



Milldale Stages 14-17 Fast-Track - Stream Investigations

Fulton Hogan Land Development Ltd
4/08/2026
For Information

Document Control

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Statement Of Qualifications And Experience

Hamish den Dekker – Graduate Surveyor

I am a Graduate Surveyor at Wood and Partners Consultants Ltd (Woods), a multi-disciplinary consultancy specialising in planning, urban design, engineering, water infrastructure, and surveying. I have been employed at Woods since November 2024.

I hold a Bachelor of Surveying from University of Otago, completed in 2024. I am a Graduate Level member of Survey + Spatial New Zealand. I have two years of post-graduate experience in surveying, including field capture and plan preparation, on the Milldale site.

I confirm that, in my capacity as the originator of this report, I have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

Sam Kirk - Associate Engineer/Surveyor

I am a Licensed Cadastral Surveyor and Associate Engineer at Wood and Partners Consultants Ltd (Woods). Woods is a multi-disciplinary consultancy specialising in planning, urban design, engineering, water infrastructure, and surveying. I have been employed at Woods since July 2025, although also previously between January 2019 and September 2022.

I hold the qualifications of a Bachelor of Surveying, which I completed in 2018, and I also hold a Cadastral Surveying License. I am also a Voting Member of S+SNZ.

I have eight years of experience in the Land Development industry. My experience includes surveying, the design and construction observation of a range of land development projects, including project management and the procurement of earthworks, roading, services and other infrastructure. I have been involved with the surveying, design and management of previous Milldale projects, dating back to Stage 1A. I have also been involved in managing multiple land development projects in London and Melbourne.

I confirm that, in my capacity as the co-author of this report, I have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practices Note 2023.

Samantha Muirhead - Associate Surveyor

I am a Licensed Cadastral Surveyor, and Associate Surveyor at Wood and Partners Consultants Ltd (Woods). Woods is a multi-disciplinary consultancy specialising in planning, urban design, engineering, water infrastructure, and surveying. I have been employed at Woods since December 2013.

I hold a Bachelor of Surveying from University of Otago, completed in 2013. I am a Licensed Cadastral Surveyor with the Cadastral Survey Licensing Board of New Zealand and a Full Member of Survey and Spatial New Zealand.

I have 12 years of professional experience in Surveying and the land development industry. Including both greenfield and brownfield development. My experience includes capture of physical features and cadastral surveys, as well as navigating the regulatory and legal processes associated with land development.

I confirm that, in my capacity as co-author of this report, I have read and abide by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

Contents

1.	Introduction	5
2.	Watercourse Legislative Requirements	5
2.1.	Cadastral Survey Rules 2021	5
2.2.	Resource Management Act 1991	5
2.3.	Auckland Unitary Plan	6
3.	Watercourse Investigations Methodology	6
3.1.	Field Investigations	6
3.2.	Data Analysis	6
3.3.	Typical Cross Section	7
3.4.	Annual Fullest Flow Verification	7
4.	Conclusion	8
5.	APPENDIX A – DETAILED STREAM INVESTIGATION	9
5.1.	Watercourse P1	9
5.2.	Watercourse P2	10
5.3.	Watercourse P3	11
5.4.	Watercourse I1	12
5.5.	Watercourse I2	13
5.6.	Watercourse I3	14
5.7.	Watercourse I4	15
5.8.	Watercourse I5	16
5.9.	Watercourse I6	17
5.10.	Watercourse I7	18
5.11.	Watercourse I8	19
5.12.	Watercourse I9	20
5.13.	Watercourse I10	21
6.	APPENDIX B – STREAM WIDTH INVESTIGATION PLAN	22

1. Introduction

This report provides a summary of the investigation conducted on the watercourses within the Milldale Stages 14-17 Development Area in Wainui East, Auckland. This includes watercourses located north of Wainui Road, east of Cemetery Road and north-east of Endsley Rise, specifically referred to as P1 – 3 and I1 – 10 (Shown in Appendix A).

The primary objective of this investigation is to identify the relevant permanent and intermittent watercourses within the site and determine the stream bed width for each watercourse for the purpose of assessing whether an esplanade reserve is triggered under section 230 of the Resource Management Act 1991 (RMA).

The investigation involved analysing field survey data, with the surveyed stream widths verified against modelled annual fullest flow extents. The findings of this assessment inform the planning and development processes, ensuring compliance with relevant legislation and planning requirements.

This report should be read in conjunction with the appendices and (separately provided) ecology reporting.

2. Watercourse Legislative Requirements

This investigation has been undertaken employing the following enactments:

2.1. Cadastral Survey Rules 2021

The Cadastral Survey Rules 2021 are issued by the Surveyor-General under Section 49 of the Cadastral Survey Act 2002.

Section 6. Duty of a Surveyor when defining boundary by survey

When defining a boundary by survey, a cadastral surveyor must—

- (a) gather all evidence relevant to the definition of the boundary and its boundary points; and
- (b) interpret that evidence in accordance with all relevant enactments and rules of law; and
- (c) use that evidence to determine the correct position of the boundary and boundary points in relation to other boundaries and boundary points.

2.2. Resource Management Act 1991

As per Section 230 of the RMA 1991, **esplanade reserves** are required where:

*“any allotment of **less than 4 hectares** is created **when land is subdivided**, an **esplanade reserve 20 metres** in width shall be set aside from that allotment...”*

And, when:

*“a **river** means a river whose bed has **an average width of 3 metres or more** where the river flows through or adjoins an allotment”*

Section 2, interpretation, also defines the terms “bed” and “river” as the following:

*“**bed** means,—*

- (a) *in relation to any river-*
 - i. *for the purposes of esplanade reserves, esplanade strips, and subdivision, the space of land which the waters of the river cover at its annual fullest flow without overtopping its banks.” and,*

“river means,

- *a continually or intermittently flowing body of fresh water; and includes a stream and modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal)*

Field survey information has been used to assess whether the average bed width of each watercourse is 3 metres or greater, with modelled annual fullest flow extents used as a verification check against the surveyed stream bank interpretation.

2.3. Auckland Unitary Plan

Where an esplanade reserve is not required under the RMA, the Auckland Unitary Plan, Wainui Precinct (1544.6.1. Open Space) specifies requirements for riparian margins. These requirements state that the location and width of open space shall provide a minimum width of 25m for the Waterloo Creek ecological corridor and 15m for secondary ecological corridors.

3. Watercourse Investigations Methodology

As per the legislative requirements, ephemeral and artificial watercourses are not within the definition of river and therefore are not subject to the provisions of section 230 of the RMA. Natural inland wetlands are also not assessed against the RMA stream width trigger.

The remainder of the report is therefore limited to intermittent and permanent watercourses that are proposed to be retained or subject to streamworks.

3.1. Field Investigations

Extensive topographical surveys were conducted between 2022 and 2026 using a combination of GNSS and total station methodologies. The streams surveyed were characterised by clearly defined banks and delineated onsite using top and bottom bank strings, supplemented by channel centreline and water level observations where identifiable.

Separate ecological field investigations were also undertaken by Viridis Limited, including site walkovers and review of mapped freshwater features. The ecologists' expertise provided important context for the interpretation of watercourses, wetlands and other freshwater features across the site.

The stream investigation survey was comprehensive and included freshwater drainage features assessed as part of the wider investigation. This initially included some surveyed reaches that were subsequently classified as wetlands, artificial ponds/watercourses, or ephemeral streams. These features have been excluded from the final stream width calculations and the RMA s230 trigger assessment. Where shown on the attached summary plans, they are included for context only.

This assessment should be read in conjunction with (the separately provided) ecology reporting and freshwater mapping prepared by Viridis in support of this Fast-track Application.

3.2. Data Analysis

The survey data was processed using 12d software, ensuring precise handling and accuracy of field measurements. Following the creation of the overall ground surface model, cross-sectional measurements perpendicular to the surveyed stream banks were exported to CAD for targeted stream width analysis.

The stream width calculations have been undertaken only for those reaches classified as permanent or intermittent watercourses.

Across the site, natural obstructions such as felled trees, blocked culverts and vegetation build-up resulted in some gaps in data and localised channel variation. These locations were documented and accounted for when calculating the overall average width of each channel.

The average stream width was calculated using the following formula:

$$\text{Average width (m)} = \frac{\text{Sum of width (m) at cross sections}}{\text{Number of cross sections}}$$

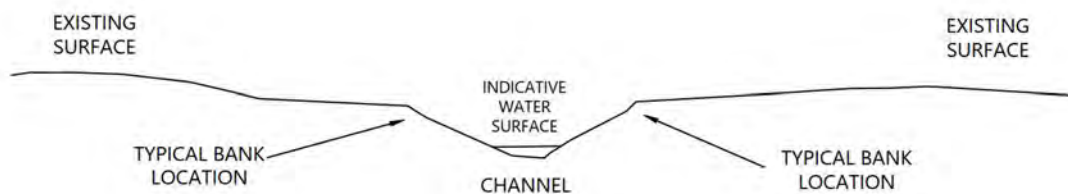
3.3. Typical Cross Section

Typical cross sections of the watercourses in this report were characterised by identifiable stream banks, a channel invert and, where present at the date of survey, an observed waterline.

