

Evidence Received

Proposed Plan Change 9

Tūtaekurī Ahuriri Ngaruroro Karamū
Catchment Area

PART 1

May 2021

List of Evidence Received in Numeric order

Original Sub #	Evidence #	Organisation Name – Individuals Name
PART 1		
12	1	Ministry of Education - Alec Duncan
13	1	Fire and Emergency New Zealand – Alec Duncan
29, 194, 208, & 238	1	Hawke’s Bay Winegrowers Association, Gimblett Gravels Winegrowers Association, Villa Maria Estate Limited, Pernod Ricard Winemakers New Zealand Limited (collectively ‘The Winegrowers’) - Andrew Laughton Dark
	2	Hawke’s Bay Winegrowers Association, Gimblett Gravels Winegrowers Association, Villa Maria Estate Limited, Pernod Ricard Winemakers New Zealand Limited (collectively ‘The Winegrowers’) – Edwin John Massey
	3	Hawke’s Bay Winegrowers Association, Gimblett Gravels Winegrowers Association, Villa Maria Estate Limited, Pernod Ricard Winemakers New Zealand Limited (collectively ‘The Winegrowers’) – Emma Taylor
	4	Hawke’s Bay Winegrowers Association, Gimblett Gravels Winegrowers Association, Villa Maria Estate Limited, Pernod Ricard Winemakers New Zealand Limited (collectively ‘The Winegrowers’) – Fabin Yukich
	5	Hawke’s Bay Winegrowers Association, Gimblett Gravels Winegrowers Association, Villa Maria Estate Limited, Pernod Ricard Winemakers New Zealand Limited (collectively ‘The Winegrowers’) – Mark St Clair
54	1	Apatu Farms Ltd – Anthony Davoren
63 & 207	1	Hastings District Council & Napier City Council – Annette Sweeney
	2	Hastings District Council & Napier City Council – Annette Sweeney (Appendix A)
	3	Hastings District Council & Napier City Council – Brent Chapman
	4	Hastings District Council & Napier City Council – Cameron Drury
	5	Hastings District Council & Napier City Council – Mark Clews
	6	Hastings District Council & Napier City Council – Paulina Wilhelm
	7	Hastings District Council & Napier City Council – Russell Bond

Original Sub #	Evidence #	Organisation Name – Individuals Name
PART 2		
66	1	Ngaruroro Irrigation Society – Anthony Davoren
82	1	Lowe Corporation – Andy Lowe
	2	Lowe Corporation – Gerard Willis
120	1	Ngāti Kahungunu Iwi Incorporated – Grey Wilson
	2	Ngāti Kahungunu Iwi Incorporated – Peter Fraser
PART 3		
132	1	Te Taiwhenua o Heretaunga – Marei Boston Apatu
	2	Te Taiwhenua o Heretaunga – Tank Hearings Presentation
	3	Te Taiwhenua o Heretaunga – Maurice Wayne Black
	4	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 1)
	5	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 2)
	6	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 3)
	7	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 4)
	8	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 5)
	9	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 6)
	10	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 7)
	11	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 8)
	12	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 9)
	13	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 10)
	14	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 11)

Original Sub #	Evidence #	Organisation Name – Individuals Name
	15	Te Taiwhenua o Heretaunga – Maurice Wayne Black (Appendix 12)
PART 4		
135	1	Ravensdown – Anna Wilkes
	2	Ravensdown – Carmen Taylor
180	1	Horticulture New Zealand – Andrew Dooney
	2	Horticulture New Zealand – Catherine Sturgeon
	3	Horticulture New Zealand – Damien Farrelly
	4	Horticulture New Zealand – Gill Holmes
	5	Horticulture New Zealand – Michelle Sands
	6	Horticulture New Zealand – Stuart Ford
193	1	Heinz Watties Ltd – Anthony Davoren
195	1	Federated Farmers New Zealand – Rhea Dasent
197	1	Beef + Lamb New Zealand – Gerry Kessels
	2	Beef + Lamb New Zealand – Dr Michael Greer
	3	Beef + Lamb New Zealand – Tom Orchiston
203	1	The Oil Companies – Philip Brown
	2	The Oil Companies – Annexure 1
	3	The Oil Companies - Annexure 2
	4	The Oil Companies - Annexure 3

Original Sub #	Evidence #	Organisation Name – Individuals Name
201	1	Royal Forest and Bird Protection Society of New Zealand Incorporated – Thomas Kay
	2	Royal Forest and Bird Protection Society of New Zealand Incorporated – Thomas Kay (Appendix 1)
	3	Royal Forest and Bird Protection Society of New Zealand Incorporated – Thomas Kay (Appendix 2)
	4	Royal Forest and Bird Protection Society of New Zealand Incorporated – Thomas Kay (Appendix 3)



Hawkes Bay Regional Council
159 Dalton Street
Napier 4110

22 April 2021

Attention: Hearing Commissioners

Dear Commissioners

Hawkes Bay Regional Council - Proposed Plan Change 9: Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments

The Ministry of Education (the Ministry) has lodged a submission on the Proposed Plan Change 9 (PPC9) (submitter 12). The Ministry has chosen not to attend the hearing scheduled to commence 26th May 2021 and requests that in lieu of attendance this letter be tabled for the Hearing Commissioners' consideration.

The Officer's report for PPC9 has been received. The Ministry's response to the Officer's report recommendations on these submission points is set out below.

OBJ TANK 2

The Ministry supported OBJ TANK 2 (d) as notified to the extent that the responsibilities of people and communities for sustainable resource use and development is recognised and supported. The Reporting Officer has recommended accepting the Ministry's submission, subject to recommended changes to the wider objective. This is supported by the Ministry.

OBJ TANK 10, 11, 12, 13 and 14

The Ministry supported OBJ TANK 10 (d), OBJ TANK 11 (f) OBJ TANK 12 (f), OBJ TANK 13 (e) and OBJ TANK 14 (e) as notified to the extent that it enables people and communities to safely meet their domestic water needs in the TANK catchments. However, the Ministry emphasised that communities are more than just a collection of houses providing shelter, they include marae, schools, halls and other social infrastructure facilities that contribute to the well-being of the community.

The Ministry therefore requested that OBJ TANK 10 - 14 be amended to enable the social infrastructure that supports communities as follows:

*...people and communities to safely meet their domestic water needs **and provide for the social infrastructure necessary to support these people and communities;***

The Reporting Officer has recommended that the Ministry's submissions on OBJ TANK 10 - 14 be rejected for reasons that the submission does not align with the hierarchy of obligations in Te Mana o te Wai which is covered in section 1.3 of the NPSFM2020 or the values for the Ahuriri Catchment that were decided by the TANK Group. Further, the Reporting Officer considers that the life supporting capacity of water is covered in section 5(2)(b) of the RMA and it does not need to be duplicated in this objective.

The Ministry disagree with the Reporting Officers recommendation. The Ministry considers that the above suggested amendment provides clarity regarding the importance of provision of social infrastructure. These activities have limited use of water and may be considered as being of a domestic scale. However, at a higher level, the Ministry consider that OBJ TANK 10 (d) OBJ TANK 11 (f) OBJ TANK 12 (f), OBJ TANK 13

(e) and OBJ TANK 14 (e) captures this to a degree (as schools are part of the community) and as such, water quality and water quantity are maintained and enhanced where necessary to enable people and communities to safely meet their domestic water needs.

This recommendation (although vague) is considered acceptable by the Ministry.

OBJ TANK 16

The Ministry supported OBJ TANK 16 (a) and (b) to the extent that it prioritises water for the essential needs of people and the allocation and reservation of water for domestic supply including for marae and papakāinga.

However, the Ministry considers that provision for social infrastructure necessary to support people should also be prioritised. This includes schools, halls and other social infrastructure facilities that contribute to the well-being of the community. These have limited use of water and may be considered as being of a domestic scale.

The Ministry therefore requested that OBJ TANK 16 is amended to enable the social infrastructure that supports communities, as follows:

b) The allocation and reservation of water for domestic supply including for marae and papakāinga and for municipal supply including provision for the social infrastructure necessary to support these people and communities so that existing and future demand as described in HPUDS (2017) can be met within the specified limits;

The Reporting Officer has recommended that the Ministry's submission is rejected for reasons that it is contrary to other accepted submission points as shown below:

- OBJ TANK 16** Subject to limits, targets and flow regimes established to meet the needs of the values for the water body, water quantity allocation management and processes ensure water allocation Ground and surface water in the TANK Catchment is allocated, subject to limits, targets and flow regimes which provide for the values of each water body.^{210.2, 132.83} in the following priority order:
- a) ~~Water for the essential-reasonable domestic~~ needs of people, livestock drinking and fire-fighting supply^{13.8, 35.76, 195.28};
 - b) ~~The allocation and reservation of water for~~ existing and future demand for domestic supply including marae and papakāinga, and municipal uses supply as described in HPUDS (2017) ~~can be met within the specified limits;~~
 - c) Primary production on versatile soils;
 - d) Other primary production^{30.1} food processing, industrial and commercial end uses;
 - e) Other non-commercial end uses.

The Ministry do not agree with this recommendation and are concerned that Council are failing to recognise the importance of social infrastructure, to the extent that schools are given no priority under OBJ TANK 16 in terms of allocation of ground and surface water. Schools cannot operate without adequate water supply for health and safety reasons. This poses a significant risk to the community should priority not be given to social infrastructure that are not connected to Councils reticulated water supply and rely on a ground or surface water takes.

The Ministry request that further consideration is given to prioritising social infrastructure such as schools that are necessary in supporting people and communities in OBJ TANK 16 and suggest the following further amendment:

OBJ TANK 16

Subject to limits, targets and flow regimes established to meet the needs of the values for the water body, water quantity allocation management and processes ensure water allocation Ground and surface water in the TANK Catchment is allocated, subject to limits, targets and flow regimes which provide for the values of each water body, in the following priority order:

- a) *Water for the essential reasonable domestic needs of people, livestock drinking and fire-fighting supply;*
- b) *The allocation and reservation of water for existing and future demand for domestic supply including schools, marae and papakāinga, and municipal uses supply as described in HPUDS (2017) can be met within the specified limits;*
- c) *Primary production on versatile soils;*
- d) *Other primary production, 30.1 food processing, industrial and commercial end uses;*
- e) *Other non-commercial end uses.*

OBJ TANK 17

The Ministry supported OBJ TANK 17 as notified to the extent that it requires the allocation and use of water to result in water being available for abstraction at agreed reliability of supply standards. The Ministry also supports efficient water use and as such requested that OBJ TANK 17 be retained as notified.

The Reporting Officer has accepted in part the Ministry's submission, subject to recommended changes. These recommendations are supported by the Ministry.

OBJ TANK 18

The Ministry supported OBJ TANK 18 to the extent that it requires that the current and foreseeable water needs of future generations and for mauri and ecosystem health are secured. This is important for the current and future use of schools within the TANK catchments.

The Reporting Officer has accepted in part the Ministry's submission, subject to recommended changes. These recommendations are supported by the Ministry.

Policy 1

The Ministry is responsible for supplying safe drinking water to students and staff in accordance with the New Zealand Drinking Water Standards 2008.

The Ministry, as a key stakeholder, supported Policy 1 as it recognises the need to regulate or manage land use activities and surface and groundwater bodies so that water quality attributes are maintained at their current state or, where required, show an improving trend towards the water quality targets shown in

Schedule 26. Policy 1 will protect the water quality and subsequently, the health and safety of pupils and staff.

The Reporting Officer has recommended a number of amendments to Policy 1, which are acceptable to the Ministry.

Policy 6

The Ministry supported Policy 6 on the basis that it seeks to protect water supplies by identifying a source protection extent for small scale drinking water supplies. The Ministry requested that Policy 6 be retained as notified.

The Reporting Officer has recommended that the Ministry's submission be accepted, subject to minor recommended changes. This is supported by the Ministry.

Policies 7, 8

The Ministry supported Policies 7 and 8 on the basis that these policies seek to protect the source water for water supplies.

The Reporting Officer has recommended accepting in part the Ministry's submission, subject to recommended changes. These changes are supported by the Ministry.

Policy 9

The Ministry supported Policy 9 on the basis that it requires Council to collaborate with agencies which have roles and responsibilities for the provision of safe drinking water to protect source water and associated water supplies.

The Reporting Officer has recommended that the Ministry's submission be accepted in part, subject to minor amendments. These changes are supported by the Ministry.

Rule TANK 7

The Ministry supported TANK 7 to the extent that it provides for the take and use of surface water in the TANK Water Management Zones.

However, the Ministry considered that PPC9 could be clearer around the use of water for activities that support the community i.e., those activities that are not industrial or commercial and water use is usually well within the permitted thresholds.

These include activities such as marae, schools, halls and other social infrastructure facilities that contribute to the well-being of the community. These activities have limited use of water and may be considered as being of a domestic scale. It should be clear throughout PPC9 that activities such as those that are likely to meet the reasonable domestic needs definition should also be permitted activities.

The Ministry therefore requested that TANK 7 is amended to enable the social infrastructure that supports communities as follows:

~~(iii)~~ (ii) Takes occurring for a period of less than 28 days within any 90 day period, the total volume taken on any property shall not exceed 200 cubic metre per 7 day period.

(iii) Takes existing as at 2 May 2020 may continue to take up to 20 cubic metres per property per day and to meet the reasonable needs of social infrastructure.

The Reporting Officer has recommended acceptance in part of the Ministry's submission in so far as it improves clarity, however, has not accepted the Ministry's request as above. No commentary has been provided in assessing the Ministry's submission.

The Ministry understands that the permitted activity rules are intended to enable any permitted take existing as at 2 May 2020 to continue. For any new activity, permitted takes must be 5m³ or less except takes for stock drinking water, firefighting purposes, and aquifer testing.

Those activities that exceed 5m³ per day per property would require resource consent. The Ministry wishes to re-emphasise that schools have limited use of water and are only open for approximately 180 days a year and as such, the average use is significantly less than that of domestic scale. However, should the Ministry require a resource consent to take surface water to provide for a new or existing school (consent renewal), the allocation of additional take will need to be given priority as a school cannot operate without sufficient water supply.

The Ministry understands that water supply needs to be carefully allocated based on priority and as social infrastructure such as schools are of significant importance to the community, priority should be given to schools. The Ministry therefore support the recommendation, subject to consideration being given to prioritising social infrastructure in OBJ TANK 16 as requested above.

Rule TANK 8

The Ministry supported TANK 8 to the extent that it provides for the take and use of groundwater in the TANK Water Management Zones.

However, the Ministry considers that PPC9 could be clearer around the use of water for activities that support the community i.e., those activities that are not industrial or commercial or domestic in nature and water use is usually well within the 5m³ per day criteria (or could be made to be by averaging) and should therefore be permitted.

These include activities such as marae, schools, halls and other social infrastructure facilities that contribute to the well-being of the community. These have limited use of water and may be considered as being of a domestic scale. It should be clear throughout PPC9 that activities such as these that meet the domestic reasonable use definition should also be permitted activities.

As with Rule TANK 7, the Ministry therefore requested that TANK 8 is amended to enable the social infrastructure that supports communities as follows.

(iv) Takes existing as at 2 May 2020 may continue to take up to 20 cubic metres per property per day and to meet the reasonable needs of social infrastructure.

As above, the Reporting Officer has recommended acceptance in part of the Ministry's submission in so far as it improves clarity however has not accepted the Ministry's request as above. No commentary has been provided in assessing the Ministry's submission.

For the same reasons set out above, the Ministry support this recommendation subject to consideration being given to prioritising social infrastructure in OBJ TANK 16 as requested above.

Should you have any queries or seek clarification on the above, please contact me on the details below.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Alec Duncan', written in a cursive style.

Alec Duncan
Planner

on behalf of

Beca Limited

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Hawkes Bay Regional Council
159 Dalton Street
Napier South
Napier 4110

20 April 2021

Attention: Hearing Commissioners

Dear Commissioners

Hawkes Bay Regional Council - Proposed Plan Change 9: Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments

Fire and Emergency New Zealand (Fire and Emergency) has lodged a submission on the Proposed Plan Change 9 (PPC9). Fire and Emergency has not requested to attend the hearing scheduled to commence Monday 26th May 2021 and requests that in lieu of attendance, that this letter be tabled for the Hearing Commissioners' consideration.

The Section 42A Officer's Report (Officer's report) has been received. Fire and Emergency's response to the Officer's report recommendations on these submission points are set out below.

Fire and Emergency Submission

Through its submission, Fire and Emergency has supported PPC9, subject to PPC9 being amended to enable Fire and Emergency to carry out its requirements under the Fire and Emergency New Zealand Act 2017 more effectively in the protection of lives, property and the surrounding environment. This submission addresses matters relating to activities required to be undertaken to enable effective firefighting training, emergency response and to provide for the health and safety of people and communities in the Hawkes Bay region.

Officer's Report Recommendations

OBJ TANK 3

Fire and Emergency supported OBJ TANK 3 as notified as it promotes community resilience requiring effects from climate change on water supply, human health, infrastructure, and the environment to be considered.

The Reporting Officer has recommended accepting Fire and Emergency's submission in part, subject to a number of changes to the objective, including the introduction of a new policy (POL TANK 61) to incorporate parts of the notified TANK OBJ 3 that determines how matters and environmental effects will be managed.

The Reporting Officer's recommendation is supported, subject to the acceptance of new policy (POL TANK 61).

OBJ TANK 10 - 14

Fire and Emergency supported OBJ TANK 10 – 14 on the basis that it requires the use and development of land and the taking of freshwater to be carried out in the four freshwater catchments so that water quantity is maintained and enhanced where necessary to enable people and communities to safely meet their domestic water needs and primary production water for community social and economic well-being. Fire and Emergency therefore requested that these objectives be retained as notified.

The Reporting Officer has recommended that Fire and Emergency's submissions be accepted. This is supported by Fire and Emergency.

OBJ TANK 16

Fire and Emergency supported OBJ TANK 16 to the extent that it sets out a priority order for water allocation, subject to the limits, targets and flow regimes established. However, Fire and Emergency sought that they are given priority for water allocation under OBJ TANK 16, in recognition of section 14(3)(e) of the Resource Management Act 1991 (RMA).

Fire and Emergency sought to amend OBJ TANK 16 as follows:

OBJ TANK 16 Subject to limits, targets and flow regimes established to meet the needs of the values for the water body, water quantity allocation management and processes ensure water allocation in the following priority order;

- a) Water for the essential needs of people;*
- b) The allocation and reservation of water for domestic supply including for marae and papakāinga, Fire and Emergency New Zealand activities and for municipal supply so that existing and future demand as described in HPUDS (2017) can be met within the specified limits;*
- c) Primary production on versatile soils;*
- d) Other primary production food processing, industrial and commercial end uses;*
- e) Other non-commercial end uses.*

The Reporting Officer has recommended accepting Fire and Emergency's submission in part for the reason that it provides clarity. The suggested amendment to include "fire-fighting supply" is supported by Fire and Emergency.

5.10.6 Policies

Fire and Emergency generally supported the proposed policies in 5.10.6 to the extent that they seek to manage the allocation and use of groundwater levels in the region to protect the supply of water as a finite resource. The management of water supply (regardless of the source) will provide security for Fire and Emergency in terms of the availability of water supply for use by Fire and Emergency during an emergency. The Reporting Officer has recommended that Fire and Emergency's submission is accepted in part as Fire and Emergency sought that the policies are retained as notified.

The amendments recommended to POL TANK 36 – 42 are considered acceptable by Fire and Emergency.

5.10.7 Policies – Policy 50

Fire and Emergency generally support the proposed policies in 5.10.7 to the extent that they seek to manage the allocation and use of surface water levels in the region to protect the supply of water as a finite resource.

Policy 50 requires Council to ensure the water needs of future community growth are met within water limits when making decisions about resource consent applications for municipal and papakāinga water supply. Fire and Emergency further support this policy as it requires Council to manage water demand and supply and the identification of communities at risk of low water reliability.

The Reporting Officer has recommended that Fire and Emergency's submission be accepted, subject to minor amendments to the policy. This is supported by Fire and Emergency.

5.10.7 Policies – Policy 51

Fire and Emergency generally supported Policy 51 to the extent that when making water shortage directions under Section 329 of the RMA, Council will establish and consult with an emergency water management group that include representatives from the former New Zealand Fire Service to make decisions about providing for water uses in a priority order.

As outlined above, Fire and Emergency New Zealand (formerly the New Zealand Fire Service) was established by the Fire and Emergency Act on 1 July 2017. Fire and Emergency therefore requested that a minor amendment is made to better align with the current unified structure of Fire and Emergency.

Fire and Emergency also supported Policy 51(c) to the extent that recognition is given to the well-being and health of communities in terms of priority use of water. However, Fire and Emergency recommends that the wording better reflects section 5 of the RMA which also refers to the 'safety' of the community.

The amendments sought are as follows:

*51. When making water shortage directions under Section 329 of the RMA, occurring when rivers have fallen below minimum flows and water use has decreased or ceased according to permit conditions, the Council will establish and consult with an emergency water management group that shall have representatives from Napier City and Hastings District Councils, ~~NZ Fire Service~~ **Fire and Emergency New Zealand**, DHB, iwi and MPI, to make decisions about providing for water uses in the following priority order;*

...

*c) water essential for community **safety**, well-being and health;...*

The Reporting Officer has recommended that Fire and Emergency's submission is accepted in part in so far that the policy correctly refers to 'Fire and Emergency New Zealand', however has not accepted Fire and Emergency's requested amendment to Policy 51c). This is not preferred, and Fire and Emergency note that no reasoning has been given, however overall, this recommendation is accepted by Fire and Emergency.

6.10.2 Water – Take and Use

The Operative Regional Resource Management Plan includes a note in the permitted activity Rule 53 'Minor takes & uses of groundwater' that exempts firefighting uses from the permitted ground water take volumes.

In contrast, the PPC9 rules to take water do not provide for Fire and Emergency to operate as required and could therefore affect their ability to operate as effectively as needed. Given that emergency events (such as fires) are unplanned, it is unrealistic and impracticable to expect Fire and Emergency to apply for resource consent to take water above the permitted thresholds.

PPC9 as notified puts Fire and Emergency in a position where responding to large emergency events could result in a breach of the RMA through the take of water for emergency or training purposes. Consequently, non-compliance with the Regional Resource Management Plan provisions could see Fire and Emergency prosecuted, should the Regional Resource Management Plan provisions be enforced during temporary emergency events.

Whilst section 14(3)(e) of the RMA provides for water takes for firefighting and training purposes, it is considered that PPC9 should explicitly recognise this. Providing clarity through the rules of the Regional Resource Management Plan provides certainty for Fire and Emergency and its ability to fulfil its statutory objectives and also community expectations, and amongst other matters, the ability to efficiently and effectively respond to emergencies. Fire and Emergency therefore require a level of assurance that they can continue to operate without the risk of infringing statutory requirements in order to meet their own statutory functions under the FENZ Act.

Fire and Emergency therefore sought the following be added:

6.10.2 Water – Take and Use

The following rules do not apply to the taking and use of water that occurs in accordance with section 14(3)(e) of the RMA:

• Tank 7 - 17

The take and use of water for emergency or training purposes in accordance with section 48 of the Fire and Emergency New Zealand Act 2017, including from locations within the groundwater management zones in Schedule 31 is exempt from the water take and use provisions and restrictions as provided for within section 14(3)(e) of the Resource Management Act 1991.

The Reporting Officer has recommended that Fire and Emergency's submission on Rules TANK 7 and 8 be accepted in part, in so far as they improve clarity and has recommended adding a note to clarify that takes for the purposes of firefighting are not limited.

Fire and Emergency note that the Reporting Officer has not applied this note for the remainder of Rules TANK 9 – 17 and while an explanation has not been provided by the Reporting Officer, acknowledge that the note on permitted activity Rules TANK 7 and 8 provides adequate clarity to ensure that Fire and Emergency can continue to operate without the risk of infringing statutory requirements in order to meet their own statutory functions under the FENZ Act.

This recommendation is therefore supported by Fire and Emergency.

Schedule 31: Flows, Levels and Allocation Limits

Schedule 31 specifies the amount of water that may be authorised for abstraction from the specified water management units and the flows at which water abstraction is subject to restrictions or requirements and relates to Rules TANK 9-11.

Fire and Emergency's support of Schedule 31 was subject to the inclusion of the amendment sought above relating to the exemption of the take and use of water for firefighting purposes from the water take and use provisions Rules TANK 9-11. However, Fire and Emergency have accepted that the Reporting Officer's recommendation relating to Rules TANK 7 and 8 is adequate in addressing Fire and Emergency's concerns, and therefore considers the recommendations relating to Schedule 21 acceptable.

Fire and Emergency wish to thank Hawkes Bay Regional Council for the process undertaken to date and await the decisions on submissions.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Alec Duncan', written in a cursive style.

Alec Duncan
Planner

on behalf of

Beca Limited

Phone Number: +6479607259
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BEFORE THE HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER Proposed Plan Change 9 – Tūtaekurī, Ahuriri,
Ngaruroro and Karamū Catchments (TANK)

BETWEEN **HAWKE’S BAY WINEGROWERS ASSOCIATION
LIMITED; GIMBLETT GRAVELS
WINEGROWERS ASSOCIATION; VILLA MARIA
ESTATE LIMITED; PERNOD RICARD
WINEMAKERS NEW ZEALAND LIMITED
(collectively “THE WINEGROWERS”)**

AND HAWKE’S BAY REGIONAL COUNCIL

STATEMENT OF EVIDENCE OF ANDREW LAUGHTON DARK

ON BEHALF OF THE WINEGROWERS

WATER QUANTITY MEASUREMENT AND MODELLING

11 MAY 2021



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A. INTRODUCTION

1. My full name is Andrew Laughton Dark.
2. I am currently employed as a senior water resource engineer at Aqualinc Research Limited ("**Aqualinc**") in Christchurch. I have been employed by Aqualinc since 2005. I am the Business Manager of Aqualinc's Research and Development Group.
3. My qualifications are a PhD (awarded 2017), Masters of Engineering (awarded 2005), and a Bachelor of Engineering with first class honours (awarded 2004). These degrees are all in Civil Engineering and are from the University of Canterbury. I am a Chartered Professional Engineer, and a Chartered Member of Engineering New Zealand (formerly IPENZ). I am a member of the New Zealand Hydrological Society. The topics of both my PhD and Masters theses were related to numerical and experimental modelling of water flows, in a water resources context. The focus of my PhD research was numerical modelling of groundwater – surface water interactions.
4. I have significant experience in analysing and modelling water supply and demand for irrigation. This experience includes regional and catchment-scale studies in Canterbury, Marlborough, Otago and Wairarapa, and national-scale studies. I was a lead author of Stages 2 and 4 of the Canterbury Strategic Water Study, a precursor to the Canterbury Water Management Strategy. I have modelled irrigation supply and demand to investigate irrigation development feasibility, the effects of changing allocation rules on water supply reliability, and the projected impacts of climate change on water resources.
5. A large proportion of my work at Aqualinc has included assessments of irrigation water demands. These assessments have typically been done with IrriCalc, Aqualinc's in-house soil moisture balance and irrigation simulation software. As a result, I am familiar with the theoretical basis, assumptions and inputs for the IrriCalc model.
6. My evidence supports the submission by Hawke's Bay Winegrowers' ("**HBWG**"), Gimblett Gravels Winegrowers Association ("**GGWA**"), Villa Maria Estate Limited ("**Villa Maria**") and Pernod Ricard Winemakers New Zealand Limited ("**PRW**") to give evidence concerning their submissions on Proposed Plan Change 9 ("**PPC9**") - Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments (TANK). HBWA, GGWA, Villa Maria, and PRW are collectively referred to as the "**Winegrowers**" in this evidence.

B. CODE OF CONDUCT

7. I confirm that I have read and agree to comply with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express and that, except where I state I am relying on information provided by another party, the content of this evidence is within my area of expertise.

C. SCOPE OF EVIDENCE

8. This evidence addresses the following matters:
- (a) Viticulture water use and requirements;
 - (b) Proposed allocations methods in PPC9;
 - (c) The implications of the PPC9 provisions concerning water allocation and use;
 - (d) Alternative approaches to water allocation and use in the PPC9.
9. In preparing my evidence I have read the draft evidence prepared by Ms Taylor and Mr St.Clair. The information I rely on with respect to **water usage** was provided to me by the Winegrowers. Model outputs that I refer to have been prepared by my colleague Dr Birendra KC, a water resource engineer at Aqualinc, under my supervision.

D. EXECUTIVE SUMMARY

10. PPC9 proposes to allocate water for irrigation so that it is allocated and used efficiently by ensuring that the allocation of water for irrigation end-uses is based on soil, climate and plant needs.¹ It proposes to use the IrriCalc water demand model (or a suitable equivalent approved by Council) that utilises crop type, soil type and climatic conditions to determine efficient water allocations for irrigation uses.² PPC9 also looks to phase out overallocation by preventing new water allocations and allocating water according to 'Actual and Reasonable' use when consenting water takes in the region.³

¹ POL TANK 47(a).

² POL TANK 47(b).

³ POL TANK 52(b); RULE TANK 9 and 10.

11. In my view, this approach to allocating water is suitable, providing that the methodology for determining 'Actual and Reasonable' use is robust and fair. As outlined in my evidence, I have concerns about the robustness of the proposed definition of 'Actual and Reasonable', particularly around the use of averages and the "lesser of" condition, and the likely implications for setting reasonable use volumes.
12. The IrriCalc model is a piece of in-house software developed by Aqualinc. It calculates the soil moisture balance on a daily basis, using input timeseries of rainfall and potential evapotranspiration (PET). The crop type is specified in the model via a 'crop coefficient' (or 'crop factor'), which incorporates the effects of plant transpiration and evaporation from the soil, and describes the evapotranspiration of the crop relative to that of a reference crop.
13. It is important to distinguish the model from the online IrriCalc tool, which (unlike the Aquatic model) is available to the public via www.mycatchment.info. The online tool does not actually run the model, but is a means of accessing the results of many IrriCalc model runs that have been done for combinations of climate inputs (accounting for spatial variability), soils, land-use, and irrigator type (where applicable).
14. Overall, I consider that using the current online IrriCalc tool to calculate 'Actual and Reasonable' use volumes is useful as a default or start-point for resource consent applications, and may be able to be relied on fully for a vineyard that is set up and managed in a relatively "standard" way (i.e. where the assumed model parameters match the actual vineyard set-up). However, it is important to understand the limitations of this approach. For example, as I discuss in my evidence:
 - (a) A number of factors, including vine variety and how the vineyard is planted and the vine canopy is managed, may mean that the crop coefficients used in the model (which underpins the tool) do not exactly represent the water use of vines in a particular vineyard. In my view, further research is required to quantify the effects of these factors on the crop coefficients for grape vines, and the implications for water use requirements.
 - (b) In addition, the accuracy of the results given by the IrriCalc online tool could be improved by improving the input datasets. The climate inputs could be improved considerably by using interpolated climate data with a finer spatial

resolution, for example, a 500 m grid rather than the existing 5 km grid spacing, and the soils data could be updated.

(c) For examples that I have considered, the actual use, based on water meter data, is reasonably consistent with the volumes calculated from the IrriCalc online tool, but this will not always be the case. Consent-holders should be able to present water use data, supported by soil moisture data or other contextual information, in support of an annual volume that is higher than the IrriCalc volume.

15. The proposed “least of either” approach to determining ‘Actual and Reasonable’ use in combination with the proposed reliance on average water use data over the 2010 – 2020 period is likely to have a major impact on the annual volume limits that will be placed on consents when they are reviewed or renewed. As I discuss in my evidence, an average over a 10 year period is not necessarily a valid comparison with a 95% reliability number from long-term modelling.

16. Therefore, in my view:

(a) There is a need to continue to refine the online IrriCalc tool to improve its accuracy and increase the level of confidence that growers have in its results.

(b) The PPC9 provisions should enable additional site-specific information to be considered and should not preclude alternatives where growers are able to show that the volumes from IrriCalc are insufficient for their circumstances (for example, based on site specific soil and rainfall data). The proposed “least of either” approach precludes use of water meter data to show that the IrriCalc volume is insufficient for a particular vineyard.

17. Average measured water use data over the 10 year period preceding May 2020 should not be relied on to determine ‘Actual and Reasonable’ use, as this results in volumes that are insufficient for irrigation in dry years.

E. HAWKE’S BAY WINEGROWERS CURRENT WATER ALLOCATION AND USE

18. The Winegrowers operate a number of irrigated vineyards across the TANK catchments. Ms Taylor’s evidence for the Winegrowers provides background information on the irrigation methods, consented rates and volumes, and typical water demands.

F. WATER ALLOCATION IN THE PPC9

19. In terms of initial water allocation, the PPC9 provisions contemplates that water will be allocated according to 'Actual and Reasonable' use, which will be the lesser of:⁴
- (a) The average⁵ annual amount as measured by accurate water meter data in the ten years preceding 2 May 2020, if accurate water meter data is available; and
 - (b) The quantity required to meet the modelled crop water demand for the irrigated area as specified by the IRRICALC water demand model (if it is available for the crop and otherwise with an equivalent method).⁶
20. The definition of 'Actual and Reasonable'⁷ refers to 95% supply reliability. I note that there is no further definition of "supply reliability" given. In my experience, there are a number of ways of defining supply reliability, usually considering both the supply (i.e. water availability) and demand. In the context of 'Actual and Reasonable' use, reliability only considers the demand side. In the analysis that I have presented below, I have assumed that the "95% supply reliability" referred to in the definition corresponds to the 95th percentile annual demand from the IrriCalc online tool. In other words, that sufficient water is allocated to meet crop water demands in 19 out of 20 years on average. I consider this a more appropriate metric to use when considering reasonable water use.
21. Broadly, there are two issues with the proposed 'Actual and Reasonable' use approach:
- (a) Is the average measured water use from the 10 years preceding 2 May 2020 comparable to the 95th percentile value from IrriCalc?
 - (b) Is the use of measured water-use data a reasonable approach for setting 'Actual and Reasonable' water use limits on resource consents?
22. In their submissions, the Winegrowers opposed the approach of taking the maximum measured water use from the 10 year period preceding August 2017 on the basis that it would unfairly penalise consent-holders that did not have water meter data

⁴ As above.

⁵ Note the consequential change from 'maximum' to 'average'.

⁶ The specific requirements concerning the efficiency of application and reliability of supply of the irrigated area are contained in the definition of 'Actual and Reasonable'.

⁷ In Chapter 9, Glossary of Terms Used.

extending back to the 2012 drought. The submissions preferred a 10 year period that included the 2019-2020 drought, for which vineyards had accurate water data available. While extending the timeframe over which water data is collected (through to May 2020), the Section 42A Hearing Report also recommends modifying the approach to the **average** (from the maximum) over the 2010 – 2020 period.

23. Mathematically, taking an average of values that vary over time will always result in a lower number than the maximum over that period. The difference between the maximum over one period and the average over a different (but overlapping) period is less clear-cut, however.
24. To understand how the average of the 2010 – 2020 period compares to the maximum of the 2007 – 2017 period (as originally proposed), and how it fits in the context of longer-term supply reliability, I have analysed the annual water demands calculated from running the IrriCalc model (i.e. Aqualinc’s in-house software, which gives more detailed results than the online tool) from 1960 through to present day. I have assumed that the model results are representative of actual water use on a fully developed vineyard with well-managed irrigation, i.e. the time-series of model outputs is a proxy for measured water use in my analysis.
25. To generate these results, the IrriCalc model was set up to model demand for grapes, with soil and irrigation system parameters representative of the vineyards in the TANK catchments. I did not attempt to exactly replicate the results of the IrriCalc online tool, as the focus was on the variability over time; however, the results were a reasonably close match in terms of the summary statistics such as the 95th percentile and median. Differences between the results that I have used, and the results given by the online tool are not unexpected: although they are from the same model the parameters and inputs are not necessarily exactly the same. Because both my analysis and the results used in the IrriCalc online tool are based on a long time-series of data, I am confident that where I draw conclusions about the 95th percentile, this can be related to the 95th percentile (or 95% supply reliability) result from the IrriCalc online tool.
26. For 1960 – 2018⁸ the climate inputs for the IrriCalc model were from previous work by Aqualinc, in which long-term climate time-series at locations with shorter climate

⁸ Note that where I refer to a year or an irrigation season, it is based on the hydrological year - i.e. the 2018 hydrological year is the period from 1 July 2018 - 30 June 2019.

records have been generated based on developing statistical relationships with longer climate records from nearby climate stations. To bring the analysis up to present day, measured climate data were downloaded from NIWA's Cliflo database (rainfall from Hastings and PET from Whakatu). IrriCalc was run with this dataset from July 2010 through to May 2021 (i.e. capturing through to the end of the 2020 – 2021 irrigation season). In the overlapping period, there were differences in the results from the two climate datasets; however, these were minor and the variability in response to climate was similar. I was therefore able to normalise the two sets of model results by the mean over their overlapping period, and combine them into a record of modelled irrigation demand from 1960 – 2020.

27. My conclusions from this analysis are as follows:

- (a) In the period from 2007 to 2020, the 2012-2013 irrigation season had the highest modelled annual water demand. Demand in this season was equivalent to the long-term 95th percentile; it was the fourth-highest annual demand in the 1960 – 2020 modelled record. Taking the maximum water use over a period that encompasses this year would therefore be equivalent to allocating based on the 95th percentile results from the online IrriCalc tool www.mycatchment.info.
- (b) The modelled demand in the 2019 – 2020 irrigation season was lower than the 2012-2013 season, and was equivalent to the 92nd percentile. Paragraph 2064 of the Section 42A Hearing Report notes that the 2019-2020 drought was longer and had lower rainfall than the 2012-2013 event. If the “tail end” of the drought was after grape harvest, a more severe drought will not necessarily result in a higher irrigation demand. Conversely, a milder drought during key stages of grape growth could result in higher irrigation demand.
- (c) The average water use over the 10 year period ending in May 2020 is approximately 4% higher than the long-term average. This shows that the inclusion of two drought years is not sufficient to bring the average up to a level that is anywhere near 95% supply reliability.
- (d) The average water use over the 10 year period is 68% of the 95th percentile value. It is equivalent to the 58th percentile of the long-term record. If water

was allocated on this basis, water users would have insufficient water to meet their full vineyard demand in approximately 4 years out of 10.

- (e) I have also analysed the effect of the averaging approach on shorter periods of data. This is relevant because not all water-users had water meters installed in 2010. The Section 42A Hearing Report (para 1371) notes that all takes above 5 l/s should be able to provide at least three years of data. A water-use record beginning in 2013 (after the end of the 2012-2013 drought) would result in average annual water use equivalent to the 52nd percentile, while the minimum assumed period of three years results in the 60th percentile.
- (f) In the absence of another water source or means of meeting the shortfall between supply and demand, a volumetric allocation that provides insufficient water in dry years will result in lower grape production than would be achieved with full irrigation. Ms Taylor's evidence addresses the effects of water stress on fruit quality and disease resistance.
- (g) In my opinion, an approach that takes the maximum of the measured water use over the 2010 – 2020 period is much more likely to be representative of long-term 'Actual and Reasonable' water use at a 95% reliability level, **provided that the measurements are representative of the vineyard's long-term water use**. I will address the issue of representativeness below.
- (h) The "least of either" provision in the 'Actual and Reasonable' use definition safeguards against annual volume based on measured water use that reflects inefficient irrigation. However, there is a risk that without being able to fully account for the context of the measured water use, the data may not be representative of a vineyard's long-term water use, even when inter-annual variability due to climate is accounted for. Potential reasons for this include:
 - i. Establishment / re-development, where parts of the vineyard may be fallow or contain young vines with different water requirements to fully established vines.
 - ii. Low-flow restrictions that prevent water being taken, even though there is a demand for it. While low river flows are often correlated with high water demand, this is not always the case. Where measured water use

has been reduced due to low flow restrictions, in my opinion this is not a true reflection of 'Actual and Reasonable' use, and should not be compared with IrriCalc numbers, which are based on water being available whenever required.

- iii. Irrigation systems that contain storage, where stored water may have been taken in a different hydrological year to when it is used.
 - iv. Under-irrigation or over-irrigation, which may occur due to lack of soil moisture monitoring.
 - v. The definition of 'Actual and Reasonable' use refers to "insufficient or no accurate data" The terms "insufficient" and "accurate" are not defined further, but in my opinion these are likely to refer to the water use records being gap-free, and the flow meter being installed and maintained in compliance with HBRC's *Technical Specifications and Installation Requirements for Flow Meters* document. Without further context about how the water is being used, however, this does not address whether the data actually reflects reasonable use.
28. One other concern relating to the use of historic data to determine the 'Actual and Reasonable' water demand is that it does not account for climate change. Potential evapotranspiration deficits (i.e. the difference between rainfall and evapotranspiration that needs to be replaced by irrigation to maintain crop growth) are projected to increase in Hawke's Bay Region over the next century. This will potentially result in allocations set based on historic data being insufficient to meet demand in the future. I have discussed a potential solution to this in paragraph 58 of my evidence.

G. IRRICALC - MODEL VS TOOL

29. In order to understand the implications of "IrriCalc" as an option relied on within PPC9, I provide some background information on the IrriCalc model (and online tool) below.
30. The IrriCalc model is a piece of in-house software developed by Aqualinc. It is based on a model originally developed by Dr John Bright as part of his PhD research, and has been further developed since then by Aqualinc for use in consulting and research projects. The IrriCalc model itself is not available to the public.

31. The IrriCalc model simulates irrigation water use. It calculates the soil moisture balance on a daily basis, using input time-series of rainfall and potential evaporation (PET). The climate inputs can be daily values recorded from climate stations, or modelled values such as spatial interpolations to cover areas without climate stations, or outputs from climate change model scenarios. The soil's Plant Available Water ('PAW', i.e. the amount of water that can be stored by the soil and accessed by plants, also referred to as the water holding capacity) is specified as one of the model inputs, based on database values or site-specific information.
32. The crop type is specified in the model via a 'crop coefficient' (which may also be referred to as a 'crop factor'), which incorporates the effects of plant transpiration and evaporation from the soil, and describes the evapotranspiration of the crop relative to that of a reference crop (usually well-watered pasture with constant canopy characteristics). The crop coefficients differ for each agricultural or horticultural crop - e.g. the crop factors for pasture are different to those for grape vines. The crop coefficient can represent changes to the plants' structure of the plant over the growing season and is therefore specified as a time-series.
33. Values for the crop coefficient can be obtained from literature⁹ or from research. Literature values are for "standard" crops under typical growing conditions, while values obtained from research reflect the conditions at the trial site used.
34. Based on discussions with John Bright (Aqualinc), Steve Green (Plant and Food Research), my understanding is that the crop coefficient¹⁰ for grapes used in the online IrriCalc tool (which is discussed below) was originally derived from field research carried out on Sauvignon Blanc vines in Marlborough by Plant and Food Research. It has then been modified based on more recent research carried out by Plant and Food Research in Hawke's Bay. The monthly values of crop coefficient that were derived from the research results have allowed for some flexibility in terms of canopy management by holding the crop coefficient higher for longer than indicated by Plant and Food's research results, from mid-January onwards.
35. A number of factors, including vine variety, and how the vineyard is planted and the vine canopy is managed, may mean that the crop coefficients used in the model do not

⁹ For example, Allen, RG et al (1998). Crop evapotranspiration – Guidelines for computing crop water requirements. Irrigation and Drainage Paper 56, Food and Agriculture Organisation of the United Nations, Rome.

¹⁰ Strictly speaking this is a set of crop coefficients, as it is a time series that varies over the season.

exactly represent the water use of vines in a particular vineyard. In my view, further research is required to quantify the effects of these factors on the crop coefficients for grape vines, and the implications for water use requirements.

36. Irrigation can be modelled in IrriCalc either by specifying irrigation management rules (for example, the soil moisture level that is used as a trigger point to start irrigating), or by providing an input time-series of irrigation application depths (i.e. the amount of water that is applied, averaged over the irrigated area, in each irrigation event). Specified irrigation management rules, which determine when and how much irrigation occurs, are used to determine reasonable use volumes, or to test the effects on water use and drainage of varying the irrigation parameters. Running the model with a pre-determined irrigation time-series is a way of analysing the water-use efficiency and drainage through the soil profile under a known irrigation regime.
37. Where irrigation management rules are specified in the model, a number of options are available to determine when to irrigate, and how much water to apply. The 'decision' to irrigate (i.e. when irrigation occurs in the model, based on implementation of the irrigation rules) can be based on a return period (i.e. water is applied every X days) and / or a soil moisture trigger level. When a trigger level is used in combination with a return period, the model checks whether the number of days since the last irrigation event is greater than or equal to the return period.
38. The modelled irrigation depth can either be a fixed depth (reflecting the characteristics of the irrigation system), or a variable depth to return the soil moisture to a specified level.
39. The system capacity of the irrigation system (i.e. how much water can be applied in a given timeframe, typically specified as millimetres per day or litres per second per hectare) is specified in the model through the combination of the application depth and minimum return period.
40. The raw outputs of an IrriCalc model simulation are:
 - (a) daily time-series of irrigation water applied (i.e. the irrigation demand);

- (b) “actual evapotranspiration”;¹¹
 - (c) soil moisture;
 - (d) drainage below the root zone;
 - (e) cumulative irrigation water use; and
 - (f) a check-sum value (typically zero) that indicates whether mass has been conserved by the model.
41. The daily values of the model outputs (irrigation, drainage, etc) can then be aggregated to give monthly, seasonal or annual totals of these outputs.

H. IRRICALC ONLINE TOOL

42. It is necessary to distinguish the IrriCalc model (software) from the online IrriCalc tool that is available at <http://mycatchment.info/>.
43. The online tool available on the ‘mycatchment.info’ website is a means of accessing the results of many IrriCalc model runs that have been done for combinations of climate inputs (accounting for spatial variability), soils, land-use, and irrigator type (where applicable). Although the online tool contains results for a range of land-uses, most of my comments relate to vineyard irrigation.
44. The ‘mycatchment.info’ website was developed by Aqualinc Research under a project instigated by Irrigation NZ, and supported by Ministry of Primary Industries Sustainable Farming Fund and several local authorities. As far I am aware, the most recent updates to the databases used by the website were done in 2020, by Aqualinc. This update was to refine some of the crop and irrigation parameters, including giving the option for two different vineyard row spacings (2.1 m and 2.4 m), and did not include an update of the climate inputs.
45. Using the online tool does not actually run the IrriCalc model; it accesses a database containing the results of modelling that has been done previously. The user selects a location from a map interface, and a crop type, and an irrigation method. The website determines the closest climate station. The user can choose to use the mapped soil

¹¹ As modelled, using the crop factor and other variables.

water holding capacity (PAW) at the selected location or specify a Plant Available Water value based on property-specific information. The mapped soil Plant Available Water values are from the Fundamental Soils Layer, which was produced by Landcare Research. For irrigation of pasture the user can select a centre pivot, or a notional “80% efficient irrigator”. For grapes there are no alternative options available with respect to the irrigation system (it is assumed to be ‘micro/drip’).

46. The outputs of running the online tool are daily volumes, monthly volumes, and annual (July – June) volumes for reasonable irrigation water use based on different percentiles of the long-term time-series, all expressed in cubic metres per hectare. The nine out of ten-year annual volume is the 90th percentile of the series of annual water use from the 42-year period (1972 – 2014) that was modelled in IrriCalc. The 90th percentile monthly volumes are the 90th percentile of the series of modelled water use for that month, from all the years that have been modelled. The 90th percentile monthly values do not necessarily sum to the 90th percentile annual value. Note that PPC9 refers to 95% supply reliability, which I have interpreted as being the 95th percentile value from IrriCalc: the value that is sufficient 19 out of 20 years on average.
47. Under the irrigation rules that have been applied in model runs underpinning the online tool, the daily volume of water applied is determined by the model inputs, rather than being a result of the simulation. This represents the system capacity of the irrigation system – i.e. how much water can be delivered to the irrigated area in a day. In most cases for grapes this is 24 m³/ha/day, which can also be expressed as 2.4 mm/day or 0.28 l/s/ha. Other land uses have higher daily volume requirements. For example, pasture on a light soil is allocated up to 58 m³/ha.
48. In the online tool, it is not possible to vary the model parameters such as the system capacity, crop factor (beyond choosing between say “grapes” and “pasture”), or soil moisture trigger level.
49. The parameters in the online tool have been set up in a way that attempts to broadly represent vineyard irrigation practices in Hawkes Bays. A number of factors, including irrigation system designs, vineyard layout (i.e. planting density and row spacing), decisions on when and how much to irrigate, and vine canopy management (e.g. when and the degree to which vines are pruned), vary in practice. All these factors affect water use (although the degree to which each is important is not well understood at

present), and cannot be varied in the online tool, apart from the choice between 2.1 m and 2.4 m row spacing.

50. Accordingly, the online tool will not necessarily provide the most accurate water allocation for any particular vineyard. In my opinion, site specific information might suggest that a higher or lower allocation is appropriate. The “least of either” approach taken in PPC9 will not allow this to happen adequately.

I. ACCURACY OF THE ONLINE IRRICALC TOOL IN ASCERTAINING ‘REASONABLE USE’

51. The Section 42A Hearing Report (para. 2065) notes that “IrriCalc has been found to have a tendency to over-estimate water needs for irrigation.” I disagree with this statement. There are some circumstances in which IrriCalc will over-estimate water use, in particular where there are fine-textured soils and a high water-table (<1 m below the bottom of the root zone). In this case other methods are more appropriate. However I am confident that for free-draining soils and a deeper water table, the IrriCalc outputs are a robust assessment of reasonable use.
52. The rainfall and potential evapotranspiration datasets that were used in the modelling that underpins the online tool are from NIWA’s Virtual Climate Station Network (“VCSN”). This is a product produced by NIWA that provides daily estimates of climate variables at an approximately 5 km grid spacing, based on spatial interpolation of measured data from actual climate stations. The scale on which the spatial interpolation is done potentially affects the accuracy of the data. At present, the IrriCalc results are based on a climate dataset that does not go beyond 2014. While the dataset goes back far enough in time to capture climate variability (wet and dry years), it is a static dataset and is therefore unable to pick up any emerging climate change effects.
53. The accuracy of the results given by the IrriCalc online tool could be improved by improving the input datasets. The climate inputs could be improved considerably by using interpolated climate data with a finer spatial resolution. More recent climate data could be incorporated into the modelling, to account for the emergence of climate change effects. The soils data could be improved by basing the soil Plant Available Water value on the more recent S-Map data,¹² rather than the Fundamental Soils Layer.

¹² <https://smap.landcareresearch.co.nz/>

J. SOLUTIONS/RECOMMENDATIONS

54. Although in theory further flexibility could be provided in the online IrriCalc tool (i.e. by enabling additional information to be entered by the person using it), it is likely to be impractical to incorporate the full range of possible parameter values, and combinations of these parameters. The “parameter space” is potentially very large if a range of irrigation strategies, grape varieties and canopy management styles needs to be accounted for. For each combination of parameters, the full range of soil types would need to be modelled in each VCSN grid square. It is also not clear whether canopy management and irrigation strategies are able to be adequately categorised, or whether they vary on a broad continuum according to the preferences of each grower.
55. In my opinion, there is a need to continue to refine the online IrriCalc tool to improve its accuracy and increase the level of confidence that growers have in its results. Reasonable use volumes from the current online IrriCalc tool are useful as a default or start-point, however Council policies should not preclude alternatives where growers are able to show that the volumes from IrriCalc are insufficient for their circumstances (for example, based on site specific soil and rainfall data). This is precluded by the “lesser of’ approach in PPC9.
56. It is necessary to bear in mind that no model is 100% accurate in all circumstances, and there are further practical limitations associated with making the results of the model available to the public via the IrriCalc online tool.

Other approaches

57. PPC9 allows ‘Actual and Reasonable’ use to be determined based on measured historic water use data. However, my opinion is that this needs to be considered in conjunction with soil moisture measurements to provide evidence that the historic use of water has been efficient.
58. In isolation, measured water use data does not show whether the historic use of water has been reasonable and efficient. Ideally, it should be accompanied by soil moisture data to show that irrigation has been applied efficiently, i.e. that a specified proportion of the irrigation water has remained in the root zone to be accessed by the crop, and has not resulted in drainage below the root zone.

59. As the collection of water use data was not made mandatory until relatively recently, most vineyards' historic use records are likely to be too short to represent a wide range of climate variability, particularly if the proposed averaging approach is used. In order to derive a 'ten-year' reasonable use volume from measured water use, the data would need to be considered alongside a longer dataset of climate or modelled water use data. For example, if recent annual measured values were consistently 10% higher than the recent annual values from an IrriCalc model run covering 40 years of climate data, and soil moisture measurements indicated that water was being used efficiently, it would be reasonable in my opinion to base a reasonable use volume on the IrriCalc value plus 10%.
60. The Section 42A Hearing Report¹³ recommends a change to POL TANK 47(b) to make it clearer that the policy allows for a suitable equivalent model, approved by Council, "that utilises crop type, soil type and climatic conditions." In my opinion, these criteria should be expanded to ensure that alternative models are able to represent the characteristics and operation of the irrigation system adequately. I am aware of examples of soil moisture balance models where the irrigation regime is over-simplified. Other computer simulation models exist that calculate the soil moisture balance in a similar way to IrriCalc. Some have more sophisticated representations of the soil, incorporating multiple layers. Any other model that is used for determining reasonable water use requirements should be able to represent the irrigation management regime in a way that is comparable to IrriCalc. The model inputs need to be robust, and the model should be set up and run, and the results analysed by a suitably qualified and experienced person.
61. The use of any model to calculate water requirements does not guarantee that the modelled water use is efficient. The modelled water use over an irrigation season can be very sensitive to the model inputs and parameters that are used, and if a model is set up inappropriately the modelled irrigation water use may not represent reasonable and efficient use of water. If other models are used, an efficiency standard should be set to ensure that the irrigation regime that is modelled would result in efficient water use. One way of setting this standard would be to specify the proportion of applied irrigation water that remains in the root zone (as opposed to draining below the root

¹³ Para. 1580.

zone). I note that an efficiency standard of this nature is not an input to the model; it is a check that is performed on the model results.

62. Where local climate records exist that differ from the spatially interpolated data used in the IrriCalc online tool, PPC9 should specifically allow this to be used as a model input (to IrriCalc or another model). However, the online IrriCalc tool does not allow users to change the climate data.

K. **IMPLICATIONS OF THE PPC9 WATER ALLOCATION PROVISIONS FOR HBWG**

63. Currently Hawke's Bay Winegrowers resource consents have daily volume limits, expressed as m³/day (cubic metres per day). In general, the daily volume limit will relate to the flowrate (in litres per second) required to operate the irrigation system, assuming that the system operates 24 hours per day. My understanding, from information provided by Mr St. Clair and some of the Winegrowers, is that most of the consents also have monthly and annual volume limits.

64. Under PPC9 all of Hawke's Bay Winegrowers vineyards will be subject to annual volumes limits (when the resource consents are next reviewed, renewed or replaced), which will restrict the volume of water that can be used on an annual basis.

65. I have been provided with water use data from the Winegrowers for a number of vineyards. Due to time constraints, I have not been able to consider all of the available data in time to include in this evidence. I have considered a total of six examples. For each, I have been provided with context such as the total irrigated area, the water sources and consent conditions. Due to commercial sensitivity I have referred to the vineyards as "Example A" - "Example F".

66. I have separated the water use data into two sub-sets. Example A and Example B have data covering the 2012 – 2019 irrigation seasons (i.e. through to May 2020), and are for groundwater supplies with no restrictions tied to river flows. Example C – Example F have varying lengths of data, and water sources that are tied to low-flow restrictions (direct surface water takes or hydraulically-connected groundwater). Some also have storage.

67. The measured and modelled annual water use values for Example A and Example B are compared in the figures below. In Figure 1 I have plotted the annual water use in

millimetres, and in Figure 2 I have normalised the annual water use by the mean of each dataset over the 2012 – 2019 period covered by the measured data.

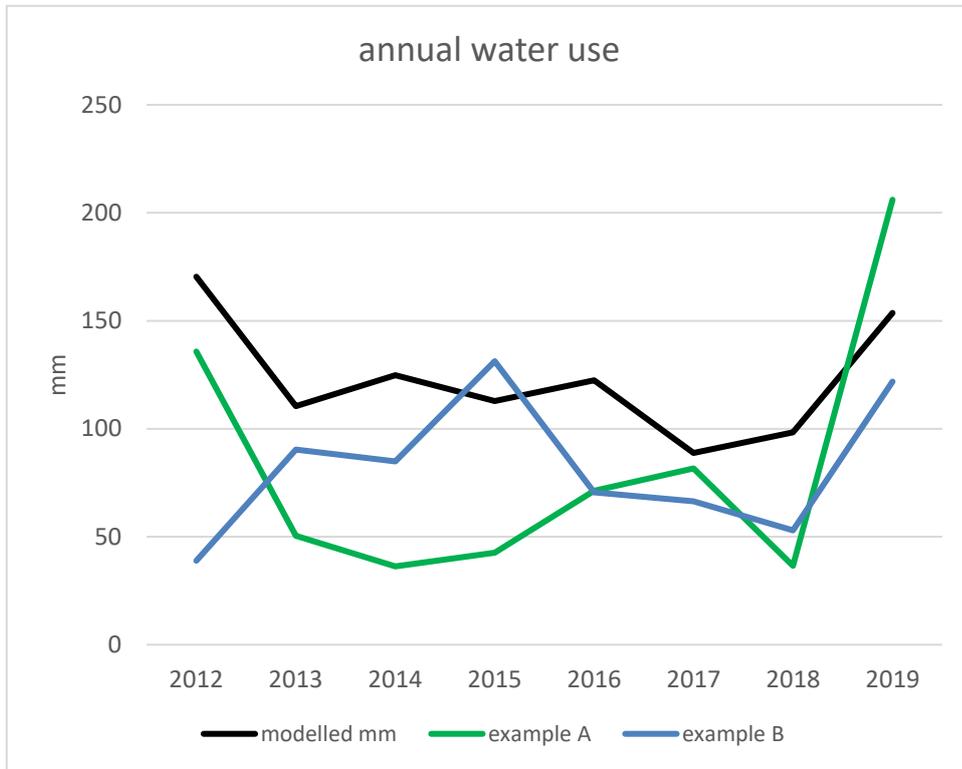


Figure 1 Measured and modelled annual water use in millimetres, groundwater supplies with no low-flow restrictions.

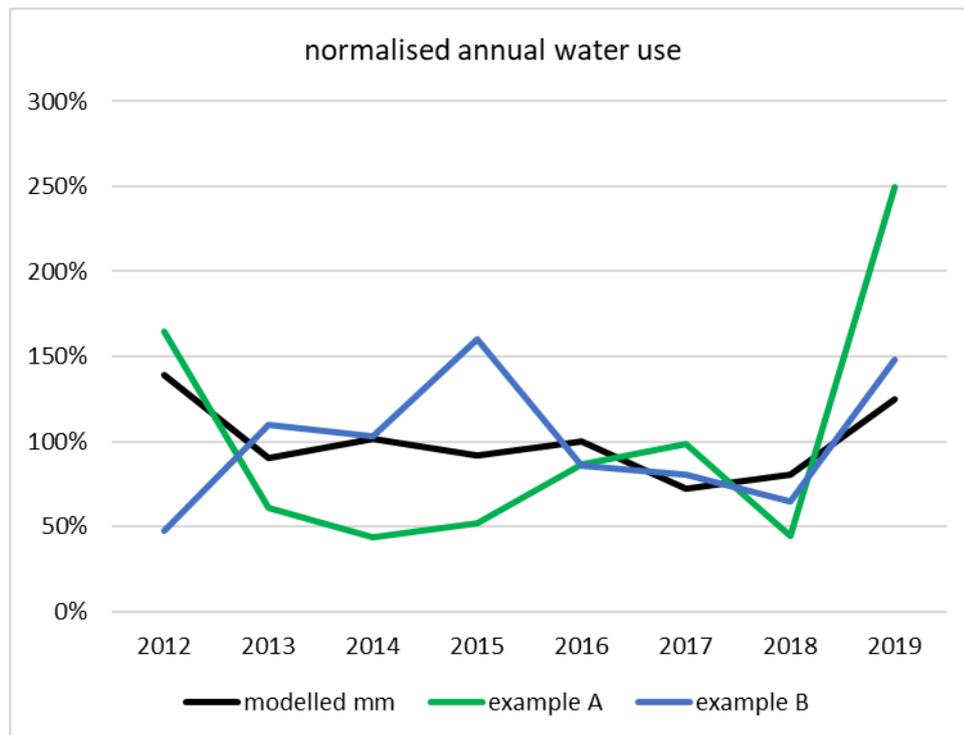


Figure 2 measured and modelled water use, normalised by the 2012 - 2019 mean of each dataset; , groundwater supplies with no low-flow restrictions.

68. Neither of the measured data examples for unrestricted groundwater supplies are consistently higher or lower than the modelled dataset. Figure 2 shows more clearly how the measured and modelled water use responds reasonably consistently to wetter and drier years. It is unclear why the measured water use for Example B is particularly low in the 2012-2013 drought year because the vineyard was fully developed at this point. The measured water use for Example A was particularly high in the 2019 – 2020 drought year; it exceeded the IrriCalc 95th percentile value for the property. Both of these anomalies highlight that without further context, for example expert interpretation of soil moisture records, or information from the vineyard staff about how irrigation was being managed, it is possible for measured water use data to give an incomplete or inaccurate picture of ‘Actual and Reasonable’ water use.
69. For both examples, the average based on measured water use is less than half of the 95th percentile value calculated for each vineyard from the online IrriCalc tool (46% for Example A, and 47% for example B). The values from the online IrriCalc tool are consistent with the annual time-series values that I have analysed from the IrriCalc model.

70. Based on the long-term modelling discussed earlier, an annual volume based on 95% reliability would have been sufficient to fully meet vineyard irrigation demands in the 2012 – 2019 period. If, however, the two examples that I have considered (A and B) had been constrained by an annual volume based on the average measured use over that period, Example A would have been short of water in 2 years out of 8, and Example B would have been short of water 4 years out of 8. For comparison, the modelled annual demand exceeds the average in 3 years out of 8 over the same period.
71. For the remaining examples, the water sources and other relevant details that potentially affect the water use data are as follows:
- (a) Example C: Water storage filled from the Ngaruroro River.
 - (b) Example D: Initially supplied from the Ngaruroro River; dual supply with additional groundwater (not subject to low-flow restrictions) from 2015 onwards.
 - (c) Example E: Groundwater, subject to low-flow restrictions. Vineyard was under development in the first year of water use data (2015-2016).
 - (d) Example F: Groundwater (subject to low-flow restrictions) and water storage.
72. The measured and modelled annual water use values, in millimetres, for Example C - Example F are compared in Figure 3 below. For these examples I have not normalised by the mean, as the mean values are influenced by restrictions. Data from 2012 for Example F was discarded as it was unrealistically high (too high to be explained by inefficient water use). An anomalous data “spike” was also removed from 2017 for this example.

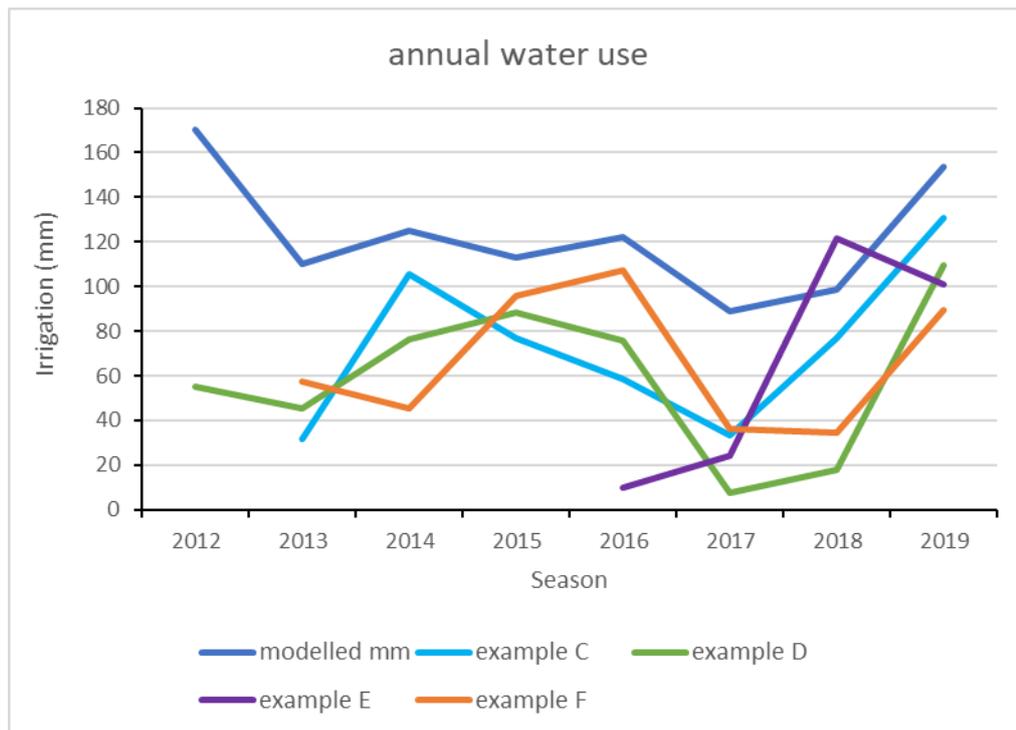


Figure 3 Measured and modelled annual water use in millimetres, supplies with low-flow restrictions

73. I have sourced data on low-flow restrictions from HBRC's website¹⁴ for the Ngaruroro River at the Fernhill water level recorder site. The website summarises the number number of days in each ban period for consent-holders that are restricted from taking water when the river flow is less than 2,400 litres per second. Note that the consent-holders with water storage have additional consent conditions that restrict the rates / volumes of take when the flow at the Whanawhana water level recorder site is less than 12,800 l/s. I have not analysed the effects of storage refill and drawdown on the water use data.
74. For the period over which I have analysed the water use data, the irrigation seasons affected by low-flow restrictions are:
- (a) 2012 – 2013: 5 days in early February; 33 days mid-February – mid March; further restrictions late March – mid April may have occurred after harvest.

¹⁴ <https://www.hbrc.govt.nz/environment/low-flows/>

- (b) 2013 – 2014: no water available until 6th November at the start of the irrigation season.
 - (c) 2014 – 2015: intermittent restrictions (14 days total) from mid-February to late March.
 - (d) 2016 – 2017: five days on restriction in mid-February.
 - (e) 2019 – 2020: 47 days in total on restriction from early February – late March.
75. Although the measured data for Examples C – F is generally lower than the modelled demand, this is at least in part due to the effects of the low-flow restrictions. The effect of the 2012 restrictions on Example D is particularly pronounced. For Examples C, D and F, the effects of the restrictions in the 2019 – 2020 irrigation season would have been mitigated by the use of stored water or a secondary supply. However, for Example E the water use in 2019 – 2020 was lower than the previous year. Note that the early data for example E was low due to vineyard development.
76. The effect of low-flow restrictions, and other issues such as vineyard development, have implications for the proposed averaging method: these artificially lower the average below what would be expected for an unrestricted supply.
77. I have calculated the averages of the measured data for Example C – Example F, and analysed the number of times over the period of measured data the average was been exceeded. For Example C and D, the average would have been exceeded four times (out of seven and eight years of data, respectively) – i.e. if an annual volume limit based on the average had been in place, these vineyards would not have had sufficient water in at least half of the irrigation seasons considered. For Example E, the average was exceeded twice in four years of data, and in Example F, the average was exceeded in three years out of seven.
78. As I have noted above, because neither measured water use data or IrriCalc can be relied on to accurately represent reasonable use in all circumstances, it would be appropriate for the policy framework in the PPC9 to recognise that while IrriCalc is a useful method of undertaking reasonable use calculations, some flexibility may be needed in instances where ‘Actual and Reasonable’ use allocation does not deliver

enough water all year round for vineyard operations. Where flexibility is provided, care needs to be taken to ensure that the water allocation is calculated in an accurate way.

L. Interim Allocation limit

79. In my opinion there is a high level of uncertainty around how the 90 Mm³ interim allocation limit was derived, and whether this is an appropriate value for the interim limit.
80. The Appendix 11 Technical Water Quantity memo (pg 18) refers to the “dry climate” scenario that was run with the Heretaunga Aquifer Groundwater Model. In this scenario, climate conditions and pumping that are representative of the 2012 – 2013 irrigation season were repeated every year for the next hundred years. This is a conservative scenario, as it assumes that water use is high every year, rather than varying from year to year.
81. The groundwater pumping volume for the dry climate scenario was estimated at 90 Mm³, based on demand modelling that was completed as part of the groundwater model development. The demand modelling used information available at the time about irrigated areas and land-use to derive the 90 Mm³ volume.¹⁵
82. The results of the “dry climate” scenario were that groundwater levels remained low, but there was no long-term decline.
83. While it is not explicitly stated, it appears that HBRC have relied on this scenario result as the basis for setting the interim allocation limit at 90 Mm³.
84. It is possible, in my opinion, that the same or similar model outputs could have been generated by using a higher maximum annual water use, but allowing it to vary naturally from year to year.
85. I note that In Figure 12 of the Appendix 11 memo, water use for the 2019 – 2020 irrigation season (a drought year) has been estimated at around 105 Mm³. The memo states that irrigation water use for this season was based on model results. No further details are provided, however, on how the updated volumes in this figure were derived.

¹⁵ HBRC, 2018; Rajanayaka and Fisk, 2018.

86. Given that the proposed method for determining 'Actual and Reasonable' use volumes considers data up to the 2019 – 2020 irrigation season, it may be more consistent to use a 2019 – 2020 water use volume as the basis of the interim allocation limit.

M. SECTION 42A HEARING REPORT RECOMMENDATIONS

87. I have reviewed the responses in the Section 42A Hearing Report to HBWG and other winegrower submissions, and the recommendations that have been made on these points. To some extent I have picked up on the comments in the Section 42A Hearing Report already, as relevant to the discussion above.

N. CONCLUSION

88. I consider that the methodology proposed in PPC9 for determining 'Actual and Reasonable' uses volumes for irrigation, including the consequential amendment recommended in the Section 42A Hearing Report, will result in volume limits that are substantially lower than that required to give 95% reliability, and will not provide sufficient water in dry years. I have identified a number of respects where refinements can be made, and I support the changes to the provisions proposed in Mr St Clair's evidence for the reasons set out in my evidence above.

Andrew Dark

11 May 2021

O. APPENDICES A AND B

Appendix A – Long-term modelled data

The following table shows the outputs of a long-term IrriCalc model run. The annual demands have been normalized by the mean, i.e. each year is shown as a proportion of the long-term average. Colour shading has been used to highlight low and high demand years.

Irrigation Season	Modelled annual irrigation demand normalised by mean
1960	0.81
1961	1.23
1962	1.11
1963	1.29
1964	
1965	0.66
1966	0.45
1967	1.23
1968	0.42
1969	1.2
1970	0.99
1971	1.02
1972	1.11
1973	0.9
1974	0.81
1975	0.84
1976	0.66
1977	1.08
1978	1.23
1979	1.05
1980	0.57
1981	1.29
1982	1.98
1983	0.69
1984	0.93
1985	0.75
1986	1.17
1987	1.02
1988	1.17
1989	1.02
1990	1.68
1991	0.66
1992	0.39
1993	0.54
1994	1.38
1995	0.81
1996	0.87

Irrigation Season	Modelled annual irrigation demand normalised by mean
1997	2.01
1998	0.93
1999	0.78
2000	0.75
2001	0.54
2002	0.99
2003	0.9
2004	1.29
2005	1.17
2006	0.78
2007	1.05
2008	1.11
2009	1.08
2010	1.14
2011	0.69
2012	1.53
2013	0.99
2014	0.99
2015	0.75
2016	1.11
2017	0.96
2018	0.84
2019	1.36

Appendix B – Example measured use data

■ **Table 1 Examples for groundwater supplies with no low-flow restrictions**

Irrigation season	Example A annual measured water use (mm)	Example B annual measured water use (mm)	<i>Modelled annual water use (mm)</i>
2012	136	39	170
2013	50	90	110
2014	36	85	125
2015	43	131	113
2016	71	71	122
2017	82	66	89
2018	37	53	98
2019	206	122	154
average	83	82	123

■ **Table 2 Examples for supplies with low-flow restrictions**

Irrigation season	Example C annual measured water use (mm)	Example D annual measured water use (mm)	Example E annual measured water use (mm)	Example F annual measured water use (mm)	<i>Modelled annual water use (mm)</i>
2012		55			170
2013	32	45		58	110
2014	106	76		45	125
2015	77	88		96	113
2016	59	76	10	107	122
2017	34	8	24	36	89
2018	77	18	121	35	98
2019	131	110	101	89	154
average	73	59	64	67	123

BEFORE THE HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER Proposed Plan Change 9 – Tūtaekurī, Ahuriri,
Ngaruroro and Karamū Catchments (TANK)

BETWEEN **HAWKE’S BAY WINEGROWERS ASSOCIATION
LIMITED; GIMBLETT GRAVELS
WINEGROWERS ASSOCIATION; VILLA MARIA
ESTATE LIMITED; PERNOD RICARD
WINEMAKERS NEW ZEALAND LIMITED
(collectively “THE WINEGROWERS”)**

AND **HAWKE’S BAY REGIONAL COUNCIL**

STATEMENT OF EVIDENCE OF EDWIN JOHN MASSEY ON BEHALF OF THE WINEGROWERS

WINE INDUSTRY SUSTAINABILITY PROGRAMME

11 MAY 2021



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A. INTRODUCTION

1. My full name is Edwin John Massey. I am currently employed as General Manager Sustainability at New Zealand Winegrowers (“**NZW**”). I have been in that position since September 2019. Prior to that, I was the Biosecurity and Emergency Response Manager at NZW, a position I commenced in January 2016.
2. My role involves the implementation of the NZW Environment Strategy through overseeing and coordinating the delivery of three key programmes:
 - (a) Sustainable Winegrowing New Zealand (“**SWNZ**”);
 - (b) Biosecurity – to mitigate the impact of new pests and disease on the wine industry; and
 - (c) Sustainability Guardians – to promote sustainability innovation in the wine industry through peer-to-peer learning.
3. I report to the NZW Environment Committee, a sub-committee of the Board chaired by the Board Deputy Chair.
4. I hold the following degrees from the University of Auckland:
 - (a) PhD in Geography – conferred in 2006.
 - (b) MSc in Geography – conferred in 2002.
 - (c) BA/BSc – conferred in 2000.
5. My evidence supports and gives further evidence on the submissions of Hawkes Bay Winegrowers Association (“**HBWA**”), Gimblett Gravels Winegrowers Association (“**GGWA**”), Villa Maria Estate Limited (“**Villa Maria**”) and Pernod Ricard Winemakers New Zealand Limited (“**PRW**”) concerning Proposed Plan Change 9 (“**PPC9**”) - Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments (TANK). HBWA, GGWA, Villa Maria, and PRW are collectively referred to as the “**Winegrowers**” in this evidence.

