

**From:** [Bridget Irving](#)  
**To:** [Plan Hearings](#)  
**Cc:** [Simon Peirce](#); [Kate McKinlay](#)  
**Subject:** RE: PC7 Evidence - Submitter 384 - Mullihan, Kerse Kingston  
**Date:** Monday, 20 July 2020 12:22:39 pm  
**Attachments:** [image005.png](#)  
[image003.png](#)  
[Statement of Evidence Hayden Crow.pdf](#)

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Hello,

Please see attached an updated version of Mr Crow's evidence with appendices attache3d.

Please confirm receipt.

Kind regards,

**Bridget Irving**  
Partner

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**From:** Bridget Irving  
**Sent:** Friday, 17 July 2020 4:40 PM  
**To:** 'planhearings@ecan.govt.nz'  
**Cc:** Simon Peirce; Kate McKinlay  
**Subject:** PC7 Evidence - Submitter 384 - Mullihan, Kerse Kingston

Good Afternoon,

Please see attached for filing the following statements of evidence:

1. Mark Mulligan - Farmer/Landowner
2. Ian Kerse - Farmer/Landowner
3. Neil Kingston - Farmer/Landowner
4. Ian McIndoe – Hydrology
5. Matthew Hickey – Ecology
6. Keri Johnston – Planning and consenting
7. Hayden Crow – Economics (Please not in relation to this statement there is a further email to follow with Appendices – we are just experiencing some difficulties in compiling these documents. We will send them as soon as possible).

I would be grateful if you could please acknowledge receipt of this email.

Kind regards,

**Bridget Irving**  
Partner

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**New Anti-Money Laundering (AML) legislation came into effect as of July 1st 2018 and will apply to all law firms. This requires us to obtain certain personal information from you before proceeding with any work on your behalf. [Read more here](#).**

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**BEFORE THE COMMISSIONERS APPOINTED BY  
THE CANTERBURY REGIONAL COUNCIL**

**IN THE MATTER** of Proposed Plan Change 7 to the  
Canterbury Land and Water  
Regional Plan

**SUBMITTER** **MULLIGAN, M E & KERSE, I J &  
KINGSTON N S**

Submitter 384

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**STATEMENT OF EVIDENCE OF HAYDEN TEMPLETON CRAW**

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**GALLAWAY COOK ALLAN  
LAWYERS  
DUNEDIN**

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## **STATEMENT OF EVIDENCE OF HAYDEN TEMPLETON CRAW**

### **Introduction**

1. My full name is Hayden Templeton Craw. I am an Agribusiness Specialist with Compass Agribusiness Management Limited.
2. Compass Agribusiness Management Limited is a privately-owned company that provides agricultural and rural business consultancy. Located in Otago, New Zealand as well as Victoria, Australia, I provide advice to clients throughout the South Island of New Zealand as well as in Victoria, Tasmania and New South Wales in Australia. I have acted in advisory roles for the Manuherikia and NOIC irrigation schemes and provide consultancy work for many large scale irrigated farms throughout the South Island. I have many customers in the Central Otago region including several in the Tarras / Lindis catchment area who fall within the scope of this report.
3. My services include a full range of farm consultancy and advisory services as well as planning and business management. I also assist large scale commercial and family farming entities with financial management. I have been working with farmer providing this type of advice for over 12 years. I have also worked on farms as a young person and during travel overseas to the UK.
4. I hold a Bachelor of Applied Science, majoring in Agriculture and Agribusiness from Massey University.
5. I confirm that I have read and agree to comply with the Environment Court Practice Note 2014 with regard to Expert Witnesses. This evidence is within my area of expertise, except where I state that I am relying on what I have been told 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**

6. I was engaged by the Submitters to evaluate the effects of the proposed minimum flow of 50l/s on their farming operations. The assessment is set out in the Report, "*Upper Coopers Creek Sub*

*Catchment Group – Assessment of the impact of the proposed minimum flow on the financial viability of the affected farming business, July 2020*”. A copy of the report is attached at Appendix 1 to this evidence.