The observed waterline was recorded as a field indicator only and has not been used as the basis for determining stream width. Stream widths have instead been assessed from the surveyed channel form, including the identified bank locations, channel shape and containment of flows.

Cross sections were taken at approximately 20m intervals, perpendicular to the surveyed channel alignment, and used to calculate the average stream width for each assessed watercourse. This survey-based assessment forms the basis for determining whether each watercourse has an average bed width of 3m or greater for the purposes of the RMA s230 esplanade reserve trigger.

An overall plan showing section locations can be found in Appendix A.



3.4. Annual Fullest Flow Verification

To verify the survey-based stream width assessment, each assessed watercourse has been reviewed against the modelled pre-development 2.3-year ARI event. This event has been used as a practical representation of the annual fullest flow referred to in the RMA definition of the bed of a river.

The purpose of this review was to test whether the surveyed stream banks and calculated widths are consistent with the area expected to be occupied by the annual fullest flow, without overtopping the banks. The modelling has therefore been used as a verification check, rather than as the primary method for defining the stream banks.

Across the site, the modelled annual fullest flow was found to be contained within the surveyed stream banks. This included locations where the surveyed average width was close to, but below, the 3 m threshold. In these cases, the modelling confirmed that the annual fullest flow remained comfortably contained within the surveyed channel form and did not indicate a wider stream bed than had been identified by survey.

In limited locations where the surveyed bank form appeared to be influenced by artificial or modified features, the modelled annual fullest flow extent was given greater weight in verifying the assessed stream bed width. In those locations, the modelled flow remained comfortably contained within the broader surveyed channel form and confirmed that the annual fullest flow width was less than the wider surveyed bank-to-bank extent.

On this basis, the 2.3-year ARI modelling verifies that the surveyed stream width assessment remains consistent with the RMA definition of the bed of a river, being the area covered by water at annual fullest flow without overtopping its banks.

4. Conclusion

With reference to the esplanade reserve requirements under s230 of the Resource Management Act 1991, stream widths have been assessed at approximately 20m intervals and averaged to determine whether each assessed watercourse has a stream bed width of 3m or greater.

The stream width assessment has been based on the surveyed stream banks and channel form. The modelled pre-development 2.3-year ARI event has been used as a verification check to confirm that the surveyed stream widths are consistent with the annual fullest flow test under the RMA.

The modelling confirmed that the annual fullest flow is contained within the surveyed stream banks across the assessed watercourses, including locations where the surveyed average width is close to, but below, the 3m threshold. Accordingly, the modelling did not alter the survey-based classification of which watercourses do, and do not, trigger an esplanade reserve requirement.

On this basis, the following classifications apply:

Watercourse	Esplanade Reserve Required
P1	Yes
P2	Yes
P3	No
I1	No
I2	No
I3	No
I4	No
I5	No
I6	No
I7	No
I8	No
I9	No
I10	No

Accordingly, an esplanade reserve is proposed alongside Watercourses P1 and P2. The reserve provides for the required **minimum 20m width**, with the proposed reserve boundary locally widened in places to achieve a practical, contiguous and maintainable reserve layout alongside proposed road corridors, residential lots and physical site features.

Where an esplanade reserve is not triggered, a separate **15m retained and realigned watercourse corridor** is proposed along the remaining retained and realigned watercourses, consistent with the secondary ecological corridor requirements applying within the Wainui Precinct under the Auckland Unitary Plan.

For completeness, the localised widening of the proposed esplanade reserve and watercourse corridors beyond the minimum 20m and 15m widths is a practical design response and does not alter the classification of which watercourses do, and do not, trigger an esplanade reserve requirement. Section 77 of the RMA provides for esplanade reserve widths to be varied through the relevant planning framework.

5. APPENDIX A – DETAILED STREAM INVESTIGATION

5.1. Watercourse P1

Stream within **Lot 5 & 8** DP 198205, adjacent to **9, 10 & 12** DP 198205.

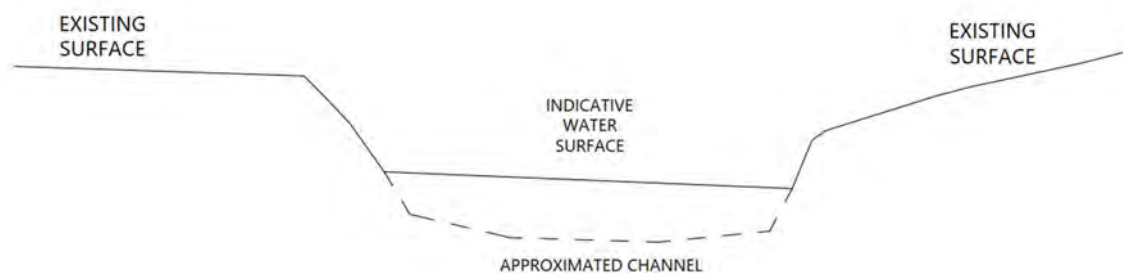
Watercourse P1 (Ōrewa River) is a well-defined, primarily u-shaped channel flanked by farmland, with approximately 2km situated within the proposed development area. It discharges to the ocean approximately 3km downstream of the development area and receives a steady flow from connecting watercourses I1-8.

The average stream bed is **greater than 3 metres** wide with only small sections falling under this threshold, **esplanade reserve required**.



Figure 1 Watercourse P1

Typical cross section – P1
Not to scale, 1x Vertical Exaggeration



5.2. Watercourse P2

Stream adjacent to **Lot 4** DP 353309 and **Lot 1** DP 589819.

Watercourse P2 (Waterloo Creek) is a well-defined primary channel, with densely vegetated banks.

The average stream bed is **greater than 3 metres** wide, therefore, **esplanade reserve is required**.



Figure 2 Watercourse P2

5.3. Watercourse P3

Stream within **Lot 1** DP 589819.

Watercourse P3 has a clear waterline and well-defined grassed banks. It is also characterised by a deep channel relative to the width. The stream is located between a well-established vegetated area to the west and grassed paddock to the east. This section of the stream within the development area is approximately 100m long.

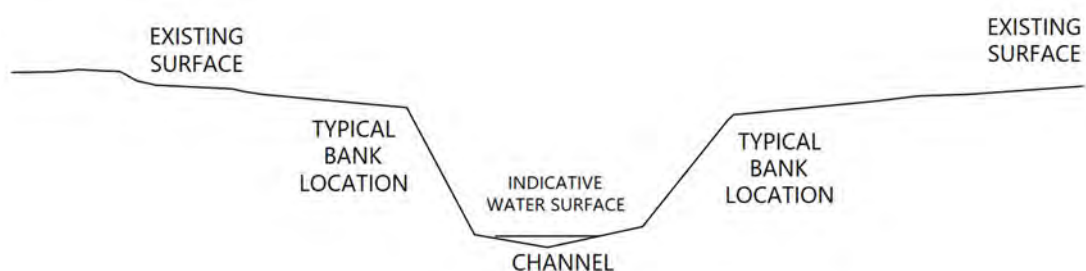
Watercourse P3 has an average stream bed width of 2.3m – **less than 3m wide, esplanade reserve not required.**



Figure 3 Watercourse P3

Typical cross section – P3

Not to scale, 1x Vertical Exaggeration



5.4. Watercourse I1

Stream within **Lot 5** DP 198205.

Watercourse I1 is a low-lying flat channel flanked by wetland areas, transitioning into a well-defined channel further downstream. This defined channel, approximately 40m long, is characterised by steep grassed banks, a narrow channel width and a largely indistinct water level.

Watercourse I1 has an average stream bed width of 2.6m – **less than 3m wide, esplanade reserve not required.**

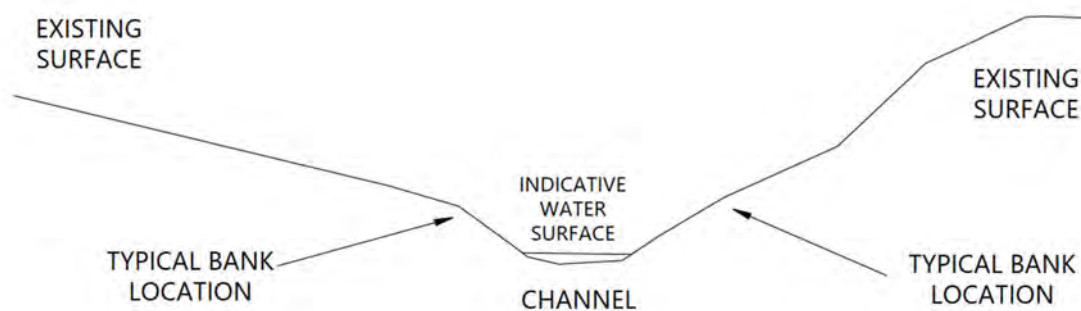


Figure 5 Watercourse I1 Upstream



Figure 5.1 Watercourse I1 Downstream

Typical cross section – I1
Not to scale, 1x Vertical Exaggeration



5.5. Watercourse I2

Stream within **Lot 5** DP 198205 & **Lot 3** DP 130515.

