**BEFORE THE COMMISSIONER**

**IN THE MATTER OF** the Resource Management Act 1991

**AND**

**IN THE MATTER OF** Plan Change 7 to the Ashburton District Plan

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# STATEMENT OF EVIDENCE OF SELWYN CHANG (ENGINEERING AND INFRASTRUCTURE)

## ON BEHALF OF CONISTON PARK LTD FARM AND RACECOURSE ROADS, ASHBURTON

Dated: 1 DECEMBER 2025

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## INTRODUCTION

1. My full name is Selwyn Chang. I am a Charted Professional Engineer (Water Services) and the Principal Civil Engineer (Timaru Lead) at Davis Ogilvie (Aoraki) Limited based in Timaru.

2. I have had direct involvement in infrastructure assessments and design for greenfield rezonings, large subdivisions, and urban expansion areas. Across these projects I have frequently dealt with issues involving attenuated discharge, use of naturalised watercourse margins, uncertain groundwater conditions, and District Plan transitions. Working with both Local and Regional authorities to obtain associated construction and operational phase consents.

3. For Proposed Plan Change 7 (PC7), I am the lead infrastructure engineer that covers water, wastewater, stormwater and roading planning and designs for the development. I prepared the infrastructure assessment in the Infrastructure Servicing Report (Annexure 10), coordinated the engineering investigations, responded to multiple RFIs from ADC, undertook groundwater analysis and infiltration review, met with ADC's engineering staff on numerous occasions, and personally reviewed ADC's and ECan's evidence and assessments.

4. I am thoroughly familiar with the site, the technical constraints and opportunities, the relevant planning provisions, the submissions, and the Council's section 42A report.

5. I am generally in agreement with the Council's Section 42A Report and offer the following points of clarification in relation to my evidence.

### Qualifications and experience

6. In terms of academic qualifications, I hold a Bachelor degree in civil engineering (2004) from the University of Canterbury New Zealand.

7. I am a Chartered Professional Engineer with a practice field of Three Waters competent in drinking water supply systems, wastewater systems, stormwater management, asset management and renewals planning and water safety planning.

8. I am an active member of the Engineering NZ Canterbury branch and am committed to continually advancing my professional skills and capabilities.

9. I hold over 20 years of civil engineering experience, specialising in land development, infrastructure planning, and public servicing solutions. Prior to

working with Davis Ogilvie (Aoraki) Limited I spent 15 years working in local government with the Timaru District Council as a Drainage and Water Engineer.

10. My expertise includes:

    (a) Civil engineering planning, design and reports for water, wastewater, stormwater and roading.

    (b) Development of Stormwater Management Plans for greenfield and brownfield sites.

    (c) Hydraulic modelling and catchment analysis for water, wastewater and stormwater.

    (d) Engineering assessments for plan changes, rezoning, and Outline Development Plans (ODPs)

11. I have prepared or peer-reviewed engineering evidence for multiple hearings involving complex engineering issues. My experience includes several projects with similar characteristics to this site, where groundwater, infiltration variability, or flood hazard considerations required detailed analysis and careful design flexibility at the planning stage.

**CODE OF CONDUCT**

12. Although this is a Council hearing, I have read the **Environment Court's Code of Conduct for Expert Witnesses** set out in the Environment Court Practice Note 2023. I agree to comply with it while giving this evidence. Except where I state that I rely on the evidence of another person, I confirm that the issues addressed in this brief of evidence are within my area of expertise, and I confirm that I have not omitted any material facts known to me that might alter or detract from the opinions expressed in this evidence.

13. In preparing my evidence, I have reviewed:

    (a) The submissions and further submissions.

    (b) The relevant provisions of the District Plan.

    (c) The s.42A report prepared by the Council officer and specifically Appendix 4 (Evidence of Mr Andrew Tisch – Principal Engineer for ADC).

## SCOPE OF EVIDENCE

14. My evidence addresses engineering and infrastructure matters relevant to Proposed Plan Change 7 (PC7), specifically:

    (a) Site Context and Flood Hazard

    (b) Roading and Transport connectivity

    (c) Water supply servicing

    (d) Wastewater servicing

    (e) Stormwater servicing

    (f) Infiltration viability

    (g) Further Consideration for Detailed Subdivision Design

    (h) Responses to the section 42A report

    (i) Responses to submitter concerns

## ENGINEERING SUMMARY

15. The feasibility for water and wastewater of the site to be serviced from Council network is feasible with no constraints.

16. Inter-connected road linkages within the site connecting to adjacent Farm Road and Racecourse Road can be accommodated within the capacity of the existing and planned transport network.

17. The ODP shows stormwater management areas (SMAs) to demonstrate the land potentially required for full stormwater attenuation without discharge to ground option.

18. The need of flexibility in the ODP to allow further detailed design or refinement to the SMA's and/or road layout to be able to achieve both developer's and ADC acceptable requirements.

## SITE CONTEXT AND FLOOD HAZARD

19. The PC7 site consists of approximately 16.3 hectares of land currently zoned Residential D, located at the northwest corner of Farm Road and Racecourse Road, Ashburton. The land is mostly flat with gentle fall toward Wakanui Creek,

a small channelised watercourse flowing through the southeastern part of the site.

20. Several submitters raised concerns relating to flood hazard, and both ADC and ECan provided flood-related material.

21. The site is located within the 2015 ADC flood map assessment area, which indicated the site is not at risk from flooding from Ashburton District Plan Floodable Areas Map (Annexure 15).

22. Following review of the submissions we obtained an ECan Flood Hazard Assessment (FHA) – 25 Nov 2025, which is supplied within the **Appendix A** in this document. The site is classified as low flood risk (does not meet the 2013 Canterbury Regional Policy Statement definition of high hazard flooding).

23. The ECan FHA also confirmed/stated the following:

    (a) The site is protected by stopbanks designed for the 200-years ARI flood and the site was not flooded in the May 2021 flood which has an ARI of around 200-years in the North Ashburton River.

    (b) From ECAN modelling for the 500-years ARI breakout scenarios at Rawles Crossing or Jessop's Bend indicated that the site could expect shallow flooding occur (generally 0.2–0.5 m deep). These are extreme events well beyond standard design requirements.