6. My evidence addresses the role of the national wine industry's sustainability programme, SWNZ in the context of PPC9, including Schedule 30 and the role of Farm Plans, Industry Programmes, and Catchment Collectives.¹
7. I am providing evidence on behalf of NZW, based on my experience in my role as General Manager Sustainability, with responsibility for implementing SWNZ within NZW. I am authorised to provide this evidence on behalf of NZW, which is intended to provide context and background to SWNZ and its role in farm environmental management in Hawke's Bay and nationally.

B. SCOPE OF EVIDENCE

8. In this brief of evidence, I address the following matters:
 - (a) The role of SWNZ;
 - (b) Benefits of SWNZ;
 - (c) Vineyard and Winery water use;
 - (d) Sustainable land use; and
 - (e) Farm Freshwater Plans.
9. In preparing this evidence, I have read and considered the section 42A report prepared in response to submissions on the PPC9 provisions and relevant appendices and their reports. I have also read the relevant section 32 reports.

C. EXECUTIVE SUMMARY

10. Sustainability is a crucial component of the New Zealand wine industry, with SWNZ having been set up to establish and implement sustainable wine production. SWNZ has been the New Zealand wine industry's flagship sustainability programme for over 25 years.
11. SWNZ sets standards and gives guidance on best practice across different aspects of the entire wine production chain. Its members submit information annually to NZW and are subject to independent verification. SWNZ has a very high participation rate, with

¹ Relating to POL TANK 23, Rules TANK 1 and 2 and Schedule 30.

96% of the national vineyard area and over 90% of wine produced in a SWNZ certified facility. SWNZ demonstrates the viticulture industry's commitment to protecting the people and places that make our famous wines.

12. Water management is a crucial aspect of sustainability. NZW and HBRC have closely aligned goals on the utilisation and management of freshwater resources. There is potential for SWNZ to be the industry programme that enables members to meet Hawke's Bay Regional Council's ("HBRC") freshwater objectives at minimum transaction costs. There is a need for continued engagement between HBRC and NZW to ensure that this potential use for SWNZ can be realised. There is otherwise a risk that decisions made in the Hawke's Bay will jeopardise NZW's ability to use SWNZ as a vehicle to meet the needs and objectives of other regional authorities.
13. The drivers behind HBRC's recent endeavours to ensure the highest standards of freshwater management in the region are acknowledged. However, care is required to ensure that PPC9 does not prevent or unduly limit SWNZ and the (best) opportunity it provides for its members and industry to meet HBRC's standards in a cost-efficient way. Generally, SWNZ also demonstrates the wine industry's vision of sustainability of winegrowing and as an environmentally conscious primary sector land use.

D. WINE INDUSTRY SUSTAINABILITY PROGRAMME

14. The New Zealand wine industry is recognised internationally for global leadership in sustainability. NZW is the national industry body that represents all commercial grape growers and winemakers in New Zealand. NZW has a vital role as a custodian to protect and enhance New Zealand's reputation for sustainability.
15. The NZW Environment Strategy outlines the key industry goals in this area across six different focus areas: *Water, waste, pest and disease, soil, climate change and people*. These goals are based on the United Nations Sustainable Development Goals.
16. In relation to water, our industry goal is to "*Be a world leader in efficient water use and the protection of water quality*". This goal recognises that water is critically important to the wine industry, whether that be for irrigation, frost protection or general winemaking activities. Our businesses must minimise water use and protect the purity of waterways to ensure wine supply remains clean and sustainable for the future.

17. SWNZ is the flagship sustainability programme for viticulture, which is used to track progress towards the goals set out in NZW's Environment Strategy. SWNZ originated in 1995. Twenty-six years later, 96% of the total New Zealand vineyard area and over 90% of the wine produced in New Zealand is SWNZ certified. SWNZ has approximately 2000 members.
18. SWNZ's goal is to raise the profile of the New Zealand wine industry's sustainability and be globally recognised as a leader in this area. To achieve this, SWNZ has the following objectives:
 - (a) Provide standards and guidance for members to ensure stewardship across key focus areas of sustainability.
 - (b) Provide members with a regular set of benchmarks, enabling them to make informed business decisions across key focus areas with the aim of continuous improvement.
 - (c) Protect and enhance the reputation of the New Zealand wine industry nationally and abroad by ensuring the industry's social license to operate.
19. SWNZ is a voluntary, externally audited programme based on continuous improvement and adherence to standards and guidelines issued by NZW. These standards represent best agricultural practice for the wine industry and encapsulate the six key focus areas of the NZW Environment Strategy.
20. Each year SWNZ members fill out questionnaires regarding their practices across these six focus areas to ensure that they are consistent with standards set by SWNZ. This information is submitted to NZW, who then certify that the relevant vineyard, winery, or wine brand are sustainable for the following year. To verify the information submitted by members is accurate, each member is audited by an independent auditor every three years. Auditors can issue corrective actions if members do not meet SWNZ requirements. If these corrective actions are not met, they can ultimately lead to deregistration.

E. BENEFITS OF SWNZ

21. SWNZ provides benefits to both individual members and the entire industry. Recent research conducted by AERU at Lincoln University (2017 and 2018) highlighted that

SWNZ is a key contributor to the New Zealand wine industry's reputation for sustainability. This reputation contributed to a willingness for consumers to pay a higher bottle price. SWNZ also helps to protect the industry's social license, reducing production costs.

22. Critical benefits for members include market access, guidance regarding maximum residue limits enabling members to target their spray regimes to the highest value market, and in-season benchmarking reports. Due to the very high participation rates, growers do not receive a specific premium for sustainably produced grapes. Instead, they benefit from the price premium wineries enjoy in the market or simply from market access.
23. The benefits of the SWNZ programme are relevant when considering the current and future needs of the Hawke's Bay wine industry and the economic and environmental objectives of HBRC. Because:
 - (a) SWNZ has the potential to be an effective vehicle to collect information required by HBRC about wine industry water use in the region.
 - (b) SWNZ has almost universal membership amongst Hawke's Bay wine industry members who account for approx. 4700 hectares of agricultural land use.
 - (c) SWNZ members are used to providing information on their practices each year to NZW, who could share them with HBRC if members consent.
 - (d) SWNZ members are currently subject to verification checks via SWNZ audits every three years.
 - (e) SWNZ produces benchmarking reports on water use. These can be shared amongst members to help promote best practice.
24. Taken together, there appears to be a considerable degree of alignment between SWNZ's and HBRC's objectives for water management, water use and sustainable economic development. The ideal outcome would therefore be for members to be able to use SWNZ as the Industry Programme (under Schedule 30, Section C) to generate the information required by HBRC in the relevant PPC9 planning provisions. If SWNZ is an accepted Industry Programme, SWNZ can provide the information on behalf of winegrowers at an economy of scale that reduces compliance cost for individual

winegrowers and lifts consenting costs and pressures from HBRC. Whether this is a viable proposition depends on the nature and detail of information required by HBRC, and compliance costs, such as around audit requirements, remaining reasonable for NZW to be able to meet through a levy on members at a national scale. I discuss these matters in further detail later in my evidence.

F. VINEYARD AND WINERY WATER USE

25. Each year SWNZ produces a National Water Use Report, compiled by independent consultants from the latest annual information submitted by SWNZ members. This provides a useful snapshot of vineyard and winery water usage, nationally and on a region-by-region basis.
26. In 2020, SWNZ reviewed the questionnaire to ensure more comprehensive information on water use is available. For the 2020/2021 growing season, it was mandatory for all vineyards nationally to report total water use for irrigation and frost protection. These results will be available in August 2021.
27. Nationally, total industry water use for the 2020 vintage was estimated to be 44,898,300 m³, 98% of which was used for irrigation—other uses such as frost fighting and in-winery use were much lower.
28. For the 2019/2020 growing season, all SWNZ members were asked about their irrigation optimisation techniques. It was not a compulsory question, but 1,025 vineyards responded. 68% of irrigated vineyard respondents indicated that they currently use soil moisture monitoring. 67% of irrigated vineyard respondents stated that they metered and recorded water use, consistent with 68% reported in 2018/2019. These figures are higher than the 34% who provided their water use records through the SWNZ questionnaire (40% of the irrigated area), indicating that not all vineyards with water use data are providing it to SWNZ.
29. In the Hawke's Bay, water use reporting increased from 49% of all vineyards in 2013/2014 to 63% of all vineyards in 2019/2020. This lack of comprehensive information in 2013/2014 was a crucial factor in SWNZ's changes in subsequent questionnaires to focus on water use.

30. The 2019/20 growing season, vineyard water use from SWNZ records in Hawke’s Bay is set out in Table 1:

Table 1: Irrigated area, water use, planting density and rainfall in Hawkes Bay 2019/20

	Irrigation area (ha)	Irrigated area	Irrigated area with recorded water use (ha)	Scorecard recorded use (m3)	Water use (mm)	Water use (litres/vine)	Planting density(vines/ha)	Total rainfall (mm)
Hawke’s Bay	3577	67%	2,263	3,380,618	149	509	2,390	293

31. NZW holds regional total irrigation water use estimates from the Hawke’s Bay dating back to 2013/2014. Over that time, the mean estimated total regional water use for irrigation has been 3.776 million m³ per annum. For the 2019/2020 growing season, the estimated total was 5.318 million m³. In my experience, relative to other primary sector land uses, wine production uses relatively little water in this regard.
32. Typically, a vineyard’s irrigation varies dependent on seasonal rainfall. However, in specific seasons it is the timing of rainfall, rather than the total amount, which is a more important driver of the total irrigation volume. For example, in 2019/20, irrigation was 56% higher than the 10-year average, despite rainfall staying at a level close to the average. The very high rainfall in October 2019 distorts the average figure, hiding the extremely low rainfall for the rest of the season. This lack of rain during the main growth period is what drove the large increases in irrigation that season and demonstrates the caution needed when looking at seasonal averages. Ms Taylor discusses the limitations involved with an ‘averaging’ approach to water use data over any identified time span.

G. SUSTAINABLE LAND USE

33. As outlined above, the New Zealand wine industry has a world-leading reputation for sustainability. We consider sustainability to represent the nexus of environmental, economic, and social wellbeing. NZW uses SWNZ to manage and mitigate the impacts of our production practices across these different categories. Through SWNZ, NZW has,

for over a quarter-century, set standards that have enabled members to measure themselves against others in their regions so that they can make informed business decisions on how to improve the sustainability of their business.

34. In my experience SWNZ provides strong evidence suggesting the sustainability of wine production as an agricultural land use. It is very challenging to consider one element of sustainability as mutually exclusive from another. The sustainability of wine production as a land-use has implications beyond the scope of water management.
35. For example, recent research conducted by Toitu Envirocare highlights that the GHG emission metrics from vineyard operations were estimated to be 3000 kgCO₂e/hectare, 270 kgCO₂e/tonne grapes, 0.15 kgCO₂e/\$grapes and 0.07 kgCO₂e/\$export revenue. Across these same metrics, vineyard emissions were favourable compared to dairy. The wine industry has far lower GHG emissions per \$ export revenue earned than dairy.
36. Land use changes are to be expected as New Zealand transitions to a low emissions economy. In many ways it makes sense for emissions-intensive land users to transition to viticulture in areas suitable for quality wine production; this will help to reduce New Zealand's emissions overall.
37. The Hawke's Bay is an area that contains land suitable for wine production. There is potential for land conversion to occur in several areas, such as the elevated terraces on both banks of the Ngaruroro River around Crownthorpe and Kereru. These areas are cool enough and have appropriate soil, slope, and river proximity to support high-quality viticulture.
38. However, any shift to increase or intensify the planted vineyard area in the Hawke's Bay to achieve a positive land-use change in terms of greenhouse gas emissions will not occur if constrained by regulations that render winegrowing uneconomic. For this reason, a broad view of what sustainable land use means is necessary, and in my view, HBRC would benefit from working more closely with NZW and SWNZ, on behalf of its members, to ensure the most sustainable land use outcome for the Hawke's Bay region.

H. FARM FRESHWATER PLANS

39. NZW is generally supportive of the outcomes that Farm Freshwater Plans (or Farm Environment Management Plans) ("**FFPs**") seek to achieve. As I have outlined above,

these outcomes are consistent with those NZW seek as an industry as part of our Environment Strategy. FFPs themselves have the potential to help ensure efficient water use and minimise the potential for downstream pollution.

40. However, I am concerned that FFPs will be applied as a blunt instrument within PPC9 in a manner that ignores the potential for solutions that achieve the same outcomes with fewer transaction costs. While I appreciate that PPC9 allows for catchment collectives and industry programmes, these do not appear to accommodate the SWNZ programme presently being run by NZW. In particular, I note:

- (a) FFPs do not consider NZW's potential to use the SWNZ programme to collect, report on and verify relevant information from members on their water use. SWNZ and HBRC have aligned goals regarding the sustainability of water use. It would be more streamlined and cost-effective for winegrowers if they only need to report information once: to the national industry body (through SWNZ) who in turn would share this information with HBRC. Creating an additional reporting requirement for very similar information seems unnecessary when there is the potential to work together to achieve the same end.
- (b) While SWNZ is a national programme, it is possible to seek specific information from members in particular regions or catchments, depending on the information required by regulators. There is excellent potential for HBRC to use SWNZ as equivalent to a FFP so that NZW members can fulfil their requirements and demonstrate their commitment to sustainable water use. Equivalence would be where SWNZ effectively delivers what (and instead of) a FFP. Enhancing SWNZ also helps ensure that the programme remains relevant to members. In my view, it is very much a "win-win".
- (c) Through equivalence, HBRC can demonstrate leadership in recognising Industry Programmes and highlighting what is possible to other regions around the country. NZW will be engaging with other Regional Councils in key winegrowing regions on the potential to use SWNZ to fulfil regionally specific requirements to ensure sustainable water use. The Hawke's Bay is New Zealand's second largest wine region, and there is an excellent opportunity for a partnership that will benefit both environmental and economic outcomes. At the very least, the Winegrower's submissions focus on the need for PPC9 to not create a regulatory

environment that prevents or unduly limits the work NZW is doing nationally to ensure sustainable water use in other regions.

- (d) Equivalence with SWNZ is favourable over a strict FFP approach. FFPs have been designed primarily to manage practices associated with pastoral farming and do not work particularly well with viticulture. SWNZ would ensure that there was a more tailored approach for the reporting and regulation of viticulture, while still meeting the requirements and outcomes of PPC9.
- (e) It appears that SWNZ meets many of the governance and management criteria set out in Section C of Schedule 30. The SWNZ questionnaire could be adapted to collect data across the water and soil focus areas to enable our members to meet many, but not all, of the requirements set out in the Catchment Collective Freshwater Plan Requirements. At present, SWNZ cannot meet the auditing requirements due to the cost of annual audits (currently, SWNZ audits are every three years as opposed to annual audits as required by Schedule 30). I consider that requiring our members, who conduct a relatively low impact land use, to be subject to annual audits is a particularly onerous regulatory burden. Instead, the audit requirements should be scaled consistently with the level of risk that a particular land use poses to water quality. Annual audits for vineyards, which are low water users and contaminant leachers, is in my view a strict requirement.
- (f) To ensure equivalence with planning requirements, NZW supports working with HBRC to make regionally specific adjustments to SWNZ so that our members can fulfil requirements through equivalence. It is not clear from Schedule 30 whether there is sufficient flexibility for these adjustments to be made or recognised.
- (g) There is also residual uncertainty over whether SWNZ will qualify in the first instance, with a question mark over the defined “programme area” the Regional Council needs to approve before industry programmes are implemented. NZW would prefer these types of matters to be resolved with the Regional Council at the earliest possible opportunity, with a view to avoiding uncertainty and delay.

41. The section 42A report considers that existing industry programs do not have sufficient direction to landowners about contaminant loss, mitigation measures and timeframes that contribute to local water quality issues. As outlined above, should HBRC consider

SWNZ as an equivalent programme, I see no impediment to NZW engaging with HBRC to ensure the outcomes of these measures can be achieved. I note:

- (a) It is relatively common for NZW to add requirements into SWNZ. For example, the 2021 season is the first time SWNZ will collect information on industry fertiliser use. Until now, the industry use of fertiliser has been considered a lower priority for SWNZ since we use relatively little fertiliser compared with other primary sectors. Typically, in the Hawke's Bay, wine industry fertiliser use will be targeted at younger vines during the establishment phase, with only occasional applications after that in specific circumstances.
 - (b) Nonetheless, industry fertiliser use is becoming increasingly topical due to its potential impact on water quality and climate change. Due to our low level of fertiliser use, it is unlikely that our members will be able to make the same level of reductions as other primary sectors. Using a tailored approach like SWNZ to highlight the low volume of leaching from fertiliser use appears to be a better way to illustrate the sustainable use of water resources.
42. There is a concern that the section 42A report underestimates the transaction costs for all parties (landowners and HBRC) of establishing, verifying and maintaining the information flow required by HBRC to meet its objectives. In my experience, it is a lot easier to design reporting regimes to achieve designated outcomes. The difficulty is in implementing and obtaining widespread participation in implementing the regime. The way to do it is to make it cost-effective and capable of producing productive outcomes for participants. In my view, aligning SWNZ and Schedule 30 would better achieve this.
43. Industry programmes can help reduce or externalise these transaction costs for the benefit of all parties. Working with NZW to ensure SWNZ equivalence would provide HBRC with the potential to succinctly collect relevant information from all SWNZ members in the region and ensure its verification at minimum cost. I am confident that using SWNZ as the vehicle to collect information from our members will help to prove that sustainable winegrowing can deliver economic benefit to the Hawke's Bay without compromising HBRC's objectives for water quality and ecosystem health.
44. The key benefit of industry programmes like SWNZ is that they collect information on behalf of many members and internalise the transaction costs of information collection while protecting the privacy of individuals. These benefits are threatened by regulatory

regimes which require increasingly specific information from individual members based on their particular location at a sub-catchment level. It is considerably easier for NZW to use SWNZ to represent the interests of all our Hawke's Bay members as a collective to meet water regulations than it is for NZW to represent the interests of members if these regulations differ on a catchment-by-catchment level or even lower level of granularity.

45. In conclusion, sustainable water use is a key goal for both HBRC and NZW. NZW consider that it has, through SWNZ, an effective means for its members to meet the outcomes required by HBRC. It is well accepted by industry that sustainable water use is essential, not only to NZW members' financial interests and the Hawke's Bay economy, but also to the industry's social license to operate and the wellbeing of the Hawke's Bay community. There needs to be sufficient flexibility within PPC9 to ensure that the Winegrowers (through its industry groups) can work with HBRC to ensure that SWNZ can be aligned to meet PPC9 outcomes and demonstrate the wine industry's commitment to being a world leader in sustainable viticulture practices.

Dr Edwin Massey

11 May 2021

BEFORE THE HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER Proposed Plan Change 9 – Tūtaekurī, Ahuriri,
Ngaruroro and Karamū Catchments (TANK)

BETWEEN **HAWKE’S BAY WINEGROWERS ASSOCIATION
LIMITED; GIMBLETT GRAVELS
WINEGROWERS ASSOCIATION; VILLA MARIA
ESTATE LIMITED; PERNOD RICARD
WINEMAKERS NEW ZEALAND LIMITED
(collectively “THE WINEGROWERS”)**

AND **HAWKE’S BAY REGIONAL COUNCIL**

STATEMENT OF EVIDENCE OF EMMA LOUISE TAYLOR ON BEHALF OF THE WINEGROWERS

VITICULTURE IN HAWKE’S BAY

11 May 2021



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A. INTRODUCTION

1. My full name is Emma Louise Taylor. I am an independent viticultural consultant with over 20 years of viticulture experience in Hawke's Bay. One of my clients is Villa Maria Estate ("**Villa Maria**"). I am a board member of New Zealand Winegrowers ("**NZW**") and represent the Hawke's Bay Winegrowers Association ("**HBWA**") and the Gimblett Gravels Winegrowers Association ("**GGWA**").
2. Villa Maria is the largest landowner in the Gimblett Gravels and is actively involved with HBWA and GGWA. My evidence supports the submission by HBWA (submitter 29), GGWA (submitter 238), Villa Maria (submitter 208), and Pernod Ricard Winemakers New Zealand Limited ("**PRW**") (submitter 208). HBWA, GGWA, Villa Maria and PRW are collectively referred to as the "**Winegrowers**" in this evidence.
3. My evidence supports and provides further evidence on the submissions of HBWA, GGWA, Villa Maria and PRW concerning Proposed Plan Change 9 ("**PPC9**") - Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments (TANK).
4. I hold a Masters in Science (1999) in Physical Geography. My thesis specifically related to the accumulation of copper in vineyard soils as a result of spray application. This thesis was funded by a research grant from New Zealand Winegrowers.
5. I have worked as a Viticulturist for 21 years. Since 2000 I have been employed by Villa Maria in various roles, including:
 - (a) Viticulture Cadet;
 - (b) National Research Viticulturist;
 - (c) Company Viticulturist;
 - (d) Hawke's Bay Company Vineyards Manager;
 - (e) Viticulture Project Manager;
 - (f) Nursery Viticulturist; and
 - (g) General Manager (Nursery).

6. In 2007, I was the New Zealand and Hawke's Bay Young Viticulturist of the Year and the New Zealand Young Horticulturist of the Year.
7. I have held, or hold, the following relevant Committee and Board Memberships:
 - (a) 2017 – 2019: GGWA TANK representative;
 - (b) 2020 – Present: Chair, NZW Research Advisory Committee
 - (c) 2017 – Present: Member, NZW Environment Committee;
 - (d) 2014 – Present: Member New Zealand Viticulture Nursery Association (ViNA);
 - (e) 2015 – Present: Chair, ViNA;
 - (f) 2017 – 2018: NZW Member, Regional Research Institute Industry Advisory Committee;
 - (g) 2015 – Present: NZW Vineyard Ecosystems – Project Management Team;
 - (h) 2015 – 2017: NZW Vinefax – Project Management Team;
 - (i) 2010 – 2014: NZW Grapevine Wood Disease – Project Management Team;
 - (j) 2008 – 2014: NZW Virus Elimination Project – Project Management Team;
 - (k) 2008 – 2014: National Co-ordinator, Young Viticulturist of the Year;
 - (l) 2008 – 2012: Member, EIT Wine Science and Viticulture Advisory Board;
 - (m) 2008 – 2014: Member, New Zealand Winegrowers Research Committee;
 - (n) 2005 – 2014: Member, HBWA Focus Vineyard Group;
 - (o) 2008 – 2011: Chair, HBWA Focus Vineyard Group.

B. CODE OF CONDUCT

8. I confirm that I have read and agree to comply with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the

opinions that I express and that, except where I state I am relying on information provided by another party, the content of this evidence is within my area of expertise.

C. SCOPE OF EVIDENCE

9. This evidence addresses the following matters:
- (a) Background to the HWBG and its position on PPC9.
 - (b) Viticulture in the Hawke's Bay.
 - (c) Effects of water shortage/limitations.
 - (d) How the PPC9 provisions impact on viticulture operations.
 - (e) Future of viticulture as land use.
 - (f) Land use change.
 - (g) Zone 1.
10. In preparing this evidence, I have read and considered the section 42A report prepared in response to submissions on the PPC9 provisions, and the relevant appendices and their reports. I have also read the relevant section 32 reports.

D. EXECUTIVE SUMMARY

11. Irrigation is critical for viticulture in Hawke's Bay.
12. Approximately 97% of wine sector water use is for irrigation/frost protection. Of the vineyards using irrigation, about 95% is applied by the most efficient drip method.
13. 91% of the irrigated viticulture land area in Hawke's Bay uses soil moisture monitoring to determine when to irrigate.¹ Viticulture is a responsible water user, because over-irrigation of grapevines has a negative impact on wine quality. So, in a wetter year, irrigation use on vineyards is reduced.
14. Most subregions in the Hawke's Bay are reliant on irrigation. Water is required to ensure vine canopies can retain their ability to photosynthesise sufficiently to ripen

¹ SWNZ Scorecard 2019/2020.

grapes and store carbohydrates for the following season. In the Hawke's Bay, the dry climate means that irrigation is used to supplement rainfall, especially during the hot summer months. Unrealistic limits on water allocation for irrigation will reduce the ability of the vine to photosynthesise correctly and result in decreased canopy growth and yield, impacting overall quality. In severe situations, a lack of water could stress the vine, resulting in complete defoliation of the vine. Without leaves, vines cannot ripen their fruit and the grapes will shrivel before reaching maturity. The grapes would be un-harvestable and, in extreme circumstances, would not recover, leading to vine death.

15. These factors would mean that viticulture in the Gimblett Gravels and Bridge Pa Triangle in particular, which are on lighter soils with minimal water holding capacity, would not be economically viable due to dramatically reduced yield capacity, fruit quality, and potential vine death.
16. The definition of Actual and Reasonable proposed within PPC9 will not allocate enough water to winegrowers to irrigate their crops, particularly in times of drought, which has significant effects on vine productivity and could ultimately damage vines. As discussed in my evidence, the "least of either" rule (where irrigation allocations will be the lower of an average seasonal use or an IRRICALC modelled amount) effectively allocates 'the lowest of the lows'. The average seasonal use and the IRRICALC modelled amount are both below what vineyards require in times of drought. Vineyards use approximately 1/3rd of the irrigation per area of land compared to other irrigated crops and have the lowest diffuse discharge profile of any intensive land-use activity.² They are a sustainable land-use option. However, vineyards are being unduly restricted by the proposed policies within PPC9. Not only does the proposed plan change limit viticulture without justification, but it also disincentivises others to invest and convert to a sustainable land-use option.

E. BACKGROUND

17. HBWA is the industry representative body for grape growers and winemakers in the Hawke's Bay. All growers and wineries receive automatic membership through payment of industry levies. HBWA is affiliated with New Zealand winegrowers and has

² Clothier et al 2017.

a local membership of 183 growers and wineries – accounting for 10% (by tonnage) of the national total.

18. HBWA has been an active participant in regional planning process over several years. HBWA was a submitter to the Ngaruroro Water Conservation Order, where it supported the WCO on the upper reaches of the river and reached an agreement outside of the Environment Court with the applicants regarding a WCO on the lower reaches of the river. HBWA has been involved in the Tukituki Plan Change 6 working group, TANK, HBRC Horticulture Sector Group, and HDC primary producers round table.
19. At a general level, HBWA and its various members (including those submitters supporting the HBWA evidence before the Hearing Panel) are concerned with policies and methods within PPC9, including the rules that put water allocation limits in place and restrict land-use change within the TANK catchments.

F. VITICULTURE IN HAWKE'S BAY

20. The wine industry is dependent on having a sufficient and reliable supply of water.
21. 77% of vineyards in the Hawke's Bay (approx. 3,577Ha³) are irrigated, including all the vineyards in the economically important Gimblett Gravels and the Bridge Pa Triangle subregions. Water is also required in the winery for cleaning, with hygiene critical to winemaking processes.
22. In short, without a sufficient and reliable water supply, grapes do not grow, and wine cannot be made to meet local, national and international demand.

Why is water essential?

23. All plants, including grapevines, carry out photosynthesis. Photosynthesis uses water and CO₂ as inputs and produces sugars/carbohydrates and oxygen. Oxygen is a by-product that is released into the atmosphere and carbohydrates are used for plant growth. The more water available to a plant, the more it will grow.
24. The amount of water a vine will need to ripen grapes depends on several factors, including the variety of grape, rootstock, climate, soil, and crop load. In some New Zealand regions, such as Gisborne, seasonal rain and clay soils allow vines to survive

³ SWNZ Scorecard 2019/2020.

and produce a crop without supplemental irrigation. However, vineyards in New Zealand are generally planted in much drier areas and in soils that have less water holding capacity. This principle also applies in the Hawke's Bay.

25. The vast majority of New Zealand vineyards require supplemental irrigation to maintain vine health and productivity. Many wine varieties grown in the Hawke's Bay (for example, the high-end red wines produced in the Gimblett Gravels) come from poor soils that hold very little water. These soils would otherwise have very low productive use, which improves land-use sustainability (as I discuss later in my evidence).
26. High draining soils that do not hold water are perfect for grape growing because it enables growers to precisely limit water to the vines. Limiting a vine's water is beneficial for grape production because excessive irrigation encourages continual growth of the canopy, requiring constant trimming of vine shoots and mowing the interrow, driving up farming costs. In addition, while a canopy is necessary for photosynthesis to occur and generate carbohydrates for grape production, an overly dense canopy (caused by excessive irrigation) also creates an unfavourable microclimate for developing fruit by limiting sun exposure, increasing humidity, and restricting air circulation and spray penetration. Excessive water lowers fruit quality and increases fungal disease.⁴ Through viticultural research, it is well accepted that excessive irrigation of grapes leads to higher farming costs, increased disease pressure, and reduces overall grape quality.⁵
27. Applying water to vines is a careful balancing act between allowing the vines to grow – but not too much to compete with grapes. As such, vineyards are one of the most responsible water users in the primary industry sector. Grape growers are careful only to irrigate the vines when they need it and to put only enough water to continue fruit development and ripening, but not enough to harm the crop or slow ripening. Most vineyards in New Zealand use drip irrigation to make efficient use of water and reduce evaporative losses. Drip irrigation is suited to vineyards as it doesn't introduce extra humidity into the canopy – reducing the chance of fungal disease occurring. Irrigation is primarily scheduled using soil moisture probes or vine water status monitoring to ensure water is only put on when the vines require it. In the 2019/2020 season, figures

⁴ Austin and Wilcox, 2010.

⁵ Myburgh, 2006.

from the SWNZ scorecard show that 91% of irrigated vineyard land in Hawke's Bay utilise soil moisture monitoring to determine their water use.⁶

28. In my opinion, the wine industry is already a very efficient water user. Notwithstanding this, the industry continues to actively conduct research and improve practices to increase water savings without compromising quality or vine health and productivity.

How vines use water

29. Vines are a living plant and, as such, require the basics of soil, light and water to survive. Because vines are usually grown where there is minimal rainfall, careful irrigation management is crucial to a vine's ability to develop a canopy, set good fruit levels, ripen the fruit, and then prepare the vine for the following season as it enters dormancy.
30. Plant and fruit growth in any stage is driven by water uptake expanding cells.⁷ Critical events happen in each stage that affects the current season's productivity, the following season's productivity, or both.
31. In **Appendix A**, I have set out a well-accepted industry explanation of the seasonal process of growing grapes. This simple summary explains, in general terms, that there are differing water needs throughout the year depending on when priority is given to developing the canopy and producing grapes. It also illustrates that water is a vital input for vineyards' productivity and long-term sustainability.

Hawke's Bay viticultural water use

32. As I have already noted, 77% of vineyards in the Hawke's Bay require irrigation at some point in the season to maintain vine activity and successfully ripen the fruit.⁸
33. In some New Zealand regions, enough rain falls in the winter and is stored in the soil to support reasonable canopy development in the early stages of vine growth. There are, however, specific challenges within the Hawke's Bay region. There are areas with high draining soils, such as the Gimblett Gravels, where supplemental irrigation may be necessary early in the season (the canopy development stage) to generate enough leaf area to ripen an economically sustainable crop. Alternatively, in some soils, like those

⁶ SWNZ Scorecard 2019/2020.

⁷ Shultz and Matthews, 1993.

⁸ SWNZ, 2018.

of the Bridge Pa Triangle, enough water is usually stored in the soil to develop a good canopy, but there is not enough water in the soil to sustain that canopy in spring for the full season, necessitating supplemental irrigation over the course of the season.

34. Therefore, most vineyards, especially those in the economically important Gimblett Gravels and Bridge Pa Triangle regions, require irrigation throughout the entire season, especially in the summer heat when soil reserves have been depleted, and fruit development and ripening are occurring.
35. A research project funded by Hawke's Bay Winegrowers and NZ Winegrowers, and conducted by Mark Krasnow, '*Thoughtful Viticulture across the 2017-2018 and 2018-2019 seasons*' (the "**Optimisation of Irrigation Project**"),⁹ was aimed at optimising water usage in Hawke's Bay vineyards and investigating the bare minimum of water needed to maximise quality and maintain economically sustainable yield. Vines were frequently monitored for water potential and were only irrigated when their water potential fell below a threshold value. Irrigation threshold values were chosen that were specific for each variety and changed based on the developmental stage of the vine.
36. The Optimisation of Irrigation Project looked at the 2017-18 season, a more or less average season in terms of rainfall, with 423.5 mm falling from September through April. The 30-year long term average for Hawke's Bay is 455.2 mm.¹⁰ The study showed that the water needs for all vineyards were especially pressing during ripening in the December-February window, with most vineyards requiring water early in this window. Obviously, in a drought year, the vines would dry out much faster, and the irrigation amounts to sustain them would need to be greater. Even in this best-case scenario, it was evident from the study that the vines in the Hawke's Bay acted similarly to vines all over the world: they still required irrigation to ripen the fruit and replenish reserves.
37. In addition, the culmination of three years monitoring of soil water use in vineyards in both Hawke's Bay and wider New Zealand by Clothier et al,¹¹ showed that because of managed water use at vineyards, vineyards were net positive land users, returning more than 100 mm of water to the aquifer than it extracted for irrigation. As I discuss below, the efficiency of viticulture in terms of its water use is a double-edged sword,

⁹ Krasnow et al (2020).

¹⁰ Vinefacts, 2018.

¹¹ Clothier et al 2020.

with the allocation limits proposed under PPC9 now effectively locking in water use levels to the “lowest of the low”, thereby discouraging growth and investment in the wine industry.

Soil Types

38. While vineyards have a low overall environmental footprint, the wine sector stands to be one of the most affected by controls on water quality and quantity, as vineyards generally occupy the lightest soils closest to rivers, including the Ngaruroro.
39. The lighter soils are often the most suitable for grape growing. The light alluvial soils have little water holding capacity and are incredibly free draining. This prevents any water from sitting around the roots of vines, and irrigation is key to providing just enough water to the vines to ensure that they survive. These soils support a land-use which uses approximately 1/3rd the water of other irrigated crops. However, by virtue of its location, these land-uses are the most likely to be affected by controls concerning rivers and groundwater connectivity rules.
40. In addition, viticulture is not only an efficient water user – it has also been shown that in the context of the nitrogen (N) and phosphorous (P) leaching numbers, viticulture is at the very low end of the spectrum for intensive horticulture and comparable or better than the low end of extensive agriculture.
41. In 2017, Brent Clothier modelled nitrogen leaching of 87% of New Zealand vineyards and found that leaching level to be 8 kg N-NO₃/ha/y and 0.25kg-P/Ha/y.¹² Further, between 2017 and 2020, Brent Clothier and his team monitored vineyard soils in Hawke’s Bay and Marlborough and showed that the vineyards preserved the natural soil capital of major stocks, with minimal to no change in total nitrogen levels. Clothier concluded that viticulture, through its very low levels of nitrate leaching, parsimonious use of water for irrigation, and net positive recharge of groundwater, had very strong eco-credentials.¹³

¹² Clothier and Green (2017).

¹³ Clothier et al. (2020).

42. Both pieces of research led by Brent Clothier prove that when evaluating a sustainable land use option for the Heretaunga Plains, there would be not many other industries that can provide an economic return, while having such strong eco-credentials.

G. EFFECTS OF WATER SHORTAGE/LIMITATIONS

43. Water is absolutely necessary for all stages of grape production. Limitations in water lead to the slow growth of photosynthetic tissues, meaning the vine can only make limited carbohydrates from photosynthesis during the season. Moreover, in-season water limitations cause leaves to close their stomata, meaning little or no photosynthesis, impacting the vines' canopy, yield, and ability to ripen fruit. A 2016 trial looking at Maximising Irrigation Savings in Grapevines in MLB showed that a reduction in water of 80% reduced yield by 45%. In addition, wine made from the reduced irrigation trial areas resulted in winemaker evaluations concluding that the overall wine composition had been detrimentally affected.¹⁴

44. In extreme cases, or prolonged drought, complete defoliation of the vine can occur. Figure 1 and 2 set out below are illustrative of vine defoliation. Figure 1 highlights a vine displaying water stress and the start of defoliation. You can see the bunches still green on the vine. These bunches did not ripen as there were no leaves to provide energy to the bunches to complete ripening. Figure 2 shows an entire vineyard that has lost its canopy and bunches as a result of water stress. Both examples were in vineyards that were planted in Zone 1 areas in Hawke's Bay.



Figure 1: A vine in defoliation

¹⁴ Mercer et al (2016).



Figure 2: a vineyard that has completed defoliation as a result of water stress

45. Without a steady supply of carbohydrates from photosynthesis, a vine's productivity will drop below what is economically sustainable through reduced fertility, smaller berry size, insufficient ripening of fruit for winemaking, or a combination of these. Chronic, severe water stress will eventually kill grapevines.
 46. The effects of drought or water shortage on vineyards (particularly those with low water retaining soils) is substantial. It makes it harder to operate to standard levels and it could cause a crop to be lost, or permanent damage to vines. Viticulture's experience of the 2019-2020 and 2012-2013 droughts reinforces the critical importance of ongoing access to freshwater for crop protection purposes, and to protect the viability of vineyards.
- H. PROPOSED PLAN CHANGE 9 (PPC9)**
47. I have been involved in the PPC9 process from an early stage. I became the GGWA representative on the TANK stakeholders group in 2017. It was around this time that the Heretaunga Plains aquifer water models were made available. Once the modelling was available, it was evident that stakeholders needed to work together to reduce water take from the Heretaunga Plains aquifer while enabling good practice to be adopted (for water management) to allow horticulture to continue on the plains.
 48. PPC9 has imposed the same sinking lid approach to viticulture as every other agricultural activity without regard to viticulture's status as an efficient water user already. Viticulture is a low water user/nutrient leaching activity, comparative to other users who have naturally high water use and leaching or have lagged in implementing

good practice. I explain this in further detail below.¹⁵ It has the flow-on effect of limiting viticulture to its current water use, which prevents expansion within property boundaries (through intensification) and the change of land use to meet market demand, climate change or scientific improvements in growing.

49. Vineyards have been planted in Hawke's Bay since the 1800s. Some of the oldest viticulture land in New Zealand is in Hawke's Bay. Over time, viticulture in New Zealand has progressed and advanced with innovations and technologies being adopted to enhance the quality of the fruit harvested and the viability of the vineyard. One of the more recent trends (in the last 20 years) is the adoption of higher density planting of vineyards. Vineyard density in New Zealand was traditionally dictated by tractor width; with the development of newer, lighter, narrower, more fuel-efficient tractors, vineyards are able to plant our vineyards at a closer planting density per hectare. This means that vineyards can increase productivity and return within existing land footprints, thus ensuring vineyards can continue to be financially viable.
50. In 2003, a study by Steve Green showed that an increase in plant density by 24% from 1860 vines per hectare to 2315 vines per hectare requires an extra 10% in water for irrigation.¹⁶ The study concluded that winegrowers would not need to worry about extra water for their increased plantings, as there was plenty of flexibility within their current consents to allow for this extra water. These conclusions are undone by PPC9. Under PPC9 there would not be enough water for the existing vineyard to continue, let alone any development of higher density, and therefore more efficient, plantings.
51. Vineyards in New Zealand have a life span on average of 25-30 years. At the conclusion of their life span, they succumb to wood disease and viruses, resulting in a loss of productivity and economic viability. NZW have invested heavily in research aimed at understanding and combatting these life shortening issues. However, at the moment, vineyards are set for replanting at some stage between the 20 and 30 year age mark. A significant portion of vineyards in Hawke's Bay were planted in the early 2000s, which means that a similarly large portion of vineyards in Hawke's Bay will be replanted within the lifespan of PPC9. Even if a vineyard was replanted to the same density and specifications as the vineyard it was replacing, it requires more water than a mature vineyard. Young vines are at greater risk during drought because of their small and

¹⁵ See paragraphs 61-66.

¹⁶ Green et al (2003).

shallow root system.¹⁷ If a vine does not have enough water at planting, it will never recover. This is particularly evident for younger vines. New vines that do not receive enough water during early growth will be more likely to continue to under perform in terms of quality and yield than vines that received enough water during this period. Under PPC9, the reduction in water allocation to vineyards based on their average water use for the 10 years preceding 2020, does not allow sufficient water for any replanting of vineyards to occur.

Actual and reasonable for irrigation takes - the “least of either” rule

52. PPC9 will phase out over-allocation by allocating water according to Actual and Reasonable use. The definition of Actual and Reasonable for irrigation takes is “the least of either” an amount determined by accurate water meter data or IRRICALC.¹⁸
53. I have concerns about winegrowers being required to adopt a water allocation limit based on the lesser of these two options. There are three main concerns:
- (a) **First**, the option to be allocated water use based on water meter data currently measures the water use by an average annual amount, rather than (as previously the case, prior to the section 42A report) by reference to a maximum over the ten-year period. I discuss this in further detail later in my evidence but note at this point that the approach underestimates viticulture’s actual use of water, particularly in drought years.
 - (b) Vineyards have different water needs year-to-year, with some years requiring higher takes than others. In my experience of 2019 – 2020 (a drought year), the demand for water was higher than the previous several years.¹⁹ If the average rule were applied to 2019 – 2020, vineyards would not have had enough water allocated to meet their actual needs. This would have had consequential effects on grape production and potentially long-term ramifications to vine health caused by reduced photosynthesis and, in extreme cases, defoliation (as I have referred to earlier in this evidence). History shows that there will be droughts and fluctuating water demand in the future, and in my opinion, PPC9 needs to

¹⁷ Shortt (2020).

¹⁸ See definition of ‘Actual and Reasonable’ in the section 42A Report, at Appendix 1A.

¹⁹ See Appendix A to the Brief of Evidence of Andrew Dark.

provide a mechanism to manage these realities/constraints in a way that does not unduly restrict viticulture.

- (c) It is important to note that although vineyards will have some years where water need is higher, there are other years where water need will be low. In low years, where there is sufficient rain, vineyards do not irrigate their crop to hit their water allocation. As explained previously, over irrigation is detrimental to vine health and wine quality. A TBG project on the Gimblett Gravels in 2000 stated that in a dry year (1997-1998), vineyards will use as much as 307% more water than they would use in a wet season (1995-1996).²⁰ This illustrates the disparity.
- (d) Using an averaging approach, the Council will underrepresent the true actual and reasonable use that a vineyard requires for 4 years out of 10 – potentially by catastrophic amounts. Dr Dark addresses ‘averaging’ in his evidence.
- (e) PPC9 is also structured in a manner which rewards poor agricultural practice. It rewards today’s profligate users and restricts the future options for wise users of water. We have adapted our water management strategies over time to maximise efficiency, but water allocation needs to reflect the requirements for viticulture based on maximum usage. The overall allocation limits should be based on ‘peak usage’, aligned to the peak limit of 9,000,000m³ which would happen in a dry year. By including the water use from a wet year when determining average use (as is the case with PPC9) – there is the likely chance that water will be under-allocated, which might appear to be an ideal goal, however, it will come with significantly economic repercussions.
- (f) **Second**, there are limitations around IRRICALC’s ability to correctly model viticulture irrigation. The Section 42A report says that IRRICALC tends to overestimate water needs for irrigation.²¹ In my experience, contrary to the Section 42A report, IRRICALC does not accurately model viticulture’s water usage. If the IRRICALC model is applied to the 2019 – 2020 year, most vineyards would not have had enough water to meet their needs. The evidence of Dr Dark discusses this issue. Again, having accurate water allocation is critically

²⁰ Caspari et al (1998).

²¹ Section 42A Report, paragraph 2065.

important when considering the effects of drought on vine health and vineyard productivity.

- (g) **Third**, the proposed PPC9 rule allocates water based on the lower of the average take and the IRRICALC model. This “least of either” rule is particularly restrictive in circumstances where both options allocate water below vineyards’ actual needs. Effectively, the rule is allocating water for its lowest productive user (vineyards) at ‘the lowest of the lows’.

54. These factors mean that viticulture will be required to comply with an Actual and Reasonable allocation that is either lower than its actual peak use by being held to an average (for example, in times of drought) or based on a modelled irrigated use that may not reflect the local environment. Dr Dark addresses these matters in his evidence.

55. Having worked in viticulture for many years, I am concerned that the average allocation method proposed by PPC9 will simply not be enough. The change from the “maximum” to the “average” has come out of the blue as part of the section 42A report and does not, in my opinion, account for the practicalities of viticulture operations. Specifically:

- (a) Averaging the annual usage will under allocate water for irrigation. As I have noted above, the year-to-year highs and lows play a significant role in determining vineyards’ actual need. In years of drought, there is an actual need for that water, so low usage years should not be accounted for in measuring actual usage.
- (b) The definition requires “accurate water meter data”. However, it is not clear what constitutes accurate water meter data for the Council’s purposes. In my view, some clarity should be provided to users so that they have certainty that their ongoing data collection will be satisfactory. While almost all vineyards have metered wells, not every vineyard has kept long term records of water use from season to season. With the increased move to telemetry, the digital storage of these records increases the length of time the records are kept, and will provide a good basis for accurate water use going forward. This, however, does not address the gaps in data for historical record use that some vineyards will have.

- (c) The calculation of average annual usage penalises irrigators who have been using best practice and rewards slow adopters. This is particularly impactful on viticulture, which has invested in low water use and has a biological incentive to reduce water.
 - (d) It is unclear whether the 2 May 2020 cut-off date includes the entire 2019 – 2020 water year, which does not finish until 30 June 2020.
56. I note that the definition of ‘Actual and Reasonable use’ proposed within the section 42A Hearing Report permits the use of an alternative water demand model but does not clarify when and how the water demand model will be considered an adequate substitute. Where users are being expected to comply with lower water allocations (and potentially an allocation lower than their actual need), it would be my preference that vineyards have an option of using a water demand model that can accurately model water use. This could be addressed through an amendment to the defined term in PPC9.

Actual and Reasonable (90million m³ interim limits)

57. In managing the allocation and use of groundwater in the Heretaunga Plains Groundwater Quantity Area, PPC9 adopts an interim allocation limit of 90,000,000 m³ based on the “actual and reasonable water use”.²²
58. I am concerned that the interim limit does not account for water use post-2017 through to 2020. It also appears that the change in the definition of Actual and Reasonable to account for the average, and not the maximum demand of water, is an attempt by Council officers to shoehorn the allocated amounts into the 90,000,000m³ interim limit without regard to what is actually occurring on the ground. I agree with the reservations expressed in the submissions of various winegrowers, including HBWA, that the “interim limit” is a modelled estimate and not a true reflection of water needs amongst the industry.

Can Hawke’s Bay Winegrowers achieve reductions?

59. PPC9 adopts a sinking lid approach to water allocation. As I have explained above, viticulture is a low water user, having already reduced its water use to optimise grape

²² POL TANK 37(a).

growing. However, having reached low water use, it is now difficult for viticulture to reduce water use further to comply with sinking lid limits when in effect it has already been doing so for an extended period of time.

60. To add to this, year-to-year fluctuating environmental conditions, where water use one year may be significantly higher than another, increases the difficulty to meet the reductions. As demonstrated in the 2019 droughts, there are years where viticulture requires water use above its average. If it is unable to take water above the average, there will be significant impacts on viticulture production during drought years.

I. FUTURE OF VITICULTURE AS LAND USE

61. The sinking lid approach proposed by PPC9 impacts the intensification of land use. While this may be an intended effect of PPC9, I do not endorse the blanket approach proposed by Council.

62. The effect is particularly acute for low water users, such as viticulture, who have a low water allocation from which to intensify. The current provisions inappropriately restrict an increase in crop density, the re-establishment of vines, and growth of new vines (which require higher water usage, refer paragraph 50 and 51). It places very real limitations on the ability of winegrowers to expand/grow their businesses. This has implications for the longer term ability of winemakers to meet demand, but also creates flow-on effects for the sustainability of some businesses in circumstances where costs of operation are increasing (for example the minimum wage increases). In other words, the opportunities to intensify and meet those costs are being limited through regulation. It is not obvious to me that the Regional Council has considered these factors as part of any cost/benefit analysis.

63. I acknowledge that a purpose of PPC9 is to reduce water use and allocation limits, and that as a general rule, intensification conflicts with that purpose. In my view, however, viticulture can be intensified consistently with PPC9 objectives and sustainable management.

64. Intensifying viticulture does not necessarily mean increasing the area of land allocated for grape growing. Viticulture can be intensified by increasing the density of vine rows, which has several positive effects. Firstly, the yield per area of land increases, meaning that land is used more efficiently. Secondly, with advances in technology designed

around narrower planting, higher density vineyard planting allows for the adoption of more specialised mechanical management options such as over row tractors and sprayers, which can apply targeted spray to multiple rows, thereby reducing both chemical application and soil compaction. Narrow row vineyard tractors can be used, which are more fit for purpose than wider farm tractors. These smaller tractors can also reduce fuel usage on the vineyard. Intensification of planting can reduce vine vigour slightly, as a result of increased vine competition, and this impact can be elevated with narrow interrow posts; this, in turn, will create narrower rows that are less dense, thus reducing disease pressure and the need for chemical intervention.

65. It is my opinion that viticulture is one of the most sustainable of all primary industry land uses. This view is shared by Dr Massey in his evidence regarding the sustainability of the wine industry in New Zealand. Comparatively, intensifying viticulture where vines are planted at between 3000 and 5000 vines per hectare compared with the traditional 1800 vines per hectare is much more sustainable than other primary industry land uses in terms of water use and leaching (viticulture is a low N and P leacher²³).
66. Therefore, there is alignment between the intensification of viticulture (and the recognition of the economy within sustainable management) and the water quality objectives of PPC 9, as well as higher order directives of central government. Mr St Clair discusses this in further detail in his planning evidence before the Hearing Panel.

J. LAND USE CHANGE

67. PPC 9 seeks to manage the adverse effects of land-use change in relation to nitrogen loss and water use, which arose out of concerns about the lack of control over land use change creating additional risk to meeting water quality objectives.
68. As notified, I was concerned that PPC9 would restrict use of viticultural land, which already has negligible contaminant losses and would be unable to achieve the material reduction of contaminant loss at either an individual or industry level. In particular, I have concerns about land-use change from viticulture (low nitrogen loss) to other uses (higher nitrogen loss) being restricted and disincentivised, thereby potentially reducing the environmental gains which may arise from land-use change to viticulture.

²³ Paragraphs 40-42.

69. I understand that the section 42A report has recommended a change to Schedule 29 to include grape growing within the ambit of horticulture. The land-use types were previously separate, so that any increase in leaching would be from grapes to separate types of horticulture such as pip-fruit. The effect of the change to Schedule 29 from a land-use change perspective is that a change in use from irrigated vineyard to irrigated horticulture (excluding commercial vegetable growing) would not require consent as a change of land use. I support this change to PPC9.
70. The limiting factor to land-use change would then remain the actual and reasonable use of water (as I have described earlier in this evidence). A change from grapes to pip-fruit (for example, apples) would, I understand, require more water.
71. The sinking lid approach affects low water users by preventing such uses from obtaining more water than currently allocated. This effectively 'locks-in' low water users to their current use and prevents them from changing land use to meet operational needs or meet market demand. Not only does it affect low water users' ability to explore profitable alternative markets, but it also has a significant effect on the capital value of land (which can be tied to water allocations). It benefits users who have current high uses (either by the nature of their industry or poor water usage) while unduly restricting land uses with existing low water usage.
72. Current high water users would continue to have a high volume of water allocation and will more readily and easily be able to switch land uses or crops, whereas low users will be restricted in changing land use. This is an equity issue because it may have an undesirable consequence of locking in current low water users, potentially reducing the usability and value of their land. To provide an example, Villa Maria Estate recently looked to sell a parcel of land adjacent to, but not on the Gimblett Gravels. The land had previously been a stonefruit orchard in the 1990s but was converted to Organic Viticulture in the early 2000s. Villa Maria had farmed it as a vineyard for 20 years but had decided that it was not producing wines with the desired flavour profile. The decision was made to sell the land as there was value in the land being productive for other horticulture crops. However, Villa Maria was disadvantaged in sale negotiations due to several parties wanting to guarantee the original consent volume of water, despite actual use being more reflective of the viticulture land use. This is an example of how the current allocation method proposed in PPC9 may reduce land value and encourage water trading by default.

K. ZONE 1

73. PPC9 creates Zone 1 areas where groundwater takes are to be managed as if they are direct surface water takes. I understand that this is because the proximity of the zones to surface water means that they are assumed to be hydrologically connected to the river network. As a consequence, groundwater takes in Zone 1 are subject to the same or similar policies and rules as surface water takes.
74. There are some areas in the Gimblett Gravels which have been newly classified as Zone 1. The exact area is hard to determine as the maps provided are not in enough detail. There are also several vineyards that exist in pre-determined Zone 1 areas. The implications of being in Zone 1 is that vineyards in these areas do not have security of water. In the 2019/2020 season, as a result of drought, Pernod Ricard winemakers report that they had access to their bore water for only 15 days out of the 91 days between veraison and harvest. I understand that they supplemented their irrigation with water from an onsite dam. As detailed in Appendix A, vines require water during this time to expand the berries and accumulate sugar (ripen). Without alternative water use within this time the fruit would fail to ripen. Several of the newly created Zone 1 vineyards do not have the ability to create infrastructure on their vineyard to mitigate the impact of a cease take. They will be looking to join the replenishment scheme.
75. As discussed in Mark St Clair's planning evidence,²⁴ there is a disconnect in the approach to cease orders between surface water takes and groundwater takes within Zone 1. Groundwater takes within Zone 1 are not subject to a cease order where the user is part of a replenishment scheme. Ostensibly, this is similar to surface water takes where a cease order cannot be made against someone part of a replenishment scheme. However, a moratorium applies to cease orders for surface water takes until the replenishment scheme has been put in place. There is no corresponding moratorium for groundwater takes within Zone 1, meaning Zone 1 groundwater takes are treated more strictly than surface water takes; it is not an equivalent.
76. However, I understand that stream replenishment programmes will now be developed over time by Council and in consultation with key parties. This change (recommended

²⁴ Brief of Evidence of Mark St Clair at paragraphs 64 to 76.

as part of the section 42A report) is, in my opinion, positive and an outcome that HBWA and other winegrower submitters sought in submissions.

77. The exception is for those properties newly classified within Zone 1, which rely on the introduction of a stream replenishment stream to avoid a cease take. With no line of sight on when these schemes will be introduced (and what they look like), I am concerned that those vineyard operators in Zone 1 are left with a large amount of uncertainty over whether cease orders will apply and the potential implications for the future of their businesses and livelihood. I support the recommendations of Mr St Clair in evidence to address this issue.

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Emma Taylor

11 May 2021

M. APPENDIX A - summary of seasonal vine growth²⁵

Canopy growth (October to mid-November): The energy for this stage is generated almost entirely by the usage of carbohydrates made the previous season and stored in the permanent structures of the vine (trunks, cordons, and roots). The amount of reserves available to fuel this stage depends on the photosynthesis done the previous season, and thus water limitations in one season carry over to the next. This stage is when the canopy develops, as shoots elongate, and leaves are made and expand. The size of the canopy directly affects the amount of light intercepted, and thus the amount of photosynthesis the vines are capable of doing. All of the cell expansion in the stem and leaves is driven by water uptake by cells. Water limitation at this stage will lead to stunted shoot growth with little leaf area, capable of ripening a limited amount of fruit, if any at all.²⁶ However, the larger the canopy created, the more water will be necessary to sustain it throughout the season.

Flowering to set (Mid November to December): This is probably the most critical period in the season, in that it largely determines productivity not only for the current season, but for the following one as well.²⁷ During this short period, pollination of the flowers occurs. These pollinated flowers develop into the grapes. Bunch initiation for the following season happens in the buds during this time, which determines the number and size of next season's potential bunches.²⁸ The energy to drive both of these processes is provided by photosynthesis from the now-developed canopy.

Set to veraison (December and January): During this stage, the fruit undergoes many rounds of cell division, an energetically intensive process. The sugars made from photosynthesis are used to fuel these divisions. The number of cell divisions determines the potential berry size, which in turn greatly affects yield. Cells in the fruit also expand during this stage, and their expansion is due to water influx into the berry cells.

Veraison to harvest (February through mid-April): This is the stage where the grape berries ripen. Sugar is rapidly accumulated, and in red grapes, anthocyanin pigments are made in the skin. The cells in the fruit expand from water influx, driven by the rapid accumulation of sugars. Again, photosynthesis produces the sugars that accumulated

²⁵ Goldammer, T. (2018).

²⁶ Shultz and Matthews, 1993.

²⁷ Vasconcelos et al., 2009, Matthews and Anderson, 1989.

²⁸ Vasconcelos et al., 2009.

in the fruit. Photosynthetic rates greatly increase at the onset of veraison, requiring more water to keep stomata open to gather carbon dioxide to sustain this rapid burst of photosynthesis.²⁹

Harvest to leaf fall (Mid-April through June): Once the fruit is harvested, the photosynthate made by the leaves is stored in the permanent structures of the vine. This carbohydrate will fuel the following season's budburst and early canopy growth. This storage process carries on until the leaves eventually senesce and fall off the vine, which then enters dormancy for the winter.

²⁹ Petrie et al., 2000.

BEFORE THE HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER Proposed Plan Change 9 – Tūtaekurī, Ahuriri,
Ngaruroro and Karamū Catchments (TANK)

BETWEEN **HAWKE’S BAY WINEGROWERS ASSOCIATION
LIMITED; GIMBLETT GRAVELS
WINEGROWERS ASSOCIATION; VILLA MARIA
ESTATE LIMITED; PERNOD RICARD
WINEMAKERS NEW ZEALAND LIMITED
(collectively “THE WINEGROWERS”)**

AND **HAWKE’S BAY REGIONAL COUNCIL**

STATEMENT OF EVIDENCE OF FABIAN GEORGE YUKICH ON BEHALF OF THE WINEGROWERS

VITICULTURE INDUSTRY - BACKGROUND

11 MAY 2021



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A. INTRODUCTION

1. My name is Fabian George Yukich.
2. I am the Director of a wine industry consultancy business (Planina Advisory Limited), Director of Terra Vitae Vineyards, Director and Deputy Chair of New Zealand Winegrowers, Chair of the New Zealand Winegrowers Environment Committee, consultant and past director for Villa Maria Estate Limited. One of my responsibilities as Deputy Chair of New Zealand Winegrowers is engagement with the regions and involvement, where appropriate, in regional issues.
3. I have a Roseworthy Agricultural College Diploma in Wine.
4. My family have been involved in grape-growing and winemaking in New Zealand since the 1930s and were the founding family behind Montana Wines, planting the first modern day commercial vineyard in Marlborough in the 1970s. I started work in the vineyard at an early age and gained experience in all aspects of the domestic wine business by my 20s, when I enrolled in the wine diploma course at Roseworthy College in South Australia.
5. After working in the Barossa Valley Australia, I moved to a project management, then a winemaking role for Penfolds Wines in Gisborne. In 1998 I joined Villa Maria Estate to project-manage the build of their new Marlborough and Auckland Wineries. I was appointed to the Villa Maria board in 2006 and was heavily involved in all operational aspects of the business, including vineyards, wineries, and export sales. During my time at Villa Maria I have championed a progressive approach to sustainable practices, including our organic vineyard developments from 1999 and Carbon Emissions accounting from 2009.
6. In 2010, I won the Sustainable Business Network Champion Award and in 2012 Villa Maria was the overall supreme winner at both the Sustainable Business Network Awards and New Zealand Green Ribbon Awards. In 2017, I led the team that built the new Villa Maria Hawke's Bay Winery at State Highway 50, in the middle of Villa Maria's extensive (over 220 hectares) Gimblett Gravels vineyard holdings.
7. I was first elected to the board of New Zealand Winegrowers in 2012 and am now serving a sixth successive term, being elected Deputy Chair in 2020. At New Zealand Winegrowers, I have served on the advocacy, sustainability and marketing committees,

am a past chair of the marketing committee and chair of the Environment Committee since 2016.

8. My evidence provides further evidence to and supports the submissions of Hawke's Bay Winegrowers Association ("**HBWA**"), Gimblett Gravels Winegrowers Association ("**GGWA**"), Villa Maria Estate Limited ("**Villa Maria**") and Pernod Ricard Winemakers New Zealand Limited ("**PRW**") concerning Proposed Plan Change 9 ("**PPC9**") - Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments ("**TANK**"). HBWA, GGWA, Villa Maria, and PRW are collectively referred to as the "**Winegrowers**" in this evidence.

B. SCOPE OF EVIDENCE

9. In this evidence I address the following matters:
 - (a) The importance of Hawke's Bay as a winegrowing region in the regional, national and international setting;
 - (b) Future opportunities for Hawke's Bay as a winegrowing region.
10. In preparing this evidence I have read and considered the section 42A report prepared in response to submissions on the PPC9 provisions, as well as relevant appendices and their reports. I have also read the relevant section 32 reports

C. EXECUTIVE SUMMARY

11. The importance of Hawke's Bay as a wine region has been recognised since the 1890s, and there has been considerable effort expended over the last 120 years in ensuring that that future potential of viticulture in the region over the long term is protected.
12. Hawke's Bay will have a critical role in serving the future needs for the wine industry, because it is able to ripen a wider range of grape varieties than anywhere else in New Zealand. The combination of topography, soils and climate in Hawke's Bay makes it unique as a wine growing region.
13. If PPC9 does not enable winegrowers to operate their vineyards with sufficient water to maintain and increase intensity, the expected result will be the decline of the existing wine industry through the attrition of vineyards through lack of water in dry years, and as the vines require redevelopment. This will lead to the loss of vineyard jobs and downstream employment in winemaking, packaging and wine tourism. There will also be loss of opportunity for land-use change to reduce catchment contaminant load, and

for climate change adaptation. These factors are critical matters for PPC9 to account for.

14. In my opinion, any regulatory environment must allow appropriate growth to occur so that the wine industry (and the communities that it supports) can take a long term view and plan for that investment in a sustainable way.

D. PROPOSED PLAN CHANGE 9 – TANK CATCHMENT

15. The grower and winery members of HBWA have a significant investment in land, vineyard and winery infrastructure, and share PPC9’s objectives of providing a sustainable economic return whilst protecting water for future generations.
16. Current grape-growing practices mean vineyards are comparatively low water users and low N and P leachers. However, improvements made over the last decades equally means that vineyards have minimal room for further water use reductions if they are to remain viable or even survive through dry summers. In particular, the Gimblett Gravels, which has an international reputation for the quality of its red wines, will see vines die if they do not get sufficient water over the summer.
17. PPC9 provides some significant challenges for the viticulture industry, with reduced access to water, risk to production and vine health, reduced flexibility in delivery of its operations (including growth and adoption of new practices and technologies) and increased difficulty and cost of consenting existing viticulture within the region.

E. THE HAWKE’S BAY WINE INDUSTRY

18. Hawke’s Bay is one of the ancestral homes of the New Zealand Wine Industry, and New Zealand’s oldest wineries are located here.
19. New Zealand’s first vines were planted in Hawke’s Bay in 1851 by French missionaries who established the vineyard and winery known as Mission Estate. By the early 20th century Mission Estate, Te Mata Estate (1896), Vidal Estate (1905), McDonalds Winery (1897 – Church Road) and Glenvale Winery (1933 – Esk Valley Winery) had been established, cementing Hawke’s Bay as a pioneering, innovative wine region.
20. In 1895, the Premier of New Zealand, Richard Seddon, invited Romeo Bragato, now widely regarded as the Prophet of the New Zealand Wine Industry, to report on the country’s potential for winemaking. Bragato’s report “Prospects for Viticulture in New

Zealand” was written after six months of intensive touring and is still valued as playing a pre-eminent role in the foundation of New Zealand’s wine industry. Bragato declared that *“The Hawke’s Bay Province is, in my opinion, the most suitable for growing vines I have visited”*.

21. The central importance of Hawke’s Bay to the New Zealand wine industry is that the region can produce unique world-class wines that are different to all the other New Zealand wine regions. It has a temperate climate, consistent sunshine, and an array of unique soils (the legacy of four major rivers’ historic meanderings), which encourage diverse viticulture and wine styles. Hawke’s Bay is known for its red blends and Chardonnay, but it also produces outstanding aromatic whites and excellent Syrah.

Vineyard locations

22. The vineyards of Hawke’s Bay are located in five broad types of area: the coastal areas, hillsides, alluvial plains, river valleys, and central Hawke’s Bay. Each area has unique soils and sub-climates, which enable a range of grapes to be grown.

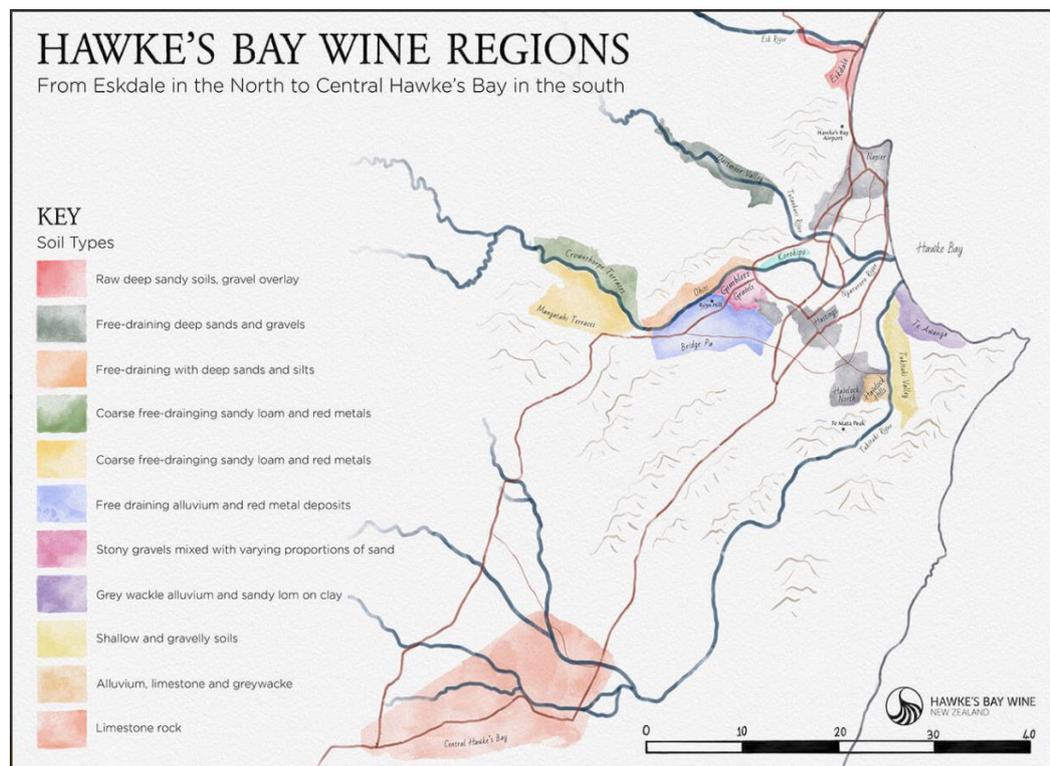


FIGURE 1: HAWKE’S BAY WINE REGIONS¹

¹ Sourced from Hawke’s Bay Wine: <https://hawkesbaywine.co.nz/about/>.

23. In New Zealand, it is important for a wine region to have the opportunity for growth to reach the scale needed for international success. Not only does Hawkes Bay produce wines of world class quality, given the right regulatory environment there is land available in a variety of locations to enable growth to meet increasing export demand.

Contribution to the economy

24. In the 12 months ending 30 June 2020, New Zealand wine exports totalled \$1.92 billion.² Wine is New Zealand's sixth-largest export good and has seen substantial growth in the last 10 years, with the total export value increasing by almost \$1 billion from 2010.³ Major factors in New Zealand's export success have been quality, sustainability and regional diversity.
25. There are 100 wineries in Hawke's Bay. There are approximately 57 grape growers, with 4721 ha of land utilised for grape growing. As well as a large number of small boutique wineries, Hawke's Bay is also significantly invested in by five of New Zealand's largest wine companies, who represent 50% of all New Zealand wine exports.
26. In addition to wineries, Hawke's Bay also boasts one of New Zealand's largest wine bottling and logistics operations, with a cluster of wine industry suppliers providing further employment for over 100 people. In total, the Hawke's Bay Wine industry directly employs approximately 1,000 people.
27. The wine industry makes a significant contribution to the New Zealand economy. It provides employment in the primary sector, then adds value to that product by turning grapes into wine, providing further employment. Once bottled, the industry markets the wine, selling 85% of the output to international markets, enhancing our country's reputation and branding, with every bottle carrying a WINE OF NEW ZEALAND identification.
28. In the year ending 30 June 2020, Hawke's Bay produced 43,000 tons of grapes, making it the second largest wine producing region.⁴ However, Hawke's Bay is a major producer of certain unique varieties, showing its value to New Zealand's wine industry. The

² New Zealand winegrowers Inc, annual report 2020, at page 3.

³ New Zealand winegrowers, media release 26 November 2020.

⁴ New Zealand winegrowers Inc, annual report 2020, at page 35.

following figures show the portion of several wine varieties produced in Hawke's Bay as a percentage of total New Zealand Production:

(a)	Chardonnay	30%
(b)	Merlot	95%
(c)	Cabernet Franc	80%
(d)	Malbec	79%
(e)	Syrah	90%

F. FUTURE OPPORTUNITIES FOR HAWKE'S BAY AS A WINEGROWING REGION

29. Importantly for the future, Hawke's Bay will have a critical role as its vineyards can produce a wider range of grape varieties than anywhere else in New Zealand. The combination of topography, soils and climate in Hawke's Bay makes it unique as a wine-growing region. By way of example, in the late 1980s/early 1990's Fraser Shingle Ltd applied for planning consent to turn a significant part of the Hawke's Bay Gimblett Gravels land into a shingle pit. In the landmark appeal against the Hastings District Council's decision not to grant the planning consent to extract the gravels, Justice Shepperd upheld the Council decision, noting that, "Land having the potential which the subject land possesses is scarce in the Hawke's Bay region; and this potential has particular value because of its significance for the export trade."⁵
30. The Hawke's Bay's focus on different wine styles needs to be seen in the context that 85% of NZ wine exports are Sauvignon Blanc. This is both a sign of success and a significant risk to the wine industry. A successful and thriving Hawke's Bay wine industry is one of the primary tools available to producers to enhance the diversity of the New Zealand wine offering and manage the risk of having all our eggs in one basket. Without Hawke's Bay, where would those varieties/styles come from?
31. The fact that Hawke's Bay can make world-class wines that are recognised internationally is critical to the future of New Zealand wine exports. White and red wines from Hawkes Bay continue to win prestigious national and international awards. In the last 10 years wines from the Gimblett Gravels alone have received 952 Gold

⁵ *Fraser Shingle v Hastings District Council* W7/92.

medals and 322 Trophies in International and Domestic award judging. It is important to note that 52 Trophies and 194 gold medals were awarded in international competitions, against the best from the rest of the world.

32. In 2018, the New Zealand Winegrowers organisation commissioned Price Waterhouse Coopers to conduct a strategic review of the industry. The regional diversity of New Zealand's wines was one of the key strategic themes that the report said characterised and enhanced the New Zealand wine industry.
33. As the second largest wine region with a diverse offering, including the internationally recognised Gimblett Gravels sub-region, Hawke's Bay is integral to the New Zealand Wine industry's future success.
34. Wine tourism is an increasing focus of the New Zealand wine industry. Pre-COVID, twenty seven per cent of international tourists visited a winery when in New Zealand, amounting to over 700,000 tourists who spent \$3.8 billion per year. Over a third of wineries sell only into the domestic market.
35. In Hawke's Bay, before COVID, there were up to 40 winery cellar doors open to the public (approximately 16% of the NZ total), and there are up to 20 winery restaurants or cafes operating. With Napier being a major port for cruise ships, wine tourism in Hawke's Bay add significant value to tourism within Hawke's Bay and to wine production generally, and should not be underestimated when international tourists return.
36. Confidence in the growth of the Hawke's Bay wine industry has also been evidenced by recent substantial investments in vineyards by Delegats and Apatu, and new wineries built by Villa Maria and Delegats, plus winery and bottling line expansion and cellar door redevelopment at Mission Estate. By way of example:
 - (a) Craggy Range Winery has made a major \$4 million investment in its wine tourism offering, with plans for a similar investment in winery expansion and recent replantings of 20% of its Gimblett Gravels vineyards. More vineyard redevelopment is proposed, but this is dependent on having sufficient water to support young plants (that require more water in the early stages). Ms Taylor discusses this further in her evidence before the Hearing Panel.

- (b) Villa Maria has also recently embarked on a new vineyard development in the Hawke's Bay region that will lead to an expansion of the tank capacity at the new Gimblett Gravels winery.
 - (c) Further development of 280 hectares of vineyard is being planned by Links Winery, subject to water security. Investment in winery expansion will follow if the proposed vineyard is planted.
37. Another theme of the Price Waterhouse Strategic Review was the issue of land supply constraining future growth of the wine industry. The land supply issue particularly affected Marlborough, where winegrowers have been purchasing and growing grapes on as much productive land possible.
38. Therefore, with its unique viticultural qualities and increasing international reputation for high-quality wines, it is my opinion that Hawke's Bay is poised to be very much at the forefront of the continued export growth of the New Zealand wine industry and contribution to the country's employment and economy.

Constraints on growth

39. Although poised for growth (for reasons set out above), Hawke's Bay's vineyard area has been constrained in recent years by industry economics, lack of available land, lack of available groundwater, the failure of the Ruataniwha water storage scheme, and industry national investment priorities being focused on planting up the last available land in Marlborough.
40. The outcome of PPC9 will be a crucial factor in whether the Hawke's Bay wine industry will survive and grow in the future. If winegrowers needs are appropriately balanced in PPC9, I expect continued growth because the constraints on diffuse discharges should improve the relative attractiveness of grape growing due to the sector's relative water and nutrient use efficiency. Growth will depend on sufficient water being available for day to day vineyard operations all year round, including the dry season. Ms Taylor's evidence discusses water use in vineyards and the known efficiencies already existing within the industry.
41. In addition to its competitive advantage and the use of natural resources, climate change may also increase the attractiveness of grape growing in the cooler elevated

parts of Hawke's Bay. This will provide further impetus for land conversion to grape growing in areas that may otherwise not be productive.

42. Grape growing is a lower water user than other farming activities, however for a wine region such as Hawkes Bay to be truly internationally successful and sustainable as an industry, the area in vineyards needs to be able to expand to support the processing and brand building functions that are needed to achieve scale in export markets.
43. The Marlborough region is the best example of how scale helped the New Zealand wine industry become the sixth largest export earner. As the second largest wine region, Hawke's Bay has the attributes and the opportunity to repeat that success, however, for business to invest in developing grape growing land and winemaking infrastructure there needs to be security of water supply.
44. Winegrowing is also a low carbon land use alternative to pastoral farming, a factor that will become increasingly relevant to the wine industry's future prospects and needs as New Zealand transitions to a low carbon economy.
45. The Sustainable Winegrowing New Zealand ("**SWNZ**") initiative that was launched by New Zealand Winegrowers in 1995 has greatly enhanced our reputation as an environmentally responsible producer to our international customers. SWNZ, which is now based on the United Nations Sustainable Development Goals is a proven tool that winegrowers can use to continuously improve their environmental performance. In particular the SWNZ scorecard will be used to gather and benchmark data on water use and drive the industry to assisting New Zealand meet its low carbon economy targets. Dr Massey has provided evidence for HBWG on PPC9 regarding SWNZ.
46. If PPC9 does not enable winegrowers to operate their vineyards with sufficient water to maintain and increase intensity, the expected result will be the decline of the existing wine industry through the attrition of vineyards through lack of water in dry years, and as the vines require redevelopment. This will lead to the loss of vineyard jobs and downstream employment in winemaking, packaging and wine tourism. There will also be the loss of new entrants bringing innovation and new investment.