7. I was assisted in this analysis by my colleague Bruce Hamilton whose experience is set out in section 3 of the Report.
8. The Report assess two farming systems:
  - (a) Dairy; and
  - (b) Dairy support.
9. These farm systems are currently being deployed by the Submitters. Kingston and Mulligan operate dairy farms whilst Kerse operates a dairy support operation. I have not specifically analysed the Submitters individual farm systems, but assessed the respective farm systems using average efficient metrics. Having been provided information about the Submitters individual farm systems I am satisfied that the average efficient model are representative of their operations.
10. The details of the farm models are set out in the Report.
11. Each farm system has been assessed under the following conditions:
  - (a) An average year
    - (i) With no flow restrictions (this being the base model); and
    - (ii) With 50l/s restrictions.
  - (b) Average of 3 dry years (2015-2017)
    - (i) With no flow restrictions; and
    - (ii) With 50l/s restrictions.

12. The analysis in the report shows that the proposed minimum flow of 50l/s will have significant impacts on the economic viability of the farming businesses.<sup>1</sup>

## **SUMMARY**

13. The analysis I have carried out demonstrates that the proposed minimum flow of 50l/s will result in a significant reduction in effective farm surplus. This has flow on effects in reducing the asset value of businesses<sup>2</sup>.
14. The 50l/s restrictions result in a marked increase in the coefficient of variability. This introduces considerable uncertainty for farmers in terms of feed production. To try and account for this farmers will tend to farm more conservatively which results in further opportunity costs during seasons when water reliability is relatively good. I discuss this in greater detail in the Report attached at Appendix 1.
15. The ability to irrigate reliably allows farming business to be financially and environmentally sustainable. Profitable farming practices allow for re-investment back into the land at a higher standard. It also allows farmers to carry out other works such as riparian management, weed and pest control and the like.
16. The flow on effect from reduced farm returns and the reduced land values, impacts not only on investment on farm but would also have flow on effects to the local community and region.

**Hayden Crow**

**Compass Agribusiness**

17 July 2020

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<sup>1</sup> Appendix 1 section 5.2.3, 5.2.4 and Section 6.2.3, 6.2.4

<sup>2</sup> Appendix 1 section 5.2.5 and 6.2.5

**APPENDIX 1** - *Upper Coopers Creek Sub Catchment Group – Assessment of the impact of the proposed minimum flow on the financial viability of the affected farming business, July 2020*

## APPENDICES – COOPERS CREEK

- Consolidated Forecast P&L Dairy Base Model – consolidation of 4 x Farmax Models.
- Physical Summary Dairy Base Model
- Consolidated Forecast P&L Dairy Support Base Model – consolidation of 4 x Farmax Models.
- Physical Summary Dairy Support Model