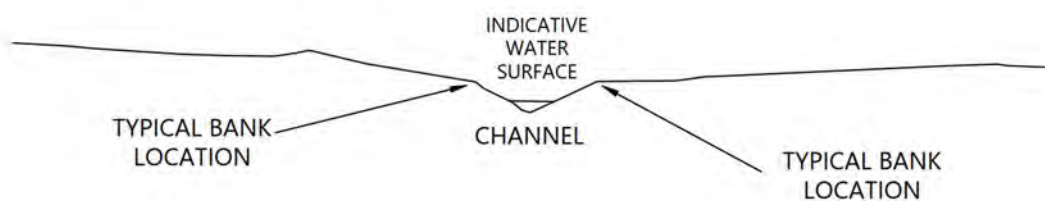
Watercourse I2 consists of a defined V-shaped channel upstream, transitioning into a low-lying flat channel with steep grassed banks further downstream. Positioned between farmland on both sides and approximately 450m long, it passes beneath Wainui Road via a culvert.

Watercourse I2 has an average stream bed width of 2.6m – **less than 3m wide, esplanade reserve not required.**



Figure 6 Watercourse I2 Upstream

Typical cross section – I2
Not to scale, 1x Vertical Exaggeration



5.6. Watercourse I3

Stream within **Lot 5** DP 198205 and **Lot 2** DP 130515.

Watercourse I3 is a low lying u-shaped channel running through a tall grassed lane, flanked by farmland on both banks. This watercourse reach is approximately 180m, and flows into Watercourse P1 downstream.

Watercourse I3 has an average stream bed width of 2.8m – **less than 3m wide, esplanade reserve not required.**

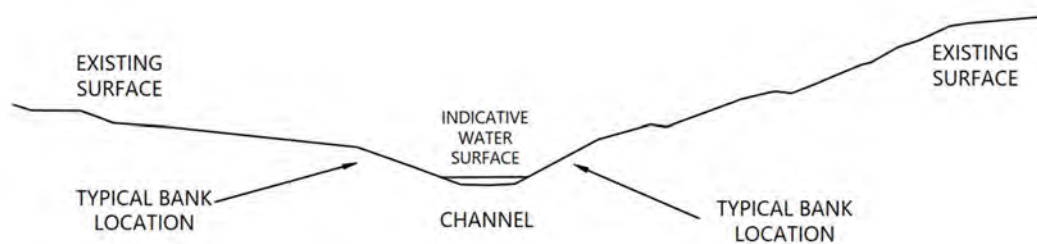


Figure 8 Watercourse I3 upstream



Figure 8.1 Watercourse I3 downstream

Typical cross section – I3
Not to scale, 1x Vertical Exaggeration



5.7. Watercourse I4

Stream within **Lot 5** DP 198205, **Lot 8** DP 198205 and unformed paper road.

Watercourse I4 comprises a short watercourse reach connecting to Watercourse P1 downstream. The assessed reach is located immediately downstream of an artificial farm pond and adjacent to an existing farm track and culvert crossing.

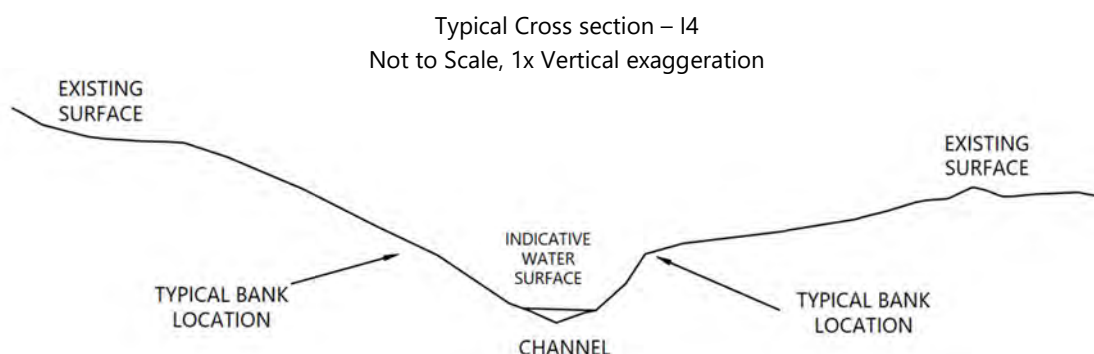
The surveyed bank-to-bank width exceeds 3m in places. However, the surveyed channel form in this location appears to be influenced by the adjacent artificial pond, farm track formation and associated culvert works. Dense vegetation also limited the clarity of the physical bank interpretation.

The modelled pre-development 2.3-year ARI flow, used as a practical representation of annual fullest flow, is comfortably contained within the surveyed banks and indicates a stream width of less than 3m. In this specific location, the modelled annual fullest flow extent has therefore been used to verify the assessed stream bed width.

On this basis, Watercourse I4 has an assessed average stream bed width of **less than 3m. An esplanade reserve is therefore not required for Watercourse I4.**



Figure 9 Watercourse I4



5.8. Watercourse I5

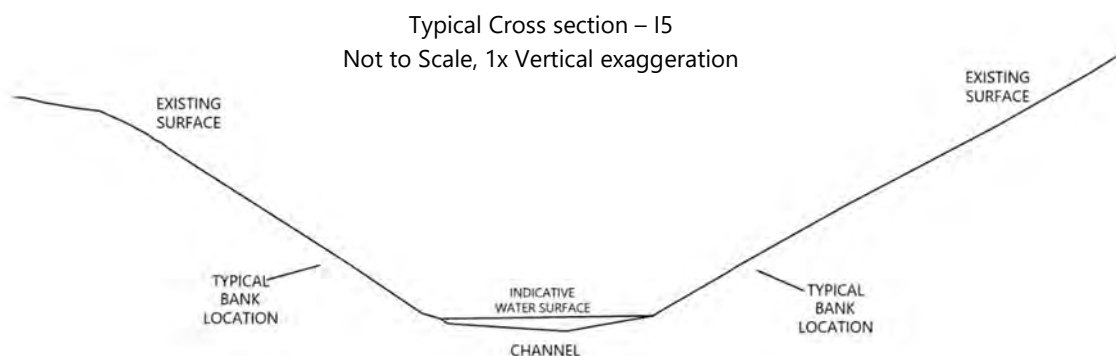
Stream within **Lot 12** DP 198205.

Watercourse I5 is characterised by steep grassed banks with a shallow, marshy water depth at the bottom of the banks. This watercourse has an approximate length of 12m, leading down from a small pond into the Ōrewa River (P1).

Watercourse I5 has an average stream bed width of 2.8m – **less than 3m wide, esplanade reserve not required.**



Figure 10 Watercourse I5



5.9. Watercourse I6

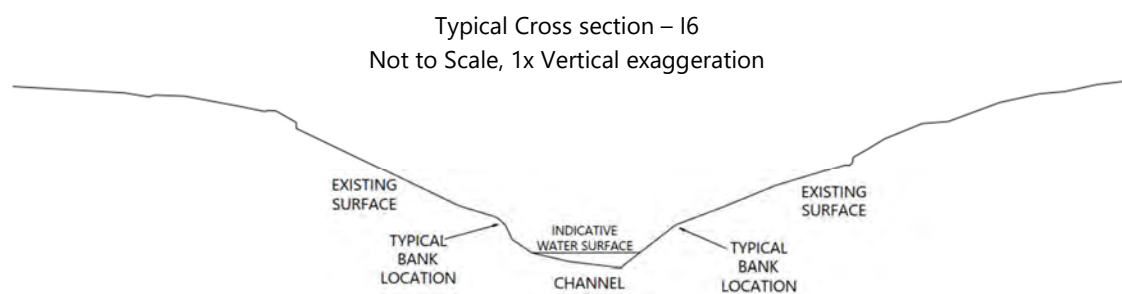
Stream within **Lot 12** DP 198205.

Watercourse I6 is characterised by well-defined grassed banks with a narrow stream at the base of the banks. This watercourse has an approximate length of 60m and flows into Ōrewa River (P1).

Watercourse I6 has an average stream bed width of 2.2m – **less than 3m wide, esplanade reserve not required.**



Figure 11 Watercourse I6



5.10. Watercourse I7

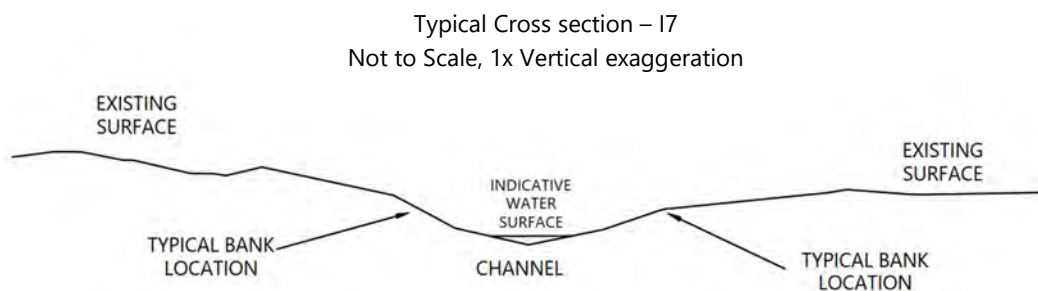
Stream within **Lot 8, 9, 10, 11 & 12** DP 198205.

Watercourse I7 comprises of a watercourse reach of approximately 1.5km with several branches feeding into the main reach. It is characterised by a narrow u-shaped channel with well-defined banks.

