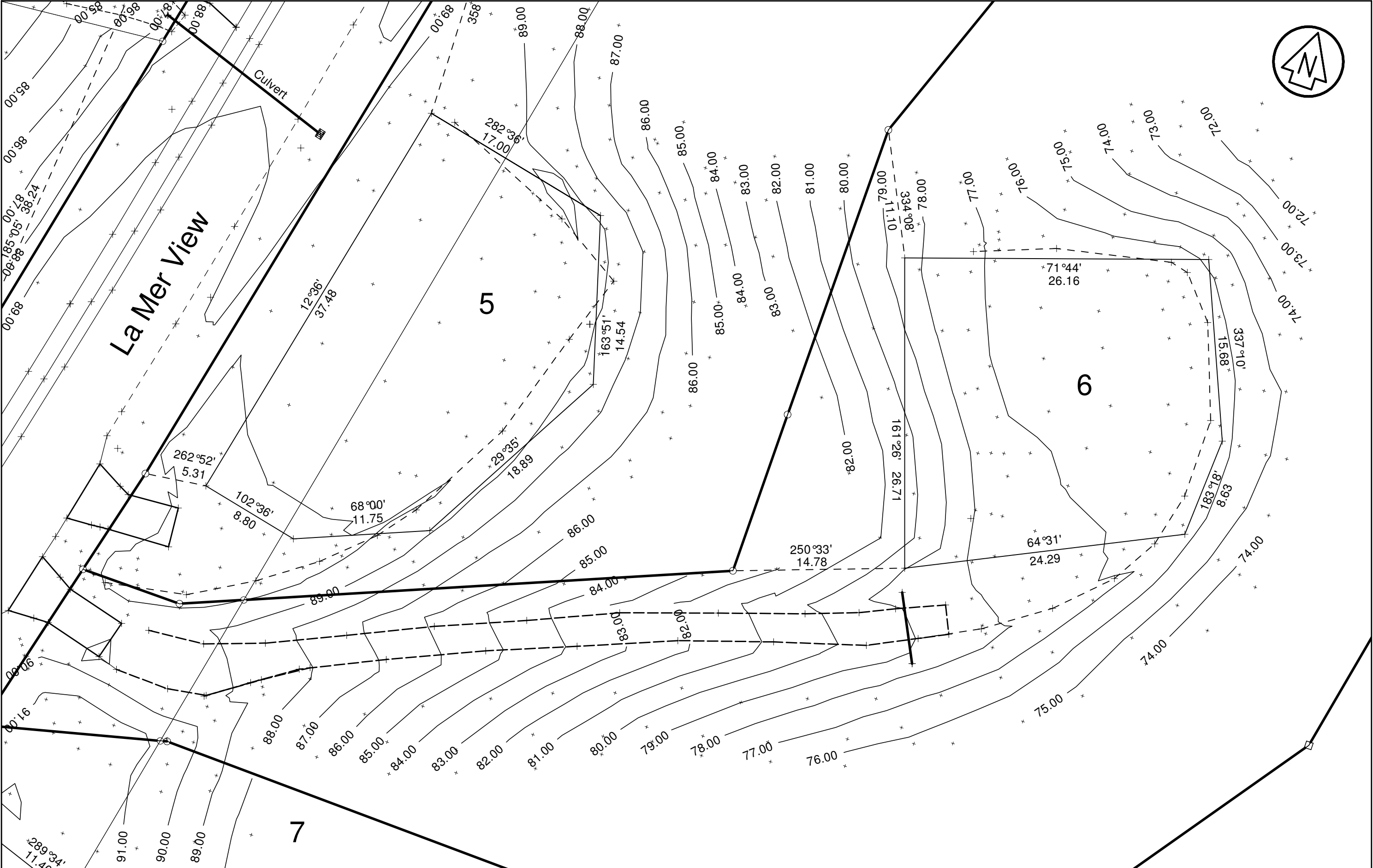


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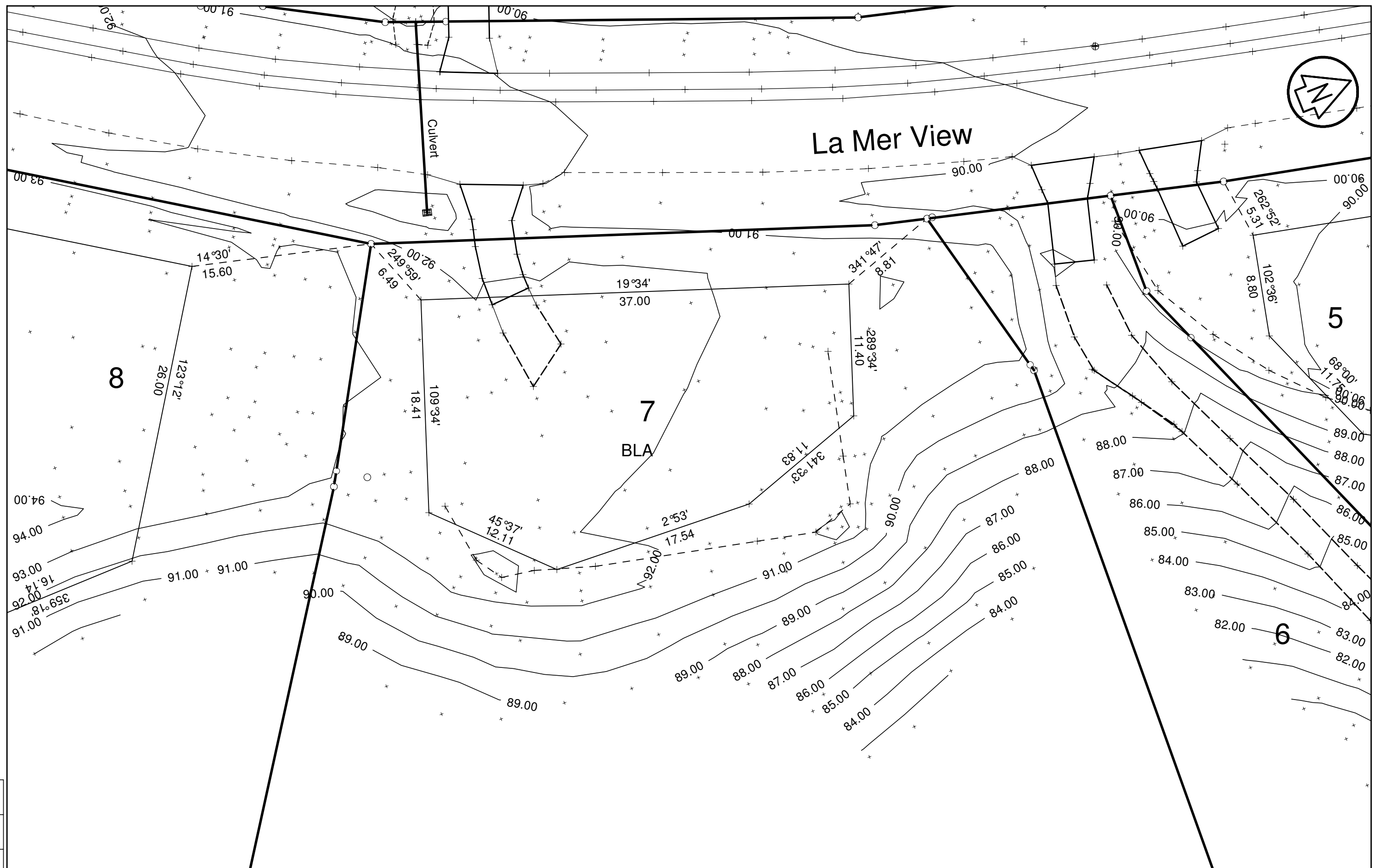
Surveying and Resource Management



