

**Before the Hearing Panel appointed by the
Christchurch City Council**

In the Matter of

the Resource Management Act
1991 (**Act**)

And

In the Matter of

Proposed Plan Change to the
Christchurch City Council: Marshs
Road Industrial

**Statement of Evidence of
Andrew James Emil Hall
(Infrastructure Engineering) for
Calder Stewart Development Limited**

Dated: 2 October 2026

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INTRODUCTION

Qualifications and Experience

1. My name is Andrew James Emil Hall.
2. I am a Chartered Civil Engineer. I hold a Bachelor of Engineering (Civil) with honours from Coventry University (United Kingdom). I am a Chartered Member of Engineering New Zealand. I am also a Registered Surveyor and I hold a Bachelor of Surveying from Otago University.
3. I am the Engineering Director of Davie Lovell-Smith Ltd. I have had 35 years of experience designing and building land developments.
4. I have been instructed by Calder Stewart Development Limited (**Calder Stewart**) to give expert infrastructure evidence in respect of Private Plan Change 19: Marshs Road Industrial (**PC19**), being a private plan change application to rezone approximately 19.5 hectares of land zoned Rural Urban Fringe Zone (**RUFZ**) to Industrial Heavy Zone (**IHZ**) and Industrial General Zone (**IGZ**) (**Site**).
5. I am familiar with the Site, having undertaken a site visit on the 31st of July 2026. I also provided engineering advice on an earlier stage of the Hornby Quadrant industrial development that is located adjacent to the Site. I have been involved in the greater Hornby Quadrant project since July 2006.
6. I have worked in consultation with Christchurch City Council (**Council**) Officers Michele McDonald (Wastewater), Ian Johnson (Water Supply) and Brian Norton (Stormwater), to assess the servicing feasibility of PC19. This evidence reflects the outcome of those consultations.

Code of Conduct

7. While this is not an Environment Court hearing I have read and agree to comply with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023. This evidence is within my area of expertise, except where I state that I am relying on material produced by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

SCOPE OF EVIDENCE

8. My evidence will deal with the following:
 - (a) executive summary;

- (b) Site background and role;
- (c) description of PC19;
- (d) the infrastructure effects of PC19;
- (e) response to infrastructure-related issues raised in submissions;
- (f) response to infrastructure-related issues raised in Section 42A report; and
- (g) conclusions.

EXECUTIVE SUMMARY

9. This evidence addresses the servicing of the Site for water supply, wastewater, stormwater, roading/access, power and communications. Earthworks and flooding are also considered here.
10. In terms of earthworks, PC19 will be earthworked completely to ensure that any flood flows will be directed safely along roading routes and not onto future lots. The lots will be elevated above the roading network.
11. Key access points into PC19 will be made from Bruce Stewart Drive linking through to Main South Road. The intersection with Main South Road will align with Pound Road. A roading connection will be made to Aruhe Road but there will not be any vehicular connection to Marshs Road.
12. For water supply, PC19 will connect to the existing Council supply network in Aruhe Road and Bruce Stewart Drive. No connection will be made to Main South Road. The Fire Water Supply Classification for PC19 will be FW3.
13. PC19 will be serviced for wastewater by way of a Local Pressure network that will connect to the existing Council sewer on Main South Road. The permitted wastewater discharge from the Site will be limited to 0.09l/s/ha.
14. Stormwater will be discharged to ground following treatment and attenuation in accordance with Council requirements. It is expected that the discharge will be permitted under the Council's Global Discharge Consent CRC252424 (**Global Consent**).
15. PC19 will be serviced for power and telecommunications with connections to the existing utility company grids.

16. Submissions have been received in reference to the servicing of the Site and flooding. All concerns have been accepted and will be addressed in the eventual design and construction of the future development.
17. Following the issuing of Section 42 reporting, Council is in full support of the servicing of the Site as proposed.
18. The supply of infrastructure and the servicing of PC19 is not an inhibitor to any rezoning.