More significantly, there will be the loss of opportunity for land-use change to reduce catchment contaminant load and climate change adaptation. In particular, access to new high-flow storage will be a critical limiting factor to future wine industry growth.

Fabian Yukich

11 May 2021

BEFORE THE HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER Proposed Plan Change 9 – Tūtaekurī, Ahuriri,
Ngaruroro and Karamū Catchments (TANK)

BETWEEN **HAWKE’S BAY WINEGROWERS ASSOCIATION
LIMITED; GIMBLETT GRAVELS
WINEGROWERS ASSOCIATION; VILLA MARIA
ESTATE LIMITED; PERNOD RICARD
WINEMAKERS NEW ZEALAND LIMITED
(collectively “THE WINEGROWERS”)**

AND **HAWKE’S BAY REGIONAL COUNCIL**

STATEMENT OF EVIDENCE OF MARK LESLIE ST.CLAIR ON BEHALF OF THE WINEGROWERS

PLANNING

11 MAY 2021



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A. INTRODUCTION

1. My name is Mark Leslie St Clair.
2. I am a director of Hill Young Cooper Ltd, a Planning and Resource Management consultancy firm based in Wellington and Auckland.
3. My evidence is given on behalf of the Hawkes Bay Winegrowers Association (“**HBWG**”) (Submission #29), Gimblett Gravels Winegrowers Association (“**GGWA**”) (Submission #238), Pernod Ricard Winemakers New Zealand Limited (“**Pernod Ricard**”) (Submission #194) and Villa Maria Estate Limited (“**Villa Maria**”) (Submission #208). I have collectively referred to these submitters as “**Winegrowers**” throughout my evidence.
4. This evidence focuses on the planning matters arising from the proposed Plan Change 9 (“**PC9**”) to the Hawkes Bay Regional Plan for the Tūtaekurī, Ahuriri, Ngaruroro and Karamū (“**TANK**”) catchments.

B. QUALIFICATIONS

5. I hold a Bachelor of Resource and Environmental Planning, with first class honours, from Massey University.
6. I have more than 30 years’ experience in planning practice in local government (Lower Hutt City Council and Manukau City Council), central government (Ministry for the Environment) and private practice (Connell Wagner, Manukau Consultants Ltd, GHD Ltd and Hill Young Cooper Ltd).
7. I also regularly sit as a commissioner on hearings for resource consents, plan changes and general policy development administered under the Resource Management Act 1991 (“**RMA**”) and Local Government Act 2002. In 2020, I was appointed as a Freshwater Commissioner under s66 of the RMA.
8. I have annexed full details of my qualifications and my relevant past experience in **Appendix A** of my evidence.

C. CODE OF CONDUCT

9. I confirm that I have read and agree to comply with the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express and that, except where I state I am relying on information provided by another party, the content of this evidence is within my area of expertise.

D. SCOPE OF EVIDENCE

10. The Winegrowers have filed submissions on PC9 – TANK and I have been asked by Winegrowers to provide expert evidence in relation to the planning matters arising.

11. In preparing this evidence I have read and considered the section 42A Hearing Report¹ prepared in response to submissions on the PC9 provisions, as well as relevant appendices and their reports. I have also read the section 32 evaluation report that accompanies the plan change.²

12. In this brief of evidence, I address the following matters:

- (a) Consideration of the relevant national planning instruments;
- (b) Provide an independent assessment of Winegrowers' key submission points relative to how those points have been addressed in the Section 42A Report.

13. In preparing my evidence, I have set out those parts of the Section 42A report and the relevant Winegrower submission points that apply.

E. EXECUTIVE SUMMARY

14. The submissions from Winegrowers address a large number of points as may be anticipated with Hawkes Bay being the second largest wine producing region in New Zealand. I have focused my evidence on the main issues raised by Winegrowers.

15. In relation to the relevant planning instruments I generally concur with the assessment of Officers as to the National Policy Statement Freshwater 2020 (NPSFM 2020) and as

¹ Officer's s42A Hearing Report for PC9, prepared by Kim Anstey, Mary-Anne Baker, Anne Bradbury, Ellen Robotham and Kirsten Tebbutt.

² Section 32 Evaluation Report - TANK Catchments Plan Change to Regional Resource Management Plan – Change 9, 28 March 2020, prepared by Mitchell Daysh.

to the Regional Policy Statement (RPS), with the exception of some details, primarily in relation to water allocation.

16. I have addressed particular matters relating to Freshwater Farm Plans (FFP), Source Protection Zones (SPZ), the relationship of viticulture to primary production on versatile soils and the implications of the Zone 1 provisions for groundwater takes that are reclassified as surface water takes.
17. The major component of my evidence is on the policy framework of water allocation in relation to actual and reasonable use, and the Heretaunga Aquifer and surface water allocation regime. My assessment includes a section 32 critique as to changes to the definition of “Actual and Reasonable” in relation to “maximum” and “average”, and the “least of either”, concluding that the original analysis by Council officers (“**Officers**”) was too broad with insufficient regard to the cost and benefits to viticulture.
18. I have proposed a number of amendments to the provisions proposed by Officers in the section 42A report. These changes are intended to address the issues I have raised in evidence. The amended provisions are set out throughout my evidence. In my opinion these changes will ensure that PC9 better meets the purpose of the plan change, the purpose of the Act, and the relevant Hawke’s Bay Regional Resource Management Plan (**RRMP**) objectives, than the operative RRMP or PC9.

F. OVERVIEW OF THE WINEGROWERS’ SUBMISSION

19. HBGW lodged a submission on PC9, along with a number of winegrowers (vineyards and wineries) within the Hawke’s Bay region. A number of these submitters support the HBGW case before the Hearing Panel, with the issues raised by the parties broadly consistent, with differences mostly around matters of detail. I understand that HBGW will present its case to the Hearing Panel, with the support of a number of those individual submitters.
20. The primary issues raised through the submissions are:
 - (a) Allocation and Flow Limits
 - (i) Actual and Reasonable Use
 - (ii) Stream depletion / maintenance requirements

- (iii) Zone 1 requirements
- (iv) High flow storage
- (v) Frost protection
- (b) Freshwater Farm Plans
 - (i) Industry Programmes/Catchment Collectives
 - (ii) Relationship to section 360 regulations
- (c) Land Use Changes
 - (i) Locked-in to allocation limit (relationship to actual and reasonable use)
 - (ii) Limitations on land use change
 - (iii) Equity for efficient water users and users with low contaminant loss
- (d) Source Protection Zones

21. Where the submissions remain an issue and/or require further elaboration for the Winegrowers', I discuss these matters in the evidence that follows. A number of submission points have been addressed by Officers in the section 42A Hearing Report and these are not considered further. In relation to any changes to the wording of the PPC 9 provisions I have included those in the body of my evidence. Similarly, I have a section 32AA analysis where I considered it necessary.

G. RELEVANT PLANNING INSTRUMENTS

22. Unless otherwise stated, I agree with the statutory framework described in the section 42A Hearing Report.³

National Policy Statement on Freshwater Management

³ Officer's s42A Hearing Report for PC9, Paras 67 – 84.

23. The National Policy Statement on Freshwater Management was first gazetted in 2011⁴. It was replaced in 2014⁵, updated in 2017 (though still referred to as the NPSFM 2014)⁶ and again most recently replaced in 2020⁷.
24. In terms of related sequencing, PC9 was notified on 2 May 2020, with the submission period closing on 14 August 2020. The NPSFM 2020 was approved by the Governor General on 3 August 2020 and came into force on 3 September 2020. The further submission period opened on 11 November 2020 and closed on 9 December 2020. I note that when PC9 was prepared and the original submission period was open, it was the NPSFM 2014 that was in place.
25. I also observe that, from a planning perspective, a further submission can only support or oppose an original submission⁸, and that a further submission may not otherwise extend the relief sought by an original submission.
26. I concur with the assessment of the Officers in the section 42A Hearing Report, that the extent to which PC9 can 'give effect to' the NPSFM 2020, is limited by the scope of the submissions.⁹ In this regard I have relied on the relevant case law as set out in the report of the Officers¹⁰ and matters to be addressed in the legal submissions of Ms Johnston. As a result, any recommendations as to changes to PC9 so as to give effect to the NPSFM 2020, must be considered through the lens of the submissions.
27. I also concur with the Officers that PC9 does not need to give full effect to the NPSFM 2020 immediately and that it is for the Council to resolve any conflict between the RRMP and the NPSFM 2020 through the notification of a freshwater planning instrument by 31 December 2024.¹¹
28. It is through these later freshwater planning processes that environmental outcomes, limits on resource use, environmental flows and levels and take limits for defined FMUs will be set in accordance with NPSFM 2020. The process prescribed under the NPSFM 2020 requires engagement with tangata whenua and communities, and application of

⁴ Effective 1 July 2011.

⁵ Effective 1 August 2014.

⁶ Effective 7 September 2017.

⁷ Effective 3 September 2020.

⁸ RMA, First Schedule, Clause 8(2).

⁹ Officer's s42A Hearing Report for PC9, Paras 55 – 56 and 123.

¹⁰ *ibid*, Para 55.

¹¹ *ibid*, Paras 56 and 122.

the hierarchy of obligations within the fundamental concept of Te Mana o te Wai. I do not understand this work to have been completed as part of the PC9 process to date.

29. In relation to the Winegrowers' submission points, the particularly relevant matters of the NSPFM 2020 are:

- (a) the objective, which establishes the priorities by reference to which freshwater is to be managed;
- (b) Policy 11 as to efficiency of allocation and use, the phasing out of existing over allocation and the avoidance of future over allocation; and
- (c) Policy 15 that, "*Communities are enabled to provide for their social, economic, and cultural well-being in a way that is consistent with this National Policy Statement.*".

30. That said, in terms of PC9 as a whole, the other policies are relevant to the consideration of the Hearing Panel, as is the obligation to give effect to the NPSFM 2020¹² in making decisions on the submissions¹³.

31. I would also note that the hierarchy within the objective of NPSFM 2020, which lists social, economic and cultural wellbeing as the third priority, does not alleviate the statutory obligation on the Regional Council to undertake an evaluation of costs and benefits under section 32 and section 32AA of the Act, and to determine which proposed provisions are the most appropriate on the basis of that evaluation.

Regional Policy Statement

32. The RRMP is a combined Regional Policy Statement (RPS) and regional plan. The RRMP was made operative in August 2006.

33. Plan Change 5¹⁴ inserted chapter 3.1A into part 3 of the RRMP and introduced a number of objectives and policies¹⁵. The provisions in *Chapter 3.1A: Integrated Land Use and Freshwater Management* require catchment wide approaches for integrated management of freshwater and land use, including giving priority to maintaining or

¹² Section 67(3), Resource Management Act 1991.

¹³ Clause 10, Schedule, Resource Management Act 1991.

¹⁴ Operative 24 August 2019.

¹⁵ OBJ LW1, OBJ LW2, OBJ LW3, POL LW1A, POL LW1, POL LW2, POL LW3, POL LW4.

enhancing, where appropriate, the values of the Heretaunga / Ahuriri Catchment Area when preparing regional plans.

34. I generally concur with the assessment of the Officers in the section 42A Hearing Report, that PC9 gives effect to RPS Chapter 3.1A¹⁶. My area of disagreement lies in the details of the approach to water allocation and some other matters, noting the objectives and policies of the RPS Chapter 3.1A applicable to winegrowing industry including, OBJ LW1 6. and 9. and POL LW1 iE) and j). As I have already noted, the approach to water allocation must also be evaluated through section 32 of the Act in order to assess the appropriateness of objectives and provisions.

35. I also concur with the assessment the Officers in the section 42A Hearing Report, that PC9 gives effect to the other relevant objectives in the RPS including OBJ 21, OBJ 22, OBJ 25, OBJ 27, and OBJ 27A¹⁷.

H. Freshwater Farm Plans

36. Freshwater Farm Plans (FFPs) are addressed in the Section 42A Report at *Section 14.5 Farm Plans, Industry Programme and Catchment Collectives, POL TANK 23 – 27, Rules TANK 1 and 2 and Schedule 30 (pages 120 – 132)*.

37. The Winegrower submission points applicable to these provisions are 29.13, 29.14, 29.37, 29.38, 29.49, 29.51, 29.59 – 29.61, 194.8, 194.15, 194.40 – 194.42, 194.78, 194.107 - 194.109.

38. In my view the Officers have set out fulsome assessment of the relevant provisions (as listed in paragraph 36 above) in terms of national direction on FFPs, industry programmes, catchment collectives and the farm size to which any rules should apply. From a planning perspective, it is my view that regulation as to FFPs needs;

- (a) to address the specific water quality objectives for the local environment in which the farming operation is located;
- (b) to align with the new national regulations¹⁸ for the purpose of consistency and to reduce confusion for plan users;

¹⁶ Officer's s42A Hearing Report for PC9, Paras 78-80.

¹⁷ Officer's s42A Hearing Report for PC9, Para 81.

¹⁸ Part 9A Resource Management Act 1991

- (c) to provide for industry programmes to be developed to meet the outcomes sought by PC9, so as to provide a cost-effective approach for industry sectors;
 - (d) to apply appropriate time frames for the development and implementation of industry programmes, catchment collectives, and individual FFPs, as to priorities within various catchments.
39. The section 42A Hearing Report addresses the majority of matters in (a) through (d) above, but in my view, it does not go far enough with respect of matter (c) to address the cost effectiveness of an industry programme as identified in Dr Massey's evidence.¹⁹ That said, in relation to matter (d) above, the amendments recommended by Officers do provide some flexibility for discussions/work between the Regional Council and NZW over the industry's needs²⁰ given the 3 year timeframe for implementation of Industry Programmes, Catchment Collectives and FFPs²¹.
40. In the preparation of PC9, the Council has also prepared a draft implementation plan that sits outside the Plan Change itself. In my view this implementation plan is important in signalling how the Council's approach to address the identified significant resource management issues in the TANK catchments will be addressed.
41. The Officers, through recommended amendments to the policies, rules and schedules have set out, in my view a collaborative, flexible and effective approach as to mechanisms outside of rules, to address local water quality issues, that provide the opportunity for engagement with the winegrowing industry. I would also add that the more detail that can be agreed at an early stage the better, given the investment being sought in terms of FFPs, and the value that can be added through use of existing national programmes.

I. Source Protection Zones (SZP)

42. Source Protection Zones (SZPs) are addressed in the Section 42A Report at Section 17 Source Protection Zones, OBJ TANK 9, POL TANK 6 - 9, Rules 1 – 5, 7, 12, 14 -16, 37, 48 49 and the Source protection Zone Maps and Schedule 35. (pages 272 – 294).

¹⁹ Evidence in Chief (EIC), Dr E Massey, Para 40, 42-43.

²⁰ EIC, Dr E Massey, Para 44.

²¹ Officer's s42A Hearing Report for PC9, Appendix 1A, Recommended Changes to PPC – Schedule 28.

43. The Winegrower submission points applicable to these provisions are 29.10, 29.39, 29.44, 29.56, 194.16, 194.22, 194.111, 208.07, 208.14, 208.17, 238.7, 238.14, and 238.19.

44. OBJ TANK 9 as recommended to be changed in Appendix 1 of Section 42A Report states:

OBJ TANK 9 Activities in source protection areas for Registered Drinking Water Supplies are managed to ensure that they do not cause source ^{203.4} water in these zones to become unsuitable for human consumption, and that risks to the supply of safe drinking water are appropriately managed.

45. In the Section 42A Report at paragraph 2230, Page 272, submission point 194.22 (along with other submission points) is recommended to be accepted:

“... because these submission points support TANK OBJ 9 which helps achieve:
l. section 5(2)(a)(b) and (c) of the RMA;
m. the National Policy Statement for Freshwater Management; and
n. the National Environment Standards for Sources of Human Drinking Water Regulations (2008).”

46. Submission point 194.22, states, “OBJ TANK 9 should be revised so that it is expressed as an outcome statement that responds to an identified resource management issue.”

47. In my view, OBJ TANK 9, is not written as an outcome statement.²² Rather, it is expressed as a policy, in that it directs how the activities in a SZP for Registered Drinking Water Supplies and risks to the supply of safe drinking water are to be managed. To address this matter, OBJ TANK 9 could be reworded as an outcome statement as follows:

OBJ TANK 9 Activities in source protection areas for Registered Drinking Water Supplies ~~are managed to ensure that they~~ do not cause source ^{203.4} water in these ~~zones~~ areas to become unsuitable for human consumption, ~~and that risks to the supply of safe drinking water are appropriately managed.~~

48. The final part of the objective relating to risk management is already addressed in POL TANK 6 b) (ii) and POL TANK 8 f) iv – vi²³ and does not need to be repeated in the

²² *Ngāti Kahungunu Iwi Inc v Hawkes Bay Regional Council* [2015] NZEnvC 50, at [42].

²³ I observe that in Appendix 1 to the Section 42A the sub parts of Report POL TANK 8 are labelled e) and f), whereas they should be labelled a) and b).

objective itself as risk management approach is for the purpose of achieving the objective. I recommend removing the word “zone” and replacing it with the word “area” for consistency of terminology within the objective. In recommending this amendment I have relied on Submission point 194.22.

49. POL TANK 8 sets out the matters to which Council will have consideration for applications for discharge of contaminants or to carry out a land use, or water use activities. This policy has been implemented by Rules relating to bores, feedlots, animal effluent and in relation to water takes.
50. In relation to vineyards, relying on the evidence of Mr Yukich²⁴ and Ms Taylor²⁵, FFPs would be an effective tool in managing land use activities where the discharge of contaminants (leaching) is of relatively low risk. FFPs for discharges and land uses, is an appropriate tool to demonstrate risk minimisation as part of the assessment. I note that Officers have recommended amendments to Schedule 28 which has been amended to make it clear that production land in a SPZ requires a FFP as high priority, namely to be prepared with three (3) years of the proposed plan becoming operative.²⁶
51. In relation to water takes, RULES TANK 9 and 10 require the assessment of potential adverse effects on Registered Drinking Water Supplies arising from discharge activities (as opposed to land use). In my view, such provisions are appropriate.

J. Primary production on Versatile Soils

52. Primary production on versatile soils is addressed in the Section 42A Report at Section 15.2.2, OBJ TANK 16 (pages 170 – 172). The term “versatile land” is used in POL TANK 48 and 56. These provisions are addressed in the Section 42A Report at 15.4.8 (page 205 – 207) and at 15.5.5 (page 222-224). POL TANK 48 relates to water use or transfers and POL TANK 56 relates to water storage and augmentation. As such the use of the term “versatile land” in those provisions is not as relevant as it is to OBJ TANK 16 which is about priority order.

²⁴ EIC, Mr F Yukich, Para 16.

²⁵ EIC, Ms E Taylor, Paras 41-42.

²⁶ Officer’s s42A Hearing Report for PC9, Appendix 1A, Recommended Changes to PPC – Schedule 28 – Priority Catchments.

53. The Winegrower submission points applicable to these provisions are 29.7, 194.16, 194.28, 208.6, and 238.6.

54. OBJ TANK 16 as amended by the Officers' recommendation states:

OBJ TANK 16 ~~Subject to limits, targets and flow regimes established to meet the needs of the values for the water body, water quantity allocation management and processes ensure water allocation~~ Ground and surface water in the TANK Catchment is allocated, subject to limits, targets and flow regimes which provide for the values of each water body, ^{210.2, 132.83} in the following priority order:

- a) ~~Water for the essential reasonable domestic~~ needs of people, livestock drinking and fire-fighting supply ^{13.8, 35.76, 195.28};
- b) ~~The allocation and reservation of water for~~ existing and future demand for domestic supply including marae and papakāinga, and municipal uses supply as described in HPUDS (2017) ~~can be met within the specified limits~~;
- c) Primary production on versatile soils;
- d) Other primary production, ^{30.1} food processing, industrial and commercial end uses;
- e) Other non-commercial end uses.

55. As I understand it, the issue for Winegrowers relates to uncertainty around the inclusion of viticulture in “c) Primary production on versatile soils”.

56. The Section 42A Report, at paragraph 1277, states:

1277. 33 submission points are identical and request that 16(c) be amended to accord viticulture soils the same priority as versatile soils, and that 16(e) be amended to specify water bottling in the lowest priority use category. One submission point also makes a similar submission about versatile soils. I recommend rejecting these points and do not recommend any amendments to the objective. The definition of versatile soils in the RRMP glossary already includes highly productive viticulture soils. It is impractical to specify water bottling as lower priority due to difficulties defining the activity or identifying distinct adverse effects of water bottling from other beverage bottling activities.

(Emphasis added)

57. I agree with the Officers that the RRMP glossary includes reference to viticulture, however, that reference is in the definition of “versatile land” and not a definition of “versatile soils”. The definition for “versatile land” in the RRMP states:

9.254A Versatile Land

In relation to the Heretaunga Plains sub-region, means contiguous, flat to undulating terrain within the Heretaunga Plains sub-region that acts collectively to support regionally (and nationally) significant primary production and associated secondary services on the Heretaunga Plains, based around^{4A}:

- a) an exceptionally high proportion of versatile Class 1-3 soils (comprising almost 90%);
- b) Class 7 soils that are internationally recognised as having very high value for viticultural production (comprising almost 7%);
- c) its proximity to a cluster of national and international processing industries and associated qualified labour force; and
- d) its proximity to the Port of Napier and other strategic transport networks providing efficient transport of produce.

(Footnote excluded)

58. In the RPS section of the RRMP, the term “versatile land” only appears in the provisions around urban sprawl containment in ISS UD2, OBJ UD1 – POL UD 1, POL UD 2, POL UD 3, MET UD1, MET UD3, AER UD1, AER UD5 and AER UD. The term “versatile land” or “versatile soil” does not appear in Regional Plan section of the RRMP.

59. In PC9 itself, the term “versatile land” only appears in POL TANK 48 c) and in POL TANK 56 c), as follows:

POL TANK 48 When considering any application to change the water use specified by a water permit, or to transfer a point of take to another point of take, ~~to consider~~ the Council will take into account:

- a) changes to the nature, location, scale and intensity of effects on:
 - (i) total water use
 - (ii) specified minimum flows and levels or other water users’ access to water
 - (iii) the water body values listed in Schedule 25 and in the objectives of this Plan
 - (iv) the patterns of water use over time, including changes from seasonal use to water use occurring throughout the year or changes from season to season
 - (v) water quality ^{132.77, 132.109, 195.69}
- and will consider declining applications:
- b) ~~declining applications~~ where the transfer is to another water quantity area management zone unless;
 - (i) new information provides more accurate specification of applicable zone boundaries;

- (ii) where the lowland tributaries of the Karamū River are over-allocated, whether the transfer of water take from surface to groundwater provides a net beneficial effect on surface water flows;
- c) ~~to change/transfer water away from irrigation of the versatile land of the Heretaunga Plains for primary production especially food production, except where a change of use and/or transfer is for;~~
 - (i) ~~a flow enhancement or ecosystem improvement scheme, subject to clause (a); or~~
 - (ii) ~~the efficient delivery of water supplies and to meet the communities' human health needs for water supply, including for marae and papakāinga, subject to clause (a)~~^{3.19}
- d) ~~in over-allocated quantity areas, to transfer allocated but unused water~~
- e) ~~for a change of use from frost protection to any other end use.~~

210.69

~~a) effects on specified minimum flows and levels or other water users' access to water resulting from any changes to the rates or volume of take;~~

~~b) any alteration to the nature, scale and location of adverse effects on the water body values listed in Schedule 25 and in the objectives of this Plan;~~

~~c) effects of the alteration to the patterns of water use over time, including changes from seasonal use to water use occurring throughout the year or changes from season to season;~~

~~d) except where a change of use and/or transfer is for the purpose of a flow enhancement or ecosystem improvement scheme, declining applications to transfer water away from irrigation end uses in order to protect water availability for the irrigation of the versatile land of the Heretaunga Plains for primary production especially the production of food;~~

~~e) in Water Quality Management Units that are over-allocated, ensuring that transfers do not result in increased water use and to prevent the transfer of allocated but unused water;~~

~~f) declining applications for a change of use from frost protection to any other end use;~~

~~g) enabling the transfer of a point of take and change of water use to municipal water supplies, including for marae and papakāinga, (not including transfer to industrial uses above 15m³/day) from any other use for the efficient delivery of water supplies and to meet the~~

~~communities' human health needs for water supply, subject to clause (b).~~

POL TANK 56 The Council will recognise beneficial effects of water storage and augmentation schemes, including water reticulation in the TANK catchments and out-of-stream- storage, and when considering applications for resource consent will take into account the nature and scale of the following criteria;

- a) benefits for aquatic organisms and other values in Schedule 25 or in relation to the objectives of this plan in affected water bodies;
- b) whether water availability is improved or the level to which the security of supply for water users is enhanced;
- c) whether the proposal provides for the productive potential of un-irrigated land or addresses the adverse effects of water allocation limits on land and water users, especially in relation to primary production on versatile land;
- d) whether the proposal provides benefits to downstream water bodies at times of low flows provided through releases from storage or the dam;
- e) the nature and scale of potential ecosystem benefits provided by the design and management of the water storage structure, its margins and any associated wetlands;
- f) benefits for other water users including recreational and cultural uses and any public health benefits;
- g) other community benefits including improving community resilience to climate change;
- h) whether the proposal provides for renewable electricity generation.

(emphasis added)

60. Whereas the term “versatile soil” only appears in OBJ TANK 16 c), as set out above.

61. As I understand the view of the reporting officers, the reason for their recommendation to reject the associated submission is that the matter is already addressed in the RRMP, rather than that viticulture is not, as a matter of principle, included in primary production on versatile soils. In my view, without the specific reference to viticulture, confusion around their inclusion remains due to the different uses of the terms “versatile soils” and “versatile land” within the Plan as a whole, including in PC9.

62. In order to address this matter, I recommend that Objective 16 be amended in the following manner (amendment shown in blue):

OBJ TANK 16 ~~Subject to limits, targets and flow regimes established to meet the needs of the values for the water body, water quantity allocation~~

~~management and processes ensure water allocation~~—Ground and surface water in the TANK Catchment is allocated, subject to limits, targets and flow regimes which provide for the values of each water body,^{210.2, 132.83} in the following priority order:

- a) ~~Water for the essential reasonable domestic~~ needs of people, livestock drinking and fire-fighting supply^{13.8, 35.76, 195.28};
- b) ~~The allocation and reservation of water for~~ existing and future demand for domestic supply including marae and papakāinga, and municipal uses supply as described in HPUDS (2017) ~~can be met within the specified limits~~;
- c) Primary production on versatile soils and viticulture on other soils;
- d) Other primary production,^{30.1} food processing, industrial and commercial end uses;
- e) Other non-commercial end uses.

63. In my view, this amendment would not affect the use of the term “versatile land” throughout the remainder of the RRMP and would clarify that viticulture is included within the c) priority order of OBJ TANK 16. I note that the Officer considered that viticultural land was included within the definition of “versatile land” in the RRMP and as such, I do not consider that any further analysis beyond the s32 report as at notification is required.

K. Water Allocation – Zone 1 – Policies and Rules

64. Zone 1 is an area on the PC9 maps (e.g. Ngaruroro Water Quantity Area – Schedule 31C map) where groundwater takes have been classified in the same manner as surface water takes due to the hydraulic connectivity between the groundwater take and the effect on the surface water body.²⁷ Zone 1 is referenced in POL TANK 43 b) and g), POL TANK 45 d), Rule TANK 10 and Schedule 31. A related policy to Zone 1 is POL TANK 39 regarding flow maintenance. These provisions are addressed in the Section 42A Hearing Report at paragraphs 1424 – 1444 (POL TANK 39), paragraphs 1497 – 1512 (POL TANK 43), paragraphs 1548 – 1561 (POL TANK 45) and paragraphs 1513 – 1532 (Schedule 31).

65. The Winegrower submission points applicable to these provisions are 29.25, 29.28, and 238.11.

²⁷ Officer’s s42A Hearing Report for PC9, Para 1501.

66. As I understand it, Winegrowers concerns around the implication of Zone 1 provisions, is that those growers with groundwater takes in Zone 1²⁸ will now be classified as surface water takes and will be subject to cease takes during low flows in the adjacent water body, unless the winegrower is part of stream enhancement programme (POL TANK 45 d)).
67. I note that it is POL TANK 39 that would make provision for the mitigation of stream depletion effects and that this policy has been recommended to be amended by Officers in order to address the practical implementation of any such programme and in order to achieve OBJ TANK 17.²⁹ I concur with the assessment as to POL TANK 39.
68. However, the effect of POL TANK 45 d) means that growers with groundwater takes in Zone 1, are subject to cease takes without the ability to rely on the exemption provided by membership of a stream enhancement scheme. However, there are presently no stream enhancement schemes in existence, with the exception of the Twyford irrigators scheme. Ms Taylor has discussed the implications of this approach in her evidence³⁰ as it would apply to growers in the Gimblett Gravels area.
69. Ms Taylor refers to a number of winegrowers who would, on replacement of consents be, subject to RULE TANK 10 and stream depletion calculation and flow enhancement programmes within the Gimblett Gravels area.³¹
70. I understand that the existing water take and use consents for vineyards in the Gimblett Gravels area affected by Zone 1, expired on 31 May 2019. Those vineyards have applied for replacement consents and the processing of those applications is currently on hold. As such, when those applications are considered by the Council, the PC9 provisions will apply, namely TANK RULE 10. The consequence of this rule is that any replacement permit granted before a stream flow maintenance and habitat enhancement scheme was in place, would mean that those consent holders would be subject to cease take conditions.

²⁸ Zone 1 covers existing takes which are subject to cease takes under POL33 of the RRMP where the takes are within 400m of a river. These are not covered by the HBWG and GGWA submissions. Rather it is only those takes beyond 400m of the river and now subject to Zone 1 provisions.

²⁹ Officer's s42A Hearing Report for PC9, Paras 1424 – 1444.

³⁰ EIC, Ms E Taylor, Para 74.

³¹ EIC, Ms E Taylor, Para 75.

71. In order to address this matter, an amendment to RULE TANK 9 and 10 should be made to specify the cease take provisions would not apply to Zone 1 groundwater abstractors now classified as surface water abstractors until a stream flow maintenance and habitat enhancement scheme is in place. This would ensure that these rules reflected the changes, which I support, proposed by Officers around development and implementation of the schemes, in consultation with stakeholders and the community.
72. TANK RULES 9 and 10, in the matters of control/discretion, item 15 it states that; *“For takes from Zone 1 in the Ngaruroro and Tūtaekurī Water Quantity Areas review of permit and new conditions to be imposed in respect of contribution to a stream flow maintenance and habitat enhancement scheme, when applicable.”* (Recommended by Officers with tracked changes removed). The applicability referred to, is, as I understand it, at the time of that any replacement consent application is considered. As such if there was no stream flow maintenance and habitat enhancement scheme in place at that time, then the consent holder would be subject to any cease take when low flow limits are reached.
73. In order to address this issue, the policy could be amended in the following manner (relying on Submission 29.28)(amendment shown in blue):

POL TANK 45 When assessing applications to take water the Council will;

- a) provide that the ~~taking and use abstraction~~ of water that has been taken and ~~impounded or stored~~ at times of high flow ~~and stored~~ and released for subsequent use, is not subject to allocation limits; ^{58.26}
- b) require water meters to be installed for all water takes authorised by a water permit and water use to be recorded and reported via telemetry provided that telemetry will not normally be required where the consented rate of take is less than 5l/sec ~~or where there are technical limitations to its installation;~~ ^{123.80, 203.19}
- c) ensure water allocation from tributaries is accounted for within the total allocation limit for the relevant zone and that the total abstraction from any tributary does not exceed 30% of the MALF for that tributary unless otherwise specified in Schedule 31;
- d) offset the stream depletion effects of any groundwater takes in Zone 1, that were not previously considered stream depleting, by managing them as if they were in the Heretaunga Plains Groundwater Quantity Area Water Management Unit; and

- (i) require contributions to an applicable lowland stream enhancement programme at a rate equivalent to the stream depletion effect consistent with ~~Policy-POL TANK 39~~ [once such programmes are established and in effect](#);

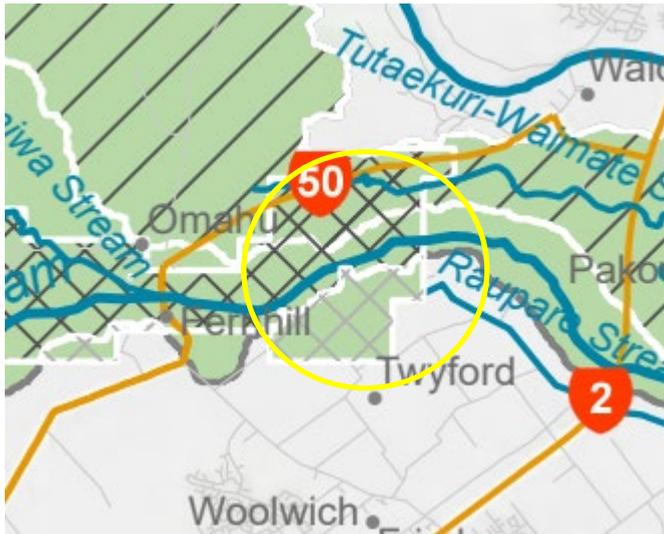
or

- (ii) require the water take to cease when the minimum flow for the affected river is reached if a permit holder does not contribute under clause (i) where there is an applicable lowland stream enhancement; and
- (iii) allow further technical assessments to determine the extent of stream depletion effect.

74. Amendments to rules RULE TANK 9 and 10 would not, in my view, be required. The current wording in the matters of control/discretion, item 15 states that; *“For takes from Zone 1 in the Ngaruroro and Tūtaekurī Water Quantity Areas review of permit and new conditions to be imposed in respect of contribution to a stream flow maintenance and habitat enhancement scheme, when applicable.”* In this case *“when applicable”* would mean when a stream flow maintenance and habitat enhancement scheme exists. Similar wording has been used by Officers in the additional wording for RULE TANK 9 and 10 in relation to written approval from affected persons and notification.³²

75. In relation to the Ngaruroro Water Quantity Area – Schedule 31C Map I observe that there appears to be two (2) shades of hatching denoting the Zone 1 as shown in the excerpt of the map below.

³² Officer’s s42A Hearing Report for PC9, Appendix 1A Recommended Changes to Proposed Plan Change 9, Pages 46-52.



76. It is my understanding that the hatching should be the same to indicate Zone 1. This may have been a mapping issue in moving Zone 1 from Schedule 31E Map to Schedule 31C Map and could be addressed by Officers when settling the provisions.

L. Water Allocation – Actual and Reasonable and, Heretaunga Aquifer and Surface Water Allocations

77. The definition of “Actual and Reasonable” as it applies to water takes is central to the policy framework by establishing a sinking lid approach to controlling the allocation of water in the Heretaunga Plains aquifer and the various surface water bodies in the TANK plan change area. The Heretaunga Plains Groundwater Levels and Allocation limits are addressed in the Section 42A Report Section 15.3 (Pages 175 – 194) and the Surface Water flow management is addressed in Section 15.4 (Pages 194 – 217). The applicable rules are, RULE TANK 9 and 10 in Section 15.6.2 (Page 230- 234) and definition of Actual and Reasonable Use in section 15.6.17 (Page 253 – 256).

78. The Winegrower submission points applicable to these provisions are 29.3, 29.19, 29.20, 29.21, 29.22, 29.23, 208.9, 238.9, 29.50, 194.2, 194.44, 194.45, 194.47, 194.48, 194.49, 194.59, 194.64, 194.65 and 194.113.

Background to changes to definition of Actual and Reasonable

79. The definition of “Actual and Reasonable” at the time of notification of the plan change PC9 was as follows:

Actual and Reasonable in relation to applications to take and use water means;

- a) no more than the quantity specified on the permit due for renewal or any lesser amount applied for; and the least of either;
- b) the maximum annual amount as measured by accurate water meter data in the ten years preceding 1 August 2017 for groundwater takes in the Heretaunga Plains Water Management Unit or in the preceding ten years preceding the 2 May 2020 as applicable elsewhere if accurate water meter data is available. (If insufficient or no accurate data is available either clause a) or c) will apply)

or

- c) for irrigation takes, the quantity required to meet the modelled crop water demand for the irrigated area with an efficiency of application of no less than 80% as specified by the IRRICALC water demand model (if it is available for the crop and otherwise with an equivalent method), and to a 95% reliability of supply where the irrigated area is;
 - (i) no more than in the permit due for renewal, or any lesser amount applied for, and in the case of Heretaunga Plains Water Management Unit, is not more than the amount irrigated in the ten years preceding 1 August 2017; and
 - (ii) evidence is supplied to demonstrate that the area has, and can continue to be, irrigated and the permit substantially given effect to.

80. I note that the above definition set out that the water take volume was the least of either the maximum annual actual recorded water take for the 10 year period prior to 1 August 2017 or the quantity of water derived from the IRRICALC water demand model.

81. The change to the definition, recommended by Officers, is as follows:

Actual and Reasonable in relation to applications to take and use water means;

- a) no more than the quantity specified on the permit due for renewal or any lesser amount applied for; and the least of either;
- b) the ~~maximum average~~^{consequential} annual amount as measured by accurate water meter data in the ten years preceding ~~2 May 2020-1 August 2017 for groundwater takes in the Heretaunga Plains Water Management Unit or in the preceding ten years preceding the 2 May 2020 as applicable elsewhere~~^{82.4} if accurate water meter data is available. (If insufficient or no accurate data is available either clause a) or c) will apply)

or

- c) for irrigation takes, the quantity required to meet the modelled crop water demand for the irrigated area with an efficiency of application of no less than 80% as specified by the IRRICALC water demand model (if it is available for the crop and otherwise with an equivalent method), and to a 95% reliability of supply where the irrigated area is;
 - (i) no more than in the permit due for renewal, or any lesser amount applied for, and in the case of Heretaunga Plains ~~WGroundwater Quantity Area Management Unit~~, is not more than the amount

irrigated in the ten years preceding ~~2 May 2020–1 August 2017~~^{82.5};and

- (ii) evidence is supplied to demonstrate that the area has, and can continue to be, irrigated and the permit substantially given effect to.

82. This recommended change maintains the “least of either” structure to the definition, but amends the “annual actual recorded water take for the 10 year period prior”, by changing “maximum” to “average”³³ and the date from “1 August 2017” to “2 May 2020”³⁴.

83. In terms of my evidence below, I firstly address the amendments to the definition in relation to the date change and the wording “average vs maximum”, and secondly I turn to the “least of either” issue.

Changes to definition “Actual and Reasonable”

84. The first change within the definition is to the date, with a shift from the date from the ten years preceding 1 August 2017, to the ten years preceding 2 May 2020. I consider the reasoning for this amendment to have been thoroughly examined through submissions, and I concur with the assessment of the Officers in the section 42A Hearing Report that amendment to the date provides clarity for plan users, and aligns with the period of enforced water metering under the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 resulting in more accurate records of water use in recent years³⁵.

85. The second change is from the “*maximum annual amount*” to the “*annual average amount*” as measured by accurate water meter data. This is a consequential amendment recommend by Officers. The change is not supported by Dr Dark, with the averaging approach seriously constraining water use in dry years.³⁶ For reasons explained in Dr Dark’s evidence, I support retention of the “maximum annual amount” within the definition to ensure reliable water supply for viticulture. I note that I could not readily locate any submission point seeking this change to an “averaging” approach. The consequential change will be addressed in legal submissions of Ms Johnston.

³³ Officer’s s42A Hearing Report for PC9, para 2064.

³⁴ Officer’s s42A Hearing Report for PC9, para 2063.

³⁵ Officer’s s42A Hearing Report for PC9, para 2063.

³⁶ EIC, Dr A Dark, Para 27(f).

86. Further to the definition of actual and reasonable, the structure of the definition is in summary, “the least of either”, the annual average of the previous 10 years of actual use or the quantity for the crop calculated using the IRRICALC water demand model.
87. Relying on the evidence of Ms Taylor³⁷ and Dr Dark³⁸, the “least of either” approach would result in reduced volumes of water relative to the volume required by existing vineyards in the TANK catchments.

Interim allocation limit

88. Before examining the ‘averaging’ change, it is important to revisit the interim 90Mm³ allocation limit for the Heretaunga Plains Water Management Unit (HPWMU). The interim 90Mm³ allocation limit is a modelled number based on irrigation area and an assessment of water use in 2012/2013, of which 90Mm³ “*is considered to be sustainable in terms of the ability of the resource to recharge and maintain equilibrium*”.³⁹
89. The policy intent of PC9 in terms of restricting the amount to be taken to the maximum annual water use in any one year within the 10 years preceding the notification of PC9 was to reduce the total allocated volume of 180 Mm³ ⁴⁰ to what is actual and reasonable, thereby creating a ‘sinking lid’ for total water allocation⁴¹.
90. The definition of actual and reasonable, as notified, was measured on the basis of water meter records for the ten years’ preceding 1 August 2017. This effective date set the standard for which future sustainable use was to be managed, with this data for the ten years’ proceeding used as an input to groundwater model calculations⁴².
91. However, since the publication of these reports, a further five years of data, overlapping with the period of enforced measurement and reporting, is now available. I refer to Figure 12 in Appendix 11 to the s42A Report which illustrates total groundwater pumping (Mm³/year) per water cycle year between 2010/11 to 2019/2020. The data in the figure demonstrates that for the years 2010/2011 through to 2018/2019 inclusive, that total groundwater pumping is at or below 90Mm³.

³⁷ EIC, Ms E Taylor, Paras 52-56.

³⁸ EIC, Dr A Dark, Paras 16 and 27(h).

³⁹ Section 32 Report, Page 274.

⁴⁰ Appendix 11 of the S42A Report, Page 3.

⁴¹ Section 32 Report, Page 267.

⁴² Appendix 11 of the Section 42A Report, Page 20.

92. Total groundwater pumping for 2019/2020 is indicated to be above 105Mm³. It is notable that the 2019/2020 drought event was longer and resulted in lower rainfall than the 2012-2013 event, and as a result, modelled and water meter data show a significant increase in water use during the 2019-2020 water year.⁴³ Dr Dark notes that there are no details in the Water Quantity memo,⁴⁴ as to how the 105Mm³ was derived.⁴⁵
93. As noted in the section 42A Hearing Report as justification for the change to 2 May 2020, there is now a minimum of four years actual use water data which is considered to be a better indicator of existing use than IRRICALC for irrigators.⁴⁶
94. While I acknowledge that there are other factors that the Panel are required to consider, including environmental and cultural effects, in my view the s32 report has not provided adequate justification as to why 90Mm³ was adopted as the interim limit, for the following reasons:
- (a) the policy directive of POL TANK 36(g) - 'reducing existing levels of water use' fails to recognise that for the HPGQA the policy intent should focus on reduction of the allocation limit rather than water use, as the approach to groundwater allocation is evidentially based on cumulative consented volume rather than the cumulative consented actual and reasonable use.
 - (b) it is not apparent why POL TANK 37(a) references adoption of 'an interim allocation limit of 90Mm³ based on actual and reasonable water use', given that this is a modelled number (i.e. not based on actual and reasonable use).
 - (c) it is noted in the s32 Report itself that "There is uncertainty that 90 million m³ is reflective of actual and reasonable use until existing takes have been reviewed and quantified".⁴⁷

Evaluation of changes to provisions

95. Returning to the consequential amendment from 'maximum' to 'average', I consider that this change should have been accompanied by s32 evaluation. The definition of

⁴³ Officer's s42A Hearing Report for PC9, Para 2064.

⁴⁴ Officer's s42A Hearing Report for PC9, Appendix 11.

⁴⁵ EIC, Dr A Dark, Paras 85-86.

⁴⁶ Officer's s42A Hearing Report for PC9, Para 2063.

⁴⁷ Section 32 Report, Page 274.

actual and reasonable has been inconsistently applied, and is not, in my view justified by s32AA analysis. This is a statutory requirement under the Act. Rather, the Officers appear to rely the requirement to give effect to the higher order documents, particularly in relation to the ability for the Council to phase out over-allocation.⁴⁸

96. Section 32 and 32AA of the Act requires an evaluation of costs and benefits anticipated from the implementation of the provisions to determine which policy option is the most appropriate based on that evaluation. In terms of the provisions as notified, that evaluation is set out at section 8.75, Table 53 of the section 32 Report.⁴⁹ This section 32(2) and s32(1)(b) evaluation does not appear to have been updated as to any economic or social evaluation of the implications of setting an allocation limit below what is evidenced actual and reasonable use as per the 2019/2020 data. The existing evaluation in Table 53 is also at a high level only, with a focus on differences between allocation options as to actual and reasonable using the 2013 takes.
97. Relying on the evidence of Ms Taylor as to effects of lack of water for vines⁵⁰ and the evidence of Dr Dark as to the effect of the averaging in relation to the accessing the quantity of water required,⁵¹ I understand that viticultural operations, including future intensification or development would be negatively impacted by the consequential averaging change. This evidence is supported by the views of Mr Yukich for the Winegrowers.⁵² In my opinion, it is difficult to draw the conclusion that the consequential amendment is justified and in line with actual and reasonable water use, which applies to both groundwater and surface water takes.
98. In this case, it is my opinion that the section 32 analysis is too broad and that insufficient regard has been had to the cost and benefits to viticulture, particularly in terms of the approach to the reduction in the allocation water, which Dr Dark⁵³ and Ms Taylor⁵⁴ consider significant in terms of its impacts on viticulture. In part the reason for reaching this view, is that viticulture being a very efficient user of water means that its ability to

⁴⁸ Officer's s42A Hearing Report for PC9, Para 2064.

⁴⁹ Section 32 Report, Pages 288 – 293.

⁵⁰ EIC, Ms E Taylor, Paras 43-46.

⁵¹ EIC, Dr A Dark, Paras 19-28.

⁵² EIC, Mr F Yukich, Paras 29-46.

⁵³ EIC, Dr A Dark, Para 27(d).

⁵⁴ EIC, Ms E Taylor, Para 62.

improve its efficiency is limited. As such, it is an industry that is potentially more affected by uniform reductions across all users, with little room to change or adjust.

99. My concerns as to the adequacy of the section 32 analysis as set out above, is equally applicable in relation to the “least of either” structure of the definition of “Actual and Reasonable”.
100. As identified in paragraph 94 above, the consequential change from “maximum” to “average” has not, as far as I have been able to ascertain, being the subject of a s32AA analysis.
101. I also observe that the section 32 analysis does not assess the differences between water users in relation to efficiency. Where all water users are treated equally in terms of actual and reasonable use, I would have anticipated the s32 assessment to address this matter as the provisions lock in the most efficient users, such as viticulture, with no opportunity for intensification on existing sites.
102. If the Panel were of the mind to amend the definition of “Actual and Reasonable” to address the issues I have identified above, then the following amendment may assist (my amendments to the notified version of PC9 in blue):

Actual and Reasonable in relation to applications to take and use water means;

- d) no more than the quantity specified on the permit due for renewal or any lesser amount applied for; and ~~the least of~~ either;
- e) the maximum annual amount as measured by accurate water meter data in the ten years preceding 2 May 2020^{82.4} if accurate water meter data is available. (If insufficient or no accurate data is available either clause a) or c) will apply)

or

- f) for irrigation takes, the quantity required to meet the modelled crop water demand for the irrigated area with an efficiency of application of no less than 80% as specified by the IRRICALC water demand model (if it is available for the crop and otherwise with an equivalent method), and to a 95% reliability of supply where the irrigated area is;
- (i) no more than in the permit due for renewal, or any lesser amount applied for, and in the case of Heretaunga Plains ~~WGroundwater Quantity Area Management Unit~~, is not more than the amount irrigated in the ten years preceding 2 May 2020-1 August 2017^{82.5}; and
- (ii) evidence is supplied to demonstrate that the area has, and can continue to be, irrigated and the permit substantially given effect to.

103. In **Appendix B** to my evidence, I have set out a section 32AA evaluation assessment in relation to this proposed change.

104. In addition, Ms Taylor, in evidence, raises the issue that the definition of “Actual and Reasonable” does not clarify when and how an alternative water demand model to IRRICALC will be considered an adequate substitute.⁵⁵ I observe that the definition of “Actual and Reasonable”, states “... specified by the IRRICALC water demand model (if it is available for the crop and otherwise with an equivalent method)”. I also observe that Officers have recommended amendments to POL TANK 47 b) to clarify that alternative models to IRRICALC may be used.⁵⁶ POL TANK 47 b) is recommended by Officers to be amended to read as follows:

- b) using the IRRICALC water demand model ~~if available for the land use being applied for (or otherwise by~~ a suitable equivalent approved by Council^{192.13} ~~that utilises crop type, soil type and climatic conditions~~^{8.44} to determine efficient water allocations for irrigation uses;

105. I note that the purpose of POL TANK 47 in relation to consideration of resource consent applications is to ensure water is allocated and used efficiently. It does not relate to, and has no direct linkage to, the definition of ‘Actual and Reasonable Use’. In my view there is the potential to address the issue identified by Ms Taylor, through an amendment to the term ‘Actual and Reasonable Use’ that includes similar wording to the amendments recommended for POL TANK 47 b). This would include wording with reference to ‘suitable equivalent approved by Council’ and ‘that utilises crop type, soil type and climatic conditions’.

M. OTHER MATTERS ON WATER QUANTITY

Storage and Controlled Release

106. In relation to OBJ TANK 18, submission point 29.8 sought explicit reference to controlled release from storage. OBJ TANK 18, as amended by Officers states:

OBJ TANK 18 The current and foreseeable water needs ~~for mauri and ecosystem health and~~ of future generations ~~and for mauri and ecosystem health~~^{58.12} are secured through:

⁵⁵ EIC, Ms E Taylor, Para 56.

⁵⁶ Officer’s s42A Hearing Report for PC9, Para 1580.

- a) avoiding future over-allocation and phasing out existing over-allocation^{123.39, 233.9}
- b) ~~a)~~ water conservation, water use efficiency, and innovations in technology and management;
- c) ~~b)~~ flexible water allocation and management regimes;
- d) ~~e)~~ water reticulation;
- e) ~~d)~~ aquifer recharge and flow enhancement;
- f) ~~e)~~ water harvesting and storage.

107. The Officers considered that the controlled release of stored water was implicit and did not require specific reference.⁵⁷ While I agree with the Officers that the water storage and harvesting would, all things being equal, include the release of any such water, I note that section 14 of the RMA states in summary, that no person may take, use, dam, or divert any water in a manner that a regional rule, unless expressly allowed for by way of a resource consent. While in this case the matter is in relation to an objective, relying on implicit interpretation is not in my view good plan drafting practice.

108. I recommend that OBJ TANK 18 be amended to include reference to controlled release of stored water. In my view this amendment does not require a s32AA evaluation beyond that published at the notification of the plan change. The objective would be worded as follows (amendment shown in blue):

OBJ TANK 18 The current and foreseeable water needs for mauri and ecosystem health and of future generations ~~and for mauri and ecosystem health~~^{58.12} are secured through;

- a) avoiding future over-allocation and phasing out existing over-allocation^{123.39, 233.9}
- b) ~~a)~~ water conservation, water use efficiency, and innovations in technology and management;
- c) ~~b)~~ flexible water allocation and management regimes;
- d) ~~e)~~ water reticulation;
- e) ~~d)~~ aquifer recharge and flow enhancement;
- f) ~~e)~~ water harvesting ~~and,~~ storage and controlled release.

⁵⁷ Officer's s42A Hearing Report for PC9, para 1308.

Frost Protection – POL TANK 53, RULE 11 and Schedule 31

109. In relation to POL TANK 53, submission point 194.47 sought an amendment to POL TANK 53 to recognise that takes for frost protection are excluded from the total allocation limits in Schedule 31. POL TANK 53, as amended by Officers states:

POL TANK 53 When considering applications to take water for frost protection, the Council will avoid, remedy or mitigate actual and potential effects of the take on its own or in combination with other water takes;

- a) from groundwater in the Heretaunga Plains Groundwater Quantity Area Water Management Unit on;
 - (i) neighbouring bores and existing water users;
 - (ii) connected surface water bodies;
 - (iii) water quality as a result of any associated application of the water onto the ground where it might enter water;
- b) from surface water on;
 - (i) instantaneous flow in the surface water body;
 - (ii) fish spawning and existing water users;
 - (iii) applicable minimum flows during November to April;
 - (iv) water quality as a result of any associated application of the water onto the ground where it might enter water;

By;

- c) requiring applicants to demonstrate non-water reliant alternatives have been investigated and provide evidence as to why they are not appropriate.^{8.45}
- d) ~~e~~taking into account any stream depletion effects of groundwater takes;
~~d~~imposing limits in relation to minimum flows or groundwater levels;

110. The Officers' response to submission point 194.74, was as follows:

1695. One submission point highlights that there is a discrepancy between this policy and Rule 11, where this policy requires the application of minimum flows and Rule 11 excludes consideration of allocation limits and minimum flows in Schedule 31. I recommend consequential amendments to Rule 11 to rectify this discrepancy.

111. The Officers' consequential amendment to the relevant part of RULE TANK 11, Conditions/Standards/Terms; is as follows:

The activity does not comply with the conditions of Rules TANK 7, TANK 8,^{203.23} TANK 9 or TANK 10 where relevant.^{129.15}

Either

- (a) The application is either for the continuation of a water take and use previously authorised in a permit that was issued before 2 May 2020

or is a joint or global application that replaces these existing water permits previously held separately or individually ~~in the following Management Units (quantity);~~

- ~~(i) Ahuriri~~
- ~~(ii) Poukawa~~
- ~~(iii) Ngaruroro groundwater~~
- ~~(iv) Tūtaekurī groundwater~~
- ~~(v) Heretaunga Plains~~
- ~~(vi) _____~~

Or

- (b) The total amount taken, either by itself or in combination with other authorised takes in the same water quantity area management unit does not cause the total allocation limit in the relevant quantity area management unit as specified in Schedule 31 to be exceeded ~~except this clause does not apply to takes for:~~

or

- (c) The take is for:
 - (i) frost protection; or^{194.74}
 - (ii) takes of water ~~associated with and from or~~^{123.106} dependant on release of water from a water storage impoundment, or managed aquifer recharge scheme^{29.42}; or

Water takes that are non-consumptive.^{129.16, 203.23}

112. I see the policy to rule framework differently in this case. POL TANK 53 at b)(iii) refers to the applicable minimum flows during November to April. I understand that this drafting was specific so as to not include the frost season which is August to October and a time at which minimum flows do not usually occur. In addition, POL TANK 53 only applies to the Council in consideration of any resource application. POL TANK 53 does not direct the allocation framework. Rather that framework is provided through Schedule 31 and the definition of 'Allocation limit for Groundwater' which excludes frost protection from allocation limits. The definition of 'Allocation limit for Groundwater' states (as amended by Officers):

Allocation limit for ~~G~~groundwater means the maximum quantity that is able to be allocated in water permits and abstracted during each year, expressed in cubic metres per year, and is calculated as the sum of maximum water permit allocations for the groundwater zone. Allocations for irrigation will be calculated on the basis of the irrigation period of November- May. The Heretaunga Plains Water Management Unit groundwater allocation limit will be addition to water taken and used for frost protection which is expressed as an instantaneous take in litres per second and calculated as the sum of water permit allocations.

113. If the Panel were of the mind to amend the proposed plan to address this issue, then the RULE TANK 11, Conditions/Standards/Terms in relation to the exclusion of frost

protection could be amended as follows (no amendment reverts closer to notified version, hence no additions shown in blue):

- (b) The total amount taken, either by itself or in combination with other authorised takes in the same water ~~quantity area management unit~~ does not cause the total allocation limit in the relevant ~~quantity area management unit~~ as specified in Schedule 31 to be exceeded except this clause does not apply to takes for:
- (i) frost protection; or
 - (ii) takes of water ~~associated with and from or~~ dependant on release of water from a water storage impoundment, or managed aquifer recharge scheme; or
 - (iii) water takes that are non-consumptive.

N. Land Use Change

114. PC9, as amended by Officers' recommended changes, through POL TANK 21 seeks to regulate changes in production land use, to manage the potential impacts of increases in the diffuse discharges of nitrogen. That policy is implemented by RULES TANK 5 and 6 which, require resource consent application as a controlled and restricted discretionary activity for land use changes greater than 10Ha. Associated with RULES TANK 5 and 6 is Schedule 29, which, following Officers' recommended amendments, sets out a table of land uses from high N leaching to low N leaching. The section 42A Hearing Report addresses these provisions at paragraphs 763 – 825.
115. The Winegrower submission points applicable to these provisions are 29.12, 29.15, 29.26, 29.4, 29.48, 29.62, 194.39, 194.79 - 194.82, 194.105, 194.106 and 238.8, 238.12 and 238.13.
116. As I understand the submissions of the Winegrowers, the concern of the industry is that as a low risk N leaching land use activity,⁵⁸ land used for that purpose is unable to change to a use that is of a higher leaching rate. This issue has been responded to in part by Officers recommending that grapes be included at the same level as other horticultural crops in the amended Schedule 29.⁵⁹ As an example, the change to Schedule 29 means that a change from an irrigated vineyard to irrigated horticulture (excluding commercial vegetable growing) would not require consent under RULE TANK 5 or 6. I understand that this change is supported by HBWG.⁶⁰

⁵⁸ EIC, Ms E Taylor, Paras 41-42.

⁵⁹ Officer's s42A Hearing Report for PC9, para 816.

⁶⁰ EIC, Ms E Taylor, Para 69.

117. The limiting factor for winegrowers contemplating such a land use change would be access to water. A change from grapes to pip-fruit (apples) would, I understand, require more water than grapes. Therefore, as set out in section L Water Allocation – Actual and Reasonable Use and, Heretaunga Aquifer and Surface Water Allocations of my evidence, it is the limit set by the actual and reasonable use of water that would constrain any such change. This reinforces viticulture concerns around limit setting.

Mark St.Clair

11 May 2021

O. APPENDIX A

Appendix A – Qualifications and Relevant Experience

- New Zealand Certificate in Town and Country Planning Draughting 1984;
- Bachelor of Resource and Environmental Planning, First class honours, Massey University 1994.

Professional Membership

- Full member of the New Zealand Planning Institute 1996.
- New Zealand Planning Institute Distinguished Service Award 2018.

My relevant past experience includes:

- Special Advisor – Environment Court of New Zealand – Plan Chances 1, 7 and 8 Otago Regional Plans (2020 - 2021);
- Commissioner (Sole) – Palmerston North City Council and Manawatū Whanganui Regional Council – Hoult Quarry (2020 - 2021);
- Expert Witness – Hawkes Bay Winegrowers Association, Gimblett Gravels Winegrowers Association and Pernod Ricard Winemakers New Zealand Limited – Water Conservation Order Ngaruroro and Clive Rivers (2018 – 2020);
- Policy Advisor – Manawatū Whanganui Regional Council – NPS-FM 2020 Implementation Programme Farming (2020);
- Expert Witness - Pernod Ricard Winemakers New Zealand Limited – Hawkes Bay Regional Council proposed Plan Change 7, Outstanding Water Bodies (2020);
- Providing planning and resource management services to Winegrowers and individual winegrowing entities such as Pernod Ricard Winemakers New Zealand Limited, Dry River Wines, Schubert Wines – Preparation of resource consent applications for water take and use, discharge permits and activities in the beds of lakes and rivers;
- Section 87F Reporting officer, Manawatu Wanganui Regional Council for Waka Kotahi NZ Transport Agency for Te Ahu a Turanga: Manawatū-Tararua Highway (2019-2020);
- Expert Witness – Golden Bay Cement – Submissions on Marlborough Environmental Management Plan (2018);
- Commissioner (Chair) – Greater Wellington Regional Council – Proposed Natural Resources Plan (2017-19);
- Policy Advisor – Manawatū Wanganui Regional Council - Section 35: Intensive Farming (2018);
- Expert Witness – PEPANZ – South Taranaki District Council, District Plan Appeals (2018-2020);
- Section 87F officer – Manawatū Wanganui Regional Council for Horowhenua District Council Foxton Wastewater Treatment Plant applications (2017-19);
- Commissioner (Chair) – Nelson City Council – Calwell Slipway Remediation Project (2016);

- Commissioner (Chair) – Gisborne District Council – Makauri Aquifer Recharge Project (2016);
- Section 42A officer – Horizons Regional Council for Manawatū Wanganui Regional Council Lake Horowhenua Weed Harvesting, Fish Pass and Sediment Trap applications (2015);
- Section 42A officer – Manawatū Wanganui Regional Council for Midwest Disposals Ltd Bonny Glen Landfill Extension applications (2014/15);
- Facilitator Pre-hearing meeting – Manawatū Wanganui Regional Council, s128 review of Palmerston North City Council, Wastewater Treatment Plant (2014);
- Advisor/Expert Witness – Planner to Board of Inquiry for Tukituki Catchment Proposal (HBRC Plan Change 6 and the Ruataniwha Water Storage Project) (2013/14);
- Friend of Submitter – Environmental Protection Authority, NZTA Basin Bridge Proposal – Notice of Requirements and Resource Consent (2013/14);
- Commissioner (Chair) – Manawatū Wanganui Regional Council, Hunterville Wastewater Treatment Plant discharge permit application (2013);
- Advisor – Environmental Protection Authority, completeness check for RMA applications for Ruataniwha Water Storage Scheme (2012/13).

P. APPENDIX B

Appendix B – Section 32AA evaluation

Provision	Evaluation
<p>The 32(1)(a)</p> <p>The evaluation report must examine the extent to which the objectives of the proposed changes are the most appropriate way to achieve the purpose of the RMA;</p>	<p>The proposed changes to the definition of “Actual and Reasonable Use” do not conflict with the objectives (OBJ TANK 16, 17 and 18) of PC9 and they remain the most appropriate way to achieve the purpose of the RMA, as well as the NPSFM 2020.</p>
<p>32(1)(b)</p> <p>The evaluation report must examine whether the proposed provisions are the most appropriate way to achieve the objectives by reference to other reasonably practicable options and assessing the efficiency and effectiveness of the proposed changes in achieving the objective;</p>	<p>I consider the proposed change to the definition is the most efficient and effective to achieve the objectives (OBJ TANK 16, 17 and 18) of PC9.</p> <p>The relevant policies being POL TANK 37, 43, 44, 46 and 50 with reference to actual and reasonable use.</p> <p>The change provides a practical option for the maintenance of viticultural operations through the access to water required for that industry, while providing for the continuation of reducing over allocation through minimum flows for surface water and, an interim limit and review for groundwater.</p> <p>When considered against the recommended amendment in the s42A Hearing Report, it is my view that the change is the most practicable option.</p>
<p>32(1)(c)</p> <p>The evaluation report must contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from implementation of the proposed changes;</p>	<p>The change to the definition addresses the matters raised in my evidence as to the broad approach of the s32 evaluation and the lack of specificity in terms of the impacts on viticulture⁶¹ relying on the evidence of Ms Taylor and Dr Dark.</p> <p>The change maintains the economic and cultural benefits of the winegrowing industry while providing for progress to be made on the over allocation of water.</p>

⁶¹ Paragraphs 92-98

<p>32(2)(a) –(c)</p> <p>The assessment under (1)(b)(ii) must identify and assess the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from implementation of the proposed changes, including opportunities for economic growth that are anticipated and employment; quantify the benefits and costs identified (if practicable); and assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the proposed changes;</p>	<p>The commentary above is also relevant to this aspect of the s32 evaluation.</p> <p>The change to the definition addresses the matters raised in my evidence as to the broad approach of the s32 evaluation and the lack of specificity in terms of the impacts on viticulture⁶² relying on the evidence of Ms Taylor and Dr Dark.</p> <p>The change maintains the economic and cultural benefits of the winegrowing industry while providing for progress to be made on the over allocation of water.</p>
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⁶² Paragraphs 92-98

**BEFORE THE INDEPENDENT HEARING PANEL
APPOINTED BY HAWKE'S BAY REGIONAL COUNCIL**

IN THE MATTER of the Resource Management Act
1991

AND

IN THE MATTER of the hearing of submissions on
Proposed Plan Change 9 (PPC9)
– Tūtaekurī, Ahuriri, Ngaruroro
and Karamū Catchments (TANK)

**EVIDENCE OF ANTHONY DAVOREN
FOR APATU FARMS LTD**

11 MAY 2021

INTRODUCTION

Qualifications and Experience

1. My name is Anthony Davoren.
2. I am currently a private consultant to applicants and submitters as an expert witness, orchard management companies, consulting companies and grower co-operatives (e.g. Zespri). Prior to my current position I was employed as an Irrigation Management Consultant, Aqualinc Research Ltd. I owned HydroServices Ltd, a company specialising in soil moisture measurement and irrigation management from 1983 to 2016.
3. I hold a Bachelor and Masters (1st Class) in Science from University of Waikato, majoring in Earth Sciences; and a PhD in Engineering Science from Washington State University.
4. I have 38 years professional experience measuring soil moisture, irrigation management and acting as an expert witness at resource consent hearings. I have been an expert witness at resource consent and Environment Court hearings for:
 - 4.1. Canterbury Groundwater Zones;
 - 4.2. Irrigation of industrial and urban wastewater hearings for Canterbury Meat Packers and Selwyn District Council (Leeston);
 - 4.3. Selwyn District Council Rolleston urban wastewater discharge (resource consent hearing only);
 - 4.4. Manawatu District Council for the Feilding wastewater treatment plant discharge consent;
 - 4.5. Southland District Council in respect of the Te Anau wastewater discharge consent;
 - 4.6. Ngaruroro Water Conservation Order; and
 - 4.7. Otago Regional Council Plan Change 7.

Code of Conduct

5. While this is not a hearing before the Environment Court I confirm that I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note. This evidence has been prepared in accordance with the Code and I agree to comply with it. I confirm that the evidence and opinions I have expressed in my evidence are within

my areas of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Scope and purpose of evidence

6. My evidence addresses the following matters:
 - 6.1. Policy 36, 37, 46, 52; TANK 9, 10 and 11; Schedule 31; and the Glossary of Terms regarding replacement consents and, actual and reasonable use.
 - 6.2. Policy 54, 55,56, 57; TANK 13, 14, 15; and Schedule 32 regarding high flow takes and storage.
 - 6.3. Policy 51, 52; TANK 7 and 8 regarding availability of water for survival of permanent crops.
 - 6.4. Policy 48, 52; RRMP 61, 62, 62a and 62b regarding transfers of water permits.
 - 6.5. Policy 37 and 38 regarding restriction on re-allocation of water.
 - 6.6. Policy 17, 18, 19, 23, 24, TANK 1 and 2; Schedule 28, 30; and the Glossary of Terms regarding industry programmes and landowner collectives.
 - 6.7. Policy 21, TANK 5 and 6; and Schedule 26, 27 and 29 regarding land use change and nutrient loss.
 - 6.8. Schedule 31 regarding flows, levels and allocation limits.

7. In preparing this evidence I have relied on the following reports and presentations prepared for the TANK process, and:
 - 7.1. Hearing Report on Proposed Plan Change 9 (including Appendices) - Tūtaekurī Ahuriri Ngaruroro Karamū Catchment Area. Hawke's Bay Regional Council Publication No.5550, 15 April 2021.
 - 7.2. Proposed Plan Change 9 Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchment, Publication Number: 5456, Notification date: 2 May 2020.
 - 7.3. Ngaruroro and Tūtaekurī flow data from HBRC.
 - 7.4. TANK presentation reports of 22 March 2017, 27 July 2017, 2 August 2017 and 14-15 August 2018.
 - 7.5. Affidavit of Jeffrey Cameron Smith to the Special Tribunal for the Ngaruroro and Clive Rivers Water Conservation Order.

- 7.6. Hawke's Bay Regional Council Section 32 Evaluation Report March 2020. TANK Catchments Plan Change to Regional Resource Management Plan – Change 9.

Apatu Farms Ltd Stated Position

8. Apatu Farms Ltd (AFL) submitted in support of the overall framework of Plan Change 9 (PC9) and sought amendments to ensure future sustainability of the TANK catchments and horticulture which critically important to the region.
9. AFL consider changes are required to ensure there is sufficient reliable water to provide for this sustainability.
10. AFL recognises that “real freshwater improvements” are delivered through their farming practices, especially their water use and discharge management. AFL supports the requirement for “all growers to operate at best management practice.”

Policy 36, 46, 52; TANK 9, 10 and 11; Schedule 31; and the Glossary of Terms

11. AFL disagreed with the date for determining use of August 2017 and the definition of Actual land Reasonable.
12. HBRC has amended the date to define the 10-year period of water use data to the period preceding 2 May 2020.
13. I agree with the amended date but do not agree that the period of record should be restricted to 10 years. Statistically, the longer the period the more robust the analysis. AFL consider if there is a longer length of water meter use data than 10 years prior to 2 May 2020 then it should be used.
14. A longer length of record is also more likely to capture higher irrigation demand seasons and better define the 95th percentile (95 percent reliability of supply) demand season HBRC proposes¹.
15. I disagree with the amended meaning for Actual and Reasonable (b) in Chapter 9, Glossary of Terms Used; i.e. “the average annual amount as measured by accurate water meter data in the ten years preceding 2 May 2020 if accurate water meter data is available. (If insufficient or no accurate data is available either clause a) or c) will apply)”.

¹ Appendix 1: Recommended Changes to Proposed Plan Change 9 - Tūtaekurī Ahuriri Ngaruroro Karamū Catchment Area, Glossary of Terms Used, Paragraph c) page 90.

16. The average amount (volume) used will not capture the irrigation demand season to meet the 95% reliability of supply (Paragraph (c) of the Actual and Reasonable meaning).
17. I demonstrate this with data from two AFL properties with 6 years of accurate water meter data (Table 1, Appendix 1). The analysis shows:
- Example 1 the average volume is 315,792m³, the 95th-percentile demand is 406,081m³ and if the definition of Actual and Reasonable (as recommended by Council officers) is applied only 78% of the volume required in the 95%-ile season would be allocated.
 - Example 2 the average volume is 557,574m³, the 95th-percentile demand is 700,884m³ and if the definition of Actual and Reasonable (as recommended by Council officers) is applied was applied only 80% of the volume required in the 95%-ile season would be allocated.

Year	Example 1	Example 2
	Volume m ³	Volume m ³
2012-13	419922	
2013-14	346511	522977
2014-15	381079	578228
2015-16	385320	704355
2016-17	279310	500732
2017-18	264371	534608
2018-19	194870	334899
2019-20	289088	693865
2020-21	281653	590930
Mean	315792	557574
95%-ile	406081	700684
Proportion (95th-%ile/mean)	0.78	0.80

Table 1. Annual volume m³ used in the water years (1 July to following 30 June) for two AFL arable properties.

18. While allocating the average use might be consistent with Policy TANK 37(d)(ii)], it is not consistent with Policy TANK 47(d) or the definition in “Actual and Reasonable” allocating water for irrigation with a “95% reliability of supply”.
19. I have run an Irricalc model at Bridge Pa (close the to the AFL properties) for the seasons 2010-11 to 2019-20 to determine the 95th-percentile irrigation demand season (Appendix 2).
20. The 95th-percentile or 95% reliability of supply season demand is 570mm/year (5740m³/ha/year). The 2012-13 season was the highest

demand season and the percentile is greater than 95%. The 2018-19 demand (540mm/year) was less than the 95th-percentile demand but still exceeded the mean for the period of record of 465mm/year.

21. Allocating the average use will severely compromise the ability of irrigators to meet crop demand.

Policy 54, 55, 56 and 57; TANK 13, 14 and 15; and Schedule 32

22. AFL submitted for the high flow allocations to be revisited and considered the allocations to be interim.
23. I support the hydrological evidence of Ms Gillian Holmes for HortNZ that deals with these limits. That is, if future hydrological investigations demonstrate that a higher allocation(s) does not result in adverse effects, the limit(s) should be reconsidered.

Policy 51 and 52; TANK 7 and 8

24. AFL submitted a specific exemption to allow up to 20m³/day should be provided for in TANK 7 and 8 for survival of permanent horticultural crops.
25. Policy 51(d) references “water essential for survival of horticultural tree crops” but only “to make decisions about providing for water uses”. Neither TANK 7 nor TANK 8 specify the allowance of 20m³/day for a property. TANK 8 only refers to the “taking of water for non-consumptive uses including aquifer testing is limited to 20 cubic metres per day”.

Policy 48, 52; RRMP 61, 62, 62a and 62b; and

Policy 37 and 38

26. I disagree that enabling the transfer of water permits should not be permitted.
27. I support the transfer of groundwater and surface water permits that have been exercised. Key to the transfer is the interim allocation limit of 90Mm³ per year and actual use which is likely less than the allocation.
28. Any permit to take and use groundwater is already included in the interim limit and the “environment”. Transferring the permit elsewhere in the Heretaunga Plains Aquifer area should be enabled so long as:
- a) Well interference effects are less than minor or can be mitigated (reduce the rate of take or volume); and
 - b) Any nutrient losses are no greater than from the current location.

29. This is no different to the trade and transfer of water permits in fully allocated groundwater zones in Canterbury where interference effects must be assessed and mitigated, and nutrient limits must be met.
30. While the allocation limit is interim “until there has been a review of the relevant allocation limits within this plan²” and is to be managed as an over-allocation, there are uncertainties with the allocation limit, the review and the over-allocation status. Water meter use analysis would demonstrate whether this limit is realistic, and if it is exceeded by use and in which years.
31. The 90Mm³/year limit is considered to be the approximate abstraction for municipal, industrial and irrigation use according to Smith (2017)³ in his affidavit and was assessed in the s32 Report⁴ as use in the summer of 2012–13 water year⁵. Based on this, 90Mm³ has been set as the allocation limit.
32. The s32 Report estimates actual total use is 78Mm³/year or approximately about 48% of the (paper) allocation of 163Mm³/year. The estimated use of 48% is similar to an analysis of AFL and Heinz Watties (presented in their expert witness evidence⁶) water meter data use as a proportion of annual allocation is 41%. This suggests the actual irrigation use could be as low as 67Mm³/year and total use about 78Mm³/year; i.e. groundwater may not be over allocated
33. There is no proposal as to when the review might take place and be completed. While Policy 42 requires the council to commence a review after water has been re-allocated and consents reviewed and within 10 years of the operative date, I consider this is too long and there needs to be greater certainty of the completion date.
34. Policy 37(b) appears to be contrary to TANK Rules 9 and 10 under Section 124 rights. As stated, “avoid re-allocation of water . . . “would prevent the first consents which expire from being re-granted because the allocation limit would still be exceeded based on the current paper allocation being in excess of the interim limit.
35. I do not believe this is the intent of the Council and if it is not their intent the wording should be amended.

² Appendix 1: Recommended Changes to Proposed Plan Change 9 - Tūtaekurī Ahuriri Ngaruroro Karamū Catchment Area, Policy 37, page 24.