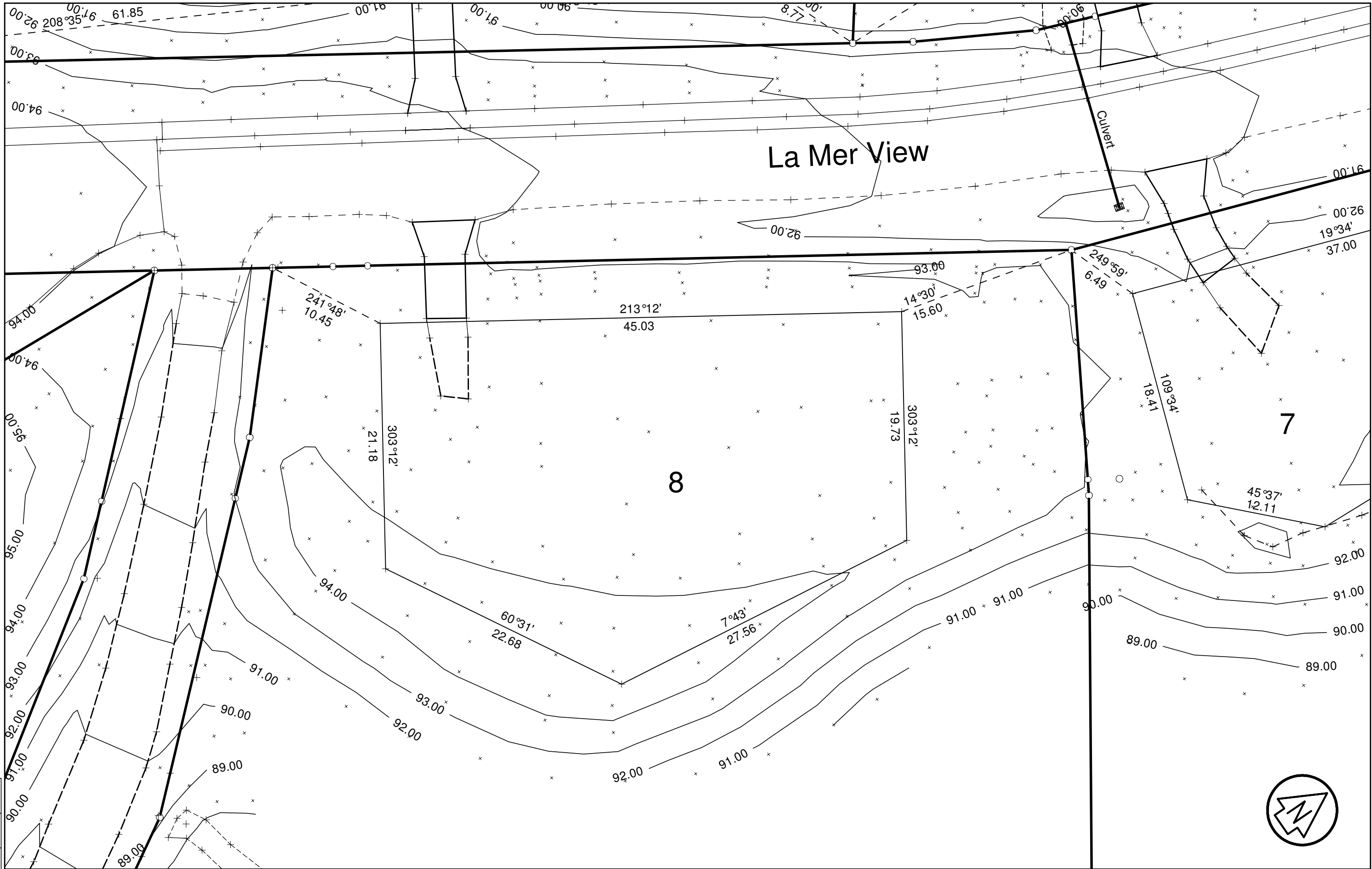
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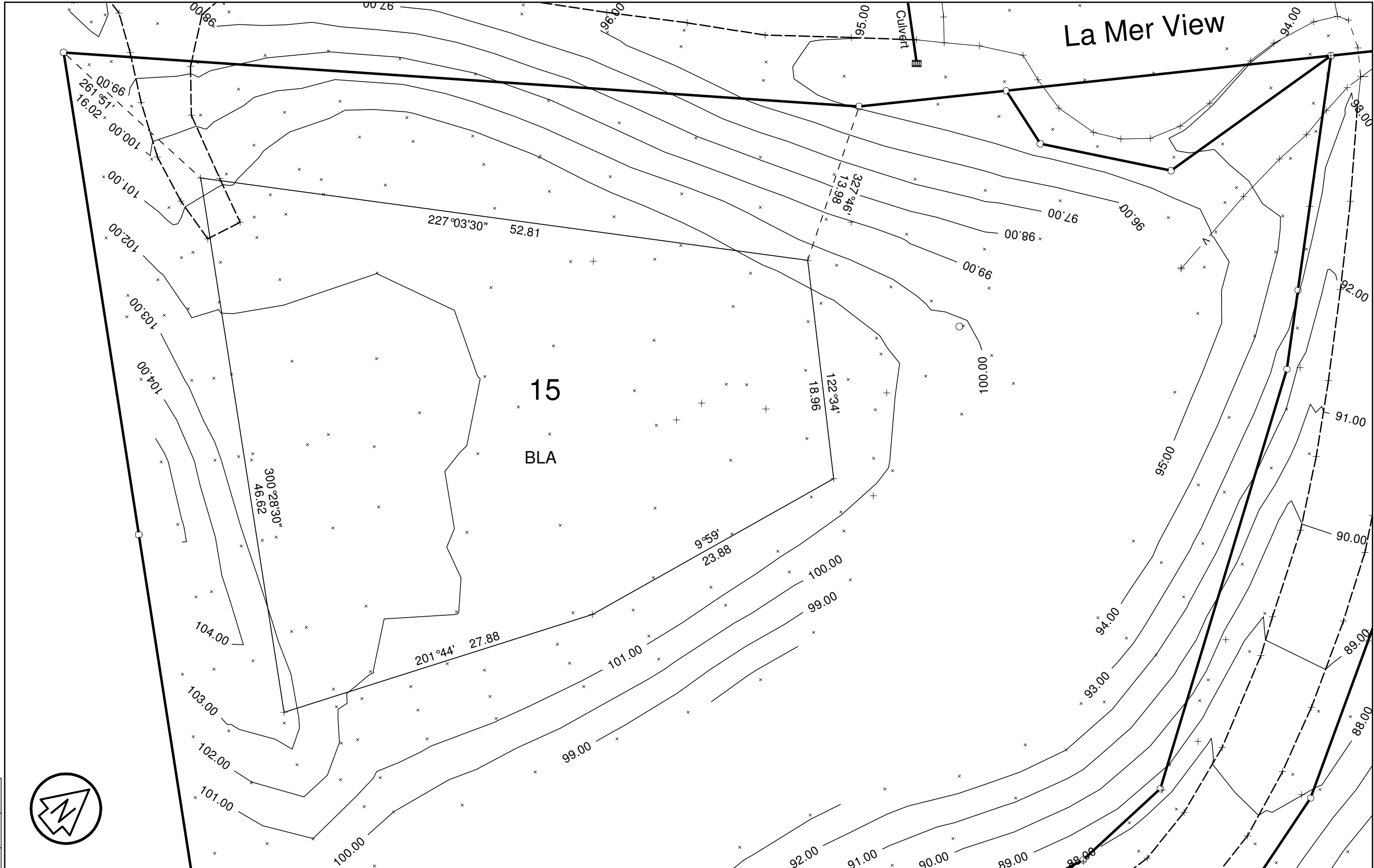
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						P Newbury	JOB NO:
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						APPROVED:	DATE: Jun 2024
						SHEET NUMBER: 1 OF 1	REVISION: A



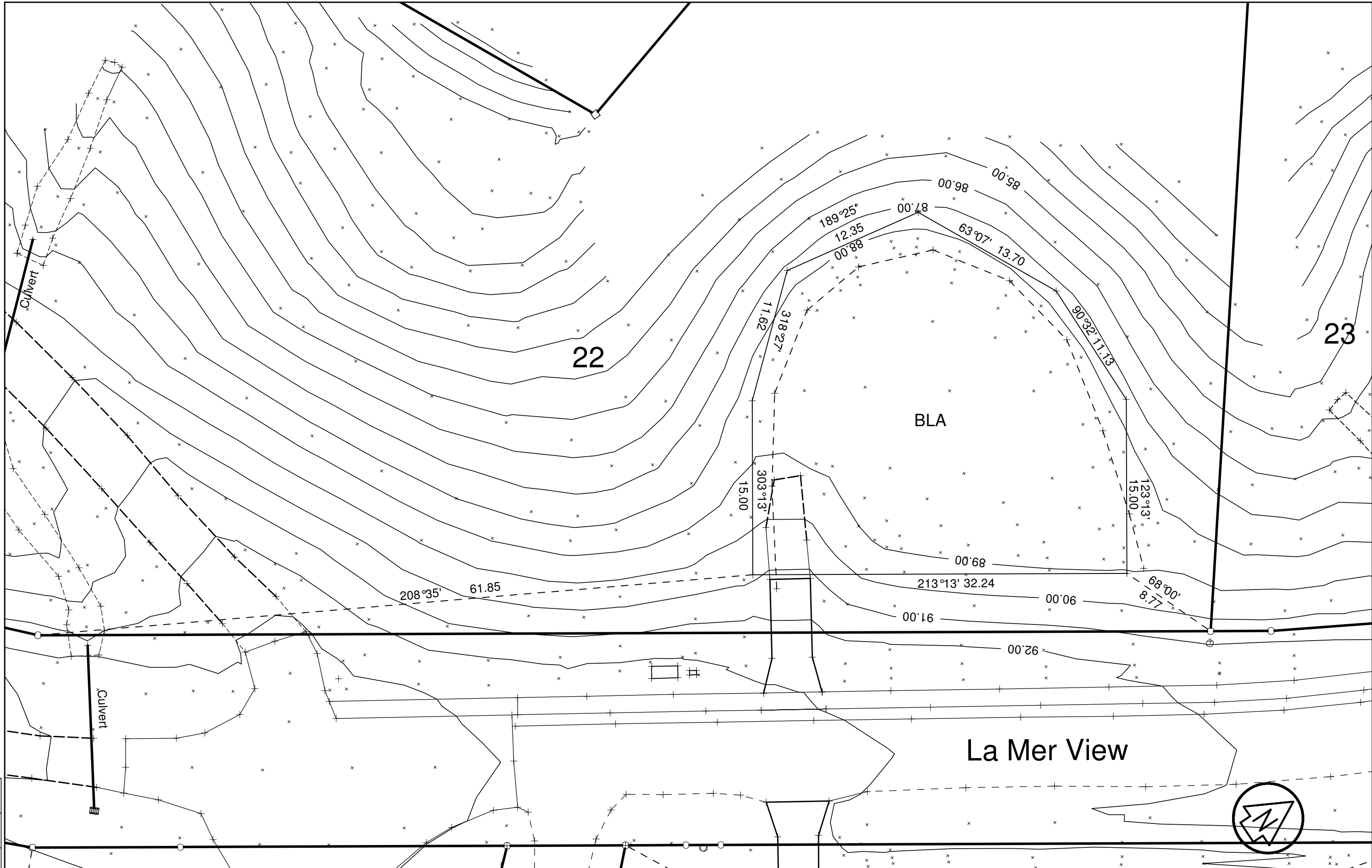
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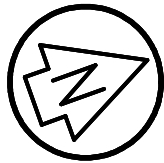
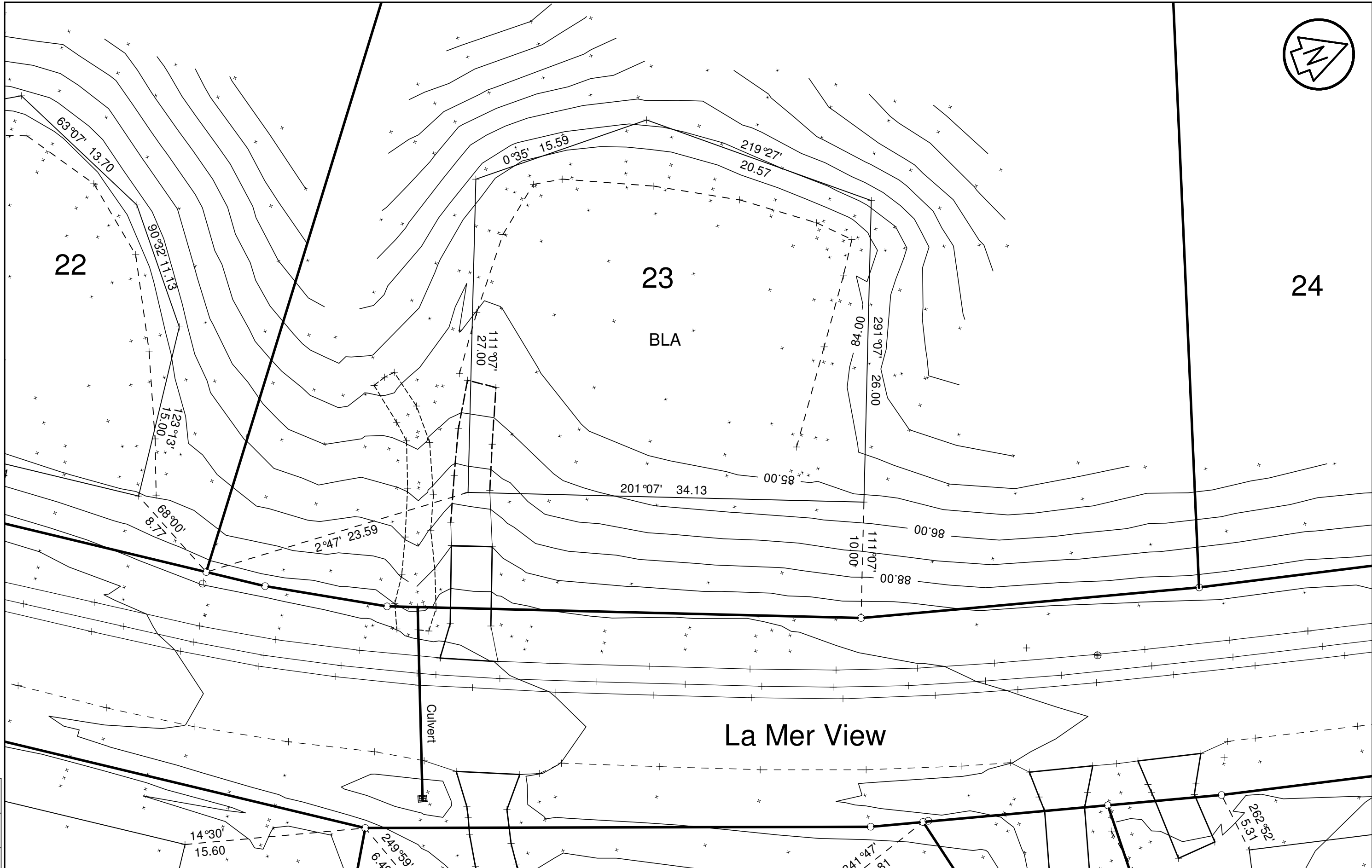
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						SHEET NUMBER: 1 OF 1	