BACKGROUND

19. This infrastructure evidence addresses the servicing of PC19, an industrial development at the corner of Marshs Road and Main South Road, Hornby. The total area of the Plan Change is approximately 19.5ha. The Site is proposed to be subdivided into industrial lots, with a stormwater reserve and vested roads.
20. This evidence addresses all aspects of the feasibility of servicing of the proposed development including stormwater disposal and reticulation, sewer reticulation, water supply, earthworks, roading, pavements, power and telecommunications. In addition, the suitability of the soils over the Site to accommodate industrial development is addressed.
21. Consultation will be undertaken with Orion and Enable to ensure the coordinated provision of power and telecommunications.
22. The design and construction of the proposed development infrastructure will comply with the requirements of Council's Infrastructure Design Standard and Construction Standard Specifications. Council consultations and modelling have been completed.

SITE DESCRIPTION OF PLAN CHANGE 19

23. As shown in the Outline Development Plan in **Appendix A**, the Site is bounded by Main South Road to the north and Marshs Road to the west. The remaining boundaries abut existing IHZ land owned by Calder Stewart.
24. Previous land development of the PC19 land has created potential future road connections to Main South Road opposite Pound Road and also onto Marshs Road. It is expected that the connection to Pound Road will be created with an upgraded intersection on Main South Road by way of an extension to the existing Bruce Stewart Drive. This will form a link from Pound Road to Shands Road. A connection will also be made to Aruhe Road in the adjacent land development.

25. There will not be vehicular access into the future Site off Marshs Road.
26. The Site is relatively flat and generally falls at approximately 1 in 200 to the south east. The majority of tree lines will be removed as part of the development. However, the shelter belt along Marshs Road will remain until new planting has been established.
27. The Site is bordered by a water race running along Marshs Road. The water race is to remain open and will be protected and maintained during development works.
28. A full geotechnical investigation was undertaken by CGW Limited. This consisted of a desktop study as well as numerous site tests. Please refer to their report attached to the application. The soil profile of the Site is consistent with surrounding areas and generally comprises of 300mm of topsoil on layers of silt and clay, overlying silts, transitioning into sand and gravel layers at a depth of approximately 1.5m. The gravels extend to a great depth. Groundwater is at least 3.3m below ground level.
29. The soils have the potential to create capable subgrades for the roads and building sites. The land is considered Technical Category 1 (**TC1**) in terms of the Ministry of Business, Innovation and Employment Liquefaction Guidelines.
30. A Preliminary Site Investigation (**PSI**) into contamination has been completed by Pattle Delamare Partners Ltd, which concluded that HAIL activities were undertaken on parts of the Site. Please refer to their report attached to the application. Their recommendation is that a Detailed Site Investigation be undertaken over parts of the Site identified as a HAIL area as part of any future subdivision. The PSI concludes that there is no reason from a site contamination perspective why the proposed plan change from RUFZ to an IHZ and IGZ cannot proceed.

SERVICING EFFECTS OF PLAN CHANGE 19

Earthworks and Flood Management

31. Earthworks will be carried out on the Site to ensure that all future sites will drain towards the new or existing roads at a grade of at least 1/500.
32. The Site is not located within a 50- or 200-year flood zone nor within a Flood Management Area. The Site is not in a Liquefaction Management Area.
33. The total estimated cut to fill volume is 70,000m³. The significant areas of cut are in the roadways where the depth to the subgrade may be up to a metre below existing ground level. Trenching for stormwater and other services will be lower than this again. A significant amount of fill will be required in the central area of the Site to elevate sites above the road alignment.

34. There are two natural channels across the Site draining from northwest to southeast. These channels will be filled and the secondary flows that would have otherwise been contained in these channels will be diverted to the roading network. Please refer to the 1 in 200-year flood model in **Appendix B**.
35. All topsoil on Site will be stripped, stockpiled and replaced on the land immediately following bulk earthworks. All disturbed topsoil will be re-sown with Council specification grass seed mixes. A balance of cut and fill will be maintained on Site and removal of material from the Site will be kept to a minimum. Excess topsoil is proposed to be used in a landscape bund parallel to Marshs Road. Material from under the bund may also be excavated out and used on Site. The excavation will be filled with excess topsoil. This excavation will be within 50m of the water race on Marshs Road and this will result in consent being required from Environment Canterbury.
36. Sediment runoff within the Site will be controlled as per Council requirements. The basis of the sediment control will be the Environment Canterbury Guidelines and the discharge during construction will be undertaken either under Council's Global Consent, or in accordance with Environment Canterbury permitted rules. All dust created on the Site will be controlled by water cart or other such Council approved methods. An erosion, sediment and dust control plan will be compiled and submitted to both local and regional council for approval.
37. All bulk Earthfill will be compacted in accordance with NZS 4431:2022. All fill testing will be carried out by an independent laboratory.

