

In the Matter of the Environment Canterbury (Temporary Commissioners and Improved Water Management) Act 2010 and the Resource Management Act 1991

And

In the Matter of submissions and further submissions by the Christchurch City Council on the proposed Land and Water Regional Plan

**Further Evidence of Jeanine Gesine Keller
for the Christchurch City Council**

1. Introduction

1.1 My name is Jeanine Gesine Keller. I have over 18 years experience in Resource Management. I am a self-employed Environmental Planner. I hold an Honours Degree in Animal and Plant Ecology from Victoria University and a Masters Degree in Resource Management from Canterbury University.

1.2 I worked for the Christchurch City Council (CCC) as a planner for three years before working as a Policy Analyst for the Norwegian Ministry for the Environment and the World Wildlife Fund (Arctic Programme). I worked for seven years as senior planner for the Christchurch Office of URS New Zealand Limited, before starting my own planning business six years ago.

1.3 I am here giving planning evidence on the submissions by the CCC on the proposed Land and Water Regional Plan (LWRP). I confirm that I have read and agreed to comply with the

Code of Conduct for expert witnesses. This evidence is within my area of expertise, except where I state that I am relying on facts or information provided 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.

1.4 I am providing this further evidence at the request of the Hearing Commissioners, as a result of the CCC presentation of its evidence on the 1 March 2013. The Commissioners requested the CCC to further assess and provide further evidence on three points. These are:

- Timeframes for developing Stormwater Management Plans (SMPs) (Rule 5.71).
- The relationship between rules 5.71 to 5.73, and in particular the activity status for stormwater discharges that are not permitted activities but not covered under Rule 5.71 community stormwater system.
- Comparison of the rule framework within Horizons Regional Council One Plan (HRCOP) and the pLWRP with regard to the installation of culvert in rivers (Rule 5.115).

2. Timeframes for developing SMPs

2.1 Mr Roy Eastman's evidence opposed the timeframe proposed in the S.42 report (see Mr. Roy Eastman's evidence paragraphs 3.10 and 3.11) as being too short to complete the SMPs required within the City. Mr. Eastman reiterated this point at the hearing. He explained that the CCC would find it difficult to 'even' meet the five year deadline, if the quality of the SMPs were to be maintained.

2.2 The Commissioners asked whether the addition of the following to Rule 5.71 would meet the CCC concerns.

"...or other time as agreed with the Regional Council"

2.3 The Commissioners asked that the CCC consult with the other district councils in Canterbury and the Regional Council on this matter and report back to the Hearing Panel.

- 2.4 I have discussed this matter with Ms Jane Whyte, the planning consultant giving evidence for the other Canterbury region district councils. I believe that the following changes would meet both of our concerns.

“ 5.71 The discharge of stormwater from a community stormwater system onto or into land or into or onto land in circumstances where a contaminant may enter water, or into groundwater or a surface water body is a restricted discretionary activity provided the following condition is met:

1. An application for a discharge permit for a discharge that existed at 11 August 2012 must be completed and lodged by 30 June 2018, or at a later date as agreed between the community stormwater operator and the Regional Council.”

- 2.5 I consider that is there is sufficient reason for this clause to be included, and the date to be extended. As identified in Mr Roy Eastman’s evidence the CCC has a defined programme for the development of SMPs across Christchurch, with two SMPs completed (Southwest Area Plan and Styx Area Plan), and one area-wide consent (for the Southwest) having been granted. The Avon River SMP is presently being prepared with an expected SMP lodgement date of December 2014. In theory the June 2016 date proposed by the S.42 report, would only allow one and a half years to complete the remaining ten SMPs. Even providing for the extension to five years (2018) the number of SMPs which could be completed would be less than the ten remaining areas, although the CCC will likely have completed a number of the more complex SMPs in this time. I have include a list (see Appendix A) of the SMPs which the CCC has committed to undertake.