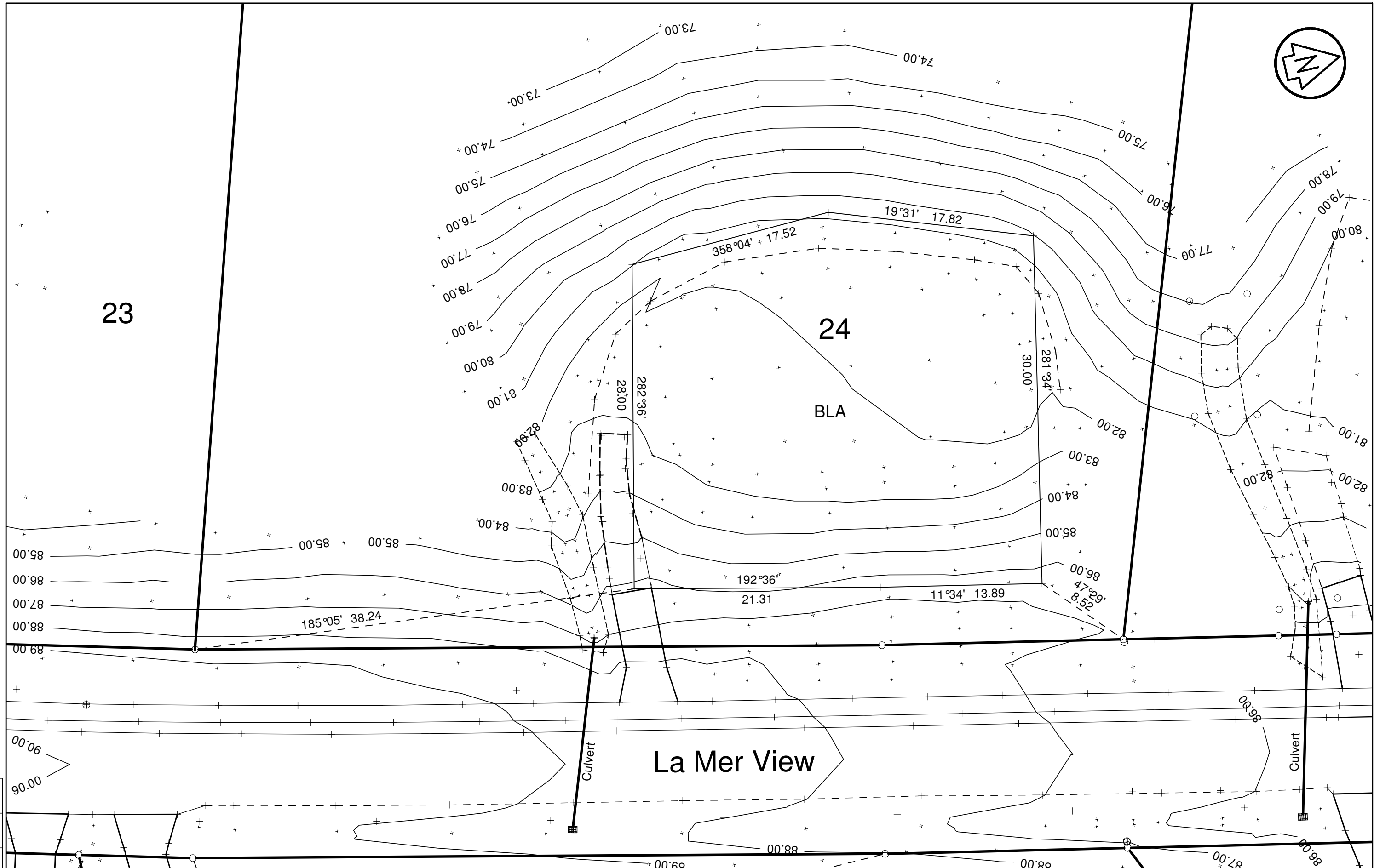
REV	AMENDMENT	DATE	NOTES	JOB TITLE:	DRAWING TITLE:	DESIGNED:	SCALE:
			(1) VERIFY ALL DIMENSIONS ON SITE. (2) DO NOT SCALE FROM DRAWING. (3) COORDINATES IN TERMS OF NZGD2000 NELSON CIRCUIT (4) LEVELS IN TERMS OF: NZVD 2016 ORIGIN OF LEVELS: AP 1 DP 557817 RL 67.14 SOURCE: ASBUILT PLANS	Merc Developments Ltd La Mer View	Diagram of Lot 15 BLA	SURVEYED:	1:300 @ A3
						DRAWN: P Newbury	JOB NO:
						CHECKED:	2001
						APPROVED:	DATE: Jun 2024
						SHEET NUMBER: 1 OF 1	REVISION: A



REV	AMENDMENT	DATE	NOTES	JOB TITLE:	DRAWING TITLE:	DESIGNED:		SCALE:
			(1) VERIFY ALL DIMENSIONS ON SITE. (2) DO NOT SCALE FROM DRAWING. (3) COORDINATES IN TERMS OF NZGD2000 NELSON CIRCUIT (4) LEVELS IN TERMS OF: NZVD 2016 ORIGIN OF LEVELS: AP 1 DP 557817 RL 67.14 SOURCE: ASBUILT PLANS	Merc Developments Ltd La Mer View	Diagram of Lot 22 BLA	94 Selwyn Place PO Box 99, NELSON 7040 03 539 0281 enquires@planscapes.co.nz www.planscapes.co.nz		1:300 @ A3
						DRAWN: P Newbury		JOB NO: 2001
						CHECKED:		DATE: Jun 2024
						APPROVED:		REVISION: A
						SHEET NUMBER: 1 OF 1		