Roading and Access

38. I defer to the evidence of Andrew Leckie in relation to transportation matters.
39. From an engineering perspective, the key route through the Site will be the extension of Bruce Stewart Drive from its existing end in the adjacent Phase 1 of the Hornby Quadrant development, through to the intersection of Main South Road and Pound Road. This is shown in the Outline Development Plan in Appendix A. This will be a 23m wide Road reserve with a 12m carriageway. A 1.5m wide footpath will be located on the southern side and a 2.5m wide shared path will be constructed on the north side.
40. Any other roading will have a reserve width of 22m with a 12m carriageway and 1.5m footpaths either side.
41. The intersection with Main South Road will require specific design and consultation with the New Zealand Transport Agency. This work will be undertaken at the time of

subdivision consent as set out in the traffic report included in the application and the evidence of Andrew Leckie.

42. A roading connection will also be made to Aruhe Road.

43. There will be no vehicular access onto Marshs Road.

Water Supply

44. Following consultation with the Council, it is expected that there will be two connection points to the existing Council system surrounding the overall development area:

(a) the 200mm main in Bruce Stewart Drive as constructed as part of Phase 1;
and

(b) the 200mm dia uPVC main in Aruhe Road.

45. No connection can be made to Main South Road as this network is in a different pressure zone.

46. Initial estimates of water demand for 30 lots on the future industrial development on the Site would have a peak demand of 23.1l/s. Added to that, the sites may potentially be Fire Hazard Category 3 with Fire Cells up to 800m². This dictates a Fire Water Supply Classification FW5. FW5 has a demand of 75l/s.

47. Following modelling, it became clear that whilst it is confirmed that the Site can be serviced, the fire flows can only service an FW3 arrangement. Alternative onsite fire protection may be required on individual sites or potentially a private fire supply could be considered. This will be a matter to be resolved under a subdivision or building consent.

48. Water supply is not considered to be a problem for the rezoning of the Site to IHz and IGZ.

Wastewater

49. The Site is to be serviced for wastewater by a Local Pressure Sewer network that will be vested in Council. Each lot will have a private individual pump reservoir tank connected to a common pressure sewer pipe in the street.

50. The pump units and reservoirs will be installed at the time of building consent for each lot. The development works will include the installation of a lateral pipe, isolation valve and boundary box to each Lot located at the road boundary.

51. As part of the overall wastewater servicing investigation, the Council were able to provide advice and modelling from their consultants at WSP. This modelling shows that the Site is expected to be restricted to a daily average sewer flow of 0.09l/s/ha at the instruction of Council. 22.59ha equates to a flow of 2.033l/s. The max flow is expected to be approximately five times the average flow. The maximum flow will therefore have an expected discharge rate of 10.16l/s. I accept these limits and they are as expected.
52. Council have an immediate concern that the downstream pump performance has degraded. The future developer may be required to upgrade the pumpstation to meet the modelled flow rates. It is expected that this work will be carried out in conjunction with the Council as a shared cost.
53. The expected discharge point is manhole WwAccess43671, on the 225mm diameter pipe in Main South Road. This pipe drains to PS87 on Marshs Road from where it is pumped to WwAccessID29871 on Waterloo Road.
54. Odour control will be required at this discharge point and the existing manhole will be lined to prevent concrete corrosion.

Stormwater

55. A stormwater facility will be constructed in Phase 2 of the existing Hornby Quadrant development as described in the Outline Development Plan. The stormwater facility will provide for Phase 2 of the Hornby Quadrant development and the proposed PC19 area. The proposed stormwater design consists of a forebay, a first flush stormwater facility, a retention basin and rapid soakage chambers for storms larger than the nominal first flush event of 25mm. These will be completed and commissioned prior to any stormwater discharge from completed development areas, including on the Site.
56. Through consultation with the Council, it is expected that stormwater will be treated and disposed of under the Council's Global Consent with the following provisos:
 - (a) It is assumed 40% of Lot coverage will be roof area. The flows off the roof will be disposed of to ground via on-site rapid soakage chambers. These are to be sized to attenuate up to and including the critical 2% AEP storm event.
 - (b) The remaining 60% of Lot coverage is assumed to be car parking and landscaped areas which will be piped to the mains in the road and discharged to the first flush, retention and disposal facilities.