Watercourse I7 has an average stream bed width of 2.8m – **less than 3m wide, esplanade reserve not required.**



Figure 12 Watercourse I7



5.11. Watercourse I8

Stream within **Lot 10** DP 198205.

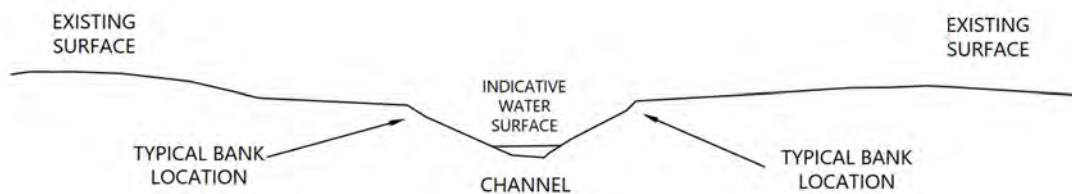
Watercourse I8 is approximately 300m, comprised of well-defined channel with grassed banks.

Watercourse I8 has an average stream bed width of 2.8m – **less than 3m wide, esplanade reserves not required.**



Figure 13 Watercourse I8

Typical Cross section – I8
Not to Scale, 1x Vertical exaggeration



5.12. Watercourse I9

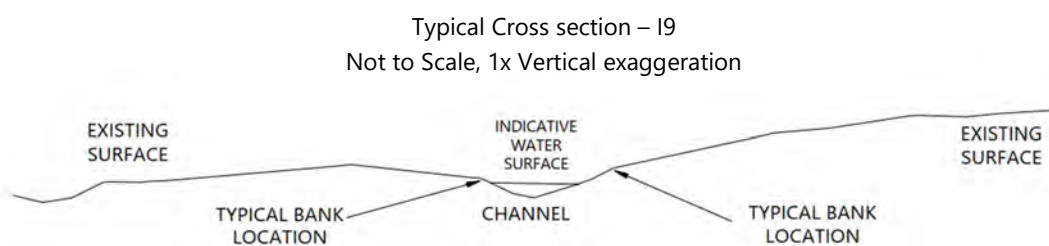
Stream within **Lot 12** DP 198205.

Watercourse I9 is characterised by a shallow channel adjacent to a wetland and ponds. The channel is a very low lying, with gentle grassed banks and is approximately 100m long.

Watercourse I9 has an average stream bed width of 1.9m – **less than 3m wide, esplanade reserve not required.**



Figure 14 Watercourse I9



5.13. Watercourse I10

Stream within **Lot 4** DP 353309.

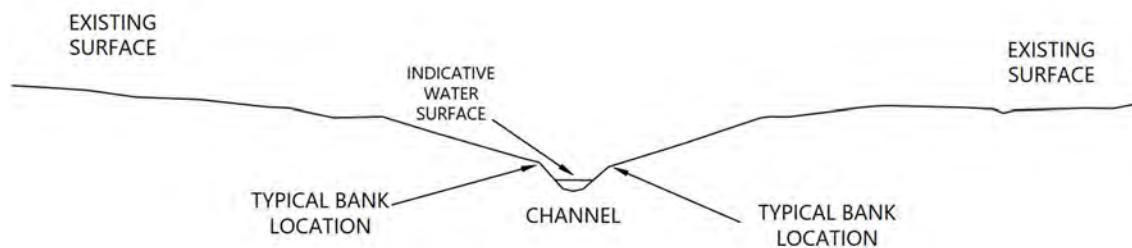
Watercourse I10 is characterised by a narrow u-shaped channel with steep well-defined grassy banks. The overall nature of the stream is shown in Figure 15.

Watercourse I10 has an average stream bed width of 1.7m – **less than 3m wide, esplanade reserve not required.**



Figure 15 Watercourse I10

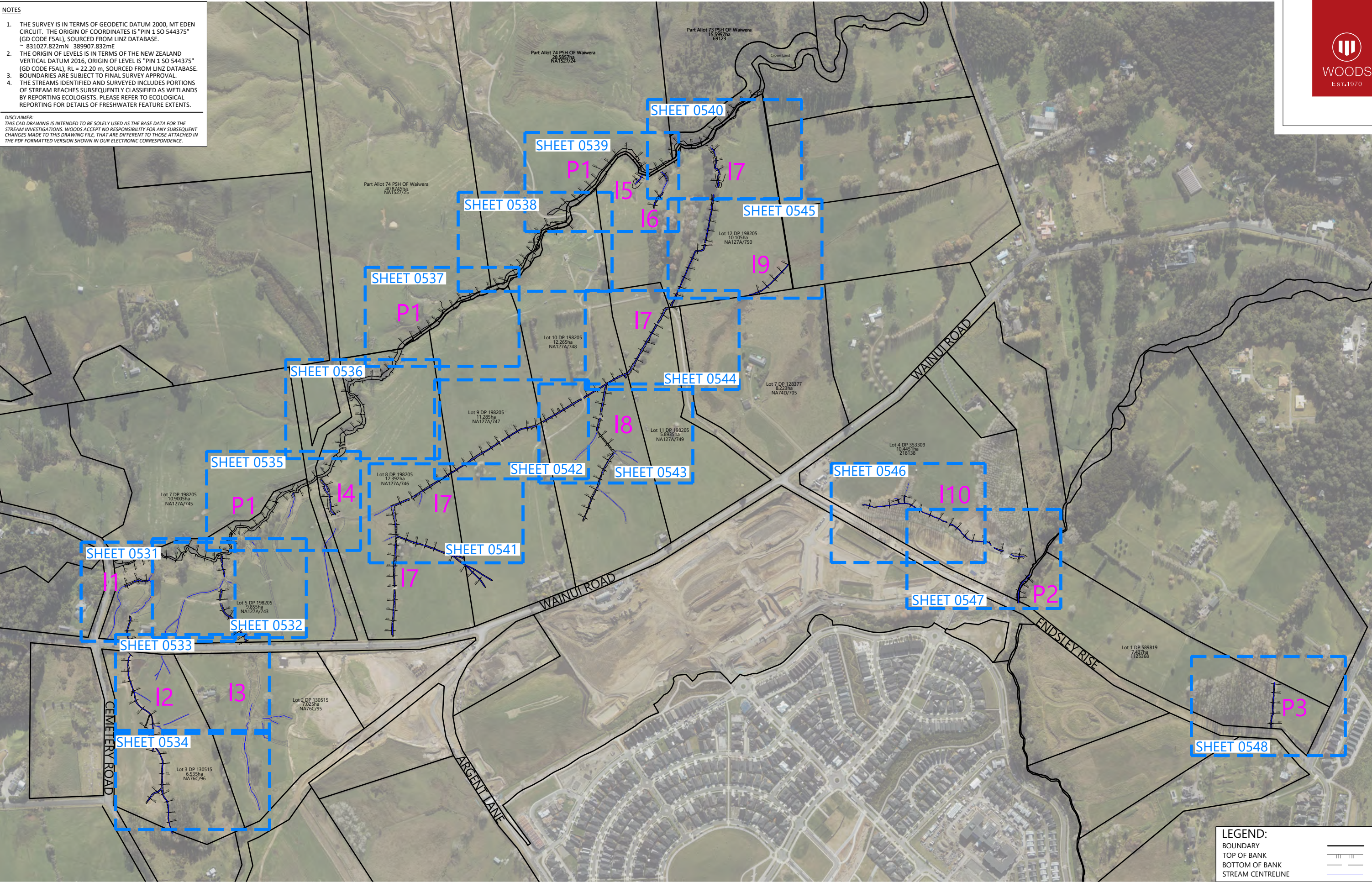
Typical Cross section – I10
Not to Scale, 1x Vertical exaggeration



6. APPENDIX B – STREAM WIDTH INVESTIGATION PLAN

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5AL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
 2. THE ORIGIN OF LEVELS IS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016, ORIGIN OF LEVEL IS "PIN 1 SO 544375" (GD CODE F5AL), RL = 22.20 m, SOURCED FROM LINZ DATABASE.
 3. BOUNDARIES ARE SUBJECT TO FINAL SURVEY APPROVAL.
 4. THE STREAMS IDENTIFIED AND SURVEYED INCLUDES PORTIONS OF STREAM REACHES SUBSEQUENTLY CLASSIFIED AS WETLANDS BY REPORTING ECOLOGISTS. PLEASE REFER TO ECOLOGICAL REPORTING FOR DETAILS OF FRESHWATER FEATURE EXTENTS.

DISCLAIMER:
THIS CAD DRAWING IS INTENDED TO BE SOLELY USED AS THE BASE DATA FOR THE STREAM INVESTIGATIONS. WOODS ACCEPT NO RESPONSIBILITY FOR ANY SUBSEQUENT CHANGES MADE TO THIS DRAWING FILE, THAT ARE DIFFERENT TO THOSE ATTACHED IN THE PDF FORMATTED VERSION SHOWN IN OUR ELECTRONIC CORRESPONDENCE.