- 2.6 I consider it is desirable to include the five year timeframe and well as the addition to the rule as it is possible that some districts may be able to complete their required SMPs within a five year timeframe. At minimum, councils are likely to be at a stage where they are sufficiently progressed with their plans that they and the Regional Council can have confidence that the SMP work is progressing satisfactorily and as such can agree on a realistic extension of their deadline. It is my opinion that the CCC will also be in a better position to identify how much additional time will be required to complete their SMPs at that time.

3.0 The activity status for discharges of stormwater which are not a permitted activity.

3.1 At present the proposed stormwater rules cover three circumstances with regard to stormwater discharges:

- Rule 5.71 relates to stormwater discharges from community stormwater systems as a restricted discretionary activity;
- Rule 5.72 (in the S.42 report Rules 5.72 A and 5.72B) which set the conditions for permitted activities; and
- Rule 5.73 relates to the activity status of those activities which are not permitted activities, which the proposed plan proposed to be non-complying and the S.42 report proposed to be discretionary.

3.2 The three provisions provide a suite of rules which determine the activity status of any stormwater discharge whether to land or to water.

3.3 The CCC in its evidence sought to retain the non-complying status. I refer to Mr. Roy Eastman's evidence 4.14 to 4.17, Mr. Roy Eastman's rebuttal evidence, and my evidence 7.7 to 7.11. The CCC submission is that the pLWRP should provide a strong positive incentive for dischargers to "join into" the CCC stormwater systems, and thereby better ensuring an integrated approach to stormwater management, high quality discharges of stormwater, and the protection of both surface and groundwater resources.

3.4 The Commissioners requested that the CCC consult with both the district councils and the Regional Council and propose any changes to Rule 5.73 that could meet both the CCC and the district council concerns.

3.5 I have consulted with Ms Jane Whyte, consultant planner for the district councils, and Ms Patricia Harte, consultant planner for the Regional Council. I consider that the following amendment to Rule 5.73 would meet both the CCC and the other district councils' concerns with regard to this rule.

Rule 5.73 The discharge of stormwater into a river, lake or wetland or artificial watercourse or onto land in circumstances where a contaminant may enter water that does not meet the conditions of Rules 5.72 is a discretionary activity, except that in the areas identified in Schedule X it shall be a non-complying activity.

Schedule X

Table X: Areas where the discharge of stormwater into a river, lake or wetland or artificial watercourse or onto land in circumstances where a contaminant may enter water that does not meet the conditions of Rule 5.72 is a non-complying activity.

	<u>Area</u>
<u>1.</u>	<u>Within the boundaries of the Christchurch City Council</u>

- 3.6 In my consultation with the other councils (Ms Whyte), a number of options for amendments to these rules were considered. These included having a separate rule for Christchurch City, or specifically including the wording “Christchurch City” within the existing rule. However, given that these rules are in the part of the pLWRP with rules set for the whole region, reference to a specific part of the region would not be appropriate.
- 3.7 A further option considered was to differentiate between urban and rural areas within the rule. A number of issues arose from this option.
- 3.8 The first issue was that there are numerous very small urban areas throughout the region where undertaking a SMP is unrealistic and a discretionary status may be more appropriate. Using population to define urban areas is also difficult due to seasonal populations and future growth issues.