57. Pipes in roads are sized to accommodate the 20% AEP storm event and will transfer that flow to the stormwater facilities.
58. All overland flow from the Lots and roads is to be conveyed along the road alignments to the stormwater facilities for treatment and storage up to and including the 2% AEP critical storm event.
59. Any storms exceeding the critical 2% AEP will over top the facilities and discharge to the existing northern end of Bruce Stewart Drive, and then on to Marshs Road.

Power and Telecommunications

60. Power and telephone will be provided to all sites to utility company and industry standards. All cables will be placed underground and all kiosks will be constructed on separate individual lots. The kiosk sites will be forwarded to Council for approval following the power design.

Conclusion on Servicing Effects of Plan Change 19

61. PC19 can be fully serviced for infrastructure in accordance with Council standards.

RESPONSE TO SUBMISSIONS

62. Lynn Cottam and Grant Hamilton, owners of 687 Main South Road, raised concerns regarding runoff onto their property from the proposed future road at the Main South Road – Pound Road intersection.
63. In response, a LiDAR contour investigation and site visit was undertaken at the road connection and the house at 687 Main South Road. Please refer to **Appendix C** for a plan of the area including contours and secondary flow paths.
64. It is clear that there are existing flooding issues shown by the secondary flow path running through the property at 687 Main South Road. Calder Stewart is prepared to work with the submitters to alleviate this flooding nuisance. This may be a combination of some filling on the existing house site and also ensuring that any future road alignment is designed at a level lower than the adjacent properties. A full flood analysis will be undertaken as part of the subdivision process. That flood analysis will address flooding of adjacent properties and will require approval from the Council.
65. Christchurch International Airport Limited raised concerns regarding bird strike and the attraction of birds to stormwater facilities. It is intended that the development will adopt the Global Consent. Condition 28 of the Global Consent specifies design requirements that apply to facilities within 3km of Christchurch International Airport

to ensure that the risk of bird strike is minimised. Calder Stewart will be required to comply with these conditions.

- 66. Canterbury Regional Council raised concerns as to the effect on groundwater from the disposal of stormwater. The discharge of stormwater from the Site will comply with the conditions of the Global Consent.
- 67. Further, the proposed stormwater facility will fundamentally replicate the facility constructed in the previous stage of the Hornby Quadrant development adjacent to the Site. This included an infiltration bed to provide additional treatment in consideration of the Christchurch Groundwater Protection Zone.

RESPONSE TO SECTION 42A REPORT

- 68. Council officers are in support of the proposed servicing of PC19.
- 69. In relation to water supply and wastewater, Council Officer Ramolin Naidoo and myself are in full agreement.
- 70. For stormwater, Council Officer Brian Norton confirms *“broadly that the development enabled by this plan change is capable of mitigating its effects on stormwater and flooding through standard conditions of resource consent for subdivision that are currently applied to similar industrial developments”*.

CONCLUSION

- 71. Following the issue of Section 42 reporting, Council are in full support of the servicing of the Site as proposed.
- 72. Submissions have been received in reference to the servicing of the Site and flooding. All concerns have been accepted and will be addressed in the eventual design and construction of the future development.
- 73. The supply of infrastructure and the servicing of PC19 is not an inhibitor to any rezoning.