Forecast Profit and Loss for Coopers Creek Dairy Model																		
			Unrestricted								50L/sec min flow at SH72							
			Average Season				Dry Season				Average Season				Dry Season			
			\$ Total	\$/Farm ha	\$/cow	\$/kg MS	\$ Total	\$/Farm ha	\$/cow	\$/kg MS	\$ Total	\$/Farm ha	\$/cow	\$/kg MS	\$ Total	\$/Farm ha	\$/cow	\$/kg MS
Revenue	Stock	Net Milk Sales - this season	\$1,706,192	\$9,323	\$2,844	\$6.43	\$1,537,047	\$8,399	\$2,846	\$6.43	\$1,454,195	\$7,946	\$2,802	\$6.43	\$916,545	\$5,008	\$2,696	\$6.42
		Net Milk Sales - last season	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00
		Net Milk Sales - dividend	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00
		Net Livestock Sales	\$126,143	\$689	\$210	\$0.48	\$112,470	\$615	\$208	\$0.47	\$107,711	\$589	\$208	\$0.48	\$70,160	\$383	\$206	\$0.49
		Contract Grazing	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$24,321	\$134	\$72	\$0.17
		Change in Livestock Value	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00
		Total	\$1,832,335	\$10,013	\$3,054	\$6.91	\$1,649,517	\$9,014	\$3,055	\$6.90	\$1,561,906	\$8,535	\$3,009	\$6.90	\$1,011,026	\$5,525	\$2,974	\$7.08
Total Revenue			\$1,832,335	\$10,013	\$3,054	\$6.91	\$1,649,517	\$9,014	\$3,055	\$6.90	\$1,561,906	\$8,535	\$3,009	\$6.90	\$1,011,026	\$5,525	\$2,974	\$7.08
Expenses	Wages	Wages	\$169,800	\$928	\$283	\$0.64	\$152,820	\$835	\$283	\$0.64	\$146,877	\$803	\$283	\$0.65	\$96,220	\$526	\$283	\$0.67
		Management Wage	\$85,000	\$464	\$142	\$0.32	\$85,000	\$464	\$157	\$0.36	\$85,000	\$464	\$164	\$0.38	\$85,000	\$464	\$250	\$0.60
	Stock	Animal Health	\$60,000	\$328	\$100	\$0.23	\$54,000	\$295	\$100	\$0.23	\$51,900	\$284	\$100	\$0.23	\$34,000	\$186	\$100	\$0.24
		Breeding	\$48,000	\$262	\$80	\$0.18	\$43,200	\$236	\$80	\$0.18	\$41,520	\$227	\$80	\$0.18	\$27,200	\$149	\$80	\$0.19
		Farm Dairy	\$18,000	\$98	\$30	\$0.07	\$16,200	\$89	\$30	\$0.07	\$15,570	\$85	\$30	\$0.07	\$10,200	\$56	\$30	\$0.07
		Electricity	\$22,200	\$121	\$37	\$0.08	\$19,980	\$109	\$37	\$0.08	\$19,203	\$105	\$37	\$0.08	\$12,580	\$69	\$37	\$0.09
	Feed/Crop	Feed Crop	\$11,250	\$61	\$19	\$0.04	\$11,250	\$61	\$21	\$0.05	\$11,250	\$61	\$22	\$0.05	\$11,250	\$61	\$33	\$0.08
		Feed Conserved	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$0	\$0	\$0	\$0.00	\$31,500	\$172	\$93	\$0.22
		Bought Feed	\$59,166	\$323	\$99	\$0.22	\$54,275	\$297	\$101	\$0.23	\$44,952	\$246	\$87	\$0.20	\$12,341	\$67	\$36	\$0.09
		Calf Feed	\$15,000	\$82	\$25	\$0.06	\$13,500	\$74	\$25	\$0.06	\$12,975	\$71	\$25	\$0.06	\$8,500	\$46	\$25	\$0.06
	Grazing	Grazing	\$347,071	\$1,897	\$578	\$1.31	\$307,294	\$1,679	\$569	\$1.29	\$297,703	\$1,627	\$574	\$1.32	\$194,271	\$1,062	\$571	\$1.36
	Other Farm Working	Fertiliser (Excl. N)	\$85,644	\$468	\$143	\$0.32	\$85,644	\$468	\$159	\$0.36	\$85,644	\$468	\$165	\$0.38	\$85,644	\$468	\$252	\$0.60
		Nitrogen	\$53,387	\$292	\$89	\$0.20	\$53,387	\$292	\$99	\$0.22	\$53,387	\$292	\$103	\$0.24	\$39,960	\$218	\$118	\$0.28
		Irrigation	\$63,949	\$349	\$107	\$0.24	\$57,601	\$315	\$107	\$0.24	\$54,533	\$298	\$105	\$0.24	\$34,422	\$188	\$101	\$0.24
		Regrassing	\$9,000	\$49	\$15	\$0.03	\$9,000	\$49	\$17	\$0.04	\$9,000	\$49	\$17	\$0.04	\$9,000	\$49	\$26	\$0.06
		Weed & Pest Control	\$6,222	\$34	\$10	\$0.02	\$6,222	\$34	\$12	\$0.03	\$6,222	\$34	\$12	\$0.03	\$6,222	\$34	\$18	\$0.04
		Vehicle Expenses	\$18,300	\$100	\$31	\$0.07	\$18,300	\$100	\$34	\$0.08	\$18,300	\$100	\$35	\$0.08	\$18,300	\$100	\$54	\$0.13
		Fuel	\$15,125	\$83	\$25	\$0.06	\$13,623	\$74	\$25	\$0.06	\$12,898	\$70	\$25	\$0.06	\$8,141	\$44	\$24	\$0.06
		R&M Land/Buildings	\$36,600	\$200	\$61	\$0.14	\$36,600	\$200	\$68	\$0.15	\$36,600	\$200	\$71	\$0.16	\$36,600	\$200	\$108	\$0.26
		R&M Plant/Equipment	\$26,535	\$145	\$44	\$0.10	\$23,901	\$131	\$44	\$0.10	\$22,628	\$124	\$44	\$0.10	\$14,283	\$78	\$42	\$0.10
		Freight & Cartage	\$15,000	\$82	\$25	\$0.06	\$13,500	\$74	\$25	\$0.06	\$12,975	\$71	\$25	\$0.06	\$8,500	\$46	\$25	\$0.06
	Overheads	Administration Expenses	\$18,300	\$100	\$31	\$0.07	\$18,300	\$100	\$34	\$0.08	\$18,300	\$100	\$35	\$0.08	\$18,300	\$100	\$54	\$0.13
		Insurance	\$12,627	\$69	\$21	\$0.05	\$12,627	\$69	\$23	\$0.05	\$12,627	\$69	\$24	\$0.06	\$12,627	\$69	\$37	\$0.09
		ACC Levies	\$4,941	\$27	\$8	\$0.02	\$4,941	\$27	\$9	\$0.02	\$4,941	\$27	\$10	\$0.02	\$4,941	\$27	\$15	\$0.03
		Rates	\$18,300	\$100	\$31	\$0.07	\$18,300	\$100	\$34	\$0.08	\$18,300	\$100	\$35	\$0.08	\$18,300	\$100	\$54	\$0.13
Total Farm Working Expenses			\$1,219,416	\$6,663	\$2,032	\$4.60	\$1,129,465	\$6,172	\$2,092	\$4.73	\$1,093,304	\$5,974	\$2,107	\$4.83	\$838,302	\$4,581	\$2,466	\$5.87
Depreciation			\$63,683	\$348	\$106	\$0.24	\$57,362	\$313	\$106	\$0.24	\$54,306	\$297	\$105	\$0.24	\$34,279	\$187	\$101	\$0.24
Total Farm Expenses			\$1,283,099	\$7,011	\$2,138	\$4.84	\$1,186,828	\$6,485	\$2,198	\$4.97	\$1,147,611	\$6,271	\$2,211	\$5.07	\$872,581	\$4,768	\$2,566	\$6.11
Economic Farm Surplus (EFS)			\$549,235	\$3,001	\$915	\$2.07	\$462,690	\$2,528	\$857	\$1.94	\$414,295	\$2,264	\$798	\$1.83	\$138,445	\$757	\$407	\$0.97
Farm Profit before Tax			\$549,235	\$3,001	\$915	\$2.07	\$462,690	\$2,528	\$857	\$1.94	\$414,295	\$2,264	\$798	\$1.83	\$138,445	\$757	\$407	\$0.97