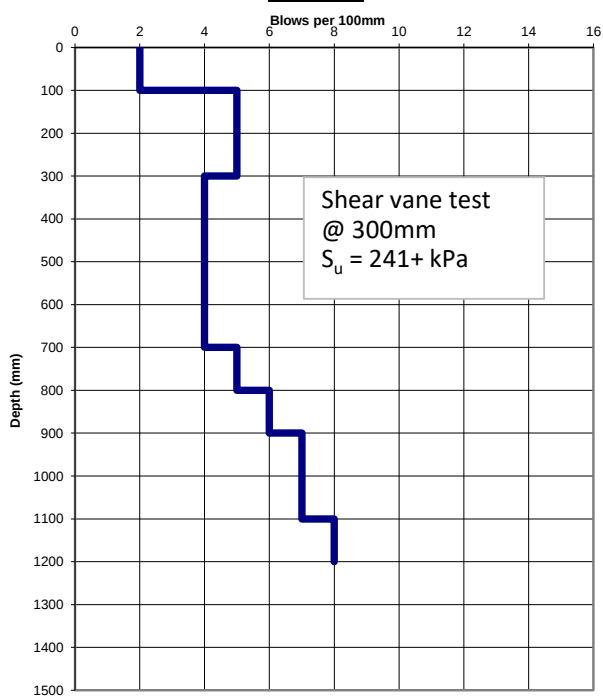


REV	AMENDMENT	DATE	NOTES	JOB TITLE:	DRAWING TITLE:	DESIGNED:	SCALE:
			(1) VERIFY ALL DIMENSIONS ON SITE. (2) DO NOT SCALE FROM DRAWING. (3) COORDINATES IN TERMS OF NZGD2000 NELSON CIRCUIT (4) LEVELS IN TERMS OF: NZVD 2016 ORIGIN OF LEVELS: AP 1 DP 557817 RL 67.14 SOURCE: ASBUILT PLANS	Merc Developments Ltd La Mer View	Diagram of Lot 23 BLA	94 Selwyn Place PO Box 99, NELSON 7040 03 539 0281 enquires@planscapes.co.nz www.planscapes.co.nz	1:300 @ A3
						DRAWN: P Newbury	JOB NO: 2001
						CHECKED:	DATE: Jun 2024
						APPROVED:	REVISION: A
						SHEET NUMBER: 1 OF 1	

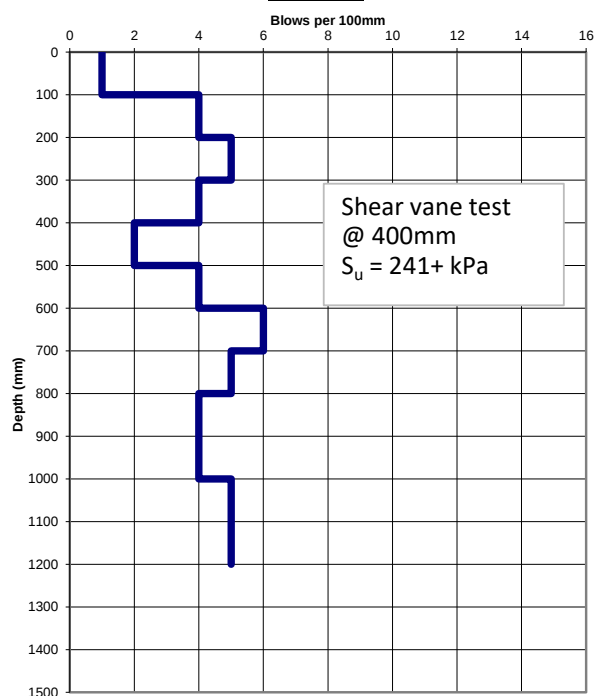


REV	AMENDMENT	DATE	NOTES	JOB TITLE:	DRAWING TITLE:	DESIGNED:	SCALE:
			(1) VERIFY ALL DIMENSIONS ON SITE. (2) DO NOT SCALE FROM DRAWING. (3) COORDINATES IN TERMS OF NZGD2000 NELSON CIRCUIT (4) LEVELS IN TERMS OF: NZVD 2016 ORIGIN OF LEVELS: AP 1 DP 557817 RL 67.14 SOURCE: ASBUILT PLANS	Merc Developments Ltd La Mer View	Diagram of Lot 24 BLA	94 Selwyn Place PO Box 99, NELSON 7040 03 539 0281 enquires@planscapes.co.nz www.planscapes.co.nz	1:300 @ A3
						P Newbury	JOB NO:
						CHECKED:	2001
						APPROVED:	DATE: Jun 2024
						SHEET NUMBER: 1 OF 1	REVISION: A

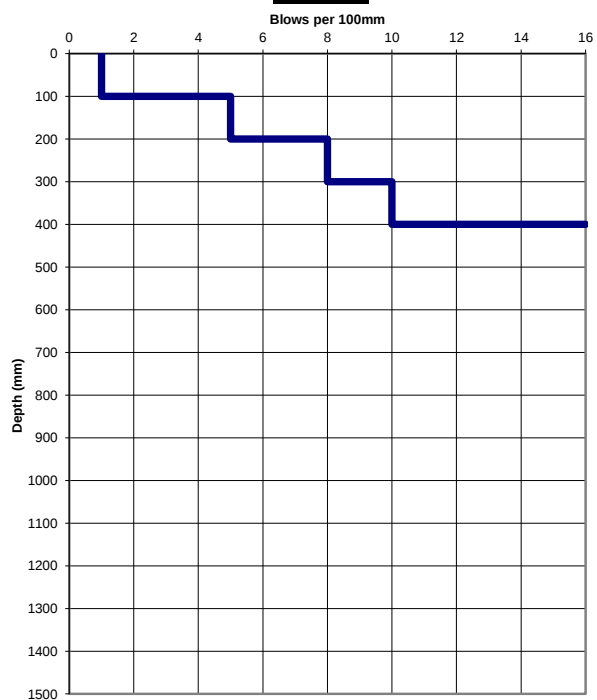
SP5-1



SP5-2



SP5-3



Field shear vane testing in compliance with NZGS guidelines. Shown as peak/residual
Test 6.5.2 NZS4402 Determination of the penetration resistance of a soil

Swanney

Geotechnical and Civil Engineering

PO Box 828, Nelson

Phone: 03 548 9870

Mobile: 021 882011

Client: Merc Developments Ltd

Location: La Mer View

Tester: J Swanney

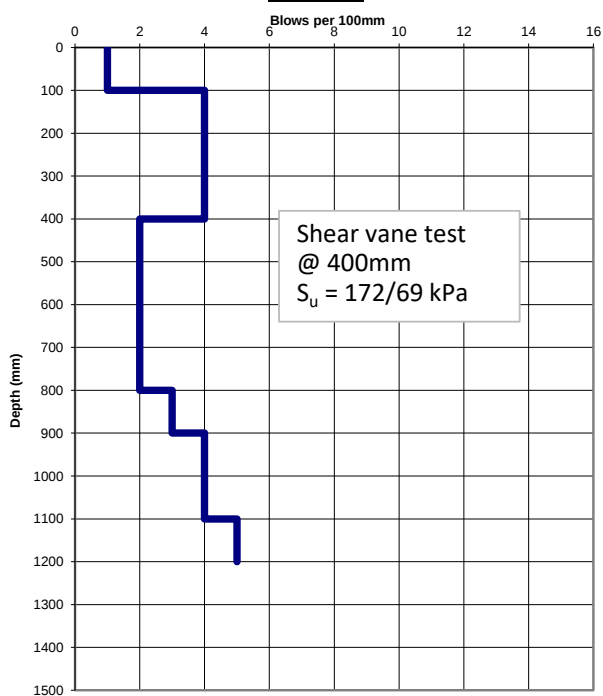
**Scala Penetrometer Certification
Testing**

Date: Aug-24

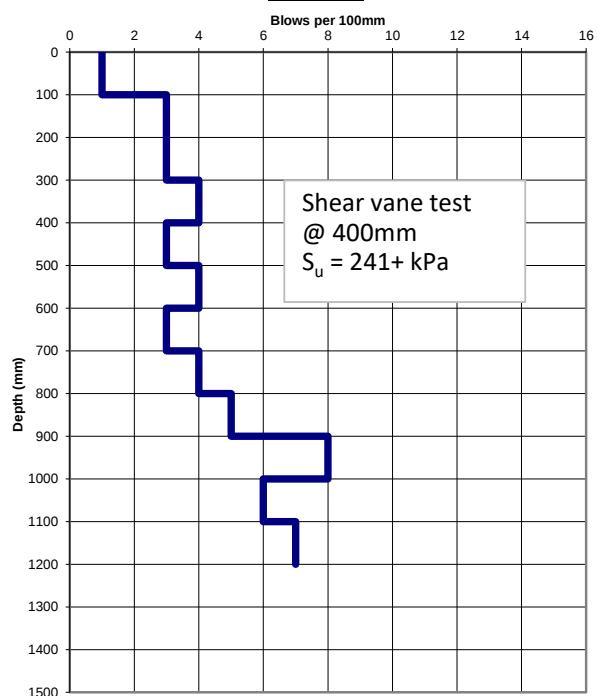
Job No. 1892

Lot 5

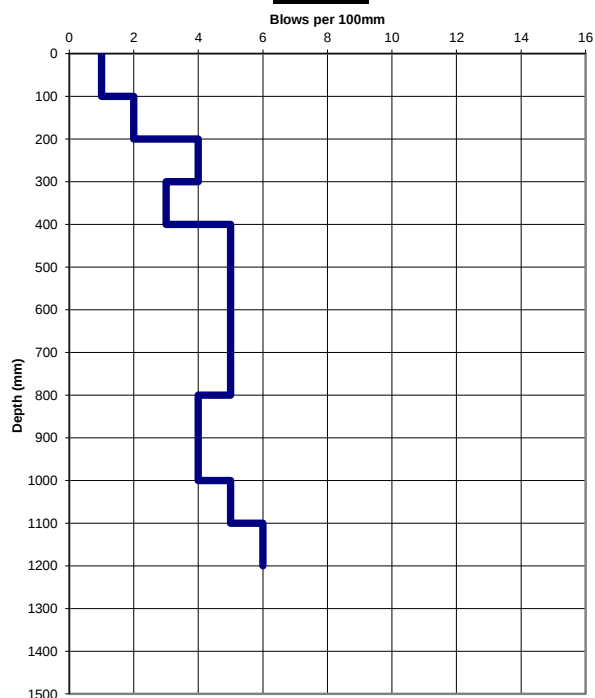
SP6-1



SP6-2



SP6-3



Field shear vane testing in compliance with NZGS guidelines. Shown as peak/residual
Test 6.5.2 NZS4402 Determination of the penetration resistance of a soil