    (c) The report specifically stated: The Ashburton District Council requires that *new dwellings have a minimum floor height at least 150 mm above the expected 200-year Average Recurrence Interval (ARI) flood level. As the stopbanks are designed to provide protection to this property in an event of that size, there is no need for additional elevation of the floor height beyond what the Building Act requires. However, recognising that Wakanui Creek may present some form of flood risk, management of this risk should be incorporated into any future development of the property, either through elevation of the floor levels or through designing a stormwater system to manage these flows.*

24. Wakanui/Mill Creek is managed by ADC as part of their stormwater network. It is acknowledged that Wakanui Creek is a potential source for localised flooding and will require further assessment as part of subdivision consent and design process including:

(a) Providing flood analysis that details any potential tailwater effect from Wakanui Creek,

(b) Overland flow paths will need to be maintained.

25. Flood hazard is not a constraint preventing rezoning or development, and all relevant flood issues can be readily addressed through standard engineering methods.

**ROADING AND TRANSPORT CONNECTIVITY**

26. The proposed site can be connected to Farm Road and Racecourse Road with inter-connected road linkages to the wider public transport network.

27. All road design will be in accordance with NZS 4404:2010, Austroads Guide to Road Design, ADC District Plan requirements and standards.

28. The New Zealand Urban Design Protocol has been adopted, incorporating features such as the Wakanui Stream, Argyle Park, and the surrounding modern residential environment to enhance accessibility, foster community well-being, and create attractive, liveable spaces.

29. Integrated traffic assessment in Annexure 7, notes that the site is well located and has a good connectivity to local destinations to enable travel via walking and cycling (or other micro mobility devices).

30. The additional traffic generated by the residential development is relatively low and can be safely and efficiently accommodated on Farm Road and Racecourse Road to the appropriate urban transport infrastructure.

31. Provision for a future road connection to the Residential D zoned land west of the site has been included on the revised ODP attached to Mr Harford's evidence.

32. Potential future road connection to connect adjacent land to the north-west is not critical but could be beneficial to provide flexibility for future connection. The decision on whether to provide for a future road connection can then be made at subdivision stage.

33. It is important to note that the Farm Road drain functions both as a road drainage channel and as an overland flow path for the wider catchment/network drainage. This will be retained, or if changed, will provide similar or better utility.

34. There is no roading and transport connectivity constraints to PC7.

**WATER SUPPLY SERVICING**

35. The site can be readily serviced from ADC's existing water supply network from DN200 PVCu watermain along Farm Road.

36. Hydraulic modelling has been undertaken for the proposed development to demonstrate that adequate firefighting and operating flow and pressure are achieved, in accordance with SNZ PAS 4509 and ADC level of service requirements.

37. There are no water supply constraints to development or rezoning.

**WASTEWATER SERVICING**

38. The site can be serviced via gravity wastewater reticulation connecting to the existing DN150 and DN225 PVCu Farm Road wastewater network.

39. ADC have installed Allens Road Pump Station and new pipe network extension to the development site since August 2023 to have the capacity required to meet the expected demand.

40. There is no wastewater servicing constraint to PC7.

**STORMWATER SERVICING**

41. The stormwater servicing concept is described in the Infrastructure Servicing Report (Annexure 10) and subsequent RFIs.

42. The engineering framework for PC7 is based on:

    (a) Achieving stormwater neutrality (post-development discharge less than pre-development discharge),

    (b) Treating stormwater in accordance with ECan's Land and Water Regional Plan and ADC's global consent,

    (c) Ensuring secondary overland flow paths for exceedance events,

    (d) Providing for potential infiltration where viable.

43. The allocated stormwater management area (SMA) for full attenuation and no discharge to ground option is shown on the ODP, this complies with Councils global stormwater consent.

44. Full attenuation and no discharge to ground option as shown, is the largest anticipated stormwater volume to attenuate within both SMAs up to 100-years ARI (1% AEP).

45. The SMAs shown on the ODP are indicative which consider the worst-case scenario (full attenuation with no discharge to ground), their shape, size, depth, and treatment method will be refined through further infiltration or groundwater testing/analysis and tailwater modelling during subdivision and engineering approval stage.

46. The stormwater concept is feasible and capable of meeting all relevant ADC and regional requirements once detailed design is completed.

47. Overland flow (secondary) paths will be provided for through the site, utilising road corridors, reserve areas and existing Farm Road drains. These allow safe conveyance of extreme storm events ensuring that natural overland drainage patterns are preserved.

48. Mr Tisch's evidence confirms that the concept stormwater design and the SMA areas identified for PC7 are feasible and capable of being developed further to satisfy ADC's stormwater requirements.

**FURTHER CONSIDERATIONS FOR DETAILED SUBDIVISION DESIGN**

49. The infrastructure servicing assessment prepared for this plan change and ODP demonstrates the feasibility of infrastructure servicing, the intent of the planned zoning, and the purposes of the zoning area. This has become evident through the potential refinement of the SMAs as part of ADC's RFI responses and the Section 42A review.

50. Fixing SMA sizes or confirming attenuation volumes at the plan change stage would be premature and counterproductive. These matters are appropriately left to subdivision and engineering approval stage, where engineering information will be more fully known.

51. Flexibility is entirely appropriate and common for greenfield ODPs.

**RESPONSE TO SECTION 42A REPORT**

52. Section 42A overall conclusion that PC7 is feasible from a servicing perspective, stormwater effects can be managed and the plan change can proceed.

53. However, there are clarifications on the level of understanding and agreement required within this PC7 below:

(a) Any implication that infiltration should be excluded,

(b) Confirmation that 50-years ARI is acceptable and agreed standard rather than 100-years ARI attenuation,

(c) The SMAs are not intended to accept the wider upstream rural catchment, which would be an unreasonable burden for a single plan-change site,

(d) Statements that SMA sizing is fixed without flexibility to change.

**INFILTRATION VIABILITY**

54. ADC's engineering evidence makes statements to the effect that infiltration may not be feasible. Based on the data and my experience, these statements are too general and not consistent with the full evidence available.

55. Davis Ogilvie undertook geotechnical and infiltration testing on the site in March 2023, identifying potential infiltration areas as documented in the Infrastructure Servicing Report.

56. The 'design' infiltration rates for the two SMAs is 140 mm/hr for the western basin and 300 mm/hr for the eastern basin after applying factor of safety 3 and 4 respectively. These infiltration rates are higher than those typically used to justify soakage systems in Canterbury.

57. The geotechnical investigation has identified permeable gravel layers within reasonable depths of 1.5m to 3.0m that have soil profiles consistent with infiltration capability.