- 3.9 A second issue is that the CCC does not consider that it has enough certainty, that for the life of the LWRP, the extent of urban development will be able to be defined. This concern has been exacerbated since the 2010/2011 Canterbury earthquakes.
- 3.10 Finally, it was considered that such a rule would be overly complicated, even if it could be written effectively.
- 3.11 Based on my consultation with the other councils I consider that the rule amendment as proposed in paragraph 3.5 of this evidence is the most appropriate. It is practical and efficient. An additional advantage is that it provides the ability for the schedule to be altered in the future without the rule having to be altered. Areas could be included or removed without disturbing the integrity of the rule section of the Plan.
- 3.12 In responding to the Commissioners' query regarding the activity status in rules 3.71 to 3.73, CCC officers have identified a further significant potential issue regarding possibly unintended consequences of the Rule 5.72B for permitted activities proposed in the S.42A Report. The rule as it is currently written, would permit a private site of any size, for example a supermarket and its surrounding carparks, to discharge its hard-standing stormwater run-off directly to ground without any pre-treatment.
- 3.13 The Section 42A Report (5.14 Stormwater pg 187, para.3) describes the Regional Council's rationale for the rule as:
"Rule 5.72 specially provides for discharges within sites or for single entities as a permitted activity. In these cases there is no obvious need for a co-ordinating stormwater management plan to be developed as the treatment and disposal of stormwater is most likely to be independent of other systems and have relatively few elements."
- 3.14 I agree that untreated stormwater discharge to ground as a permitted activity would be appropriate in residential situations; however, the rule could also permit some very significant private developments to discharge directly to land without any treatment, where treatment prior to discharge should be a requirement, and would simply be best practice. This is a concern to the CCC. I recognise that condition 2(a) provides the safeguard that if the site has land that is "potentially contaminated" it would require a consent, however Schedule 3 of the pLWRP does not cover all significant

contaminants in stormwater which may arise from individual commercial site developments. Using the supermarket example (refer 3.12 of this evidence), several hundred carparks surrounding a supermarket may generate considerable contaminants including, but not limited to, metals and petroleum chemicals which could be discharged into groundwater without treatment as a permitted activity under this rule. Other commercial or industrial facilities may use hard-surfacing for the storage materials such as metal, or plastics. Neither of these situations is covered under Schedule 3.

3.15 I recommend that a condition should be added which states

“2(e) The discharge is only from a residential site.”

4.0 Proposed Rule 5.115 installation, extension, use and maintenance or removal of bridges and culverts.

4.1 Evidence provided by Dr. Zoe Dewson (section 5) described the CCC concerns with regard to the potential adverse environmental effects of the construction of culverts as described in Rule 5.115. The Commissioners asked the CCC to consider whether the rule framework as provided in the HRCOP would better meet the CCC concerns with regard to this rule. They also requested that the CCC consult with the Regional Council consultant on this matter. I have consulted with Ms Harte. The provisions within HRCOP (section 16) are included in Appendix B of this evidence. I have reviewed the HRCOP Rule 16-11 relating to the installation, removal and extension of culverts.

4.2 The HRCOP Rule 16.11 is significantly more complex than the pLWRP rule.

4.3 I consider the most constructive way to discuss the framework of the HRCOP Rule 16-11 was to discuss the rule conditions individually, and compare and/or contrast it with the conditions of Rule 5.115 of the pLWRP, as it relates to culverts, and in particular as it relates to environment and ecological effects. With regard to the HRCOP, if all the conditions are met under Rule 16.11 the activity is a permitted activity. If not, it becomes a discretionary activity. Conditions in italics in section 4 of this evidence from this point on, are those included in Rule 16.11 of the HRCOP.

4.4 *Condition (a) A new culvert must not be erected or placed in*

(ii) a river or lake regulated under Rule 16-4.

(iii) a reach of a river with a Schedule AB value of Flood Control and Drainage, unless the work is undertaken by or on behalf of the Regional Council

4.5 Rule 16-4 relates to structures and disturbance involving a reach of river or its bed within Schedule AB. Schedule AB lists a large number of surface water management zones throughout the region, and the natural and other values which need to be considered within these management zones. One of these aspects is flood control and drainage. My understanding is that many of the rivers within the region (the Horizons Regional Council) fall under Schedule AB. This will result in many of the activities within these “sensitive” reaches of rivers becoming discretionary activities under this rule. The Horizons Regional Council has its own guidelines which are used when the region undertakes these activities, and are used as the basis for assessing resources consent applications triggered by this condition.

4.6 Rule 5.115 does not have any such condition or schedule.

4.7 “ *(b) Where multiple culverts are placed side by side, the total cross-sectional area of the multiple culverts must not be less than that of a single culvert which complies with this rule.*”

4.8 This condition relates to the situation where a number of culverts are placed across the width of the bed of the river. This does not cover the situation where a 25 metre culvert is placed a very short distance from another 25 metres culvert thereby essentially piping a waterway for 50 metres. Hence I consider that the issues arising from having large culverts placed one after another along the length of a river, thereby leading to potential cumulative adverse effects is not met by this condition (b).

