BEFORE THE CANTERBURY REGIONAL COUNCIL

UNDER THE	Resource Management Act 1991
AND	
IN THE MATTER	of application CRC190445 by the Christchurch City Council for a comprehensive resource consent to discharge stormwater from within the Christchurch City area and Banks Peninsula settlements on or into land, into water and into coastal environments

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EVIDENCE SUMMARY

SIMON RICHARD HARRIS FOR CHRISTCHURCH CITY COUNCIL

5 November 2018

TABLED AT HEARING

Application: CRC190445

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Date: 7 November 2018

CHRISTCHURCH CITY COUNCIL
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INTRODUCTION

1. My name is Simon Richard Harris. I here summarise key points of my evidence. I am not aware of any area of disagreement between my opinion and that expressed by or on behalf of submitters and in the s42A report.

SUMMARY OF EVIDENCE

2. I am an economist. My evidence covers:

   a. The costs of treatment;

   b. The efficiency of treatment in terms of cost per % of contaminant removal;

   c. Affordability of treatment options for ratepayers; and

   d. The benefits of delaying a decision on treatment infrastructure that is additional to that proposed in the Application.

3. My analysis considers four scenarios which are a subset of the options assessed in the Golder (2018) report. These scenarios are:

   I. BPI – represents the infrastructure planned for in the Application;

   II. BPI plus source control (**BPISC**) – the Application infrastructure plus control of zinc and copper sources. The zinc source control comprises painting of unpainted and poorly painted galvanised iron roofs. The copper sources are controlled by requiring use of copper free brake pads on light vehicles;

   III. Full Treatment (**FT**) – widespread coverage across the built environment within the city of any single water quality scenario component. Simplistically this represents wide coverage of treatment via a single device (rain garden *or* proprietary filtration device *or* large community facility). This is roughly equivalent to Mitigation Scenario F from the Avon SMP;

IV. Maximised plus raingardens (**MT+**) – represents wide coverage of devices in series across the built environment within the city to form a treatment train (rain garden *and* proprietary filtration device / other large community facility).

4. The analysis of infrastructure costs and timing uses data as specified in the evidence of Mr Tom Parsons and Mr Brian Norton. The modelling and timing of contaminant removal is taken as specified in the evidence of Mr Eric Van Nieuwkerk. The financial unit at Council assisted with the development of the ratings analysis.

5. I combined the costs and outcomes for each scenario into an analytical framework that allows the capital and operating costs to be compared across different timescales. The results are presented as total capital spend (capex), the annual operating costs (opex) at 35 years when all infrastructure is installed, and a Net Present Value (NPV) at a 6% discount rate of the future capex and opex cashflows on treatment over the whole 35 year period.

6. The infrastructure in the Application will incur capital costs of $470 million and operational costs of $2.3 million per year when fully installed. The net present value (**NPV**) of the costs, is $250 million at a 6% discount rate.

7. If further treatment were to be required the capital and operational costs would increase significantly. Full treatment of all stormwater would add 115% to the NPV of costs for the city above that in the Application (i.e. more than double). If additional raingardens were installed in all feasible locations in the city, the NPV of costs would increase by 151% (i.e. 2.5 times greater than the Application treatment costs). These costs of additional treatment are substantial in the context of other priorities for council spending.

8. The expenditure on treatment costs is usefully understood in the context of cost effectiveness of contaminant removal, and the affordability of that expenditure. The cost effectiveness calculation estimates cost per additional percentage removal of contaminant for each scenario when all the infrastructure is fully installed, with the BPI scenario reported as relative to existing treatment infrastructure, the BPISC and FT scenarios reported as their marginal cost effectiveness relative to Best

Practice Infrastructure, and the MT+ scenario relative to the FT scenario. This approach allows the costs and gains of each incremental treatment to be assessed.

9. The results of the cost effectiveness analysis are shown in Figure 1. The Application adopts the most cost-effective treatment options across each of the three main contaminants investigated (TSS, zinc and copper). If additional treatment above that in the Application were to be required, the costs of each additional percentage of contaminant removed increases considerably, causing additional expense for lower environmental gains.