## Key Assumptions for Coopers Creek Dairy

			Unrestricted		50L/sec min flow at SH72	
Category	Description	Units	Average Season Value	Dry Season Value	Average Season Value	Dry Season Value
<b>Farm</b>	Effective Area	ha	183	183	183	183
	Stocking Rate	cows/ha	3.3	3	2.9	1.9
<b>Herd</b>	Cow Numbers (1st July)	cows	620	555	534	350
	Peak Cows Milked	cows	604	544	523	341
	Days in Milk	days	262	262	262	262
<b>Production</b>	Milk Solids total	kgMS	265,347	239,009	226,277	142,830
	Milk Solids per graze ha	kgMS/ha	1,517	1,367	1,294	846
	Milk Solids per cow	kgMS/cow	439	439	433	419
	Peak Milk Solids production	kg/cow/day	2.09	2.08	2.09	2.09
	Milk Solids as % of live weight	%	105.4	105.7	103.4	100.5
<b>Feeding</b>	Pasture Offered per cow *	t DM/cow	4.4	4.4	4.4	4.1
	Supplements Offered per cow *	t DM/cow	0.5	0.5	0.5	0.8
	Off-farm Grazing Offered per cow *	t DM/cow	0.8	0.8	0.9	0.8
	Total Feed Offered per cow *	t DM/cow	5.8	5.8	5.8	5.8
	Pasture Offered per graze ha	t DM/ha	15.3	13.7	13.1	8.3
	Supplements Offered per graze ha	t DM/ha	2.1	2	1.8	1.8
	Off-farm Grazing Offered per graze ha	t DM/ha	5.9	5.2	5.1	3.5
	Total Feed Offered per graze ha	t DM/ha	23.3	20.9	20.1	13.6
	Supplements and Grazing / Feed Offered *	%	23.4	23.8	23.8	28.5
	Bought Feed / Feed Offered *	%	8.1	8.2	7.7	5.2



