

JOINT WITNESS STATEMENT

Proposed Natural Resources Plan

Topic: Alternative Wairarapa framework for stormwater

Date: 30 April 2018

Witnesses:

Name	For
Dr Claire Conwell: Senior Environmental Scientist, GWRC	Greater Wellington Regional Council
Dr Vaughan Keesing: Senior Ecologist: Boffa Miskell Limited	South Wairarapa District Council & Masterton District Council

Environment Court practice note:

It is confirmed that all witnesses:

- Have read the Environment Court Practice Note 2014 Code of Conduct and agreed to abide by it

And in particular:

- Have read the Environment Court Practice Note 2014 Code of Conduct Appendix 3 – Protocols for Expert Witness Conferencing and agreed to abide by it

In the following we set out in tabular form statements to assist the hearing panel and which relate to the discussions we have been having over the Wairarapa Councils proposed rule regarding a permitted activity level for stormwater network infrastructure.

Statements in one column are made by Dr Keesing and in the other either accepted or agreed or a counter opinion offer by Dr Conwell. Additional statements are then put by Dr Conwell and agreed etc by Dr Keesing.

Dr Keesing	Dr Conwell
The "catchment" lower boundaries that forms the denominator in the formation of the TIA %, are not fixed by a particularly objective method. The revised boundaries have "pulled" the catchments up towards the stormwater points of discharge, and are below a number of small drains that are the immediate receiving environment for the stormwater. The boundary of the wider catchment reflects the area of water contributing to the dilution of the stormwater.	Accept that the method and assumptions set out by Dr Keesing are consistent with his original approach.
The small drains between the stormwater discharge and a main stem (main water body) are assumed low value streams which do not need an individual sub-catchment TIA consideration. This is why the method as proposed by Dr Keesing looks at the	This is a point of difference, i.e. the use of the term 'value', and where do we apply our assessment of potential effects and/or impacts of stormwater discharges from the TA network. For example, the community may value a site identified at the point of a common water body, downstream of any point

<p>wider catchment and sets a point below these smaller generally modified waterways.</p> <p>It could be argued that the lower catchment boundary could be closer still to the towns, however, doing so does not make a material difference to the revised impervious surfaces percentages calculations.</p>	<p>source discharges, for the purpose of recreational use (i.e. full immersion swimming). But smaller streams and tributaries that maybe present within the designated urban zone, whilst not valued for recreational contact, can offer significant ecological and mana whenua values.</p>
<p>Towns in the Wairarapa with total impermeable area (TIA) to catchment ratios below 3%, the very small towns and villages, pose a very low risk in terms of stormwater discharge of pollutants that could have a measurable adverse effect on their receiving environments.</p>	<p>Agree that setting this threshold to 3% has effectively grouped the towns as we envisaged – i.e. that the smaller towns with the calculated %TIA below 3% are not towns of concern where I would expect a detailed stormwater monitoring plan or strategy to be set out.</p>
<p>We are not concerned with those smaller towns in respect to monitoring contaminant discharges or biological monitoring for effects.</p>	<p>Agree</p>
<p>While much of the scientific literature around being able to measure adverse effects focuses on a TIA ratio of 10%, we agree that the towns in Wairarapa with more than 5% TIA have a potential for measurable adverse effects related to stormwater discharges and we are not in contention that these towns (one at present: Masterton) require consents and methods for measuring stormwater discharge, accumulation and effect on the receiving environment.</p>	<p>Accept that this has been the consistent position set out by Dr Keesing. Agree that the case for Masterton requiring a consent is not a point of contention.</p>
<p>The Impermeable surface method assumes that the discharge water quality in question is a product of the catchments proportion of natural and impermeable surfaces. Just where the catchment boundary is drawn becomes the point of contention (as is the case here). If the catchment is the urban centre then by default the impermeable surface will approach 100%, but water into the receiving waterways is typically a combination of wider catchment flows and the contribution of the sub-catchment in which the urban/ impermeable is located. Only where the discharge waterway arises in (or very near) the urban centre (with no other inputs) and aquatic values were present in those systems would the sub-catchment method proposed by GWRC be appropriate. There are 3 such short-small tributaries in Greytown, 2 in Featherston and 2 in Carterton. The condition and values of these tributaries are not however, known.</p> <p>Agree with the last paragraph.</p>	<p>The main point of difference for GWRC is the focus on the area under any potential receiving environment and risk assessment – i.e. is this on the sub-catchment level as proposed by Dr Keesing, or the urban zone as proposed by Dr Conwell and GWRC.</p> <p>GWRC hold the view that the urban zone is the area of potential impact and thus would expect adverse effects to be concentrated in this urban footprint, not in the rural zone. These adverse effects would still be measurable below the threshold set out by Dr Keesing, given that it would be expected that these are highly localised, but in an urban, rather than rural setting.</p> <p>More recent literature, based on New Zealand data has quantified the relationships between impervious cover and functional indicators of stream ecological integrity. Whilst reporting a clear adverse response threshold at 10%, the authors also reported reduced ecological integrity at any level of impervious cover >0% (Clapcott et al. 2011).</p>