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				CHECKED	SM
				APPROVED	SK



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MILLDALE FAST TRACK APPLICATION STAGES 14-17
STREAM INVESTIGATION P1-3, L1 - 10
SHEET 1 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:7500 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0530-SU	

NOTES

1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5AL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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LEGEND:

BOUNDARY	
TOP OF BANK	
BOTTOM OF BANK	
STREAM CENTRELINE	

REVISION DETAILS		INT	DATE	SURVEYED	HDD
1	ISSUED FOR INFORMATION	HDD	04/08/26	DESIGNED	
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10

SHEET 2 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0531-SU	

NOTES

1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE FSAL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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LEGEND:	
BOUNDARY	
TOP OF BANK	
BOTTOM OF BANK	
STREAM CENTRELINE	

REVISION DETAILS		INT	DATE	SURVEYED	HDD
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 3 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0532-SU	

NOTES

1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE FSAL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
2. THE ORIGIN OF LEVELS IS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016, ORIGIN OF LEVEL IS "PIN 1 SO 544375" (GD CODE FSAL), RL = 22.20 m, SOURCED FROM LINZ DATABASE.
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LEGEND:

BOUNDARY	—
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STREAM CENTRELINE	—

REVISION DETAILS		INT	DATE	SURVEYED	HDD
1	ISSUED FOR INFORMATION	HDD	04/08/26	DESIGNED	HDD
				DRAWN	HDD
				CHECKED	SM
				APPROVED	SK



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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 4 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0533-SU	

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE FSAL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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REVISION DETAILS		INT	DATE	SURVEYED	HDD
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 5 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0534-SU	

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5AL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

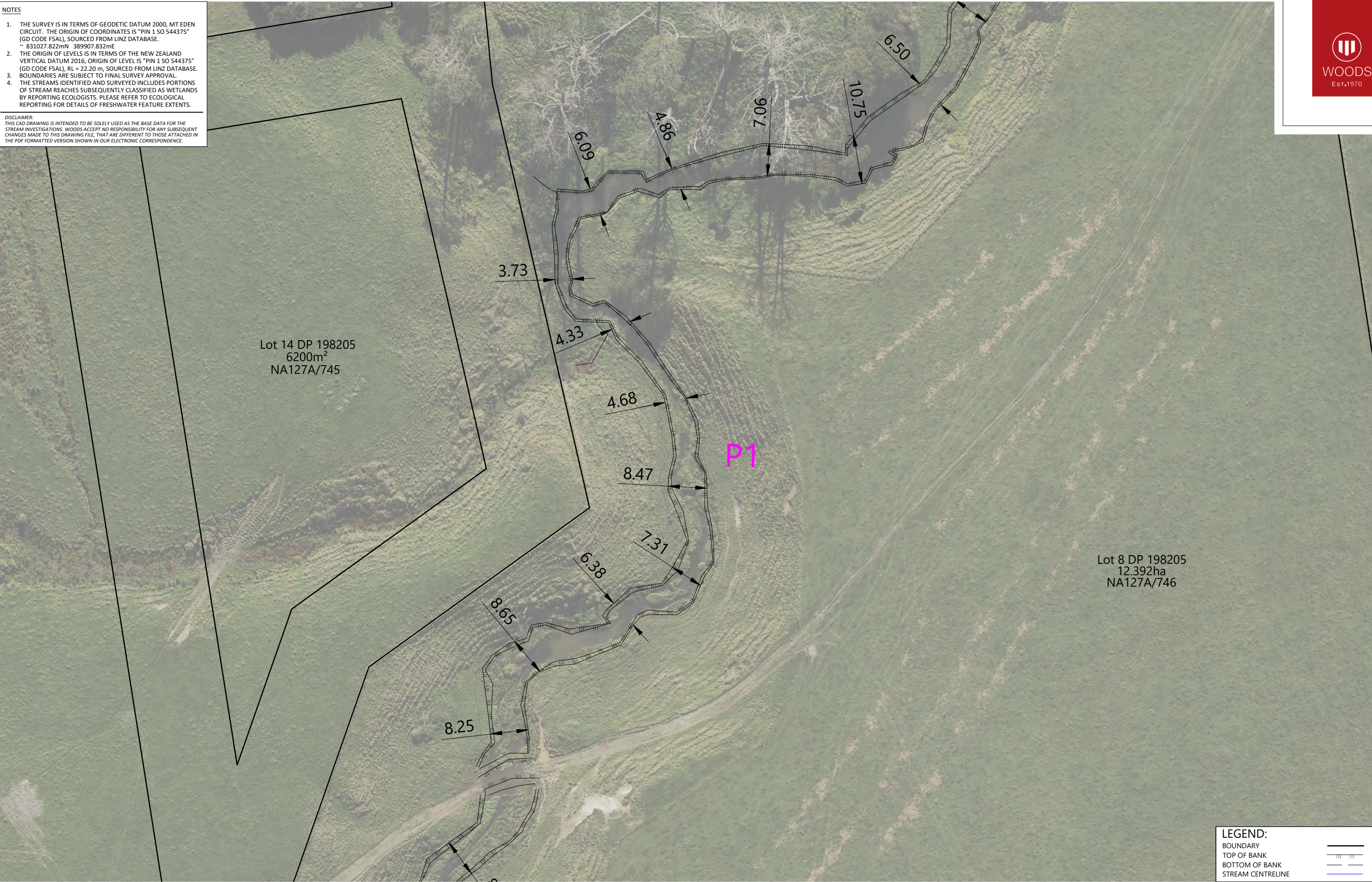
STREAM INVESTIGATION P1-3, L1 - 10
SHEET 6 OF 19



STATUS	ISSUED FOR INFORMATION	REV
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COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0535-SU	

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5A1), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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LEGEND:	
BOUNDARY	
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STREAM CENTRELINE	

REVISION DETAILS		INT	DATE	SURVEYED	HDD
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				CHECKED	SM
				APPROVED	SK



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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 7 OF 19

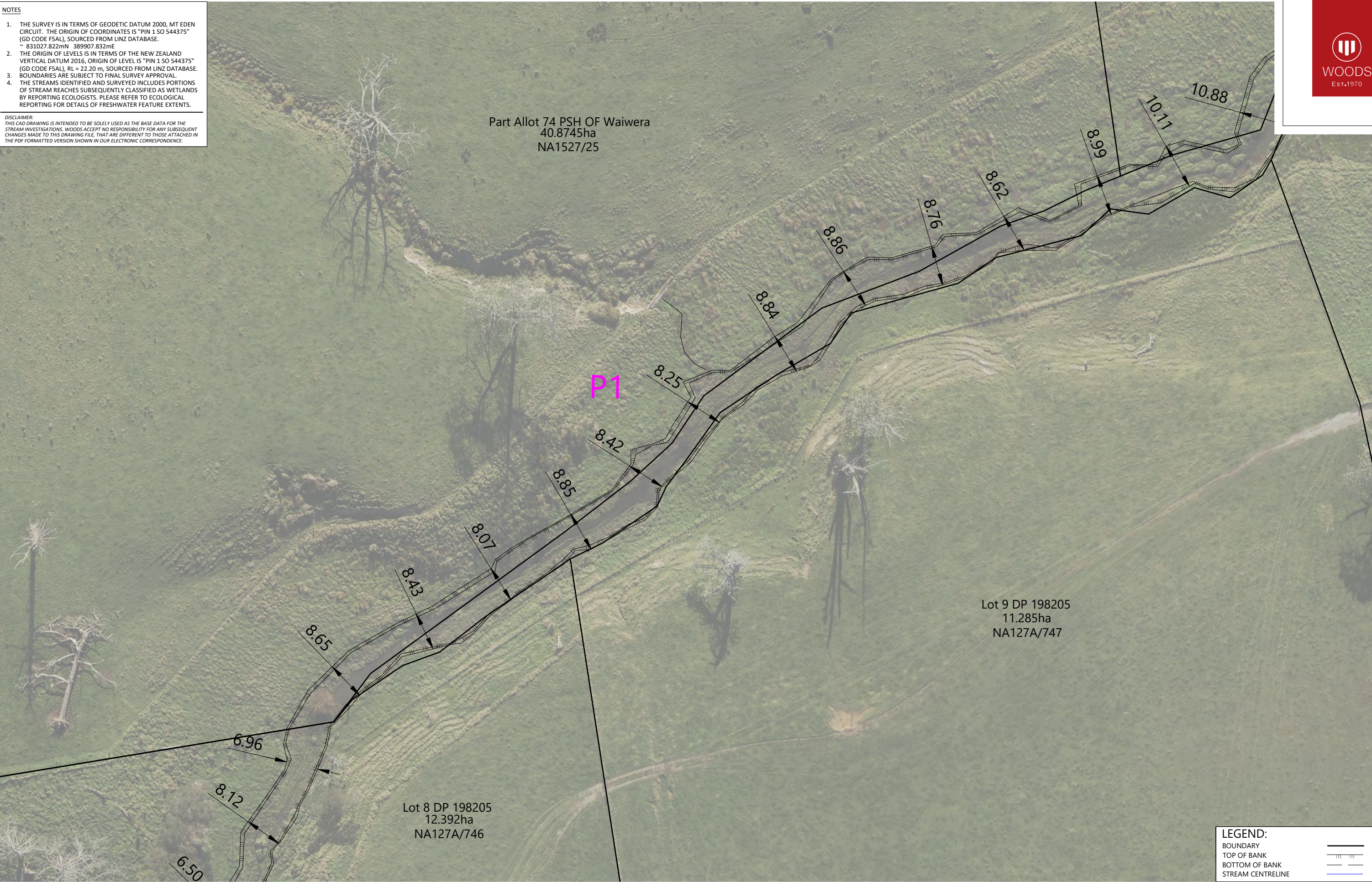


STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0536-SU	



- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5AL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10

