

**BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED BY THE  
WAIMAKARIRI DISTRICT COUNCIL**

**IN THE MATTER OF**

The Resource Management Act 1991 (**RMA** or  
**the Act**)

**AND**

**IN THE MATTER OF**

Hearing of Submissions and Further  
Submissions on the Proposed Waimakariri  
District Plan (**PWDP** or **the Proposed Plan**)

**AND**

**IN THE MATTER OF**

Hearing of Submissions and Further  
Submissions on Variations 1 and 2 to the  
Proposed Waimakariri District Plan

**AND**

**IN THE MATTER OF**

Submissions and Further Submissions on the  
Proposed Waimakariri District Plan by **Mark  
and Melissa Prosser**

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**SUPPLEMENTARY EVIDENCE OF DAVID PATRICK DELAGARZA  
IN RESPONSE TO OFFICER REPORT  
ON BEHALF OF MARK AND MELISSA PROSSER  
REGARDING HEARING STREAM 12C**

DATED: 8 July 2024

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## INTRODUCTION

- 1 My name is David Patrick Delagarza.
- 2 I have prepared a statement of evidence regarding Hearing Stream 12C in support of Mark and Melissa Prosser's submission on the Proposed Waimakariri District Plan (**PWDP**) to rezone approximately 73 ha at Mandeville (**Site**) from Rural Lifestyle Zone (**RLZ**) to Large Lot Residential Zone (**LLRZ**).
- 3 My qualifications and experience are set out in that statement. I confirm that this supplementary statement of evidence is also prepared in accordance with the Environment Court's Code of Conduct.
- 4 On 23 May 2024 the Waimakariri District Council (**Council** or **WDC**) released an Officer Report for Hearing Stream 12C prepared under section 42A of the RMA containing an analysis of submissions seeking Large Lot Residential Zone and recommendations in response to those submissions (**Officer Report**).
- 5 The Officer Report recommends that the Prosser rezoning submission be rejected. My supplementary evidence is filed in response to that Report.

## SCOPE OF SUPPLEMENTARY EVIDENCE

- 6 In my supplementary evidence I address the following matters:
  - (a) My supplementary evidence responds to those parts of the Officer Report that address matters within scope of my expertise, with particular emphasis on matters where there is a difference of view between myself and the Officer Report.
- 7 In preparing my supplementary evidence I have:
  - (a) Reviewed the Officer Report and the Appendices to that Report relevant to my area of expertise;
  - (b) Reviewed my evidence in chief filed earlier on behalf of the Submitters;
  - (c) Reviewed other materials specifically mentioned in my supplementary evidence discussed below.

## CONTEXT AND APPROACH

8 As mentioned, the Officer Report recommends declining the Prosser rezoning submission. A range of reasons are given for this recommendation, some of which relate to my area of expertise.

9 The approach I have adopted in this supplementary statement of evidence is to identify those parts of the Officer Report (including Appendices attached to that Report) where I disagree with the Officer Report and to explain my reasons for disagreement.

## RESPONSE TO OFFICER REPORT

### Flooding Risks

10 Several parts of the Officer Report raised potential issues associated with flooding risk.

11 From an overall flooding standpoint, this Site is virtually indistinguishable from any surrounding site, the greater Waimakariri District or the overall Canterbury Plains (see **Figure 1**).