58. High Groundwater Assessment was submitted to ADC as part of the RFI response to address the potential impacts of elevated groundwater levels on the stormwater system, as detailed in Annexure 12 – Stormwater Further Response

59. Current assessment indicated negative separation to the high ground level for a stormwater system to be able to discharge to ground and will not comply with ADC stormwater global consent.

60. Consent will need to be obtained from ECAN for the development to discharge to ground under the conditions set by the Land and Water Regional Plan, as this will constitute a non-permitted activity.

61. There are advantages to have stormwater infiltration system that will reduce the stormwater volume that discharges direct to Wakanui Creek. This will improve

the groundwater recharge, providing additional flow capacity to Wakanui Creek and reduces the SMAs footprint within the site.

62. From an engineering perspective, infiltration remains viable and appropriate for PC7 which can be confirmed at detailed design.

63. Precluding infiltration at the plan change stage would be premature, unjustified, and contrary to best-practice stormwater management, which encourages use of infiltration where feasible.

**ADC'S REQUEST FOR 100-years ARI ANALYSIS**

64. A significant point of disagreement relates to ADC's request that stormwater attenuation be assessed against the 100-years ARI rain event (1% AEP), as opposed to the standard 50-years ARI event.

65. To date, ADC have not been able to supply us with a formally adopted policy requiring 100-years ARI (1% AEP event) attenuation for greenfield residential development.

66. Mr Tisch's email dated 10 April 2025 confirms:

    *"The 1% requirement arose from a meeting with the Assets Manager… I will need to confirm where the ADC policy sits."*

67. Mr Tisch's evidence also states: *the applicant was notified at a meeting with Andrew Guthrie ADC assets manager (16/10/2024) that assessment against a 1% AEP event is an ADC requirement for land subject to plan change applications, as the site is not within the residential zones where the infrastructure is designed for development of this scale.*

68. We wish to note that the site is already zoned Residential D (changing to Res C) and is included within ADCs stormwater management area in the stormwater global consent CRC18263 which is based on 50-years ARI.

69. Ashburton District Plan does not state 100-years ARI attenuation requirements.

70. ADC & TDC Stormwater Design Guidelines - March 2018 (draft) states 50-years ARI if stormwater overland flow path is available, which the site has Farm Road drain and Wakanui Creek in vicinity.

71. NZS 4404:2010 does not require 100-years ARI attenuation for residential areas.

72. Industry practice across comparable districts (Selwyn, Waimakariri, Christchurch, Queenstown, Tauranga, Timaru) typically use 50-year ARI.

73. No subsequent evidence was provided identifying any policy or guideline.

74. The 100-years ARI request is not supported by formal policy for PC7 and should not be used to constrain the ODP. Attenuation requirements for all rain events up to 50-years ARI can be considered reasonable engineering approach and acceptance.

**RESPONSE TO SUBMISSIONS**

75. In respect to Greg and Rachel submissions (S1) and David & Hilary Ward (S2), are concerned about construction effects. Both the District Plan and the Regional Plan provide the regulatory framework to address these concerns as stated within the s42A planning officer report (i.e. at the time specific subdivision and consenting approvals are sought).

76. Greg and Rachel submissions (S1) have noted the flood water ditch function as drainage utility. We agree with Andrew Tisch from ADC who noted this in his evidence statement that the overland flowpath will remain as-is or better utility if it is changed.

77. Gloria Barrett (S4) and Judith Kingsbury (S5)) have noted flooding and potential flooding risk from overflow obstruction. We agree with Andrew Tisch from ADC who noted in his evidence statement that this will be addressed in detailed design with supporting flood modelling to ensure overland flowpath are not being obstructed.

78. Cherrey Crozier (S7) concern of increasing density in a flood risk area. Andrew Tish from ADC noted in his evidence statement reviewing the conceptual stormwater plan has adequately addressed stormwater from increased density resulting from the rezoning.

79. DG and CM Williamson Settlement Trust (S3) requested a future road connection to the existing Residential D zoned land west of the site. We agree to the logic for this connection and have provided an updated ODP, attached to Mr Harford's evidence. Final location and details to be addressed at the subdivision approval stage.

**CONCLUSION**

80. The infrastructure servicing of the site from Residential D to Residential C is feasible to be implemented.

81. The ODP has allowed a significant area for stormwater management area and will need flexibility to refine the sizing to accommodate potential infiltration options and potential future road connections which can be made at subdivision stage.

82. Overall, I therefore support Proposed Plan Change 7 from an engineering perspective.

**Selwyn Chang**
Principal Civil Engineer
Davis Ogilvie (Aoraki) Ltd

1 December 2025

## Attachment:

**Appendix A – ECan Flood Hazard Assessment (25 November 2025)**

Environment Canterbury
Regional Council
Kaunihera Taiao ki Waitaha

75 Church Street
PO Box 550
Timaru 7940
P. 03 687 7800
F. 03 687 7808
E. ecinfo@ecan.govt.nz
Customer Services
P. 0800 324 636
www.ecan.govt.nz

25 November 2025

Selwyn Chang
Davis Ogilvie & Partners Ltd
12 The Terrace
Timaru 7910
**New Zealand**

Dear Selwyn

**Flood Hazard Assessment – Subdivision**
**Farm Road, Ashburton**
**Lot 4 DP 320165 & LOT 8 DP 311232**
**Valuation No: 24440-630-35 & 24440-630-21**

This 16-ha property is located on the northwest side of Farm Road, 750 metres east of the North Branch of the Ashburton River. You have requested this assessment to assist with a hearing regarding a subdivision of the lot for residential development. No scheme plan of the proposed subdivision was supplied with this application. Ground levels vary across the property but can generally be described as falling towards the east in Lot 4, while Lot 8 shows little variation in ground levels, though there are several swales (historic flow paths) present towards the north western boundary. Wakanui Creek passes through the property towards the eastern boundary of Lot 4. The property is currently vacant and used for grazing.

Historic investigations carried out by Canterbury Regional Council in 1997/1998 indicate that the site and general area may be floodable from breakouts from the North Ashburton River in extreme flood events. However, in the mid-2000s stopbanks were designed and built to protect Ashburton from floods up to and including the 200-year Average Recurrence Interval (ARI) flood. In floods larger than this, or if the stopbanks are breached because of lateral or piping erosion, breakouts onto the floodplain, including toward this property, may occur. I note that this property was not flooded in the May 2021 flood which had an ARI of around 200-years in the North Ashburton River.