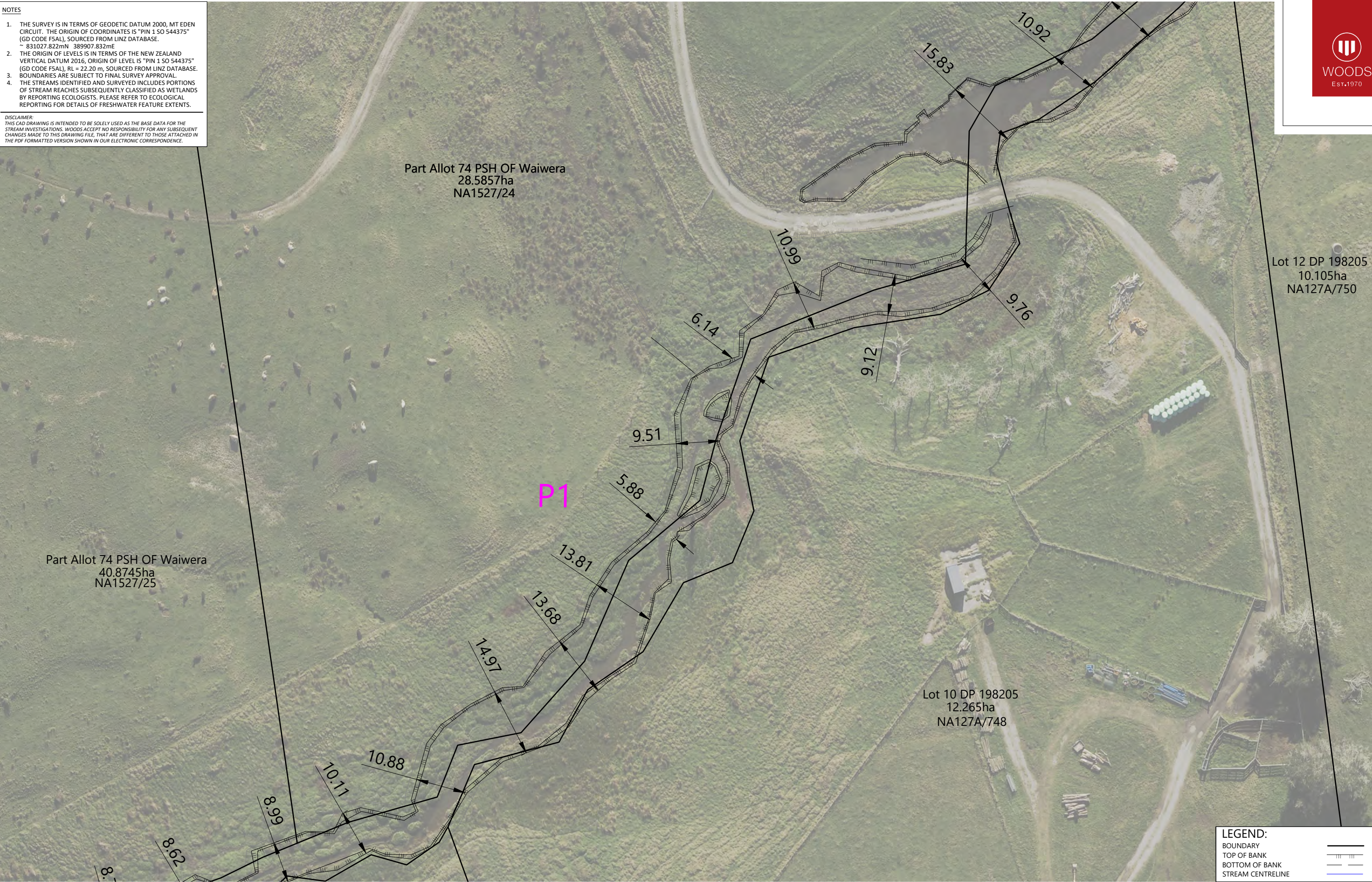
SHEET 8 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0537-SU	

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5AL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 9 OF 19

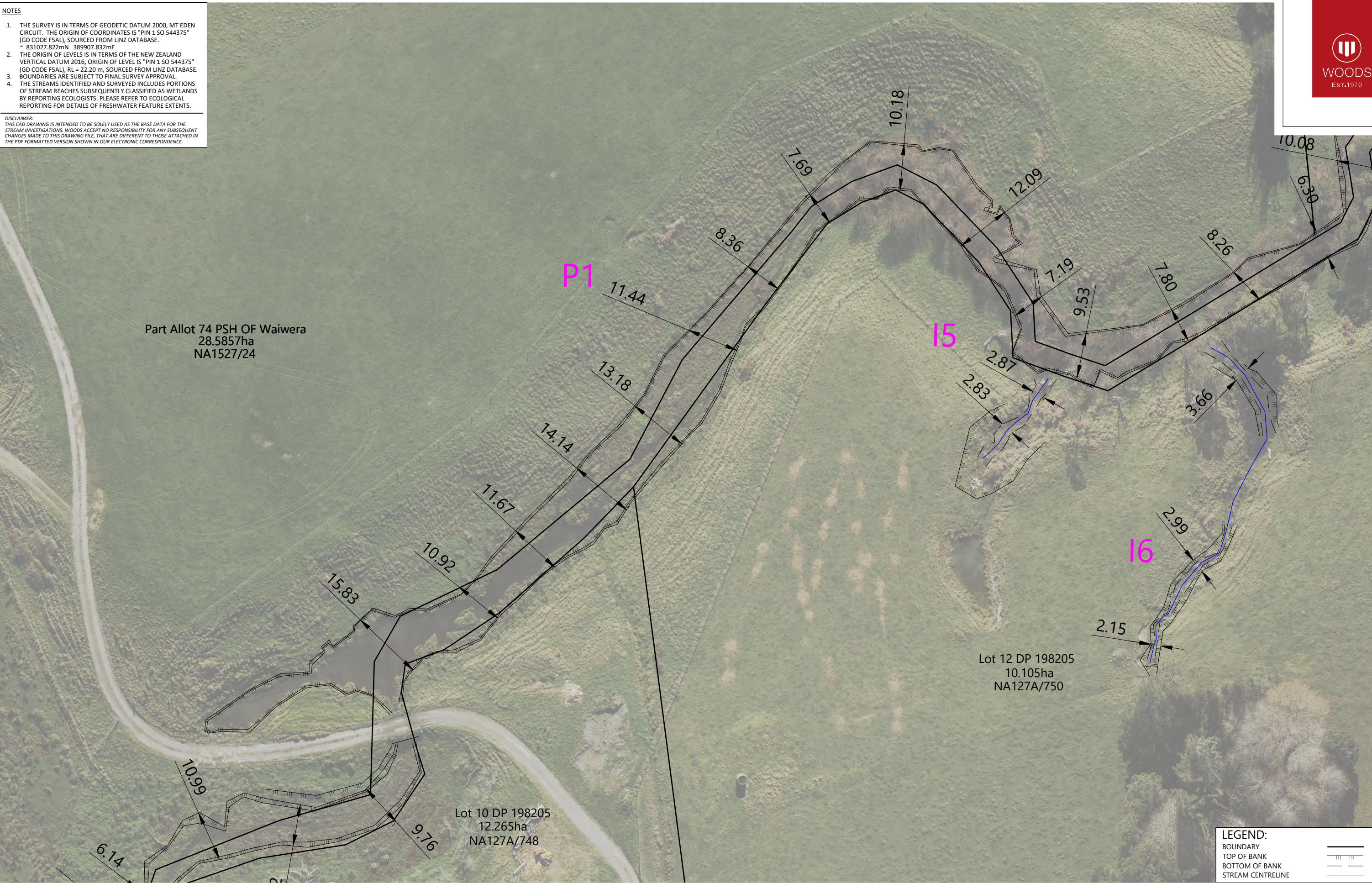


STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0538-SU	

NOTES

1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE FSAL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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STREAM INVESTIGATION P1-3, L1 - 10
SHEET 10 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0539-SU	

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE FSAL), SOURCED FROM LINZ DATABASE.
~ 831027.822mN 389907.832mE
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STREAM INVESTIGATION P1-3, L1 - 10
SHEET 11 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0540-SU	

NOTES

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				CHECKED	SM
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 12 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0541-SU	