<p>We are agreed that measuring effects attributable to stormwater is difficult, especially on modified tolerant biotic systems as these receiving systems are affected by many aspects, not just stormwater contaminants including other water quality aspects (rural runoff etc) as well as habitat issues (substrate modification, flow modification, riparian loss, algae and macrophyte "blooms" etc)</p>	<p>Agree. To add to Dr Keesing's comment, it is also difficult to identify an appropriate biotic indicator for a specific discharge activity (such as a stormwater discharge), given that this also represents a mixture of contaminants that is discharged across a variety of scenarios (i.e. representing a pulse disturbance of both physical and chemical stressors).</p> <p>MCI scores that have been routinely used in broadscale catchment studies, such as SoE monitoring, were developed to assess tolerance based on organic enrichment. For stormwater discharges, contaminants of potential concern also include metals, sediment, hydrocarbons and pathogens. Therefore we also broadly discussed the limitations of the available MCI data. Given the context of the baseline modelling results that have been done for the Ruamahanga whaitua, that shows across the wider catchments the MCI are already represent a compromised state, then relating biotic indices specifically to stormwater discharges is not possible.</p>
<p>We prefer a sediment entrapped contaminant monitoring system (rather than biotic), using specific chemical trigger levels that represent likely adverse effect, acknowledging the difficulty with assuming bioavailability etc of that contaminant on pelagic freshwater species and measuring chronic effects.</p>	<p>Agree that we have both been consistent that this would provide meaningful information, as well as provide a cost effective approach to setting out a framework that can be applied to any Adaptive Management Plan.</p>
<p>We agree that whatever monitoring is required that it be scale of issue reflective and target those contaminants and responses most dangerous and likely to enable recognition of contaminant effects, not a broad scale or "monitoring for monitoring" approach.</p>	<p>Agree.</p>
<p>We say this on the understanding that most/many of the receiving environments are on the lower end of the scale of quality -i.e. modified streams with tolerant poor-quality flora and fauna and that historic macroinvertebrate, etc monitoring can do little to identify stormwater pollution effects.</p>	<p>Accept that this is most likely the case with most of the urban stream in the main urban centres. We also recognise there is a paucity of data on which to make categorical statements around the current state</p>
<p>That said we agree that the amount of good data on all of the receiving environments in the Wairarapa is currently limited and the above in regard to the receiving habitats biotic quality is a stereo type from a limited set of data.</p>	<p>Agree.</p>
<p>We have a differing opinion as to the need for measures of stormwater effects in the towns with TIA between 3 and 5% (i.e. Greytown, Carterton, & Featherston). The specific reason for the difference in opinion are that GWRC have concerns with</p>	<p>Agree that we have differing opinions, and GWRC accepts the position set out by Dr Keesing. In addition to the concerns with potential tradewaste and wastewater entering stormwater, GWRC has also expressed that smaller urban streams offer a</p>

<p>potential trade waste and wastewater contamination of stormwater rather than with the TIA method and % trigger limits of "clean" stormwater.</p>	<p>variety of intrinsic values (e.g. ecological and social/community values) that are not captured in monitoring set out in the existing Rivers water Quality Programme (i.e. SoE monitoring). Dr Conwell has also discussed that for these three towns, the urban stream receiving environments can also be impacted at a very localised scale, and also be susceptible to chronic cumulative effects that cannot be accounted for in the current broadscale intent of the structure of the SoE monitoring programme.</p>
<p>Dr Keesing considers the proposed TIA 5% level to be sufficiently precautionary and a situation of low risk. This assumes that trade waste water is not allowed into the stormwater system, and that the receiving environments are already modified, tolerant, systems.</p>	<p>Accept that this is the position that Dr Keesing has taken in his assessment.</p> <p>I am in agreement that the immediate receiving environments are modified, but also state here there are also stream areas in these urban centres that are also unmodified.</p> <p>I also accept that the statement and assessments from Dr Keesing is on the basis that no other waste sources are entering the stormwater network. On the basis of GWRC's experience in the Porirua and Wellington region catchments, it is a common occurrence for wastewater to enter stormwater, and the contribution of tradewaste is subject to specific education programmes (e.g. Take Charge) and audits from Trade waste officers. I am not aware of similar programmes for the Wairarapa. From my experience it would be highly likely there is an unknown component of wastewater entering the stormwater network that would present a human health risk in the urban stream environment.</p>
<p>Compared to Wellington city or Porirua city or even the larger Kapiti towns, these three Wairarapa towns are small with small surface areas and their contaminant loading of stormwater will be relatively small in comparison to these larger towns.</p>	<p>Agree.</p>

Signed:

Conwell 30/4/18.

Dr Conwell

Dr Keesing

[Signature] 30/4/2018.