³ Affidavit of Jeffery Cameron Smith, 27 February 2017 for Special Tribunal for the Ngaruroro and Clive Rivers Water Conservation Order.

⁴ Mitchell Daysh Report for Hawke’s Bay Regional Council Section 32 Evaluation Report March 2020. TANK Catchments Plan Change to Regional Resource Management Plan – Change 9.

⁵ Hawke’s Bay Regional Council Section 32 Evaluation Report March 2020. TANK Catchments Plan Change to Regional Resource Management Plan – Change 9.

⁶ Evidence of Anthony Davoren for Heinz Watties, 7 May 2021

Policy 21; TANK 5 and 6; and Schedules 28 and 29

36. AFL submitted that clarification of a change in land use and the nutrient provisions was required.
37. I do not support the changes made to Schedule 29 in the inclusion of Table 1: Land Use Types and Nitrogen Leaching Risk. This is a new table that defines land use types and the nitrogen leaching risk. It is not an improvement and is not a sensible or robust alternative.
38. Schedule 29 is highly subjective, does not consider differences in farm systems within any risk category, does not encourage mitigation measures to reduce nutrient leaching, and assumes all farm systems in a particular risk category have the same leaching and loss and risk of leaching.
39. Schedule 29 addresses only N leaching risk. Many enterprises (for example hill country sheep and beef or deer) will have a much greater risk of P loss than N.
40. Each Level assumes every farming enterprise in the Land use type will have the same or fall within a range of unspecified nutrient loss. This is not the case. Every enterprise in a category will have a different nutrient loss depending on soil type, topography and farming systems. An enterprise may then have a lower level of risk than categorised or may have a greater level of risk. Without any limits an enterprise will not know which category their operation fits.
41. I am not aware of and consider it is unlikely an enterprise is solely “intensive winter grazing”. It is more likely that an area of winter forage crop(s) forms part of a farming enterprise.
42. To consider dairy and arable to have the same leaching risk is not correct and is not supported by any nutrient modelling. My experience from Overseer modelling is that dairy will in most every location has a higher N loss than arable.
43. Any land that is irrigated is identified as the highest N leaching risk. This is not correct and in my experience horticulture, even if irrigated, generally leaches less Nitrogen than many of the listed ‘higher risk’ land uses.
44. TANK 6 is contingent on the outcome of the test for TANK 5(a) which states “A change in land use types means a change from one leaching level to a higher leaching level as shown in Table 1 of Schedule 29”. The Schedule will be easily contested with nutrient modelling and result in protracted debate that an applicant has not met the condition(s) or standard(s) of Table 1.

45. TANK 5 provides that a change of land use from (say) a low leaching activity to a higher leaching activity requires consent as a controlled activity. TANK 6 applies if the activity does not meet the conditions of TANK 5 – so it captures land uses that go from high leaching (e.g. dairy) to low leaching (e.g. arable) because that would not meet TANK 5(a). Restricted discretionary consent would be required.
46. I do not think that was what was intended. The only sensible reason for defaulting from Rule 5 to Rule 6 would be if the landowner does not comply with condition (d) of Rule 5 – i.e. is not a member of a Catchment Collective. More likely AFL would amalgamate their permits in a catchment and this does not appear to be an option.
47. Quite apart from that, unless Schedule 29 is changed to something more meaningful and certain, it:
- 47.1. will be easily contested with nutrient modelling; and
- 47.2. will result in protracted debate about whether an applicant has not met the condition(s) or standard(s) and so which activity status applies.
48. Schedule 29 should at the very least, given the objective is to manage nutrient loss to water, directly address nutrient limits and targets. For example:
- A farming enterprise(s) must achieve a reduction of nitrogen or phosphorous loss (e.g. 10% or 15%) from a good management baseline as determined by OverseerFM (or other approved model) by “2025”.
 - Such an approach would firstly provide knowledge of the potential (N and/or P) loss and secondly give HBRC time to develop nutrient limits for catchments and sub-catchments. This would put an onus on both the enterprise(s) to “know” their impact and demonstrate improvement, and the council to improve their monitoring of surface and ground water to inform the establishment of limits.
 - The recent Mayfield Hinds Valetta Irrigation Scheme consent application decision⁷ (Appendix 3) provides an example of such an approach;
- “This consent is granted on the basis that the significant adverse effects on the receiving water will be reduced and there will be measurable environmental improvements” and “also gives the Applicant (substitute farming enterprise) sufficient time to

⁷ Mayfield Hinds Valetta Irrigation Scheme consent application decision, 21 April 2021.

demonstrate that land use practices can change to significantly reduce nutrient inputs and to address environmental degradation”.

And the decision sets nutrient loss reductions to be achieved by 2025 and 2030.

49. Freshwater Farm Plans (FFP) are outlined in Schedule 30 and are to be completed 3, 6 or 9 years after the Plan’s operative date. A key component of the FFP is a nutrient budget. However, there are no on-farm limits or targets to provide growers with certainty and clarity they are meeting any Plan requirement.

Schedule 31

50. AFL submitted there be no increase to minimum flow in the Tūtaekurī River from 2000L/s to 2500L/s because of the “catastrophic impact on production” of potential irrigation bans.
51. I agree the increase in minimum flow in the Tūtaekurī River may not result in ban days that could affect irrigation takes. An analysis of the Tūtaekurī mean daily flow record 2009-21 shows there would have been no ban days if the minimum flow had been 2500L/s (Appendix 4).
52. Recent (2020 and 2021) low flows are very close to the proposed minimum flow and irrigation bans. I am aware there has been increased change in land use from grapes to pip fruit in the lower Tūtaekurī catchment. Much of this development has yet to reach full maturity. Water use is greater for pip fruit than grapes and maximum water use at maturity may result in increased abstraction. There is potential for this increase to hasten the minimum flow of 2500L/s being reached resulting in irrigation bans that have previously not occurred.
53. The low flow fell to 2667L/s in 2020 and again in April 2021, suggesting the effect of land use change may be hastening the onset of the 2500L/s minimum flow.
54. I understand (*pers comm* Bruce McKay, Heinz Wattie and Lesley Wilson, DN & LR Wilson Limited) TANK did not discuss raising the minimum flow to 2500L/s and during discussions members discussed why the limit should be kept at 2000L/s. The Schedule and TANK 9-11 do not reference any investigation or reason to raise the minimum flow.
55. Raising the minimum flow to 2500L/s could jeopardise the investment in pip fruit in the lower Tūtaekurī catchment.

CONCLUDING COMMENTS

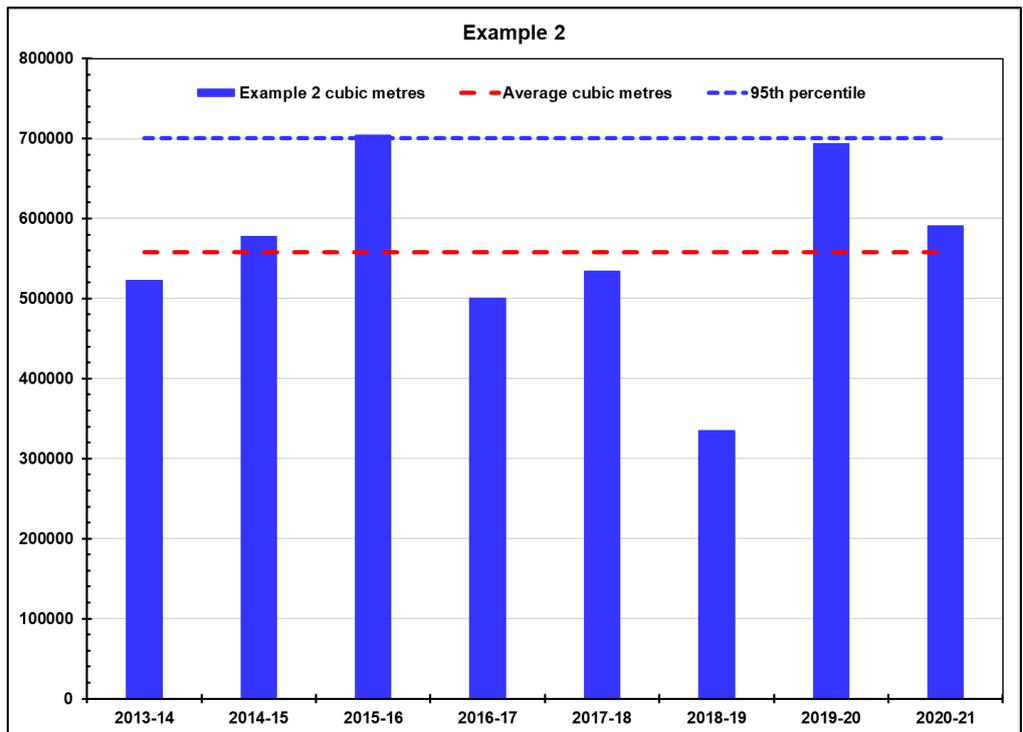
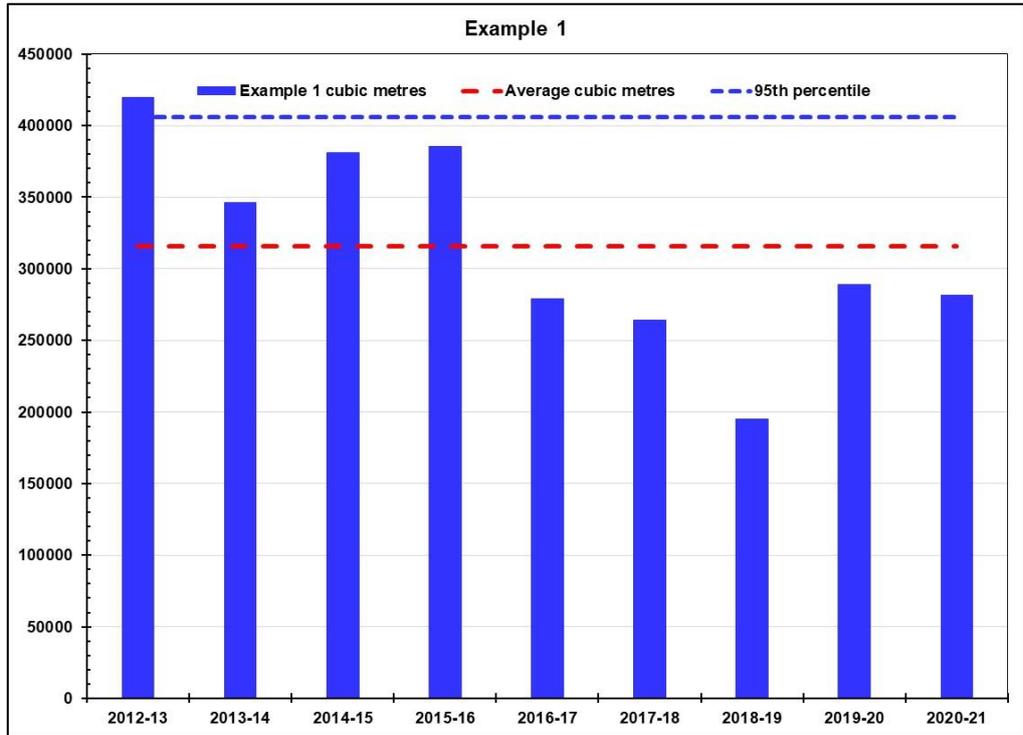
56. I do not support the amended meaning for Actual and Reasonable Use in Chapter 9, Glossary of Terms (b). Adopting the average annual volume will not provide for the demand in the 95th percentile season. This has been demonstrated by the examples from AFL water meter records.
57. I do not support groundwater being managed as an over allocation. Water meter data shows actual irrigation use is approximately 41% of allocated use, similar to the HBRC estimate an average total use of 48%. This equates to actual irrigation use of 67 Mm³/year and total use of 78Mm³/year, less than the interim allocation limit.
58. I support the transfer of groundwater and surface water permits that have already been exercised and the transfer should be enabled. Other than nutrient losses, the effects of these permits exist in the environment and are already counted in the groundwater allocation limit.
59. I do not support the changes in land use and the nutrient provisions of Table 1 of Schedule 29 and, by inference TANK 5 and 6, and Policy 21 need to be amended.
60. While flow data shows raising the minimum flow in the Tūtaekurī River there is no effect on irrigation ban days, the reason for raising the minimum flow is unclear.

**Anthony Davoren**

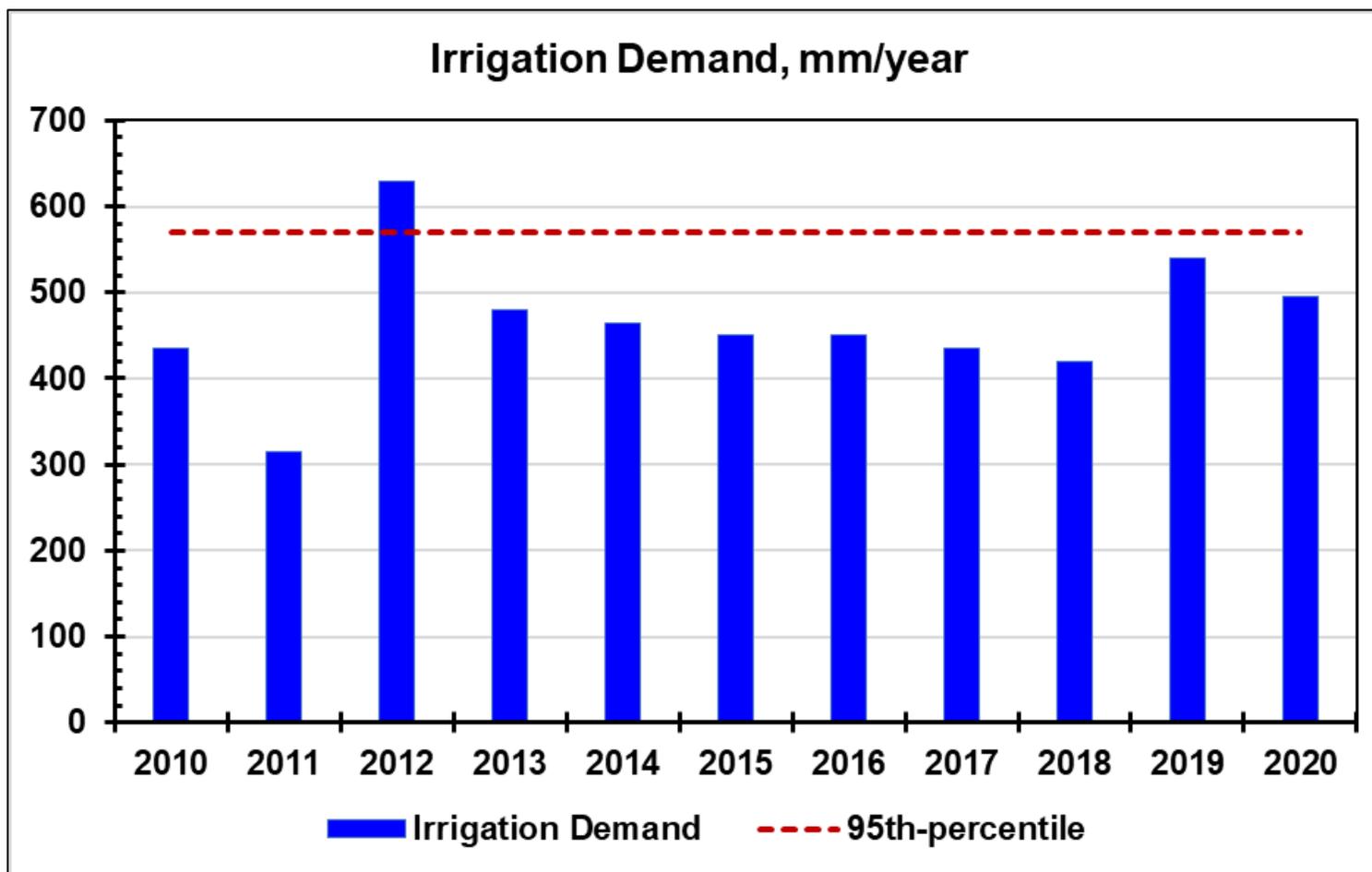
11 May 2021

Appendix 1

Water meter volume analyses for two Apatu Farms Ltd arable properties.



Appendix 2. Irricalc irrigation demand modelling results at Bridge Pa for seasons 2010-11 to 2019-20.

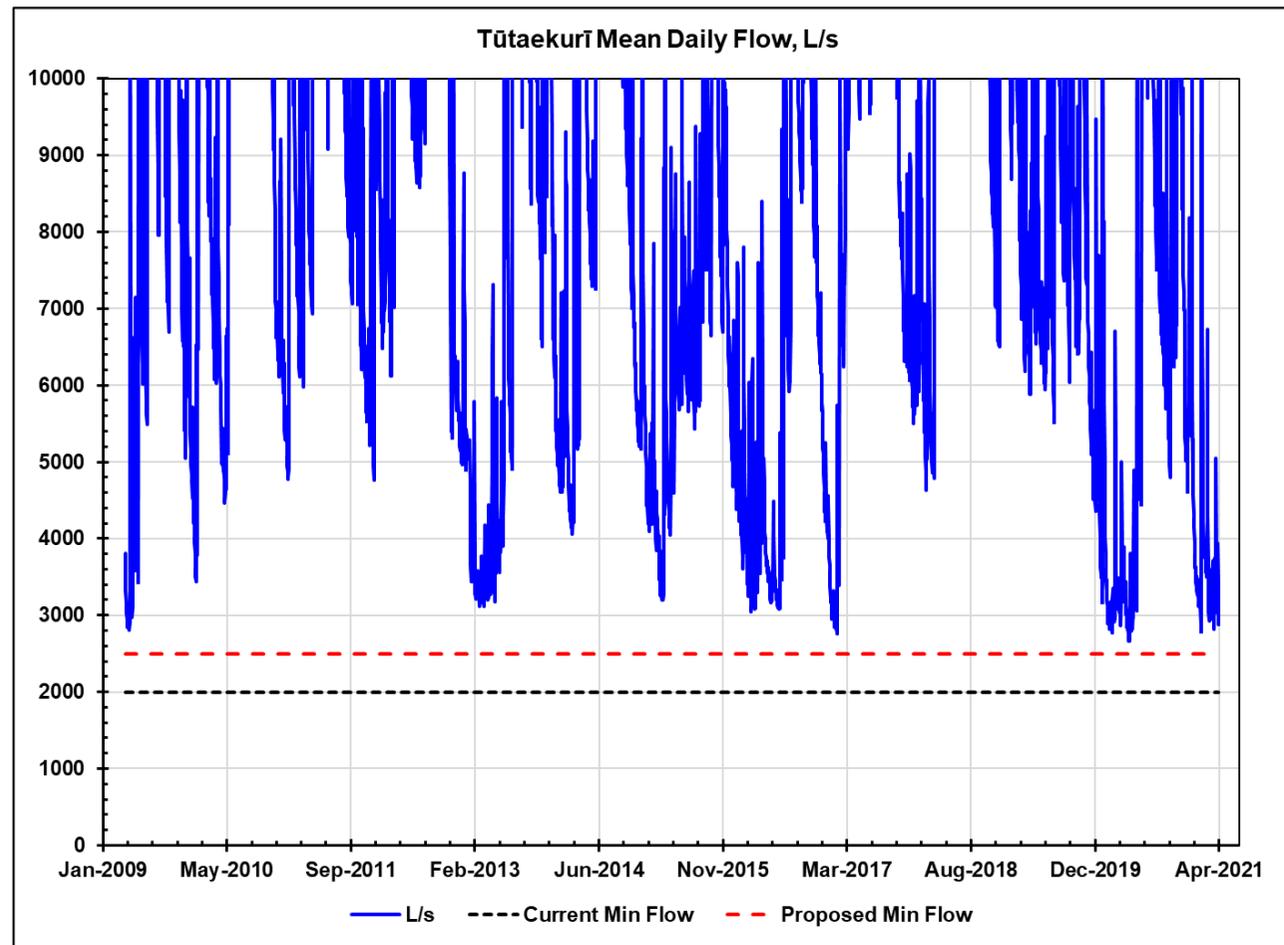


Appendix 3.

Link to Mayfield Hinds Valetta Irrigation Scheme consent application decision, 21 April 2021

<https://www.ecan.govt.nz/get-involved/news-and-events/2021/questions-addressed-on-mayfieldhindsvaletta-irrigation-schemes-application-for-consent-renewal/>

Appendix 4. Tūtaekurī mean daily flow, current and proposed minimum flow.



Before the Hawke's Bay Regional Council

In the matter of the Resource Management Act 1991

And

In the matter of Proposed Plan Change 9 to the Hawke's Bay Regional Plan
(Tūtaekurī, Ahuriri, Ngaururoro and Karamū Catchments) (**PPC9**)

**Statement of evidence by Annette Sweeney
on behalf of Hastings District Council and Napier City Council**

Dated 11 May 2021

INTRODUCTION

1. My full name is Annette Sweeney. I am a Principal and Managing Director of Good Earth Matters Consulting Ltd, Palmerston North.
2. I have the following qualifications and experience relevant to my evidence:
 - (a) Bachelor of Engineering, Hons (Natural Resources); Chartered Professional Engineer (CPEng Registration No 209452) and Fellow of Engineering New Zealand. My practice area for CPEng is 'Assessment, design and consenting of three waters infrastructure and flood protection. Assessment and reporting on contaminated land'.
 - (b) Master of Science, Hons (Resource Management).
3. I have over 20 years' experience providing consultancy services to local government relating to the provision of water, wastewater and stormwater infrastructure, with a particular focus on obtaining and managing resource consents for these services in accordance with the Resource Management Act and relevant Regional Policy Statements and Regional Plans.
4. I have been engaged by Hastings District Council (**HDC**) and Napier City Council (**NCC**) (together the **Councils**) to provide RMA planning advice in relation to Plan Change 9

to the Hawke's Bay Regional Resource Management Plan (TANK Plan Change) (PC9) being promoted by Hawke's Bay Regional Council (HBRC).

5. In preparing this statement of evidence I have read the notified version of PC9, the submissions and further submissions by HDC and NCC, and other submissions and further submissions relevant to my evidence as referred to below. I have also read the section 42A report, and the evidence of Mr Mark Clews, Mr Cameron Drury, Mr Brett Chapman, and Mr Russell Bond.
6. I am familiar with the TANK area and the provisions within the TANK Proposed Change through the following:
 - (a) I have been engaged by HDC since March 2017 to assist in the development and implementation of their drinking water strategy including providing RMA planning advice and have been responsible for obtaining all necessary RMA approvals to implement the strategy. Prior to this engagement, I was responsible for obtaining the current resource consent for the Hastings Urban water supply in 2010-2012.
 - (b) I, along with my colleague Grey Wilson, were engaged to provide recommendations to the Hawke's Bay Drinking Water Joint Working Group, (JWG) on regulatory provisions for source protection in the proposed TANK Plan Change and was lead author of the Good Earth Matters Consulting Ltd report¹ on this matter which is referenced in the s32 Report for PPC9. As part of this work, I attended and presented on this subject matter at TANK meetings in May and July 2018.

CODE OF CONDUCT

7. I confirm that I have read the Expert Witnesses Code of Conduct contained in the Environment Court of New Zealand Practice Note 2014. My evidence has been prepared in compliance with that Code in the same way as I would if giving evidence in the Environment Court. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

SCOPE OF EVIDENCE

¹ Drinking Water Source Protection – Draft Regulatory Provisions for TANK Catchments - Draft for Discussion; Good Earth Matters Consulting Ltd; June 2018.

8. My evidence addresses the following matters:
 - (a) Municipal Water Supply, specifically relief sought to ensure that Councils have the ability to meet their statutory obligations to provide for growth and give effect to the National Policy Statement on Urban Development subject to meeting industry best practice efficiency standards.
 - (b) Provisions for the protection of sources of human drinking water including amendments required to achieve consistency throughout the TANK Catchments as to how source water is protected.
 - (c) Provisions for stormwater management including minor amendments necessary to improve the clarity of the stormwater provisions.
9. I have addressed any matters raised in the s 42A report on the above topics throughout my evidence. Unless stated otherwise, the references to the PPC9 provisions in my evidence are for the s 42A report track changes version of the Plan Change.
10. In summary, my evidence concludes that the relief sought by the Councils with respect to municipal water supplies, source protection and stormwater management is consistent with the proposed plan change and higher order RMA planning instruments. In summary the relief sought by the Councils is as follows and is expanded on in my evidence:
 - (a) Amendments to the provisions for municipal water supply to ensure that future water allocation for municipal water services necessary to supply the needs of future demand is able to be provided for where the effects are less than minor, and the Councils services meet industry best practices for efficiency. This includes recognising growth projections that are determined subsequent to HPUDS 2017 and providing for transfer of water where such transfers will result in a more efficient use of water.
 - (b) Minor amendments to improve the clarity and consistency of the Plan provisions.
 - (c) Support for the source protection provisions and amendments as necessary to ensure that the provisions consistently give effect to the multi-barrier approach

and recognise and give effect to the recommendations of the Joint Working Group for Drinking Water Safety.

MUNICIPAL WATER SUPPLY

11. The Councils' submissions seek a framework for municipal water supply which:

- (a) **Recognises urban growth demands and statutory obligation on local authorities to provide for growth, including that growth projections are subject to change during the life of a Plan or term of consent.**

The Councils' submission is therefore that the Regional Plan must recognise that municipal water supply differs to other sectors and water takes for municipal purposes therefore require different management tools. It is considered that the TANK provisions recognise this (in part) and HDC's submission therefore is to support the municipal water objectives, policies and rules subject to amendments as discussed below. In summary, the framework needs to provide ability for municipal and community water supplies to meet current and future demands while ensuring that the systems are operated and maintained in a way which meets industry best practice for efficiency.

- (b) **Requires municipal water supplies to manage their systems in an efficient manner in accordance with industry best practice guidelines and benchmarks.**

In this regard, it is considered that PPC9 provisions adequately address this matter, and no further relief is sought.

- (c) **Enables transfer from existing allocated water between municipal supplies (eg between Napier and Hastings supplies) and enables transfers of existing self-serviced areas to municipal water supplies.**

This will enable servicing of currently serviced areas in a manner which provides for a more efficient use of, and reliable access to, safe water of suitable quality.

HPUDS2017 and subsequent variations

12. As set out in Mr Clews and Mr Chapman's evidence, municipal water suppliers are required to provide for community growth including provision of infrastructure services to support that growth as a function of their statutory obligations. In that regard, they differ from the majority of water users in that there is no discretion as to

the choice to undertake or to expand (grow) the activity. It is therefore appropriate that the water allocation framework provide for future allocation of water for municipal and community purposes based on evidentially sound growth projections, subject to the water services being operated in an efficient manner.

13. As notified, and as recommended in the Section 42A Report version of PC9, population and urban development projections are tagged to HPUDS 2017. Mr Clews' evidence explains that the growth projections in HPUDS 2017 are already considered to be out of date and are unlikely to be sufficient to account for the Councils' obligations to provide for growth under the National Policy Statement – Urban Development. Mr Clews' evidence discusses the need for Councils – including HBRC - to be responsive to changes in growth projections and that, as a consequence of a number of factors, growth projections can change significantly within the period of a regional plan or term of consent.
14. In summary, if a municipal water supplier is operating an efficient network, and the growth projection is such that it is unable to meet the projected demands under the current allocation, there should be a consenting process which would enable additional allocation to be made to the municipal or community supply in order that the supplier is able to meet its statutory obligations.
15. In order to achieve this, the Councils have sought that the water allocation framework for municipal water supplies be linked to growth projects in *"HPUDS 2017 or successive versions and/or any requirements prescribed under a NPS on Urban Development"*. This relates to the following provisions in PPC9:
 - (a) Objective TANK 16(b)
 - (b) Pol TANK 50(a)
 - (c) Rule TANK 9, Matter of Discretion 6b
 - (d) Rule TANK 10, Matter of Discretion 5b.
16. The Section 42A Report rejects these submission points that seek to reference subsequent variations. The reason given is that it does not help to give effect to the RPS or align with the NPSFM. It is unclear what specific points of the RPS or NPSFM the author is referring to, so it is difficult to respond to that criticism.

17. In my opinion, reference to the most up-to-date growth projections is appropriate and gives effect to relevant higher order provisions, including:
- (a) OBJ TANK 16 which provides a priority for domestic water supply, subject to the needs of the water body first being met. I consider that amending Objective TANK16 (b) to include reference to subsequent version of HPUDS is consistent with the priority order of Te Mana o te Wai and is consistent with the NPSFM.
 - (b) Policy TANK50(b) which requires water efficiency measures to be achieved as the water demand calculated from the projected growth is to be based on *“industry good practice targets for water infrastructure management”* being achieved.
 - (c) Policy LW2 of the RMP which requires priority to be given to the values in Table 2A which include *“urban water supply for cities, townships and settlements and water supply or key social infrastructure facilities”*.
 - (d) Policy 15 of the NPSFM which enables communities to provide for their social, economic and cultural well-being in a way which is consistent with the NPSFM. It is recognised that this requires giving effect to Te Mana o te Wai and providing for the needs and values of ecosystems and waterbodies as first priority.
 - (e) Provisions of the National Policy Statement on Urban Development as set out in Mr Clews evidence and in particular Objective 1 (*“well-functioning urban environments that enable all people and communities to provide for their social, economic and cultural wellbeing and for their health and safety, now and into the future”*); and Policy 2 which requires both Councils (as Tier 2 local authorities) to *“at all times”* provide sufficient development capacity to meet housing and business land over the short, medium and long term.
18. The above relief recognises the importance of water to community wellbeing through provision of sufficient water to meet household needs (e.g. vegetable growing); provide for recreation (parks, sports playing fields) and provide for health facilities, community facilities and cultural needs.

Rules applicable to municipal water supplies

19. Rule TANK9 provides for replacements of existing consents for groundwater takes from the Heretaunga Plains Aquifer as a Restricted Discretionary Activity. Condition

d) means that the application can only be considered under this rule if the amount of water applied for is the same or less than the current consented allocation.

20. Similarly, under Rule TANK 10, replacement consents for municipal supplies from surface or other groundwater areas can only be considered as a Restricted Discretionary Activity if the amount of water applied for is the same or less than the current consented allocation. If additional water is sought in order to meet growth projections, the activity may fall to be considered a Discretionary Activity under Rule TANK 11 but may also be considered to fall as a Prohibited Activity under Rule TANK12.
21. It is unclear if the activity could be considered as a Discretionary Activity under Rule TANK11 as:
 - (a) The application may fail to meet criterion b(i), which requires the application to be for a 'continuation' of a previously authorised water take. There may be a question of scale as to whether an application for an increased take is considered to be a 'continuation' of the previously consented activity. This is particularly true if the application includes a proposal for a new water source (to supply either part or all of the network) which may be sought, for example, to enable abstraction from a lower risk source water.
 - (b) The application may fail to meet criterion b(ii), which requires that the total amount taken on its own or in combination with other authorised takes in the same water quantity area not exceed the total allocation limit in Schedule 31. Depending on the overall allocation within the management unit at that time, a proposed municipal take may exceed the limit.
 - (c) The application does not fit within the list of takes provided for under b(iii).
22. If the application cannot meet the criteria in Rule TANK11 above, then it is a Prohibited Activity under Rule TANK12 and the Council would therefore be unable to meet its obligations to supply water to the growth areas. In my opinion, it is inappropriate for an activity which is required to be undertaken by statute to be at risk of being considered a Prohibited Activity. This is particularly the case where the activity is afforded second tier priority under Te Mana o te Wai, and where the allocation 'limit' is only an interim one until better information on the water resource can be gathered.²

² I note that the Councils' submissions seek that the 'limit' be described as a 'target', and I agree that is a more accurate term given the lack of information on which the 90 million cubic metres

23. If the activity falls to be considered a Prohibited Activity, it would be inconsistent with RPS provisions Table 2A (which identifies 'urban water supply' as a priority value); and OBJLW1 which requires integrated management of freshwater and land use and development which recognises the regional value of freshwater for municipal water us.
24. The relief sought by the Councils is for the ability to seek consent for additional water in order to provide for growth, only where efficiency benchmarks have been achieved, or will be achieved within an acceptable timeframe. This is consistent with the provisions of PPC9 which seek to provide for growth, in the first instance, by improving efficiency of use. However, there is a practical limit as to the efficiency gains that can be achieved and, after that time, additional water is required to provide for growth. Not being able to apply for resource consent in that instance would put an unnecessary and costly brake on additional growth that would be inconsistent with the NPSUD.
25. The Councils' submissions primarily sought to address this issue by changing the Prohibited fallback status for applications not able to comply with the conditions in Rule TANK11 to Non-Complying. This would enable municipal supplies to be considered as Non-Complying, as well as enabling some other applications to be considered on their merits – the latter is addressed in the evidence of Mr Drury.
26. In the event that the Hearings Panel wanted to provide for municipal supplies separately from other potential applications, this could be addressed by:
 - (a) Adding 'municipal, community or papakainga water supply' to Rule TANK 11 condition b(iii). This would provide certainty that the application could be considered as Discretionary Activity; or
 - (b) Adding a new Rule (TANK11A) that provides for municipal, community or papakainga water supply that does not meet TANK Rules 7, 8, 9, 10 or 11 to be considered as a Non-Complying Activity.
27. As these fall between the relief sought by the Councils and what is proposed in PC9, I consider there is no issue with scope.

has been reached. This aspect of the relief sought is addressed in more detail in the evidence of Mr Drury.

28. I agree that, given the over-allocation of water resources in the TANK catchments that PPC9 seeks to address, any allocation sought above the current consented limit should be subject to a high degree of scrutiny. Either pathway outlined above would require the applicant to present an evidential basis as to why the water sought is required to meet growth needs; why the demand is unable to be provided within the current allocation; and demonstrate that the water supply is being managed to the water efficiency benchmarks set in the plan and industry best practice or, if that is not the case, include a programme of works to achieve those standards. In the case of either a Discretionary or Non-complying activity, the application would be assessed against the policies and objectives stated above and would likely only be granted if there was certainty that efficiency benchmarks would be achieved, and the effects of the allocation are less than minor.
29. Both options (A) and (B) above would be consistent with the changes to the Objectives and Policies discussed in my evidence above, namely that references to HPUDS 2017 should also refer to successive versions of growth projections. Those changes would ensure that any Discretionary or Non-Complying application for municipal and community supply would be assessed against objectives and policies that appropriately recognise the need for communities to be serviced based on the most up to date growth projections.
30. In my opinion, a non-complying activity status would be appropriate for a situation where an increase in allocation is sought given the threshold tests of s104D that would need to be met for consent to be granted. However, I note that TANK11 provides an exemption for specified activities to be considered as Discretionary Activity and I consider it would be appropriate for municipal, community and papakainga water supply takes to be provided for in a similar manner to those activities. I therefore consider that option (A) in paragraph 26 above, would provide appropriate relief and would be consistent with the priority afforded such supplies under Te Mana o te Wai and Objective TANK 16.
31. In terms of a s 32AA evaluation, I consider that the suite of amendments referenced above would result in the Councils being able to seek additional allocation above their existing consented allocations via a Discretionary Activity Rule only where that is necessary to provide for growth projections which are consistent with the most recent version of HPUDS (or any planning document which replaces HPUDS) **and** the Councils have exhausted the capability to provide for that growth via efficiency gains.

32. The amendments sought relate specifically to municipal and community water supplies and therefore do not 'open the door' for widespread applications seeking additional water.³ The activity status sought for such applications would require a comprehensive assessment of actual and potential effects including establishing an evidential basis for the water sought; reasons why the growth needs cannot be met through efficiency gains; and a fulsome assessment of actual and potential effects on the environment, including effects on Te Mana o te Wai; and effects on the water resources and on other users.
33. The costs of this process, and burden of proof as to effects, fall on the water supplier as applicant and consent would only be granted if it can be demonstrated that the potential effects are less than minor. The alternative of retaining Prohibited status has potentially significant cost in terms of the prevention of Councils being able to deliver on their statutory obligations to adequately provide for growth.
34. I therefore consider that the relief sought:
- (a) Provides an effective means of enabling an application only for municipal and community water abstraction which may be needed to meet statutory requirements by the water supplier to provide for growth in a manner consistent with higher order RMA instruments.
 - (b) Is efficient in that it does not result in additional costs on parties other than the water supplier.
 - (c) Will only result in additional water being allocated if it can be demonstrated by the water supplier that the effects are less than minor, the supply is meeting (or will meet within an acceptable timeframe) best practice efficiency benchmarks, and allocating the water is consistent with the objectives and policies of the RPS and NPSFM.
 - (d) Avoids the potentially significant costs of Councils not being able to adequately provide for growth as required by other statutory obligations.

³ I note the potential for other activities to have the opportunity to have applications considered on their merits is also contemplated in the Councils' submission and is addressed in Mr Drury's evidence.

35. I therefore consider that the relief sought is the most appropriate way for providing the relief sought by the Councils and is both effective and efficient in respect of s 32AA.
36. A related matter is the Councils' submission on Rules TANK 7 and 8 which relate to the take of surface and groundwater in the TANK water quantity area. One of the conditions for the permitted activity is that the new take not prevent water being taken by any other 'lawfully established *efficient* groundwater take, or any lawfully established surface water take'. There is a concern that the qualifier of 'efficient' in relation to groundwater takes means that lawfully established domestic and community takes might be prevented from taking water because it is not considered 'efficient'.
37. The Councils' submission sought to carve out domestic and community takes so that there is no requirement for them to be 'efficient' before they are captured by the condition. I agree that the relief sought is appropriate and better implements objectives relating to people and communities meeting their domestic water needs (OBJ TANK 10(d), 11(f), 12(f) and 13(e)).

Efficiency Measures

38. The Councils sought amendments to Policy 50(b)(i) and Tank RULES 10 and 11 relating to the requirement to meet Infrastructure Leakage Index 4 or better. I understand that the amendments sought were intended to reflect that the ILI is only one measure of assessing the efficiency of the network, rather than to avoid the need to achieve efficiency standards or assess against the ILI. Having considered the s42A recommendations (which was to reject this submission point) and noting that the use of ILI in the plan provisions inform the setting of conditions rather than as a determination of activity status, I consider that the relief sought by the Councils is provided in the notified and s 42A versions and no further amendments are required.
39. Further, I understand from review of Water New Zealand's National Performance Review benchmark report for 2019/2020 that both Councils currently meet the ILI <4 standard and therefore it is appropriate to retain this benchmark within the PPC9 provisions as well as the requirement to meet industry best practices for efficiency which may drive further improvements.

Infrastructure leakage index

The Infrastructure leakage index is a non-dimensional performance indicator used for comparing the operational management of real water losses. It is the ratio of *Current Annual Real Losses* to *Unavailable Annual Real Losses*. Corresponding performance bands, contained in *Water New Zealand, Water Loss Guidelines, 2010* are shown on the figure. Infrastructure leakage indicators, shown on bars, have been colour scaled based on levels of residential metering, as this affects the accuracy of water loss calculations. Average system pressure, in m head, is indicated using the red dots, as this has a large bearing on water loss.

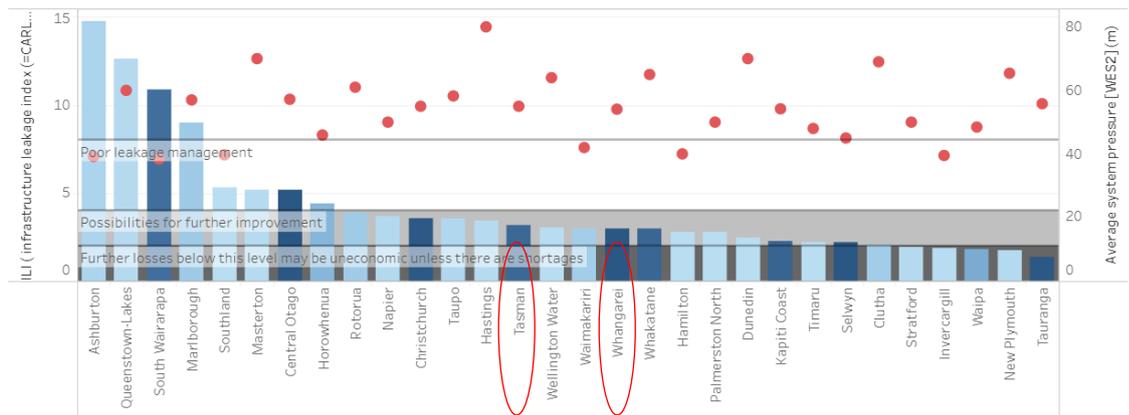


Figure 1: Water NZ National Performance Review Data 2019/2020

Term of Consent

40. Policy 49 addresses duration of consents granted for water takes. As notified, that policy stated that the duration of municipal water take consents would be linked to reviews of HPUDS presenting a risk that such consents would be restricted to 5-year terms. Such short duration consents for municipal water supplies are inconsistent with the importance of such infrastructure in supporting the community wellbeing and would lead to inefficient operation of the system with resourcing being required to be directed to re-consenting on a continual basis. Short term consent durations also do not incentivise improvements such as efficiency measures that require certainty over a longer duration to be implemented.
41. The Councils' submission sought an amendment to Policy 49 which would provide for 30-year consents for municipal water supplies. I note that this submission has been accepted by the s 42A reporting officer. I consider the s 42A track changes version of Policy 49 provides the relief sought by the Councils.

Transfers: RRMP Rule 62A

42. Proposed RRMP Rule 62A allows for permanent or temporary transfer of water in accordance with section 136(2)(b)(i) of the RMA as a Controlled Activity. Condition (i)(iii) enables the purpose of the water use to change where it "enables efficient delivery of water supply to the meet the communities' human health needs". It is recognised that community water supplies provide for a range of factors which are beneficial to a community's wellbeing (e.g. as evidenced in Policy 50b) and are not

limited to health needs. In my opinion, clause (i)(iii) is unnecessarily limiting and is inconsistent with Policy 50.

43. To achieve consistency with Policy 50, I consider that condition (i)(iii) should be amended to read *“enables efficient delivery of water supply through a municipal or community water supply”*.

44. The Councils submissions sought an advice note be added to state that:

For the purpose of (i), the transfer of water from a municipal water supply to a point of take servicing industrial uses with a demand of greater than 15 m3 per day is not considered to be a change of use.

45. I understand that this advice note was sought in order to provide for situations where industrial water allocation from, for example, the Napier municipal water supply was required to be transferred to Hastings water supply system due to a change in the projected supply of industrial land and / or relocation of a significant business or industry that should be enabled in order to retain the economic wellbeing afforded by that activity within the Region.

46. Similar benefits are achieved to both community economic wellbeing and the efficient use of water, through transfers from individual self-serviced activities to a municipal or community water supply in order to enable a new development area to be serviced and / or an extension of existing serviced areas. Such transfers would normally result in lower overall allocation as a degree of averaging of use occurs across a serviced area such that the peak requirement for a serviced area is less than the sum of the peak requirement of each individual activity in the area. Therefore, enabling such transfers would enable the Councils to meet their obligations to provide for growth under the NPSUD as well as achieve more efficient allocation of water. For this reason, I support the relief sought by the Councils and consider that a more appropriate wording of the advice note would be:

For the purpose of (i), the transfer of water from a municipal water supply or from individual abstractions to a municipal supply in order to expand municipal supplies to service new areas is not considered to be a change of use.

SOURCE PROTECTION

47. PPC9 includes an objective, policies and a suite of rule provisions which provide a framework for protection of sources of human drinking water. As stated in the introduction of my evidence, these provisions are informed by recommendations for

provisions provided to TANK by the JWG. Myself and my colleague Grey Wilson authored the technical report for JWG which is also referenced in section 8.8 of the Section 32 report.

48. The provisions as notified are generally as per the recommendations of JWG, although I note that not all of the provisions are included in the notified PPC9. The Councils' submission supports the SPZ provisions to the extent that they are consistent with the JWG's recommendation and the relief sought is to ensure that the PPC9 source protection provisions are consistent with the JWG recommendations.
49. In summary, the SPZ provisions are intended to give effect to the multi-barrier approach for provision of safe drinking water; give effect to the National Environmental Standard for Sources of Human Drinking Water including, in particular, Regulation 10; and adopt the approach of providing source protection zones with the same regulatory provisions as existing plan provisions for the unconfined aquifer and sensitive environments.
50. **Objective TANK9** is supported by HDC and NCC. The s42A reporting officer recommends a minor wording change to include "source" so that the objective now reads:

Activities in source protection areas for Registered Drinking Water Supplies are managed to ensure that they do not cause source water in these zones to become unsuitable for human consumption, and that risks to the supply of safe drinking water are appropriately managed.

51. I agree that this is appropriate and would support this amendment as it provides clarity to the objective.
52. The policy framework for source protection consists of TANK policies 6 – 9. These policies are largely as recommended by the JWG and the relief sought by the Councils in their submissions has been recommended to be accepted by the s 42 reporting officer noting that they are minor amendments which improve the clarity of the provision.
53. In addition to the changes sought by the Councils, there are two other submission which sought further amendments to the SPZ policies as follows:
 - (a) Submitter 203 which sought an amendment to policy 7(d)(iii) to add "*and occupiers*" regarding consultation within the SPZ areas. The s 42A report recommends this submission point be accepted. I agree that this amendment

is appropriate as it is consistent with RMA provisions relating to consultation and notification.

- (b) Submitter 203 which sought an amendment to policy 8(f)(vi) to add the words *“including with regard to relevant codes or guidelines”*. This relates to matters which Regional Council will take into account when considering applications for resource consent within SPZs. The s 42A report recommends this submission point be accepted. I understand that this amendment is sought to recognise that hazardous substances storage are subject to specific codes and regulations and that the policy should recognise these existing controls. I agree that this would be appropriate and would assist to provide clarity to applicants. In my opinion, the wording could be improved by phrasing the clause as follows:

The effectiveness of any mitigation measures to avoid or mitigate risk of contaminants entering the source water and the extent to which the effectiveness of the mitigation measures can be verified, including whether the activity is regulated by and / or complies with relevant codes of practice or guidelines.

54. **Policy 7** provides for Source Protection Zones to be added or amended via the consent process for applications to take water for a Registered Drinking Water Supply. This policy was not part of the suite of provisions proposed by the Joint Working Group given that the recommendation was for the SPZ areas to be defined by maps within the Regional Plan. As notified, PPC9 proposed that the SPZ spatial definition maps sit outside of the Plan and Policy 7 proposed a process for new or amended SPZs to be provided via a consent process. The Councils submission sought that the maps be included as part of Regional Plan and, if they were not to be included in the Plan, sought clarification from the Regional Council as to the practical implications of this approach, particularly given that the spatial definition of the SPZs is used throughout PPC9 to regulate activities (i.e. whether an activity requires consent may be determined by an activity’s location within an SPZ).
55. The s42A report recommends that the SPZ maps be included in the Regional Plan as this is required *“to ensure that the SPZs are legally robust, provide certainty for water suppliers and plan user alike”* (s 42A report, para 2270). I agree that the SPZs are required to form part of the Regional Plan given that their spatial definition is used to regulate activities in the TANK Rules. Inclusion of the SPZs within the Regional Plan means that they are unable to be altered by way of a resource consent process and therefore Policy 7 is no longer required in its current form. Incorporation of the SPZ

maps into the Regional Plan means that the process for amending the SPZs is to undertake a Plan Change process.

56. I consider that Policy 7 still has relevance to updating Source Protection Extents, being source protection areas for registered drinking water supplies that provide drinking water to between 25 and 50 people for not less than 60 days per year. The Source Protection Extents have a different role in PPC9 to Source Protection Zones. SPZs are used in a regulatory context and define when some activities require resource consents and / or the activity status for those activities and, as such, the spatial extent of SPZs is required to be defined in the plan. SPEs do not have a similar regulatory status and, instead, are used to define where matters of control or discretion are required to be taken into account in determining a consent application. It is therefore appropriate that the SPEs are able to be updated via the water supplier's water take consent process. I therefore consider that Policy 7 should be retained except that all references to 'Source Protection Zone' should be changed to 'Source Protection Extent'.
57. Further, and for the same reasons as above, Matter of Discretion 6d in Rule TANK9 should be amended to refer only to Source Protection Extents as it would be inappropriate for an application for a water take to amend the Regional Plan map defining Source Protection Zones.
58. **Policy 8(b)** details the matters which Regional Council will take into account when considering applications within a SPZ. The Councils sought that water takes be included in clause (iv) which, as notified only relates to land use and discharge activities. The s 42A report has recommended this submission point be rejected. In my opinion, it is necessary to either include water takes in clause (iv) as that directs the effects of the take to be considered in combination with other activities; or amend clause (v) which is specific to groundwater abstractions to include wording which requires the assessment to be considered for the activity "*on its own or in combination with other existing activities*" as per the current wording in clause (iv).
59. **Policy 9** details the way in which organisations will work together for the provision of safe drinking water. I support the amendment sought by the Councils, JWG and as recommended by the s 42A report to refer to the relevant agencies in general, rather than the individual entities given the roles and responsibilities for delivering and regulating water services is undergoing reform as stated in Mr Chapman's evidence. For the sake of clarity, I recommend that 'national regulator' be replaced with

‘national drinking water regulator’ for the absence of doubt as to which regulator is referenced.

Rules TANK 1-6: Use of Productive Land

60. The Councils supported the JWG recommendations that the SPZs should not be used to trigger a specific requirement for a consent for the use of productive land but that, within the rule framework agreed by the TANK Collaborative group for productive land, risks to sources for drinking water should be managed by:

- (a) Requiring Freshwater Farm Plans (Farm Environment Plans in the notified PPC9), Catchment Collective or Industry Programmes recognise their location within the source protection areas (where applicable) and state how risks to source water that may arise from the productive land use activity will be managed.
- (b) Requiring that, where a need for a resource consent is triggered under the PPC9 provisions, that the risks to sources of human drinking water be a matter of control or discretion.

61. The above approach is generally reflected in the notified PPC9, however the Councils submission sought amendments to the notified provisions to achieve consistency with the approach recommended by JWG. Specifically, these were:

- (a) That Source Protection Zones be specified as high priority areas for preparation of Freshwater Farm Plans, Catchment Collectives and Industry Programmes; and Source Protection Extents be specified as medium priority areas in Schedule 28.
- (b) Amendment of the requirement for Freshwater Farm Plans, Catchment Collective Plans and Industry Programmes in Schedule 29 to encourage engagement with water suppliers in the preparation of those Plans (with respect to the assessment and management of risks to source water) and for a copy of those Plans to be provided to the relevant water supplier.
- (c) Amendment to the matters for control / discretion in TANK Rules 2, 4, 5 and 6 to include *“irrespective of any treatment process for the Registered Drinking Water Supply”*.

62. The s 42A report has recommended that Schedule 28 be amended to clarify that Source Protection Zones are high priority areas. This will require the relevant Freshwater Farm Plans, Catchment Collective Plans and Industry Programmes to be developed within three years of PPC9 becoming operative. I agree that this provides the relief sought by the Councils in respect of SPZs. I note that the relief sought with respect to Source Protection Extents has not been recommended in the s 42A report. It is likely that the plans will fall into either high, medium or low priority areas as a consequence of other parameters within Schedule 29. Therefore, the plans that relate to SPEs will be developed in a phased manner over 3-, 6- and 9-year cycles.
63. To my knowledge, there has been no mapping of the number of plans which are affected by SPEs that will fall into a longer time period for preparation than that sought by the Councils. Given that only some of plans that are affected by SPEs will fall into a time period longer than sought by Council and that some will, by virtue of being within a high priority area for other determinants, be undertaken in the same timeframe or sooner, I consider that the s 42A version of PPC9 goes a substantial way to providing the relief sought by the Councils and no further changes are likely required.
64. Schedule 30 specifies the requirements for Freshwater Farm Plans, Catchment Collective Plans and Industry Programmes. It requires that these include:
- (a) Locations of any SPZs or SPEs and the contact details for the relevant water supply manager.
 - (b) Measures required to reduce risk of contamination of the source water for any Registered Directing Water Supply.
65. The Councils sought that a clause be added to the above requirements stating that *“landowners are encouraged to engage with the relevant Registered Drinking Water supply to understand potential risks of activities on the source water and to identify appropriate risk mitigation measures”*. The s 42A report has not accepted this submission point. I note that the amendment sought is more of a ‘guidance note’ rather than a requirement as such, however, Schedule 30 already contains a number of ‘Notes’ to provide guidance on some matters, and the relief sought by the Councils could also be included as a ‘Note’.

66. I consider that including such an advice note in Schedule 30 is an efficient and effective manner of both assisting those preparing the plans by directing them to engage with the water supplier who will be able to provide advice on the matters to be addressed; and also improves the efficiency of non-RMA statutory matters such as the development of Source Water Risk Management Plans and sharing of information signalled under the Water Services Bill.

Consistency of Matters of Control and Discretion

67. The Councils sought that amendments be made to the following matters of control / discretion in order to achieve consistency as to how risks to source protection zones and extents are to be managed. The relief sought is to add the wording *“irrespective of any treatment process for the Registered Drinking Water Supply”* to the following provisions:

- (a) TANK 2, Matter of Control 1(g)
- (b) TANK 5, Matter of Control 3(g)
- (c) TANK 20, Matter of Discretion 7
- (d) TANK 21, Matter of Control 4
- (e) TANK 22, Matter of Discretion 3
- (f) RRMP Rule 2, Matter of Control f

I note that the amendment has been recommended by the s 42A report in respect of TANK6, Matter of Control 5(g). It is unclear why this amendment has not been accepted with respect to the provisions listed above.

68. An assessment of the risks to source water to be undertaken *“irrespective of any treatment process”* is to give effect to the multi-barrier approach for drinking water safety as per PPC9 proposed Policy 9. The multi-barrier approach requires that protection of source water and the treatment processes be considered as separate barriers and the relief sought is consistent with Objective 16 and Policy 9.

Amendments to Regional Resource Management Plan Rules

69. The Councils supported the proposed amendments to the RRMP rules (within the TANK Catchments) as recommended by the JWG for purposes of protection of sources

of human drinking water. The reasons for those amendments have been set out in the section 8.8 of the s 32 report and are required to meet the Regional Council's obligations with respect to Regulation 10 of the NES. The Councils submission noted that some of the JWG recommendations had not been included in the notified PPC9 and sought relief to include all of the recommended provisions.

70. **RRRMP Rule 1 and 2:** I agree with the s 42A report that amendment of the activity description for these rules to include 'Bore Use and Maintenance' is outside of the scope of PPC9 as such a change would extend beyond the TANK catchment. In Paragraph 2300, the s 42A report states that:

The maintenance of a bore is an important part of keeping it intact and preventing cross-contamination and it is appropriate to address "maintenance". The Plan amendment allow for this by including well maintenance as a matter for bores in the TANK catchment.

I consider the relief proposed by the s 42A report to be appropriate and that the further relief sought by the Councils is out of scope of PPC9.

71. Amendments to the RRMP Permitted and Controlled Activity Rules to implement source protection zone provisions in the TANK catchment are such that activities are likely to fall to be considered as Restricted Discretionary under RRRMP Rules. The Councils sought that, in these instances, a matter of discretion be included regarding the assessment of risks to source water. I consider that this is necessary to ensure consistency with the provisions of PPC9 and to provide clarity to applicants and decision makers. I therefore consider that the following matter of discretion should be included in RRMP Rule 6:

In the Tutaekuri, Ahuriri, Ngaruroro and Karamu catchments, the actual or potential effects of the activity on the quality of source water for Registered Directing Water Supplies irrespective of any treatment process for the Registered Drinking Water Supply, and any measures to manage the risks to the water quality.

72. The s 42A report rejected Councils' submission that amendments be made to RRMP Rules 16, 48 and 49 being Permitted Activity Rules for solids waste on production land; discharge of solid contaminants to land that may enter water and discharges to land that may enter water respectively. The Councils sought that these Permitted Activity Rules be amended to include requirements that the activity not take place within a SPZ. The reason for this submission was to achieve the full suite of recommendations provided by the JWG. I note that the JWG analysis, which has been supported by the s 32 report on PPC9 was that these amendments were required to meet Regulation

10 of the NES-Drinking Water. Regulation 10 states that a regional council must not include a rule in its regional plan to allow a permitted activity upstream of an abstraction point unless satisfied that it is not likely to have certain effects on the source water.

73. The amendments recommended by JWG on these rules were not included in the notified PPC9. I have seen no supporting material from regional council as to why amendment on these specific rules were excluded from the notified version or any alternative assessment to that provided in Good Earth Matters report to the JWG or the s32 analysis. I therefore consider that amendment of these rules is necessary to meet Regulation 10 of the NES-Drinking Water.
74. This notwithstanding, I agree with the s 42A reporting officer that the submissions by Council to amend RRMP Rules 16, 48 and 49 is not 'on the plan' given that these amendments were not notified.
75. As an overall assessment on the above matters on source protection, I consider that the relief set out in my evidence seeks to provide clarity as to the provisions notified and, in respect to Policy 7, addresses consequential changes required as a consequence of the s 42a recommendations to include the SPZ maps as part of the Regional Plan. This approach is supported by the relief sought by the Councils. I therefore consider that no further analysis under s32AA is required.
76. I note that PC9 will result in provisions for protection of sources of human drinking water which are more stringent than the NES-Drinking Water. This is provided for under Regulation 13 of the NES-Drinking Water. Further, I note that the proposed regulatory provisions seek to give sources of human drinking water similar protection under the Plan as that provided to other vulnerable water bodies (i.e. unconfined aquifer) and I consider that this is a reasonable approach which is consistent with the overall framework and approach of the Regional Plan.

Source Protection Zone Maps

77. As stated in Mr Chapman's evidence, the map for the Hastings Source Protection Area as notified does not represent the full extent of the zone required to enable HDC as a water supplier to meet its obligations in respect of source water protection. Section 8.8.4 of the Section 32 report discusses the development of the source protection zone maps particularly the Analytical Element Model used by Hastings District Council

to define the SPZ and HBRC's Heretaunga Plains Groundwater model which developed the SPZ as notified. The s 32 report records that the differences between these two models was considered by the JWG and

The JWG was unable to reach a consensus about how to delineate an APZ and **considered a zone boundary combining the protection zone boundary of both models.**

78. This approach was not adopted by HBRC and the s 32 report notes that:

Use of both models at the same time is overly cautious, would impose a higher consenting burden on landowners and would not be defensible given the more technically robust approach provided by the Heretaunga Plains numerical model.

79. It is outside of my expertise to make any comment as to the technical merits or robustness of either model. This notwithstanding, I consider that adoption of the combined boundary recommended by the JWG could be considered appropriate for the following reasons:

- (a) Where the SPZ area overlays the unconfined aquifer, the SPZ provisions do not represent an increased regulatory burden. In this instance, a consent for the same activity would be required due to the location over the unconfined aquifer and the SPZ provisions only add a requirement to consider the effects of the activity on the source water via a matter of control or discretion. Such considerations are required under the NES-Drinking Water and inclusion of these considerations as a matter for control or discretion makes this requirement explicit.
- (b) Where the SPZ area does not overlay the unconfined aquifer, the provisions may create a regulatory burden as a consequence of some activities which would otherwise be permitted requiring consent as a restricted discretionary activity. However, in my opinion, such an approach is consistent with the precautionary approach given that the matters to be considered are restricted to the specific matters of the effects on the source water (thereby limiting the scope of the matters to be considered and therefore costs of the consent application); and especially given the consequences of not acting as concluded in section 8.8.7 of the s 32 report.

Glossary

80. The Councils sought amendment to the definition of “Registered Drinking Water Supply (or Supplies)” in the glossary of the Plan. The RRMP currently includes a definition of Registered Drinking Water Supply which references the register maintained by the Ministry of Health under the Health Act. The relief sought by the Councils recognises that the drinking water regulation system is under reform and the proposed reform will result in the register no longer being maintained by the Ministry of Health under the Health Act. Under the Water Services Bill, it is proposed that the register is maintained by Taumata Arowai. This is defined in Section 54 of the Water Services Bill. I consider that it would be appropriate to recognise this transition in order to ensure that the source protection provisions of the PPC9 are able to be implemented efficiently and effectively. In my opinion, the relief sought by Councils would be achieved by amending the definition of Registered Drinking Water Supply (or Supplies) in the glossary of the Plan to read as follows:

Registered Drinking Water Supply (or Supplies) means a drinking water supply that is recorded in the drinking water register maintained by the Chief Executive of the Ministry of Health (the Director-General) under section 69J of the Health Act 1956 that provides no fewer than 25 people with drinking water for not less than 60 days in each calendar year; or the equivalent definition in any subsequent enactment that replaces that Act.

STORMWATER

81. The Councils’ submissions were supportive of notified objectives, policies and rules relating to stormwater. I understand that both Councils were involved in the stormwater group for TANK and the submissions are limited to seeking minor amendments to clarify the provisions and, as a consequence, improvement implementation of the stormwater provisions.

82. The amendments sought by the Council are as follows including my analysis of the relief sought:

83. Minor amendments to improve clarity of provisions. This relates to the following submission points:

- (a) **Policy 28(b):** The Councils sought to amend the clause to read “*local authorities adopting an integrated catchment management approach to the management, collection, treatment and discharge of stormwater*”. I note that the s 42A

reporting officer has recommended including 'treatment' but not 'management'. The submission to include 'management' was intended to reference the organisational management of the stormwater network which complements the physical management and characteristics of the network embodied in the terms 'collection, treatment and discharge'. Having considered the s 42A report, I accept the officer's recommendation given that the clause relates to the integrated management approach as a whole.

84. Minor amendments to ensure consistency with other provisions of PPC9, NPSFM and the RMA. This relates to the following submission points:
- (a) **Policy 28(f)** to add 'or extents' to the clause in order that site specific constraints to be taken into account include both source protection zones and source protection extents.
 - (b) **Policy 30** where amendments were sought to clarify that the water quality standards (as set out in Schedule 26 and the ANZECC Guidelines) were to apply in the receiving environment after reasonable mixing. The s 42A reporting officer's recommendation is to amend Policy 30 to include 'after reasonable mixing' and notes that this is consistent with RMA s70 and s107. In my opinion, the s 42A reporting officers' recommended changes to Policy 30 meet the intent of the Councils submission and is appropriate.
85. Amendments to **Policy 28(d)** which requires increased retention or detention of stormwater. The Councils submitted that 'increased' should be removed and for wording to be added such that the requirement for retention or detention was only required where necessary to prevent exacerbation of flood hazards. The s 42A report has accepted the submission to removed 'increased' but has rejected the submission point for detention to only be required 'where necessary'. I consider that 'where necessary' is appropriate to avoid the need for retention or detention to be provided where, for example, there is a small stormwater network which can discharge to the receiving environment such that there is no measurable effect on flood flows, flood carrying capacity, or flood hazard. In this case, the requirement to provide retention or detention may result in additional costs (capital and operating) for no commensurate benefit.
86. Amendments to remove the direction from PPC9 to territorial authorities to amend district plans. This relates to **Policy 28(g)**, and **Policy 31(c)**. I acknowledge the s 42A

reporting officers' comment [para 2151] that the stormwater provisions have been developed via a collaborative process involving both Napier City and Hastings District Councils and the outcomes of this process are reflected in these policies. I was not a party to that process so cannot comment on the outcomes agreed. This notwithstanding, in my opinion, it remains inappropriate for a Regional Plan policy to direct an amendment to a District Plan. Section 75(4(b)) requires that a District Plan not be inconsistent with a Regional Plan, however this does not extend to the ability for a Regional Plan to direct an amendment to a District Plan. The submission point does not negate that there has been an agreement via the collaborative process to seek alignment, however, in my opinion, any such agreement would be better placed within the implementation plan.

87. Amendments to Policy 31 relating to clarifying roles and responsibilities for managing stormwater. The amendment sought was intended to include in the Regional Plan a direction for territorial local authorities and the regional council to clarify responsibilities for compliance monitoring and enforcement, as well as information sharing as to how stormwater services can be provided (e.g. including liaison and coordination to advise applicants on ability to access services and / or seek integrated stormwater solutions as an alternative to individual on-site management where that would lead to a more efficient and cost-effective solution with improved environmental outcomes). The s 42A report does not appear to provide any commentary on this matter and has rejected this submission point. In my opinion, and for reasons stated above, I consider that it would be appropriate to include within Policy 31 a requirement for roles to be clarified and consider this can be achieved via the Councils submission, specifically amending clauses e) and g) to read as follows:

- e) shared information and processes for monitoring and auditing individual site management on sites at high risk of stormwater contamination, including clarification of roles and responsibilities for managing stormwater.
- g) an integrated stormwater catchment management approach, which determines roles and responsibilities for managing stormwater.

88. **Rule TANK 19** provides for small scale stormwater diversion and discharges as a permitted activity. One of the Permitted Activity criteria is that “the property cannot connect to a current or planned reticulated stormwater network”. The Councils submission did not propose specific relief but sought clarification as to how this clause will be assessed, particularly what is meant by “planned”. There are two potential matters of concern in this regard:

- (a) What is meant by ‘cannot connect’ and who determines if a connection is not possible? I understand that the intent of the provision is that the Permitted Activity status is only available to properties outside of the area serviced by stormwater network infrastructure. However, a property owner within the serviced area who, for example, requires but is unable to obtain an approval to connect to a stormwater service may consider they ‘cannot connect’ (i.e. may not be able to meet the approval criteria of the Council bylaw – see for example clause 7.8.1 of HDC’s Consolidated Bylaw). Can that property owner then say that they ‘cannot connect’ and therefore discharge under the Permitted Activity rule?
- (b) What is meant by ‘planned reticulation’? I understand from the s 42A report that this is intended to refer to developments which have been approved but for which the infrastructure has not yet been built but is imminent. However, planned could also be interpreted to refer, for example, to an extension of a stormwater network several years away (e.g. in a Long Term Plan or 30 year Infrastructure Strategy). Such an interpretation could lead to unintended consequences with activities discharging under the Permitted Activity rules for many years while awaiting the future extension of services.

89. In my opinion, Rule TANK 19(b) should be amended to read:

The property is not located within a municipal or community stormwater serviced area including areas which are planned to be serviced within 1 year of commencement of the activity.

90. I also agree with the s 42A recommendations that to include, as a matter of discretion in **Rule TANK 20** “*the timing of future planned reticulation networks*”. I consider this would enable Regional Council to set conditions requiring connection to stormwater reticulation within a specified period of that infrastructure being available. This would avoid ongoing discharges where consent was required only as an interim measure. In my opinion this recommendation achieves the purpose of relief sought by the Councils.

91. **Rule TANK 21** provides for ‘Stormwater Diversion and Discharge from local authority networks’ as a Controlled Activity. The notified version of the PPC9 required an Integrated Catchment Management Plan (ICMP) to be provided with the application for resource consent in order for the stormwater discharges to be considered as a Controlled Activity under Rule 21. In my opinion, this is an appropriate provision and

activity status as it provides certainty as to grant of consent (as is appropriate for stormwater discharges from local authority networks which are required to be provided in order to manage potential flooding within urban areas) subject to the local authority managing the system in an integrated manner which appropriately addresses potential environmental effects of the discharges (i.e. via an integrated catchment management plan). I consider it is appropriate that the matters required to be addressed in an Integrated Catchment Management Plan are reflective of best practice and such level of detail is appropriate in order to be able to provide the certainty to applicants that is afforded via the Controlled Activity status.

92. I do note, that in response to submissions to define the required contents of an ICMP in the glossary or Schedule, the s 42A report recommendation is to remove the requirement to provide an ICMP from the Controlled Activity Conditions / Standards / Terms. While the efficacy of the ICMP remains a matter of discretion, the requirement to provide an ICMP to achieve Controlled Activity Status has been removed. In my opinion, it would provide greater clarity to include the requirement for the ICMP as a Condition / Standard Term, albeit that the matters to be included in the ICMP can be detailed in a Schedule as recommended in the s 42A Track Changes version (Section 34B).
93. The Councils submissions sought amendment to TANK Rule 21 Condition / Standard / Term (a) as follows:
- (a) Amendment to condition (a)(ii) so that the diversion and discharge shall not *“cause or contribute to flooding of any property except where flooding occurs over a watercourse or designated secondary flow path”*. It is often the case, particularly in urban areas, that primary watercourses (e.g. open channels, drains, modified water courses) may be in private ownership and all form part of a legal property. Further, it is also often the case within urban areas that there are secondary flow paths that require stormwater to be conveyed in designated areas which may have an alternative primary purpose (e.g. access ways, roadways, park areas). A strict interpretation of condition (a)(ii) could therefore result in the activity not meeting the Controlled Activity status, even when functioning as designed and in accordance with best practice. For this reason, I consider the amendment sought by HDC to be a matter of clarification of intent that will assist to achieve the outcome sought via the proposed rule.

- (b) A grammatical correction to clause (a)(vi)(v) and (a)(vi)(vi) to avoid repetition of “*cause to occur or contribute to*” in the sub-clause (a)(vi). In my opinion, this is a grammatical drafting error that requires correction but does not change the meaning or intent of the rule.
- (c) In my opinion, clause (a)(vi)(vi) does not sit appropriately with its parent clause. As notified (and unaltered by the s 42A recommendations) this clause reads as follows:
 - (a) The diversion and discharge shall not: ...
 - (vi) **cause to occur or contribute to any of the following after reasonable mixing: ...**
 - (vi) **cause to occur or contribute to the discharge of microbiological contaminants including sewage, backwater, greywater or animal effluent.**

94. For reasons set out above, the second “*cause to occur or contribute to*” should be deleted. This notwithstanding, clause (vi) remains inappropriate as it relates to the quality of, and contaminants within the discharge, whereas the parent clause is specific that the assessment point is after reasonable mixing. Further in my opinion, a literal interpretation could mean that clause (a)(vi)(vi) would prevent local authority stormwater discharges being considered as a Controlled Activity given that it would be almost impossible for any stormwater network to meet the requirement of not discharging microbiological contaminants (i.e. zero E Coli) or animal effluent, given that animal defecation and urine would be present in the catchment area (e.g. via domestic animals, wildfowl).

95. The Councils sought that clause (a)(vi)(vi) be changed to read “*exceedance of water quality targets for microbiological contaminants*”. That is, the entire clause would require that the discharge shall not cause to occur or contribute to, after reasonable mixing, the exceedance of water quality targets for microbiological contaminant. I consider that this is a more appropriate standard as it applies to the receiving environment in the same manner as the other conditions of Tank 21, and it takes into account the matters noted above.

96. Further, the potential effects are able to be conditioned via matter of control 2 being “*the actual or potential effects of the activity on the water quality objectives set out in*

Schedule 26 including for ... contact recreation". If there is further concern as to issues of wastewater overflows into the stormwater network, in my opinion, this would be best addressed by including this as a matter for inclusion in the ICMP (e.g. that the ICMP include *"an assessment of the risk of overflow of wastewater and greywater systems such that untreated wastewater and greywater may enter the stormwater network, including a programme of work to reduce and remove any identified overflows"*). The issue of wastewater overflows is also expected to be addressed via the proposed National Environmental Standard for Wastewater Discharges and Overflows which has been signalled by the Ministry for the Environment.

97. For the same reason as per above, I consider that the amendment sought by the Councils in respect of TANK 22(d)(ii) should be amended to read *"the exceedance of water quality guidelines for microbiological contamination"*.
98. Schedule 34A details the requirements for a Stormwater Management Plan relevant to rules TANK 21-23. I understand that this schedule is intended to specify what is required for on-site management at industrial or high-risk sites in order to avoid contaminants being discharged to stormwater. Item 5 of Schedule 34A requires that the SMP include an *"Identification of risks with the activities on the property and how they will be managed"*. HDC's submission sought to include *"contingency measures in event of a spill or hazardous event"*. The s 42A report rejected this submission point stating that there was insufficient evidence that such an addition was warranted. In my opinion, it is standard practice for SMPs to include requirement for consideration of contingency measures in the case of an event, recognising that no system is 100% fail safe and that good site management requires prior thought as to how spills will be managed. I consider that the amendment sought by HDC would assist to achieve the outcomes sought by the PPC9 in the requirement for SMPs as it sends an explicit signal to those developing SMPs that they also need to consider the risk of primary containments failing and the measures that need to be undertaken in that event.

CONCLUSION

99. In summary, the relief sought by the Councils with respect to municipal water supplies, source protection and stormwater management supports the proposed plan provisions and the relief sought is generally as follows:
- (a) Amendments to the provisions for municipal water supply to ensure that future water allocation for municipal water services necessary to supply the needs of

future demand is able to be provided for where the effects are less than minor, and the Councils services meet industry best practices for efficiency. This includes recognising growth projections that are determined subsequent to HPUDS 2017 and providing for transfer of water where such transfers will result in a more efficient use of water.

- (b) Minor amendments to improve the clarity and consistency of the Plan provisions.
- (c) Support for the source protection provisions and amendments as necessary to ensure that the provisions consistently give effect to the multi-barrier approach and recognise and give effect to the recommendations of the Joint Working Group for Drinking Water Safety.
- (d) Minor amendments to support the implementation of the plan.

100. Attached to my evidence as **Appendix A** is a version of PC9 as per the s 42A Report which includes the changes currently sought by the Councils. This includes changes which are assessed in other evidence, specifically that of Mr Drury. I note Appendix A does not include Schedule 30, Schedule 34A nor the revised SPZ Maps. The amendments to those items are described in my evidence above.

Annette Sweeney
11 May 2021

Appendix A to Evidence of Annette Sweeney

Proposed Plan Change 9 – Section 42A Version with Relief Sought by Hastings District Council and Napier City Council

Relief sought is shown in underline / ~~strike through~~ with **yellow highlighting**.

Reference to the submission point and assessment in evidence is noted in a footnote for each point of relief. There may be additional evidence and submission points relevant to the point, but at least one reference is given.

Where a point from the Councils' submission is not addressed, they generally agree with, or do not oppose, the wording suggested in the s 42A Report.

Appendix A to Evidence of Annette Sweeney

Proposed Plan Change 9 – Section 42A Version with Relief Sought by Hastings District Council and Napier City Council

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Appendix A to Evidence of Annette Sweeney

Proposed Plan Change 9 – Section 42A Version with Relief Sought by Hastings District Council and Napier City Council

Background deleted – 120.80, 123.19 and 132.33

HDC and NCC Relief Sought

Amendments Proposed in Plan Change 9

The Proposed Plan Change makes the following amendments to the Regional Resource Management Plan.

Chapter 5.10 Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments

A new chapter 5.10 inserts objectives and policies for the management of land and water in the Tūtaekurī, Ahuriri,

Ngaruroro and Karamū (TANK) Catchments.

This Plan Change also makes consequential amendments to parts of Section 5 of the Regional Resource Management Plan.

Chapter 6.9 Regional Rules

A new section 6.10 inserts new rules to manage land and water resources in the TANK catchments.

This Plan Change also makes consequential amendments to existing rules in Chapter 6. These amendments apply only where the activity is carried out in the TANK catchments.

Schedules

New Schedules 26 – 36 are inserted to support policy and rules.

Chapter 9 Glossary

New terms are inserted to support interpretation of the Plan.