Modelling of a 500-year breakout at Rawles Crossing/Jessops Bend areas indicates that the property can expect flooding in such an event. In smaller events flooding from this source is also possible should erosion as described above occur. Generally, water depths are expected to generally be between 200 to 500 mm across both lots in such a river breakout event but there may be localised areas of higher or lower depth. It is important to note this modelling was of fixed breakout locations. Should floodwaters breakout from the river in a different location to that modelled (in an event larger than the river design capacity) flooding at the property may differ.

**Note:** Average Recurrence Interval (ARI) represents the average period between floods of a certain size.

Wakanui Creek is also a potential source of flooding, though not one we hold significant information on. A report carried out by the South Canterbury Catchment Board in 1980 referred to drainage problems on the parts of this lot adjacent to the creek. However, in the 40 plus years since this report's publication it is unclear if these issues remain or have been resolved. Historically, the creek flow was augmented with water from the North Ashburton River which could be shut off during periods of high flows. Wakanui/Mill Creek is now managed by Ashburton District Council as part of the stormwater network and I am unable to comment on what

management regime is now in place for it, but they may have information on stormwater flooding and flows in the Creek and are better placed to comment on flood risk from this source.

**The Ashburton District Council requires that new dwellings have a minimum floor height at least 150 mm above the expected 200-year Average Recurrence Interval (ARI) flood level. As the stopbanks are designed to provide protection to this property in an event of that size, there is no need for additional elevation of the floor height beyond what the Building Act requires. However, recognising that Wakanui Creek may present some form of flood risk, management of this risk should be incorporated into any future development of the property, either through elevation of the floor levels or through designing a stormwater system to manage these flows.**

Overall, flooding at the property can be described as low risk (does not meet the 2013 Canterbury Regional Policy Statement definition of high hazard flooding).

**Predicting site specific flooding is not an exact science and requires many assumptions. This is particularly true due to the lack of detailed information we hold regarding flood risk from Wakanui Creek. Any additional elevation of dwelling floor levels will provide additional protection in the event of major flood events.**

**It is also clear that the property may be flooded from the river in floods larger than the 200-year ARI event or if the stopbanks are breached at lower than design flows. This risk is not captured by high hazard or minimum floor level policies but should be noted.**

The above comments relate to the risk of flooding from rivers or major streams. Environment Canterbury has no information on the potential for local stormwater flooding at the site as a result of very heavy or prolonged rainfall events. Ashburton District Council may have more information regarding this matter.

**When using the flood information provided in this letter it is important the following points are understood:**

- The information provided is the best information Environment Canterbury has at this time. The District Council or local residents may have further information about flooding at the property.
- Environment Canterbury's understanding of flooding at the property may change in the future as further investigations are carried out and new information becomes available.
- It is assumed that flood protection works will be maintained to at least their current standard in the future.
- Flooding can occur in smaller floods if stopbanks are breached at lower than design flows. A breach can occur through lateral or internal erosion of the stopbank. The location of a stopbank breach or overtopping may affect flood depths at the property.
- Flood flow paths and depths can be affected by changes on the floodplain such as:
    - Altering swales, roads or irrigation features
    - Property development including buildings, fencing and hedges
    - Blockages in culverts, drains and bridges
    - Seasonal vegetation growth
    - Antecedent soil moisture conditions

**The prediction of flood depths requires many assumptions and is not an exact science.**

I hope this information is of assistance. Please do not hesitate to contact me if you require any clarification.

Yours sincerely,

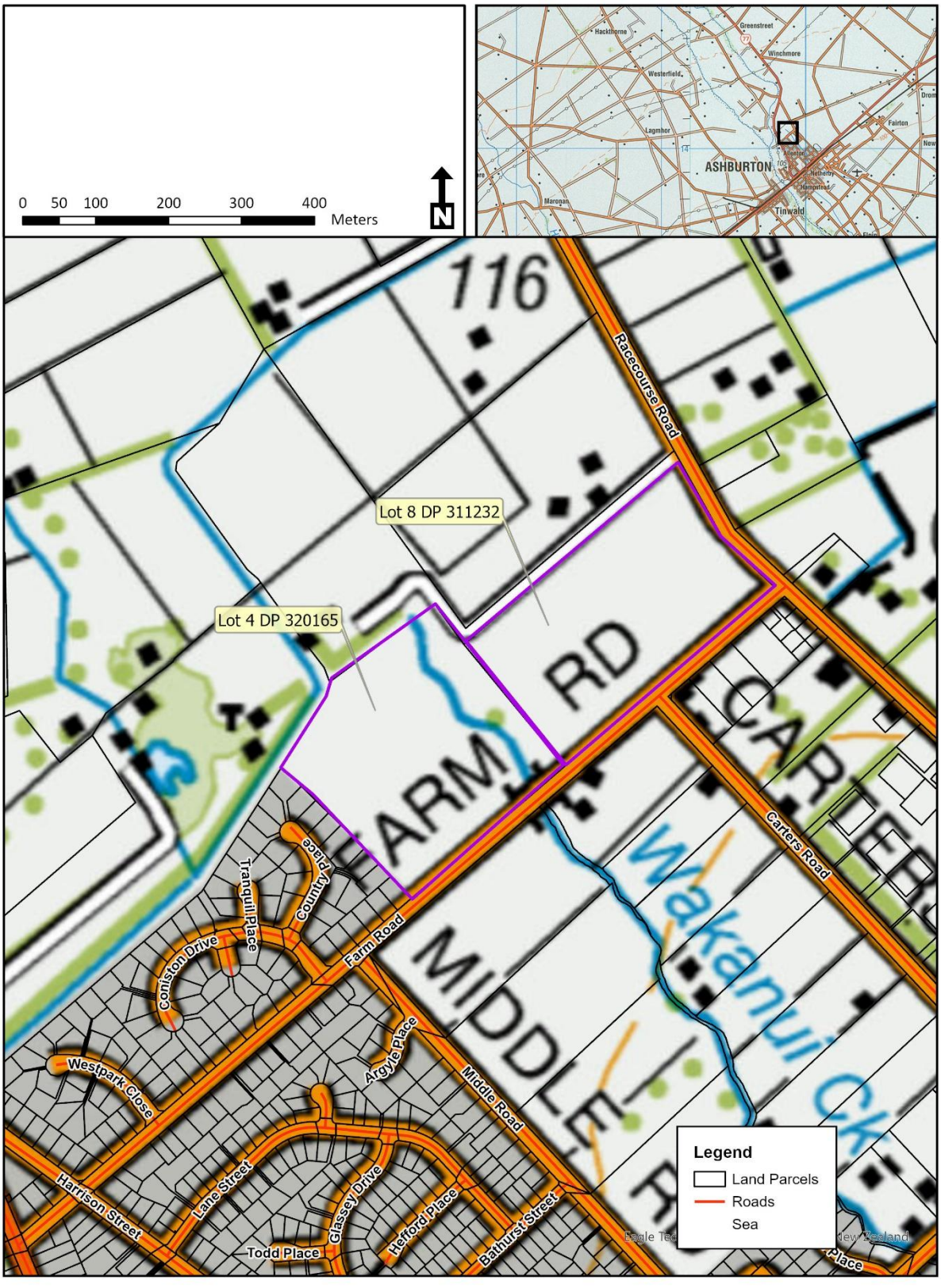
**Oliver Hermans**
Scientist (Natural Hazards)