- NOTES
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 13 OF 19

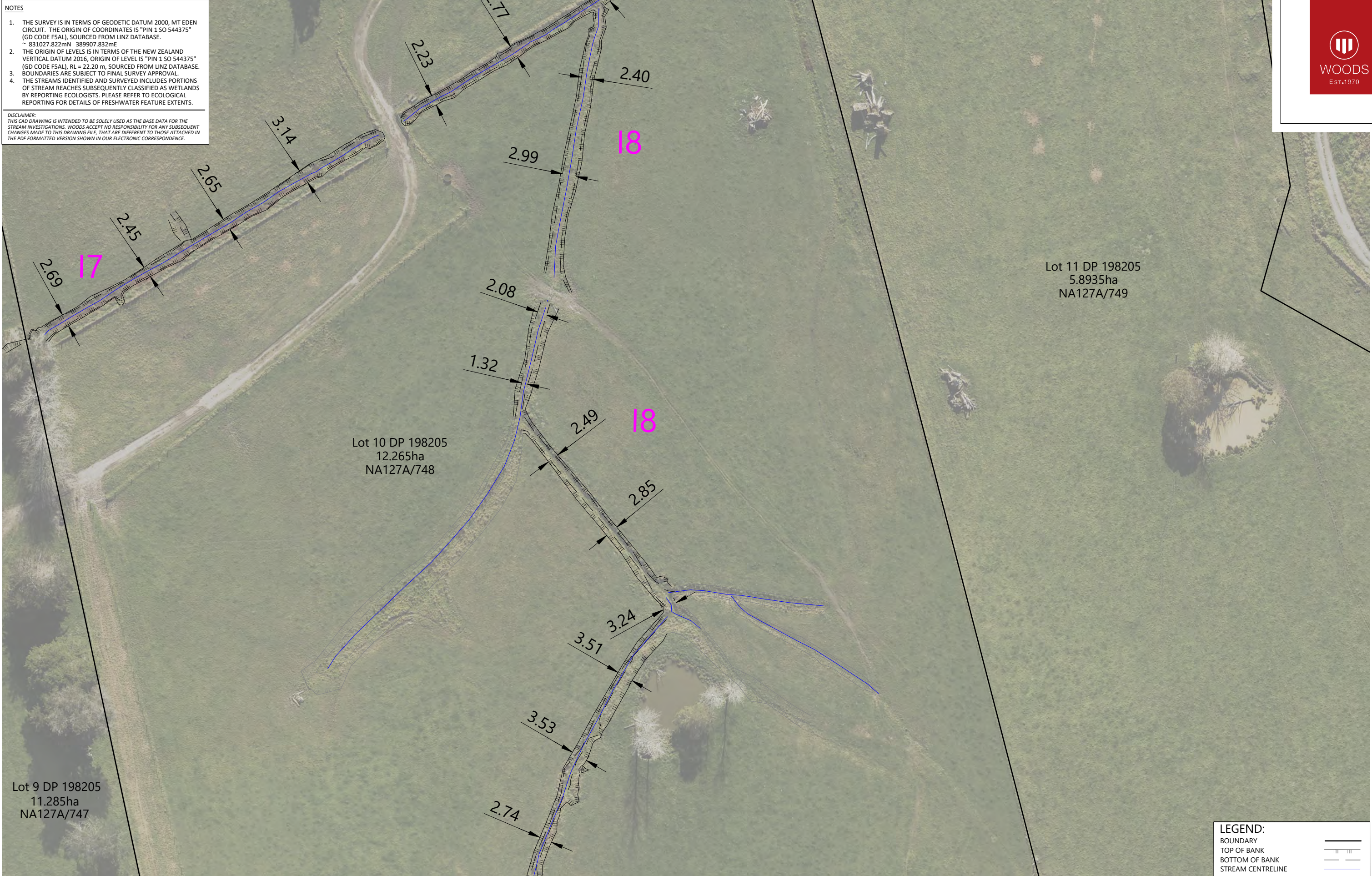


STATUS	ISSUED FOR INFORMATION	REV
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COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0542-SU	

NOTES

1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5AL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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				DRAWN	HDD
				CHECKED	SM
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 14 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0543-SU	

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5A1), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
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LEGEND:	
BOUNDARY	—
TOP OF BANK	—
BOTTOM OF BANK	—
STREAM CENTRELINE	—

REVISION DETAILS		INT	DATE	SURVEYED	HDD
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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 15 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0544-SU	

- NOTES
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LEGEND:

BOUNDARY	
TOP OF BANK	
BOTTOM OF BANK	
STREAM CENTRELINE	

REVISION DETAILS		INT	DATE	SURVEYED	HDD
1	ISSUED FOR INFORMATION	HDD	04/08/26	DESIGNED	
				DRAWN	HDD
				CHECKED	SM
				APPROVED	SK



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MILLDALE FAST TRACK APPLICATION STAGES 14-17

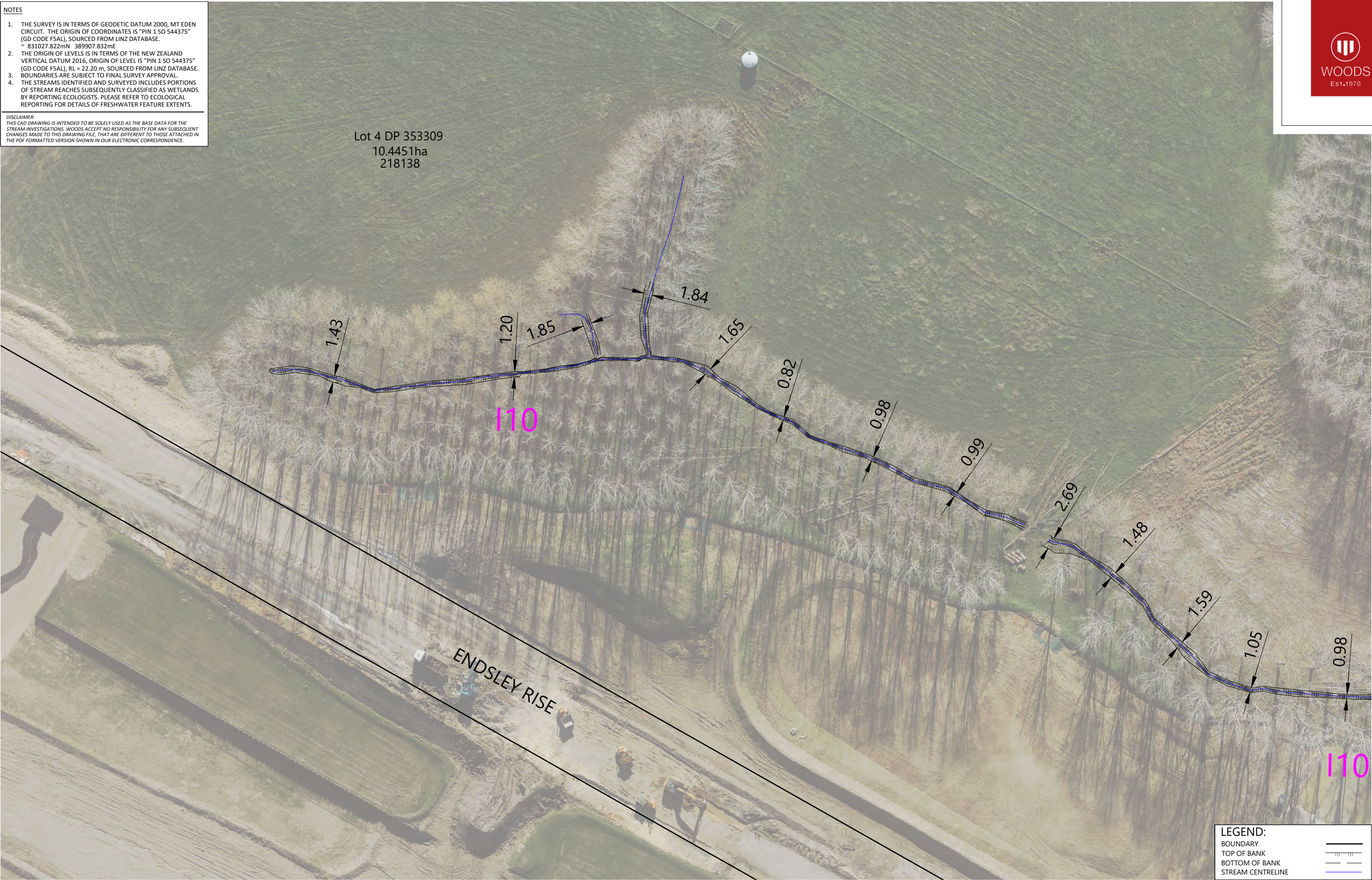
STREAM INVESTIGATION P1-3, L1 - 10
SHEET 16 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0545-SU	

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE FSAL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
 2. THE ORIGIN OF LEVELS IS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016, ORIGIN OF LEVEL IS "PIN 1 SO 544375" (GD CODE FSAL), RL = 22.20 m, SOURCED FROM LINZ DATABASE.
 3. BOUNDARIES ARE SUBJECT TO FINAL SURVEY APPROVAL.
 4. THE STREAMS IDENTIFIED AND SURVEYED INCLUDES PORTIONS OF STREAM REACHES SUBSEQUENTLY CLASSIFIED AS WETLANDS BY REPORTING ECOLOGISTS. PLEASE REFER TO ECOLOGICAL REPORTING FOR DETAILS OF FRESHWATER FEATURE EXTENTS.