Proposed Plan Change PC9 to the Hawke's Bay Regional Resource Management Plan – TANK Catchments

Insert at the end of Chapter 5 the following new chapter:

5.10 Introduction

Freshwater is essential to the region’s economic, environmental, cultural and social well-being. The way in which these well- beings are provided for is informed by how the values for freshwater are understood and identified. Figure 1 provides an illustration of the wider community values for the TANK freshwater bodies expressed across the four well-being domains.

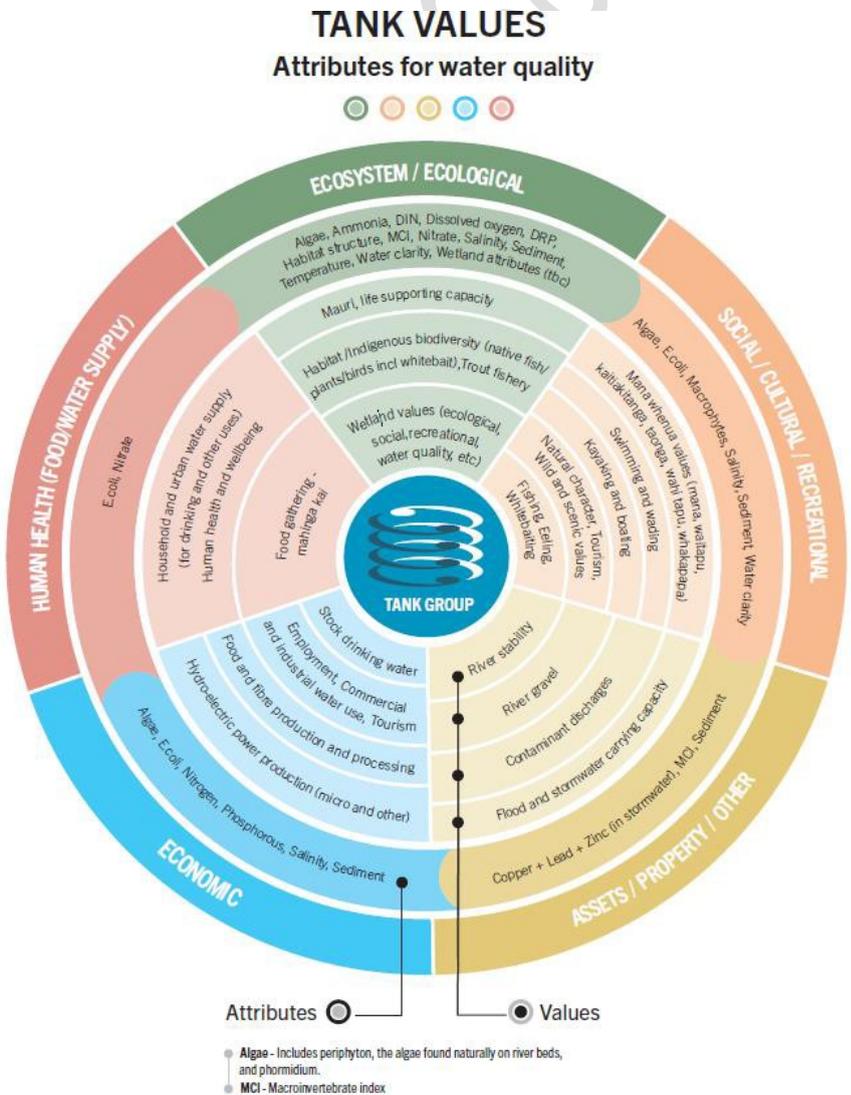
This Plan also recognises Te Mana o te Wai, which puts the mauri of the waterbody and its ability to provide for te hauora o te tangata (the health of the people), te hauora o te taiao (health of the environment) and te hauora o te wai (the health of the waterbody) to the forefront of freshwater management.

Water is viewed as a taonga by Māori; a treasure where mauri and ecosystem health are protected and provided for. Mauri is a spiritual value that is manifested by abundant and healthy water and aquatic resources, including plants and animals that depend on water.

Figure 2 below shows the interrelated nature and cultural connections of the values held by Māori for water. These core values are underpinned by a philosophy of etiquette, customs, harmony and timing.

The two expressions of the values for freshwater complement and build on each other. They enable the directions of the National Policy Statement for Freshwater Management to be given effect to and ensure the Plan provides for all of the community’s values.

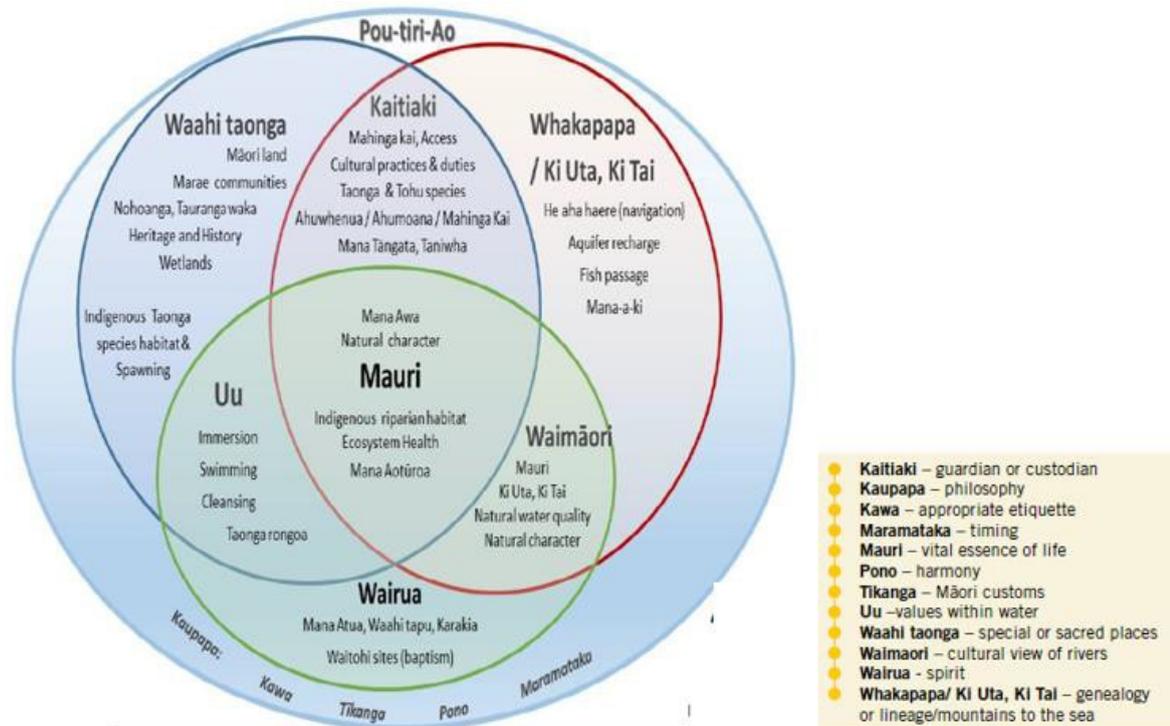
Figure 1; community values and attributes for water management



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Figure 2; Wāriū (value) groups and aspects for management



This articulation of community and Māori values has enabled decisions to be made about the use and management of waterbodies of the TANK catchments.

The Plan focuses on all the values for which water is to be managed by the setting of objectives, limits and other management measures that enable the needs of those values to be met. It also acknowledges the wider Māori perspectives of kawa, kaupapa and tikanga that support Māori values for water and its management and ensures the outcomes that are being sought are consistent with those cultural principles and approaches.

Key attributes that allow the state of the values to be assessed and monitored have been developed and objectives established for them. Attributes for both water quality and water quantity have been identified and the desired attribute state has been agreed. For some water bodies, the desired state meets the actual state, however, for others, the state is less than desired and the plan provides measures and introduces new rules that will enable the objectives to be met. This includes objectives for water quality attributes as well as limits and flows for managing quantity of water.

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5.10.1 TANK Objectives

General Objectives

OBJ TANK 1 Freshwater management in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments will be achieved by ~~the~~ Council, tangata whenua and the urban and rural community working together in a way that:^{194.18, 210.2, 132.83}

- a) recognises the kaitiaki and guardianship roles they each play in freshwater management ~~and;~~
- b) recognises the importance of monitoring, resource investigations and the use of mātauranga Māori to inform decision making and limit setting for sustainable management;
- c) ensures good land and water management practices are followed and where necessary, mitigation or restoration measures adopted; and
- d) supports good decision making by resource users ~~including rural and urban communities through marae and hapū initiatives, community or other catchment management programmes and monitoring initiatives, urban stormwater programmes, landowner collectives, farm management plans and industry good practice programmes.~~^{201.16}

OBJ TANK 2 Land and freshwater in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments are sustainably managed as integrated natural resources so that; ~~When setting objectives, limits and targets;~~

- a) Te Mana o te Wai¹¹ and ~~integrated mountains to the sea~~ the connection between freshwater, land and the coast, ki uta ki tai principles, and the connection between surface water and groundwater are upheld and recognised;^{126.6}
- b) A continuous improvement approach to the use and development of natural resources and the protection of indigenous biodiversity and the habitat of trout and salmon^{58.4} is adopted and life-supporting capacity and the aquatic ecosystem processes are safeguarded^{126.6}
- c) ~~the~~ collective management of sustainable^{135.5} freshwater is enabled;^{120.78}
- d) ~~e)~~The kaitiakitanga role of tangata whenua and their whakapapa, customs^{120.12} and cultural connection with water are recognised and provided for;
- e) ~~d)~~The responsibilities of people and communities for sustainable resource use and development is recognised and supported; and
- f) ~~e)~~The significant values of wetlands,^{126.6} ~~the~~ outstanding water bodies in Schedule 25 and the values in the plan objectives are appropriately protected and provided for.

Climate change

OBJ TANK 3 The effects of climate change are taken into account when in respect of each of the following are taken into account in making decisions about land and water management within the TANK catchments;

- a) ~~The effects on aquatic ecosystems, including indigenous biodiversity, freshwater bodies, water supply and human health, primary production and infrastructure from the predicted:~~
 - (i) ~~increases in intensity and frequency of rainfall;~~
 - (ii) ~~effects of rainfall on erosion and sediment loss;~~
 - (iii) ~~increases in sea level, and the effects of salt water intrusion;~~
 - (iv) ~~increasing frequency of water shortages;~~
 - (v) ~~increasing variability in river flows;~~
- b) ~~The amount of information available and the scale and probability of adverse effects,~~

¹ From Objective AA and Policy AA in NPSFM 2017

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- ~~particularly irreversible effects, as a consequence of acting or not acting;~~
- ~~c) The timeframes relevant to the activity;~~
- ~~d) Opportunities to improve community resilience for changes occurring as a result of (a)(i) to (iv).~~

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Water Quality General

OBJ TANK 4 ~~Land and water use, contaminant discharge and nutrient loss activities are carried out so that~~^{201.19} the quality of the TANK freshwater bodies is maintained where objectives are currently being met, or is improved in degraded waterbodies so that they meet water quality attribute states in Schedule 26 by 2040 provided that:

- a) For any specific water body where the attribute state is found to be higher than the target attribute state ~~that~~ given in Schedule 26, the higher state is to be maintained; ~~and~~
- b) Progress is made over the life of this Plan towards the long term target attribute states by the mixture of regulatory and non-regulatory provisions in this Plan. ~~Maintenance of a state is at the measured state².~~

OBJ TANK 5 Te Mana o te Wai, kaitiakitanga and the needs for the values set out in Schedule 26, particularly mauri and ecosystem health are achieved through collectively managing all of the specified attributes.

~~**OBJ TANK 6** The quality of the TANK freshwater bodies set out in Schedule 27 will be achieved through future plan changes.~~^{203.4}

OBJ TANK 7 Land use is carried out in a manner that reduces contaminant loss including soil loss and consequential sedimentation in freshwater bodies, estuaries and coastal environment.

OBJ TANK 8 Riparian margins are protected or improved where necessary to provide for A aquatic ecosystem health and mauri of water bodies in the TANK catchment ~~is improved by appropriate management of riparian margins and~~ to:^{23.30, 180.16, 195.24, 210.22}

- a) reduce effects of contaminant loss from land use activities;
- b) improve aquatic habitat and protect indigenous species including fish spawning habitat;
- c) reduce stream bank erosion;
- d) enhance natural character and amenity;
- e) improve indigenous biodiversity;
- f) reduce water temperature in summer;
- g) reduced nuisance macrophyte growth.

OBJ TANK 9 Activities in source protection areas for Registered Drinking Water Supplies are managed to ensure that they do not cause source^{203.4} water in these zones to become unsuitable for human consumption, and that risks to the supply of safe drinking water are appropriately managed.

Catchment Objectives

OBJ TANK 10 In combination with meeting the water quality states specified in Schedule 26, the use and development of land, the discharge of contaminants and nutrients, and the taking, using damming and diverting of freshwater is carried out in the **Ahuriri** freshwater catchments so that the mauri, water quality and water quantity are maintained and enhanced where necessary to enable:

- a) Ahuriri estuary sediments to be healthy and not accumulate excessively;
- b) healthy ecosystems that contribute to the health of the estuary;
- c) healthy and diverse indigenous aquatic plant, fish and bird populations;

²~~The state is as measured according to the method specified for each attribute. It does not allow for decline to a lower state within any band specified in the NPSFM:2014 (as amended 2017)~~

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- d) people and communities to safely meet their domestic water needs;
- e) primary production water for community social and economic well-being; and provide for;
- f) contribution to the healthy functioning of the Te Whanganui a Orotū (Ahuriri)^{126.15} estuary ecosystem and enable people to safely carry out a wide range of social, cultural and recreational activities including swimming and the collection of mahinga kai in the estuary.

OBJ TANK 11 In combination with meeting the water quality states specified in Schedule 26, the use and development of land, the discharge of contaminants and nutrients, and the taking, using^{29.53} damming and diverting of freshwater is carried out in the **Ngaruroro River catchment** so that the mauri, water quality and water quantity are maintained in the mainstem above the Whanawhana Cableway and in the Taruarau River, and are improved in the tributaries and lower reaches where necessary to enable;

- a) healthy ecosystems;
- b) healthy and diverse indigenous aquatic plant, animal and bird populations especially whitebait, torrent fish, macroinvertebrate communities, bird habitat on braided river reaches and a healthy trout fishery;
- c) people to safely carry out a wide range of social, cultural and recreational activities especially swimming and cultural practices of Uu and boating, including jet-boating in the braided reaches of the Ngaruroro;
- d) protection of the natural character, instream values and hydrological functioning of the Ngaruroro mainstem and Taruarau and Omahaki tributaries;
- e) collection of mahinga kai to provide for social and cultural well-being;
- f) people and communities to safely meet their domestic water needs;
- g) primary production water needs and water required for associated processing and other urban activities to provide for community social and economic well-being;

and provide for;

- h) contribution to water flows and water quality in the connected Heretaunga Plains Aquifers;
- i) contribution to the healthy functioning of Waitangi Estuary ecosystem and to enable people to safely carry out a wide range of social, cultural and recreational activities and the collection of mahinga kai in the estuary.

OBJ TANK 12 In combination with meeting the water quality states specified in Schedule 26, the use and development of land, the discharge of contaminants and nutrients, and the taking, using damming and diverting of freshwater is carried out in the **Tūtaekurī River catchment** so that the mauri, water quality and water quantity are maintained in the upper reaches of the mainstem and are improved in the tributaries and lower reaches where necessary to enable:

- a) healthy ecosystems;
- b) healthy and diverse indigenous aquatic and bird populations especially , whitebait, torrent fish, macroinvertebrate communities and a healthy trout fishery;
- c) people to safely carry out a wide range of social, cultural and recreational activities, especially swimming and cultural practices of Uu and boating;
- d) protection of the natural character, instream values and hydrological functioning of the Tūtaekurī mainstem and Mangatutu tributary;
- e) collection of mahinga kai to provide for social and cultural well-being;
- f) people and communities to safely meet their domestic water needs;
- g) primary production water needs and water required for associated processing and other urban activities to provide for community social and economic well-being;

and provide for;

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- h) contribution to the healthy functioning of Waitangi Estuary ecosystem and to enable people to safely carry out a wide range of social, cultural and recreational activities and the collection of mahinga kai in the estuary.

OBJ TANK 13 In combination with meeting the water quality states specified in Schedule 26, the use and development of land, the discharge of contaminants and nutrients, and the taking, using damming and diverting of freshwater is carried out in the **Karamū and Clive Rivers** catchment so that the mauri, water quality and water quantity are improved to enable;

- a) healthy ecosystems;
- b) healthy and diverse indigenous aquatic and bird populations, especially black patiki, tuna and whitebait, and healthy macroinvertebrate communities;
- c) people to safely carry out a wide range of social, recreational, and cultural activities, including swimming and cultural practices of Uu and rowing and waka ama in the Clive/Karamū;
- d) collection of mahinga kai to provide for social and cultural well-being;
- e) people and communities to safely meet their domestic water needs;
- f) primary production water needs and water required for associated processing and other urban activities to provide for community social and economic well-being;

and provide for;

- g) contribution to the healthy functioning of the Waitangi Estuary ecosystem and to enable people to safely carry out a wide range of social, cultural and recreational activities and the collection of mahinga kai in the estuary.

OBJ TANK 14 In combination with meeting the water quality states specified in Schedule 26, the use and development of land, the discharge of contaminants and nutrients, and the taking and using of freshwater is carried out so that the mauri, water quality, water quantity and groundwater levels are maintained in the **Groundwater** connected to the Ngaruroro, Tūtaekurī and Karamū rivers and their tributaries is managed to enable;

- a) people and communities to safely meet their domestic water needs and to enable the provision of safe and secure supplies of water for municipal use;
- b) primary production water needs and water required for associated processing and other urban activities to provide for community social and economic well-being;

and provide for;

- c) the maintenance of groundwater levels at an equilibrium that accounts for annual variation in climate and prevents long term decline or seawater intrusion;
- d) contribution to water flows and water quality in connected surface waterbodies.

OBJ TANK 15 ~~In combination with meeting the water quality states specified in Schedule 26, the use and development of land, the discharge of contaminants and nutrients, and the taking, using damming and diverting of freshwater connected to the~~ **Wetland and lake waahi taonga** within the TANK catchments are is managed so that mauri, water quality and flows, and levels are maintained and improved to enable; ^{58.12, 123.36, 201.28}

- a) healthy and diverse indigenous and valued introduced ^{58.16} fish, bird and plant populations in wetland and lake areas and connected waterways;
- b) improved hydrological functioning in wetland and lakes and in connected waterways;
- c) people to safely carry out a wide range of social, recreational ^{58.9} and cultural activities;
- d) collection of mahinga kai and the abstraction of water to provide for human or animal health and social and cultural well-being; ^{124.21}

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- e) contribution to improved water quality in connected surface waters;
- f) the protection of the outstanding values of the Kaweka Lakes, Lake Poukawa and Pekapeka Swamp and the Ngamatea East Swamp;

and to;

- g) increase the total wetland area by protecting and restoring 200ha hectares of existing wetland and reinstating or creating 100ha of additional wetland by 2040.

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Water quantity

OBJ TANK 16 ~~Subject to limits, targets and flow regimes established to meet the needs of the values for the water body, water quantity allocation management and processes ensure water allocation~~ Ground and surface water in the TANK Catchment is allocated, subject to limits, targets and flow regimes which provide for the values of each water body,^{210.2, 132.83} in the following priority order:

- a) ~~Water for the essential reasonable domestic~~ needs of people, livestock drinking and fire-fighting supply^{13.8, 35.76, 195.28};
- b) ~~The allocation and reservation of water for~~ existing and future demand for domestic supply including marae and papakāinga, and municipal uses supply as described in HPUDS (2017) or successive versions and/or any requirements prescribed under a NPS on Urban Development³ can be met within the specified limits;
- c) Primary production on versatile soils;
- d) Other primary production,^{30.1} food processing, industrial and commercial end uses;
- e) Other non-commercial end uses.

OBJ TANK 17 The allocation and use of water results in;

- a) the development of Māori economic, cultural and social well-being supported through regulating the use and allocation of the water available at high flows for taking, storage and use;
- b) water being available for abstraction at agreed reliability of supply standards;
- c) efficient water use⁵;
- d) ~~Allocation regimes that are flexible and responsive, allowing water users to make efficient use of this finite resource;~~^{132.84}

OBJ TANK 18 The current and foreseeable water needs for mauri and ecosystem health and of future generations ~~and for mauri and ecosystem health~~^{58.12} are secured through;

- a) avoiding future over-allocation and phasing out existing over-allocation^{123.39, 233.9}
- b) ~~a)~~ water conservation, water use efficiency, and innovations in technology and management;
- c) ~~b)~~ flexible water allocation and management regimes;
- d) ~~c)~~ water reticulation;
- e) ~~d)~~ aquifer recharge and flow enhancement;
- f) ~~e)~~ water harvesting and storage.

³ HDC submission 207.2, NCC submission 63.2; Evidence of Annette Sweeney, paras 12-18.

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5.10.2 Policies: Surface Water and Groundwater Quality Management

Priority Management Approach

- POL TANK 1** The Council ~~will regulate land use activities and will work with mana whenua, with~~ landowners, local authorities, industry and community groups, ~~mana whenua~~ and other stakeholders ~~will regulate or to~~ manage land use activities ~~and surface and groundwater bodies~~ so that ~~the 2040 target~~ water quality ~~attribute states described in Schedule 26~~ attributes are maintained ~~at their current state~~ or where required ~~show an improving trend towards the water quality targets shown in Schedule 26~~ by focussing on:
- water quality improvement in priority sub-catchments (as described in Schedule 28) where water quality is not meeting specified freshwater quality targets;
 - sediment management as a key contaminant pathway to also address phosphorus and bacteria losses;
 - the significant environmental stressors of excessive sedimentation and macrophyte growth in lowland rivers and nutrient loads entering ~~the~~ Te Whanganui ā Orotu (Ahuriri) and Waitangi estuaries;
 - the management of riparian margins;
 - the management of urban stormwater networks and the reduction of contaminants in urban stormwater;
 - the protection of water quality for domestic use and registered drinking water supplies, and municipal water supply. ^{201.32, 135.18, 195.31, 233.10}
- POL TANK 2** In the Clive/Karamū Rivers and their tributaries, in addition to ~~Policy~~ POL TANK 1 the Council will work with mana whenua, landowners and the Hastings District Council to:
- reduce water temperature and increase the level of dissolved oxygen by:
 - the establishment of riparian vegetation to shade the water and reduce macrophyte growth while accounting for flooding and drainage objectives ;
 - reducing excessive macrophyte growth by physical removal of aquatic plants in the short term;
 - adopt flow management regimes to remedy or mitigate the effects of surface and ground water abstraction;
 - reduce the amount of sediment and nutrients entering the freshwater from adjacent land;
 - improve stormwater and drainage water quality and the ecosystem health of urban waterways and reduce contamination of stormwater associated with poor site management practices, spills and accidents in urban areas (refer also to Policies POL TANK 28 -31).
- POL TANK 3** In lakes and wetlands in the TANK Catchments, in addition to ~~Policy~~ POL TANK 1 the Council will work at a catchment scale with land owners in the wetland or lake catchments (refer also to Policies POL TANK 23 to 25) to:
- reduce sediment and nutrient inputs into the waterbody;
 - improve water quality by increasing macrophyte plant growth in shallow lakes;
 - improve ecosystem health and water quality by excluding stock and improving riparian management;
 - meet water quality target attribute states objectives in Schedule 26 for water bodies downstream of the lake or wetland;
 - support and assist landowners to protect, increase or restore existing wetlands or create new wetlands including for the management of urban stormwater.
- POL TANK 4** In the lower Ngaruroro and Tūtaekurī Rivers and their tributaries, in addition to

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~~Policy~~ **POL TANK 1** the Council will work with landowners to:

- a) improve water clarity and reduce deposited sediment by reducing the amount of sediment being lost from land;
- b) reduce risk of proliferation of algae by reducing nutrient losses from land, including by reducing phosphorous loss associated with sediment;
- c) improve ecosystem health and water quality by excluding stock from surface water bodies and improving riparian management.

POL TANK 5 In the tributaries of **Te Whanganui ā Orotu (the Ahuriri Estuary)**^{126.15}, in addition to ~~Policy~~ **POL TANK 1** the Council will work with mana whenua, landowners and the Napier City Council to:

- a) improve water clarity and reduce deposited sediment by ~~reduc~~**ing** the amount of sediment being lost from land and river banks;
- b) reduce risk of proliferation of algae by reducing nutrient losses from land, including through management of phosphorous loss associated with sediment;
- c) improve stormwater and drainage water quality and the ecosystem health of urban waterways and reduce contamination of stormwater associated with poor site management practices, spills and accident in urban areas;
- d) carry out further investigations to understand the estuary hydrology, functioning and environmental stressors.

Protection of Source Water

POL TANK 6 The quality of **groundwater of the Heretaunga Plains and surface waters used as source water** for Registered Drinking Water Supplies will be protected, in addition to ~~Policy~~ **POL TANK 1**, by the Council:

- a) identifying a source protection extent for small scale drinking water supplies or Source Protection Zones for large scale drinking water supplies by methods defined in Schedule 35; and
- b) regulating activities within Source Protection Zones that may actually or potentially affect the quality of the source water or present a risk to the supply of safe drinking water because of:
 - (i) direct or indirect discharge of a contaminant to the source water including by overland flow ~~and/~~^{207.39} or percolation to groundwater;
 - (ii) an increased risk to the safety of the water supply as a result of a non-routine event ;
 - (iii) potentially impacting on the level or type of treatment required to maintain the safety of the water supply;
 - (iv) shortening or quickening the connection between contaminants and the source water, including damage to a confining layer ~~of the aquifer.~~^{207.39};
 - (v) in the case of groundwater abstraction, the rate or volume of abstractions causing a change in groundwater flow direction or speed and/ or a change in hydrostatic pressure that is more than minor.

POL TANK 7 When considering applications to take water for a Registered Drinking Water Supply, the Council will:

- a) provide for the replacement or amendment of a source protection extent or Source Protection **Zone-Extent** which reflects the level of protection required for that supply, according to a method specified in Schedule 35;
- b) provide for the amendment of a Source Protection Zone where new information changes the

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- outputs from the method specified in Schedule 35;
- c) require applications to include an assessment of the Source Protection **Zone Extent** required, taking into account the factors set out in Schedule 35;
- d) have regard to:
 - (i) the extent to which the application reflects the factors and methodology in Schedule 35 when establishing the Source Protection **Zone Extent**; and
 - (ii) the impacts, including any costs and benefits, of any additional restrictions in the Source Protection **Zone Extent**;
 - (iii) the level of consultation with land owners and occupiers^{203.9} in the Source Protection **Zone Extent**.⁴

POL TANK 8 The Council will, when considering applications to discharge contaminants or carry out land or water use activities within:

- e) the source protection extent for Registered Drinking Water Supplies, take into account possible contamination pathways and risks to the quality of the source water for the water supply,
- f) A Source Protection Zone, avoid or mitigate risk of contamination from the activity of the source water for the water supply by taking into account criteria including but not limited to;
 - (i) the amount, concentration and type of contaminants likely to be present as a result of the activity or in any discharge;
 - (ii) the potential pathways for those contaminants, including any likely or potential preferred pathways;
 - (iii) the mobility and survival rates of any pathogens likely to be in the discharge or arising as a result of the activity;
 - (iv) any risks the proposed land use **water take**⁵ or discharge activity has either on its own or in combination with other existing activities, including as a result of non-routine events;
 - (v) any risks ensuring the water supplier is aware of any abstraction of groundwater **on its own or in combination with other existing activities**⁶ where abstraction has the potential to have more than a minor impact on flow direction or speed and/ or hydrostatic pressure;
 - (vi) the effectiveness of any mitigation measures to avoid or mitigate risk of contaminants entering the source water and the extent to which the effectiveness of the mitigation measure can be verified, **including whether the activity is regulated by and/or complies with with regard to relevant codes of practice or guidelines**;⁷
 - (vii) notification, monitoring or reporting requirements to the Registered Drinking Water Supplier
 - (viii) Outcomes of consultation with the Registered Drinking Water Supplier with respect to the risks to source water from the activity , including measures to minimise risks and protocols for notification to the Registered Drinking Water Supplier should an event presenting a risk to groundwater occur ^{180.25, 195.36, 203.10, 2017.41}

POL TANK 9 The Council will work with the agencies which have roles and responsibilities for the

⁴ **HDC Submission 207.40, Evidence of Annette Sweeney, para 56.**

⁵ **HDC Submission 207.41, Evidence of Annette Sweeney, para 58.**

⁶ **HDC Submission 207.41, Evidence of Annette Sweeney, para 58.**

⁷ **Evidence of Annette Sweeney para 53, point of clarification arising from changes made in response to Submission 203.10**

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provision of safe drinking water, including local government agencies, the national drinking water⁸ regulator, health agencies and registered water suppliers Napier City Council, Hastings District Council, Hawkes Bay District Health Board and Drinking Water Assessors and through multi-agency collaboration to:^{119.7}

- a) implement a multi-barrier approach to the delivery of safe drinking water for Registered Drinking Water Supplies, through the consideration of source protection measures, water treatment and supply distribution standards;
- b) understand the nature and extent of the water resources used to supply communities, their connectivity with other waterbodies and their recharge sources;
- c) understand the nature of the relationship between water age and water quality, the use of water age as an attribute and implications for its management;
- d) understand risks to the quality of water used for Registered Drinking Water Supplies, including through consultation on any applicable resource applications in Source Protection Zones;
- e) maintain shared databases of activities, including information in consents for land and water use, that have the potential to adversely affect quality of water used for community supply;
- f) develop solutions that address risks to water quality including wastewater reticulation solutions in Source Protection Zones;
- g) ~~implement a multi-barrier approach to the delivery of safe drinking water for Registered Drinking Water Supplies, through the consideration of source protection measures, and water treatment and supply standards.~~^{29.56, 129.1, 207.42, 203.11}

Managing point source discharges

POL TANK 10 The Council will manage point source discharges (that are not stormwater discharges) so that after reasonable mixing, contaminants discharged either by themselves or in combination with other discharges do not cause the 2040 target attribute states objectives for water quality in Schedule 26 to be exceeded and when considering applications to discharge contaminants will take into account:

- a) measurement uncertainties associated with variables such as location, flows, seasonal variation and climatic events;
- b) the degree to which a discharge is of a temporary nature, or is associated with necessary maintenance work.
- c) when it is an existing activity, identification of mitigation measures, where necessary, and timeframes for their adoption that contribute to the meeting of water quality target attribute states quality objectives
- d) The extent to which the discharge activity complies with industry good management standards
- e) The necessity for requiring best practicable option to prevent or minimise any actual or likely adverse effect on the environment of any discharge of a contaminant.^{126.16, 120.106, 201.34}

Riparian Land Management

POL TANK 11 The Council will promote and support the establishment of riparian vegetation, including in conjunction with stock exclusion and setback regulations, that:

- a) contributes to the health of aquatic ecosystems especially for indigenous species;

⁸ Evidence of Annette Sweeney, para 59. Consequential amendment for clarity.

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- b) provides shading to reduce macrophyte growth and water temperature especially in lowland tributaries of the Karamū River;
- c) reduces contamination of water from land use activities;
- d) reduces river bank erosion;
- e) improves local amenity;
- f) enhances recreational activities;
- g) improves fish spawning habitat;
- h) assist in weed control.

POL TANK 12 When making decisions about riparian land management in accordance with ~~Policy POL TANK 11~~, the Council will account for management objectives related to land drainage and flood control, and regional biosecurity and where appropriate, support establishment of native plant species in riparian margins to contribute to improving the region's indigenous biodiversity, the collection of mahinga kai, taonga raranga and taonga rongoa and the mauri of the river. ^{180.21, 99.104, 99.7}

POL TANK 13 The Council will support improvement of riparian management to meet the specified timeframes (in ~~Policy POL TANK 27~~) consistent with to provide for the values in Policies POL TANK 11 and 12 by; ^{123.49, 210.134}

- a) working with industry groups and land owner collectives to identify where riparian management is to be improved;
 - b) providing information about appropriate riparian planting that assists in meeting the outcomes sought for riparian land values;
 - c) regulating cultivation, ~~stock access~~ ^{consequential} and indigenous vegetation clearance activities that have a significant adverse effect on functioning of riparian margins in relation to water quality and aquatic ecosystem health in adjacent waterbodies;
 - d) providing funding assistance for riparian vegetation improvements;
- and
- e) when making decisions on applications for resource consent to:
 - (i) take into account benefits arising to the outcomes values in ~~Policy POL TANK 11 and 12~~ as a result of the activity;
 - (ii) consider whether to waive the fees and charges required to process the application where:
 - 1. there is significant public benefit from the activity or the nature and scale of the activity results in significant ecosystem benefits; and
 - 2. the activity is not a requirement of any other resource consent.

Wetland and Lake Management

~~**POL TANK 14** The Council will regulate activities in and adjacent to wetlands and lakes and will support and encourage the maintenance and improvement of wetland values, including their value for:~~

- ~~a) biodiversity and as a habitat for indigenous flora and fauna species;~~
- ~~b) recreation (where appropriate);~~
- ~~c) cultural uses including for tikanga Māori and mahinga kai;~~
- ~~d) their role in the hydrological cycle, including their effects on both high and low flows;~~
- ~~e) enhancement of water quality in connected waterbodies;~~
- ~~f) fishery habitat.~~ ^{123.5, 210.35, 210.36}

POL TANK 15 The Council will regulate activities in and adjacent to wetlands and lakes and will

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support and encourage the restoration and extension of natural wetlands and lakes and the reinstatement or creation of additional wetlands to provide for or improve the wetland values (a)–(f) in Policy 14 by working with mana whenua, industry and community groups, land owners, the Hawke’s Bay Fish and Game Council and other stakeholders in alignment with the Regional Biodiversity Strategy to:

- a) identify priority areas where wetland and lake management can be improved
 - b) identify priority areas where wetland extent can be increased
 - c) provide information to landowners about wetland and lake values and their management;
 - d) provide funding assistance for wetland and lake protection and for construction of new wetlands and lakes;
 - e) target resources where multiple objectives can be met;
- and
- f) when making decisions on applications for resource consent to:
 - (i) take into account benefits arising to the values listed in OBJ TANK 15 Policy 14 as a result of the activity;
 - (ii) consider whether to waive the fees and charges required to process the an application to improve or maintain wetland or lake values where;
 - 1. there is significant public benefit from the activity or the nature and scale of the activity result in significant ecosystem benefits; and
 - 2. the activity is not a requirement of any other resource consent. ^{123.5, 210.35, 210.36, 58.17, 145.5}

Phormidium Management

POL TANK 16 The Council will address the risks to human health and dogs from toxic phormidium by;

- a) regular monitoring and reporting on the incidence of algae, including toxic phormidium and nutrient concentrations and ratios of nutrients in freshwater related to phormidium establishment;
- b) adopting applicable national guidelines for the monitoring and management of toxic algae; ^{210.37}
- c) supporting national investigations into the incidence of toxic phormidium, the reasons for its establishment and measures to reduce the incidence;
- d) reducing nutrient and sediment inputs in accordance with Policies POL TANK 17 and 20;
- e) maintaining flushing flows;
- f) ensuring the public has information about phormidium risk, including as a result the accumulation of toxic algal mats as specified in Schedule 26.

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5.10.3 Policies: Managing Adverse Effects From Land Use on Water Quality (Diffuse Discharges)

Adaptive Approach to Nutrient and Contaminant Management

POL TANK 17 The Council will achieve or maintain the 2040 freshwater attribute targets ~~or freshwater objectives in~~ Schedule 26 with landowners, industry groups, and other stakeholders and will implement the following measures;

- a) establish programmes and processes through Farm Environment Plans, Catchment Collectives and Industry Programmes to ensure land managers;
 - (i) adopt industry good practice;
 - (ii) identify critical source areas of contaminants at both property and catchment scale;
 - (iii) adopt effective measures to mitigate or reduce contaminant loss;
 - (iv) ensuring prepare nutrient management plans are prepared in catchments not meeting targets for dissolved nitrogen according to the priority order specified in Schedule 28, the farm plan required for the property shall include the nitrogen loss rate and nitrogen loss target. ^{124.54, 126.20, 135.25, 210.40}

POL TANK 18 The Council will achieve or maintain the 2040 freshwater attribute targets ~~or freshwater objectives in~~ Schedule 26 by;

- a) gathering information to determine sustainable nutrient loads;
- b) developing nutrient limits and a nutrient allocation regime if the management framework in Policy POL TANK 17 is not leading to improved nutrient attribute states by the time this plan is reviewed;
- c) regulating land use change to manage ~~where there is a~~ significant risk of increased nitrogen loss;
- d) gathering and assessing information about environmental state and trends and the impact of land use activities on these;
- e) working with industry groups, landowners and other stakeholders to undertake research and investigation into;
 - (i) contaminant nutrient pathways, concentrations and loads in rivers and coastal receiving environments;
 - (ii) nutrient uptake and loss pathways at a property scale;
 - (iii) measures to reduce contaminant nutrient losses at a property as well as catchment scale including those delivered through industry programmes. ^{180.29}

~~**POL TANK 19** In catchments that do not meet objectives for dissolved nutrients specified in Schedule 26, the Council will ensure landowners, landowner collectives and industry groups have nutrient management plans according to the priority order in Schedule 28.~~ ^{124.54, 126.20, 135.25, 210.40}

Sediment Management

POL TANK 20 The Council will reduce adverse effects on freshwater and coastal aquatic ecosystems from eroded sediment, and from the phosphorus associated with this, by prioritising the following mitigation measures;

- a) regulating cultivation, ~~stock access~~ and vegetation clearance activities; ^{35.83, 124.32, 88.13, 140.5 consequential}
- b) targeting priority areas and activities for sediment loss management where there is high sediment loss risk and working with land managers to identify and manage critical source areas of contaminants at both property and catchment scale;

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- c) informing land managers where land is vulnerable to erosion, using tools such as SedNet and LUC; and providing information about measures that reduce soil loss;
- d) recognising the benefits provided by tree planting and retirement of land for erosion control as well as for mitigating climate change effects and improving indigenous biodiversity by;
 - (i) targeting resources where multiple objectives can be met;
 - (ii) and supporting landowners to retire land, establish forests where appropriate, and plant trees on land with high actual or potential erosion risk;
- e) Supporting and encouraging improved riparian management across all TANK catchments.

195.45

Land Use Change and Nutrient Losses

POL TANK 21 The Council will ~~regulate production land use change to manage the remedy or mitigate~~ the potential impact of ~~increases in~~ diffuse discharge of nitrogen on freshwater quality objectives ~~by regulating land and water use changes that modelling indicates are likely to result in increased nitrogen loss~~ (modelled on an annual, whole of ~~property or whole of farm or collective enterprise~~ basis) and in making decisions on resource consent applications, the Council will take into account:

- a) whether freshwater quality objectives or targets are being met in the catchment where the activity is to be undertaken ~~as a result of modelled nitrogen losses from the land use change;~~
- b) where any relevant TANK Industry Programme or Catchment Collective is in place the extent to which the changed ~~production~~ land use activity is consistent with the Industry Programme or Collective outcomes, mitigation measures and timeframes;
- c) any mitigation measures required, ~~(including those where model results are not available)~~ and timeframes by which they are to be implemented that are necessary to ensure the actual or potential ~~nitrogen~~ contaminant loss occurring from the property, in combination with other ~~nitrogen~~ contamination losses in the catchment will be consistent with meeting ~~2040~~ freshwater ~~quality target attribute states in Schedule 26 objectives~~^{consequential}, including performance in relation to industry good practice, efficient use of nutrients and minimisation of nutrient losses;

and will;

- d) avoid land use change that will result in increased nitrogen loss that contributes to water quality ~~objectives and target attribute states~~ in Schedule 26 for dissolved nitrogen not being met.

210.37, 210.42, 180.31, 135.27, 195.46, 54.73 et al consequential

Stock Exclusion

POL TANK 22 ~~The Council will regulate the exclusion of cattle, deer and pigs from rivers, lakes and wetlands, and when considering an application for resource consent or when making decisions about stock exclusion in Industry or Catchment Collective Plans or when making decisions about Farm Environment Plan requirements to take into account the following matters:~~

- a) ~~assessment of sources, scale and significance of adverse effects of sediment, phosphorus, nitrogen and bacterial inputs to the water body that could effectively or efficiently be reduced by stock exclusion, bridging or culverting;~~
- b) ~~identifying whether there are alternative measures to meet water quality outcomes and improve ecosystem health, including by managing bank erosion or reducing sediment losses to water in contributing areas, altering land uses, or providing reticulated water for stock;~~
- c) ~~whether stock exclusion is practicable in the circumstances including in relation to;~~

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- ~~(i) total costs of stock exclusion measures compared to expected water quality benefit; assessed in (a) and other possible adverse effects including stock welfare;~~
- ~~(ii) technical or practical challenges of any works required for stock exclusion to be effective;~~
- ~~(iii) potential costs and benefits provided by alternative measures compared to stock exclusion.~~ ^{35.83, 124.32, 88.13, 140.5.}

Industry Programmes and Catchment ~~Management~~Collectives ^{29.14, 194.41, 58.22}

POL TANK 23 The Council will support the establishment and operation of Industry Programmes and Catchment Collectives and:

- a) ~~support development of industry good practice by industry groups and support provision of~~ ~~ensure any~~ relevant information or expertise for making sustainable land management decisions ~~is available~~ to ~~farm operators land managers~~; ^{consequential}
- b) support local investigation and water monitoring programmes where information gaps exist;
- c) support development and use of ~~catchment scale~~ models that assist in identification and management of critical source areas;
- d) support ~~collective catchment~~ and farm scale decision making to meet freshwater objectives and encourage local solutions and innovative and flexible responses to water quality issues; ^{58.22, 194.41, 29.14, 129.15 and 129.16 et al}
- e) ~~work with water permit holders to encourage and support establishment of catchment collectives that address both freshwater quality objectives and stream flow management through environmental management programmes as specified in Schedule 30 and Schedule 36 and within the timeframes specified in Schedule 28.~~ ^{210.140 and 216, .222}

POL TANK 24 The Council will continue to work with ~~farm operators landowners~~, industry groups and other stakeholders to manage land and water use activities so that they meet 2040 objectives for freshwater/aquatic ecosystems by: ^{194.41, 58.22, consequential}

- a) further supporting the development of **Industry Programmes** that contribute to meeting applicable freshwater objectives and that;
 - (i) identify practices that contribute to meeting applicable freshwater objectives;
 - (ii) specify timeframes for completion or adoption of measures to ~~reduce mitigate~~ contaminant losses;
 - (iii) ensure individual performance under an Industry Programme is ~~monitored audited~~;
 - (iv) provide annual reports to the Council on progressive implementation of measures identified in Industry Programmes established under Schedule 30 and progress towards meeting applicable objectives for water quality;
 - (v) promote adoption of good ~~industry management~~ practice;
 - (vi) ensure that Industry Programmes are consistent with the requirements of Schedule 30;
- b) supporting ~~farm operators landowners~~ to establish **Catchment Collectives** to develop and implement environmental management plans that contribute to meeting applicable freshwater objectives and that;
 - (i) identify and adopt measures at a property scale and, collectively with other ~~farm operators land managers~~, ~~identify and adopt measures at a catchment scale~~ that reduce contaminant losses or remedy or mitigate the effects of land use on freshwater objectives;
 - (ii) specify timeframes for completion or adoption of measures to ~~reduce mitigate~~ contaminant losses; ^{135.29}
 - (iii) ensure individual performance under a catchment collective is monitored;

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- (iv) provide annual reports to the Council on progressive implementation of measures identified in ~~landowner-Catchment~~ Collectives established under Schedule 30 and progress towards meeting applicable objectives for water quality;
 - (v) promote adoption of good ~~management agricultural~~ practice;
 - (vi) ensure programmes prepared by a Catchment Collective are consistent with the requirements of Schedule 30;
- c) Approving any ~~Landowner~~ Catchment Collective or Industry Programme developed under Schedule 30;
- d) Auditing Catchment ~~Landowner~~ Collective or Industry Programmes prepared and approved under Schedule 30 including auditing of member properties. Consequential, 180.135.29 et al

POL TANK 25 Where a farm operator ~~landowner~~ is not part of an Industry Programme or Catchment Collective, the Council will require development and implementation of a Freshwater Farm Environment Plan for the farm. 194.41, 58.22

Management and compliance.

POL TANK 26 Where farm operators ~~individuals~~ are members of a **Catchment Collective** or **Industry Programme** but do not undertake their activity in accordance with the approved plan prepared in accordance with Schedules 28 or 30, or do not follow the agreed terms of membership of a Catchment Collective or Industry Programme the Council will;

- a) provide a conflict resolution service;
- b) where a farm operator ~~n individual~~ is no longer, or is deemed through conflict resolution processes not to be, a member the Council will;
- c) require the development of a Freshwater Farm Plan for that property within 6 months or;
- d) require an application for a land use consent to be made;
- e) take appropriate enforcement action. 194.41, 58.22

Timeframes; Water and Ecosystem Quality

POL TANK 27 The Council will develop an implementation plan for this Plan Change with industry groups, landowners, water permit holders, tangata whenua, and other stakeholders and to ensure that the farm operator ~~land owners and lease holders~~ are engaged in industry or ~~landowner-Catchment~~ Collective programmes or have prepared freshwater farm plans ~~farm environmental plans~~ within the timeframes in Schedule 28 and to ensure reporting (as specified in Schedule 30) on the milestones in Table 1 below. 120.102, 180.35, 126.21, 135.32, 123.61, 120.117, 124.32, 195.51 consequential

Table 1: Milestones and Timeframes

Action	Activity	Milestone	Output to be reported on
Stock and Riparian Land Management			
1; Stock exclusion and Riparian planting	Stock excluded from rivers in flat and rolling hill country	Stock excluded by 2023	Km of stream with stock exclusion
	Riparian margins planted		Km of riparian margins planted

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2; Stock exclusion and sediment mitigation	Stock access and sediment mitigation in hill country managed through environmental programme or farm plan	According to priority set out in Schedule 28 9	Soil erosion and critical source area mitigation measures and timeframes for implementation
3; Riparian management	Shading and planting in Karamū catchment and Heretaunga plains	200km of waterway subject to planting programmes	River and streams in Karamū catchment with riparian planting for shade
Wetlands			
4; wetland management and improvement	Protection and restoration of existing wetlands	100ha in 5 years and 200ha in ten years from operative date	Hectares of protected and restored wetland
	Reinstatement or creation of additional wetland	100 ha reinstated or additional wetland	Hectares of new wetland
Nutrient Management			
5; Nutrient management	Nutrient management plans	<u>Farms have plans</u> according to priority set out in Schedule 28	Number of <u>farms</u> properties subject to nutrient plan

Amendments to table - 35.83, 124.32 , 88.13, 140.5. consequential

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5.10.4 Policies: Stormwater Management

Urban Stormwater Infrastructure

POL TANK 28 The adverse effects of stormwater quality and quantity on aquatic ecosystems and community well-being arising from existing and new urban development (including infill development) industrial ~~or and~~ trade premises and associated infrastructure, will be reduced or mitigated no later than 1 January 2025, by: ^{203.13}

- a) Requiring, through consent conditions, measures to help achieve the target attribute states in Schedule 26; ^{120.137, 127.22, 123.16, 210.49}
- b) ~~a) Local Authorities~~ adopting an integrated catchment management approach to the collection, treatment and discharge of stormwater; ^{63.33, 207.53}
- c) ~~b) requiring~~ stormwater to be discharged into a reticulated stormwater network where such a network is available or will be made available as part of the development;
- d) ~~b) requiring~~ increased retention or detention of stormwater where necessary⁹, while not exacerbating flood hazards; ^{63.35, 207.53}
- e) ~~b) having particular regard to significant values of the receiving environment being either a TANK estuarine system, outstanding waterbody or wetland;~~ ^{126.22}
- f) ~~b) taking into account site specific constraints including areas with high groundwater and, source protection zones; and/or an outstanding water body~~
- g) ~~b) taking into account the collaborative approach of HBRC, Napier City and Hastings District councils in managing urban growth on the Heretaunga Plains as it relates to stormwater management;~~
- h) ~~b) taking into account the effects of climate change when providing for new and upgrading existing infrastructure;~~
- i) ~~b) adopting, where practicable,~~ a good practice approach to stormwater management including adoption of Low Impact Design for stormwater systems; ^{123.62}
- j) ~~b) amending district plans,~~¹⁰ standards, codes of practice and bylaws to specify design standards for stormwater reticulation and discharge facilities through consent conditions, that will achieve the freshwater objectives set out in this plan;
- k) ~~b) developing and making available to the public advice about good stormwater management options (including through HBRC's guidelines);~~
- l) ~~b) encouraging, through education and public awareness programmes, greater uptake and installation of measures that reduce risk of stormwater contamination;~~
- m) ~~b) requiring, no later than 1 January 2025, the preparation and implementation of a site management plan and good site management practices on industrial and or trade premises with a high risk of stormwater contamination in the TANK catchments and those in the high priority areas:~~ ^{10.4}
 - (i) of the Ahuriri catchment;
 - (ii) of the Karamū River and its tributaries;
 - (iii) of land over the unconfined aquifer; and
 - (iv) within identified drinking water Source Protection Zones.

Source Control

POL TANK 29 Sources of stormwater contamination and contaminated stormwater will be reduced by:

⁹ HDC Submission 207.53, NCC Submission 63.35: Evidence of Annette Sweeney, para 85.

¹⁰ HDC Submission 207.53 NCC Submission 63.35: Evidence of Annette Sweeney, para 86.

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- a) specifying requirements for the design and installation of stormwater control facilities on sites where there is a high risk of freshwater contamination arising from either the direct discharge of stormwater to freshwater, the discharge of stormwater to land where it might enter water or the discharge to a stormwater or drainage network;
- b) requiring the implementation of good site management practices on all sites where there is a risk of stormwater contamination arising from the use, or storage of contaminants including the management of solid contaminants and debris to avoid these entering stormwater; ^{233.16}
- c) controlling, and if necessary avoiding, activities that will result in water quality standards not being able to be met.

Dealing with the Legacy

POL TANK 30 Aquatic ecosystem health improvements and community wellbeing and reduced stormwater contamination will be achieved by HBRC working with the Napier City and Hastings District Councils requiring discharges from stormwater networks to meet:

- a) ~~water quality objectives (where they are degraded by stormwater) and the identification of measures that ensure stormwater discharges will achieve at least:~~
 - ~~(i) the 80th percentile level of species protection in receiving waters by 1 January 2025; and~~
 - ~~(ii) the 95th percentile level³ of species protection by 31 December 2040.~~ ^{10.5, 123.64, 132.92, 162.23, 135.35, 210.51}

~~and~~

- a) ~~b) except as in (a) above, the 2040 target attribute states management objectives~~ in Schedule 26 for freshwater and estuary health through resource consent conditions, including requirements:
 - (i) to apply the Stream Ecological Valuation methodology to inform further actions;
 - (ii) to install treatment devices within the drainage network where appropriate,
 - (iii) to avoid solid contaminants and debris entering stormwater; ^{233.18}
 - (iv) for stream planting/re-alignment for aquatic ecosystem enhancement;
 - (v) for wetland creation, water sensitive design and other opportunities for increasing stormwater infiltration where appropriate;
 - (vi) recognise existing and planned investments in stormwater infrastructure.
- b) for attributes not accounted for in Schedule 26, the ANZECC Guidelines 2018 will be used to achieve, after reasonable mixing; ^{63.36}
 - (i) the 80th percentile level of species protection in receiving waters by 1 January 2025; and
 - (ii) the 95th percentile level of species protection by 31 December 2040.

Consistency and Collaboration; Integration of city, district and regional council rules and processes.

- a) To assist in achieving the ~~freshwater quality objectives 2040 target attribute states~~ in ~~this Plan Schedule 26A~~ ^{consequential}, HBRC, with the Napier City and Hastings District Councils will, no later than 1 January 2025, implement similar stormwater performance standards including through the adoption of:
 - b) good practice engineering standards;
 - c) consistent plan rules and bylaws;
 - d) shared information and approaches to education and advocacy;
 - e) shared information and processes for monitoring and auditing individual site management on sites at high risk of stormwater contamination, including clarification of roles and

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- f) [responsibilities for managing stormwater](#); ¹¹
- g) consistent levels of service for stormwater management and infrastructure design; an integrated stormwater catchment management approach [which determines roles and responsibilities for managing stormwater](#); ¹²
- h) undertaking a programme of mapping the stormwater networks and recording their capacity;
- i) aligning resource consent processes and having joint hearings to achieve integrated management of proposals for urban activities particularly in respect of stormwater, water supply and wastewater provisions and implementation of the Heretaunga Plains Urban Development Strategy (2017).

Ahuriri Catchment

- a) The Council will support the development of ~~an~~ [Te Whanganui a Orotū \(Ahuriri Estuary\) consequential Integrated Catchment Management Plan](#) by;
- b) improving the quality of freshwater entering ~~the~~ [Te Whanganui a Orotū \(Ahuriri Estuary\) consequential](#) through the measures included in this plan; and
- c) carrying out investigations to help better understand processes and functions occurring within the estuary and its connected freshwater bodies.

3 ANZECC Guidelines 2018 (Australia and New Zealand Guidelines for Fresh and Marine Water Quality)

5.10.5 Policies: Monitoring and Review

POL TANK 33 The Council will recognise and support monitoring according to mātauranga Māori and will recognise and support local scale monitoring to assess ecosystem health and mauri including water quality in relation to identified values and its contribution to:

- a) understanding local ecosystem health and land and water use impacts on it;
- b) enabling kaitiaki and resource users' responsibilities for sustainable freshwater management to be met;
- c) assessing effectiveness of mitigation measures adopted to meet freshwater objectives;
- d) understanding state and trends of local water quality;
- e) adding to the regional knowledge about environmental state and trends; by;
- f) developing protocols and procedures for monitoring appropriate to the purpose of the monitoring;
- g) providing assistance and advice;
- h) supporting the provision of monitoring materials;
- i) collating and reporting on data as appropriate.

POL TANK 34 Council will meet regularly with representatives from TANK stakeholder groups to:

- a) review and report on the TANK implementation plan;
- b) identify issues arising and develop measures to enable their resolution.

POL TANK 35 The Council will monitor and report on the effectiveness of the TANK water quality management policies and rules and to assist in making decisions about reviewing or changing this management framework, the Council will:

- a) continue to monitor instream water quality and review and report on the progress towards and achievement of the water quality objectives in Schedule 26 and according to Objectives

¹¹ [HDC Submission 207.55, NCC Submission 63.37; Evidence of Annette Sweeney, para 87](#)

¹² [HDC Submission 207.55, NCC Submission 63.37; Evidence of Annette Sweeney, para 87](#)

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- 2 and 3 of this Plan in its regular State of the Environment monitoring;
- b) monitor and report on the state of riparian land and wetlands, and carry out regular ecosystem habitat assessments, including native fish monitoring and through the application of mātauranga Māori tools and approaches when they are developed;
 - c) monitor the progress towards the milestones listed in Policy POL TANK 27, according to timeframes specified in Schedule 28 and collate and report annually on information about;
 - d) the nature and extent of the mitigation measures being adopted to meet water quality and/or quantity outcomes through Catchment Collectives, Industry Programmes and Farm Plans;
 - e) the establishment of Catchment Collectives and assess progress in implementing the measures specified in their environment plans;
 - f) the preparation of Farm Environment Plans and assess progress in implementing the measures specified in that plan;
 - g) work with Industry Groups to collate information annually on the functioning and success of any Industry Programme in implementing measures specified in the Industry Programme;
 - h) along with the Napier City Council and Hastings District Council, report annually on progress towards the improvement of the stormwater network, including reporting on the preparation of Site Management Plans for activities at risk of contaminating stormwater in urban areas;

And

- ~~i) commence a review of these provisions within ten years of <operative date> in accordance with section 79 of the RMA. ^{-195.59, 135.38}~~
-

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5.10.6 Policies: Heretaunga Plains Groundwater Levels and Allocation Limits

Heretaunga Plains Aquifer Management

POL TANK 36 The Council recognises the actual and potential adverse effects of groundwater abstraction in the Heretaunga Plains Groundwater Quantity Area ~~Water Management Unit~~ on:

- a) groundwater levels ~~and aquifer depletion~~^{123.72};
- b) flows in connected surface waterbodies;
- c) flows of the Ngaruroro River;
- d) groundwater quality through risks of sea water intrusion ~~and water abstraction~~^{123.72};
- e) tikanga and mātauranga Māori;

and will adopt a staged approach to groundwater management that includes;

- f) avoiding further adverse effects by not ~~allowing granting new consents to take and use groundwater unless deemed an exceptional instance under Policy 37A~~¹³ ~~new water use~~^{63.4, 99.12}
- g) reducing existing levels of water use;
- h) mitigating the adverse effects of groundwater abstraction on flows in connected water bodies;
- i) gathering information about actual water use and its effects on stream depletion;
- j) monitoring the effectiveness of stream flow maintenance and habitat enhancement schemes;
- k) including plan review directions to assess effectiveness of these measures.

POL TANK 37 In managing the allocation and use of groundwater in the Heretaunga Plains Groundwater Quantity Area ~~Water Management Unit~~, the Council will;

- a) ~~adopt~~ ~~Set as a target~~ an interim allocation limit 90 million cubic meters per year based on ~~the A~~ actual and ~~R~~ reasonable water use, ~~with a view to developing a formal limit in accordance with Policy 42~~¹⁴, ~~prior to 2017~~^{99.105}
- b) avoid re-allocation of any water that might become available within the interim groundwater allocation limit or within the limit of any connected water body until there has been a review of the relevant allocation limits within this plan ~~unless supported by Policy 37A~~¹⁵;
- c) ~~generally~~¹⁶ manage the Heretaunga Plains Groundwater Quantity Area ~~Water Management Unit~~ as an over-allocated management unit and prevent any new allocations of groundwater;
- d) when considering applications in respect of existing consents due for expiry, or when reviewing consents, to;
 - (i) allocate groundwater the basis of the maximum quantity that is able to be abstracted during each year or irrigation season expressed in cubic meters per year;
 - (ii) ~~as a starting point~~ apply an assessment of ~~a~~ Actual and ~~r~~ Reasonable use ~~that reflects land use and water use authorised in the ten years up to August 2017~~^{194.50} (except as provided by ~~Policy~~ POL TANK 50) ~~and then, subject to the proposal being for no more than the quantity specified on the existing consent, consider any volume beyond this taking the following into account:~~

¹³ HDC Submission 207.3, NCC Submission 63.3: Evidence of Cameron Drury, 28.

¹⁴ HDC Submission 207.4, NCC Submission 63.4: Evidence of Cameron Drury, para 46.

¹⁵ HDC Submission 207.4, NCC Submission 63.4: Evidence of Cameron Drury, para 28.

¹⁶ HDC Submission 207.4, NCC Submission 63.4: Evidence of Cameron Drury, para 45.

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1. reasons for the proposed volume of water;
2. efficiency of use;
3. the proposed use, particularly if for beverages, food and fibre production and processing and other land-based primary production
4. the value of the investment associated with the certainty of the volume as previously authorised;
5. whether substantial progress or effort has been, and continues to be, made towards giving effect to the proposed use and investment enabled by the original volume authorised.¹⁷

(ii)

- e) mitigate stream depletion effects on lowland streams by providing for stream flow maintenance and habitat enhancement schemes.

POL TANK 37A Notwithstanding Policy 37b) and c), and provided:

- a) There are no feasible alternative alternatives,
- b) Significant progress is or is likely to be made toward achieving the target in Policy 37(a), and
- c) The allocation limits in Schedule 31 and 32 as at <the operative date> are not or are not likely to be exceeded;

the re-allocation of groundwater not otherwise addressed under Policy 37(d) or 50 may be considered where the proposed use is:

1. Necessary for beverage, food or fibre processing;
2. To enable the development of Māori economic, cultural and social well-being;
3. To enable significant local employment opportunities or wider economic benefits
4. To enable the servicing of urban growth (including new zones) and social infrastructure facilities;

The volume of take and consent duration may also be distinguishing factors.¹⁸

POL TANK 38 Unless provided for as an exceptional circumstance under Policy 37A, the¹⁹ Council will restrict the re-allocation of groundwater^{29,24} to holders of permits to take and use water in the Heretaunga Water Management Unit issued before 2 May 2020 and will review permits or allocate water according to the plan policies and rules either:

- a) upon expiry of the consent; or
- b) in accordance with a review of all applicable permits within ten years of <the operative date>; whichever is the sooner.

¹⁷ HDC Submission 207.4, NCC Submission 63.4; Evidence of Cameron Drury, para 19.

¹⁸ HDC Submission 207.5, NCC Submission 63.5; Evidence of Cameron Drury, Para 27

¹⁹ HDC Submission 207.5, NCC Submission 63.5, consequential amendment; Evidence of Cameron Drury, para 28.

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Flow maintenance

POL TANK 39 ~~When assessing applications to take groundwater in the Heretaunga Plains Water Management Unit the Council will:~~

- ~~a) either;~~
- ~~(i) require abstraction to cease when an applicable stream flow maintenance scheme trigger is reached;~~
 - ~~or~~
 - ~~(ii) enable consent applicants to develop or contribute to stream flow maintenance and habitat enhancement schemes that:~~
 - ~~1. contribute flow to lowland rivers where groundwater abstraction is depleting stream flows; and~~
 - ~~2. improve oxygen levels and reduce water temperatures;~~
- ~~b) assess the relative the contribution to stream depletion from groundwater takes and require stream depletion to be off set equitably by consent holders while providing for exceptions for the use of water for essential human health; and~~
- ~~c) enable permit holders to progressively and collectively through Water User Collectives develop and implement flow maintenance and habitat enhancement schemes as water permits are replaced or reviewed, in the order consistent with water permit expiry dates.~~

To mitigate the stream depletion effects of groundwater takes in the Heretaunga Plains Groundwater Quantity Area the Council will:

- a) consult with iwi and other relevant parties to investigate the environmental, technical, cultural, social^{180.42} and economic feasibility of options for stream flow maintenance and habitat enhancement schemes including water storage and release options and groundwater pumping and discharge options that:
- (i) Enable water takes not otherwise provided for under Schedule 31;²⁰
 - (ii) maintain stream flows in lowland rivers above trigger levels where groundwater abstraction is depleting stream flows, and
 - (iii) improve oxygen levels and reduce water temperatures.
- b) determine the preferred solutions taking into account whether:
- (i) wide-scale aquatic ecosystem benefits are provided by maintaining stream flow across multiple streams
 - (ii) multiple benefits can be met including for flood control and climate change resilience
 - (iii) the solutions are efficient and cost effective
 - (iv) scheme design elements to improve ecological health of affected water bodies have been incorporated
 - (v) opportunities can be provided to improve public access to affected waterways.
- c) develop and implement a funding mechanism that acknowledges the relative contribution of individuals consents to stream depletion and that is proportionate to the scale of individual effects and²¹ enables the Council to recover the costs of developing, constructing and operating stream flow maintenance and habitat enhancement schemes from permit holders, including where appropriate,
- (i) management responses that enable permit holders to manage local solutions and

²⁰ HDC Submission 207.7, NCC Submission 63.7: Evidence of Cameron Drury para 58.

²¹ HDC Submission 207.7, NCC Submission 63.7: Evidence of Cameron Drury para 58.

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- (ii) develop any further plan change within an agreed timeframe if necessary to implement a funding solution.
- d) With the exception of takes for municipal purposes, where a water conservation strategy will be undertaken,²² where schemes are operational, either
 - (i) require abstraction to cease when applicable stream flow maintenance trigger is reached;
 - or
 - (ii) require permit holders to contribute to and participate in the scheme.
- ~~(ii)~~
- e) ensure that stream flow maintenance and habitat enhancement schemes are constructed and operating within ten years of the operative date of the Plan while adopting a priority regime according to the following criteria:
 - (i) schemes be investigated and established in catchments (or sub catchments) in the order in which consents are due to expire²³;
 - ~~(i)~~(ii) solutions that provide wide-scale benefit for maintaining stream flow across multiple streams
 - ~~(ii)~~(iii) solutions that provide flow maintenance for streams that are high priority for management action because of low oxygen levels.
- f) review as per POL TANK 42 if no schemes are found to be feasible.^{129.2. 194.53}
- ~~f) —~~

POL TANK 40 When assessing applications for a stream flow maintenance and habitat enhancement scheme the Council will have regard to:

- a) opportunities for maximising the length of waterbodies where habitat and stream flow is maintained or enhanced;
- b) any improvements to water quality, especially dissolved oxygen, and ecosystem health as a result of the stream flow maintenance and habitat enhancement schemes;
- c) the duration and magnitude of adverse effects as a consequence of flow maintenance scheme operation;
- d) the extent to which the applicant has engaged with mana whenua;
- e) ~~and will;~~
 - ~~(i) — allow site to site transfer of water to enable the operation of a flow enhancement scheme;~~
 - ~~(ii) — enable water permit holders to work collectively to develop and operate stream flow maintenance and habitat enhancement schemes consistent with the requirements of Schedule 36~~
 - ~~(iii) — impose consent durations of 15 years that are consistent with the term for groundwater takes affected by stream flow maintenance requirements, except where stream flow maintenance is being provided by significant water storage infrastructure in which case consent duration is consistent with the scale of the infrastructure.~~^{Consequential to POL TANK 39}

POL TANK 41 Over the 10 year period leading into the groundwater management review under Policy

²² HDC Submission 207.7, NCC Submission 63.7, Evidence of Cameron Drury, para 58.

²³ HDC Submission 207.7 NCC Submission 63.7, Evidence of Cameron Drury, para 58.

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42. and to inform that process. The the²⁴ Council will ~~remedy~~mitigate^{99.16} the stream depletion effects of groundwater takes in the Heretaunga Plains Water Management Unit on the Ngaruroro River, in consultation with mana whenua, land and water users and the wider community through:

- a) further investigating the environmental, technical, cultural, social,^{180.42} and economic feasibility of a water storage and release scheme to off-set the cumulative stream depletion effect of groundwater takes; and
- b) if such a scheme is feasible, ~~to~~developing options for funding, construction and operation of such a scheme including through a targeted rate;
or
- c) if such a scheme is not feasible, ~~to~~reviewing alternative methods and examine the costs and benefits of those.

Groundwater management review

POL TANK 42 After water has been re-allocated and consents reviewed in accordance with ~~Policies-POL TANK~~ POL TANK 36 - 38, the Council will commence a review of these provisions within ten years of <operative date> in accordance with Section 79 of the RMA and will determine:

- a) the amount of water allocated in relation to the interim allocation limit;
- b) the total annual metered groundwater use for the Heretaunga Plains Groundwater Quantity Area Water Management Unit during the ten years prior to the time of review;
- c) if any changes in the relationship between groundwater abstraction and the flows of rivers and groundwater levels have occurred;
 - (i) the extent of any stream flow maintenance, augmentation, or and^{194.58} habitat enhancement schemes including in relation to;
 - (ii) the length of stream subject to flow maintenance;
 - (iii) the extent of habitat enhancement including length of riparian margin improvements, and new or improved wetlands;
 - (iv) the magnitude and duration of stream flow maintenance scheme operation;
 - (v) trends oxygen and temperature levels in affected streams.

And will;

- d) In relation to plan objectives and adverse effects listed in ~~Policy POL TANK~~ POL TANK 36, ~~assess~~;
 - (i) Consider new information on the long term sustainable equilibrium of the groundwater resource that accounts for annual variation in climate and prevents seawater intrusion;
 - (ii) Assess;²⁵
 - (i)1. the effects of the groundwater takes on stream flows;
 - (ii)2. effectiveness of any^{29.27} stream flow maintenance, augmentation, or habitat enhancement^{194.58} schemes in maintaining water flows, groundwater levels^{29.27} and improving water quality;
 - (iii)3. effectiveness of habitat enhancement including through improved riparian management and wetland creation in meeting freshwater objectives;
- e) review the appropriateness of the allocation limit in relation to the freshwater objectives;

²⁴ HDC Submission 207.9, NCC Submission 63.9: Evidence of Cameron Drury para 66.

²⁵ HDC Submission 207.11, NCC Submission 63.11: Evidence of Cameron Drury para 69.

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- f) develop a plan change to ensure any over-allocation is phased out.

HDC and NCC Relief Sought

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5.10.7 Policies: Surface Water Low Flow Management

Flow Management Regimes; Tūtaekurī, Ahuriri, Ngaruroro and Karamū

POL TANK 43 The Council will manage river flows and lake or wetland water levels affected by surface water abstraction activities, including groundwater abstraction in Zone 1, during low flow periods so that they meet objectives for aquatic ecosystem health, mauri, tikanga Māori values, and other instream values by;

For the **Ngaruroro River**;

- a) maintaining the existing minimum flows for the Ngaruroro River and its tributaries;
- b) reducing the effects of abstraction from the mainstem and connected groundwater in Zone 1 by reducing the allocation limit for consumptive use at times of low flow^{129.3} for the Ngaruroro River;
- c) establishing allocation limits for the river, connected groundwater in Zone 1 and tributaries to account for the cumulative effects of all abstraction and provide water for abstraction at a reasonable security-reliability of supply;
- d) establishing a limit for groundwater abstraction in the upper Ngaruroro Catchment based on existing ~~a~~Actual and ~~r~~Reasonable use until more information about the nature and extent of that resource is available.

For the **Tūtaekurī River**;

- e) increasing the minimum flow for the Tūtaekurī River and the Mangaone tributary and maintaining the minimum flow for the Mangatutu tributary;
- f) reducing the effects of abstraction from the mainstem and connected groundwater in Zone 1 by reducing the allocation limit for consumptive use at times of low flow^{129.3} for the Tūtaekurī River;
- g) establishing allocation limits for the river, connected groundwater in Zone 1 and tributaries to account for the cumulative effects of all abstraction and provide water for abstraction at a reasonable security-reliability of supply;
- h) establishing a limit for groundwater abstraction in the upper Tūtaekurī Catchment based on existing ~~a~~Actual and ~~r~~Reasonable use until more information about the nature and extent of that resource is available.

For the **Karamū River**;

- i) maintaining existing flow management regimes for the Karamū River and its tributaries and contributing lakes and wetlands affected by groundwater abstraction and surface water abstractions;
- j) establishing allocation limits for all abstraction year round^{129.4} for the river and tributaries to account for the cumulative effects of all abstraction and provide water for abstraction at a reasonable security-reliability of supply.

For the **Ahuriri Catchment Freshwater Streams**;

- k) establishing limits for ground and surface water abstraction based on existing ~~a~~Actual and ~~r~~Reasonable use until more information about the nature and extent of that resource is available.

Paritua ~~and~~ Karewarewa Streams

POL TANK 44 The Council ~~will~~recognises the connectivity between ground and surface water abstraction on the flows in the Paritua ~~and~~ Karewarewa Streams and their tributaries, acknowledges the contribution of flows from these streams to the flows in the Awanui

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Stream, Karamū River and the Heretaunga Plains ~~Groundwater Quantity Area Water-Management Unit~~, and their importance to local marae and will work with water permit holders, landowners and tangata whenua to; ^{120.49, 123.79, 195.66}

- a) further refine the Heretaunga Plains Aquifer Model to improve model outputs for this catchment;
- b) investigate opportunities for wetland creation to improve hydrological functioning and water quality in the river, especially during low flows;
- c) improve riparian management to provide shade, reduce macrophyte growth, increased dissolved oxygen levels and decrease water temperature;
- d) carry out resource investigations to understand natural stream flow regimes and feasible options for remediation including;
 - (i) managed aquifer recharge;
 - (ii) flow enhancement from groundwater;
 - (iii) streambed modification to reduce losses to groundwater in highly conductive reaches;
- e) enable and support water permit holders and landowners to collectively manage the maintenance of specified flows in the Paritua/Karewarewa Streams;
- f) provide for water to be diverted from the Ngaruroro for the enhancement of flows in the Paritua Stream.

General Water Allocation Policies

POL TANK 45 When assessing applications to take water the Council will;

- a) provide that the ~~taking and use abstraction~~ of water that has been taken and impounded or stored at times of high flow ~~and stored~~ and released for subsequent use, is not subject to allocation limits; ^{58.26}
- b) require water meters to be installed for all water takes authorised by a water permit and water use to be recorded and reported via telemetry provided that telemetry will not normally be required where the consented rate of take is less than 5l/sec ~~or where there are technical limitations to its installation~~; ^{123.80, 203.19}
- c) ensure water allocation from tributaries is accounted for within the total allocation limit for the relevant zone and that the total abstraction from any tributary does not exceed 30% of the MALF for that tributary unless otherwise specified in Schedule 31;
- d) offset the stream depletion effects of any groundwater takes in Zone 1, that were not previously considered stream depleting, by managing them as if they were in the Heretaunga Plains ~~Groundwater Quantity Area Water-Management Unit~~; and
 - (i) require contributions to an applicable lowland stream enhancement programme at a rate equivalent to the stream depletion effect consistent with Policy POL TANK 39;or
 - (ii) require the water take to cease when the minimum flow for the affected river is reached if a permit holder does not contribute under clause (i) where there is an applicable lowland stream enhancement; and
 - (iii) allow further technical assessments to determine the extent of stream depletion effect.

(iii) [Note – a consequential amendment is required further to amendments sought to POL TANK 39 to clarify that municipal supply should not be subject to a requirement to participate in a scheme or cease abstraction but should be required to take a conservation

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approach.^{26]}

Water Use and Allocation – Efficiency

POL TANK 46 The Council will ensure efficient management of the allocation of water available for abstraction by:

- a) ensuring allocation limits and allocations of water for abstraction are calculated with known-~~security-reliability~~ of supply;
- b) ensuring water is allocated to meet Aactual and Rreasonable ~~requirements-use~~^{29.61, 194.64};
- c) encouraging and supporting flexible management of water by permit holders so that the allocatable water can be used efficiently and within specified limits;
- d) on-going data collection and monitoring of water resources and water use to better understand patterns of water availability and water use and further develop efficient and effective water management provisions.

POL TANK 47 When considering applications for resource consent, the Council will ensure water is allocated and used efficiently by:

- a) ensuring that the ~~technical means of using-use of~~ water ~~is are physically~~ efficient through:
 - (i) allocation of water for irrigation end-uses based on soil, climate and ~~plant crop~~ needs;
 - (ii) requiring the adoption of good practice water use technology and processes that minimise the amount of water ~~lost from the soil profile-wasted~~; and^{59.11, 60.10, 118.2}
 - (iii) the use of water meters;
- b) using the IRRICALC water demand model ~~if available for the land use being applied for (or otherwise by~~ a suitable equivalent approved by Council)^{192.13} ~~that utilises crop type, soil type and climatic conditions~~^{8.44} to determine efficient water allocations for irrigation uses;
- c) allocating water for irrigation on the basis of ~~an 80% minimum water~~ application efficiency, ~~standard of 80%~~ and 95% reliability of supply ~~on a reliability standard that meets demand-95% of the time~~;^{59.14, 66.12, 118.3, 58.27, 201.43}
- d) requiring all non-irrigation water takes (except as provided by POL TANK Policy-50 for municipal and papakāinga supplies) to show how water use efficiency of at least 80% is being met and is consistent with any applicable industry good practice;
- e) requiring new water takes and irrigation systems to be designed and installed in accordance with industry codes of practice and standards;
- f) requiring irrigation and other water use systems to be maintained and operated to ensure on-going efficient water use in accordance with ~~any~~^{29.30} applicable industry codes of practice.