cc: info@adc.govt.nz,
Ashburton District Council

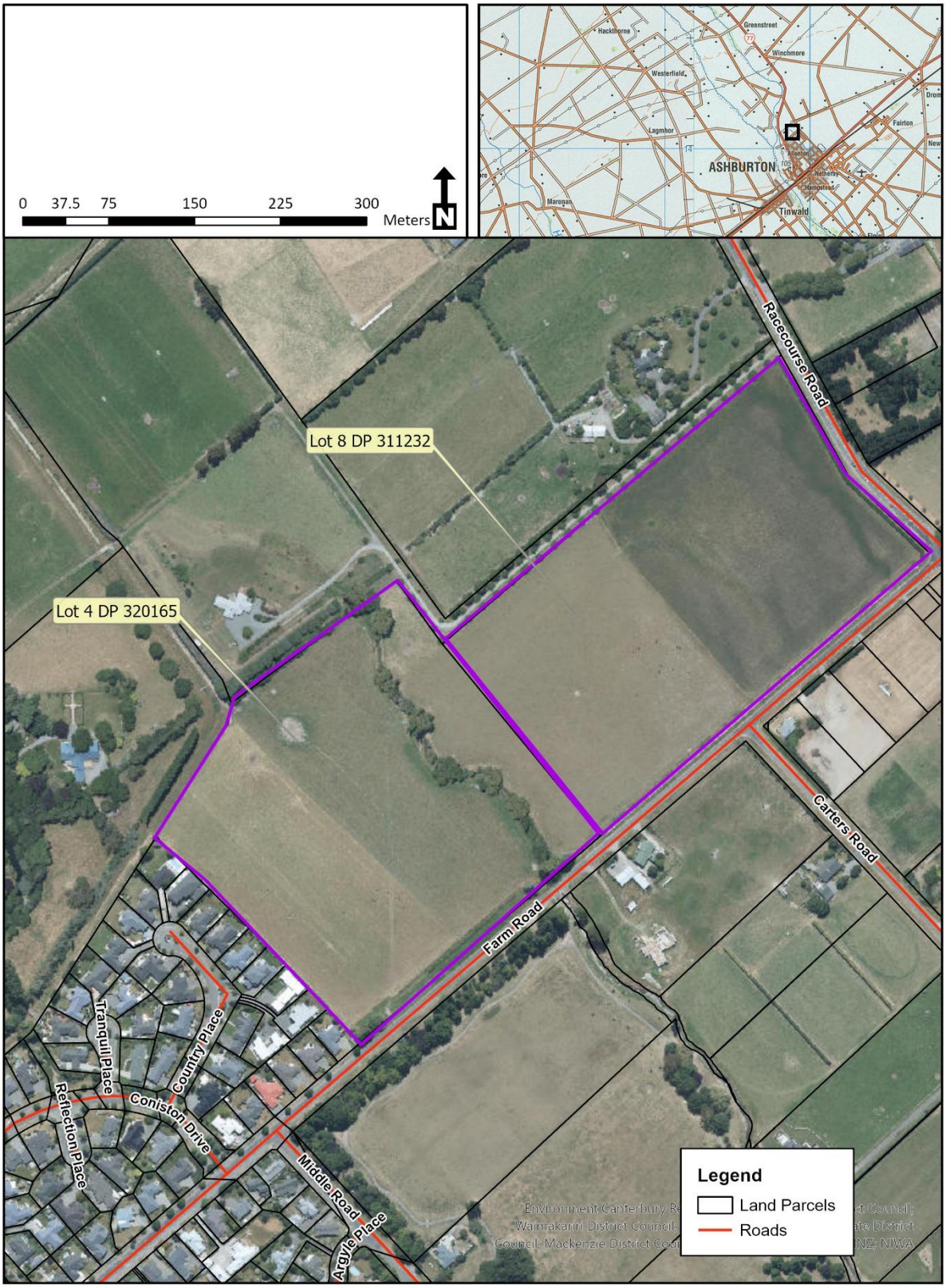
**Attachments:**

- Topographic map showing location of property
- Aerial photograph of the property
- Map showing the Rawles Crossing 500-year ARI breakout
- Map showing the Jessops Bend 500-year ARI breakout