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				APPROVED	SK



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MILLDALE FAST TRACK APPLICATION STAGES 14-17

STREAM INVESTIGATION P1-3, L1 - 10
SHEET 17 OF 19

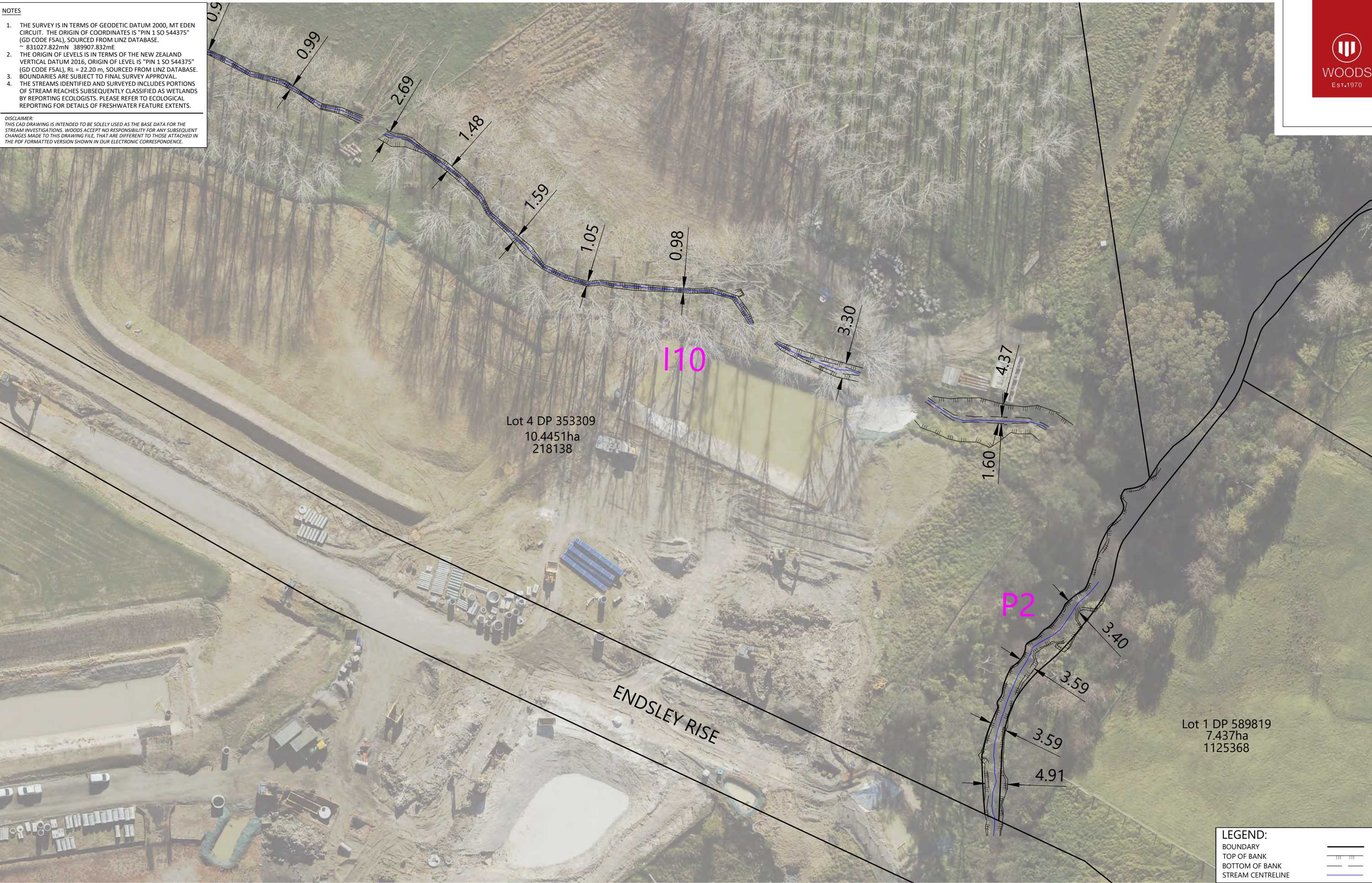


STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0546-SU	

NOTES

1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5AL), SOURCED FROM LINZ DATABASE. ~ 831027.822mN 389907.832mE
2. THE ORIGIN OF LEVELS IS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016, ORIGIN OF LEVEL IS "PIN 1 SO 544375" (GD CODE F5AL), RL = 22.20 m, SOURCED FROM LINZ DATABASE.
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LEGEND:

- BOUNDARY
- TOP OF BANK
- BOTTOM OF BANK
- STREAM CENTRELINE

REVISION DETAILS		INT	DATE	SURVEYED	HDD
1	ISSUED FOR INFORMATION	HDD	04/08/26	DESIGNED	
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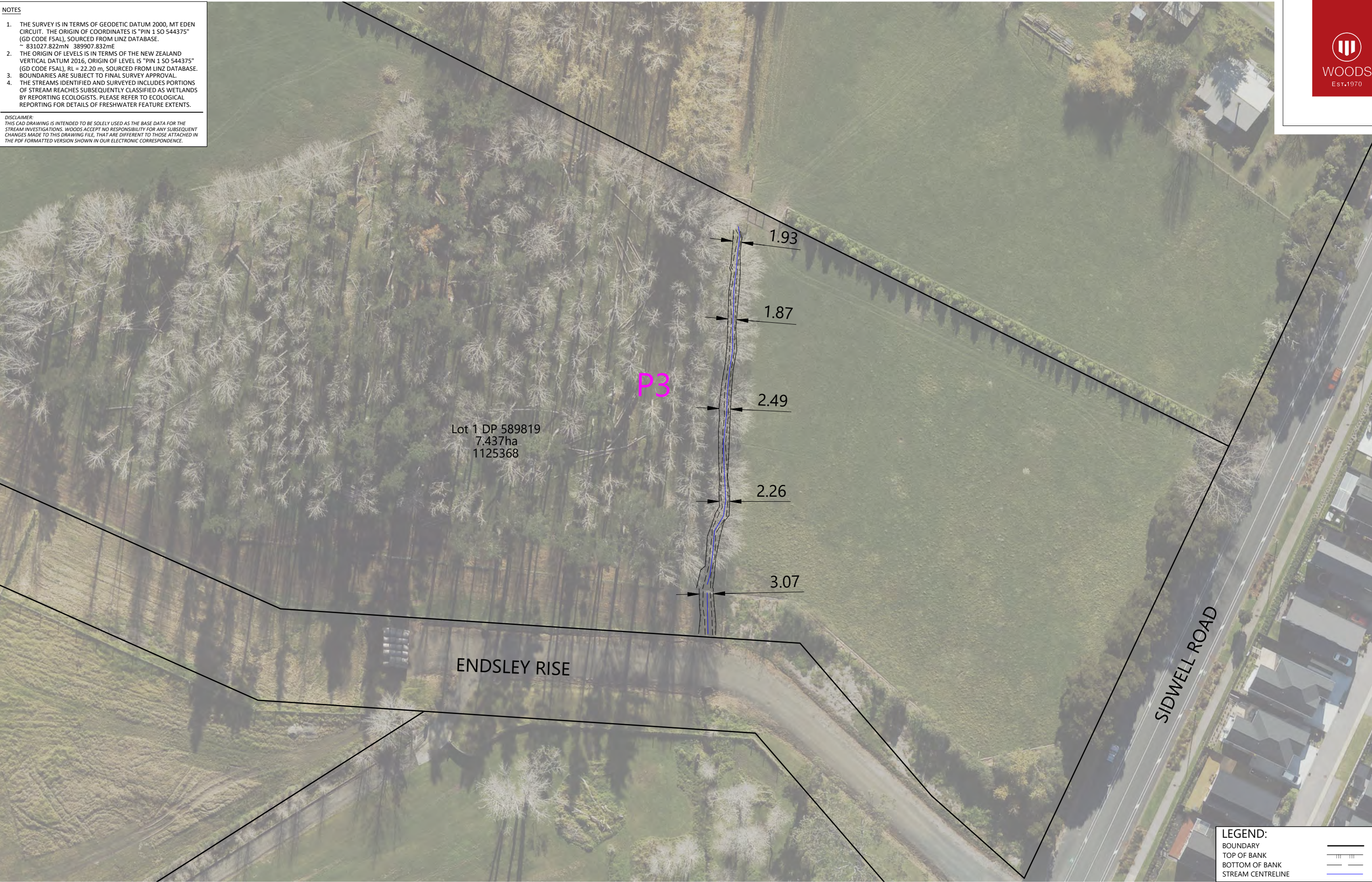
STREAM INVESTIGATION P1-3, L1 - 10
SHEET 18 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0547-SU	

- NOTES
1. THE SURVEY IS IN TERMS OF GEODETIC DATUM 2000, MT EDEN CIRCUIT. THE ORIGIN OF COORDINATES IS "PIN 1 SO 544375" (GD CODE F5AL), SOURCED FROM LINZ DATABASE.
~ 831027.822mN 389907.832mE
 2. THE ORIGIN OF LEVELS IS IN TERMS OF THE NEW ZEALAND VERTICAL DATUM 2016, ORIGIN OF LEVEL IS "PIN 1 SO 544375" (GD CODE F5AL), RL = 22.20 m, SOURCED FROM LINZ DATABASE.
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LEGEND:	
BOUNDARY	
TOP OF BANK	
BOTTOM OF BANK	
STREAM CENTRELINE	

REVISION DETAILS		INT	DATE	SURVEYED	HDD
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STREAM INVESTIGATION P1-3, L1 - 10
SHEET 19 OF 19



STATUS	ISSUED FOR INFORMATION	REV
SCALE	1:750 @ A3	1
COUNCIL	AUCKLAND COUNCIL	
DWG NO	P25-609-00-0548-SU	