Water Use Change/Transfer

POL TANK 48 When considering any application to change the water use specified by a water permit, or to transfer a point of take to another point of take, ~~to consider~~ the Council will take into account:

- a) changes to the nature, location, scale and intensity of effects on:
 - (i) total water use
 - (ii) specified minimum flows and levels or other water users' access to water
 - (iii) the water body values listed in Schedule 25 and in the objectives of this Plan
 - (iv) the patterns of water use over time, including changes from seasonal use to water

²⁶ HDC Submission 207.7, NCC Submission 63.7, Evidence of Cameron Drury, para 53- 59.

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- (v) use occurring throughout the year or changes from season to season
water quality^{132.77, 132.109, 195.69}

and will consider declining applications:

- b) declining applications where the transfer is to another water quantity area management zone unless;
- (i) new information provides more accurate specification of applicable zone boundaries;
 - (ii) where the lowland tributaries of the Karamū River are over-allocated, whether the transfer of water take from surface to groundwater provides a net beneficial effect on surface water flows;
- c) to change/transfer water away from irrigation of the versatile land of the Heretaunga Plains for primary production especially food production, except where a change of use and/or transfer is for:
- (i) a flow enhancement or ecosystem improvement scheme, subject to clause (a); or
 - (ii) the efficient delivery of water supplies and to meet the communities' human health needs for water supply, including for marae and papakāinga, subject to clause (a)^{3.19}; or
 - (iii) food processing²⁷
- d) in over-allocated quantity areas, to transfer allocated but unused water, except where provided for under Policy 37A.²⁸
- e) for a change of use from frost protection to any other end use.^{210.69}
- ~~a) effects on specified minimum flows and levels or other water users' access to water resulting from any changes to the rates or volume of take;~~
- ~~b) any alteration to the nature, scale and location of adverse effects on the water body values listed in Schedule 25 and in the objectives of this Plan;~~
- ~~c) effects of the alteration to the patterns of water use over time, including changes from seasonal use to water use occurring throughout the year or changes from season to season;~~
- ~~d) except where a change of use and/or transfer is for the purpose of a flow enhancement or ecosystem improvement scheme, declining applications to transfer water away from irrigation end uses in order to protect water availability for the irrigation of the versatile land of the Heretaunga Plains for primary production especially the production of food;~~
- ~~e) in Water Quality Management Units that are over-allocated, ensuring that transfers do not result in increased water use and to prevent the transfer of allocated but unused water;~~
- ~~f) declining applications for a change of use from frost protection to any other end use;~~
- ~~g) enabling the transfer of a point of take and change of water use to municipal water supplies, including for marae and papakāinga, (not including transfer to industrial uses above 15m³/day) from any other use for the efficient delivery of water supplies and to meet the communities' human health needs for water supply, subject to clause (b).~~

Water Allocation - Permit Duration

POL TANK 49 When considering making decisions about applications for resource consent to take and use water, the Council will set common expiry dates for water permits to take water in each water management zone, that enables consistent and efficient management of the

²⁷ HDC Submission 207.12, NCC Submission 63.12; Evidence of Cameron Drury, para 75.

²⁸ HDC Submission 207.12, NCC Submission 63.12; Evidence of Cameron Drury, para 28.

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resource, and will set durations that provide a periodic opportunity to review effects of the cumulative water use and to take into account potential effects of changes in:

- a) knowledge about the water bodies;
- b) over-allocation of water;
- c) patterns of water use;
- d) development of new technology;
- e) climate change effects;
- f) ~~efficacy of~~ flow enhancement and aquifer recharge^{29,32} schemes and any riparian margin upgrades;

and the Council;

- g) will impose consent durations of 15 years according to specified water quantity area Management Unit expiry dates. Future dates for expiry or review of consents within that catchment are every 15 years thereafter;
- h) will impose a consent duration of up to 30 years for municipal supply ~~consistent with the most recent HPUDS~~^{63.13, 207.13} and will impose consent review requirements that align with the expiry of all other consents in the applicable quantity area management unit;
- i) will impose a consent duration for significant water storage infrastructure that is consistent with the scale of infrastructure:^{99.17, 99.107, 180.45, 193.8}
- j) may grant consents granted within three years prior to the relevant common catchment expiry date with a duration to align with the second common expiry date, except where the application is subject to section 8.2.4 of the RRMP).

Water Allocation - Priority

POL TANK 50 In making decisions about resource consent applications for municipal and papakāinga water supply the Council will ensure the water needs of future community growth are met within water limits and;

- a) allocate water for population and urban development projections for the area according to estimates provided by the HPUDS (2017) or successive versions and/or any requirements prescribed under a NPS on Urban Development²⁹ to 2045;
- b) calculate water demand according to existing and likely residential, non-residential, ~~and~~ non-residential (e.g. schools, hospitals, commercial and industrial)^{63.14, 207.14} demand within the expected reticulation areas; and
 - (i) require that water demand and supply management plans are developed and adopted and industry good practice targets for water infrastructure management and water use efficiency including whether an Infrastructure Leakage Index of 4 or better can be achieved;
 - (ii) seek that the potential effects of annual water volumes are reflected in level of water supply service and reliability of supply objectives in asset management plans and bylaws for water supply;
- c) work collaboratively with Napier City and Hastings District Councils to;
 - (i) develop an integrated planning approach ~~through HPUDS~~ that gives effect to the National Policy Statements within the limits of finite resources;
 - (ii) develop a good understanding of the present and future regional water demand and opportunities for meeting this;

²⁹ HDC submission 207.14, NCC submission 63.14: Evidence of Annette Sweeney, paras 12-18.

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- (iii) identify communities at risk from low water reliability or quality and investigate reticulation options.

POL TANK 51 When making water shortage directions under Section 329 of the RMA, occurring when rivers have fallen below minimum flows and water use has decreased or ceased according to permit conditions, the Council will establish and consult with an emergency water management group that shall have representatives from Napier ~~Council, and~~ Hastings District Councils, Fire and Emergency New Zealand ~~NZ Fire Service, Hawke's Bay District Health Board,~~ iwi authorities and Ministry of Primary Industries^{13.12}, to make decisions about providing for water uses in the following priority order;

- a) water for the maintenance of public health;
- b) water necessary for the maintenance of animal welfare;
- c) water essential for community well-being and health;
- d) water essential for survival of horticultural tree crops;
- e) uses where water is subject to seasonal demand for primary production or processing;
- f) uses for which water is essential for the continued operation of a business, not provided for by (e) except where water is subject to seasonal demand for primary production or processing.^{135.48}
- g) The following uses will not be authorised under a water shortage direction:
- h) use of water not associated with the continued operation of a business or community well-being;
- i) non-essential amenity uses such as private swimming pools and car washing.

Takes not subject to any restrictions are:

- j) firefighting uses;
- k) non-consumptive uses~~;~~

Over-Allocation

POL TANK 52 The Council will phase out over-allocation by;

- a) preventing any new allocation of water (not including any reallocation in respect of permits issued before 2 May 2020, or high flow allocations) unless supported under Policy 37A^{30,29,34, 99,19, 180.47, 193.9,194.72};
- b) for applications in respect of existing consents due for expiry or when reviewing consents, to;
 - (i) generally³¹ allocate water according to Actual and Reasonable use demonstrated actual and reasonable need^{194.72} (except as provided for by POL TANK Policy 50)
 - (ii) impose conditions that require implementation of industry good management practice for efficiency of water use-gains to be made, including through altering the volume, rate or timing of the take, and requesting-providing information to verify efficiency of water use relative to industry good practice standards;^{82.12}
- c) provide for, within the duration of the consent, meeting water efficiency standards where hardship can be demonstrated;
- d) reducing the amount of water permitted to be taken without consent, including those provided for by Section 14 (3)(b) of the RMA, except for authorised uses existing before 2

³⁰ HDC Submission 207.15, NCC Submission 63.15; Evidence of Cameron Drury, para 28.

³¹ HDC Submission 207.15, NCC Submission 63.15; Evidence of Cameron Drury, para 28.

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May 2020;

- e) encouraging voluntary reductions, site to site transfers (subject to clause (f)) or promoting water augmentation/harvesting;
- f) prevent site to site transfers of allocated but unused water that does not meet the definition of ~~a~~Actual and ~~R~~ use;
- g) enabling and supporting permit holders to develop flexible approaches to management and use of allocatable water within a management zone including through catchment collectives, water user groups, consent or well sharing or global water permits;
- h) enabling and supporting the rostering of water use or reducing the rate of takes in order to avoid water use restrictions at minimum or trigger flows.

Frost Protection

POL TANK 53 When considering applications to take water for frost protection, the Council will avoid, remedy or mitigate actual and potential effects of the take on its own or in combination with other water takes;

- a) from groundwater in the Heretaunga Plains ~~Groundwater Quantity Area Water Management Unit~~ on;
 - (i) neighbouring bores and existing water users;
 - (ii) connected surface water bodies;
 - (iii) water quality as a result of any associated application of the water onto the ground where it might enter water;
- b) from surface water on;
 - (i) instantaneous flow in the surface water body;
 - (ii) fish spawning and existing water users;
 - (iii) applicable minimum flows during November to April;
 - (iv) water quality as a result of any associated application of the water onto the ground where it might enter water;

By;

- c) requiring applicants to demonstrate non-water reliant alternatives have been investigated and provide evidence as to why they are not appropriate: ^{8.45}
- d) ~~e~~taking into account any stream depletion effects of groundwater takes;
- e) ~~d~~imposing limits in relation to minimum flows or groundwater levels;
- f) ~~f~~requiring water metering, monitoring and reporting use of water for frost protection.

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5.10.8 Policies: High Flow Allocation

Adverse Effects - Water Damming

POL TANK 54 When assessing applications to dam water and to take water from the dam impoundment, the Council will avoid, remedy or mitigate adverse effects of;

- a) potential changes to water quality arising from subsequent changes to land use activities that may occur as a result of water being allocated for take and use from the dam and whether relevant freshwater quality objectives can be met;
- b) the dam and any associated lake or reservoir, and any effects of the volume, velocity, frequency, and duration of flow releases from the dam, either by itself or cumulatively with other storage structures or dams, on;
 - (i) the uses and values for any water body identified in the objectives or Schedule 25;
 - (ii) water levels and flows in connected water bodies, including lakes and wetlands;
 - (iii) water quality, including effects on temperature and management of periphyton in connected water bodies;
 - (iv) river ecology and aquatic ecosystems, including passage of fish and eels, indigenous species habitat and riparian habitat, including in relation to the storage impoundment;
 - (v) groundwater recharge;
 - (vi) downstream land, property and infrastructure at risk from failure of the proposed dam;
 - (vii) other water users;
 - (viii) downstream river bed stability, including through sediment transfer and management of vegetation in river beds;
- c) whether there are practicable alternatives;

and, except as prohibited by ~~Policy~~ **POL TANK 58**, will limit the amount of flow alteration so that the damming of surface water either on its own or in combination with other dams or water storage in a catchment does not cumulatively adversely affect the frequency of flows above three times the median flow by more than a minor amount and provided that any dam in combination with other dams or high flow takes shall not cause changes to the river flow regime that are inconsistent with specified flow triggers.

Adverse Effects - Water Take and Storage

POL TANK 55 When assessing applications to take water for off-stream storage or to take water from the impoundment the Council will avoid remedy or mitigate adverse effects of;

- a) potential changes to water quality arising from subsequent changes to land use activities as a result of water being allocated for take and use from the impoundment and whether relevant freshwater quality objectives can be met;
- b) the magnitude, frequency, duration and timing of water takes either by itself or cumulatively with other storage structures or dams, on;
 - (i) the uses and values for any water body identified in the objectives;
 - (ii) water levels and flows in connected water bodies, including lakes and wetlands;
 - (iii) water quality, including effects on temperature and management of periphyton in connected water bodies;
 - (iv) river ecology and aquatic ecosystems, including passage of fish and eels, indigenous species habitat and riparian habitat, including in relation to the storage impoundment;
 - (v) groundwater recharge;

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- (vi) downstream land, property and infrastructure at risk from failure of the proposed storage structure;
- (vii) other water users;

and will limit the amount of flow alteration so that the taking of surface water does not cumulatively adversely affect the frequency of flows above three times the median flow by more than a minor amount and provided that;

- (viii) the high flow take ceases when the river is at or below the median flow;
- (ix) such high flow takes do not cumulatively exceed the specified allocation limits;
- (x) any takes to storage existing as at 2 May 2020 will continue to be provided for within new allocation limits and subject to existing flow triggers.

Benefits of Water Storage and Augmentation

POL TANK 56 The Council will recognise beneficial effects of water storage and augmentation schemes, including water reticulation in the TANK catchments and out-of-stream-storage, and when considering applications for resource consent will take into account the nature and scale of the following criteria;

- a) benefits for aquatic organisms and other values in Schedule 25 or in relation to the objectives of this plan in affected water bodies;
- b) whether water availability is improved or the level to which the security of supply for water users is enhanced;
- c) whether the proposal provides for the productive potential of un-irrigated land or addresses the adverse effects of water allocation limits on land and water users, especially in relation to primary production on versatile land;
- d) whether the proposal provides benefits to downstream water bodies at times of low flows provided through releases from storage or the dam;
- e) the nature and scale of potential ecosystem benefits provided by the design and management of the water storage structure, its margins and any associated wetlands;
- f) benefits for other water users including recreational and cultural uses and any public health benefits;
- g) other community benefits including improving community resilience to climate change;
- h) whether the proposal provides for renewable electricity generation.

POL TANK 57 The Council will carry out further investigation to understand the present and potential future regional water demand and supply including for abstractive water uses and environmental enhancement and in relation to climate prior to the review of the planning provisions as per POL TANK 42^{63.17, 207.17}. It will consider water storage options according to the criteria in Policy POL TANK 56 in consultation with local authorities, tangata whenua, industry groups, resource users and the wider community when making decisions about water augmentation proposals in its Annual and Long Term Plans.

POL TANK 58 The Council will protect the instream water values and uses identified in Objectives 11 and 12 for the Ngaruroro and Tūtaekurī Rivers and their tributaries, the Taruarau, Omahaki, Mangatutu and Mangaone Rivers by prohibiting the construction of dams on the mainstem of those rivers.

High Flow Reservation

POL TANK 59 The Council will allocate 20% of the total water available at times of high flow in the Ngaruroro or Tūtaekurī River catchments as specified in Schedule 32^{108.5} for

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abstraction, storage and use for the following activities;

- a) contribution to environmental enhancement that is in addition to any conditions imposed on the water storage proposal;
- b) improvement of access to water for domestic use by marae and papakāinga;
- c) the use of water for any activity, provided that;
 - (i) it includes contribution to a fund managed by the Council in consultation with mana whenua; and
 - (ii) the fund will be used to provide for development of Māori wellbeing;
 - (iii) the contribution to the fund is proportional to the amount of reserved water being taken and any commercial returns resulting from the application
- d) the development of land returned to a Post-Settlement Governance Entity (PSGE) through a Treaty Settlement.

And in making decisions on applications to take and store this water the Council will;

- e) require information to be provided that demonstrates how the activity will provide for Māori economic, cultural or social well-being;
- f) have regard to the views of any affected PSGE or iwi authority arising from consultation about the application and any assessment of the potential to provide part, or all of the 20% high flow allocation;
- g) have regard to any relevant provisions for the storage and use of high flow allocation water for Māori development in any joint iwi/hapū management plans relevant to the application (where more than one PSGE, iwi/hapū is affected, the iwi management plan must be jointly prepared by the affected iwi/hapū).

POL TANK 60 When making decisions about resource consent applications to take and store high flow water, the Council will take into account the following matters:

- a) whether water allocated for development of Māori well-being is still available for allocation;
- b) whether there is any other application to take and use the high flow allocation for development of Māori well-being relevant to the application;
- c) the scale of the application and whether cost effective or practicable options for taking and using the high flow allocation for Māori development can be incorporated into the application;
- d) the location of the application and whether cost effective or practicable options for including taking and using water for Māori development can be developed as part of the application;
- e) whether there has been consultation on the potential to include taking and using all or part of the water allocated for Māori development into the application;
- f) whether it is the view of the applicant that a joint or integrated approach for the provision of the high flow water allocated to Māori development is not appropriate or feasible, and the reasons why this is the case.

Climate change

POL TANK 61 The Council will require decisions on land and water management to consider:

- a) The effects on climate change on aquatic ecosystems, indigenous biodiversity, trout and salmon,^{58.5} freshwater bodies, water supply, human health, primary production and infrastructure from the predicted:
 - (i) Increases in intensity and frequency of rainfall;
 - (ii) effects of rainfall on erosion and sediment loss;
 - (iii) increases in sea level and the effects of salt water intrusion;

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- (iv) increasing frequency of water shortages:
 - (v) increasing variability in river flows.
- b) the amount of information available
- c) the scale and probability of adverse effects, particularly irreversible effects, as a consequence of acting or not acting;
- d) the timeframes relevant to the activity; and
- e) how to improve community resilience for changes. ^{201.2, 132.83, 120.78}

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Chapter 6 New Regional Rules

Amend; Summary of Existing Rules to insert a new Section 6.10

6.10 TANK Catchments specific rules	Classification	Page (to come)
6.10.1 Use of Production Land		
Rule TANK 1 Use of Production Land	Permitted	
Rule TANK 2 Use of Production Land	Controlled	
Rule TANK 3 Stock Access	Permitted	
Rule TANK 4 Stock Access	Restricted Discretionary	
Rule TANK 5 Use of Production Land (land use change)	Controlled	
Rule TANK 6 Use of Production Land (land use change)	Restricted Discretionary	
6.10.2 Take and Use of Water		
Rule TANK 7 Take and use of surface water	Permitted	
Rule TANK 8 Take and use of groundwater	Permitted	
Rule TANK 9 Take and use groundwater (Heretaunga Plains)	Restricted Discretionary	
Rule TANK 10 Take and use ground or surface water	Restricted Discretionary	
Rule TANK 11 Take and use water	Discretionary	
Rule Tank 12 Take and use water	Prohibited	
Rule Tank 13 Take and use water (high flow)	Discretionary	
Rule Tank 14 Damming water	Discretionary	
Rule Tank 15 Take and use water (from an impoundment)	Discretionary	
Rule Tank 16 Take and use water (from an impoundment)	Non-complying	
Rule Tank 17 Damming water	Prohibited	
Rule TANK 18 Stream flow maintenance	Discretionary	
6.10.3 Discharge of Stormwater		
Rule Tank 19 Stormwater	Permitted	
Rule Tank 20 Stormwater	Restricted Discretionary	
Rule Tank 21 Stormwater	Controlled	
Rule Tank 22 Stormwater	Restricted Discretionary	
Rule Tank 23 Stormwater	Discretionary	

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Insert the following rules as new Section 6.10

6.10 Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchment Rules (TANK)

6.10.1 Use of Production Land

Rule	Activity	Status	Conditions/Standards/Terms	Matters for Control/Discretion
TANK 1 Use of Producti on Land	The use of production- farm land where: <u>(a) 20 or more hectares of the farm is arable land use; or</u> <u>(b) 5 or more hectares of the farm is horticultural land use; or</u> <u>(c) 20 or more hectares of the farm is pastoral land use; or</u> <u>(d) 20 or more hectares of the farm is a combination of any 2 or more of the land uses described above on farm-</u>	Permitted	a) The farm property or farming enterprise- land area has less than 75% plantation forest cover ³²⁴ . b) Either; (i) The owner or manager of the farm operator property or enterprise is either a member of a TANK Industry Programme or a member of a TANK Catchment Collective within the timeframes specified in Schedule 28 and accordance with the requirements of Schedule 30; Or; (ii) The farm operator property or enterprise- owner or manager of the property shall prepare a <u>Freshwater Farm Environment</u> Plan in accordance with the requirements of Schedule 30 and within the timeframes specified in Schedule 28; and the <u>Freshwater</u> <u>Farm Environment</u> Plan is being implemented and; 1. the Council shall be provided with the <u>Freshwater Farm Environment</u> Plan upon request; 2. information about the implementation of the mitigation measures identified for the	

³² The National Environmental Standards; Plantation Forestry also apply where there is plantation forest. This rule only applies if a property has less than 75% plantation forest cover

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	<p>properties or farming enterprises in the TANK catchments that are greater than 10 hectares pursuant to Section 9(2) of the RMA and associated non-point source discharges pursuant to Section 15 of the RMA 135.50,29.37, 180.53</p>		<p>property-farm shall be supplied to the Council on request.</p> <p>c) <u>Where a farm is in a high priority catchment for total nitrogen concentration or nitrogen yield as shown on the Planning Maps for Schedule 28 the freshwater farm plan shall include in accordance with Schedule 30 the:</u></p> <p>(i) <u>nitrogen loss rate (kg/ha/year) and</u> (ii) <u>nitrogen loss rate target</u> ^{110, 123, 210, 126, et al}</p>	
<p>TANK 2 Use of Producti on Land</p>	<p>The use of <u>farm production land where:</u> <u>(a) 20 or more hectares of the farm is arable land use; or</u> <u>(b) 5 or more hectares of the farm is horticultural land use; or</u> <u>(c) 20 or more hectares of the farm is pastoral land use; or</u> <u>(d) 20 or more</u></p>	<p>Controlled</p>	<p>The activity does not meet <u>the conditions (b)-</u> of Rule TANK 1.</p>	<p>1. The freshwater water quality objectives and targets in Schedule 26 for the catchment where the activity is being undertaken and any measures required to reduce the actual or potential contaminant loss occurring from the property, taking into account their costs and likely effectiveness and including performance in relation to industry good practice and requirements for;</p> <p>a) Efficient use of nutrients and minimisation of nutrient losses, b) Wetland management c) Riparian management d) Management of farm wastes e) Management of stock including in relation to water ways and contaminant losses to ground and surface water f) Measures required to maintain or improve the physical and biological condition of soils so as to reduce risks of erosion, movement of soil into waterways, and</p>

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	<p>hectares of the farm is a combination of any 2 or more of the land uses described above on farm properties or farming enterprises that are greater than 10 hectares in the TANK catchments pursuant to Section 9(2) RMA and associated non-point source discharges pursuant to Section 15 of the RMA</p> <p>35.50.29.37, 180.53</p>			<p>damage to soil structure</p> <p>g) Measures to prevent or minimise any adverse effects on the quality of the source water used for a Registered Drinking Water Supply irrespective of any treatment process for the Registered Drinking Water Supply³³</p> <ol style="list-style-type: none"> 2. Nature and scale of actual and potential contamination loss from the property in relation to the objectives specified in Schedule 26 3. Timeframes for any alternative mitigation measures 4. Duration of consent 5. Lapsing of consent 6. Review of consent conditions; 7. The collection, recording, monitoring and provision of information concerning the exercising of the consent <p>Consent applications will generally be considered without notification and without the need to obtain written approval of affected persons</p>
<p>TANK 3 Stock Access</p> <p>124.32, 129</p>	<p>Stock Access to rivers lakes and wetlands</p>	<p>Permitted</p>	<p>(a) The entry into or over the bed of any river lake or wetland by cattle, deer and pigs is a permitted activity provided that;</p> <p>(i) stock are at a stocking rate less than 18su/ha in the paddock adjacent to the river the stock have access to; and</p> <p>(ii) The slope over 60% or more of the paddock</p>	

³³ HDC Submission 207.45; Evidence of Annette Sweeney, paras 64-66.

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			<p>is greater than 15 degrees of slope.</p> <p>(b) — Rivers that are crossed by formed stock races are bridged or culverted by 31 May 2023.</p> <p>(c) — The entry into or over the bed of any river, lake or wetland by cattle, deer and pigs not permitted by condition</p> <p>(a) is a permitted activity until 31 May 2023.</p> <p>(d) For rivers, conditions (a) to (c) apply only to rivers with an active formed channel.</p>	
TANK 4 Stock- Access	Stock Access to rivers lakes and wetlands	Restricted- Discretionary	<p>The activity does not meet any one of the conditions (a)– (d) of Rule TANK 3.</p>	<p>1. — An assessment of sources, scale and significance of adverse effects of sediment, phosphorus, nitrogen and bacterial inputs to the waterbody that could be effectively or efficiently reduced by stock exclusion, bridging or culverting</p> <p>2. — Alternative measures to meet water quality outcomes and improve ecosystem health, including by managing bank erosion or reducing sediment losses to water in contributing areas, altering land uses, or providing reticulated water for stock;</p> <p>3. — Whether stock exclusion is practicable in the circumstances including in relation to;</p> <p>a) — total costs of stock exclusion measures compared to expected water quality benefit as assessed in relation to matter 1 and other possible adverse effects including stock welfare</p> <p>b) — technical or practical challenges of any works required for stock exclusion to be effective</p> <p>c) — potential costs and benefits provided by alternative measures compared to stock exclusion</p> <p>4. — Measures to prevent or minimise any adverse effects on the quality of the source water used for a Registered Drinking Water Supply</p> <p>5. — Timeframes for any alternative mitigation measures</p> <p>6. — Duration of consent</p>

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				<p>7.—Lapsing of consent 8.—Review of consent conditions; 9.—The collection, recording, monitoring and provision of information concerning the exercising of the consent</p>
<p>TANK 5 Use of Producti on Land</p>	<p><u>A change in land use</u> The changing of a use of production land on farm properties or farming enterprises that are greater than 10 hectares in the TANK catchments pursuant to Section 9(2) RMA and associated non-point source discharges pursuant to Section 15 of the RMA</p>	<p>Controlled</p>	<p>a) <u>A change in land use types means a change from one leaching level to a higher leaching level as shown in Table 1 of Schedule 29</u> b) a) A change in land use is a Any change to the production land use activity from what existed commencing after on 2 May 2020 c) The <u>change in land use</u> is over more than <u>10ha 10%</u> of the property or farming enterprise area. d) The <u>owner of the production land subject to the changed land use is a member of subject to a Catchment Collective which has a Catchment Collective Plan Programme</u> meeting the requirements of Schedule 30AB by a TANK Catchment Collective which meets the requirements of Schedule and 30BA. e) The Council may require information to be provided about production land use changes- (note that the Schedule 30 requires collectives to record land use changes- -</p>	<p>1. Modelling using Overseer, or alternative model approved by Council to demonstrate the change in land use activity will be consistent with the requirements of Policy POL TANK 21. 2. The measures being undertaken by the TANK-Landowner Catchment Collective in undertaking measures to meet water quality objectives, including measures required as a result of the proposed land use change. ^{37, 131.8, 122.68} 3. Measures to be undertaken on the property which contribute to meeting ,including how the effect of the new land use activity on contributing to the water quality objectives is being collectively addressed including by; a) Efficient use of nutrients and minimisation of nutrient losses, b) Wetland management c) Riparian management d) Management of farm wastes e) Management of stock including in relation to waterways and contaminant losses to ground and surface water f) Measures required to maintain or improve the physical and biological condition of soils so as to reduce risks of erosion, movement of soil into waterways, and damage to soil structure g) Measures to prevent or minimise any adverse effects on the quality of the source water used for a Registered Drinking Water Supply irrespective of any treatment</p>

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				<p><u>process for the Registered Drinking Water Supply</u>³⁴</p> <ol style="list-style-type: none"> 4. 3. Timeframes for any alternative mitigation measures 5. 4. Duration of consent 6. 5. Lapsing of consent 7. 6. Review of consent conditions 8. 7. The collection, recording, monitoring and provision of information including Overseer or alternative model files, <p><u>If water quality limits and targets in Schedule 26 are being met in the catchment, consent applications in that catchment will be considered without public notification and without the need to, obtain written approval of affected persons. Consent applications will generally be considered without notification and without the need to obtain written approval of affected persons.</u></p>
<p>TANK 6 Use of Producti on Land</p>	<p><u>A change in land use type</u> <u>The changing of a use of production land on farm properties or farming enterprises that are greater than 10 hectares in the TANK catchments pursuant to Section 9(2)</u></p>	<p>Restricted Discretionary</p>	<p>a) The activity does not meet the conditions of TANK 5.</p> <p>b) Any change to a production land use activity over more than 10ha of the property or enterprise area commencing after 2 May 2020 that results in the annual nitrogen loss increasing by more than the applicable amount shown in Table 2 in Schedule 29.</p> <p>b) <u>The change in land use type is a change to the activity from what existed on 2 May 2020.</u></p> <p>c) <u>The change in land use type is over more than 10ha of the property or farming enterprise area.</u></p>	<ol style="list-style-type: none"> 1. Modelling using Overseer, or alternative model approved by Council to demonstrate the change in land use activity will be consistent with the requirements of <u>Policy POL TANK 21.</u> 2. <u>The measures being undertaken by any relevant Catchment Collective to meet water quality objectives, including measures required as a result of the proposed land use change.</u> 3. Whether water quality limits and targets in Schedule 26 are being met in the catchment where the new activity is to be undertaken. 4. The extent to which the land use change will affect the ability to meet water quality objectives. 5. Any measures required to reduce the actual or

³⁴ HDC Submission 207.45: Evidence of Annette Sweeney, paras 64-66.

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	<p>RMA and associated non-point source discharges pursuant to Section 15 of the RMA</p>			<p>potential contaminant loss occurring from the property, taking into account their costs and likely effectiveness and including performance in relation to industry good practice and requirements for;</p> <ol style="list-style-type: none"> a) Efficient use of nutrients and minimisation of nutrient losses, b) Wetland management c) Riparian management d) Management of farm wastes e) Management of stock including in relation to waterways and contaminant losses to ground and surface water f) Measures required to maintain or improve the physical and biological condition of soils so as to reduce risks of erosion, movement of soil into waterways, and damage to soil structure g) Measures to prevent or minimise any adverse effects on the quality of the source water used for a Registered Drinking Water Supply <u>irrespective of any treatment process for the Registered Drinking Water Supply</u> ^{207.45} <ol style="list-style-type: none"> 6. Timeframes for any alternative mitigation measures 7. Duration of consent 8. Lapsing of consent 9. Review of consent conditions 10. The collection, recording, monitoring and provision of information including Overseer or alternative model files <p><u>If water quality limits and targets in Schedule 26 are being met in the catchment, consent applications in that catchment will be considered without public notification and without the need to, obtain written approval of affected persons.</u></p>
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6.10.2 Water – Take and Use

Rule	Activity	Status	Conditions/Standards/Terms	Matters for Control/Discretion
TANK 7 Surface Water take	The take and use of surface water in the TANK water quantity areas Management Zones including under Section 14(3)(b) of the RMA and from a dam or water impoundment ^{194.83}	Permitted	<p>a) Any take first commencing after 2 May 2020 is not from any of the following: Maraekakaho Water Management Unit Quantity Areas Ahuriri Water Management Unit Quantity Areas Awanui Stream Water Quantity Area and its tributaries Poukawa Water Management Unit Quantity Areas Louisa Stream Water Quantity Area and its tributaries Paritua-Karewarewa Water Quantity Area.^{132.21}</p> <p>b) The take does shall not exceed 5 cubic metres per day per any one property except: (i) Takes existing as at 2 May 2020 may continue to take up to 20 cubic metres per property per day and to meet the reasonable needs of animals for drinking water; (ii) Takes to meet reasonable domestic needs³⁵_{17.7} (iii) Takes for stock drinking water^{129.8} (iv) Takes occurring for a period of less than 28 days within any 90 day period, the total volume taken on any property shall not exceed 200 cubic metre per 7 day period.</p> <p>c) The taking of water does shall not cause any stream or river flow to cease.</p>	

³⁵ Refer to Glossary for definition of "reasonable domestic needs".

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			<p>d) Fish, including eels, shall be prevented from entering the reticulation system.</p> <p>e) The activity shall not cause changes to the flows or levels of water in any connected wetland.</p> <p>f) The take shall not prevent from taking water any:</p> <p>(i) Domestic or community take which existed prior to commencement of the take;³⁶</p> <p>(ii) other lawfully established efficient groundwater take, or any lawfully established surface water take, which existed prior to commencement of the take.</p> <p>g) <u>The rate of take shall not exceed 10% of the instantaneous flow³⁷ at the point of take.</u>^{123.102}</p> <p>A Means of Compliance for Condition d)</p> <p>Installation of a screen or screens on the river intake that has a screen mesh size not greater than 3 millimetres and is constructed so that the intake velocity at the screen's outer surface is less than 0.3 metres per second and is maintained in good working order at all times.</p> <p><u>Note – Conditions a) and b) do not apply to the take and use of water for emergency or training purposes in accordance with RMA Section 14(3)(e).</u>^{13.13}</p>		
TANK 8 Groundwater take.	The take and use of groundwater in the TANK Water	Permitted	a) Any take first commencing after 2 May 2020 is not from the Poukawa <u>Water Quantity Area</u> Freshwater		

³⁶ HDC Submission 207.19; Evidence of Annette Sweeney

³⁷ The taking of water for an individual's reasonable domestic needs and the reasonable needs of an individual's animals drinking water is not restricted by this rule.

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	<p>Management Zones including under Section 14(3)(b) of the RMA</p>		<p>Management Unit (quantity)</p> <p>b) There is only one point of take per property and the take does not exceed 5 cubic metres per day except;</p> <ul style="list-style-type: none"> (i) Takes existing as at 2 May 2020 may continue to take up to 20 cubic metres per property per day and to meet the reasonable needs of animals for drinking water^{129.9} (ii) <u>Takes to meet reasonable individual domestic needs</u>^{38 17.7} (iii) <u>Takes for stock drinking water needs</u>^{129.9} (iv) Takes occurring for a period of less than 28 days within any 90 day period, the total volume taken on any property shall not exceed 200 cubic metre per 7 day period. (v) The taking of water for <u>non-consumptive uses including</u> aquifer testing is not restricted <u>limited to 20 cubic metres per day</u>^{203.17, 203.18, 203.22, 210.89} <p>c) The rate of take shall not exceed 10 l/s other than aquifer testing for which the rate of take is not restricted.</p> <p>d) The take shall not prevent from taking water, any</p> <ul style="list-style-type: none"> (i) <u>Domestic or community take which existed prior to commencement of the take;</u>³⁹ (ii) other lawfully established efficient groundwater take, or any lawfully established surface water take, which existed prior to commencement of the take. 		
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³⁸ Refer to Glossary for definition of "reasonable domestic needs".

³⁹ HDC Submission 207.19; Evidence of Annette Sweeney.

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			<p>e) The take shall not cause changes to the flows or levels of water in any connected wetland.</p> <p>f) Backflow of water or contaminants into the bore shall be prevented.</p> <p><u>Note – Conditions a) and b) do not apply to the take and use of water for emergency or training purposes in accordance with RMA Section 14(3)(e).</u>^{13.13}</p>		
<p>TANK 9</p> <p>Groundwater Take – Heretaunga Plains</p>	<p><u>Replacement of an existing Resource Consent to Take of water from the Heretaunga Plains Groundwater Quantity Area Management Unit where Section 124 of the RMA applies (applies to existing consents)</u>^{63.20} ^{207.22.}</p>	<p>Restricted Discretionary</p>	<p>a) The activity does not comply with the conditions of Rule TANK 8.</p> <p>b) An application is either for the continuation of a water take and use previously authorised in a permit that was issued before 2 May 2020 or is a joint or global application that replaces these existing water permits previously held separately or individually.</p> <p>Actual and Reasonable Re-allocation</p> <p>c) The quantity taken and used for irrigation, other than provided for under d), is the Actual and Reasonable amount.^{194.85}</p> <p>d) The quantity taken and used for municipal, community and papakāinga water supply is:</p> <ul style="list-style-type: none"> (i) the quantity specified on the permit being renewed; or (ii) any lesser quantity applied for. <p>e) Other than as provided in (c) or (d) the quantity taken and used is the least of:</p> <ul style="list-style-type: none"> (i) the quantity specified on the permit due for renewal or (ii) any lesser quantity applied for (iii) the maximum annual water use in any one year within the 10 years preceding 1 August 2017 (including as demonstrated by accurate water meter records).^{194.85} 	<p>1. The extent to which the need for water has been demonstrated and is aActual and rReasonable provided that the quantities assessed or calculated may be amended after taking account of:</p> <ul style="list-style-type: none"> a. the completeness of the water permit and water meter data record; b. the climate record for the same period as held by the Council (note: these records will be kept by the Council and publically available) and whether that resulted in water use restrictions or bans being imposed; c. effects of water sharing arrangements d. crop rotation/development phases <p>2. The extent to which the application was subject to programmed or staged completion of authorised major infrastructure developments over time.</p>	<p><u>Applications may be considered without notification and without the need to obtain the written approval of affected persons in accordance with section 94(1)(b) of the RMA. Applications may be notified if special circumstances exist in terms of section 95B(10) of the RMA or upon review of a consent. In considering whether or not special circumstances exist and to notify upon review, the Council will</u></p>

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			<p>Stream Flow Maintenance Scheme</p> <p>f) The take is subject to a stream depletion calculation. The water permit holder either:</p> <p style="padding-left: 20px;">(i) contributes to or develops an applicable stream maintenance and habitat enhancement scheme that complies with the requirements of Schedule 36 at a rate equivalent to the stream flow depletion (in l/sec) which will be calculated using the Stream Depletion Calculator and based on the allocated amount of water.</p> <p style="text-align: center;">or</p> <p style="padding-left: 20px;">(ii) The water take ceases when the flow in the affected stream fall below the specified trigger level in Schedule 31.^{129.10}</p> <p>g) Any take authorised under clause (d) is not subject to conditions (f) in respect of that part of the total allocated amount used for essential human health.</p> <p>General Conditions</p> <p>g) A water meter is installed.</p> <p>h) Back flow of water or contaminant entry into the bore shall be prevented.</p> <p>Advisory Note:</p> <p>Any application to change water use as specified under (c) (d) or (e) may trigger a consent requirement under Rules TANK 5 or 6.</p>	<p>3. Previous history of exercising the previous consent.</p> <p>4. The quantity, rate and timing of the take, including rates of take and any other requirements in relation to any minimum or trigger flow or level given in Schedule 31 and rates of take to limit drawdown effects on neighbouring bores.</p> <p>5. Where the take is in a Source Protection Zone <u>Source Protection Extent</u>^{63.22, 207.24}, the actual or potential effects of the rate of take and volume abstracted on the quality of source water for the water supply and any measures to prevent or minimise any adverse effects on the quality of the source water used for a Registered Drinking Water Supply irrespective of any treatment including notification requirements to the Registered Drinking Water supplier</p> <p>6. For applications to take water for municipal, community and papakāinga water supply;</p> <p style="padding-left: 20px;">a. provisions for demand reduction and asset management over time so that water use is at reasonable and justifiable levels including whether an Infrastructure Leakage Index</p>	<p><u>include consideration of whether an applicable stream flow maintenance scheme exists.</u></p> <p>29.31, 194.70, 208.15, 238.17</p>
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				<p>of 4 or better will be achieved</p> <p>b. Rate and volumes of take limited to the projected demand for the urban area provided in the HPUDS 2017 <u>or successive versions and/or any requirements prescribed under a NPS on Urban Development⁴⁰</u>.</p> <p>c. water demand based on residential and non-residential use including for schools, rest homes, hospitals commercial and industrial demand^{63.23, 207.25} within the planned reticulation areas</p> <p>d. any Source <u>Protection Zone or eExtent⁴¹</u> (as specified in Schedule 35) and</p> <p>i. any proposed changes to provisional protection areas and</p> <p>ii. the impacts of any changes to restrictions on land or water use activities in the protection area.</p> <p>7. Measures to achieve efficient water use or water conservation</p>
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⁴⁰ HDC submission [not listed in summary]; Evidence of Annette Sweeney, paras 12-18.

⁴¹ Evidence of Annette Sweeney, 'Source Protection'

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				<p>and avoid adverse water quality effects including the method of irrigation application necessary to achieve efficient use of the water and avoid adverse water effects through ponding and runoff and percolation to groundwater.</p> <p>8. The effects of any water take and use for frost protection on the flows in connected surface water bodies.</p> <p>9. For applications other than irrigation, municipal, community or papakāinga water supply or frost protection, measures to ensure that the take and use of water meets an efficiency of use of at least 80%</p> <p>10. Management of bores including means of backflow prevention and ensuring well security.</p> <p>11. Information to be supplied and monitoring requirements including timing and nature of water metering data reporting and the installation of telemetered recording and reporting</p> <p>12. The duration of the consent (Section 123 of the RMA) as provided for in Schedule 33 timing of reviews and purposes of reviews (Section 128 of the RMA).</p> <p>14. Lapsing of the consent (Section 125(1) of the RMA).</p> <p>15. Stream flow depletion amount in litres per second calculated using</p>	
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				the Stream Depletion Calculator <u>Review of permit and new conditions to be imposed in respect of contribution to a Stream flow maintenance and habitat enhancement scheme, when applicable.</u> ^{129,11}	
TANK 10 Surface and groundwater water takes (abstraction at low flows)	<u>Replacement of an existing Resource Consent To take and use water where Section 124 applies (applies to existing consents).63.24, 207.26</u>	Restricted Discretionary	<p>a) The take is not from the Heretaunga Plains <u>Groundwater Quantity Areas Management Unit (quantity).</u></p> <p>b) The taking and use of water from surface or groundwater water bodies does not comply with conditions of TANK 7, or TANK 8.</p> <p>c) Where the take was previously subject to a condition restricting the take at flows that are higher than the applicable flow specified in Schedule 31, the higher flow will continue to apply. <u>For all other takes, the flows specified in Schedule 31 apply.</u>^{129,13}</p> <p>d) An application is either for the continuation of a water take and use previously authorised in a permit that was issued before 2 May 2020 or is a joint or global application that replaces these existing water permits previously held separately or individually.</p> <p>Actual and Reasonable Re-allocation</p> <p>e) The quantity taken and used <u>for irrigation, other than provided for by f),</u> is the Aactual and Rreasonable amount.^{194,88}</p> <p>f) The quantity taken and used for municipal, community and papakāinga water supply is:</p> <p>(i) the quantity specified on the permit being renewed; or</p>	<p>1. The extent to which the need for water has been demonstrated and is aActual and RReasonable provided that the quantities assessed or calculated may be amended after taking account of:</p> <ol style="list-style-type: none"> the completeness of the water permit and water meter data record; the climate record for the same period as held by the Council (note: these records will be kept by the Council and publically available) and whether that resulted in water use restrictions or bans being imposed; effects of water sharing arrangements crop rotation/development phases <p>2. Previous history of exercising the previous consent.</p> <p>3. The quantity, rate and timing of the take, including rates of take and any other requirements in relation to any relevant minimum flow or level or allocation limit</p>	<u>Applications may be considered without notification and without the need to obtain the written approval of affected persons in accordance with section 94(1)(b) of the RMA. Applications may be notified if special circumstances exist in terms of section 95B(10) of the RMA or upon review of a consent. In considering whether or not special circumstances exist and to notify upon review, the Council will include consideration of whether an applicable stream</u>

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			<p>(ii) any lesser quantity applied for.</p> <p>g) Other than as provided in (e) or (f), the quantity taken and used is the least of:</p> <p>(i) the quantity specified on the permit due for renewal; or</p> <p>(ii) any lesser quantity applied for;</p> <p>(iii) the maximum annual water use in any one year within the 10 years preceding 2-May 2020 (including as demonstrated by accurate water meter records).^{194.88}</p> <p>Surface Water Quantity Area Management (quantity)</p> <p>h) Any take from groundwater in Zone 1 authorised as at 2 May 2020 in any surface Water Quantity Area Management Unit (quantity) is subject to a stream depletion calculation. either;</p> <p>(iv) a restriction in water flow when the applicable minimum flow is reached in the relevant zone (as shown in Schedule 31);</p> <p>Or</p> <p>(v) the take complies with conditions (f) and (g) of rule TANK 9 where there is an applicable scheme.^{129.14}</p> <p>General Conditions</p> <p>i) A water meter is installed.</p> <p>j) Fish and eels are prevented from entering the reticulation system.</p> <p>k) Back flow of water or contaminants into any bore shall be prevented.</p> <p>Advisory Note:</p>	<p>given in Schedule 31.</p> <p>4. Where the take is in a Source Protection Zone <u>Source Protection Zone or Source Protection Extent</u>^{63.25, 207.27}, the actual or potential effects of the rate of take and volume abstracted on the quality of source water for the water supply and any measures to prevent or minimise any adverse effects on the quality of the source water used for a Registered Drinking Water Supply irrespective of any treatment including notification requirements to the Registered Drinking Water supplier</p> <p>5. For applications to take water for municipal, community and papakāinga water supply;</p> <p>a. provisions for demand reduction and asset management over time so that water use is at reasonable and justifiable levels including whether an Infrastructure Leakage Index of 4 or better will be achieved.</p> <p>b. Rate and volumes of take limited to the projected demand for the urban area provided in the HPUDS 2017 <u>or successive versions and/or any requirements prescribed</u></p>	<p><u>flow maintenance scheme exists.</u></p> <p>29.31, 194.70, 208.15, 238.17</p>
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			<p>Any application to change water use as specified under (c) (d) or (e) may trigger a consent requirement under Rules TANK 5 or 6.</p> <p>Means of Compliance for Condition (j)</p> <p>Installation of a screen or screens on the river intake that has a screen mesh size not greater than 3 millimetres and is constructed so that the intake velocity at the screen's outer surface is less than 0.3 metres per second and is maintained in good working order at all times.</p>	<p><u>under a NPS on Urban Development</u>⁴²</p> <p>c. water demand based on residential and non-residential use including for schools, rest homes, hospitals commercial and industrial demand^{63.26, 207.28} within the planned reticulation areas</p> <p>6. The location of the point(s) of take</p> <p>7. The effects of any water take and use for frost fighting on the natural flow regime of the river.</p> <p>8. Information to be supplied and monitoring requirements including timing and nature of water meter data reporting and the installation of telemetered recording and reporting.</p> <p>9. For applications other than irrigation, municipal, community or papakāinga water supply or frost protection , evidence that the take and use of water meets an efficiency of use of at least 80%</p> <p>10. Measures to achieve efficient water use or water conservation and avoid adverse water quality effects including the method of irrigation application necessary to achieve efficient use of the water</p>	
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⁴² HDC submission 207.28, NCC submission 63.26: Evidence of Annette Sweeney paras 12-18.

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				<p>and avoid adverse water effects through ponding and runoff and percolation to groundwater.</p> <p>11. Management of bores and other water take infrastructure including means of backflow prevention.</p> <p>12. Measures to prevent fish from entering the reticulation system.</p> <p>13. The duration of the consent (Section 123 of the RMA) as provided for in Schedule 33 timing of reviews and purposes of reviews (Section 128 of the RMA).</p> <p>14. Lapsing of the consent (Section 125(1) of the RMA).</p> <p>15. For takes from Zone 1 in the Ngaruroro and Tūtaekurī <u>Water Quantity Areas Management Zones-review of permit and new conditions to be imposed in respect of contribution to a Stream flow maintenance and habitat enhancement scheme, when applicable.</u> Contribution to services or works for the maintenance of river flows associated with groundwater abstraction and stream depletion in relation to takes subject to condition (h) provided in respect of the performance of conditions</p>	
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				and administration charges (Section 108 of the RMA). ^{129,14}	
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<p>TANK 11 Groundwater and Surface water take (low flow)</p>	<p>The take and use of surface (low flow allocations) or groundwater</p>	<p>Discretionary</p>	<p>a) The activity does not comply with the conditions of Rules TANK 7, TANK 8,^{203.23} TANK 9 or TANK 10 where relevant.^{129.15}</p> <p>b) Either</p> <p>(i) The application is either for the continuation of a water take and use previously authorised in a permit that was issued before 2 May 2020 or is a joint or global application that replaces these existing water permits previously held separately or individually in the following Management Units (quantity);</p> <ul style="list-style-type: none"> i. Ahuriri ii. Poukawa iii. Ngaruroro groundwater iv. Tūtaekurī groundwater v. Heretaunga Plains <p>or</p> <p>(ii) The total amount taken, either by itself or in combination with other authorised takes in the same water quantity area management unit does not cause the total allocation limit in the relevant quantity area management unit as specified in Schedule 31 to be exceeded except this clause does not apply to takes for:</p> <p>or</p> <p>(iii) <u>The take is for:</u></p> <ul style="list-style-type: none"> i. frost protection; or^{194.74} ii. takes of water associated with and from or^{123.106} dependant on release of water from a water storage impoundment, <u>or managed aquifer</u> 	<p>Refer also to RRMP Rule 31, which is amended as part of this Plan Change and Rule TANK 18.</p>	
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			<p>recharge scheme^{29,42}; or <u>iii. Water takes that are non-consumptive.</u>^{129,16, 203,23} <u>iii.iv. Municipal, community or papakainga water supply</u>⁴³</p>		
TANK 11A	The take and use of surface (low flow allocations) or groundwater	Non-Complying	<p>a) The activity does not comply with the conditions of Rule TANK 11 b) The application is for <u>municipal, community or papakainga water supply</u>⁴⁴</p>		

⁴³ HDC Submission 207.29, NCC Submission 63.27; Evidence of Annette Sweeney, paras 19-35.

⁴⁴ HDC Submission 207.29 NCC Submission 63.27; Evidence of Annette Sweeney, paras 19-35.

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<p>[Option 1] TANK 12 Groundwater and Surface water take</p>	<p>The take and use of surface or groundwater</p>	<p>Prohibited Non-Complying⁴⁵</p>	<p>a) The activity does not comply with the conditions of Rule TANK 11 No application may be made for this activity</p>		
<p>[Option 2] TANK 12 Groundwater and Surface water take</p>	<p>The take and use of surface or groundwater</p>	<p>Prohibited</p>	<p>a) The activity does not comply with the conditions of Rule TANK 11 or Rule TANK 11A⁴⁶ No application may be made for this activity</p>		
<p>TANK 13 Taking water – high flows</p>	<p>The taking and use of surface water at times of high flow (including for storage in an impoundment)</p>	<p>Discretionary</p>	<p>a) The activity does not comply with the conditions of RRMP 67 and 68.^{129.17} a) The take on its own or in combination with other authorised takes is still available for allocation within the limits specified in both columns (D) and (E) of Schedule 32 b) The activity either on its own or in combination with other activities does not cause the flow regime of the river to be altered by more than the amount specified in Schedule 32.</p>	<p>Note: The construction of dams greater than 4 metres in height and holding more than 20,000 m³ will also need a Building Consent. Dams smaller than this are exempt from the Building Act provisions.</p>	

⁴⁵ HDC Submission 207.29; NCC Submission 63.27; Evidence of Cameron Drury, para 27 etc

⁴⁶ Consequential change required if new Rule TANK 11A introduced.

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<p>TANK 14 Damming water</p>	<p><u>The erection or placement of any dam or weir or other barrier structure.</u> Ddamming of surface waters and discharge from dams except as prohibited by Rule TANK 17 ^{129.18}</p>	<p>Discretionary</p>	<p>i. <u>The activity does not comply with the conditions of RRMP 67 or RRMP 68.</u> ^{129.19} Except as prohibited by Rule TANK 17, the activity either on its own or in combination with other dam or discharge activities in the same water <u>quantity area management zone</u> does not cause the flow regime of the river to be altered by more than the amount specified in Schedule 32.</p>		
<p>TANK 15 Take and use from storage</p>	<p>Take and use from a dam or water impoundment</p>	<p><u>Restricted</u> Discretionary</p>	<p>a) The activity does not comply with <u>the conditions of Rule TANK 7.</u> ^{63.32, 207.34} b) The activity either on its own or in combination with other dam or discharge activities in the same water management zone does not cause the flow regime of the river to be altered by more than the amount specified in Schedule 32 <u>The activity will not result in a change of land use that requires consent under Rules TANK 5 or 6.</u> c)</p>	<ol style="list-style-type: none"> 1. <u>The location, quantity, rate and timing of the take.</u> 2. <u>Measures to avoid adverse water quality effects.</u> 3. <u>Measures to ensure that the take and use of water meets an efficiency of use of at least 80%.</u> 4. <u>Information to be supplied and monitoring requirements including timing and nature of water metering data reporting and the installation of telemetered recording and reporting.</u> 5. <u>The duration of the consent having regard to POL TANK 49.</u> 6. <u>Lapsing of the consent.</u> 7. <u>Review of consent conditions.</u> 	
<p>TANK 15a <u>Take and use from storage</u></p>	<p><u>Take and use from a dam or water impoundment</u></p>	<p><u>Discretionary</u></p>	<p>a) <u>The activity does not comply with the conditions of Rule TANK 15.</u></p>		

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<p>TANK 16</p>	<p>Damming, take and use at high flow or take from a dam or water impoundment</p>	<p>Non-complying</p>	<p>a) The activity does not comply with the conditions of Rules TANK 13- 15.</p>		
<p>TANK 17 Damming water</p>	<p>Construction of dams or the damming of water</p>	<p>Prohibited</p>	<p>b) The construction of dams or the damming of water on the mainstem of the following rivers (i) Ngaruroro River (ii) Taruarau River (iii) Omahaki River (iv) Tūtaekurī River: (v) Mangaone River (vi) Mangatutu River No application may be made for these activities.</p>		
<p>TANK 18 Stream Flow Maintenance and Habitat Enhancement Scheme</p>	<p>Transfer and Discharge of groundwater into surface water in the Heretaunga Plains Water Quantity Area Management unit (quantity)</p>	<p>Restricted^{99.27, 180.61} Discretionary</p>	<p>a) The transfer and discharge of water is managed according to the applicable requirements of Schedule 36. The activity does not comply with the conditions of RRMP Rule 31.^{63.34, 207.36} The activity will not result in a change of land use that triggers Rules TANK 5 or 6.^{123.113}</p>	<p>1. <u>Location, quantity, rate, duration and timing of discharge.</u> 2. <u>Flood mitigation measures.</u> 3. <u>Compliance monitoring including monitoring for water quality.</u> 4. <u>Measures or methods required for meeting the receiving water quality targets in Schedule 26.</u>^{123.113} 5. <u>The duration of the consent having regard to POL TANK 49.</u> 6. <u>Lapsing of the consent.</u> 7. <u>Review of consent conditions.</u></p>	

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<p><u>TANK 18a</u> <u>Stream Flow</u> <u>Maintenance</u> <u>and Habitat</u> <u>Enhancemen</u> <u>t Scheme</u></p>	<p><u>Discharge of</u> <u>groundwater into</u> <u>surface water in the</u> <u>Heretaunga Plains</u> <u>Water Quantity</u> <u>Area</u></p>	<p><u>Discretionary</u></p>	<p><u>The activity does not comply with the conditions of</u> <u>TANK Rule 18.</u></p>		
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HDC and NCC Relief Sought

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6.10.3 Stormwater

Rule	Activity	Status	Conditions/Standards/Terms	Matters for Control/Discretion
<p>TANK 19 Small scale stormwater diversion and discharge activities 129.21</p>	<p>The diversion and discharge of stormwater into water, or onto land where it may enter water from any new or existing and lawfully established: <u>(a) any activity with less than 1000 m2 impervious area residential activities;</u> <u>(b) non-industrial or trade premise;</u> <u>(c) industrial or trade premise with less than 1,000 m2 of impervious areas;</u> <u>(d) rural building.</u></p>	<p>Permitted</p>	<p>a) The diversion and discharge shall not;</p> <ul style="list-style-type: none"> (i) cause any permanent bed scouring or bank erosion of land or any water course at or beyond that point of discharge (ii) cause or contribute to flooding of any property (iii) cause any permanent reduction in the ability of the receiving environment to convey flood flows (iv) contain hazardous substances or, be from a site used for the storage, use or transfer of hazardous substances (v) contain drainage from a stockyard (vi) cause to occur or contribute to any of the following after reasonable mixing: <ul style="list-style-type: none"> i. production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials ii. any emission of objectionable odour iii. any conspicuous change in colour or the visual clarity of the receiving water body (including the runoff from bulk earthworks) iv. any freshwater becoming unsuitable for consumption by farm animals (vii) cause to occur or contribute to the destruction or degradation of any habitat, mahinga kai, plant or animal in 	

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			<p>any water body or coastal water (viii) cause to occur or contribute to the discharge of microbiological contaminants including sewage, blackwater, greywater or animal effluent.</p> <p>b) The property <u>is not located within a municipal or community stormwater serviced area including areas which are planned to be serviced within 1 year of commencement of the activity, cannot connect to a current or planned reticulated stormwater network.</u>⁴⁷</p> <p>c) Any structure associated with the point of discharge or diversion is maintained in a condition such that it is clear of debris, does not obstruct fish passage and is structurally sound.</p> <p>d) The person who discharges or diverts, or who causes the discharge or diversion to occur, shall provide such information upon request by the Council to show how Condition (a) will be met or has been met.</p>	
<p>TANK 20 Small scale stormwater diversion and discharge activities</p>	<p>The diversion and discharge of stormwater into water, or onto land where it may enter water from any new or existing and</p>	<p>Restricted Discretionary</p>	<p>a) The activity does not comply with the conditions of Rule TANK 19; <u>and</u></p> <p>b) <u>the activity is not from an industrial or trade premise.</u></p>	<ol style="list-style-type: none"> 1. Location of the point of diversion and discharge including its catchment area. 2. Volume, rate, timing and duration of the discharge, in relation to a specified design rainfall event. 3. Effects of the activity on downstream flooding. 4. Contingency measures in the event of pipe capacity exceedance. 5. Actual or likely adverse effects on fisheries, wildlife, habitat or amenity values of any surface water body.

⁴⁷ HDC Submission 207.56, NCC Submission 63.38; Evidence of Annette Sweeney paras 88-89

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129.21	<p>lawfully established: <u>any activity with less than 1000 m2 impervious arearesidential activities; non-industrial or trade premise; industrial or trade premise with less than 1,000 m2 of impervious areas; rural building.</u></p>			<ol style="list-style-type: none"> 6. Actual or likely adverse effects on the potability of any ground water. 7. The actual or potential effects of the activity on the quality of source water for Registered Drinking Water Supplies <u>irrespective of any treatment process for the Registered Drinking Water Supply⁴⁸</u> and any measures to reduce the risk to the water quality including notification requirements to the Registered Drinking Water supplier. 8. <u>The timing of future planned reticulated networks.</u> 207.58, 63.40 9. 7. The actual of potential effects of the activity on the water quality objectives set out in Schedule 26. 10. <u>Compliance with any relevant industry codes of practice or guidelines</u> 203.26 11. <u>When required, the efficacy of a Stormwater Management Plan (Schedule 34) including measures adopted to minimise the risk of contaminants of concern entering stormwater to assist in meeting Schedule 26 targets including:</u> <ol style="list-style-type: none"> a. <u>Installation of stormwater management devices including as detailed in table 3.1 of the Hawke’s Bay Regional Council Industrial Stormwater Waterway Design Guidelines.</u> b. <u>Alignment with relevant industry guidelines and best practice standards.</u> 12. 9. Duration of the consent. 13. 10. A compliance monitoring programme. 14. 11. Bonds or Administrative charges.
TANK 21 Stormwate	Diversion and discharge of	Controlled	<p>a) The diversion and discharge shall not; (i) cause any permanent bed scouring or</p>	<ol style="list-style-type: none"> 1. The efficacy of the Integrated Catchment Management Plan including, but not limited to:

⁴⁸ HDC Submission 207.: Evidence of Annette Sweeney, paras 67-68.

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<p><u>r activities</u> <u>Diversion</u> <u>and</u> <u>discharge</u> <u>from local</u> <u>authority</u> <u>networks</u></p>	<p>stormwater from an existing or new local authority managed stormwater network into water, or onto land where it may enter water</p>		<p>bank erosion of land or any water course at or beyond that point of discharge</p> <p>(ii) cause or contribute to flooding of any property except where flooding occurs over a watercourse or designated secondary flow path.⁴⁹</p> <p>(iii) cause any permanent reduction in the ability of the receiving environment to convey flood flows</p> <p>(iv) contain hazardous substances or, be from a site used for the storage, use or transfer of hazardous substances</p> <p>(v) Contain drainage from a stockyard</p> <p>(vi) cause to occur or contribute to any of the following after reasonable mixing:</p> <p>i. production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials</p> <p>ii. any emission of objectionable odour</p> <p>iii. any conspicuous change in colour or the visual clarity of the receiving water body (including the runoff from bulk earthworks)</p> <p>iv. any freshwater becoming unsuitable for consumption by farm animals</p> <p>v. cause to occur or contribute to⁵⁰ the destruction or degradation of any</p>	<p>a. Its contribution to achieving water quality objectives</p> <p>b. its implementation programme and milestones,</p> <p>c. The comprehensiveness and reliability of the monitoring regime</p> <p>d. The use of low impact stormwater design methods</p> <p>2. The actual or potential effects of the activity on the water quality objectives set out in Schedule 26 including for aquatic ecosystem health, mahinga kai, contact recreation and Māori customary use.</p> <p>3. The characteristics of the proposed discharge and its effects on the receiving environment</p> <p>4. The actual or potential effects of the activity on the quality of source water for Registered Drinking Water Supplies irrespective of any treatment process for the Registered Drinking Water Supply⁵³ and any measures to reduce the risk to the water quality including notification requirements to the Registered Drinking Water supplier.</p> <p>5. Duration of the consent</p> <p>6. Review of consent conditions</p> <p>7. Compliance monitoring</p> <p>8. Administrative charges</p>
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⁴⁹ **HDC Submission 207.59, NCC Submission 63.41. Evidence of Annette Sweeney, para 93(a).**

⁵⁰ **HDC Submission 207.59, NCC Submission 63.41. Evidence of Annette Sweeney, para 93(b).**

⁵³ **HDC Submission 207.45; Evidence of Annette Sweeney, para 67**

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			<p>habitat, mahinga kai, plant or animal in any water body or coastal water</p> <p>vi. cause to occur or contribute to⁵¹ the discharge of microbiological contaminants including sewage, blackwater, greywater or animal effluent exceedance of water quality targets for microbiological contaminants.⁵²</p> <p>b) An application for resource consent must include an Integrated Catchment Management plan that includes;</p> <p>c) A monitoring programme to assess existing stormwater discharge quality and level of impact on receiving water quality standards</p> <p>(ii) Identification of the spatial extent of the stormwater network to which the application for consent relates</p> <p>(iii) Identification of the priority streams or catchments where stormwater discharges currently result in receiving water quality below the standards specified in Schedule 26</p> <p>(iv) A programme of mitigation measures including timeframes and milestones for the enhancement of streams identified in (b)(iii);</p> <p>(v) Identification of any industrial or trade sites, that use, store or produce the</p>	
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⁵¹ HDC Submission 207.59, NCC Submission 63.41. Evidence of Annette Sweeney, para 93(b).

⁵² HDC Submission 207.59, NCC Submission 63.41. Evidence of Annette Sweeney, para 93(c) – 95.

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			<p>discharge of any contaminant of concern (as defined in Table 3.1 of Hawke’s Bay Waterway Guidelines Industrial Stormwater Design);</p> <p>(vi) Identification of sites within catchments that have a high risk of contaminants entering the stormwater network or land where it might enter surface or groundwater, including industrial and trade premises and areas subject to new urban development.</p> <p>(vii) For sites identified in (b)(vi), a programme to ensure Urban Site Specific Stormwater Management Plans are prepared and implemented so that stormwater quality risks are managed. (Schedule 34)</p> <p>(viii) Identification of areas at risk of flooding, and where levels of service to protect communities from flooding are not being met provide information about how this will be managed.</p> <p>(ix) The potential effects of climate change on infrastructure capacity and a description of any planned mitigation measures including the identification of secondary flow paths and the capacity of the receiving environment.</p> <p>(x) Identification of measures to demonstrate how discharges shall not cause scouring or erosion of land or any water course beyond the point of discharge</p> <p>(xi) Where the stormwater network (or part thereof) or discharge locations are</p>	
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			<p>situated within a Source Protection Zone of a registered drinking water supply, a description of measures to prevent or minimise adverse effects on the quality of the source water for the registered drinking water supply or any increase in the risk of unsafe drinking water being provided to persons and communities from the drinking water supply</p> <p>(xii) Description of measures to demonstrate how the discharge shall not contain hazardous substances or contaminants (including wastewater) and shall not cause any of the following to occur after reasonable mixing:</p> <ul style="list-style-type: none"> i. production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials; ii. any emission of objectionable odour; iii. Any conspicuous change in colour or visual clarity of the receiving water; iv. any freshwater becoming unsuitable for consumption by farm animals; v. the destruction or degradation of any habitat, mahinga kai, plant or animal in any water body or coastal water. <p>129.24</p>	
<p>TANK 22 Stormwater discharge from industrial and trade premises.</p>	<p>Discharge of stormwater to water or onto land where it may enter water from any industrial or</p>	<p>Restricted discretionary</p>	<p>a) An application for resource consent must include an Urban Site Specific Stormwater Management Plan (Schedule 34) ^{207.60, 63.43}</p> <p>b) The diversion and discharge;</p> <ul style="list-style-type: none"> (i) shall not cause permanent bed scouring or bank erosion of land or alter the natural course of any water body 	<p>1. The efficacy of the Urban Site Specific ^{207.61} Stormwater Management Plan (Schedule 34) including measures adopted to minimise the risk of contaminants of concern entering stormwater <u>to assist in meeting Schedule 26 targets</u> including: ^{210.103}</p> <ul style="list-style-type: none"> a. Installation of stormwater management devices including as detailed in table 3.1 of the

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<p>129.21</p>	<p>trade premises with 1,000 m² or more of impervious areas</p>		<ul style="list-style-type: none"> (ii) shall not cause or contribute to flooding of any property, (iii) shall not cause any permanent reduction in the ability of the receiving environment to convey flood flows (iv) shall not contain hazardous substances c) The diversion and discharge shall not cause any of the following to occur after reasonable mixing: <ul style="list-style-type: none"> (i) production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials (ii) any emission of objectionable odour (iii) any conspicuous change in colour or the visual clarity (iv) result in any freshwater becoming unsuitable for consumption by farm animals d) the diversion and discharge shall not cause to occur or contribute to: <ul style="list-style-type: none"> (i) the destruction or degradation of any habitat, mahinga kai, plan or animal in any water body or coastal water (ii) <u>the exceedance of water quality guidelines for microbiological contamination the discharge of microbiological contaminants, including sewage, blackwater, greywater or animal effluent⁵⁴.</u> 	<p>Hawke’s Bay Regional Council Industrial Stormwater Waterway Design Guidelines.</p> <ul style="list-style-type: none"> b. Alignment with relevant industry guidelines and best practice standards. <ol style="list-style-type: none"> 2. Water quality standards in the discharge in relation to any contaminants being used on site and specific methods for treating these. 3. The actual or potential effects of the activity on the quality of source water for Registered Drinking Water Supplies <u>irrespective of any treatment process for the Registered Drinking Water Supply⁵⁵</u> and any measures to reduce the risk to the water quality including notification requirements to the Registered Drinking Water supplier 4. The characteristics of the proposed discharge and its effects on the receiving environment 5. Duration of the consent 6. Review of consent conditions 7. Compliance monitoring.
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⁵⁴ HDC Submission 207.60, NCC Submission 63.42. Evidence of Annette Sweeney, para 94-97.

⁵⁵ HDC Submission 207.45, Evidence of Annette Sweeney, paras 67-68.

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			<p>e) There is no reticulated stormwater network at the property boundary</p> <p>f) Any structure associated with the point of discharge or diversion is maintained in a condition such that it is clear of debris, does not obstruct fish passage and is structurally sound.</p>	
TANK 23 Stormwater activities	The diversion and discharge of stormwater into water, or onto land where it may enter water.	Discretionary	The activity does not comply with Rules TANK 19 to TANK 22	The Council may at any time, by written notice to the owner or occupier (following a reasonable period of consultation), review a consent in light of new information that has become available or any change in circumstances that has occurred, and vary any condition of consent as a consequence.

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Chapter 6.9 Amendments to Regional Resource Management Plan Rules (see below underline/strikeout version of chapter 6)

Proposed Plan Change 9 proposes changes to Chapter 6 of the RRMP and make consequential changes to the rules and to insert new provisions relevant to the Tūtaekurī, Ahuriri, Ngaurororo and Karamū catchments. The amendments subject to the Proposed Plan Change are shown below in bold with new text underlined and text to be deleted shown in strikeout. (Note Only the text shown **underlined** and in **bold** can be the subject of submissions)

6.3.1 Bore Drilling & Bore Sealing

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>1 Bore drilling <i>Refer POL 17, 21, 27, 75</i></p>	<p>The drilling, construction, and alteration of bores.⁵</p>	<p>Controlled</p>	<p>a. The bore shall be cased and sealed to prevent aquifer cross-connection, and leakage from the ground surface into ground water.</p> <p>b. <u>The bore is not located within a Source Protection Zone</u></p>	<p>a. Bore location, diameter, depth. b. Bore screen slot size, length, depth and diameter. c. Well head completion. d. Backflow prevention. e. Information requirements, including bore logs, hydraulic head levels and aquifer tests. f. Duration of consent. g. Lapsing of consent. h. Review of consent conditions. i. Compliance monitoring.</p>	<p>Applications will generally be considered without notification, without the need to obtain the written approval of affected persons.</p>

⁵ For the purposes of this Plan, a ‘bore’ is defined as any pipe, cylinder or hole inserted into the ground that either

- i. is created for the purpose of accessing underground water, oil or gas, or
- ii. penetrates a confined aquifer, or
- iii. in any way causes the release of water from a confined aquifer, or
- iv. is created for the purpose of exploring water, oil or gas resources.

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>2 Bore drilling that does not comply with Rule 1 Refer POL 17, 21, 27, 75</p>	<p>The drilling, construction, or alteration of bores that does not comply with Rule 1.</p>	<p>Restricted discretionary</p>		<p>a. Bore location diameter, depth. b. Bore screen slot size, length, depth and diameter. c. Bore head completion. d. Backflow prevention. e. Information requirements, including bore logs, hydraulic head levels and aquifer tests. f. <u>In the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments, the actual or potential effects of the bore and bore drilling on the quality of source water for Registered Drinking Water Supplies irrespective of any treatment process for the Registered Drinking Water Supply⁵⁶ and any measures to reduce the risk to the water quality including advising any affected notification requirements to the Registered Drinking Water supplier of intent to drill prior to the activity occurring, the maintenance of the bore and the well head, including decommissioning the bore where necessary</u> g. In the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments, information to confirm compliance with conditions (a) to (f) shall be provided to the</p>	

⁵⁶ HDC Submission 207.45, Evidence of Annette Sweeney, paras 67-68.

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				<p>Council. ^{129.28}</p> <p>h. g. Duration of consent.</p> <p>i. h. Lapsing of consent.</p> <p>j. i. Review of consent conditions.</p> <p>k. j. Compliance monitoring.</p>	
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HDC and NCC Relief Sought

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
3 Unwanted or leaking bores Refer POL 21	The existence of any bore that is no longer wanted or is leaking water, oil or gas.	Non-complying			
4 Decommissioning of bores Refer POL 75	The decommissioning or sealing of bores.	Permitted	<p>a. Decommissioned bores shall be backfilled and sealed at the surface to prevent contamination of groundwater.</p> <p>b. Decommissioned holes and bores intersecting groundwater shall be sealed to prevent the vertical movement of groundwater, and to permanently confine the groundwater to the specific zone (or zones) in which it originally occurred.</p> <p>c. Backfill materials, where used between permanent seals, shall consist of clean sand, coarse stone, clay or drill cuttings. The material shall be non toxic.</p> <p>d. Decommissioning shall be undertaken by a suitably qualified person.</p> <p>e. The Council shall be advised of any bores that are decommissioned.</p> <p>f. <u>Where the bore is in a Source Protection Zone, information to confirm compliance with conditions (a) to (d) shall be provided to the Council upon request.</u>^{119.12}</p>		

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6.3.2 Feedlots & Feedpads

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>5 Feedlots & feedpads⁶ <i>Refer POL 71</i></p>	<p>The use of land for the purposes of operating a feedlot⁷ or feedpad⁸.</p>	<p>Permitted</p>	<p>a. The land used for the feedlot or feedpad shall be managed in a manner that prevents any seepage of contaminants into groundwater^{9,10}.</p> <p>b. The feedlot or feedpad shall be located no less than 20 m from any surface water body.</p> <p>c. The feedlot or feedpad shall be located no less than:</p> <ul style="list-style-type: none"> i. 150 metres from a residential building or any other building being part of a place of assembly on another site ii. 50 metres from a property boundary, and iii. 20 metres from a public road. <p>d. Runoff from the surrounding catchment area is prevented from entering the feedlot or feedpad.</p> <p><u>e. The feedpad or feedlot is not located in a Source Protection Zone</u></p>		

⁶ Rule 5 only address the use of land for a feedlot or feedpad (and thus, the effects associated with having a high density of animals on one site). Any discharges of contaminants associated with the operation of a feedlot or feedpad, e.g. the use of stock feed and the management of animal effluent, are addressed under rules in sections 6.4 and 6.6 of this Plan. Any discharge of contaminants associated with the operation of a feedlot or feedpad, such as the disposal of animal wastes and the bedding material or the runoff of manure during heavy rainfall are addressed under Rules in Sections 6.4 and 6.6. Any discharge of contaminants to air are covered in Rule 21.

⁷ For the purposes of this Plan, a ‘feedlot’ is defined as an area of land upon which animals are kept and fed, for more than 15 days in any 30 day period, where the stocking density or feedlot structure (e.g. a concrete pad) precludes the maintenance of pasture or ground cover.

⁸ For the purposes of this Plan, a ‘feedpad’ is defined as an area of land to which animals are brought for supplementary feeding on a regular basis, where the stocking density or feedpad structure precludes the maintenance of pasture or ground cover.

⁹ Sealing - The Council will accept, as one means of compliance with condition (a), the construction of a sealing layer with a permeability of no greater than 10⁻⁹ m/s (0.000000001 m/s).

¹⁰ **Compliance** – At any time Council may request information from the operator of a feedlot or feedpad to confirm compliance with condition (a).

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>6 Feedlots & feedpads that do not comply with Rule 5¹¹ <i>Refer POL 17, 20, 47, 48, 71</i></p>	<p>The use of land for the purposes of operating a feedlot or feedpad, in a manner which does not comply with Rule 5.</p>	<p>Restricted discretionary</p>		<p>a. The conditions which the activity cannot comply with, and the related environmental effects. b. Duration of consent. c. Lapsing of consent. d. Review of consent conditions. e. Compliance monitoring. e-f. <u>In the Tutaekuri, Ahuriri, Ngaruroro and Karamu catchments, the actual or potential effects of the activity on the quality of source water for Registered Directing Water Supplies irrespective of any treatment process for the Registered Drinking Water Supply, and any measures to manage the risks to the water quality.⁵⁷</u></p>	

⁵⁷ HDC Submission 207.46, Evidence of Annette Sweeney para 71.