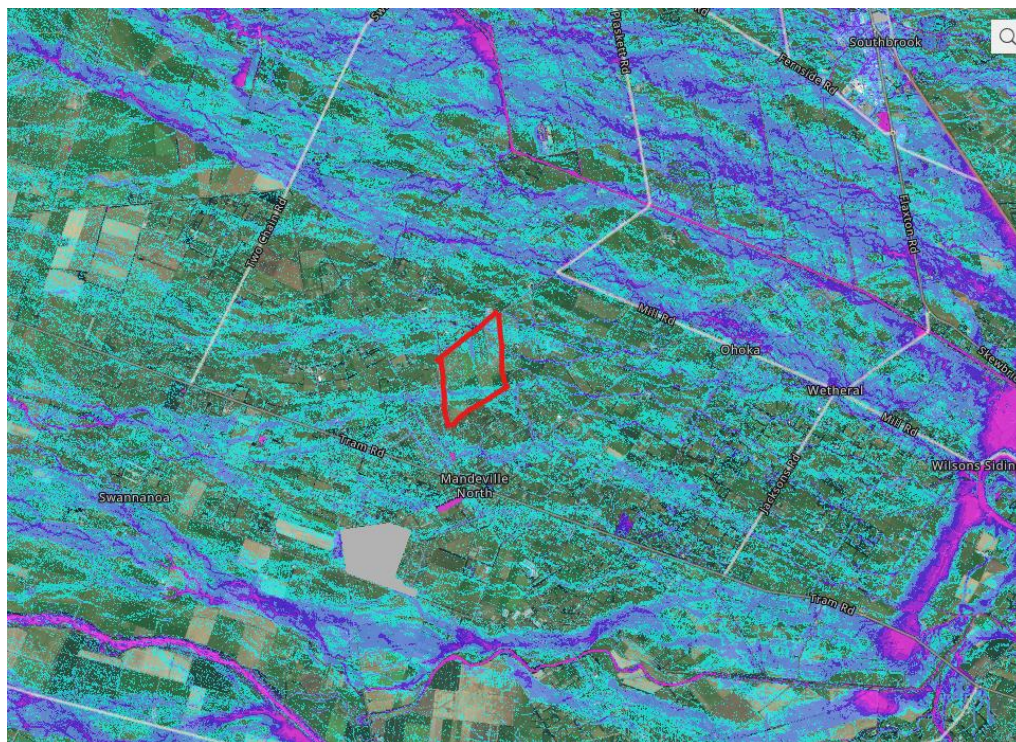


Figure 1 – Flood depth mapping of the site (red outline) and the surrounding area.

12 I note that restricting development to areas with less flooding risk would foreclose development of much of the Waimakariri District.

- 13 As mapped by WDC, the flooding is almost entirely low hazard, characterized by shallow flows and low velocities and the proposed development is sited away from major rivers and is therefore not subject to major fluvial flooding or river erosion / avulsion.
- 14 At paragraph 144, The Officer Report notes that, "the roads and overland flow paths do not match with the natural overland flow paths."
- 15 This is followed up in paragraph 154 in the Officer Report, which states that, "Council's Engineer Mr Aramowicz did not agree with the assessment around maintaining existing overland flow paths within the proposed roading network, and noted that it could contribute towards flooding in the San Dona area."
- 16 I disagree with this assessment because it assumes that the development could divert flood flows from the northern portions of the Site to the southern portion, which is not possible with the proposed Site layout.
- 17 The stormwater management philosophy of the Site was carefully considered to maintain the existing catchments by retaining the high points dividing the flowpaths, preventing the cross-catchment diversion of flows.
- 18 Each catchment flows to Stormwater Management Areas (SMAs), which were placed at the location where overland flow paths currently exit the Site. Refer **Appendix A** to this evidence.
- 19 While roadside swales and stormwater networks may divert flows from their overland flow paths within the Site, this stormwater management philosophy will ensure that flood flows across the Site are not diverted between catchments, regardless of the route they take through the Site. This philosophy is commonly employed for developments which intercept shallow off-site flows, similar to this Site.
- 20 Although detailed flood modelling has not been completed for the Site, it is my experience that for Sites affected by low flood hazard such modelling is typically undertaken at the subdivision phase, when final details of lot layouts, roading and stormwater networks have been completed.
- 21 In conclusion, I am confident that appropriate engineering design can ensure that there are no adverse flood impacts at/on the proposed development.

### **Groundwater Resurgence**

- 22 Groundwater resurgence has been infrequently observed on this Site, and across the general vicinity of Mandeville North. Resurgent flows have required recent upgrades of much of the drainage network for the area, as the network was not designed to accommodate resurgent flows.
- 23 It is now common knowledge that groundwater resurgence affects this area although the quantum of potential resurgent flows is unknown. In these circumstances it is recommended that prior to subdivision phase a detailed groundwater study is undertaken to quantify the magnitude of these flows and the associated uncertainty in the analysis. This study should also consider the potential effects of climate change on resurgent flows.
- 24 The engineering design of the development would then be informed by the results of the groundwater study and would apply appropriate safety factors to manage any associated uncertainty.
- 25 LLRZ zoning provides ample space for the provision of robust stormwater infrastructure (i.e. swales and channels) as required to manage high resurgent flows. I am confident that resurgent flows are able to be managed through proper engineering design informed by the above-mentioned groundwater study.
- 26 It is not necessary to undertake a detailed groundwater study prior to rezoning the Site to LLRZ because the issue of groundwater resurgence can be appropriately addressed on this Site during the subdivision phase through appropriate engineering design.
- 27 In summary, although groundwater resurgence has historically been an issue for the Mandeville North Area, this issue has occurred because groundwater resurgence was not considered in the design of stormwater networks. It is now common knowledge that groundwater resurgence affects this area. Appropriate consideration of this factor, to include potential climate impacts, will allow for the proposed stormwater system in the development to adequately manage resurgent flows.