Swanney

Geotechnical and Civil Engineering

PO Box 828, Nelson

Phone: 03 548 9870

Mobile: 021 882011

Client: Merc Developments Ltd

Location: La Mer View

Tester: J Swanney

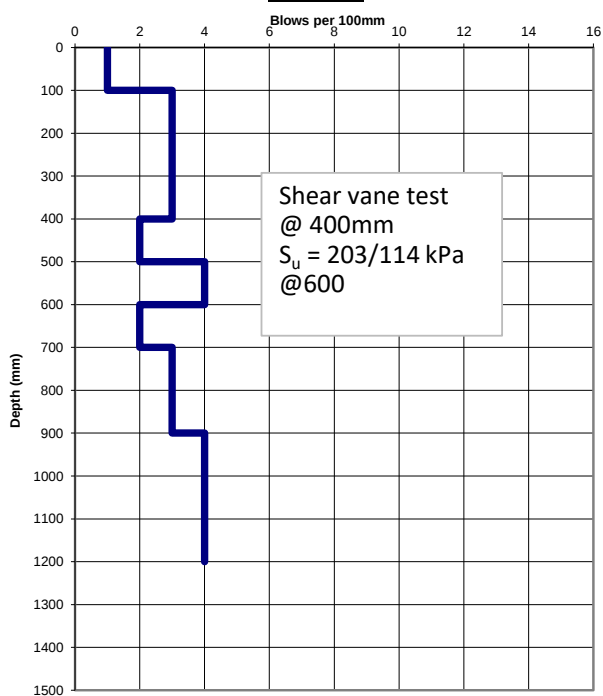
**Scala Penetrometer Certification
Testing**

Date: Aug-24

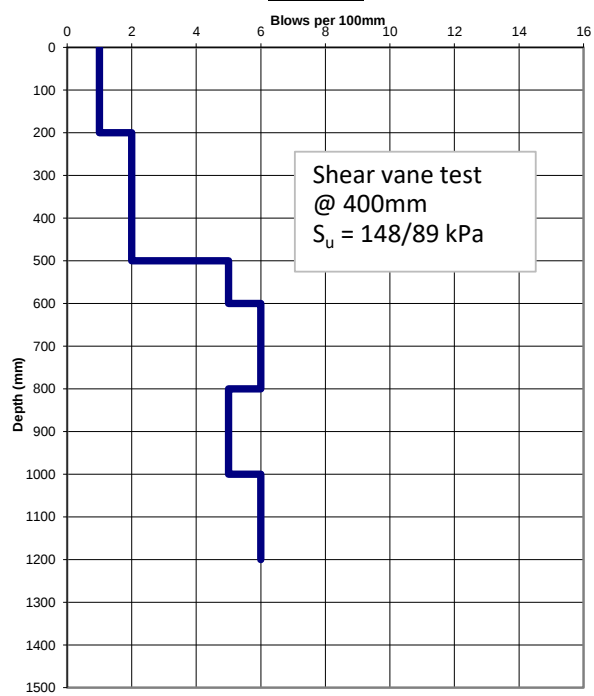
Job No. 1892

Lot 6

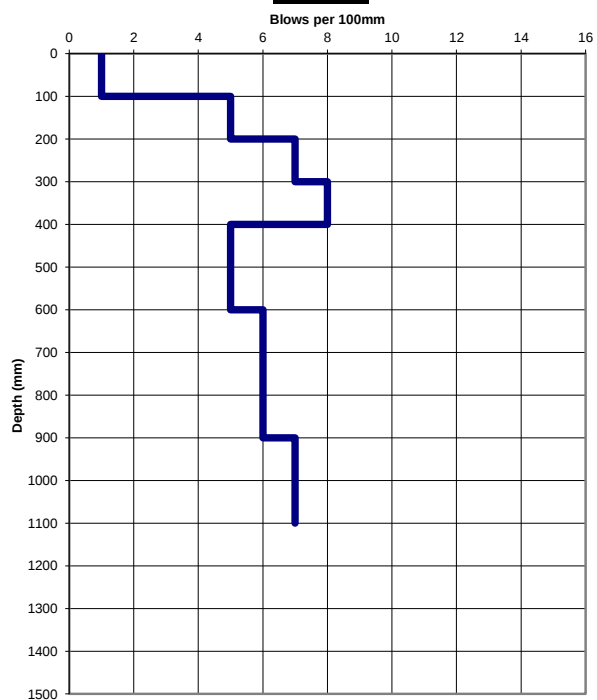
SP7-1



SP7-2

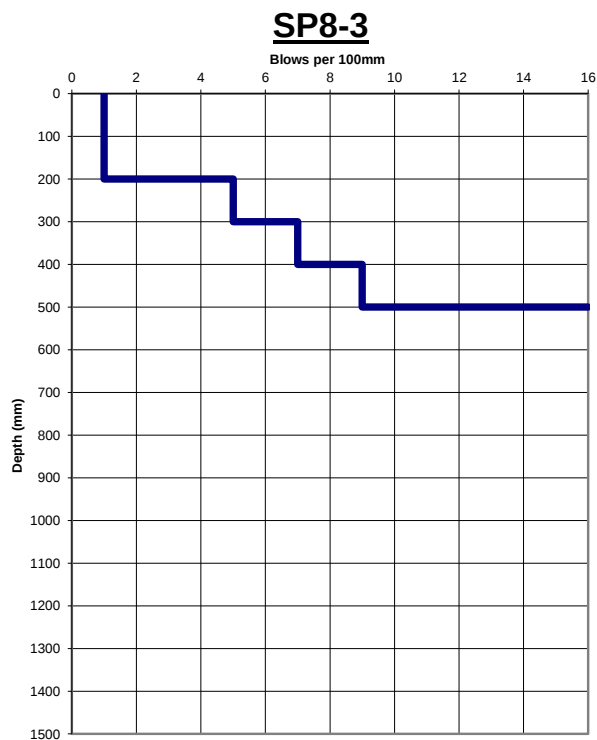
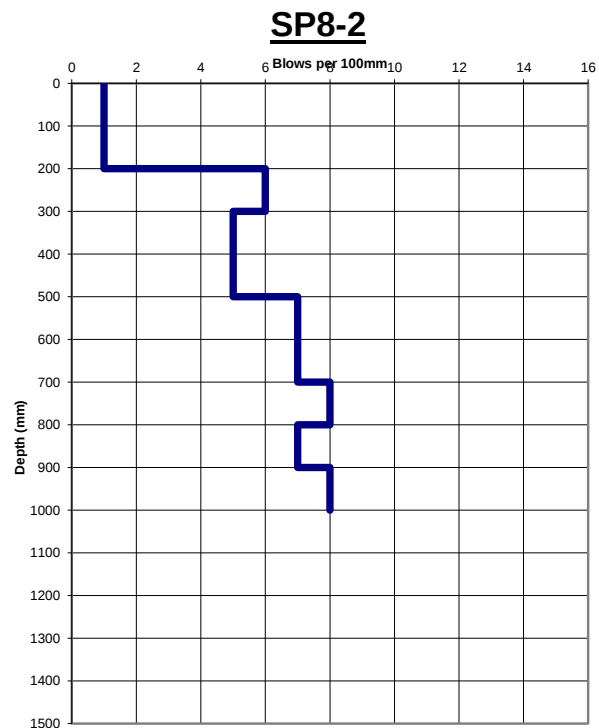
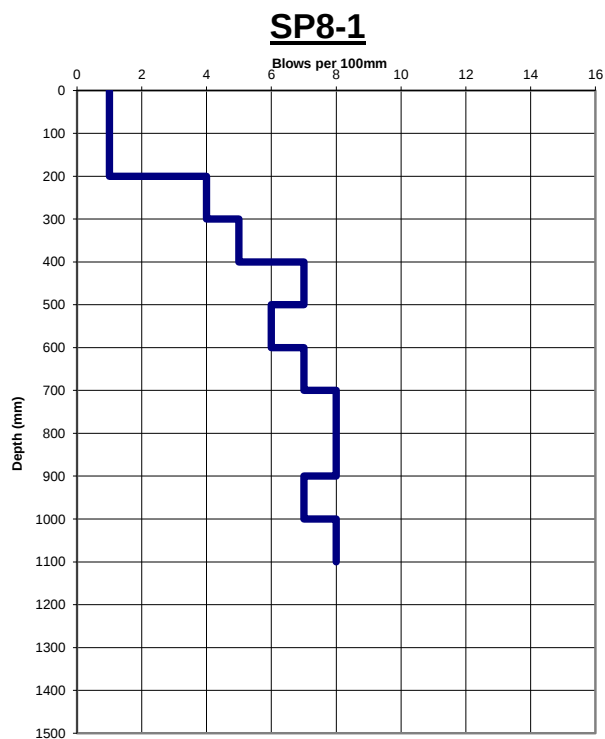