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¹¹ Rule 6 only address the use of land for a feedlot or feedpad (and thus, the effects associated with having a high density of animals on one site). Any discharges of contaminants associated with the operation of a feedlot or feedpad, e.g. the use of stock feed and the management of animal effluent, are addressed under rules in sections 6.4 and 6.6 of this Plan. Any discharge of contaminants associated with the operation of a feedlot or feedpad, such as the disposal of animal wastes and the bedding material or the runoff of manure during heavy rainfall are addressed under Rules in Sections 6.4 and 6.6. Any discharge of contaminants to air are covered in Rule 21.

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6.3.3 Vegetation Clearance and Soil Disturbance Activities

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
7 Vegetation clearance and soil disturbance¹² <small>29a</small> <i>Refer to POL 3, 67, 71</i>	Vegetation clearance ¹³ or soil disturbance ¹⁴ activities.	Permitted	a. All cleared vegetation, disturbed soil or debris shall be deposited or contained to reasonably prevent the transportation or deposition of disturbed matter into any water body ¹⁵ . b. Vegetation clearance or soil disturbance shall not give rise to any significant change in the colour or clarity of any adjacent water body, after reasonable mixing. c. No vegetation clearance shall occur within 5 metres of any permanently flowing river, or any other river with a bed width in excess of 2 metres, or any other lake or wetland, except that this condition shall not apply to:		

¹² Rule 7 does not apply to the trimming, felling, or removing of any tree or vegetation or earthworks, in relation to an existing high voltage electricity transmission lines. Refer to the Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009.

^{29a} Rule 7 does not apply to the harvesting, vegetation clearance and soil disturbance associated with plantation forestry activities. Refer to the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017.

¹³ “Vegetation clearance” means the cutting, burning, clearing or destruction (including destruction by spraying) of trees, shrubs, or plants.

¹⁴ “Soil disturbance” means the disturbance of soil by any means including blading, contouring, ripping, discing, root raking, moving, ploughing, removing, cutting and blasting. Vegetation clearance and soil disturbance exclude:

- The normal maintenance of legally established structures, roads, tracks, railway lines and river beds.
- The clearance of grasses, forest thinning, and agricultural and horticultural crops.
- The clearance of isolated or scattered regrowth on productive pasture.
- The clearance of any indigenous vegetation understorey beneath plantation forests.
- The clearance of noxious weeds covered by the Regional Plant Pest Management Strategy prepared under the Biosecurity Act, 1993.
- Non-motorised soil disturbance activities.
- Thrusting, boring, trenching or mole ploughing associated with cable or pipe laying or a network utility operation.
- Soil disturbance undertaken by a mine or quarry operation which either had a valid mining licence at the date the Proposed Regional Resource Management Plan was publicly notified (15 April 2000) or is lawfully established.
- Cultivation and grazing.
- Foundations works for structures.
- Construction and maintenance of fences and drains.

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¹⁵ Explanation of Rule 7 (a): In considering whether condition (a) in Rule 7 has been met, Council shall have regard to recognised Industry Codes of Practice, Best Practice Guidelines and Environmental Management Plans relevant to and adopted in carrying out the activity.

NOTE: 10 kg/m² of dry soil is equivalent to 5 mm depth assuming a specific gravity of 2 kg/litre.

^{32a} NOTE: Rule 7(c) has been deleted to ensure the Regional Plan aligns with the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017 and does not conflict with, or duplicate the requirements within those Regulations.

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
			<ul style="list-style-type: none"> i. the clearance of plantation forestry established prior to the date of this Plan becoming operative, or ^{32a} ii. the areas identified in Schedule X to this Plan. d. Deposition of soil or soil particles across a property boundary shall not be objectionable or offensive, cause property damage or exceed 10 kg/m². e. Where the clearance of vegetation or the disturbance of soil increases the risk of soil loss the land shall be: <ul style="list-style-type: none"> i. re-vegetated as soon as practicable after completion of the activity, but in any event no later than 18 months with species providing equivalent or better land stabilisation; or ii. retained in a manner which inhibits soil loss. f. <u>In the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments, there is no clearance of indigenous vegetation within 10m of any rivers except;</u> <ul style="list-style-type: none"> i. <u>where the clearance is part of improvements to riparian management for water quality/biodiversity purposes as specified in the relevant Farm Environment or Catchment Collective Plan;</u> ii. <u>where the clearance is necessary for construction of crossings or installation of a reticulated or network service</u> g) <u>In the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments there is no cultivation of land over 20 degrees of slope except where it is less than 10% of the paddock area.</u> h) <u>In the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments, there is no cultivation of land that results in exposure of bare soil within;</u> <ul style="list-style-type: none"> i. <u>5 m of any river, modified watercourse or drain</u> 		

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			<p><u>or lake or wetland where the land is flat to gently rolling (0-7 degrees of slope);</u></p> <p>ii. <u>10 m of any river, modified watercourse or drain or lake or wetland where the land is moderately rolling (>7 – 20 degrees of slope);</u></p> <p>iii. <u>15 m of any river, modified watercourse or drain or lake or wetland where the land is over 20 degrees of slope;</u></p> <p>i) <u>Except conditions h(i) – (ii) do not apply:</u></p> <p>i. <u>where cultivation is part of improvements to riparian management for water quality/biodiversity purposes as specified in the relevant Farm Environment or Catchment Collective Plan;</u></p> <p>iv. <u>where the cultivation is in relation to activities permitted by Rule 70.</u></p>		
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6.4.2 Agricultural Activities & Other Activities on Production Land - Discharges to Air/Land/Water

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>12 Stock feed Refer POL 12, 69, 71, 75</p>	<p>The discharge of contaminants into air, or onto or into land arising from the storage, transfer, treatment, mixing or use of stock feed¹⁶ on production land, including silage.</p>	<p>Permitted¹⁷</p>	<p>a. Any area in the Heretaunga Plains unconfined aquifer (Schedule Va) or the Ruataniwha Plains unconfined aquifer (Schedule IV) which is used for storing stock feed, including silage, and when there is a potential for contamination of groundwater by seepage of contaminants, shall be managed in a manner that prevents such contamination.</p> <p>b. Any discharges to air shall not cause any offensive or objectionable odour, or noxious or dangerous levels of gases, beyond the boundary of the subject property.</p> <p>c. There shall be no visible discharge of any material, including dust, beyond the boundary of the subject property, unless written approval is obtained from the affected property owner.</p> <p>d. The discharge shall not result in any airborne liquid contaminant being carried beyond the boundary of the subject property.</p> <p>e. There shall be no discharge within 20 m of any surface water body.</p> <p>f. There shall be no surface ponding in any area used to store stock feed or feed stock, and no runoff of contaminants into any surface water body.</p> <p>g. There shall be no discharge within 30 m of any bore or well.</p> <p>h. Where the activity is in a Source Protection Zone, information to confirm compliance with conditions (a) to (g) shall be provided to the Council upon request^{139-119.12}</p>		
Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification

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<p>13 Use of compost, biosolids & other soil conditio n- ers¹⁸ <i>Refer POL</i> 12, 69, 71, 75</p>	<p>The discharge of contaminants into air, or onto or into land, arising from the storage, transfer, treatment, mixing or use of compost, biosolids and other (solid or liquid) organic material for soil conditioning purposes¹⁹ including:</p> <ul style="list-style-type: none"> • paunch grass • apex meal • stockyard scrapings • grape marc • compost (except as regulated by Rule 28²⁰) and poultry manure (except as regulated by Rule 11 or 14). 	<p>Permitted²¹</p>	<p>c. Any area in the Heretaunga Plains unconfined aquifer (Schedule Va) or the Ruataniwha Plains unconfined aquifer (Schedule IV) which is used for storing organic material and when there is a potential for contamination of ground water by seepage of contaminants, shall be managed in a manner that prevents such contamination.</p> <p>d. Any discharges to air shall not cause any offensive or objectionable odour, or noxious or dangerous levels of gases, beyond the boundary of the subject property.</p> <p>e. There shall be no visible discharge of any material, including dust, beyond the boundary of the subject property, unless written approval is obtained from the affected property owner.</p> <p>f. The discharge shall not result in any airborne liquid contaminant being carried beyond the boundary of the subject property.</p> <p>g. There shall be no surface ponding in the area used to store, mix or use the organic material, and no runoff of contaminants into any surface water body.</p> <p>h. There shall be no discharge within 30 m of any bore or well.</p> <p>i. The discharge shall occur no less than 600 mm above the winter ground water table.</p> <p>j. Where material is discharged onto grazed pasture, the application rate shall not exceed 150 kg/ha/y of nitrogen.</p> <p>k. Where material is discharged onto land used for a crop, the application rate shall not exceed the rate of nitrogen uptake by the crop.</p> <p><u>l. Where the activity is in a Source Protection Zone, the storage or processing of compost or bio-solids and other soil conditions does not exceed 100 cubic metres of material.</u></p>	
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¹⁶ For the purposes of this Plan, “stock feed” means organic material that can be consumed by farmed animals.

¹⁷ If Rule 12 cannot be complied with, then the activity is a restricted discretionary activity under Rule 30, or a discretionary activity under Rule 52, whichever is relevant.

²¹ If Rule 13 cannot be complied with, then the activity is a restricted discretionary activity under Rule 30, or a discretionary activity under Rule 52, whichever is relevant.

¹⁸ If Council receives complaints about an activity operating under this rule, the Council may request a management plan which sets out how the conditions are being met.

¹⁹ For the purpose of this rule “soil conditioning purposes” means the application of organic material to improve the structure and quality of the soil

²⁰ The composting of more than 100 m³ of compost and raw material per premises is regulated by Rule 28.

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>14 Animal effluent <i>Refer POL 8, 12, 14, 17, 19, 47</i></p>	<p>The discharge of contaminants into air, or onto or into production land, arising from the management of liquid animal effluent²², including dairy shed effluent, piggery effluent, and poultry farm effluent²³, including associated sludges (except as provided for by Rules 13 & 15).</p>	<p>Controlled²⁴</p>	<p>a. Any area used for storing animal effluent, where there is a potential for contamination of groundwater by seepage of contaminants, shall be managed in a manner that prevents any such contamination.</p> <p>b. Either:</p> <p>i. there shall not be offensive or objectionable odour, or noxious or dangerous levels of gases or other airborne liquid contaminants, beyond the boundary of the subject property, or</p> <p>ii. for discharges of effluent from piggeries, every point of discharge shall be sited so as to meet the requirements of the "Code of Practice - Pig Farming" (New Zealand Pork Industry Board, 1997), in respect of buffer zone distances.</p> <p>c. There shall be no visible discharge of any material, including dust, beyond the boundary of the subject property, unless written approval is obtained from the affected property owner.</p> <p>d. There shall be no runoff of any contaminant into any surface waterbody.</p> <p>e. There shall be no discharge within 30 m of any bore or well.</p> <p>f. Where effluent is discharged onto grazed pasture, the nitrogen loading rate from the effluent application shall not exceed 150 kg/ha/y of nitrogen.</p> <p>g. Where effluent is discharged onto land covered by a crop, or to be used for cropping purposes, the application rate shall not exceed the rate of nitrogen uptake by the crop.</p> <p>h. <u>The activity is not in a Source Protection Zone</u></p>	<p>a. Amount of effluent per discharge.</p> <p>b. Frequency of discharge.</p> <p>c. Maintenance of vegetative cover.</p> <p>d. Buffer zone requirements.</p> <p>e. Measures to avoid a breach of the environmental guidelines for surface and groundwater quality set out in section 5.4 and 5.6.</p> <p>f. Management of cumulative adverse effects.</p> <p>g. For discharges of effluent from piggeries, use of the best practicable option for minimising discharges of odour beyond the boundary of the subject property.</p> <p>h. Duration of consent.</p> <p>i. Review of consent conditions.</p> <p>j. Compliance monitoring.</p>	<p>Applications may be considered without notification, without the need to obtain the written approval of affected persons, except that written approval of affected neighbours may be required for new consents, but upon renewal the approval of affected neighbours will not be required.</p>

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²² For the purposes of this rule, “animal effluent” refers to animal excreta (excluding human waste) that is collected and managed by people, including associated process water and contaminants including associated process water, contaminants and sludges.

²³ Rule 14 covers the discharge of poultry effluent from poultry farms on land associated with the poultry farm, where the discharge is for the purpose of disposal.

²⁴ If Rule 14 cannot be complied with, then the activity is a restricted discretionary activity under Rule 30, or a discretionary activity under Rule 52, whichever is relevant.

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>15</p> <p>Discharge of animal effluent in sensitive catchments <i>Refer POL 8, 17, 19, 20, 47</i></p>	<p>The discharge of contaminants into air, or onto or into production land, arising from the management of liquid animal effluent²⁵, including dairy shed effluent, piggery effluent, and poultry farm effluent in the following catchments as shown in Schedule VIb:</p> <ul style="list-style-type: none"> • Headwaters of Mohaka River • Headwaters of the Ngaruroro River • Maungawhio • Lake Hatuma • Lake Tutira • Heretaunga Plains unconfined aquifer • Ruataniwha Plains unconfined aquifer • Lake Whakaki • Headwaters of the Tutaekuri River • Headwater of the Tukituki River. <p><u>Or in any Source Protection Zone</u></p>	<p>Discretionary</p>			

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²⁵ For the purposes of this rule, “animal effluent” refers to animal excreta (excluding human waste) that is collected and managed by people, including associated process water and contaminants including associated process water, contaminants and sludges.

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6.5.1 Water - Discharges to Water

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
31 Discharge of water ²⁶ <i>Refer POL, 71, 79</i>	The discharge of water (excluding drainage water) into water ²⁷ .	Permitted ²⁸	<p>a. The discharge shall not cause or contribute to the flooding of any property, unless written approval is obtained from the affected property owner.</p> <p>b. The discharge shall not cause any scouring or erosion of any land or any watercourse beyond the point of discharge.</p> <p>c. The discharge shall not cause the natural temperature of any receiving water to be changed by more than 3°C from normal seasonal water temperature fluctuations, after reasonable mixing²⁹.</p> <p>d. <u>The discharge is not a discharge of groundwater into surface water in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments</u></p>		

ADVISORY NOTE:

1. Discharge of water onto or into land - Note that the discharge of water onto or into land is not restricted by the RMA.

²⁶ Rule 31 does not apply to the discharge of water into water in relation to an existing high voltage electricity transmission activity. Refer to the Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009.

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²⁷ Discharges of sediment to surface water bodies as a result of scouring are covered by Rule 49.

²⁸ If Rule 31 cannot be complied with, then the activity is a discretionary activity under Rule 52.

²⁹ See Glossary for definition of “after reasonable mixing”.

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6.6.2 Drainage Water - Discharges to Land/Water

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discussion	Non-notification
<p>32 Discharge of drainage water (gravity flow systems) Refer POL 71, 72, 79</p> <p>123.118, 124.30, 129.29, 180.64, 210.106,</p>	<p>The diversion and discharge of drainage³⁰ water into water or onto or into land, from a gravity flow system (without pumping).</p>	<p>Permitted ³¹</p>	<p>a. There shall be no adverse flooding effects on any property owned or occupied by another person, as a result of any discharge from the drainage activity.</p> <p>b. The discharge shall not cause any scouring or erosion of any land or any water course beyond the point of discharge.</p> <p>c. The activity shall not adversely affect any wetland³².</p> <p>d. The discharge shall not cause the natural temperature of any receiving water to be changed by more than 3°C from normal seasonal water temperature fluctuations, after reasonable mixing.</p> <p>e. Any discharge of water arising from a drainage system shall be to the same catchment³³ as that to which the water would naturally flow.</p> <p>f. Any suspended solids in the discharge shall comply with Policy 72 except in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments.</p> <p>g. <u>10 years after the operative date of PC9, After ten years after 2 May 2020 in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments, dissolved nutrient and sediment concentrations in the receiving water after reasonable mixing shall not increase as a result of the discharge when measuring:</u></p> <p><u>i DIN</u></p> <p><u>ii DRP</u></p> <p><u>iii suspended sediment.</u></p>		

³⁰ 'Drainage' means the activity of lowering the water table to achieve productive land use to facilitate stability of land or structures, or to achieve some other resource use activity. This generally involves the diversion of water.

³¹ If Rule 32 cannot be complied with, then the activity is a discretionary activity under Rule 52.

³² For the purposes of this Plan the term 'wetland' does NOT include:

- wet pasture land
- artificial wetlands used for wastewater or stormwater treatment
- farm dams and detention dams
- land drainage canals and drains
- reservoirs for firefighting, domestic or municipal water supply

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- temporary ponded rainfall
- artificial wetlands.

³³ **‘Catchment’** means the total area from which a single water body collects surface and subsurface runoff.

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>New RRMP rule 33A Drainage water</p> <p>123.118, 124.30, 129.29, 180.64, 210.106,</p>	<p>The diversion and discharge of land drainage water from an existing pumped drainage system (small scale)</p>	<p>Permitted</p>	<p>a) the discharge is in a Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments</p> <p>b) The pumped drainage system existed at 2 May 2020</p> <p>c) The land area being serviced by the drainage network is less than 10ha</p> <p>d) There shall be no increase in flooding on any property owned or occupied by another person, as a result of any discharge from the drainage activity.</p> <p>e) The discharge shall not cause any scouring or erosion of any land or any watercourse beyond the point of discharge.</p> <p>f) The activity shall not result in changes to water levels in any connected wetland</p> <p>g) The discharge shall not cause the natural temperature of any receiving water to be changed by more than 3°Celsius from normal seasonal water temperature fluctuations, after reasonable mixing.</p> <p>h) Any discharge of water arising from a drainage system shall be to the same catchment as that to which the water would naturally flow.</p> <p>i) After ten years after 2 May 2020 in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments, dissolved nutrient and sediment concentrations in the receiving water after reasonable mixing shall not increase as a result of the discharge when measuring:</p> <p>— i DIN</p> <p>— ii DRP</p> <p>— iii suspended sediment</p>		

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>33 Discharge of drainage water (pumped systems)</p> <p><i>Refer POL 71, 72, 79</i></p> <p>123.118, 124.30, 129.29, 180.64, 210.106,</p>	<p>The diversion and discharge of drainage³⁴ water into water or onto or into land, from a pumped system³⁵.</p>	<p>Controlled³⁶</p>	<p>a. There shall be no adverse flooding effects on any property owned or occupied by another person, as a result of the drainage activity.</p> <p>b. The discharge shall not cause any scouring or erosion of any land or any water course beyond the point of discharge.</p> <p>c. The activity shall not adversely affect any wetland.</p> <p>d. The discharge shall not cause the natural temperature of any receiving water to be changed by more than 3°C from normal seasonal water temperature fluctuations, after reasonable mixing.</p> <p>e. Any discharge of water arising from a drainage system shall be to the same catchment³⁷ as that to which the water would naturally flow.</p> <p>f. Any suspended solids in the discharge shall comply with Policy 72 except in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū water quality management units</p> <p>g. After ten years after 2 May 2020 in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū water quality management units, dissolved nutrient and sediment concentrations in the discharge water are no more than in the receiving water at the point of discharge as measured by:</p> <p>i. DIN</p> <p>ii. DRP</p> <p>iii. suspended sediment.</p>	<p>a. Location of discharge.</p> <p>b. Rate of pumping.</p> <p>c. Time of pumping.</p> <p>d. Flood mitigation measures.</p> <p>e. Duration of consent.</p> <p>f. Review of consent conditions.</p> <p>g. Compliance monitoring.</p> <p>h. For activities carried out in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments, <u>monitoring water quality to categorise the nature and extent (concentration and loads) of contaminants in the drainage water:</u></p> <p>i. measures or methods required for meeting the receiving water quality standards.</p> <p>ii. Monitoring for water quality</p>	<p>Applications will generally be considered without notification or the need to obtain the written approval of affected persons.</p>

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34 **‘Drainage’** means the activity of lowering the water table to achieve productive land use to facilitate stability of land or structures, or to achieve some other resource use activity. This generally involves the diversion of water.

35 While the discharge of drainage water by gravity flow is a permitted activity, the discharge of drainage water from a pumped system requires a resource consent due to the potential adverse environmental effects of greater water flow, generated by a pumped system. The consent authority may require the ability to control the water flow from time to time, such as through temporary cessation of pumping or other means.

36 If Rule 33 cannot be complied with, then the activity is a discretionary activity under Rule 52.

37 **‘Catchment’** means the total area from which a single water body collects surface and subsurface runoff.

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6.6.4 Domestic Sewage - Discharges to Land

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>37 New³⁸ sewage systems</p> <p><i>Refer POL 16, 71, 75</i></p>	<p>Except as provided for in Rule 35 or Rule 36, the discharge of contaminants (including greywater) onto or into land, and any ancillary discharge of contaminants into air, from a new sewage system.</p>	<p>Permitted</p>	<p>a. Where the wastewater receives no more than advanced primary treatment, the discharge shall be onto or into a property with a land area of no less than 2500m².</p> <p>aA. Where the wastewater receives more than advanced primary treatment then:</p> <p>i. the discharge shall be onto or into a property with a land area of no less than 1000m²; and</p> <p>ii. the net site area to discharge volume ratio shall not be less than 1.5 m² per litre per day ³⁹.</p> <p>b. The rate of discharge of sewage (including greywater) shall not exceed 2 m³/d, averaged over any 7 day period.</p> <p>c. The treatment and disposal system shall be designed to cater for the peak daily loading.</p> <p>d. The discharge shall not occur over the Heretaunga Plains or Ruataniwha Plains unconfined aquifer as shown in Schedule IV.</p> <p>e. The discharge and land treatment field shall not be within 20 m of any surface water body (including any stormwater open drain or roadside drain), or any tile drain or within 1.5 metres of any property boundary.</p> <p>eA. The system shall be designed and installed in accordance with the requirements specified in Figure 6.</p> <p>f. There shall be no surface ponding as a result of the discharge, or direct discharge into any water body.</p> <p>g. The discharge shall be distributed evenly over the entire disposal area.</p> <p>h. There shall be no increase in the concentration of pathogenic organisms in any surface water body as a result of the discharge.</p> <p>i. At the time of installation and commencement, the discharge shall not occur within 30 m of any bore drawing groundwater</p>		

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			<p>from an unconfined aquifer into which any contaminant may enter as a result of the discharge.</p> <p>j. The point of discharge shall be no less than 600 mm above the highest seasonal groundwater table.</p> <p>k. The discharge shall not result in, or contribute to, a breach of the “Drinking Water Quality Standards for New Zealand” (Ministry of Health, 2005 (Revised 2008)) in any groundwater body after reasonable mixing.</p> <p>l. The discharge shall not cause any emission of offensive or objectionable odour, or release of noxious or dangerous gases (including aerosols) beyond the boundary of the subject property or on any public land.</p> <p>m. For discharges using pit privies:</p> <ul style="list-style-type: none"> i. the privy shall be constructed in soil with an infiltration rate not exceeding 150 mm/h, and ii. the privy shall not be the primary wastewater system for any permanently occupied dwelling. <p>n. The system shall be designed, constructed, operated and maintained in a manner which ensures that there is no clogging of the disposal system or soils.</p> <p>nA. The discharge shall not be into a trench or bed disposal system constructed in category 5 or 6⁴⁰ soil except where wastewater receives at least secondary treatment.</p> <p>o. Where the wastewater receives secondary treatment or better, the discharge shall not exceed 20 g/m³ of BOD, and 30 g/m³ of suspended solids.</p> <p>p. The wastewater treatment and land application system shall be maintained in accordance with the manufacturer’s instructions, or if no manufacturer’s instructions exist, in accordance with the best management practice as described in AS/NZS 1547, or TP58: On-site Wastewater Systems: Design and Management Manual (Auckland Regional Council Technical Publication No. 58), or other alternative recognised on-site wastewater design manuals. A schedule of maintenance shall be kept, and this</p>		
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			<p>schedule shall be available for inspection by the Regional Council upon request.</p> <p>q. The discharge shall not be disposed of by way of spray irrigation.</p> <p>r. The discharge shall not be into a raised bed.</p> <p>p. <u>The activity is not located in a Source Protection Zone</u></p>		
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³⁸ NOTE: New sewage systems include those systems installed after this Plan becomes operative, as well as those lawfully established sewage systems that have been modified or replaced since 1 January 2012.

³⁹ NOTE: The net site area to discharge volume ratio can be calculated by dividing the net site area by the expected daily wastewater volume. If the answer is less than 1.5, the discharge does not comply with this condition. e.g. a 1000 m² property with a three bedroom home on it with maximum daily discharge volume of 1200 L (6 people at 200 L/p/d) has a ratio of 0.83 (1000/1200). This discharge would not comply with this condition.

⁴⁰ A category 5 soil is a light clay, permeability (Ksat) can range generally between 0.5 m/d (strongly structured) and <0.06 m/d (weakly structured or massive) and the soil is poorly drained. Clay content of approximately 35-40%. Category 6 soils are medium to heavy clays that are very poorly drained. The permeability of category 6 soils is generally less than 0.06 m/d. Clay content of over 40%.

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6.6.5 Stormwater - Discharges to Land/Water

Insert after the heading;

Rules 42 – 46 do not apply within the Tūtaekurī, Ahuriri, Ngaruroro and Karamū River Catchments. Refer to Section 6.10 for the new Tūtaekurī, Ahuriri, Ngaruroro and Karamū rules for stormwater.

6.7.1 Take & Use of Water

Insert after the heading;

Rules 53 – 55 do not apply in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments Refer to Section 6.10 for the new Tūtaekurī, Ahuriri, Ngaruroro and Karamū rules for take and use of water.

6.7.3 Transfer of Water Permits

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
60 Transfer of permits to take & use surface water from a lake <i>Refer POL36</i>	The transfer of a permit to take and use surface water from a lake, to another site.	Permitted	a. The transfer is to another site within the same lake.		
61 Transfer of permits to take & use surface water from a river <i>Refer POL 36, 79</i>	The transfer of a permit to take and use surface water from a river, to another site.	Controlled	a. The transfer is to another site within the same stream management zone, ⁴¹ where the flow is not significantly less than at the original site of abstraction. b. The transfer shall not result in any reduction in the rate of surface water recharge into groundwater. c. The transfer shall not adversely affect any lawfully established surface water abstraction, which existed prior to transfer of the take. d. The transfer shall not result in any increase in adverse effects on aquatic ecosystems or fish passage.	a. Timing of take. b. Design of intake. c. Duration of consent. d. Review of consent conditions. e. Compliance monitoring. f. Volume of water required by, or reasonable needs of, transferee. g. In the Tukituki River catchment, the efficient use of water having	Consent applications will generally be considered without notification, without the need to obtain the written approval of affected persons.

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			e. The transfer is not in any Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchment	regard to POL TT12.	
62 Transfer of permits to take & use ground-water <i>Refer POL 25, 77</i>	The transfer of a permit to take and use groundwater, to another site.	Controlled	a. The transfer is to another site within the same aquifer. b. The transfer is to a location at which the aquifer has the same or greater aquifer transmission and storage characteristics. c. The transfer shall not adversely affect any lawfully established efficient groundwater abstraction, ⁴² which existed prior to transfer of the take. d. The transfer shall not cause any reduction in the flow of any river or spring. e. The transfer is not in any Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchment	a. Aquifer testing. b. Duration of consent. c. Review of consent conditions. d. Compliance monitoring. e. Volume of water required by, or reasonable needs of transferee. f. In the Tukituki River catchment, the efficient use of water having regard to POL TT12.	Consent applications will generally be considered without notification, without the need to obtain the written approval of affected persons.

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⁴¹ “Stream Management Zone” refers to the reaches of a river and/or its tributaries governed by a single minimum flow site.

⁴² For the purposes of this Plan “efficient abstraction” of groundwater means abstraction by a bore which penetrates an aquifer from which water is being drawn at a depth sufficient to enable water to be drawn all year (i.e. the bore depth is below the range of seasonal fluctuations in groundwater level), with a pump capable of drawing water to the land surface.

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<p><u>Insert new RRMP Rule 62a</u> <u>Transfer of permits to take and use water</u></p>	<p><u>Permanent or temporary transfer of water in accordance with S136(2)(b)(i) of the RMA</u></p>	<p><u>Controlled</u></p>	<p>i) The transfer is not part of stream flow maintenance provided by Rule TANK 18 <small>Consequential to Section 15.6.10</small></p> <p>ii) <u>The transfer is the whole or any part of the holder’s interest in the permit for taking and use of surface or groundwater:</u></p> <p>i. To any person or occupier of the site in respect of which the permit is granted, or <small>129.30</small></p> <p>ii. To another person on another site</p> <p>iii. To another site <small>195.120</small></p> <p>iii) <u>The transfer is not between ground and surface water point of take.</u></p> <p>iv) The permit is:-</p> <p>i.) within the same catchment to any point downstream (excluding downstream tributaries) of the location to which the permit applies.:</p> <p>ii) for groundwater takes in the Heretaunga Plains Water Management Unit (Quantity), the transfer is to any point downstream of any affected stream; <small>14.18, 15.17, 20.17, 29.47, 129.32, 180.66, 208.17, 238.20</small></p> <p><u>and</u></p> <p>ii. i) the transfer is within the same Water Quantity Area Freshwater Management Unit (Quantity)</p> <p>e. <u>The transfer of a groundwater take is to an existing bore for which pump tests are available and there is no change to increase in the nature and scale of drawdown effects on neighbouring bores or connected water bodies as a result of the transfer</u> <small>14.18, 15.17, 20.17, 29.47, 129.33, 180.66, 208.17, 238.20</small></p> <p>f. <u>The transfer does not result in an increase in nitrogen loss exceeding the amounts as specified in Table 2 in Schedule 29</u> <small>29.63</small></p> <p>g. <u>All parties to the transfer shall have metering and reporting at any applicable recording and reporting level except for temporary transfers of less than five-</u></p>	<p><u>Insert new RRMP Rule 62a</u> <u>a. Transfer of permits to take and use water</u></p>	
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			<p><u>days per annum.</u> <small>Measurement and Reporting Regulations</small></p> <p>h. <u>In fully or over-allocated water quantity areas management units, the transfer shall only be of that part of the permit for which there is aActual and rReasonable use*</u></p> <p>i. <u>The purpose for the water use does not change except:</u></p> <ul style="list-style-type: none"> <u>i. that water takes for irrigation use may be transferred for irrigation of different crops subject to conditions (e) and (f)</u> <u>ii. for transfers that enable the operation of a flow enhancement scheme (ref Policy 38)</u> <u>iii. the transfer enables efficient delivery of water supply through a municipal or community water supply, to meet the communities' human health needs.⁵⁸</u> <p><u>Advisory Notes</u></p> <p>(iv) Pursuant to s136(3) of the RMA, the transfer has no effect until written notice of the transfer is received by Hawkes Bay Regional Council. The HBRC will accept transfers via any website being managed for this purpose as satisfying this requirement^{129.31}</p> <p><u>(v) Section 136(5) of the RMA provides that when notification of the transfer has occurred, the permit, or that part of the permit transferred shall be deemed to be cancelled, and the permit or part transferred shall be deemed to be a new permit subject to the same conditions as the original permit.</u></p> <p><u>(vi) For the purpose of (i), the transfer of water from a municipal water supply or from individual abstractions to a municipal supply in order to expand municipal supplies to service new areas is not</u></p>		
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⁵⁸ HDC Submission 207.32, NCC Submission 63.30; Evidence of Annette Sweeney, paras 42-46.

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			<p>considered to be a change of use.⁵⁹</p> <p>(v)</p> <p>j. Note that Rules TANK 5, and 6 or 18 may be triggered as a result of a transfer activity.</p>		
<u>Insert new rule 62b</u>	<u>Permanent or temporary transfer of water in accordance with S136(2)(b)(i) of the RMA</u>	<u>Discretionary</u>	<u>a. The transfer is the whole or any part of the holder’s interest in the permit for taking and use of surface or groundwater that does not comply with Rule 62a</u>		

ADVISORY NOTE: Notifying transfers of water permits - Pursuant to section 136 of the RMA, the transfer of a water permit has no effect until written notice of the transfer has been received by the HBRC. In addition, section 136 also sets out the requirements for the transfer of a water permit in circumstances that do not comply with the rules above.

⁵⁹ **HDC Submission 207.33, NCC Submission 63.31; Evidence of Annette Sweeney, para 44.**

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6.8.2 Erection & Placement of Dams & Other Barrier Structures, & Damming of Water

Insert after heading

Rule 69 does not apply within the Tūtaekurī, Ahuriri, Ngaruroro and Karamū River catchments. Refer to Section 6.10 for the new Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchment rules for dams and damming.

Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
67 Dams, weirs & other barrier structures in rivers, lakes and artificial water – courses <small>150B</small> <i>Refer POL 79</i>	The erection or placement of any dam ⁴³ , weir or other barrier structure in, on, under, or over the bed of a river, lake and artificial watercourse, and: any associated damming or diversion of water, and any associated discharge of sediment; and any associated disturbance of the river or lake bed. <u>This permitted activity does not apply to the erection of dams on the mainstem of any river where it is</u>	Permitted⁴⁴	The catchment area of the <u>new</u> structure shall not exceed 50 hectares. The volume of water to be stored or retained by the <u>new</u> structure to spill level shall not exceed 20,000 m ³ . The height of the structure (as measured vertically from the downstream bed to the crest) shall be no greater than 4 m. A spillway shall be constructed to prevent the <u>new</u> structure being overtopped during storm events, unless the structure is designed to allow overtopping. The impounded water shall not encroach onto any property, nor impede any drainage system, beyond the subject property unless agreed to in writing by any affected property owners. Erection or placement of the structure shall not cause any erosion, scour or deposition beyond the area of erection or placement. The impounded water shall not cause any erosion or instability of bordering land. Within rivers and lakes, provision shall be made to maintain existing fish passage within the water body and, where the water body is permanently flowing, provision shall be made to maintain a residual flow immediately downstream of the structure of at least 1.2 l/min per hectare of catchment above the structure, except at times where such flow would not have		

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	<p><u>prohibited by</u> <u>Rule TANK 17</u></p>		<p>occurred prior to the construction of the structure.</p>		
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^{150B} Rule 67 does not apply to dams, weirs & other barrier structures in rivers, lakes and artificial watercourses associated with plantation forestry activities. Refer to the Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017

⁴³ Dams - Include stock water dams, Irrigation dams, fire-fighting dams and dams in artificial water courses.

⁴⁴ If Rule 67 cannot be complied with, then the activity is a discretionary activity under Rule 69.

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
			<p>i. Where the volume of water to be stored or retained by the structure to spill levels exceeds 10,000 m³ and where the structure is located within the catchment of a land drainage or flood control scheme area that is managed by a local authority exercising its powers, functions and duties under the Soil Conservation and River Control Act 1941, the Land Drainage Act 1908, or the Local Government Act 1974 the HBRC shall be informed about the erection or placement of the structure at least 15 working days prior to the commencement of works.</p> <p>j. There shall be no disturbance of any part of the bed covered by water from 1 May to 30 September (fish spawning season) except in relation to the erection of whitebait stands, maimai, and necessary access structures to these.</p> <p>k. In areas of fish spawning there shall be no disturbance of any part of the bed covered by water from 1 May to 30 September (fish spawning season) except in relation to the erection of whitebait stands, maimai, and necessary access structure to these.</p> <p>l. Conditions (a) to (d) do not apply to structures which are located in a land drainage or flood control area that is managed by a local authority exercising its powers, functions and duties under the Soil Conservation and Rivers Control Act 1941, the Land Drainage Act 1908 or the Local Government Act 1974.</p>		
68 Existing	Any existing damming of water	Controlled	a. The impounded water shall not encroach onto any property beyond the subject property, unless agreed to	a. Stability of the land bordering the dam.	Consent applications

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<p>damming of water in rivers and lakes <i>Refer POL 79</i></p>	<p>associated with a lawfully established dam⁴⁵, weir, or other barrier structure in, on, under, over the bed of a river, lake or artificial water course that is not provided for by Rule 67.</p>		<p>in writing by any affected property owners.</p>	<p>b. Residual downstream flow. c. Flood risk in the event of failure. d. Maintenance of structure. e. Duration of the consent. f. Review of consent conditions. g. Compliance monitoring.</p>	<p>will generally be considered without notification without the need to obtain the written approval of affected persons.</p>
<p>69 River & lake bed activities that are not expressly regulated by other rules <i>Refer POL 79</i></p>	<p>Any activity which cannot comply with any of the rules in section 6.8 of this Plan and which is not expressly regulated by other rules in this Plan. <u>This rule does not apply to rivers in the Tūtaekuri, Ahuriri, Ngaruroro and Karamū catchments (refer Rules TANK 13 – 17)</u></p>	<p>Discretionary</p>			

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⁴⁵ Dams - Include stock water dams, Irrigation dams, fire-fighting dams and dams in artificial water courses.

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>69 River & lake bed activities that are not expressly regulated by other rules <i>Refer POL 79</i></p>	<p>Any activity which cannot comply with any of the rules in section 6.8 of this Plan and which is not expressly regulated by other rules in this Plan. This rule does not apply to rivers in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments (refer Rules TANK 13 – 17)</p>	<p>Discretionary</p>			

Delete RRMP Rule 70 from PPC9 as no amendments have been made. This is a consequential amendment to 210.110

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Rule	Activity	Classification	Conditions/Standards/Terms	Matters for Control/Discretion	Non-notification
<p>71 Activities affecting river control & drainage schemes^{48,49} <i>Refer POL 79</i></p>	<p>Any of the following activities, where they are undertaken by persons other than the local authority or persons acting on their behalf, within a land drainage or flood control scheme area that is managed by a local authority exercising its powers, functions and duties under the Soil Conservation and Rivers Control Act 1941, the Land Drainage Act 1908, or the Local Government Act 1974:</p> <ul style="list-style-type: none"> • The introduction or planting of any plant including any tree in, on, or under the bed of any river, lake or artificial water course, or within 6 metres of the bed <u>except that this provision does not apply to rivers for riparian vegetation established to provide shade in the Karamū catchments.</u> • The erection of any building, fence or other structure in, on, or under the bed of any river, lake or artificial water course, or within 6 metres of the bed. • The deposition of any rock, shingle, earth, debris or other substance in, on, or under the bed of any river, lake or artificial water course, or within 6 metres of the bed. • The reclamation or drainage of the bed of any river, lake or artificial water course. • The undertaking of any other land disturbance activity which impedes access 	<p>Discretionary⁵ ¹</p>			

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	<p>to the bed of any river, lake or artificial water course, or within 6 metres of the bed.</p> <ul style="list-style-type: none"> The erection of any structure and the undertaking of any land disturbance activity which interferes with the integrity of any defence against water.⁵⁰ 				
<p><u>71A</u> <u>Activities affecting river control & drainage schemes^{48,49}</u></p>	<p><u>“ The introduction or planting of any plant including any tree in or on the bed of a river, lake or artificial watercourse or within 6 metres of the bed of any river within the Heretaunga Plains Flood Control and Drainage Scheme.</u></p>	<p><u>Permitted</u></p>	<p>f) <u>The planting complies with the planting design, including species, setbacks and density requirements specified in Hawke's Bay Regional Council's Water Way Planting Guide for the Heretaunga Plains Flood Control and Drainage Scheme (date)</u></p>		

⁴⁷ For the purpose of this Plan the term ‘wetland’ does NOT include:

- wet pasture land artificial wetlands used for wastewater or stormwater treatment
- farm dams and detention dams land drainage canals and drains
- reservoirs for firefighting, domestic or municipal water supply temporary ponded rainfall
- artificial wetlands.

⁴⁸ It is important to note that the Hawke’s Bay Regional Council owns much of the land within River Control and Drainage Schemes, and thus has landowner rights

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and responsibilities in relation to this land.

⁴⁹ Any activity permitted by Rules 64 and 65 is not subject to Rule 71.

⁵¹ The ongoing maintenance or repair of any structure authorized by a resource consent pursuant to Rule 71 is permitted pursuant to Rule 64.

⁵⁰ “Defence against water” includes stopbanks and their foundations.

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SCHEDULES

Insert the following new Schedules after Schedule 25

- Schedule 26
- ~~Schedule 27~~
- Schedule 28
- Schedule 29
- Schedule 30
- Schedule 31
- Schedule 32
- ~~Schedule 33~~
- Schedule 34A
- Schedule 34B
- Schedule 35
- Schedule 36

Schedules attached separately.

Chapter 9 Glossary of Terms Used

Insert or amend meanings for the following words and terms into the Glossary. Note that where a term is already included, its meaning is only changed in respect of the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments.

Actual and Reasonable in relation to applications to take and use water means;

- a) no more than the quantity specified on the permit due for renewal or any lesser amount applied for; and the least of either;
- b) the ~~maximum-average~~ ^{consequential} annual amount as measured by accurate water meter data in the ten years preceding ~~2 May 2020-1 August 2017 for groundwater takes in the Heretaunga Plains Water Management Unit or in the preceding ten years preceding the 2 May 2020 as applicable elsewhere~~^{82.4} if accurate water meter data is available. (If insufficient or no accurate data is available either clause a) or c) will apply)

or

- c) for irrigation takes, the quantity required to meet the modelled crop water demand for the irrigated area with an efficiency of application of no less than 80% as specified by the IRRICALC water demand model (if it is available for the crop and otherwise with an equivalent method), and to a 95% reliability of supply where the irrigated area is;
 - (i) no more than in the permit due for renewal, or any lesser amount applied for, and in the case of Heretaunga Plains ~~WGroundwater~~ Quantity Area Management Unit, is not more than the amount irrigated in the ten years preceding ~~2 May 2020-1 August 2017~~^{82.5}; and
 - (ii) evidence is supplied to demonstrate that the area has, and can continue to be, irrigated and the permit substantially given effect to.

~~**Affected stream** is one which the Stream Depletion Calculator identifies the greatest magnitude of stream depletion caused by that take (a take may cause stream depletion in more than one stream). The stream with the largest effect is the “affected stream”.~~^{210.52}

Allocation limit for surface water means the maximum quantity that is able to be allocated in water permits and abstracted for consumptive water use, expressed in litres per second and calculated as the average rate required to abstract the maximum weekly or 28 day volume allocated to each water permit and summed for all water permits in the applicable management unit ~~sum of weekly maximum water permit allocations for a river, or management zone averaged over one month and includes abstraction in Zone 1.~~^{129.40}

Allocation limit for Ggroundwater means the maximum quantity that is able to be allocated in water permits and abstracted during each year, expressed in cubic metres per year, and is calculated as the sum of maximum water permit allocations for the groundwater zone. Allocations for irrigation will be calculated on the basis of the irrigation period of November- May. The Heretaunga Plains Water Management Unit groundwater allocation limit will be addition to water taken and used for frost protection which is expressed as an instantaneous take in litres per second and calculated as the sum of water permit allocations.

Allocation limit for high flow takes means the maximum quantity that is able to be allocated in water permits and abstracted expressed in litres per second as an instantaneous flow and calculated as the sum of the instantaneous flow allocations in water permits for a river or management zone.

~~**Applicable stream flow maintenance scheme** is a stream flow maintenance scheme developed to maintain river flows in an affected stream when the trigger flow is reached. If no scheme is feasible, then there is no applicable scheme.~~^{210.152}

Aquifer testing means taking and using groundwater at a constant rate not exceeding 3 consecutive days in any 28 day period to test attributes and characteristics of an aquifer and/or groundwater. Those characteristics may include transmissivity, storativity and chemical composition. It does not include the taking or use of groundwater where a device is connected to that might result in variability of water flow.

Arable land use is as defined by Part 9 of the RMA.

The use of land to grow any of the following crops for harvest:

(a) grain cereal, legumes, or pulse grain

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(b) herbage seed

(c) oilseed

(d) maize grain, maize silage, cereal silage, or mangels

(e) crops grown for seed multiplication

(f) a crop prescribed in regulations made under section 217M(1)(a)^{consequential}.

Consumptive water use means any use of fresh water that alters the flows and or levels in a water body on either a temporary or permanent basis, but excludes any non-consumptive use where:

- a) the same amount of water is returned to the same water body at or near the location from which it was taken; and
- b) there is no significant delay between the taking and returning of the water.

For the purposes of allocation limits and specified rationing provisions in the rules, the term 'consumptive use' does not apply to water used in hydro-electric power generation or water use or diversions which substantially return the water used to the same water body.^{129.42}

Essential human health needs means the proportion of water supplied to residential and other end users for essential human health needs and will be calculated at a rate of 200l litres per person per day (l/p/d). (Note this is from MfE Guidance being the sum of Drinking 2 l/p/d, Cooking and Food 3 l/p/d, Toilet flushing 80 l/p/d, Bathing and Showering 100l/sec, 23% of washing needs 15 l/p/day, Total 200l/p/d).

Farm Environment Plan means a plan that has been prepared in accordance with the requirements of Schedule 30C by a person with the professional qualifications necessary to prepare such a plan which is implemented by a landowner or on behalf of a landowner.

Farm is as defined by Part 9 of the RMA. A farm where all or part of the farm is—

(a) arable land use; or

(b) horticultural land use; or

(c) pastoral land use; or

(d) other agricultural land use prescribed in regulations made under section 217M(1)(b); or

(e) any combination of the above^{consequential}.

Farming Enterprise – as defined in the RMMP but to include Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments.

Farm Operator is as defined by Part 9 of the RMA. The person with ultimate responsibility for the operation of a farm^{consequential}.

Forestry Management Plan means a harvest plan or management plan as provided for in the National Environmental Standards for Plantation Forestry; 2017.

Fre³ means the frequency of floods that are three times above the median flow for a river as determined by the Regional Council records.

Hapū (In Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments) means kinship group, section of a large kinship group and the primary political unit in traditional Maori society.

Heretaunga Plains Groundwater Model is a numerical model for the waters of the Heretaunga Plains and meets the requirements for artesian head and stochastic uncertainty analysis as provided for in Schedule 35

Horticultural land use is as defined by Part 9 of the RMA. The use of land to grow food or beverage crops for human consumption (other than arable crops), or flowers for commercial supply^{consequential}.

Indigenous vegetation for the purposes of rules regulating removal of vegetation means: means any area of naturally occurring vegetation where the cover of indigenous plants is the same as or greater than exotic plants but excludes any indigenous vegetation which grows beneath plantation forestry.

Infrastructure Leakage Index is a performance indicator of real (physical) water loss from a water supply network of water distribution developed by the International Water Association and included in the New

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Zealand BenchlossNZ manual and which outlines performance indicators for NZ.

*** PLACEHOLDER* for an irrigation efficiency definition as per Section 15.6.17 of the Hearing Report.**

Kaitiakitanga; add “and in Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments can only be passed down through generations via whakapapa”

Ki uta ki tai – means The movement of water from mountains to sea, through the landscape and the numerous interactions it may have on its journey. Ki uta ki tai acknowledges the connections between the atmosphere, surface water, groundwater, land use, water quality, water quantity, and the coast. It also acknowledges the connections between people and communities, people and the land, and people and water.

Mahinga Kai insert “ and in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments mahinga kai generally refers to indigenous freshwater species that have traditionally been used as food, tools, or other resources. Mahinga kai provide food for the people of the rohe and these species give an indication of the overall health of the catchment. For this value, kai would be safe to harvest and eat and knowledge transfer is present (intergenerational harvest). In freshwater management units that are highly valued for providing mahinga kai, the desired species are plentiful enough for long- term harvest and the range of desired species is present across all life stages.

Māori means the aboriginal people of New Zealand that migrated from Hawaiki in successive waves of migration settling throughout the Pacific.

Marae A marae is a fenced-in complex of carved buildings and grounds that belongs to a particular iwi (tribe), hapū (sub tribe) or whānau (family). Māori people see their marae as tūrangawaewae - their place to stand and belong. Marae are places of refuge for Māori and provide facilities to enable Māori to continue with our own way of life within the total structure of their own terms and values. The marae is an institution from classical Māori society that has survived the impact of western civilisation.

Matauranga Māori means cultural knowledge of the natural world.

Mauri Insert “and in the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments Mauri is a spiritual value that expresses itself within the natural world in a particular manner. In the Māori world view, all-natural things have Mauri, both animate and inanimate. Within freshwater environments, the manifestation of healthy mauri is abundant and healthy water and aquatic resources, including the fish, insects, birds and plants that interact with the water.”

Nitrogen loss rate means the modelled nitrogen loss rate for a property using Overseer (or similar alternative nutrient budget model approved by the Hawke's Bay Regional Council)

Nitrogen loss target means the modelled nitrogen loss rate using Overseer (or similar alternative nutrient budget model approved by the Hawke's Bay Regional Council) for a property which;

- a) adopts all industry good practice measures for managing nutrient losses and/or
- b) adopts additional mitigation measures to meet applicable water quality targets or objectives for dissolved nutrients.

The Nitrogen loss rate and the nitrogen loss target may be the same for any property. (The effects of some nutrient mitigation measures cannot be modelled within Overseer. This provision also reflects that some properties are already adopting good industry practice – but that this may change over time) ^{132.111, 120.111, 132.138, 132.111, 120.111, 132.138, 120.118, 123.146, 210.138, 135.61)}

Papakāinga means a group of houses of three or more, developed on Maori land that has multiple-owners.

Pastoral land use is as defined by Part 9 of the RMA. The use of land for the grazing of livestock. ^{consequential}

Registered Drinking Water Supply (or Supplies) means a drinking water supply that is recorded in the drinking water register maintained by the Chief Executive of the Ministry of Health (the Director-General) under section 69J of the Health Act 1956 that provides no fewer than 25 people with drinking water for not less than 60 days in each calendar year **or the equivalent definition in any subsequent enactment that replaces that**

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Act.⁶⁰

River - defined as in the RMA. This will be interpreted to align with the implementation for Tukituki PC and applies to all flowing permanent and intermittent rivers/creeks, lakes and wetlands. An intermittent river or creek is a waterway that periodically flows and has a defined river bed that is predominantly un-vegetated and comprised of silt, sand, gravel and similar.

Source Protection Zone (SPZ) means an area surrounding the point of take for a registered drinking water supply that provides no fewer than 501 people with drinking water for not less than 60 days in each calendar year where plan provisions apply and includes any provisional Source Protection Zone and is defined by methods specified in Schedule 35 (information about the location of SPZs can be found on the Council's webpage).

Source Protection Extent is an area surrounding the point of take for a registered drinking water supply that provides no less than 25 and no more than 500 people with drinking water for not less than 60 days in each calendar year and includes any Provisional Source Protection Extent and is defined by methods specified in Schedule 35 (information about the location of these areas can be found on the Council's webpage).

Stream Depletion Calculator is a publically available tool that the Haawke's Bay Regional Council has developed to quantify the stream depleting effects of groundwater abstractions in the Heretaunga Plains. The calculator is based on the Heretaunga numerical groundwater model, but enables very rapid stream depletion assessments.

TANK Industry Programme or a TANK Catchment Collective is a group of people meeting the requirements of Schedule 30A and which has a Catchment Collective or Industry Programme that has been prepared in accordance with the requirements of Schedule 30B by a person with the professional qualifications necessary to prepare such a Programme

Waka ama is a New Zealand term for the traditional sport used in the Pacific of outrigger canoeing.

⁶⁰ [HDC Submission 207.37 \(no NCC submission\): Evidence of Annette Sweeney, para 80.](#)

Consequential Amendments to Chapter 5 of the Regional Resource Management Plan

As a consequence of the new chapters 5.10 and 6.10, amendments have been made to the following parts of Chapter 5 of the operative plan:

Chapter 5.4 Surface Water Quality. The Tūtaekurī, Ahuriri, Ngaruroro and Karamū River Catchments are excluded from this chapter.

Chapter 5.5 Surface Water Quantity. The Tūtaekurī, Ahuriri, Ngaruroro and Karamū River Catchments are excluded from this chapter.

Chapter 5.6 Groundwater Quality; The Tūtaekurī, Ahuriri, Ngaruroro and Karamū River Catchments are excluded from this chapter.

Chapter 5.7 Groundwater Quantity

The amendments listed above are shown in **bold** text with new insertions underlined and with deletions shown as ~~bold strikethrough~~ over the pages that follow. (Note; Submissions can only be made in respect of the amended text).

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5.4 Surface Water Quality

Insert under heading

The provisions of Chapter 5.4 do not apply within the Tūtaekurī, Ahuriri, Ngaruroro and Karamū catchments.

Table 8. Environmental Guidelines – Surface Water Quality Part II - Guidelines that Apply to Specific Catchments

Catchment Area	Faecal Coliforms (cfu/100 ml)	Suspended Solids (mg/l)
Aropoanui River	200	50
Clive Rivers and tributaries	200	10
Esk River	200	50
Ikanui Stream	200	50
Kopuawhara Stream	200	50
Mangakuri Stream	200	50
Maraetotara River	200	50
Mohaka River	50	10
Ngaruroro River upstream of Fernhill Bridge	50	10
Ngaruroro River between Fernhill Bridge and Expressway Bridge	100	25
Ngaruroro River downstream of the Expressway Bridge	150	25
Opoutama Stream	200	50
Porangahau River	200	50
Puhokio Stream	200	50
Taharua Stream	50	10
Tutaekuri River upstream of Redelyffe Bridge	50	10
Tutaekuri River between Redelyffe Bridge and SH50	100	25
Tutaekuri River downstream of the Expressway Bridge	150	25
Waingonoro Stream	200	50
Waipatiki Stream	200	50

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Waipuka Stream	200	50
Wairoa River and tributaries upstream of Frasertown	100	25
Wairoa River at and downstream of Frasertown	200	25

These guidelines apply after reasonable mixing and disregarding the effect of any natural perturbations that may affect the water body, as set out in Policy 72.

* The figures in Table 8 represent concentrations of contaminants in the water body that should not be exceeded after reasonable mixing.

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POL 72A DISCHARGE PERMITS – Matters for consideration in catchments other than the Tukituki River catchment

When considering any application for a discharge the consent authority must have regard to the following matters:

- (a) the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water and
 - (b) the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.
- (2) When considering any application for a discharge the consent authority must have regard to the following matters:
- (a) the extent to which the discharge would avoid contamination that will have an adverse effect on the health of the people and communities as affected by their secondary contact with fresh water; and
 - (b) the extent to which it is feasible and dependable that any more than minor adverse effect on the health of the people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided.

Explanation and Reasons

5.4.7A Policy 72A was inserted in accordance with the direction stated in Policy A4 of the National Policy Statement for Freshwater Management 2014 and took effect on 1 August 2014

5.5 Surface Water Quantity

Insert under heading

The provisions of Chapter 5.5 do not apply within the Tūtaekurī, Ahuriri, Ngaruroro and Karamū River catchments

POL 74 IMPLEMENTATION OF ENVIRONMENTAL GUIDELINES - SURFACE WATER QUANTITY

- (a) **Resource Allocation:** To define the allocatable volume as being the difference between the summer 7- day Q95 and the minimum flow.
- (b) To implement the environmental guidelines for surface water quantity predominantly in the process of making decisions on **resource consents** in accordance with section 104 (1)(b) of the RMA, through Table 9.

⁵⁴ NOTE 1: Policy 72A applies to the following discharges (including a diffuse discharge by any person or animal):

- (a) a new discharge or
- (b) a change or increase in any discharge –

of any contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.

NOTE 2: Pol 72A(1) does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.

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Table 9. Minimum Flow and Allocatable Volumes for Specified Rivers

River name	Minimum Flow Site Name	Minimum Flow (l/s)	Allocatable Volume (m³/week)	Map Reference
Awanui Stream	At The Flume	120	0	V21:357613
Awanui Stream	At Paki Paki-Culvert	35	0	V21:351608
Esk River	At Shingle Works	1,400	355,018	V20:432945
Esk River	At SH2	1,000		V20:438939
Irongate Stream	At Clarks Weir	100	0	V21:367666
Karamū River	At Floodgates	1,100	18,023	V21:427708
Karewarewa-River	At Turamoe-Road	75	-	V21:341622
Louisa Stream	At Te Aute-Road	30	0	V21:410625
Mangateretere-Stream	At Napier Road	100	0	V21:438659
Maraekakaho-River	At Taits Road	100	5,443	V21:170668
Maraetotara-River	At Te Awanga-Bridge	220	30,971	V21:520661
Ngaruroro River	At Fernhill-Bridge	2,400	956,189	V21:330729
Nuhaka River	At Valley Road	80	41,731	X19:225329
Ongaru Drain	Wenley Road	5	0	V21:234653
Pouhokio Stream	At Allens Bridge	80	-	V22:498441
Poukawa Inflow	Site No. 1 (d/s-dam)	10	0	V22:282504
Poukawa Inflow	Site No. 1a (u/s-dam)	10	0	V22:285502
Poukawa Inflow	Site No. 6	3	0	V22:266478
Poukawa Stream	At Douglas-Road	20	0	V22:298533

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Raupare Stream	At Ormond Road	300	83,844	V21:398713
Te Waikaha Stream	At Mutiny Road	25	-	V22:361572
Trib. of Kauhauroa Stream	(Taylors)	5	0	X19:970397
Tutaekuri River	At Puketapu	2,000	928,972	V21:357812
Tutaekuri-Waimate	At Goods Bridge	1,200	367,114	V21:384751
Waimaunu Stream	At Duncans	10	15,304	X19:229300

POL 74A Water Permits – Matters for consideration in catchments other than the Tukituki River catchment and the Tūtaekuri, Ahuriri, Ngaruroro and Karamū River catchments

- (1) When considering any application the consent authority must have regard to the following matters:
- (a) the extent to which the change would adversely affect safeguarding the life-supporting capacity of fresh water and of any associated ecosystem and
 - (b) the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.⁵⁵

⁵⁵ NOTE 1: Pol 74A applies to:

(a) any new activity and

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Explanation and Reasons

- □ Policy 74A was inserted in accordance with the direction stated in Policy B7 of the National Policy Statement for Freshwater Management 2014 and took effect from 1 August 2014

(b) any change in the character, intensity or scale of any established activity –

that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity (or in the case of a change in an intermittent or seasonal activity, compared to that on the last occasion on which the activity was carried out).

NOTE 2: Pol 74A does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management took effect on 1 July 2011.

5.6 Groundwater Quality

Insert after Heading

The provisions of Chapter 5.6 do not apply within the Tūtaekurī, Ahuriri, Ngaruroro and Karamū River catchments

OBJECTIVES

OBJ 42 No degradation of existing groundwater quality in aquifers ~~in the Heretaunga Plains aquifer system.~~

POLICIES

POL 75 ENVIRONMENTAL GUIDELINES - GROUNDWATER QUALITY

- Other than in the productive aquifer systems in the Tukituki River catchment **and the Tūtaekurī, Ahuriri, Ngaruroro and Karamū River catchments**, to manage the effects of activities affecting the quality of groundwater in accordance with the environmental guidelines set out in Table 10.

Table 10. Environmental Guidelines – Groundwater Quality

CONFINED, PRODUCTIVE AQUIFERS IN THE HERETAUNGA-PLAINS AQUIFER SYSTEM (as shown in Schedule IV)	
1. No degradation	There should be no degradation of existing water quality.
OTHER PRODUCTIVE AQUIFERS	
1. Human consumption	The quality of groundwater should meet the “Drinking Water Quality Standards for New Zealand” (Ministry of Health, 1995) without treatment, or after treatment where this is necessary because of the natural water quality.
2. Irrigation	The quality of groundwater should meet the guidelines for irrigation water contained in the “Australian Water Quality Guidelines for Fresh and Marine Waters” (Australian and New Zealand Environment and Conservation Council, 1998) without treatment, or after filtration where this is necessary because of the natural water quality.

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POL 76A Discharge Permits – Matters for consideration in catchments other than the Tukituki River catchment and the Tūtaekurī, Ahuriri, Ngaruroro and Karamū River catchments⁵⁶

- (1) When considering any application for a discharge the consent authority must have regard to the following matters:
- (a) the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water and
 - (b) the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.
- (2) When considering any application for a discharge the consent authority must have regard to the following matters:
- (a) the extent to which the discharge would avoid contamination that will have an adverse effect on the health of the people and communities as affected by their secondary contact with fresh water; and
 - (b) the extent to which it is feasible and dependable that any more than minor adverse effect on the health of the people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided.

Explanation and Reasons

5.6.5A Policy 76A was inserted in accordance with the direction stated in Policy A4 of the National Policy Statement for Freshwater Management 2014 and took effect on 1 August 2014.

⁵⁶ NOTE 1: Policy 76A applies to the following discharges (including a diffuse discharge by any person or animal):

- (a) a new discharge or
- (b) a change or increase in any discharge –
of any contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.

NOTE 2: Pol 76A(1) does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.

NOTE 3: Pol 76A(2) does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2014 took effect on 1 August 2014.

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5.7 Groundwater Quantity

Insert after the heading

The provisions of Chapter 5.7 do not apply within the Tūtaekurī, Ahuriri, Ngaruroro and Karamū River catchments

POL 78A Water Permits – Matters for consideration in catchments other than the Tukituki River catchment and the Tūtaekurī, Ahuriri, Ngaruroro and Karamū River Catchments

- (1) When considering any application the consent authority must have regard to the following matters:
- (a) the extent to which the change would adversely affect safeguarding the life-supporting capacity of fresh water and of any associated ecosystem and
 - (b) the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.⁵⁷

Explanation and Reasons

E 7.4

⁵⁷ NOTE 1: Pol 78A applies to:

- (a) any new activity and
- (b) any change in the character, intensity or scale of any established activity –

that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity (or in the case of a change in an intermittent or seasonal activity, compared to that on the last occasion on which the activity was carried out).

NOTE 2: Pol 78A does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management took effect on 1 July 2011.

Before an Independent Hearing Panel

In the matter of the Resource Management Act 1991

And

In the matter of Proposed Plan Change 9 to the Hawke's Bay Regional Plan
(Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments) (**PPC9**)

Statement of evidence by Brett Chapman on behalf of Hastings District Council

Dated 11 May 2021

INTRODUCTION

1. My name is Brett Chapman and I have been employed since August 2006 by the Hastings District Council (**HDC**) in the position of 3 Waters Manager. I am primarily responsible for the Council's 'three waters' services, that is drinking water, stormwater and wastewater services.
2. My role includes responsibility for the delivery of 3 waters services across the Hastings District including treatment, distribution, collection and disposal. I am also a key advisor to Council on strategic issues that could impact on our ability to continue to operate and deliver 3 waters services, ensuring that we minimise the risk to public health and safety, continue to meet our stated levels of service and protect the environment, both now and in the future.
3. This evidence is given on behalf of HDC in relation to Plan Change 9 to the Hawke's Bay Regional Resource Management Plan (TANK Plan Change) (**PC9**) being promoted by Hawke's Bay Regional Council (**HBRC**).
4. My involvement with the TANK Plan Change has been primarily as a member of the Joint Drinking Water Group that reports to the HB Drinking Water Governance Joint Committee on matters relating to drinking water in the Hawkes Bay region.

CODE OF CONDUCT

5. While my evidence is not strictly expert evidence, I nevertheless confirm that I have read the Expert Witnesses Code of Conduct contained in the Environment Court of New Zealand Practice Note 2014, and I have taken that into account in the preparation of my evidence.

SCOPE OF EVIDENCE

6. My evidence addresses the following matters:
 - (a) The obligations of a Drinking Water Supplier
 - (b) The Water Services Bill, including Source Water Risk Management
 - (c) An overview of the Hastings Water Supply
 - (d) HDC's approach to Water Conservation and Demand
 - (e) Source Protection Zones
 - (f) HDC's management of stormwater

OBLIGATIONS OF A DRINKING WATER SUPPLIER

7. The Health Act 1956, as amended by the Health (Drinking Water) Amendment Act 2007, sets out the main duties and obligations for drinking water suppliers that serve 25 people or more for more than 60 days per year. The Act requires the following:
 - (a) Drinking-water suppliers must take all practicable steps to ensure they provide an adequate supply of drinking-water that complies with the New Zealand Drinking-Water Standards.
 - (b) Drinking-water suppliers must develop and implement water safety plans.
 - (c) Drinking-water suppliers must take reasonable steps to contribute to the protection from contamination of sources from which they obtain drinking-water.
 - (d) Officers appointed by the Director-General of Health are to act as drinking-water assessors to determine compliance with the Act and the drinking-water standards.

- (e) Record keeping and publication of information about compliance is required.
- (f) Provides for the declaration and management of a drinking-water emergency.
- (g) Provides for penalties for non-compliance.

8. Specifically, within the Act:

69S Duty of suppliers in relation to provision of drinking water

(1) Every networked supplier, bulk supplier, and water carrier must take all practicable steps to ensure that an adequate supply of drinking water is provided to each point of supply to which that supplier supplies drinking water.

69G Interpretation defines an ‘adequate supply’ as;

adequate supply, in relation to the drinking water supplied to a property, means either—

- (a) the minimum quantity of drinking water that is required by the occupants of that property, on an ongoing basis, for their ordinary domestic and food preparation use and sanitary needs; or
- (b) if regulations have been made under section 69ZZY(1)(a) prescribing the quantity of drinking water, or a formula for determining the quantity of drinking water, that is an adequate supply to a property, the amount specified in, or calculated according to the formula set out in, those regulations

9. The Local Government Act 2002 also imposes obligations on Local government organisations that provide water services. These include the obligation to maintain water services to communities within its district (Subpart 2, s 130) and s 193(1) which provides powers to restrict water supply to a person’s land or building for offences or failures to comply with a bylaw. In doing so the water supplier cannot create unsanitary conditions and is subject to section 69S of the Health Act 1956 which requires the water supplier to ensure an adequate supply.

WATER SERVICES BILL

10. The Water Services Bill will repeal Part 2A of the Health Act 1956 and replace it with a standalone Act to regulate drinking water. There are also amendments to the Local Government Act 2002 and amendments to other Acts, including a discrete amendment to the Resource Management Act 1991.

11. The Bill is a key component of the Government’s broader package of reforms to address failures in the current regulatory system following the Havelock North

Drinking Water Inquiry. The Bill provides a regulatory framework to implement the 6 fundamental principles of drinking water safety which are:

- (a) A high standard of care must be embraced in relation to drinking water.
- (b) Protection of source water is of paramount importance.
- (c) Multiple barriers against contamination of drinking water must be maintained.
- (d) Change precedes contamination of drinking water and must never be ignored.
- (e) Suppliers must own the safety of drinking water.
- (f) A preventive risk management approach must be applied in relation to drinking water.

12. The Bill imposes duties on drinking water suppliers and now extends to all drinking water suppliers other than domestic self-suppliers. The Bill includes duties to:

- (a) Provide safe drinking water and meet drinking water standards, along with clear obligations to act when drinking water is not safe or fails to meet standards.
- (b) Ensure that there is a sufficient quantity of drinking water to support the ordinary needs of consumers, with clear obligations to act where supply is interrupted or restricted for any reason.
- (c) Register drinking water supplies with Taumata Arowai, and keep essential details relating to supplies updated each year.
- (d) Have a drinking water safety plan that contains a multi-barrier approach to drinking water safety.
- (e) Notify Taumata Arowai and take action where there are risks to public health arising from drinking water, breaches of drinking water standards, or other significant risk events.

Source Water Risk Management

13. The Bill proposes new arrangements relating to sources of drinking water based on a preventative risk management approach and specific requirements for the flow of

information between local authorities, drinking water suppliers and Taumata Arowai (the Water Services Regulator).

14. Key measures include:
 - (a) Drinking water suppliers must have a source water risk management plan, which identifies the risks to a source of drinking water and manages, controls, or eliminates those risks as part of a drinking water safety plan.
 - (b) Local authorities must contribute to source water risk management plans by sharing information about risks and undertaking actions to address them on behalf of a drinking water supplier.
 - (c) Drinking water suppliers must monitor source water quality, and regional councils must assess the effectiveness of regulatory and non-regulatory interventions relating to source water every 3 years.
 - (d) A new provision in the Resource Management Act 1991 to require consent authorities to have regard to risks, or potential risks, to source water when considering applications for resource consents.
15. Section 25 of the Bill includes a duty to provide sufficient quantity of drinking water be provided to support the ordinary drinking water needs of consumers at the point of supply or for the application of compliance rules prescribing the quantity of drinking water needed (e.g. when restrictions are imposed).
16. The Water Services Bill also includes a requirement for all persons who perform or exercise functions, powers and duties under the legislation to give effect to Te Mana o te Wai. Taumata Arowai will, as part of its governance arrangements, be required to have a Maori Advisory Group to develop and maintain a framework for providing advice and guidance on the interpretation and principles of Te Mana o te Wai as they relate to the objectives, function and purpose of Taumata Arowai.
17. The Bill contains new responsibilities for territorial authorities to ensure that their communities continue to have access to drinking water, understand the risks to ongoing access, and plan to ensure that services continue to be available.
18. The Bill also places new responsibilities on territorial authorities when supplies fail or are at risk of failing. These provisions recognise the role that territorial authorities

play in providing drinking water to their communities, and are contained in an amendment to the Local Government Act 2002 that will:

- (a) Require territorial authorities to assess every 3 years the access that communities in their district have to drinking water services, and consider its implications for local government planning requirements.
- (b) require territorial authorities to work with a supplier, consumers of a supply, and Taumata Arowai to find a solution if drinking water services fail, or are at risk of failing, and ensure that consumers continue to have access to drinking water services – whether provided by the territorial authority itself, or by another supplier.

- 19. The Water Services Bill had its first reading on 8 December 2020 and is currently before the Health Select Committee. The Bill is to be reported by 11 August 2021.
- 20. On 29 March 2021, the HB Drinking Water Joint Working Group presented a submission on the Bill. This submission included support for the establishment of Taumata Arowai and the substantive legislation to guide the provision of safe drinking water for New Zealanders and made recommendations that will further reinforce the regulatory provisions for managing sources of drinking water including Source Water Risk Management Plans.

OVERVIEW OF THE HASTINGS WATER SUPPLY

- 21. The Hastings Urban Water Supply is owned and operated by HDC. The population served by the supply is estimated to be 64,764 people making this a large drinking-water supply under the Health (Drinking Water) Amendment Act 2007.
- 22. The majority of the raw water for the Hastings Urban Water Supply is sourced from the Heretaunga Plains Aquifer system with only Brookvale sourcing from the Te Mata Aquifer. The groundwater can be abstracted from a total of 10 bores at 5 locations: Portsmouth Road (1), Wilson Road (1), Frimley Park (2), Eastbourne Street (5), and Brookvale Road (1).

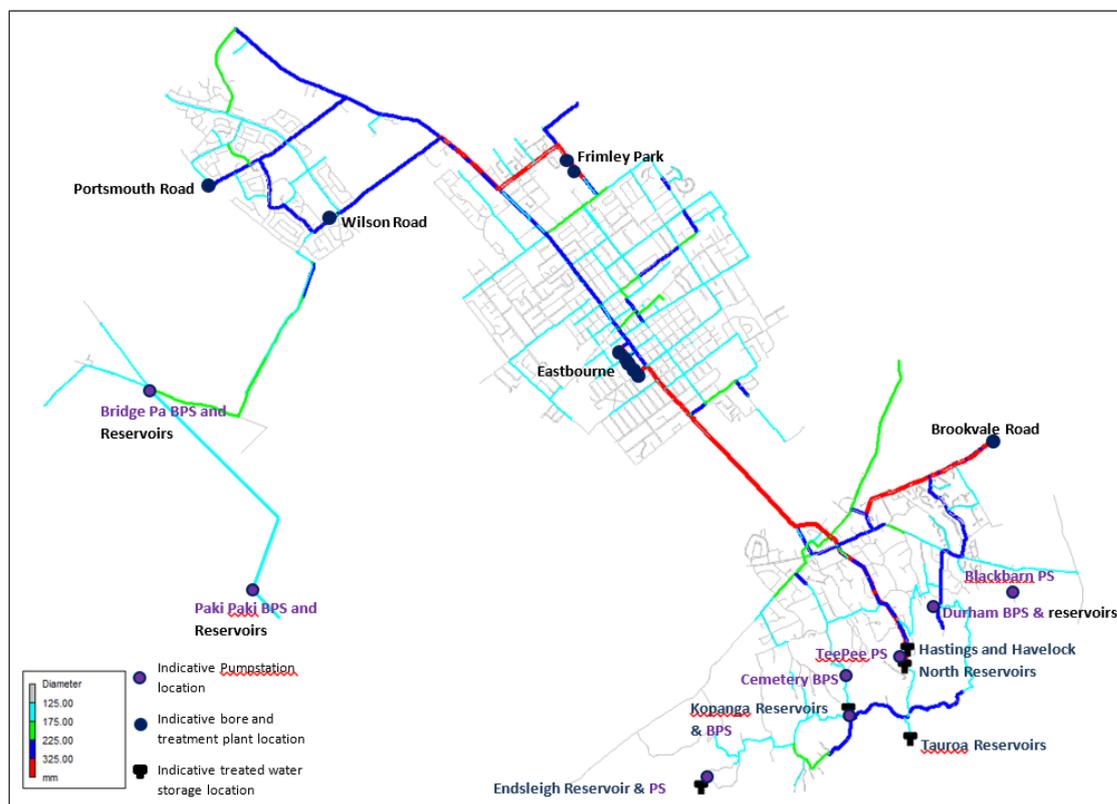
23. The following Table lists the current bore characteristics and consented abstraction.

TABLE 1 HASTINGS URBAN WATER SUPPLY ABSTRACTION BORES

Bore	WINZ Code	HBRC Bore Ref.	Bore Diameter (mm)	Bore Depth (m BGL)	Screen Interval(s) (m BGL)	Consent – Max. Instantaneous Abstraction
Brookvale	1	G02201	4151	35.0	15.5 – 20.0 22.0 – 26.5	100 L/s ¹
Eastbourne	1	G02194	15588	250	64.9 – 72.1	560 L/s ²
	2	G02195	766	250	58.8 – 61.9 67.4 – 70.4	
	3	G02196	1171	250	60.0 – 62.5 67.5 – 72.5	
	4	G02197	1302	250	59.4 – 72.3	
	5	G02198	439	250	69.4 – 76.4	
Frimley Park	1	G00076	130	250	63.4	480 L/s ²
	2	G02199	16167	300	67.5	
Portsmouth	G00782	3253	250	75.0	37.0 – 40.0 40.9 – 43.9 45.0 – 48.0	120 L/s ²
Wilson Road	G03054	16664	300	48.2	40.0 – 47.0	80L/s ²

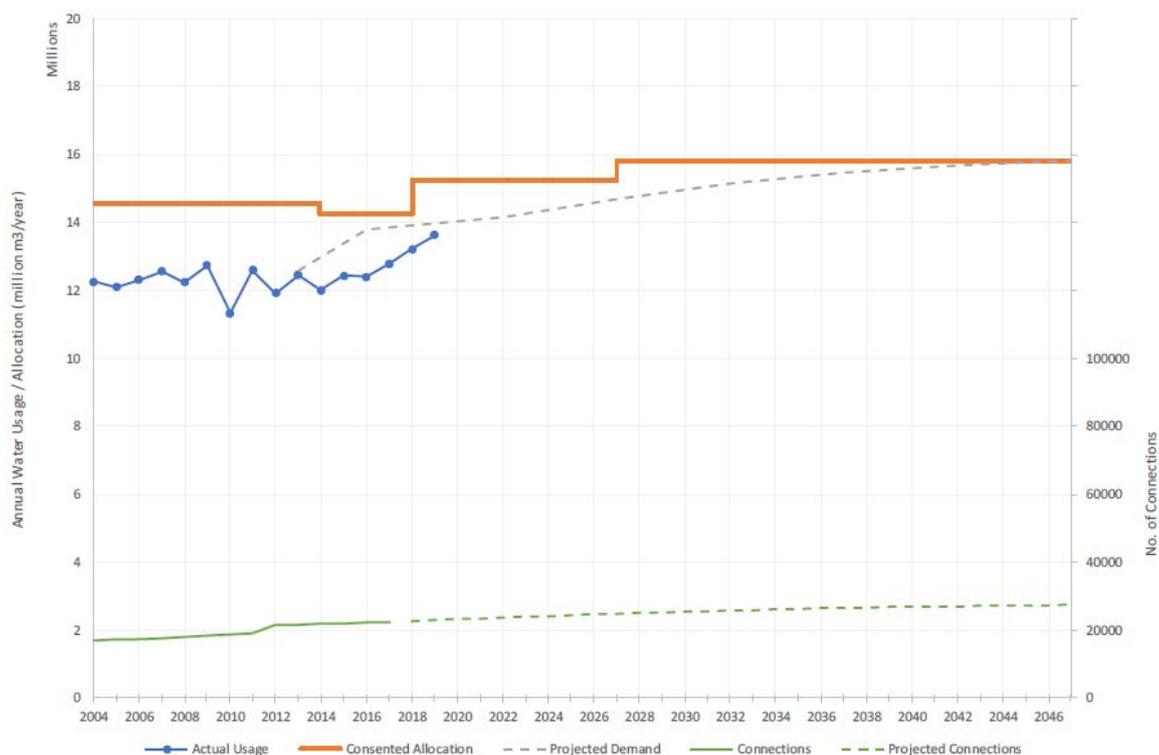
24. Figure 1 shows the extent of the Hastings water supply which includes the urban areas of Hastings, Havelock North, Flaxmere, and the small communities of Bridge Pa and Paki Paki.