### **Stormwater Management**

- 28 At paragraph 154, the Officer Report states that, "no modelling was undertaken to support a number of assumptions around groundwater

resurgence, overland flow paths, local stormwater infiltration, or the potential impact on groundwater levels and on downstream communities.”

29 I disagree with this statement because the stormwater management approach is not based on any single assumption around groundwater, and in fact goes out of the way to not make assumptions.

30 Instead, the stormwater management approach considers extremes in discharge philosophies (full infiltration vs no infiltration) and ensures that sufficient area is available to manage either outcome.

31 Infiltration is included as a solution, as this aligns with Environment Canterbury and WDC preferences to maximise groundwater recharge potential; it is not an underlying assumption in the overall management philosophy. From an engineering standpoint, the proposed development can accommodate a ‘no infiltration’ scenario as there is significant space available in the proposed SMAs to provide full attenuation.

#### **NPS-UD Policy 1(f)**

32 At paragraph 138, the Officer Report concludes that, “the flooding and groundwater resurgence risk associated with the proposed rezoning does not meet Policy 1(f) of the NPS-UD.”

33 Policy 1(f) of the NPS-UD requires that developments “...are resilient to the likely current and future effects of climate change”.

34 I disagree with the Officer Report because I consider that this development is not subject to impacts from climate change that exceed that of other locations within the Waimakariri District and Canterbury Plains.

35 As discussed above, the flooding risks at the Site, taken in context with the overall region, are minimal and the proposed development is sited away from major rivers and is therefore not subject to major fluvial flooding or river erosion / avulsion that stand to be increased by climate driven effects.

36 The ground levels across the Site vary between 34 and 40mRL (above sea level). At this level, the Site and its stormwater features will not be subject to impact due to sea level rise.

37 Whilst there is potential that the frequency and magnitude of groundwater resurgence flows could increase as a result of climate change, this is a factor

that can be accounted for when designing the stormwater management system to accommodate such flows.

- 38 In summary, I am confident that that this Site is not exposed to extraordinary climate driven risk, and in fact, has lower exposure to this risk than the majority of the region, including the urban centres of Kaiapoi, Rangiora, and Christchurch.

### **CONCLUSION**

- 39 Overall, I am very confident that all the issues raised in the Officer Report are issues that can be addressed and overcome through appropriate engineering design.
- 40 Whilst every solution has not been fully engineered and modelled, these are details which are capable of being resolved at the time of subdivision approval.
- 41 Thank you for the opportunity to present my evidence.

David Delagarza  
8 July 2024

OVERLAND FLOW PATH - SWALES EITHER SIDE OF ROAD

200 YEAR LOCALISED FLOODING  
(https://waimakariri.maps.arcgis.com)

- 0.1 - 0.25m
- 0.25 - 0.50m
- 0.50 - 0.75m
- 0.75 - 1.0m
- 1.0m +



Plot Date: 2024-07-04 10:35 AM. Filename: 524072-W00001-DRG-LM-0001.DWG

REFERENCE DRAWINGS		REFERENCE MODELS					
REV	DATE	REVISION DETAILS	REV	DRAWN	DESIGNED	VERIFIED	APPROVED
A01.01	2024-06-20		A01.01				

REV	DATE	REVISION DETAILS	REV	DRAWN	DESIGNED	VERIFIED	APPROVED
A01.01	2024-06-20		A01.01				

PREPARED BY



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CERTIFICATION

No.	CERTIFIER	DATE


CLIENT

**OHOKA FARM HOLDINGS LIMITED**


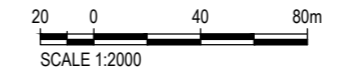
CLIENT DOCUMENT NUMBER

REV

Coordinate system  
MPL 2000  
Height datum



PRINT ALL COPIES IN COLOUR

All written dimensions take precedence over scaled dimensions.

CONSTRUCTION STATUS	
NOT FOR CONSTRUCTION	
DRAWN BY	R DAWSON
DESIGNED BY	
STATUS	CODE
STARTED	W1
DOCUMENT STATE	
WORK IN PROGRESS	

PROJECT	
OHOKA FARM HOLDINGS - ASHWORTHS ROAD	
TITLE	
MANDEVILLE NORTH-EAST DEVELOPMENT AREA ODP & WDC 200 YR LOCALISED FLOODING	
DOCUMENT CODE	
524072-W00001-DRG-LM-0001	
SCALE	SIZE
AS SHOWN	A1
REFERENCE No.	REV
DRG-LM-0001	A01.01