SP7-3



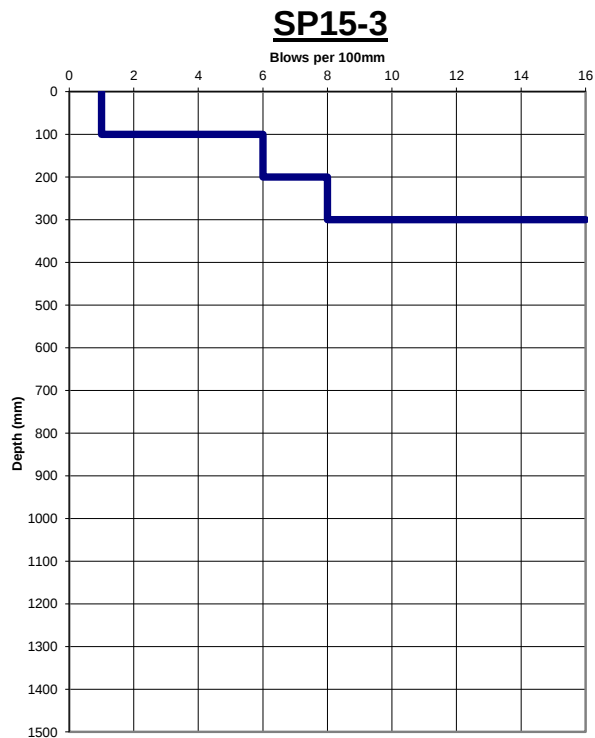
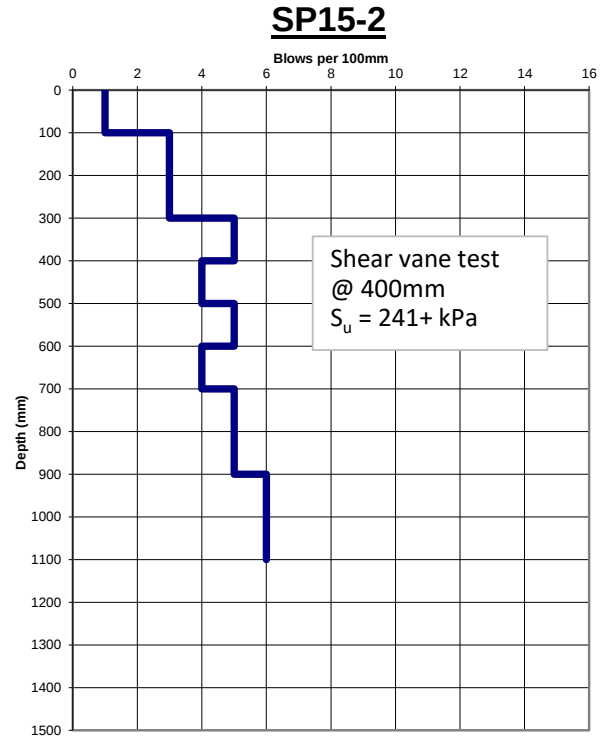
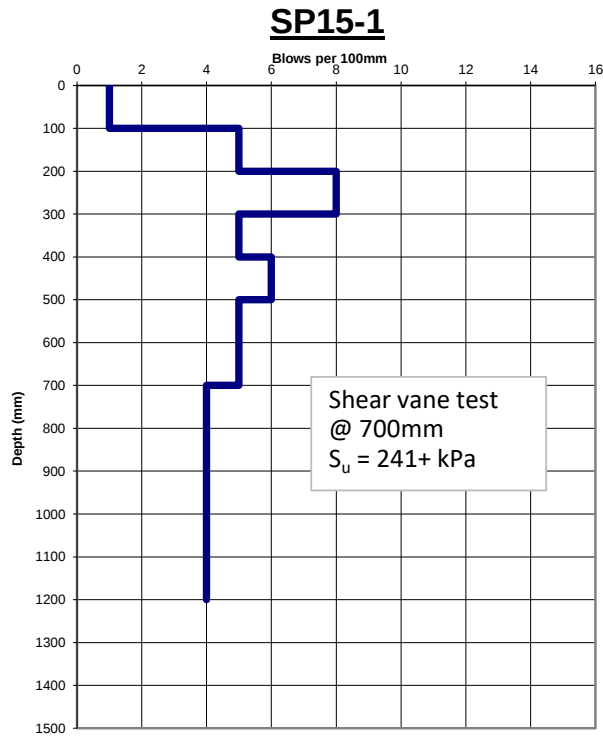
Field shear vane testing in compliance with NZGS guidelines. Shown as peak/residual
Test 6.5.2 NZS4402 Determination of the penetration resistance of a soil

Swanney Geotechnical and Civil Engineering PO Box 828, Nelson Phone: 03 548 9870 Mobile: 021 882011	Client: Merc Developments Ltd		Scala Penetrometer Certification Testing	
	Location: La Mer View		Date: Aug-24	Lot 7
	Tester: J Swanney		Job No. 1892	



Field shear vane testing in compliance with NZGS guidelines. Shown as peak/residual
 Test 6.5.2 NZS4402 Determination of the penetration resistance of a soil

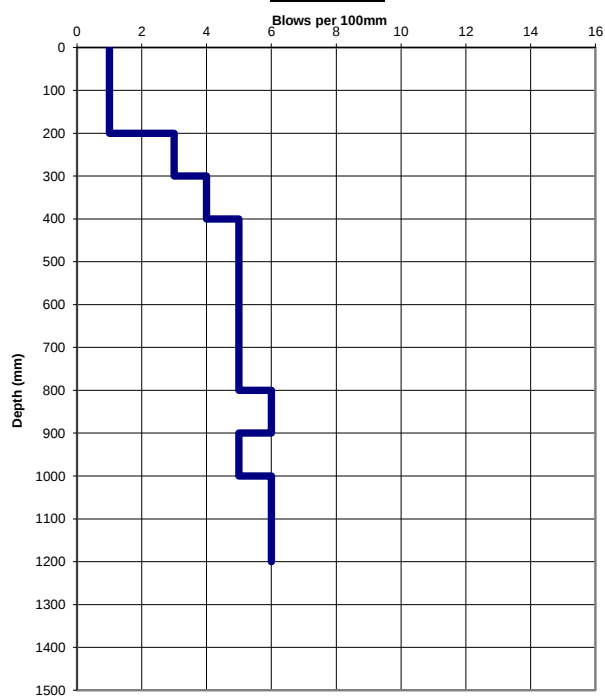
Swanney Geotechnical and Civil Engineering PO Box 828, Nelson Phone: 03 548 9870 Mobile: 021 882011	Client: Merc Developments Ltd	Scala Penetrometer Certification Testing	
	Location: La Mer View	Date: Aug-24	Lot 8
	Tester: J Swanney	Job No. 1892	



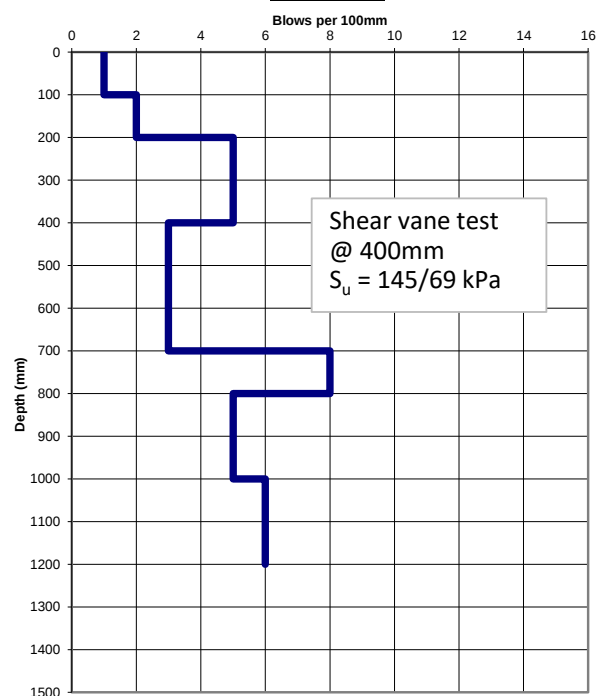
Field shear vane testing in compliance with NZGS guidelines. Shown as peak/residual
 Test 6.5.2 NZS4402 Determination of the penetration resistance of a soil

Swanney Geotechnical and Civil Engineering PO Box 828, Nelson Phone: 03 548 9870 Mobile: 021 882011	Client: Merc Developments Ltd	Scala Penetrometer Certification Testing	
	Location: La Mer View	Date: Aug-24	Lot 15
	Tester: J Swanney	Job No. 1892	