## Forecast Profit and Loss for Coopers Creek Dairy Support Model

			Unrestricted				50L/sec min flow at SH72			
			Average Season		Dry Season		Average Season		Dry Season	
			\$ Total	\$/Farm ha	\$ Total	\$/Farm ha	\$ Total	\$/Farm ha	\$ Total	\$/Farm ha
	Stock	Net Milk Sales - this season	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Net Milk Sales - last season	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Net Milk Sales - dividend	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Net Livestock Sales	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Contract Grazing	\$494,974	\$3,173	\$469,142	\$3,007	\$443,310	\$2,842	\$336,539	\$2,157
		Change in Livestock Value	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Total	\$494,974	\$3,173	\$469,142	\$3,007	\$443,310	\$2,842	\$336,539	\$2,157
	Crop & Feed	Surplus Feeds	\$114,055	\$731	\$84,671	\$543	\$91,011	\$583	\$50,082	\$321
		Capital Value Change	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Total	\$114,055	\$731	\$84,672	\$543	\$91,011	\$583	\$50,082	\$321
	<b>Total Revenue</b>		<b>\$609,029</b>	<b>\$3,904</b>	<b>\$553,814</b>	<b>\$3,550</b>	<b>\$534,321</b>	<b>\$3,425</b>	<b>\$386,621</b>	<b>\$2,478</b>
Expenses	Wages	Management Wage	\$60,000	\$385	\$60,000	\$385	\$60,000	\$385	\$60,000	\$385
	Stock	Electricity	\$6,240	\$40	\$6,240	\$40	\$6,240	\$40	\$6,240	\$40
	Feed/Crop	Pasture Conserved	\$50,400	\$323	\$40,221	\$258	\$50,400	\$323	\$44,100	\$283
		Feed Crop	\$46,800	\$300	\$46,800	\$300	\$46,800	\$300	\$37,800	\$242
		Bought Feed	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Other Farm Working	Fertiliser (Excl. N)	\$54,600	\$350	\$54,600	\$350	\$54,600	\$350	\$54,600	\$350
		Nitrogen	\$25,553	\$164	\$24,677	\$158	\$24,677	\$158	\$18,581	\$119
		Irrigation	\$46,800	\$300	\$46,800	\$300	\$46,800	\$300	\$15,600	\$100
		Regrassing	\$14,400	\$92	\$14,400	\$92	\$14,400	\$92	\$7,200	\$46
		Weed & Pest Control	\$5,304	\$34	\$5,304	\$34	\$5,304	\$34	\$5,304	\$34
		Vehicle Expenses	\$7,800	\$50	\$7,800	\$50	\$7,800	\$50	\$7,800	\$50
		Fuel	\$7,800	\$50	\$7,800	\$50	\$7,800	\$50	\$7,800	\$50
		R&M Land/Buildings	\$11,700	\$75	\$11,700	\$75	\$11,700	\$75	\$11,700	\$75
		R&M Plant/Equipment	\$11,700	\$75	\$11,700	\$75	\$11,700	\$75	\$11,700	\$75
		Freight & Cartage	\$4,680	\$30	\$4,680	\$30	\$4,680	\$30	\$4,680	\$30
	Overheads	Administration Expenses	\$15,600	\$100	\$15,600	\$100	\$15,600	\$100	\$15,600	\$100
		Insurance	\$7,800	\$50	\$7,800	\$50	\$7,800	\$50	\$7,800	\$50
		ACC Levies	\$4,212	\$27	\$4,212	\$27	\$4,212	\$27	\$4,212	\$27
		Rates	\$12,480	\$80	\$12,480	\$80	\$12,480	\$80	\$12,480	\$80
	Total Farm Working Expenses		\$393,869	\$2,525	\$382,813	\$2,454	\$392,993	\$2,519	\$333,197	\$2,136
	Depreciation		\$31,200	\$200	\$31,200	\$200	\$31,200	\$200	\$31,200	\$200
	<b>Total Farm Expenses</b>		<b>\$425,069</b>	<b>\$2,725</b>	<b>\$414,013</b>	<b>\$2,654</b>	<b>\$424,193</b>	<b>\$2,719</b>	<b>\$364,397</b>	<b>\$2,336</b>
	<b>Economic Farm Surplus (EFS)</b>		<b>\$183,960</b>	<b>\$1,179</b>	<b>\$139,800</b>	<b>\$896</b>	<b>\$110,128</b>	<b>\$706</b>	<b>\$22,224</b>	<b>\$142</b>

Economic Farm Surplus (EFS)

## Physical Summary for Coopers Creek Dairy Support

			Unrestricted		50L/sec min flow at SH72	
			Average Season	Dry Season	Average Season	Dry Season
Category	Description	Units	Value	Value	Value	Value
<b>Farm</b>	Effective Area	ha	156	156	156	156
	Calves	hd	580	550	520	0
	R1 heifers	hd	576	546	516	520
	External feed sold	tDM	300	223	254	132
	Potential Pasture Growth	t DM/ha	12.7	11.6	11.4	8.1