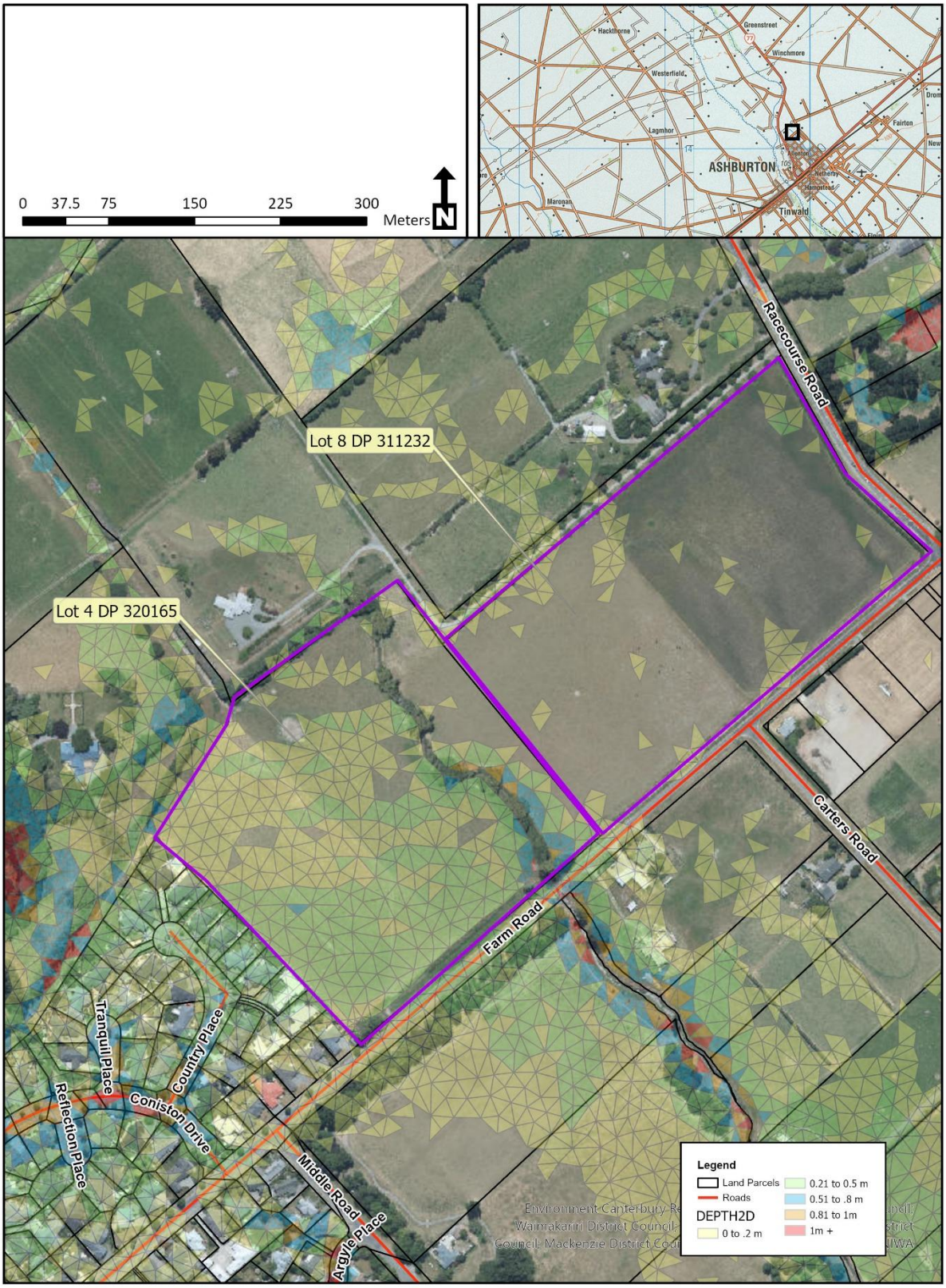
# Farm Road, Ashburton - Topo



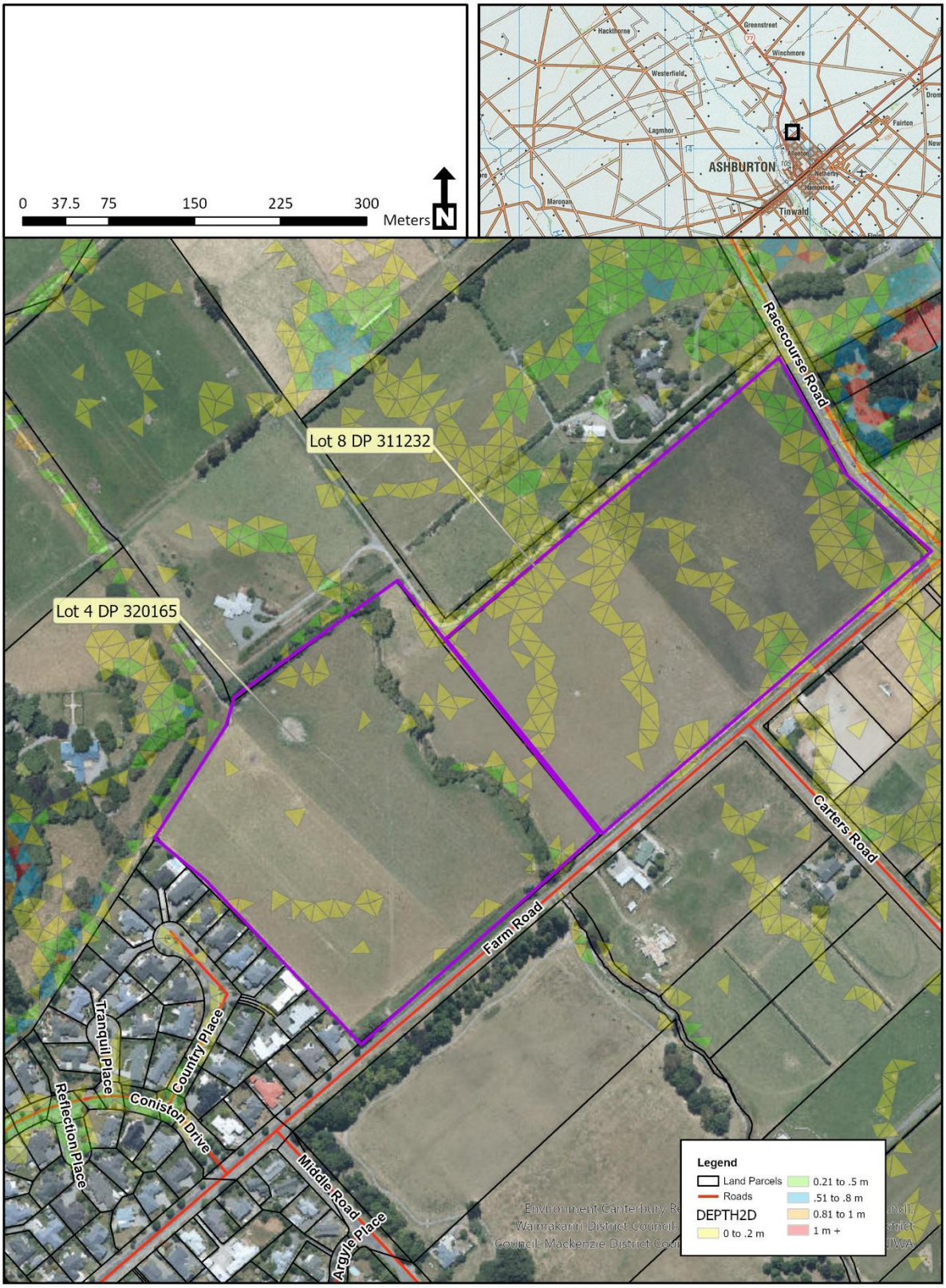
# Farm Road, Ashburton - Aerial

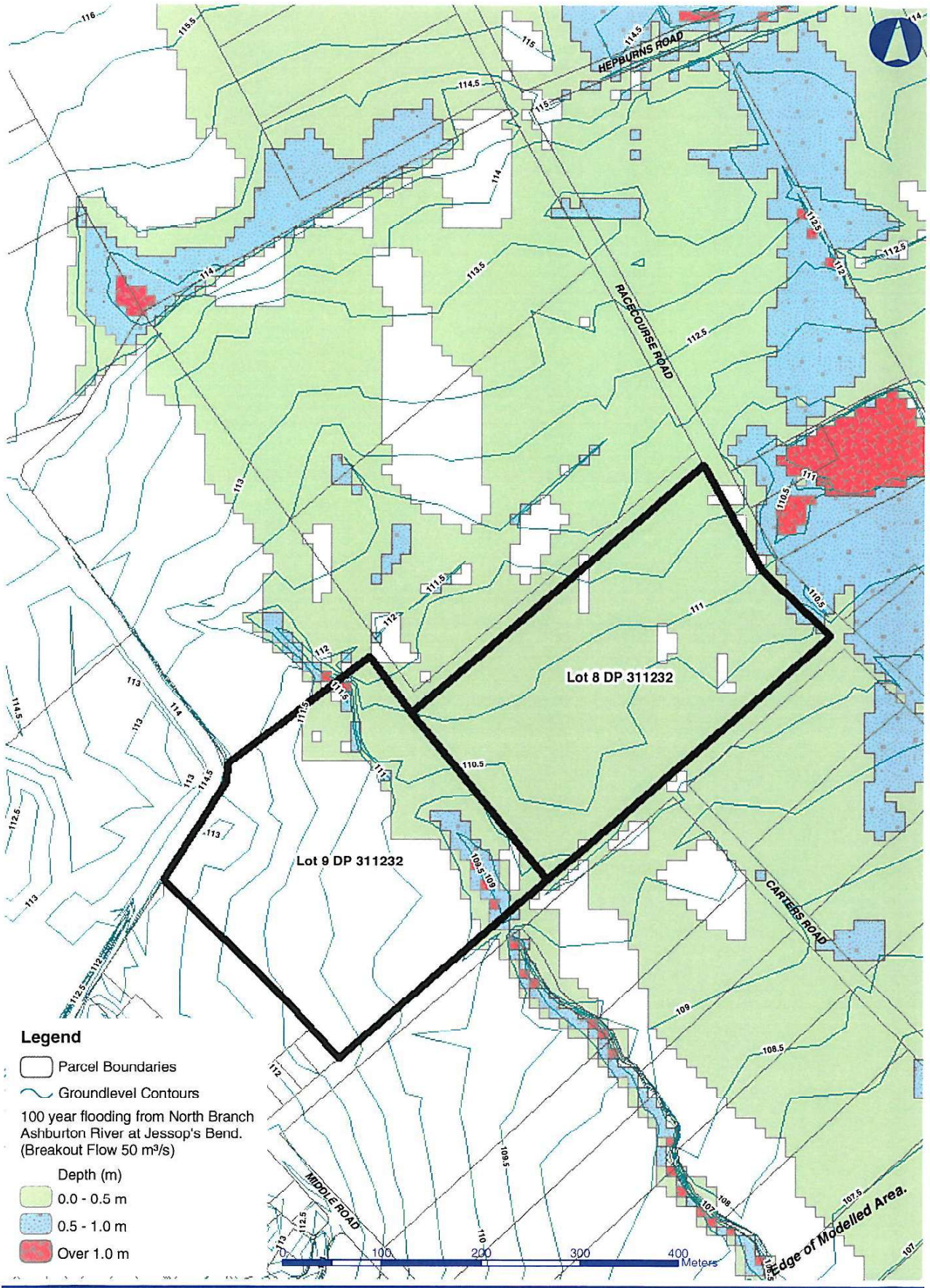


# Farm Road, Ashburton - Rawles Crossing 500 Year ARI



# Farm Road, Ashburton - Jessops Bend 500 Year ARI



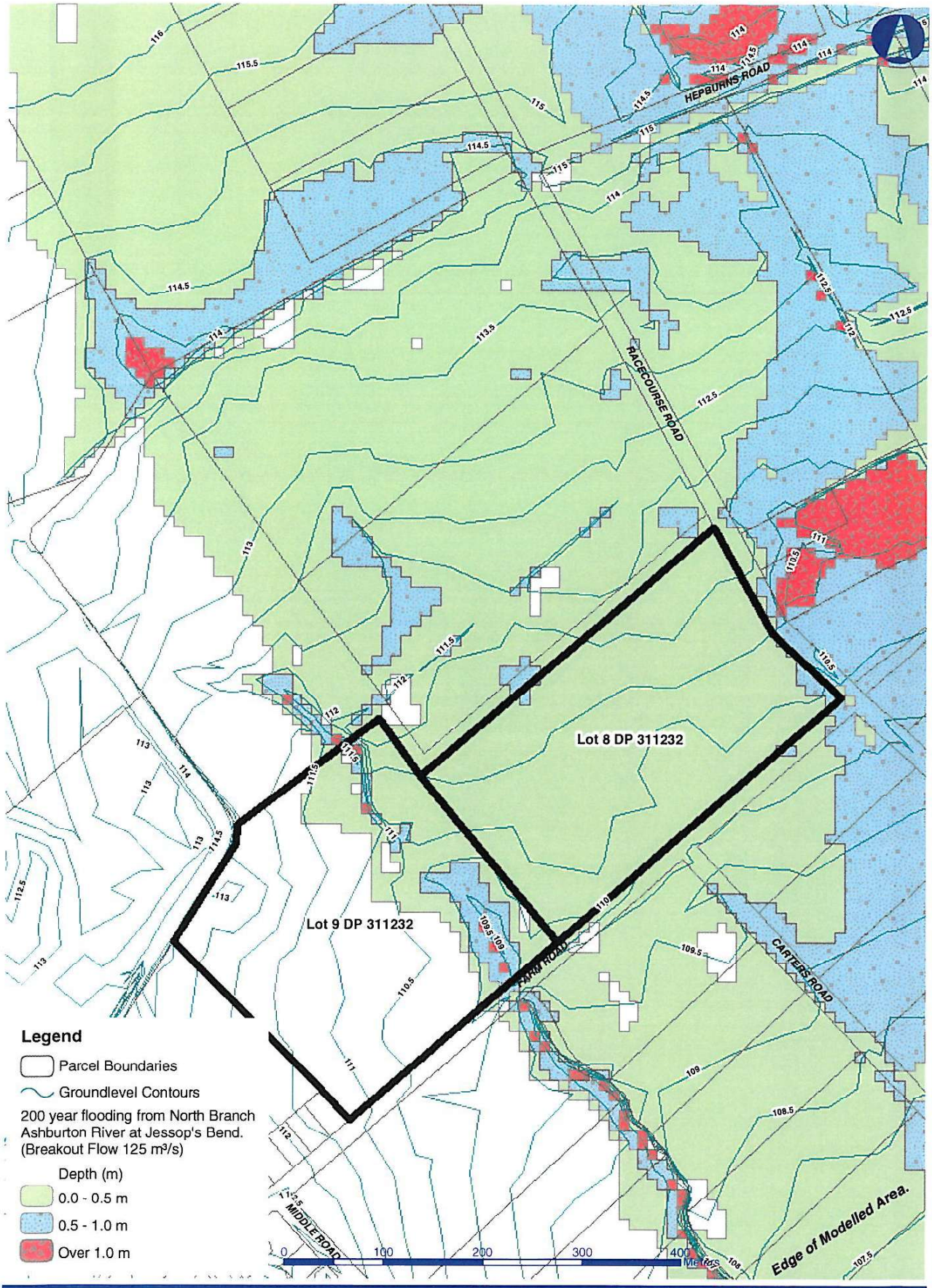