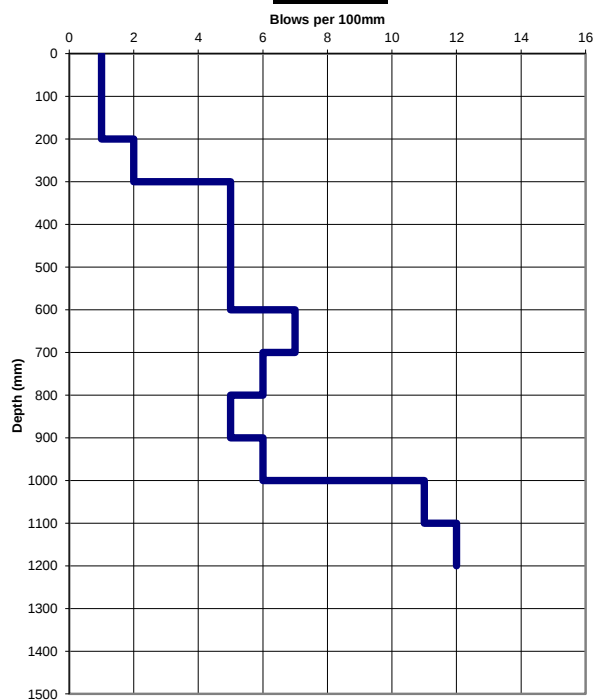
SP22-1



SP22-2



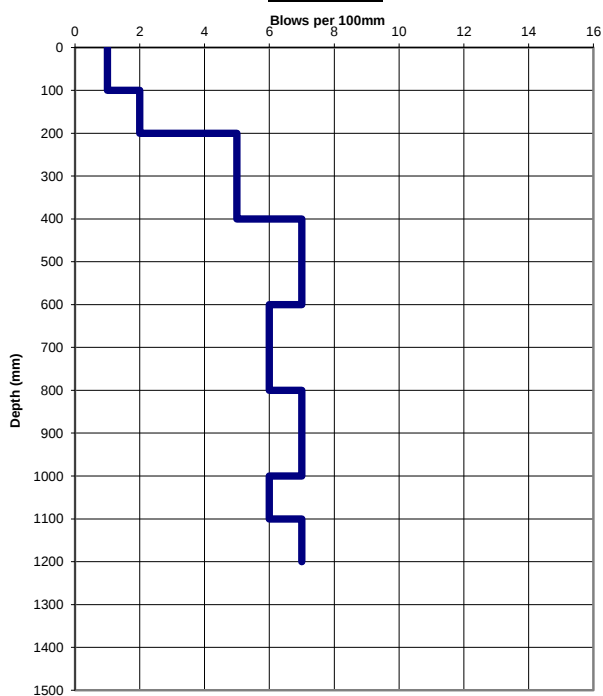
SP22-3



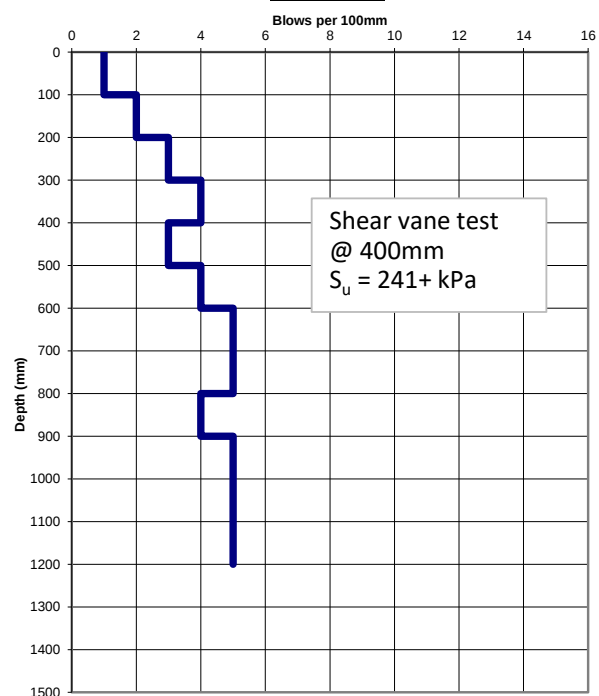
Field shear vane testing in compliance with NZGS guidelines. Shown as peak/residual
Test 6.5.2 NZS4402 Determination of the penetration resistance of a soil

Swanney Geotechnical and Civil Engineering PO Box 828, Nelson Phone: 03 548 9870 Mobile: 021 882011	Client: Merc Developments Ltd	Scala Penetrometer Certification Testing	
	Location: La Mer View	Date: Aug-24	Lot 22
	Tester: J Swanney	Job No. 1892	

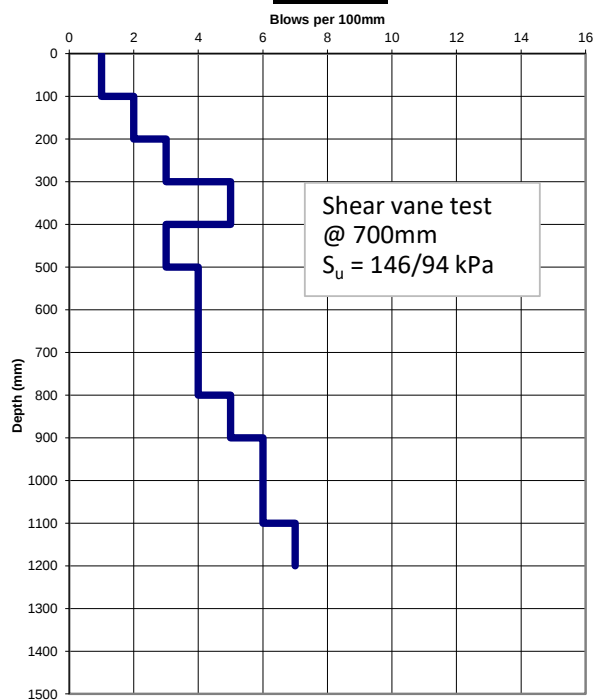
SP23-1



SP23-2



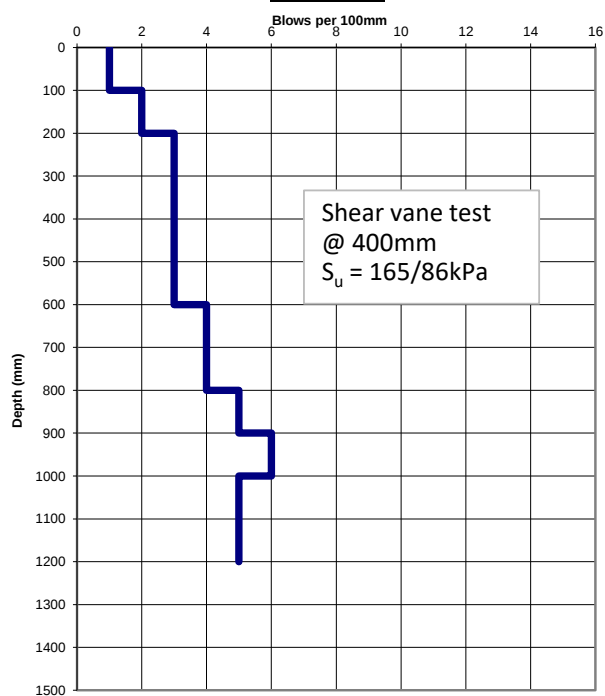
SP23-3



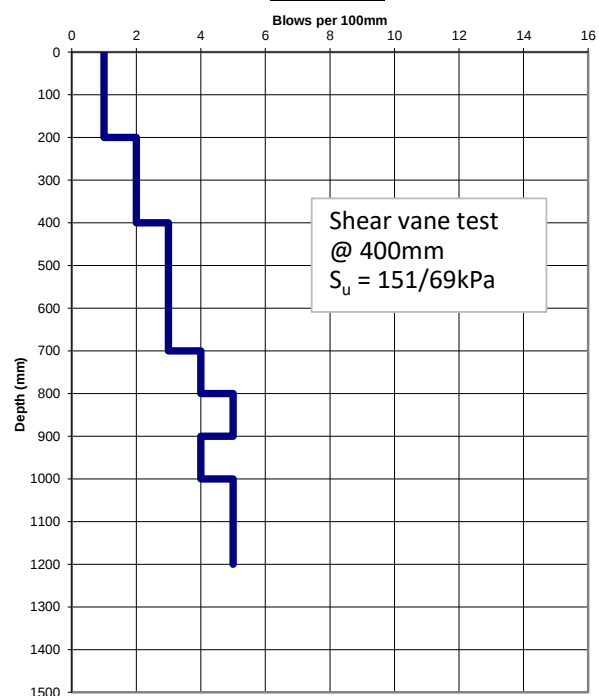
Field shear vane testing in compliance with NZGS guidelines. Shown as peak/residual
Test 6.5.2 NZS4402 Determination of the penetration resistance of a soil

Swanney Geotechnical and Civil Engineering PO Box 828, Nelson Phone: 03 548 9870 Mobile: 021 882011	Client: Merc Developments Ltd		Scala Penetrometer Certification Testing	
	Location: La Mer View		Date: Aug-24	Lot 23
	Tester: J Swanney		Job No. 1892	

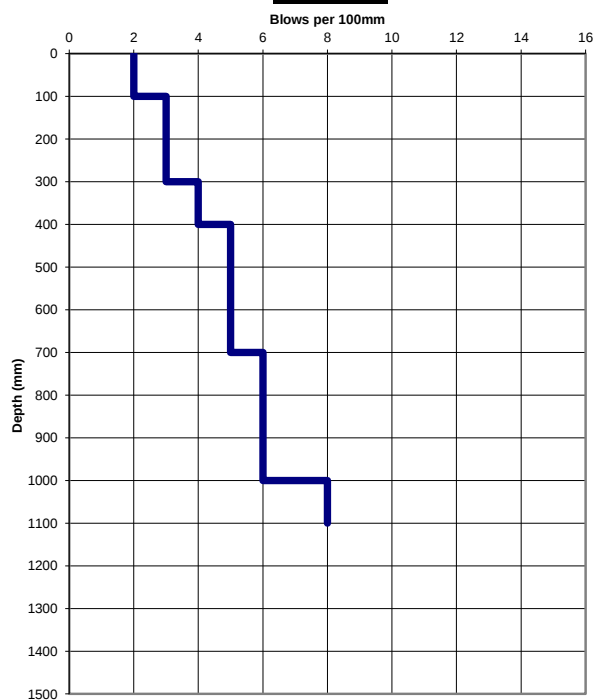
SP24-1



SP24-2



SP24-3



Field shear vane testing in compliance with NZGS guidelines. Shown as peak/residual
Test 6.5.2 NZS4402 Determination of the penetration resistance of a soil

Swanney

Geotechnical and Civil Engineering

PO Box 828, Nelson

Phone: 03 548 9870

Mobile: 021 882011

Client: Merc Developments Ltd

Location: La Mer View

Tester: J Swanney

**Scala Penetrometer Certification
Testing**

Date: Aug-24

Job No. 1892

Lot 24

Lab Ref No : 23/1529

Civil Engineering Laboratory Services Ltd
PO Box 1424, Nelson
Ph 03 547 0110 Mob 027 4457071

NDM COMPACTION CONTROL TEST RESULTS

Project : Merc Developments
Location : Redwood Valley
Client : W Vollmer
Contractor : Merc Machinery

Tested by : A Hayward
Date tested : 01/12/23
Time tested : 12:30 pm
Nuclear densometer no : Troxler 3430+

