

**BEFORE THE CANTERBURY REGIONAL COUNCIL  
HEARING COMMISSIONERS**

**UNDER** the Resource Management Act 1991

**AND** the Environment Canterbury (Transitional Governance Arrangements) Act 2016

**AND**

**IN THE MATTER** of submissions on Proposed Plan Change 7 to the Land and Water Regional Plan and Proposed Plan Change 2 to the Waimakariri River Regional Plan

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**CHRISTCHURCH CITY COUNCIL ANSWERS TO COMMISSIONER  
QUESTIONS AT HEARING ON TUESDAY 17 NOVEMBER 2020  
30 November 2020**

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**Christchurch City Council**  
53 Hereford Street, Christchurch, 8011  
PO Box 73016, Christchurch, 8154  
Solicitor: Brent Pizzey  
Tel: 941 5550  
Email: [Brent.Pizzey@ccc.govt.nz](mailto:Brent.Pizzey@ccc.govt.nz)

**May it please the Hearing Panel:**

**Introduction**

1. At the hearing on 17 November 2020 there were six questions from the Commissioners that the City Council's experts said they would need to answer after some further fact checking and research.
2. The City Council's experts here provide the answers to those six questions.
3. **Dr Chambers' evidence in chief (EIC) at paragraph 22: What is the number of nitrate-attributable colorectal cancer for the Canterbury DHB?**

Dr Chambers says:

409 cases of in 2017 In the Canterbury DHB area.

4. **Dr Chambers' EIC at paragraph 25: In the Danish study, what is the actual level of the increased risk that Dr Chambers describes as statistically significant?**

Dr Chambers says:

The authors observed a hazard ratio of 1.16 (95% CI: 1.08–1.25) for colorectal cancer at 0.87 mg/l nitrate-nitrogen compared with persons exposed to the lowest level (0.30 mg/l nitrate-nitrogen). A 16% increase in the risk of developing colorectal cancer.

5. **Dr Chambers EIC at paragraph 26: In the case-control study, what is the actual number for increased risk being referred to in Dr Chambers' evidence that long term exposure to nitrate-nitrogen is "associated with increased colorectal cancer risk compared to..."?**

Dr Chambers says:

The authors observed a risk ratio of 1.49 (95% CI: 1.24, 1.78) for colorectal cancer at 1.61 mg/l nitrate-nitrogen compared with persons exposed to the lowest level (0.80 mg/l nitrate-nitrogen). A 49% increase in the risk of developing colorectal cancer.

6. **Dr Chambers' EIC at paragraph 40: What are the countries with worse rates of colorectal cancer than New Zealand?**

Dr Chambers says:

Paragraph 40 of my evidence describes the rate of colorectal cancer in the Canterbury DHB area as being the 5<sup>th</sup> worst in New Zealand. In case we had a misunderstanding about the question, I here provide additional information about both the Canterbury DHB rate of colorectal cancer compared to other DHB areas, and also in New Zealand compared to other countries.

I have retrieved more recent data from the New Zealand Cancer Registry which shows Canterbury has the highest incidence of colorectal cancer (409 cases) but the 9<sup>th</sup> highest colorectal cancer rates as cases per 100,000 people (crude rate). I have also looked at the World Cancer Research Fund which has New Zealand with the 14<sup>th</sup> highest rate of colorectal cancer in the world (age adjusted).

<b>Number of colorectal cancer cases</b>	<b>DHB</b>	<b>Population</b>	<b>Colorectal cancer rate per 100,000 people</b>
56	South Canterbury	58,800	95
139	Nelson Marlborough	147,400	94
30	West Coast	32,800	91
148	MidCentral	173,600	85
267	Southern	316,900	84
142	Northland	172,100	83
95	Taranaki	116,800	81
178	Bay of Plenty	226,100	79
409	Canterbury	525,700	78
33	Wairarapa	44,000	75
47	Whanganui	64,000	73
287	Waikato	393,000	73
31	Tairāwhiti	48,100	64

<b>Number of colorectal cancer cases</b>	<b>DHB</b>	<b>Population</b>	<b>Colorectal cancer rate per 100,000 people</b>
105	Hawke's Bay	163,600	64
68	Lakes	106,800	64
351	Waitemata	575,100	61
80	Hutt Valley	146,700	55
162	Capital and Coast	302,500	54
213	Auckland	472,800	45
235	Counties Manukau	552,500	43

**Cases per 100,000 pop (age standardised).** Source World Cancer Research Fund.

<b>Colorectal cancer cases</b>	<b>DHB</b>	<b>Colorectal cancer rate per 100,000 people (age standardised)</b>
1	Hungary	51.2
2	South Korea	44.5
3	Slovakia	43.8
4	Norway	42.9
5	Slovenia	41.1
6	Denmark	41.0
7	Portugal	40.0
8=	Barbados	38.9
8=	Japan	38.9
10	Netherlands	37.8
11	Australia	36.9
12	Singapore	36.8
13	Serbia	36.7
14=	Belgium	35.3
14=	New Zealand	35.3

7. **In relation to Ms Carters' EIC at paragraph 26, 3<sup>rd</sup> bullet point: Is the table 8-5 proposal by the City Council for a value of 0.1mg/L an annual median or a 95<sup>th</sup> percentile?**

Mr Thorley says:

In relation to the 0.1 ppm nitrate-nitrogen target for the Waimakariri River, the metric is the **annual median**. The 0.1 mg/L value is based on the "Peak annual median nitrate" in Table 2-7 (page 27) in Kreleger and Etheridge (2019) at Waimakariri River Gorge monitoring site. The City Council's submission seeks that the 0.1 mg/L nitrate-nitrogen annual median target applies to both the Gorge and State Highway 1 bridge monitoring sites in order to protect the river recharge source to the Christchurch-West Melton groundwater system.

8. **In relation to Ms Carters' EIC at paragraph 80, what was the level of iwi engagement in the development of the City Council's Integrated Water Strategy.**

Ms O'Brien states:

The City Council developed Te Wai Ora o Tāne Integrated Water Strategy with input from Papatipu Rūnanga and Mahaanui Kurataiao Ltd throughout the process, including providing comments on the draft strategy before it was released for public consultation. Oral submissions were also made by Ngāti Wheke and Ōnuku Rūnanga during the public consultation process.

The specific steps in the engagement process were as follows:

- Issues and Options hui, 24 November 2015
- Targeted request for review, 31 March 2016
- Meeting with Mahaanui Kurataiao Ltd staff, 27 May 2016
- Mahaanui Kurataiao Ltd scope of works for draft Integrated Water Strategy review, 27 May 2016
- Mahaanui Kurataiao Ltd review/comments on the draft Integrated Water Strategy, 27 July 2016
- Boffa Miskell edited draft incorporating 27 July 2016 Mahaanui Kurataiao Ltd comments, 21 Sept 2016
- Ngā Rūnanga-Christchurch City Council meeting 3 July 2017

- Workshop facilitated by Mahaanui Kurataiao Ltd attended by an environmental issues representative from each of the rūnanga, 11 February 2019
- Oral submissions on the draft strategy released for public consultation were given by Ngāti Wheke in relation to the Whaka Ora Healthy Harbour Plan and by Ōnuku Rūnanga relating to the Akaroa wastewater.

9. The City Council's experts are of course available to answer any other questions.

Dated at Christchurch this 30<sup>th</sup> day of November 2020



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Brent Pizzey

Counsel for the Christchurch City Council