Andrew James Emil Hall

2 October 2026

APPENDIX A

Outline Development Plan

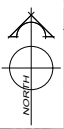


APPENDIX B
1 in 200 Year Flood Model



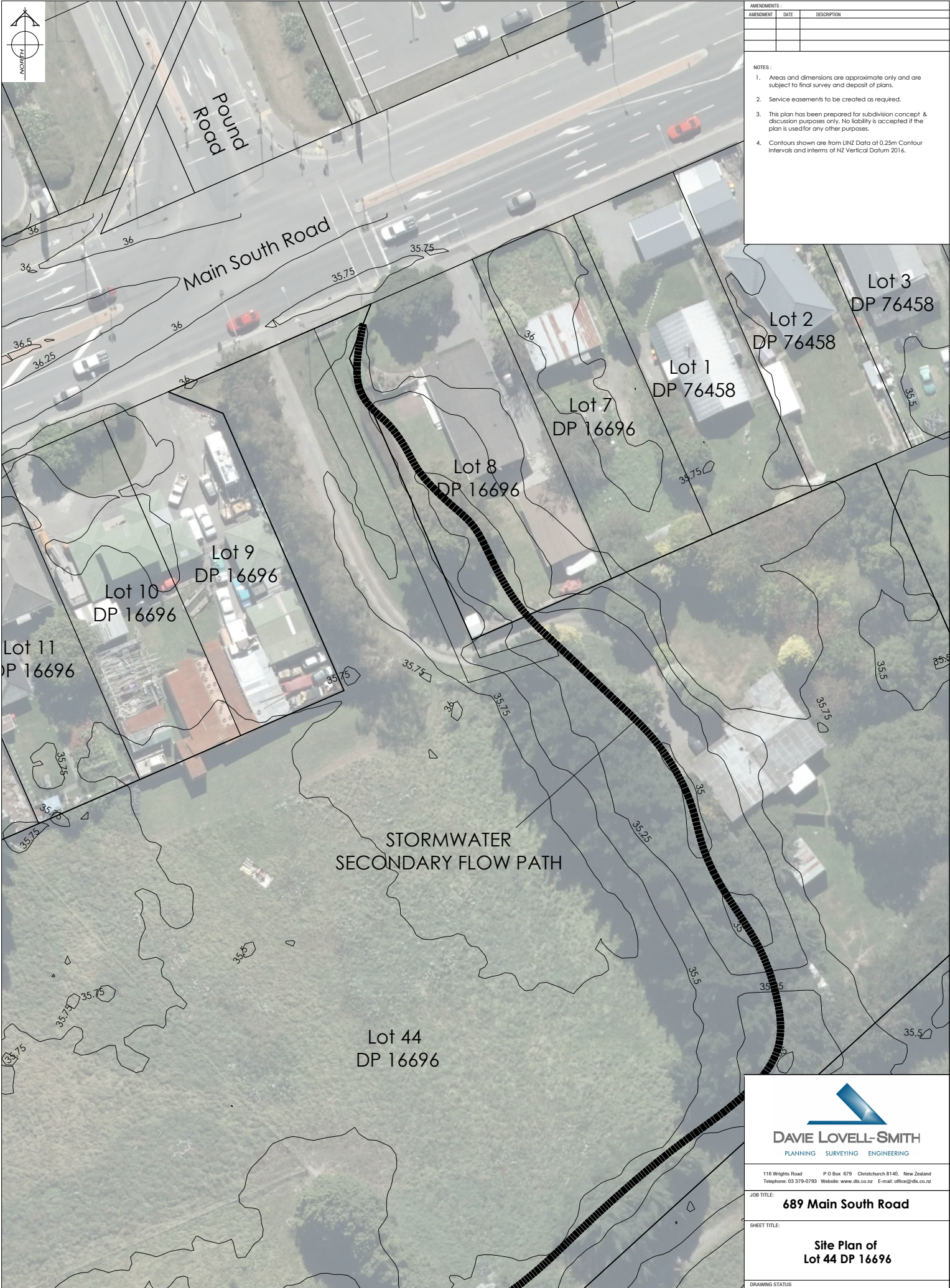
APPENDIX C

Lidar Contours over 687 Main South Road



AMENDMENTS		
AMENDMENT	DATE	DESCRIPTION

- NOTES:
1. Areas and dimensions are approximate only and are subject to final survey and deposit of plans.
 2. Service easements to be created as required.
 3. This plan has been prepared for subdivision concept & discussion purposes only. No liability is accepted if the plan is used for any other purposes.
 4. Contours shown are from LINZ Data at 0.25m Contour Intervals and Interns of NZ Vertical Datum 2016.



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JOB TITLE:
689 Main South Road

SHEET TITLE:
**Site Plan of
Lot 44 DP 16696**

DRAWING STATUS:
For Discussion Purposes

SCALE: 1:250@A1
1:500@A3 DATE: September 2026

CAD FILE: J:\20992\LDAR\20992 LDAR.dwg

DRAWING No: **E20992** SHEET No: 1 OF 1

REVISION:
R0