Solid density (assumed) : 2.65 t/m³
Max dry density (tested) : 1.70 t/m³
Optimum water content (tested) : 19 %
MDD/OMC Lab Ref No : 23/1171 & 23/814

Copies to : W Vollmer
J Swanney
Lab File

Nuclear Density Meter Test Results											
Test Probe Depth (mm)	Direct Transmission										
		Material	Test Area	Depth of Fill	Wet Density (t/m ³)	NDM Water Content (%)	Dry Density (t/m ³)	Oven Corrected Water Content (%)	Air Voids (%)	% of MDD	
Test #											
1		Moutere Clay/Gravel	Lot 5	Finish Level	1.91	20.6	1.63	17.5	10.1	96	
2					1.95	22.0	1.64	18.7	7.3	97	



Insitu Density : NZS 4407:2015, Test 4.2.1 or 4.2.2
Water Content : NZS 4402:1986, Test 2.1 for soils

Moisture correction factor used : 0.85 Lab Ref 23/1188
Sites selected by A Hayward
* Not IANZ Endorsed

Date reported : 04/12/23

This report may only be reproduced in full

A Hayward

Designation : Andrew Hayward
Senior Laboratory Technician

Date : 04/12/23



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

Lab Ref No : 23/1526

Civil Engineering Laboratory Services Ltd
PO Box 1424, Nelson
Ph 03 547 0110 Mob 027 4457071

NDM COMPACTION CONTROL TEST RESULTS

Project : Merc Developments
Location : Redwood Valley
Client : W Vollmer
Contractor : Merc Machinery

Tested by : A Hayward
Date tested : 30/11/23
Time tested : 7:30 am
Nuclear densometer no : Troxler 3430+

Solid density (assumed) : 2.65 t/m^3
Max dry density (tested) : 1.70 t/m^3
Optimum water content (tested) : 19 %
MDD/OMC Lab Ref No : 23/1171 & 23/814

Copies to : W Vollmer
J Swanney
Lab File

Nuclear Density Meter Test Results											
Test Probe Depth (mm)	Direct Transmission										
Test #		Material	Test Area	Depth of Fill	Wet Density (t/m^3)	NDM Water Content (%)	Dry Density (t/m^3)	Oven Corrected Water Content (%)	Air Voids (%)	% of MDD	
1		Moutere Clay/Gravel	Lot 6	1st Lift	1.99	22.2	1.67	18.9	5.4	98	
2					2.03	21.7	1.71	18.4	3.8	101	



Insitu Density : NZS 4407:2015, Test 4.2.1 or 4.2.2
Water Content : NZS 4402:1986, Test 2.1 for soils

Moisture correction factor used : 0.85 Lab Ref 23/1188
Sites selected by A Hayward
* Not IANZ Endorsed

Date reported : 30/11/23

This report may only be reproduced in full

A Hayward

Designation : Andrew Hayward
Senior Laboratory Technician

Date : 30/11/23



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

Lab Ref No : 23/1444

Civil Engineering Laboratory Services Ltd

PO Box 1424, Nelson

Ph 03 547 0110 Mob 027 4457071

NDM COMPACTION CONTROL TEST RESULTS

Project : Merc Developments

Location : Redwood Valley

Client : W Vollmer

Contractor : Merc Machinery

Solid density (assumed) :

2.65 *t/m³

Max dry density (tested) :

1.63 t/m³

Optimum water content (tested) :

20 %

MDD/OMC Lab Ref No :

23/1171

Tested by :

A Hayward

Date tested :

23/11/23

Time tested :

10:00 am

Nuclear densometer no :

Troxler 3430+

Copies to :

W Vollmer

J Swanney

Lab File

Nuclear Density Meter Test Results										
Test Probe Depth (mm)	Direct Transmission									
		Material	Test Area	Depth of Fill	Wet Density (t/m ³)	NDM Water Content (%)	Dry Density (t/m ³)	Oven Corrected Water Content (%)	Air Voids (%)	% of MDD
Test #										
1		Moutere Clay	Lot 22	Finish Level	2.01	22.4	1.69	19.0	4.2	103
2					1.94	28.2	1.56	24.0	3.4	96
3					1.90	30.2	1.51	25.7	4.0	93

Retested
28/11



In situ Density : NZS 4407:2015, Test 4.2.1 or 4.2.2

Water Content : NZS 4402:1986, Test 2.1 for soils

Moisture correction factor used :

0.85

Lab Ref 23/1188

Sites selected by A Hayward

* Not IANZ Endorsed

Date reported : 27/11/23

This report may only be reproduced in full

Designation : Andrew Hayward
Senior Laboratory Technician

Date : 27/11/23



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

Lab Ref No : 23/1493

Civil Engineering Laboratory Services Ltd

PO Box 1424, Nelson

Ph 03 547 0110 Mob 027 4457071

NDM COMPACTION CONTROL TEST RESULTS

Project : Merc Developments

Location : Redwood Valley

Client : W Vollmer

Contractor : Merc Machinery

Solid density (assumed) :

Max dry density (tested) :

Optimum water content (tested) :

MDD/OMC Lab Ref No :

2.65 *t/m³

1.63 t/m³

20 %

23/1171

Tested by :

Date tested :

Time tested :

Nuclear densometer no :

A Hayward

28/11/23

7:15 am

Troxler 3430+

Copies to :

W Vollmer

J Swanney

Lab File

Nuclear Density Meter Test Results											
Test Probe Depth (mm)	Direct Transmission										
Test #		Material	Test Area	Depth of Fill	Wet Density (t/m ³)	NDM Water Content (%)	Dry Density (t/m ³)	Oven Corrected Water Content (%)	Air Voids (%)	% of MDD	
1		Moutere Clay	Lot 1	1st Lift	1.96	26.7	1.59	22.7	3.7	98	
2			Lot 22 retest of site 3	Finish Level	1.99	23.4	1.66	19.9	4.3	102	



Insitu Density : NZS 4407:2015, Test 4.2.1 or 4.2.2

Water Content : NZS 4402:1986, Test 2.1 for soils

Moisture correction factor used :

0.85

Lab Ref 23/1188

Sites selected by A Hayward

* Not IANZ Endorsed

Date reported : 29/11/23

This report may only be reproduced in full

Andrew Hayward

Designation :

Senior Laboratory Technician

Date :

29/11/23



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

NDM COMPACTION CONTROL TEST RESULTS

Project : Merc Developments

Location : Redwood Valley

Client : W Vollmer

Contractor : Merc Machinery

Solid density (assumed) : 2.65 2.65 *t/m³Max dry density (tested) : 1.77 1.63 t/m³

Optimum water content (tested) : 17 20 %

MDD/OMC Lab Ref No : 23/813 23/1171

Gravel/Clay Clay

Tested by : A Hayward

Date tested : 26/10/23

Time tested : 12:45 pm

Nuclear densometer no : Troxler 3430+

Copies to : W Vollmer

J Swanney

Lab File

Nuclear Density Meter Test Results

Test Probe Depth (mm)	Direct Transmission										
Test #		Material	Test Area	Depth of Fill	Wet Density (t/m ³)	NDM Water Content (%)	Dry Density (t/m ³)	Oven Corrected Water Content (%)	Air Voids (%)	% of MDD	Lab Ref No
1		Moutere Clay	Three Roads Intersection	1st Lift	1.99	28.3	1.61	24.1	0.7	99	23/1171
2					1.96	27.2	1.59	23.1	3.1	98	
3		Moutere Gravel/Clay	Lot 23	Finish Level	2.05	20.2	1.75	17.2	4.1	99	23/813
4					2.03	21.3	1.72	18.1	4.0	97	



Insitu Density : NZS 4407:2015, Test 4.2.1 or 4.2.2

Water Content : NZS 4402:1986, Test 2.1 for soils

Moisture correction factor used : 0.85 Lab Ref 23/1188

Sites selected by A Hayward

* Not IANZ Endorsed

Date reported : 27/10/23

This report may only be reproduced in full

Designation : Senior Laboratory Technician

Date : 27/10/23



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

NDM COMPACTION CONTROL TEST RESULTS

Project : Merc Developments

Location : Redwood Valley

Client : W Vollmer

Contractor : Merc Machinery

Solid density (assumed) : 2.65 2.65 *t/m³Max dry density (tested) : 1.77 1.60 t/m³

Optimum water content (tested) : 17 22 %

MDD/OMC Lab Ref No : 23/813 21/1258

Gravel Clay

Tested by : A Hayward

Date tested : 29/09/23

Time tested : 7:45 am

Nuclear densometer no : Troxler 3430+

Copies to : W Vollmer

J Swanney

Lab File

Nuclear Density Meter Test Results

Test Probe Depth (mm)	Direct Transmission									
Test #	Material	Test Area	Depth of Fill	Wet Density (t/m ³)	NDM Water Content (%)	Dry Density (t/m ³)	Oven Corrected Water Content (%)	Air Voids (%)	% of MDD	
1	Moutere Clay	Lot 24 (Surface)	Approx 0.5m below FL	1.91	31.0	1.48	29.5	0.8	92	
2				1.90	28.6	1.49	27.2	3.0	93	

1	Moutere Gravel	Lot 24 (-150mm below Surface)	Approx 0.5m below FL	2.03	17.9	1.73	17.0	5.1	98	
2				1.98	18.6	1.68	17.7	6.7	95	



Scraped top 150mm off (elevated moisture content) and retested



Insitu Density : NZS 4407:2015, Test 4.2.1 or 4.2.2

Water Content : NZS 4402:1986, Test 2.1 for soils

Moisture correction factor used : 0.95 Lab Ref 23/890

Sites selected by A Hayward

* Not IANZ Endorsed

Date reported : 02/10/23

This report may only be reproduced in full

Andrew Hayward

Designation : Senior Laboratory Technician



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

Date : 02/10/23