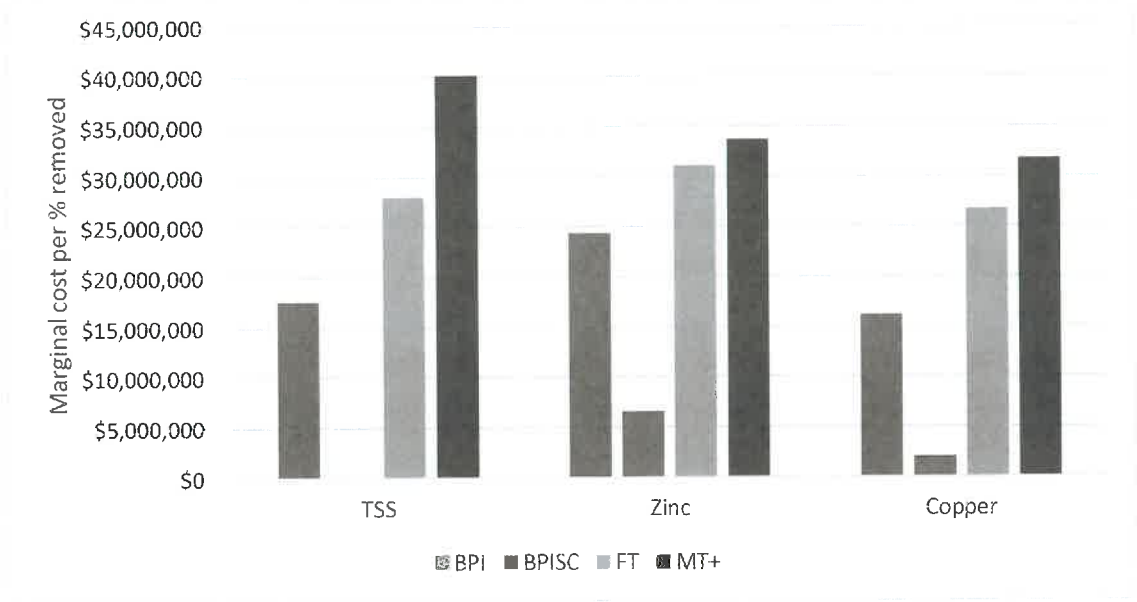

Figure 1: Cost of treatment compared with the proportion of contaminant removed, CCC Stormwater consent application (NPV(6%))

10. Source control appears from my assessment to be the least cost approach to reducing the copper and zinc loads to waterways and in the case of copper would reduce loads well below that able to be achieved from treatment. While source control is not currently within the control of the Council there is potential for it to become available over the term of the consent. In the case of copper, initiatives in the USA suggests that there is a reasonable likelihood that, even without Council intervention, copper will be removed from light vehicle brake pads within the term of the consent, and that will address most of the source of that contaminant. The US Environmental Protection Agency, Environmental Council of the States, and

motor vehicle industry associations have recently signed a memorandum of understanding (**MOU**) that will see the copper content of brakes in the USA reduced to 0.5% by 2025.[1] This MOU appears to have been driven by initiatives phasing out copper in brake pads in the states of Washington and California. It is likely that the costs of maintaining separate supply chains for copper free brake pads, together with the availability of low cost alternatives, have led to the motor vehicle industry moving to copper free brake pads across the whole country. I consider that by the same logic there is a reasonable likelihood that copper brake pads will be phased out internationally as well, although time frames may be longer.

11. The analysis of the impacts of stormwater treatment on rates utilised the Council's rating model. This model charges all infrastructure capex as a loan, repaid at 3% per year at an interest cost of 4% rising to 5% by 2027, and opex for infrastructure are charged directly to rates. The rating analysis includes inflation and growth in rating unit numbers so it is not a simple matter to compare the rating implications of the scenarios. In order to simplify the results and present them in a format that is understandable, my analysis estimates the difference in total rates, and makes an estimate of the implications of this in relation to current rates cost for an average rating unit (residential and commercial).

12. Average rates increase per household are modelled to be 1.79% higher after 30 years than they would otherwise have been as a result of the treatment included in this Application, which could rise to 6.29% higher if installation of all feasible treatment infrastructure (MT+) was required. This is equivalent in current rating terms to an additional $45 (BPI) - $167 (MT+) per year in rates for the average household, and $192 - $718 per year in rates for the average business ratepayer. The increases in rates are likely to be affordable for the average household or business, but may be significant for low income households and those paying a high proportion of their household income for housing.

13. There are benefits to a delay in making a decision on whether additional treatment beyond BPI should be required of the discharge consent. These benefits arise as

1 http://www.copperfreebrakes.org/assets/mou-press-release-final-01-21-15-3.pdf. Accessed September 2018.

a result of the time value of money, and the value associated with improved decision making with further information.

14. The Environmental Monitoring Programme (**EMP**) in the consent conditions will provide better information through the duration of the consent on the appropriate level of treatment, and the availability of source controls will become more apparent over time. When this information is available it can be used to determine whether further treatment is required beyond that in the application, and where any such treatment should be applied. A delay of a decision on whether to install additional infrastructure to that in the application, will result in estimated savings in the order of $210 - $280m in present day terms. These savings are associated with the value of improved information, and with the time value of money.

Simon Richard Harris

5 November 2018