4.9 *Condition (c) The culvert, associated fill and culvert placement must comply with the following dimensions*

(i) a maximum culvert length of 20m

(ii) for circular culverts a culvert diameter of 0.3m to 1.2 m (inclusive)

(iii) for non-circular culverts a width and height of 0.3 m to 1.2m each (inclusive)

(iv) a maximum fill height of 2m above the top of the culvert unless a spillway is constructed to enable the passage of a 200 year flood without the fill being overtopped.

(v) a minimum culvert installation depth below the bed of 20% of the width of the culvert.

- 4.10 The construction details included in this condition above are different from those within Rule 5.115, and I do not have the expertise to discuss the merits of these construction conditions other than to note that the permitted length of a culvert is shorter than that identified in Rule 5.115, and considerably greater than that sought by the CCC of 7.5 metres. Because of the numerous other environmental safeguards present as conditions to Rule 16.11 I consider the length of permitted culvert as not being excessive. It is however noted that these safeguards are not present within Rule 5.115 and therefore I consider the amendment sought by the CCC, to reduce the permitted length to 7.5 metres is still valid.
- 4.11 *(d) The culvert must be positioned so that its alignment and gradient are the same as the river.*
- 4.12 There is no such condition in Rule 5.115. Condition (d), would have the effect of ensuring that rivers are not realigned or banks significantly modified in order to install culverts. Such a condition would protect ecological values of the river and its margins.
- 4.13 *(e) The culvert must be constructed to allow:*
- (i) the flow from a 5% annual exceedence probability (20 year return period) flood event without overtopping, unless the overtopping flows to a specifically designed spillway.*
 - (ii) the flow from a 2 year return period flood event without any flow impediment.*
- 4.14 Flood flow capacity is covered in this condition which is an issue covered in Rule 5.115. I will not discuss the merits of the condition only to reiterate that any culvert activity in the Horizon Regional Council region will also have to meet condition (a)(iii) as discussed in section 4.5, 4.6 and 4.7 of this evidence.
- 4.15 Rule 16.11 Conditions (f) to (i)
- (f) The culvert inlet and outlet must be protected against erosion*
 - (g) All practicable steps must be used to minimize the release of sediment during construction.*
 - (h) The culvert must be constructed and maintained to avoid any aggradation or erosion of the bed.*
 - (i) The culvert must be kept clear of accumulated debris.*
- 4.16 Rule 5.115, Condition 5 relates to the condition of the river after the activity has been undertaken. There are however no conditions which set steps to be undertaken to minimise the effects on the river and margin during the construction of the culvert.

- 4.17 Having conditions such as (f) to (g) above would provide some protection for the environment both at the site of the culvert and downstream of it both during construction and operation.
- 4.18 (j) *The activity must comply with the general conditions listed in Section 16.2.*
- (k) *The activity must not take place in any rare habitat, threatened habitat or at risk habitat.*
- 4.19 The effect of conditions (j) and (k) are to provide greater protection for ecological values. Section 16.2 contains conditions which relate to how construction must be undertaken and the protection of riparian habitats of significant species, inanga spawning, white bait migration, trout spawning and the trout fishery, contact recreation and existing infrastructure. Condition (k) provides protection for rare, threatened or at risk habitats (which are identified in the Plan). None of these issues are covered in Rule 5.115, with the exception of inanga and trout spawning.
- 4.20 I consider that at minimum there should be a condition within Rule 5.115 which protects natural state rivers and lakes. I consider that this was an accidental omission by ECan as it is included in a number of the other rules relating to the installation of structures on or in the bed or margins of rivers and lakes.