# Lots 8 & 9 DP 311232

*100 year flooding from North Branch Ashburton River at Jessop's Bend. (Breakout Flow 50 m³/s)*

Environment Canterbury
Your regional council

RJRE 19/8/2003 Flood Assessments Ashburton 100 Year 030819.mxd

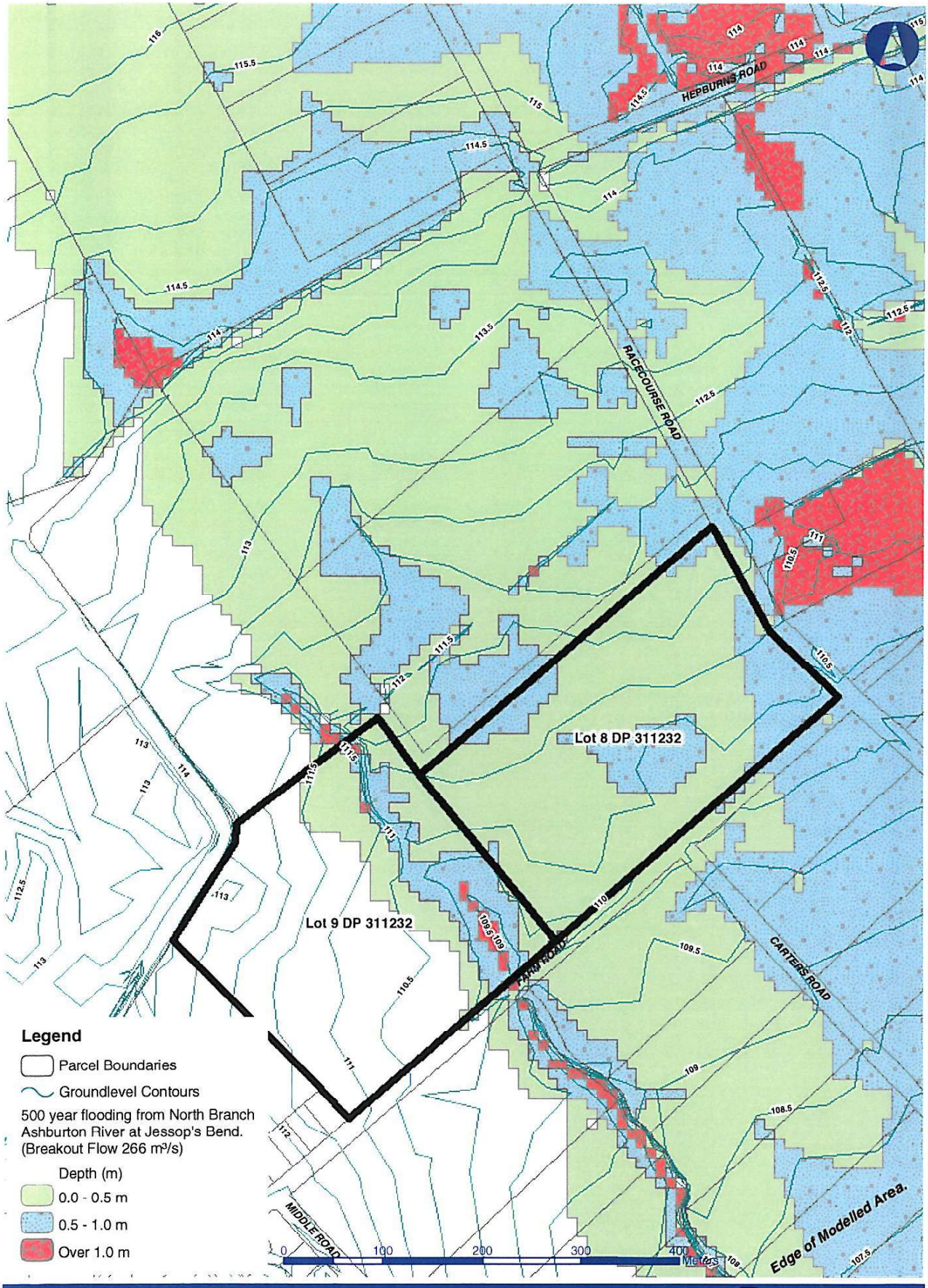



# Lots 8 & 9 DP 311232

*200 year flooding from North Branch Ashburton River at Jessop's Bend. (Breakout Flow 125 m³/s)*

Environment Canterbury
Your regional council

RJRE 19/8/2003 Flood Assessments Ashburton 200 Year 030819.mxd




# Lots 8 & 9 DP 311232

*500 year flooding from North Branch Ashburton River at Jessop's Bend. (Breakout Flow 266 m³/s)*

Environment Canterbury
Your regional council

RJRE 20/8/2003 Flood Assessments Ashburton 500 Year 030819.mxd