Conclusion

- 4.21 I consider that the framework of the HRCOP Rule 16.11 provides considerably greater protection for ecological values than does Rule 5.115. However the HRCOP is structured very differently with schedules that are linked into all the rules, relating to activities on the beds of rivers and lakes, and Rule 16.2 which includes general conditions for all activities (not only culverts).
- 4.22 The pLWRP does not include schedules comparable to those in the HRCOP. In my opinion the addition of a general rule such as Rule 16.2, for all activities in the beds of rivers and lakes, has considerable merit for not only this rule relating to culverts, but also the other rules affecting the beds of rivers, and could meet some of the concerns of CCC, however it would need to fit with the framework of the existing pLWRP.
- 4.23 It is my opinion that based on my understanding of the framework and conditions included in Rule 16.11, that only a few changes could be directly adopted from the conditions into Rule 5.115. There are a few conditions within the HRCOP Rule 16.11 which would help mitigate

adverse environmental effects, such as conditions (d) and (f) to (i). In addition, it is considered that a condition relating to the protection of natural state rivers should be included.

- 4.24 These possible amendments (pt.4.22 and 4.23) however do not in my opinion protect environmental and ecological values sufficiently and therefore it is still important that the amendments sought by the CCC in their evidence are adopted. In particular, the restriction of the length of a permitted culvert will provide for the ability to assess the impacts of a specific activity and set conditions which can mitigate any adverse ecological effects.
- 4.25 If a general rule were able to be included similar to Rule 16.2 this would also increase the protection of ecological values.
- 4.26 There are two further issues I consider important to identify in this evidence with regards to the CCC evidence concerning Rule 5.115.
- 4.27 Firstly, to reiterate, the length of a permitted culvert under Rule 5.115 is in my opinion excessive. Twenty five metres is greater than the width of a four lane road with footpaths.
- 4.28 Secondly, I have now seen a copy of Ms. Patricia Harte's evidence to the hearing. In her evidence she sought to amend condition 6(e) of Rule 5.115 (pt 4.3 - 4.4).
"6 For any permanent culvert:
(e) the **culvert** is not within an urban area of settlement **unless the culvert provides for a 1%AEP flood flow capacity without increasing upstream water levels)**"
- 4.29 That proposed change would now permit long culverts in urban areas and settlements, whereas without that change they would have required resource consent. I consider this amendment will have significant adverse impacts on the urban waterways. If the amendment is accepted urban waterways will immediately no longer be exempt from this rule, and it will significantly affect the ability of councils to manage their waterway within urban or settlement areas for recreational, environmental or social values. In addition it may lead to the lost of values and the natural functionality of rivers in urban areas.
- 4.30 Finally, I wish to thank the Commissioners for inviting the CCC input with regard to the matters addressed within this evidence, and hope that the evidence will be useful.

Date 08 March 2013

Jeanine Keller

Appendix A

Table 1: List of Christchurch City committed SMPs and their catchments

	SMP	Sub-catchments	Status
1.	Styx/ Puharakekenui	Upper Styx/ Puharakekenui Lower Styx/Puharakekenui Kaputone	Lodged
2.	Avon River	Upper Avon River Tributaries Mid Avon River Lower Avon River City Horseshoe Lake	In preparation 2013
3.	Lower Heathcote River	Mid Heathcote River Lower Heathcote River	Next SMP following on from Avon River SMP
4.	South-West	Upper Heathcote River Upper Halswell	Accepted. Area wide consent granted.
5.	Coastal	Coastal	
6.	Estuary	Estuary Estuary Hills	
7.	Sumner/Redcliffs	Ocean Discharge	
8.	Outer Christchurch	Northwest Plains Plains Waimakariri-Otukaikino	
9.	Lyttelton Harbour	All catchments draining into the Harbour	
10.	Akaroa Harbour	All catchments draining into the Harbour	
11.	Lakes	All catchments draining into Lake Ellesmere/ Te Waihora and Lake Forsyth/Te Roto o Wairewa	
12.	Southern Bays	All Banks Peninsula catchments from Lake Forsyth/Te Roto o Wairewa round to Akaroa Harbour	
13.	Northern and Eastern Bays	All Banks Peninsula catchments from Akaroa Harbour round to Lyttelton Harbour	

Appendix B