FIGURE 1 LAYOUT OF THE HASTINGS URBAN WATER SUPPLY



25. The Portsmouth, Wilson Road, Frimley and Eastbourne bores abstract from the Heretaunga Plains aquifer system. The Portsmouth bore is located within the unconfined area of the aquifer and the Wilson Road bore is located within the transition zone as the aquifer becomes confined. The Frimley and Eastbourne bore fields are both located within the confined area of the aquifer and exhibit flowing artesian conditions.
26. The Hastings water supply operates under resource consent WP120036Ta which was granted on 10 June 2014 with an expiry date of 31 May 2047. The consent includes for abstraction from 14 bores with various abstraction rates and a combined annual take of 15,800,000 cubic metres. The consent includes a stepped allocation process as follows:
- | | |
|---------------------------|---|
| Up to 30 June 2018 | not to exceed 14,250,000 m ³ |
| Up to 30 June 2027 | not to exceed 15,250,000 m ³ |
| To expiry on 30 June 2047 | not to exceed 15,800,000 m ³ |
27. The rationale behind the stepped allocation was to provide for growth as projected in the 2010 Heretaunga Plains Urban Development Strategy (HPUDS) whilst remaining flexible in the allocation approach if actual growth exceeded or was below the projections, and to consolidate all of the Council bores that supply water into the Hastings, Flaxmere, Havelock North, Bridge Pa and Paki Paki communities.
28. Figure 2 below, which was last updated in 2020, compares annual consumption against the stepped allocation. Between 2014 – 2018 there was a decline in the consented water allocation use, which I discuss further at Figure 5 and paragraph 30.
29. The increasing trend over the last 5 years is consistent with growth and demand trends within the Hastings community serviced from the water supply. Of note is that this demand includes extending the water supply to Bridge Pa and Paki Paki.

FIGURE 2 CONSENT ALLOCATION AND ACTUAL WATER USE



30. In addition to bores in Hastings and Flaxmere, the Hastings water supply has included two separately consented abstractions:
- (a) 1,040,000 m³ per year from a bore located in Napier Rd Havelock North (originally expiring in 2022). This bore which drew water from the Heretaunga Plains aquifer was decommissioned in 2015 and the consent handed in.
 - (b) 5,266,612m³ per year from the Brookvale Rd bores (expired in 2018) which extract water from the Te Mata aquifer. Post the Havelock North contamination event in 2016, two of the three bores at this location have been decommissioned with only Brookvale bore 3 remaining in operation at a significantly reduced take.
31. In summary, the allocations granted in 2014 accounted for the Napier Rd bore being decommissioned and included capacity for the Brookvale consent to be substantially reduced or abandoned. The net result is that the Hastings water supply total allocation has been significantly reduced by approximately 6 million cubic metres annually since 2014.

WATER CONSERVATION AND DEMAND MANAGEMENT

32. Since 2013, HDC has been operating a Water Conservation and Demand Management Strategy (**WC&DMS**) which sets out HDC's strategic direction and commitment to a range of measures to achieve an efficient use of water and thereby minimise the environmental effects of abstraction on surface and groundwater resources. This strategy has been developed to meet conditions contained in the specific water permits but with the intention that it serves as an over-arching document for all of HDC's water supplies as further reviews take place.
33. The WC&DMS defines efficient use of water as follows:
- (a) All groundwater abstractions meet the RRMP's definition of an efficient groundwater take.
 - (b) The water supply networks (being HDC owned and controlled infrastructure up to the point of supply) are managed so that the extent of water loss is known within acceptable confidence levels, and measures are taken to reduce water losses where it is cost effective to do so and the levels of service are able to be met.
 - (c) Use of water by HDC is measured and, where comparable use data is available, HDC use is similar to comparable communities.
34. The above definitions refer to matters over which HDC has direct control and in evaluating efficient use across the Hastings water supply. These measures include the integration of water conservation and efficiency measures into our planning and engineering controls, managing the assets to maximise efficiency and ensuring water use is appropriately managed using demand management initiatives.
35. A summary of the initiatives undertaken by HDC include:
- (a) Annual water restriction and education programme from 1 November to 31 March.
 - (b) Metering of all non-domestic water users.
 - (c) Representative metering of domestic users to establish household usage.
 - (d) Implementation of 5 pressure reduced areas (see Figure 4 below).

- (e) Increased renewals programme for targeting end of life assets (mains and connections).
- (f) Investigation of smart metering opportunities.
- (g) Pressure reduction across the entire Hastings water supply (for completion end 2022).
- (h) Leakage management and monitoring.
- (i) Reducing leakage to 15% over the next 20 years (ILI of <5).

FIGURE 3 BENEFITS ACHIEVED FROM PMAS

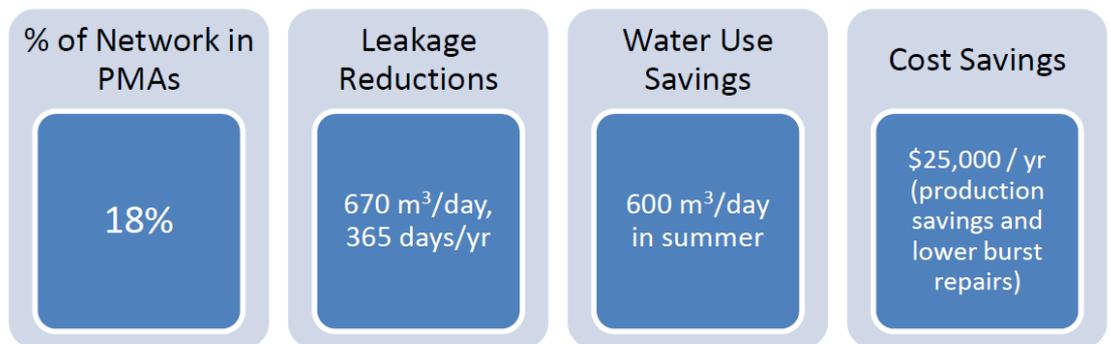
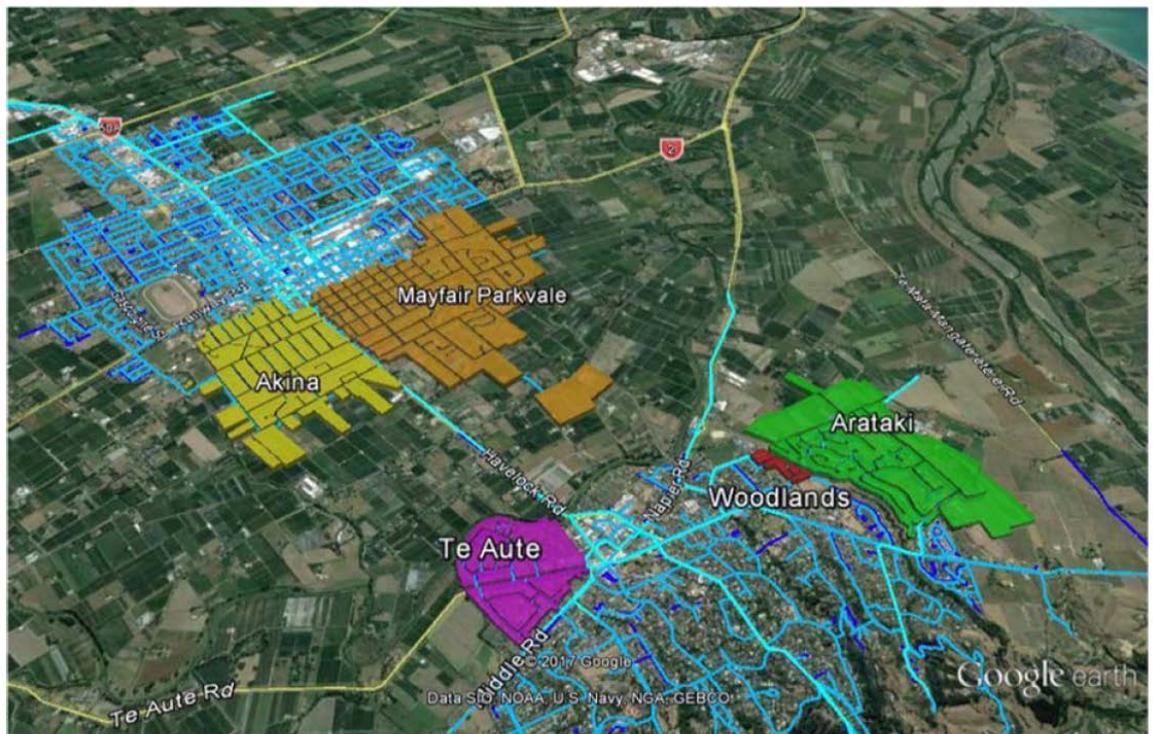


FIGURE 4 PRESSURE ZONES IN HASTINGS AND HAVELOCK NORTH



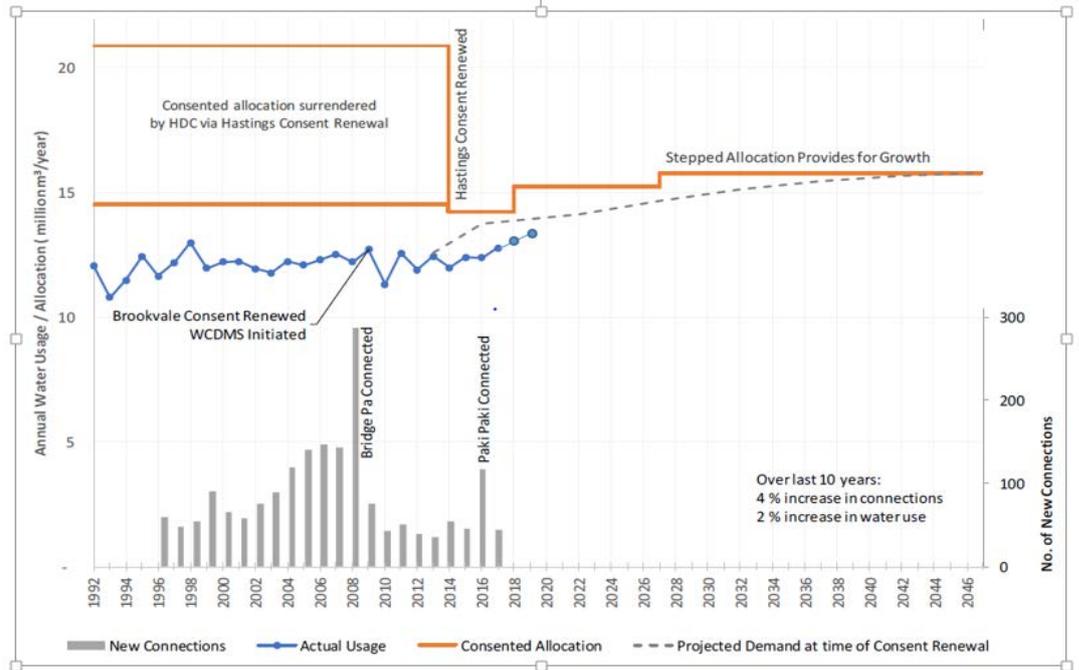
36. The American Water Works Association (AWWA) general guidelines for ILI target setting is shown below.

AWWA general guidelines for ILI target setting			
Target ILI Range	Water Resources Considerations	Operational Considerations	Financial Considerations
1 - 3	Available resources are greatly limited and are very difficult and/or environmentally unsound to develop	Operating with system leakage above this level would require expansion of existing infrastructure and/or additional water resources to meet the demand	Water resources are costly to develop or purchase Ability to increase revenues via water rates is greatly limited due to regulation or low ratepayer affordability
3 - 5	Water resources are believed to be sufficient to meet long-term needs, but demand management interventions (leakage management, water conservation) are included in the long-term planning	Existing water supply infrastructure capability is sufficient to meet long-term demand as long as reasonable leakage management controls are in place	Water resources can be developed or purchased at reasonable expense; Periodic water rate increases can be feasibly effected and are tolerated by the customer population
5 - 8	Water resources are plentiful, reliable and easily extracted	Superior reliability capacity and integrity of the water supply infrastructure make it relatively immune to supply shortages	Cost to purchase of obtain/treat water is low, as are rates charged to customers
Greater than 8	While operational and financial considerations may allow a long-term ILI greater than 8, such a level of leakage is not an effective utilization of water as a resource. Setting a target level greater than 8 – other than as an incremental goal to a smaller long-term target – is discouraged.		
<i>Source: AWWA Water Loss Control Committee Report, published in the AWWA Journal in August 2003 (Table 7, Page 76)</i>			

At (0<ILI<2) Further loss reduction may be uneconomic unless there are shortages; careful analysis needed to identify cost-effective improvement. B (2<ILI<4) Potential for marked improvements; consider pressure management, better active leakage control practices, and better network maintenance. C (4<ILI<8) Poor leakage record; tolerable only if water is plentiful and cheap; even then, analyse level and nature of leakage and intensify leakage reduction efforts. D (ILI>8) Very inefficient use of resources; leakage reduction programs imperative and high priority.

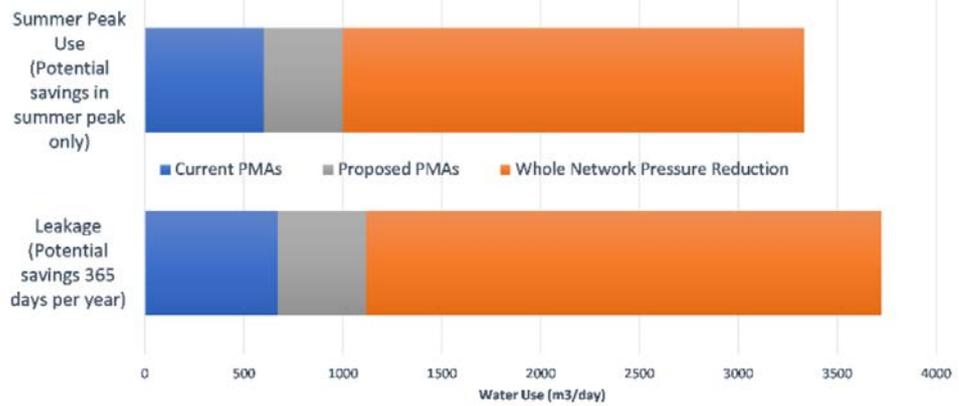
37. Figure 5 shows that our water efficiency initiatives have enabled savings which have offset the increased demand over the last 10 years. It is however evident that the rate of growth and demand is now increasing our overall usage.

FIGURE 5 BALANCE BETWEEN GROWTH, DEMAND AND WATER USE



38. In 2018 Council adopted a Drinking Water Strategy which began in 2008 as part of the Brookvale consent renewal and culminated in the most recent version that addresses the Board of Inquiry findings including treatment and disinfection across all HDC supplies.
39. A significant benefactor of this new work has been a re-engineering of the delivery of water across the network enabling network wide pressure reduction to be realised. The treatment upgrades will be completed at the end of 2022 at which time we will commence sectioning off zones and implementing network wide pressure reduction in a staged approach. The estimated savings from this programme will see a 3,500m³ per day reduction in overall leakage.
40. The estimated savings from the network wide pressure reduction strategy have not been included in the stepped allocation in the resource consent. While these savings could help offset the impacts of growth, we will only start to see the actual impact on increasing demand in future years.

FIGURE 6 POTENTIAL WATER SAVINGS WITH FULL NETWORK PRESSURE MANAGEMENT



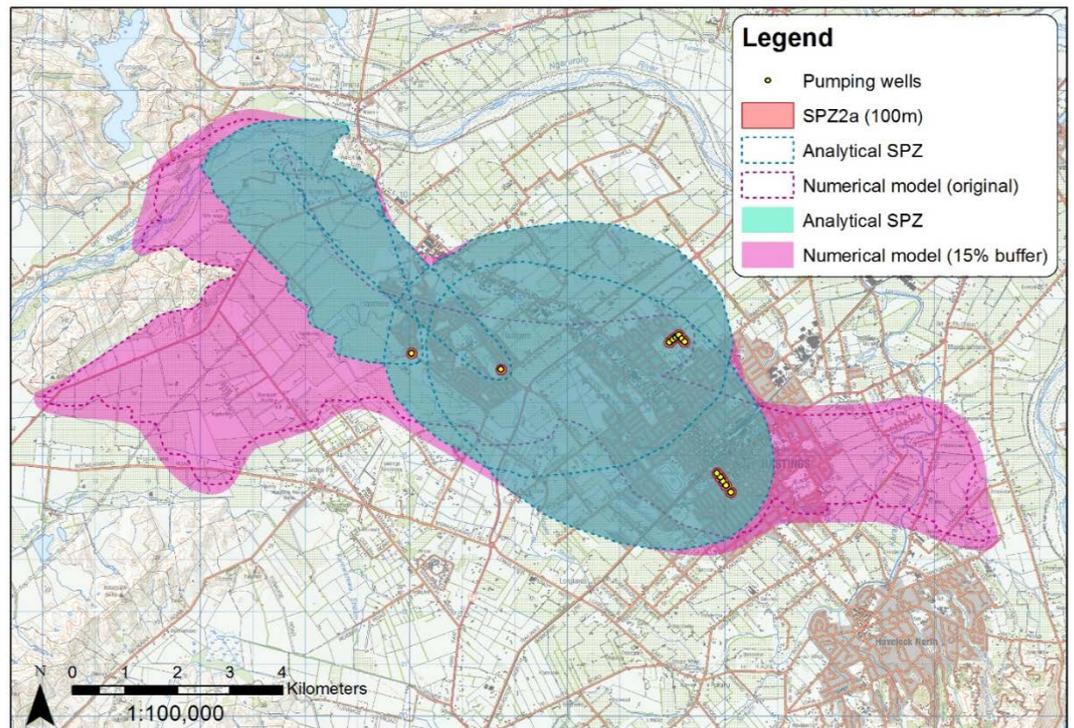
SOURCE PROTECTION ZONES

41. In general, water suppliers are not empowered to manage the catchments that they draw water from. Regional Councils and Unitary Authorities are required to effectively manage the land and water resources for which they have responsibility and require information about how decisions regarding land use may affect the quality of water bodies. Information and knowledge of the area of land from which a water body receives its water (the capture zone) and the potential contamination sources within this area assists in understanding the risks posed to drinking water supplies and what controls are needed.
42. Protection of source waters for human consumption is the first and most important stage of a multi-barrier approach to preventing the entry of contaminants into a water supply's source. The development and use of source protection zones (SPZs) with appropriate planning controls is intended to support the implementation of multi-barrier approaches to protect the quality of groundwater pumped from beneath the Heretaunga Plains for water supply purposes.
43. HDC and HBRC have developed source protection zones, based on modelled 1 and 10 year groundwater travel upstream of the abstraction point. The 1 year travel time is based on microbial risks i.e. bacteria and protozoa will die off prior to abstraction. The approach to defining SPZs for each of the bore fields was to not only consider them independently of each other but also to consider the combined effects on groundwater travel times and flow direction from all significant takes within the groundwater system.
44. Land uses within the Hastings Urban supply bore field catchments generally include a wide range of land use categories, including commercial/industrial, rural and residential. The rural zone comprises a range of land uses including pastoral,

cropping and horticultural uses, along with supporting activities, activities such as truck wash facilities, stockyards, fruit processing and timber treatment sites. The industrial areas of Omahu and Irongate which sit within our SPZs are expected to continue to expand in the future.

45. The promulgation of SPZ plans and proposed controls within the SPZs is to ensure that applicants engage with water suppliers in developing their applications and that appropriate assessments are undertaken to evaluate the impact of proposed activities on the drinking water source.
46. As a conservative approach, HDC have submitted a SPZ extent to the TANK plan change committee that is formed from the combination of all of the modelled SPZs (refer Figure 7 below). HDC propose to retain the “combined” SPZ until further evidence is available to decide which modelling approach is accurate or further modelling can be undertaken to address the current model limitations.

FIGURE 7 PLAN SHOWING THE HDC PROPOSED “COMBINED SPZ” WHICH INCORPORATES BOTH THE NUMERICAL AND ANALYTICAL MODELLING APPROACHES



47. The SPZ plan (Map 1 Source Protection Zones Hastings) in Plan Change 9 does not represent the full extent of the zone required to enable HDC as a water supplier to meet its obligations in respect of source water protection.

48. It is not considered that extending the zone imposes any significant implications on landowners that would reside within these areas. Taking a more conservative approach provides a robust mechanism for the water supplier and landowner to have oversight of risks and mitigation in fringe areas of the SPZ where the degree of accuracy can never be considered absolute.
49. Ms Sweeney's evidence discusses the specific changes sought to PC9 to reflect the above concerns.

STORMWATER MANGEMENT

50. A summary of HDC's approach to stormwater is set out in **Attachment A** to my evidence. That document was prepared by Matthew Kneebone who is a member of my team with delegated responsibility for stormwater. While I did not directly prepare that document, I have read it and agree with the content, and it is within my area of expertise. I therefore adopt it as part of my evidence.

Brett Chapman
11 May 2021

Attachment A

FILENOTE

File Ref: Record Number

File Note: Matthew Kneebone – HDC Stormwater Manager

Date: 06/05/2021

Subject: Supporting Statement regarding Hastings Stormwater Management Approach

This file note has been prepared as a supporting statement to the evidence of Mr Brett Chapman, 3 Waters Manager, Hastings District Council in regard to Plan Change 9 to the Hawke's Bay Regional Resource Management Plan. It sets out:

- The area serviced by the Council's stormwater network and an overview of the stormwater network;
- Bylaws and Regulatory Controls;
- An overview of the Council's Stormwater Catchment Management Plan; and
- A summary of Council's approach to management of high and medium risk sites.

1. Areas Served by HDC Public Stormwater Network

The stormwater system managed by HDC is confined to the urban areas of Hastings, Flaxmere, Havelock North, Whakatū West and Clive only. Land and properties outside of the urban serviced areas (rural and plains zoned land) are managed at a rural drainage level by the Hawke's Bay Regional Council. The service area is shown in Figure 1 below in green and is available for inspection on HDC's publicly available intramaps.

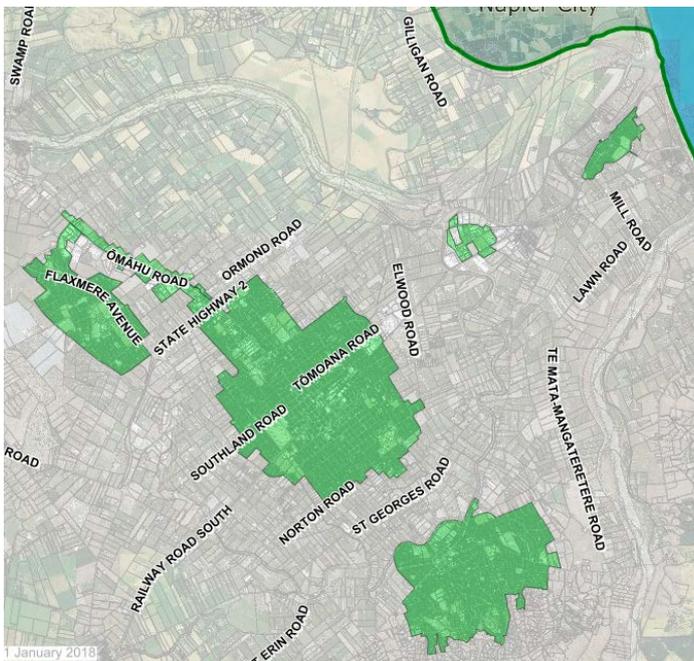


Figure 1: Stormwater service area

A full set of catchment plans have been developed to show land use zones, high/medium risk sites, extent of stormwater network, consented outlet points and features of cultural and historic significance.

Stormwater Discharge Consent

The HDC Network Discharge consent was issued by HBRC in May 2010. The duration of the consent is for 12 years and is due to expire in May 2022. This consent covers 15 urban catchments which all ultimately discharge into the Karamu Stream.

Stormwater Network Overview

The Hastings Urban stormwater system provides for the collection and controlled disposal of stormwater from urban developed land while also taking into account the contribution from upstream catchments.

The primary urban stormwater system consists of a piped stormwater network combined in some areas with open channels and pump stations which protect land, property and infrastructure against flooding.

The secondary system is typically via overland flow paths, which in the case of the urban catchments of Hastings are typically roads and controlled detention ponds within areas such as parks and reserves, which provide additional flood protection and attenuation of peak flows.

The primary stormwater system is typically designed to provide for runoff from a rainfall event with a 5-year return period without surcharging into the road. For rainfall events larger than this and up to a 1 in 50-year return period, the secondary stormwater system design standard is to have the capacity to store or pass via secondary flow paths without leading to water entry into habitable dwellings.

The urban stormwater system relies on the roading network as an initial collection and conveyance system with stormwater runoff from properties generally discharging to the road by overland flow or piped kerb connections, prior to entering the piped stormwater network. It is recognised that there is a reliance on stormwater being able to drain off the property to the kerb under most situations. Where this cannot occur, there is the potential for on-property ponding. The roading network also provides for storage and conveyance of secondary flows when the capacity of the primary system is exceeded.

Sumps that are installed within the urban stormwater system intercept significant amounts of coarse sediment and debris. The interception of these coarser sediments and debris prevents entry to the primary system and ultimately to the receiving environment. The sumps do not prevent finer sediments and other suspended and dissolved contaminants from passing through the stormwater system. The performance of the system is therefore largely governed by the capacity and condition (clear of leaves and litter etc.) of the inlets/sumps.

In some low-lying parts of the urban area, pump stations are provided to manage stormwater disposal where gravity solutions are not available. There are a total of 12 pump stations in total across the Hastings Urban area. These are generally small, serving only limited pockets of the urban area.

2. Bylaw and Regulatory Controls

The urban stormwater catchments are managed in accordance with the conditions of the network discharge consent, relevant legislation and guidance documents.

Comprehensive and effective stormwater management is guided by both regulatory and non-regulatory practices. These regulatory practices provide both the rationale and the means to avoid, remedy or mitigate any actual and potential adverse effects associated with stormwater runoff and discharge activities from any catchment.

The specific regulatory drivers which have been considered in developing the Catchment Management Plans for the Hastings urban stormwater sub-catchments are depicted in Figure 2 below.

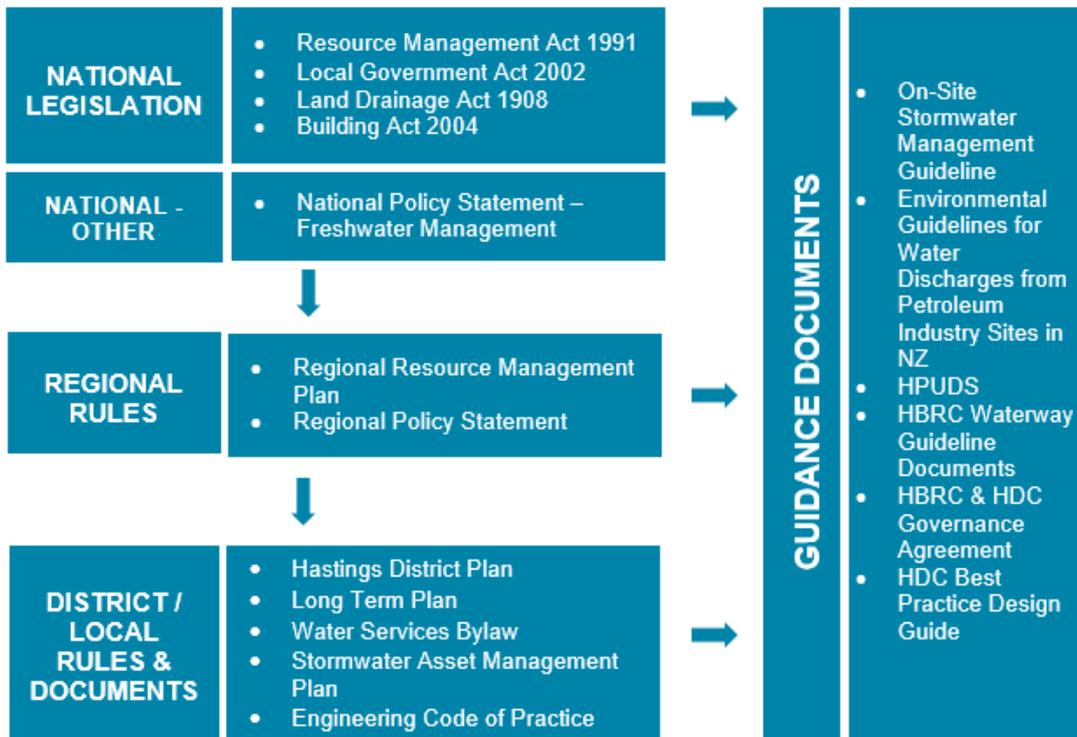


Figure 2: Regulatory and Non-Regulatory Drivers considered in the development of the Hastings Stormwater Catchment Management Plan

The Water Services related Bylaws (Chapter 7 of the Consolidated Bylaws) are used to manage **individual properties** that are connected to the HDC stormwater network which have an elevated likelihood of discharging contaminants into the public stormwater network. These properties include high and medium risk sites, industrial catchments and land use activities over the Heretaunga Plains aquifer.

3. Stormwater Catchment Management Plan

Hastings District Council (HDC) is committed to the improved management of stormwater discharges from commercial and residential properties.

HDC's key objectives in this regard are to:

1. Maintain and where practicable reduce the flooding risk for the urban area and receiving waterways by mitigating the effects of any increases in peak and total stormwater discharges from the Hastings urban area.
2. Protect and where practicable enhance the ecological health of inland waterways by improving the management of the quality of stormwater discharges from Hastings, Flaxmere, Havelock North and Clive (collectively referred to as the Hastings urban area).

To support these objectives **HDC has prepared a Catchment Management Plan (CMP)** to document the Council's strategy, implementation approach and action plan in respect of implementing improved stormwater management with a catchment-wide focus.

The CMP is an acknowledgment by Council of the greater awareness and need to address cumulative impacts of catchment development on the quantity and quality of stormwater discharges.

The CMP sets out the following:

- Key legislative drivers for improved stormwater management including the specific requirements set out in the network consent;
- The key characteristics of the stormwater catchments and HDC's stormwater network;
- The nature and quantity of the catchments' stormwater contaminant discharge;
- Five stormwater management activity areas; and
- Specific actions and measures being considered by HDC in each of the management activity areas

The stormwater management approach adopted by HDC is based on the five stormwater management activity areas of Quantity, Quality, Management/Maintenance, Monitoring/Compliance and Education/Information.

Each of the activity areas has a specific overarching management objective as depicted in Figure 3 below. Within each activity area a number of key level of service (LoS) or performance criteria have been identified.



Figure 3: Stormwater Management Objectives

4. Management of High/Medium Risk Sites

All sites within the Hastings Urban area, irrespective of size, have the potential to discharge contaminants into the surrounding environment including the stormwater network.

Industrial or trade sites carry a potentially higher level of risk than residential or general commercial land use of discharging contaminants into the stormwater environment, however actual risk will be related to the type of activity occurring on site.

The Water Services Bylaw places responsibility on the landowner to pre-treat stormwater on-site if it contains sediment or contaminants, so that contaminated stormwater water does not enter the HDC stormwater system.

All consented catchments have been assessed and individual sites with a higher potential to discharge contaminants have been identified in the Catchment Maps – Identified Potential High Risk Sites. The assessment criteria are based on the HBRC Waterway Guidelines table of high risk activities and land use.

In addition to the identified individual sites with an elevated potential to discharge contaminants, a monitoring plan has been developed to assess the water and sediment quality at a number of sub-catchment discharge locations. This monitoring plan has identified catchments of concern - where elevated levels of contaminants have been found in the receiving waters.

HDC is developing a quality improvement programme which targets improvement of stormwater quality management in high-risk commercial/industrial premises using a risk-based approach. Two catchments of concern are the Ruahapia and Awahou-Riverslea.

This programme will identify specific industry groups and sites based on the contaminants found in the associated receiving waterways. The programme will require an application for approval, via the Water Services Bylaw, for controlled stormwater discharges as well as the preparation of site-based stormwater management plans with follow-up implementation of mitigation measures. The programme will be supported by appropriate information on best practice treatment approaches. Similar industry groups will be targeted to improve efficiency and to avoid the perception that individual businesses are being singled out.

To support the implementation of improved stormwater management, HDC has developed a Stormwater Management Action Plan, which sets out specific activities to be implemented to achieve specific performance standards within each stormwater activity and contribute to the on-going improvement in stormwater management.

The key level of service areas and standards being targeted are summarised in the table below.

Stormwater Quality	Action Plan
High Risk Site Quality Improvement	<ul style="list-style-type: none">• High risk sites within priority catchments (Ruahapia and Riverslea) to be assessed and have Bylaw approval to discharge to the HDC stormwater network.
Stormwater Treatment by Approval	<ul style="list-style-type: none">• All HDC building and resource consents for high risk sites will include compliance conditions requiring effective stormwater quality mitigation.
Council Implemented Stormwater Treatment	<ul style="list-style-type: none">• Council to evaluate the cost effectiveness and affordability of adopting new design standards and implementing stormwater treatment devices within public space to achieve stormwater quality improvements.

Matthew Kneebone
Stormwater Manager
matthewk@hdc.govt.nz

Before an Independent Hearing Panel

In the matter of the Resource Management Act 1991

And

In the matter of Proposed Plan Change 9 to the Hawke's Bay Regional Plan
(Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments) (**PPC9**)

**Statement of evidence by Cameron James Drury
on behalf of Hastings District Council and Napier City Council**

11 May 2021

INTRODUCTION

1. My name is Cameron Drury. I graduated from Massey University with a bachelor's degree in Environmental and Resource Planning in 2003 with a Second Specialization in Water and Wastewater Technologies and have 17 years professional planning experience.
2. I am a Principal Planner and Director of Stradegy Planning Limited.
3. I am a Full Member of the New Zealand Planning Institute and hold a current RMA Hearing Commissioner certification.
4. I have been engaged by Hastings District Council (**HDC**) and Napier City Council (**NCC**) to provide planning advice in relation to Plan Change 9 to the Hawke's Bay Regional Resource Management Plan (TANK Plan Change) (**PC9**) being promoted by Hawke's Bay Regional Council (**HBRC**).
5. I have been practicing planning in the Hawkes Bay region my entire career. I am familiar with the TANK catchments and many of the matters involved in this Plan Change having prepared resource consent applications for global water takes involving catchment collectives and stream augmentation, water harvesting

schemes, land production activities, municipal water takes and stormwater discharges. I have also prepared implementation planning documentation around similar matters for the Hawkes Bay Regional Council in relation to Plan Change 6 pertaining to the Tukituki catchment.

6. In preparing this statement of evidence I have read the notified version of PC9, the submissions and further submissions by HDC and NCC, and other submissions and further submissions relevant to my evidence as referred to below. I have also read the section 42A report prepared by HBRC.

CODE OF CONDUCT

7. I confirm that I have read the Expert Witnesses Code of Conduct contained in the Environment Court of New Zealand Practice Note 2014. My evidence has been prepared in compliance with that Code in the same way as I would if giving evidence in the Environment Court. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

SCOPE OF EVIDENCE

8. My evidence will focus on the following water quantity matters:
 - (a) Proper consideration of existing investment (POL TANK 37(d))
 - (b) Provision for future opportunities / requirements of a limited nature (POL TANK 37 and Rule TANK 12)
 - (c) Purpose and sequencing of the Stream flow maintenance and habitat enhancement schemes (POL TANK 39)
 - (d) Timeframes around Ngaruroro River Schemes (POL TANK 41)
 - (e) Groundwater Management Review (POL TANK 42)
 - (f) Transferability of water permits for food processing (POL TANK 48)
 - (g) Conclusion.

PROPER CONSIDERATION OF EXISTING INVESTMENT

9. The Councils made a submission on the wording of POL TANK 37, which relates to managing the allocation and use of groundwater in the Heretaunga Plains Groundwater Quantity Area. This policy will be particularly relevant for applications under TANK 9, 10 and 11 (and any rule that may be introduced providing for a non-complying activity class of groundwater take).
10. The Councils' submission on POL TANK 37 has three main points:
 - (a) Whether the 90 million cubic metres should be described as a 'target' rather than as an 'interim allocation limit', with there being limited ability for new allocations of groundwater to be consented.
 - (b) What matters that should be taken into account when assessing applications to replace expiring water permits; and
 - (c) How water takes associated with future opportunities or requirements could be managed within what is generally thought to be an over allocated resource. This aspect is addressed in the next section of my evidence.
11. The first aspect of the Councils' relief sought is to describe the 90 million cubic meters per year as a 'target', pending the determination of an appropriate limit through the process described in Policy 42. The quantity referred to is described in the Section 42A Report, para 1332, as *"essentially [HBRC's] best estimation of current levels of Actual and Reasonable use across the Heretaunga Plains"*. In my view, this is not a solid basis on which to decide a 'limit', and some flexibility is required, making the term 'target' more accurate and appropriate, in light of the substantive changes the Councils are seeking.
12. The substantive changes relate to providing additional policy guidance as to what should be taken into account when an application for consent is being considered.
13. Applying an Actual and Reasonable approach when re-allocating existing consents is identified in para 1361 of the Section 42A Report as a key method by which the Council will manage groundwater to avoid future over allocation and where possible reduce actual use. POL TANK 37 provides that when considering applications in respect of existing consents, an assessment of Actual and Reasonable use will be

applied. Actual and Reasonable is defined as follows (additions and deletions reflect the s 42A Report recommendations):

Actual and Reasonable in relation to applications to take and use water means;

- a) no more than the quantity specified on the permit due for renewal or any lesser amount applied for; and the least of either;
- b) the maximum average consequential annual amount as measured by accurate water meter data in the ten years preceding 2 May 2020 1 August 2017 for groundwater takes in the Heretaunga Plains Water Management Unit or in the preceding ten years preceding the 2 May 2020 as applicable elsewhere if accurate water meter data is available. (If insufficient or no accurate data is available either clause a) or c) will apply

or

- c) for irrigation takes, the quantity required to meet the modelled crop water demand for the irrigated area with an efficiency of application of no less than 80% as specified by the IRRICALC water demand model (if it is available for the crop and otherwise with an equivalent method), and to a 95% reliability of supply where the irrigated area is;
 - (i) no more than in the permit due for renewal, or any lesser amount applied for, and in the case of Heretaunga Plains Groundwater Quantity Area Management Unit, is not more than the amount irrigated in the ten years preceding 2 May 2020; and
 - (ii) evidence is supplied to demonstrate that the area has, and can continue to be, irrigated and the permit substantially given effect to.

14. The Councils are concerned that neither this definition, nor POL TANK 37, contemplates a situation where an activity has not been making use of the full allocation of its permit for valid reasons. In particular, there are anticipated to be situations where considerable investment has been made, for example in establishing an industrial operation, yet the full extent of the consent has not been exercised due to timing, with Plan Change 9 cutting across planned business growth and market influences.

15. My understanding is that a replacement application under these circumstances would fall to be assessed as a Discretionary Activity under Rule TANK 11. This still presents an opportunity for such an application to be considered, however it would need to be assessed against POL TANK 37, and a proposal to take at previously consented levels would clearly exceed Actual and Reasonable use and would likely be considered to be contrary to the policy.

16. There is a requirement in s104(2A) of the RMA to have regard to the value of investment, when considering replacement consents.

17. Section 104(2A) states:

When considering an application affected by section 124 or 165ZH(1)(c), the consent authority must have regard to the value of the investment of the existing consent holder.

18. In my view, a strict interpretation of the policy as recommended in the s 42A Report is contrary to the consideration of s 104(2A). Given the Act requires consideration of existing investment, this should be reflected in the Policy to ensure the Plan Change aligns with the statutory obligations and does not put officers at the consenting stage in the difficult position of needing to reconcile a policy and a statutory obligation which pull in different directions.

19. The Councils' submissions proposed the following amendments to Policy 37(d) to provide for this (noting minor changes have now been recommended to Policy 37 in the Section 42A Report).

d) when considering applications in respect of existing consents due for expiry, or when reviewing consents, to;

(i) allocate groundwater *on* the basis of the maximum quantity that is able to be abstracted during each year or irrigation season expressed in cubic meters per year;

(ii) *as a starting point*, apply an assessment of actual and reasonable use that reflects land use and water use authorised in the ten years up to August 2017 (except as provided by Policy 50), *and then, subject to the proposal being for no more than the quantity specified on the existing consent, consider any volume beyond this taking the following into account;*

1. *reasons for the proposed volume of water;*

2. *efficiency of use;*

3. *the proposed use, particularly if for beverages, food and fibre production and processing and other land-based primary production*

4. *the value of the investment associated with the certainty of the volume as previously authorised;*

5. *whether substantial progress or effort has been, and continues to be, made towards giving effect to the proposed use and investment enabled by the original volume authorised;*

20. I note this does not change the starting point i.e. Actual and Reasonable as defined. What it does do is enable the decision maker to meet its obligations under s 104(2A) in a guided fashion.

21. In my opinion, the Councils' preferred wording gives effect to the requirements of the Hawke's Bay Regional Policy Statement (RPS), as required by s 67(3) RMA, particularly the following RPS requirements:
- (a) Objective OBJ LW1(6) – Which requires that *“Fresh water and the effects of land use and development are managed in an integrated and sustainable manner which includes...recognising the significant regional and national value of fresh water use for production and processing of beverages, food and fibre”*.
 - (b) Policy POL LW1(iE) – Which requires HBRC to adopt an integrated management approach to fresh water and the effects of land use and development within each catchment area that recognises and provides for existing use and investment.
 - (c) Policy POL LW2 – Which requires priority be given to the values in Table 2A, which includes industrial and commercial water supply.
22. As notified, and in the section 42A version, in my opinion POL TANK 37 fails to give effect to these provisions of the RPS. The amendments suggested by the Councils do not undermine the overall policy intent of significantly limiting new allocations of groundwater, but, in line with the requirements of the RPS, they provide a small window of opportunity for consideration of applications where, for whatever reason, the previous allocation has not been fully utilised, but will otherwise meet the outcomes sought in the plan change and the RPS.
23. I therefore support the amendment to POL TANK 37 set out in the Councils' submission.

PROVISION FOR FUTURE OPPORTUNITIES / REQUIREMENTS OF A LIMITED NATURE

24. The third aspect of the Councils' submission in relation to POL TANK 37 relates to whether there should be a limited window kept open for consent to be granted for water takes. This aspect of the submission is closely tied to whether Prohibited activity status is appropriate for such activities. The Councils consider that PC9 should retain the opportunity for such new consents where there would be significant social, economic and/or environmental benefit associated with the activity. As set out in the submission, and discussed below, this is supported by a

new policy (POL TANK 37A) and a change from Prohibited to Non-Complying activity status (Rule TANK 12).

25. As notified, and in the Section 42A version of POL TANK 37, the combined effect of subsections (a), (b) and (c) is that an application will be contrary to the policy where it is a new or increased take. This is then implemented through a Prohibited Activity rule (Rule TANK 12) for takes that did not exist before 2 May 2020 and which cause the allocation limit (as specified in Schedule 31) in respect to the relevant to Water Quantity Area to be exceeded (through failure to comply with Rule TANK 11 conditions (b)(i) or (ii)).
26. It is acknowledged that the takes for frost protection, takes associated with storage impoundment and non-consumptive takes would remain Discretionary under Rule TANK 11, condition (b)(iii). Ms Sweeney's evidence addresses the merits of adding takes for municipal supplies to the list of takes that can be assessed as a Discretionary activity under Rule TANK 11, condition (b)(iii), which I would support but do not elaborate on in this evidence.
27. The Councils' position is that the policy framework should at least provide for the consideration of a limited range of future activities to be assessed on their merits as a Non-Complying activity. In this regard, the Councils' submission sought to replace the Prohibited Activity status in Rule TANK 12 with a Non-complying Activity status, supported by a new Policy, POL TANK 37A, reading as follows:

Notwithstanding Policy 37b) and c), and provided:

- i. There are no feasible alternative alternatives,*
- ii. Significant progress is or is likely to be made toward achieving the target in Policy 37(a), and*
- iii. The allocation limits in Schedule 31 and 32 as at <the operative date> are not or are not likely to be exceeded;*

the re-allocation of groundwater not otherwise addressed under Policy 37(d) or 50 may be considered where the proposed use is:

- 1. Necessary for beverage, food or fibre processing;*
- 2. To enable the development of Māori economic, cultural and social well-being;*
- 3. To enable significant local employment opportunities or wider economic benefits*

4. To enable the servicing of urban growth (including new zones) and social infrastructure facilities;

The volume of take and consent duration may also be distinguishing factors.

28. Changes are also suggested to POL TANK 36, 37, 38, 48 and 52 to cross reference this new policy as an exception to those policies. The intention is that for any non-complying application for new takes, this Policy would strictly confine the class of activities that might be eligible for consent to ones where there would be potentially significant positive cultural, social or economic with adverse environmental effects being unlikely.
29. It was envisaged that applications outside the quite strict confines of the suggested policy would not find policy support and would be unlikely to be applied for or consented if an application was made.
30. The key question here is the appropriateness of a Prohibited Activity status in the context of this specific Plan Change.
31. This question is addressed in the Section 32A report on pages 284 - 296. Specifically, Table 52 considered the pros and cons of both a Prohibited and Non-complying Activity status (where limits are exceeded).
32. In considering these pros and cons, the author stated on page 286 that *"it is finely balanced as to whether a non-complying activity or prohibited activity status is the more appropriate option for rule TANK 12"*. Ultimately however, the balancing exercise led the author to prefer a Prohibited Activity status – seemingly to *"avoid the potential for assessing a single activity as no more than minor while not fully accounting for cumulative effects of multiple such activities"*, i.e. absolute certainty around no further consideration was favoured.
33. The analysis did not, however, consider the ability to mitigate such a 'con' through the inclusion of specific policy guidance for any such applications to be considered against.
34. With a policy such as the Councils' proposed POL TANK 37A in place, I consider that cumulative effects are unlikely, because very few activities will warrant consent under this rule. As a Non-complying activity, I would expect cumulative effects to be carefully assessed, as well as any possible precedent that might be established through the grant of consent. In my opinion, with appropriate policy support in

place, the Section 32 Report author's concerns about avoiding cumulative effects fall away.

35. The question then becomes whether the 'cost' of preventing applications from being made might foreclose the ability to achieve overall benefits. The list of matters in suggested POL TANK 37A has been chosen to reflect outcomes and priorities identified in the RPS and other higher order documents. All of the listed matters are among those 'uses' and 'values' listed in Table 2A of POL LW2 of the RPS, which under sub policy 1 are to be given priority when preparing Regional Plans. A policy approach that at least enables their consideration is therefore clearly more consistent with the RPS than intentionally prohibiting such consideration as PC9 currently proposes.
36. I note:
- (a) Beverage, food or fibre processing is identified as a matter of national and regional significance in OBJ LW1(6).
 - (b) Enabling the development of Māori economic, cultural and social well-being is in line with OBJ TANK 17.
 - (c) Enabling significant local employment opportunities or wider economic benefits is consistent with OBJ 1 of the RPS which is to manage natural and physical resources while recognising the contribution of resource use to the development and prosperity of the region.
 - (d) Enabling the servicing of urban growth (including new zones) and social infrastructure facilities is consistent with OBJ LW1(5) of the RPS , while the suggested approach gives effect to OBJ 6 of the NPS-UD which notes the responsiveness required around proposals that would supply significant development capacity i.e. opportunities to respond to the future demands need to be preserved to enable the responsiveness expected under this Objective.
37. The list of possible uses the Councils have suggested for recognition in proposed POL TANK 37A could be further limited or amended/refined, however I consider what has been suggested represents an appropriately limited class of activities which might warrant consideration on their merits.

38. In my opinion, Non-complying activity status sends an appropriate message that such water takes are not contemplated or welcomed by the Plan, but that there is a narrow window of opportunity for activities outlined in the policy. Of course, and as acknowledged in Table 52 of the Section 32A report, a Non-complying Activity status still provides a stringent resource consent test and such applications can still be declined, but in my view the objectives of PC9, and the higher order documents are given better effect to through allowing them to be considered, rather than preventing them from being considered at all.
39. Indeed, and as outlined in Table 52 of the Section 32A report, *“a prohibited activity status does not provide any flexibility to consider applications that may have merit ... and ... would prevent an activity that may be able to demonstrate a net environmental benefit from even being able to be considered on its merits through the resource consent process”*. A prohibited activity, or outcome, lacks any element of priority as directed under POL LW2 of the RPS.
40. The lack of opportunity resulting from Prohibited status must also be considered in light of the basis upon which the limits forming the regulatory approach have been based. In this regard, given the 90 million cubic meters per year groundwater limit is acknowledged to be a ‘best estimation’¹, such a blunt approach in the face of the direction of the RPS when based on an estimation it not considered to be justified or to adequately provide for the social or economic well-being of the community – certainly not as well as the suggested alternative or similar.
41. An example of such an unintended consequence may be the rationalisation of a municipal water take. It may well be that changes are proposed to better respond to water quality matters or resilience, i.e. different locations of supply bores. If, however as a result of the geographic extents of the Water Quantity Areas allocation limits in Schedule 31 were exceeded - if only marginally, such changes would fall to be Prohibited and there would be no ability to even consider them no matter the community merit or scale of effects.
42. Another example would be the establishment of a new school, kura kaupapa or kohunga reo in un-reticulated areas, or the expansion of any of these owing to increased rolls. It may be that other influencing factors strongly support such developments or expansions, and that such initiatives would carry significant social

and cultural benefits. Rather than such proposals falling short on the basis of a prohibited activity to take water to service them, it may be in the interests of the community to at least enable such proposals to be considered.

43. In my opinion, the suggested non-complying status, with policy guidance provided through new POL TANK 37A, is the most appropriate way to meet proposed objectives compared to Prohibited status.
44. Lastly, uncertainty over proper implementation of the Plan or Sections 104D and 104 of the RMA when assessing a resource consent application should not be a reason to favour a Prohibited activity status.
45. As a minimum, applications for municipal water supply purposes should not fall to being Prohibited under Rule TANK 12:
46. As outlined in the Councils submission, the relief sought could be provided as follows (presented according to the S42 Report version),

POL TANK 36

The Council recognises the actual and potential adverse effects of groundwater abstraction in the Heretaunga Plains Groundwater Quantity Area on:

- a) *groundwater levels;*
 - b) *flows in connected surface water bodies;*
 - c) *flows of the Ngaruroro River;*
 - d) *groundwater quality through risks of sea water intrusion;*
 - e) *tikanga and mātauranga Māori;*
- and will adopt a staged approach to groundwater management that includes;*
- f) *avoiding further adverse effects by not granting new consents to take and use groundwater new water use **unless deemed an exceptional instance under Policy 37A***
 - g) *reducing existing levels of water use;*
 - h) *mitigating the adverse effects of groundwater abstraction on flows in connected water bodies;*
 - i) *gathering information about actual water use and its effects on stream depletion;*
 - j) *monitoring the effectiveness of stream flow maintenance and habitat enhancement schemes;*
 - k) *including plan review directions to assess effectiveness of these measures.*

Pol TANK 37

In managing the allocation and use of groundwater in the Heretaunga Plains Groundwater Quantity Area, the Council will;

- a) ~~Adopt~~ *Set as a target* an interim allocation limit of 90 million cubic meters per year based on Actual and Reasonable water use, *with a view to developing a formal limit in accordance with Policy 42;*
- b) *avoid re-allocation of any water that might become available within the interim groundwater allocation limit or within the limit of any connected water body until there has been a review of the relevant allocation limits within this plan unless supported by Policy 37A;*
- c) *generally* manage the Heretaunga Plains Groundwater Quantity Area as an over-allocated management unit and prevent any new allocations of groundwater;

...

POL TANK 37A.

Notwithstanding Policy 37b) and c), and provided:

- (i) *There are no feasible alternative alternatives,*
- (ii) *Significant progress is or is likely to be made toward achieving the target in Policy 37(a), and*
- (iii) *The allocation limits in Schedule 31 and 32 as at <the operative date> are not or are not likely to be exceeded;*

the re-allocation of groundwater not otherwise addressed under Policy 37(d) or 50 may be considered where the proposed use is:

1. *Necessary for beverage, food or fibre processing;*
2. *to enable the development of Māori economic, cultural and social well-being;*
3. *to enable significant local employment opportunities or wider economic benefits*
4. *To enable the servicing of urban growth (including new zones) and social infrastructure facilities;*

The volume of take and consent duration may also be distinguishing factors.”

POL 38

Unless provided for as an exceptional circumstance under Policy 37A, the Council will restrict the re-allocation of groundwater to holders of permits to take and use water in the Heretaunga Water Management Unit issued before 2 May 2020 and will review permits or allocate water according to the plan policies and rules either:

- a) *upon expiry of the consent; or*
- b) *in accordance with a review of all applicable permits within ten years of; whichever is the sooner.*

POL TANK 48

...

- d) *in over-allocated quantity areas, to transfer allocated but unused water, **except where provided for under Policy 37A***

POL TANK 52

The Council will phase out over-allocation by;

- a) *preventing any new allocation of water (not including any reallocation in respect of permits issued before 2 May 2020, or high flow allocations) **unless supported under Policy 37A***
- b) *for applications in respect of existing consents due for expiry or when reviewing consents, to;*
- (i) ***generally** allocate water according to Actual and Reasonable use demonstrated actual and reasonable need^{194.72} (except as provided for by POL TANK Policy 50)*

47. As previously indicated in this evidence, the list of possible uses the Councils have suggested for recognition in proposed POL TANK 37A could be further limited or amended/refined, and this would be within the jurisdiction of the panel when deciding on a Plan Change process. Likewise, the priority referred to in POL LW2, which is in effect the relief being sought, could be given via a reserved allocation for municipal uses.
48. In a similar manner to the allocation reserved for Maori Development in Schedule 32 and provided for under POL TANK 59, this could be in the form of a portion of the high flow allocation, a portion of the existing allocation or provision for a reserve allocation to be provided for as part of the review under POL TANK 42.
49. Under either scenario, further policy could be developed to guide how the reserve allocation could be 'drawn down' via a resource consent application, which would presumably include, among other matters, the need for a Council to demonstrate a high degree of efficiency. As referred to in the evidence of Mr Clews, it may not be such an inconceivable outcome that population growth over time, no matter how efficient or conservative the 'system' is, simply requires more water than that allocated as at 2 May 2020. Depending on the framework, such allocation could be available for other uses in the interim.

PURPOSE AND SEQUENCING OF THE STREAM FLOW MAINTENANCE AND HABITAT ENHANCEMENT SCHEMES

50. The Councils made a submission on the wording of POL TANK 39, which relates to the assessment of applications to take groundwater in the Heretaunga Plains Water Management Unit and the introduction of stream flow maintenance schemes to essentially allow such takes to occur when an applicable stream flow maintenance scheme trigger is reached.
51. The Councils' submission had two main points, the first relating to the structure of the Policy and the second to its application to takes for municipal purposes. Specifically, the submission seeks that takes for municipal purposes be exempt from ceasing abstraction when an applicable stream flow maintenance scheme trigger is reached in favour of implementing a Water Conservation Strategy. This is to reflect the essential nature of such takes.
52. The Section 42A report recommends substantial changes to Policy 39, however POL TANK 39(d) retains the requirement that all takes are either required to cease abstraction when a trigger is reached or participate in an applicable scheme.
53. As noted in Mr Clews' evidence, there are a number of factors which may influence whether the Councils participate in a scheme. If, for any number of reasons, the Councils do not participate in such a scheme, in my opinion, a Conservation Strategy is the more appropriate pathway for municipal takes in low flow situations than ceasing take. I have read and agree with Mr Clews's discussion as to why municipal takes are different from other classes of take, and why ceasing abstraction is unlikely to be viable given the essential nature of municipal supply for human health and community wellbeing.
54. The current approach to water conservation undertaken by the Councils as water suppliers is set out in the evidence of Mr Chapman and Mr Bond, and it is clear that the approaches are / can be effective in reducing use, particularly during highly sensitive times.
55. Both cessation and conservation strategies to reduce use are available tools in managing effects during low flows, and in light of the essential nature of municipal takes, and that water conservation strategies can be effective, it follows that a water conservation approach rather than cessation is a genuine option for municipal takes. Providing for such an approach is also consistent with OBJ TANK 16, where

reasonable domestic needs of people is identified as a first priority in OBJ TANK 16. In this regard, it is valid for a different tool, namely a water conservation strategy, to be applied to a first priority use, and for a different tool to be applied to other lower priority uses. Again, this approach would be more consistent with the direction set down in POL LW2 of the RPS, which under sub policy 1 directs priority to be given to urban water supply and water supply for key social infrastructure facilities when preparing Regional Plans.

56. In addition, I consider POL TANK 39, as proposed to be amended in the S42A Report, should also be amended to:

- (a) More clearly reflect the purpose of the stream flow maintenance and habitat enhancement schemes in subsection (a), or at least a component of their purpose, being to offset limitations on new water takes.
- (b) Better acknowledge from the outset in subsection (c) that the funding model to be developed should be proportionate to the scale of individual effects, and that the relative contribution of individuals consents to stream depletion will need to be understood.
- (c) Include a criteria in subsection (e) that schemes should be investigated and established in catchments (or sub catchments) in the order in which consents are due to expire.

57. These points reflect aspects of the version of POL TANK 39 that was originally notified and which the Councils' submission considered.

58. The relief sought could be provided as follows in terms of S42A version of POL TANK 39:

To mitigate the stream depletion effects of groundwater takes in the Heretaunga Plains Groundwater Quantity Area the Council will:

a) consult with iwi and other relevant parties to investigate the environmental, technical, cultural, social and economic feasibility of options for stream flow maintenance and habitat enhancement schemes including water storage and release options and groundwater pumping and discharge options that:

*(i) **Enable water takes not otherwise provided for under Schedule 31***

(ii) maintain stream flows in lowland rivers above trigger levels where groundwater abstraction is depleting stream flows, and

- (iii) improve oxygen levels and reduce water temperatures.
- b) determine the preferred solutions taking into account whether:
 - (i) wide-scale aquatic ecosystem benefits are provided by maintaining stream flow across multiple streams
 - (ii) multiple benefits can be met including for flood control and climate change resilience
 - (iii) the solutions are efficient and cost effective
 - (iv) scheme design elements to improve ecological health of affected water bodies have been incorporated
 - (v) opportunities can be provided to improve public access to affected waterways.
- c) develop and implement a funding mechanism **acknowledges the relative contribution of individuals consents to stream depletion and that is proportionate to the scale of individual effects** that enables the Council to recover the costs of developing, constructing and operating stream flow maintenance and habitat enhancement schemes from permit holders, including where appropriate,
 - (i) management responses that enable permit holders to manage local solutions and
 - (ii) develop any further plan change within an agreed timeframe if necessary to implement a funding solution.
- d) **With the exception of takes for municipal purposes, where a water conservation strategy will be undertaken,** where schemes are operational, either
 - (i) require abstraction to cease when applicable stream flow maintenance trigger is reached; or
 - (ii) require permit holders to contribute to and participate in the scheme
- e) ensure that stream flow maintenance and habitat enhancement schemes are constructed and operating within ten years of the operative date of the Plan while adopting a priority regime according to the following criteria:
 - (i) **schemes be investigated and established in catchments (or sub catchments) in the order in which consents are due to expire**
 - (ii) solutions that provide wide-scale benefit for maintaining stream flow across multiple streams
 - (iii) solutions that provide flow maintenance for streams that are high priority for management action because of low oxygen levels.
- f) review as per POL TANK 42 if no schemes are found to be feasible.

59. A consequential change is also required to POL TANK 45 to clarify that municipal supply takes should not be subject to a requirement to participate in a scheme or cease abstraction when the minimum flow for the affected river is reached, but should be required to take a conservation strategy approach.

TIMEFRAMES AROUND NGARURORO RIVER SCHEMES

60. POL TANK 41 relates to HBRC undertaking further investigations around a water storage and release scheme to off-set the cumulative stream depletion effect of groundwater takes on the Ngaruroro River. With no timeframes specified, the Councils submitted that this should be undertaken over the 10 year period leading into the groundwater management review under Policy 42. This was because the feasibility of such a scheme will have a significant influence on the management of the groundwater resource moving forward.
61. It is stated in paragraph 1463 of the Section 42A Report that the amendments to POL TANK 39 clarify matters of timing so changes are not required to POL TANK 41 regrading this matter.
62. As noted in paragraph 1459 of the Section 42A Report however, Stream Flow Maintenance Schemes (as referred to in POL TANK 39) that rely on groundwater pumping are not feasible for the Ngaruroro River, and this is why POL TANK 41 relates to a water storage and release scheme.
63. If there is sufficient reason for stream flow maintenance schemes (POL TANK 39) and a water storage and a release scheme for the Ngaruroro River (POL TANK 41) to be provided for in separate policies (which I agree with), then the timeframes for each should be clear to avoid misinterpretation. This is considered to be best achieved by stating the timeframes for each in their respective Policies.
64. Acknowledging the importance of the work, POL TANK 41 should stipulate a timeframe, or at least an expectation that the work will be undertaken to inform the review under POL TANK 42 to ensure implementation of all Policy initiatives – particularly those that influence others.
65. For completeness, the Councils support the recommended changes to POL TANK 57 to now stipulate that further investigations to understand the present and potential future regional water demand and supply (including for abstractive water uses and environmental enhancement and in relation to climate) will be undertaken prior to

the review under POL TANK 42. In essence, it is this same clarity that is sought in relation to POL TANK 41.

66. The relief sought could be provide as follows:

POL TANK 41

Over the 10 year period leading into the groundwater management review under Policy 42, and to inform that process the Council will remedy the stream depletion effects of groundwater takes in the Heretaunga Plains Water Management Unit on the Ngaruroro River, in consultation with mana whenua, land and water users and the wider community

.....

GROUNDWATER MANAGEMENT REVIEW

67. The Councils' submission sought that POL TANK 42 be amended to require consideration of '*new information on the long term sustainable equilibrium of the groundwater resource that accounts for annual variation in climate and prevents seawater intrusion*' to be included in the intended review.

68. As acknowledged in paragraph 1475 of the Section 42A report, further investigations need to be undertaken to fully understand the water available². None of the items to be considered in POL TANK 42 currently consider how much water is actually available. The relief sought is considered to provide key information in better understanding how the resource should be managed moving forward.

69. The relief sought could be provided as follows:

POL TANK 42

....

And will

d) In relation to plan objectives and adverse effects listed in Policy POL TANK 36, ~~assess~~;

(i) ***Consider new information on the long term sustainable equilibrium of the groundwater resource that accounts for annual variation in climate and prevents seawater intrusion;***

(ii) Assess:

1. the effects of the groundwater takes on stream flows;

² "I consider it also makes it clear that PPC9 is not the perfect plan and that further investigations need to be undertaken to fully understand the water available and appropriate mechanisms to mitigate effects. Planning is an iterative process that enables council's to update management strategies in response to new information or evolving issues."

2. effectiveness of any stream flow maintenance, augmentation, or habitat enhancement schemes in maintaining water flows, groundwater levels and improving water quality;
 3. effectiveness of habitat enhancement including through improved riparian management and wetland creation in meeting freshwater objectives;
- e) review the appropriateness of the allocation limit in relation to the freshwater objectives;
 - f) develop a plan change to ensure any over-allocation is phased out

TRANSFERABILITY OF WATER PERMITS FOR FOOD PROCESSING

70. POL TANK 48 relates to the change or transfer of water permits and states the circumstances where HBRC will consider declining such applications, one of which is when the change or transfer is 'away from irrigation of the versatile land of the Heretaunga Plains for primary production especially food production'. The policy then provides exceptions where the change or transfer is for (i), a flow enhancement or ecosystem improvement scheme, or (ii), the efficient delivery of water supplies and to meet the communities' human health needs for water supply, including for marae and papakāinga.
71. The Councils generally support this approach as a means of preserving the life supporting capacity of the versatile soil resource but is cognisant that water is not only required to grow food, but to also process it, as both uses are required to produce the food product.
72. The Hastings District Council's District Plan acknowledges this from a landuse planning perspective, with the processing, storage and/or packaging of agricultural, horticultural and/or viticultural crops and/or produce being provided for as a Permitted Activity within the Plains Production Zone (within limits) rather than automatically directing these activities/structures to industrial zones. Similarly, the Napier District Plan provides for Rural Processing Activities³ as a Permitted Activity.
73. The same type of recognition should be given to these activities from a water use perspective, not only to align the approaches of the applicable planning documents, but to recognise the importance of food processing as part of food production.

³ Means an industrial activity that processes agricultural horticultural or viticultural produce grown in the district.

74. Including 'food processing' as an exemption under subsection (c) achieves this, and gives better effect to the Regional Policy Statement, in that it:

- (a) Recognises the significant regional and national value of fresh water use for production and processing of beverages, food and fibre as referred to in Objective OBJ LW1(6).
- (b) Reflects the intent of Policy POL LW2 i.e. that the values in Table 2A should be given priority in Regional Plans, which includes freshwater use for beverages, food and fibre production and processing and other land-based primary production.

75. The relief sought could be provided as follows:

POL TANK 48

...

c) *to change/transfer water away from irrigation of the versatile land of the Heretaunga Plains for primary production especially food production, except where a change of use and/or transfer is for;*

(i) *a flow enhancement or ecosystem improvement scheme, subject to clause (a); or*

(ii) *the efficient delivery of water supplies and to meet the communities' human health needs for water supply, including for marae and papakāinga, subject to clause (a)*

or

(iii) ***food processing***

76. It is acknowledged that this exception could be more focussed to ensure its association with primary production e.g. 'the use of water in the processing of agricultural, horticultural and/or viticultural crops'.

CONCLUSION

77. This evidence primarily identifies deficiencies of PC9 to enable the proper consideration of existing investment in assessing replacement applications, and to give priority to municipal uses as directed by the RPS. It also provides justification for alternative approaches better aligned with the direction of applicable statutes and planning documents.

78. Suggestions for improved implementation of key provisions are also made.

Cameron Drury
11 May 2021

Before an Independent Hearing Panel

In the matter of the Resource Management Act 1991

And

In the matter of Proposed Plan Change 9 to the Hawke's Bay Regional Plan
(Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments) (**PPC9**)

**Statement of evidence by Mark Anthony Clews
on behalf of Hastings District Council and Napier City Council**

Dated 11 May 2021

INTRODUCTION

1. My name is Mark Anthony Clews and I am the Principal Advisor, District Development, at the Hastings District Council (**HDC**). I set out my qualifications and experience as **Attachment A**. I am authorised to give this evidence on behalf of HDC.
2. On behalf of the HDC I have participated in the Hawke's Bay Regional Council (**HBRC**) consultation and stakeholder engagement activities and ensuing formal Resource Management Act (**RMA**) processes relating to freshwater management since 2011, including in relation to:
 - (a) The Land and Water Management Strategy (**LAWMS**),
 - (b) Change No. 5 to the Regional Policy Statement (**RPS**) section of the Regional Resource Management Plan (**RRMP**) relating to Chapter 3.1A Integrated Land use and Freshwater Management,
 - (c) Change No. 6 to the RRMP - Tukituki Catchment and
 - (d) The Tutaekuri, Ahuriri, Ngaruroro and Karamū catchments (**TANK**) Collaborative Stakeholder planning process and this Proposed Plan Change 9 (**PPC9**) to the RRMP.

3. I have been responsible for providing planning advice and administrative management on behalf of the HDC in relation to submissions on PCC9 as well representing its interests in the preparation and review of the Heretaunga Plains Urban Development Strategy 2010 (**HPUDS2010**) and its first review (**HPUDS2017**), which is referred to in a number of provisions in PPC9.
4. In preparing this statement of evidence I have read the notified version of PPC9, the submissions and further submissions by HDC and Napier City Council (**NCC**) (together, the **Councils**), and other submissions and further submissions relevant to my evidence as referred to below. I have also read the relevant sections of the section 42A report prepared by the reporting officers for HBRC.

CODE OF CONDUCT

5. As my evidence largely reflects a policy position on the part of the Councils, it is not strictly expert evidence. Nevertheless, I confirm that I have read the Expert Witnesses Code of Conduct contained in the Environment Court of New Zealand Practice Note 2014. To the extent relevant, my evidence has been prepared in compliance with that Code in the same way as I would if giving this evidence in the Environment Court.

SUMMARY AND SCOPE OF EVIDENCE

6. As a broad summary, the Councils' submissions seek greater recognition of the unique demands of territorial authorities compared to other abstractors, in particular in the discharging of their statutory obligations to supply municipal water to existing communities, and to actively support housing and business growth. The broad issues for the Councils can be summed up as being:
 - (a) Priority for, and protection of, municipal and community water supplies.
 - (b) Appropriate provision for stormwater management.
 - (c) Provision of some flexibility to support wider economic and social wellbeing.
7. The submissions specifically seek to ensure priority is afforded to municipal and community water supplies,¹ and seek flexibility to respond to changing growth demands in terms of allocation and access to freshwater in an efficient and cost

¹ Unless the context dictates otherwise, I refer to municipal supplies as including other community supplies, e.g. for Marae and Papakianga and other cooperative schemes.

effect manner. Such flexibility is sought through the ability to transfer allocations and to make use of supplementary sources. They also seek to avoid unnecessarily restrictive activity status for consenting municipal use. The specific changes sought are addressed in the evidence of Ms Sweeney.

8. Better protection of source water for municipal supplies is also a strong aspect of the Councils' submissions. While PPC9 goes a long way to implement the recommendation of the Hawke's Bay Drinking Water Governance Joint Committee, there are a number of areas where the Councils consider further changes are needed. The evidence of Ms Sweeney also addresses this issue, supported by the evidence of HDC's Water Services Manager, Mr Chapman.
9. Similarly, while the Councils support the provisions relating to stormwater management overall, there are still some practical matters that need to be addressed to allow more efficient and effective implementation, recognising the practicalities associated with collective stormwater management through municipal reticulation. Again, this is addressed by Ms Sweeney, supported by the evidence of Mr Chapman.
10. In general, the Councils support the changes in PPC9 which seek to improve water quality and have not sought changes to the proposed provisions relating directly to that subject matter.
11. The Councils also accept that the improved understanding of the freshwater resources in the Heretaunga Catchments and their interconnected nature, means that there is a need to take a greater conservation and demand management approach to reduce over allocation. That will inevitably require some form of transition in the way water resources are used to support community economic and social wellbeing.
12. In that respect, the Councils generally support the pragmatic and precautionary approach to reducing over-allocation, by removing unused allocations to prevent matters from getting worse and striving for reduction through re-allocating consents on an 'actual and reasonable use' basis and with stringent efficiency targets as a first step. They support exploring mitigation and supplementary allocation measures before resorting to potentially large reductions in allocations, which could have dramatic economy-wide economic and attendant social impacts. These steps, and

the setting of a final allocation limit as provided for in Policy 42 of PPC9, are supported by the Council.

13. Having said that, Councils consider there are changes to PPC9 that should be made to provide some flexibility in the overall framework to mitigate the transition impacts for abstractors. They also have a particular concern around enabling partly completed private sector investments in growth to be completed, providing greater flexibility around transfers, and giving some flexibility, within the trajectory towards meeting the interim limits or targets, to enable new uses in special cases.
14. For the avoidance of doubt, the Councils accept and endorse the hierarchy needs expressed in Te Mana o Te Wai. Their concerns are around how quickly the community can sustain the changes required to give effect to it, and the flexibility afforded to them in doing so. The specific changes sought to PCC9 in the Councils' submissions in this regard are addressed in the evidence of Mr Drury.
15. My evidence sets out the background and strategic context for the more specific changes addressed in the evidence of the witnesses mentioned above, and addresses the following matters:
 - (a) Strategic Context for HDC Submissions
 - (b) Need for Integrated Management
 - (c) Integrated Management in Hawke's Bay/Heretaunga
 - (d) Planning for Urban Growth Needs
 - (e) Changing Growth Projections
 - (f) Allocation Concepts Relevant to Municipal Supply.

STRATEGIC CONTEXT FOR SUBMISSIONS

16. HDC participated in the TANK process to ensure its roles and interests as a territorial authority were adequately represented and provided for. These roles and interests can be summarised as:
 - (a) Abstracting groundwater for municipal supply and discharging urban stormwater to freshwater receiving bodies.

- (b) Having landuse planning responsibilities under the RMA that affects freshwater.
 - (c) Advocating for district rural and urban dwellers' economic and social wellbeing where this is dependent upon water quality and quantity.
17. In doing so, HDC has been cognizant of the overarching responsibility under Section 14(1)(h) of the Local Government Act 2002 (**LGA**) for Councils to take a sustainable development approach in making decisions. For the HDC, this approach is given expression in its Strategic Framework and Key Focus areas articulated in its current Draft Long Term Plan (**DLTP**). These strategic framework statements can be seen as long-term commitments for HDC. The objectives I consider of most relevance to its submissions on PPC9 are:
- (a) Water and land resources are used wisely.
 - (b) The natural environment is enhanced and protected.
 - (c) Housing supply meets need.
 - (d) We enable employment and growth.
 - (e) Council services are green and healthy.
18. The DLTP includes related key focus areas that provide some further elaboration in the more immediate context as follows:
- (a) Enabling primary production.
 - (b) A leader in food and beverage innovation.
 - (c) More compact housing choices using available land.
 - (d) Adaptation to new land use and farming futures (including climate change and water access).
 - (e) Promoting water and energy efficiency.
 - (f) Managing healthy waterways.
19. A key component of sustainable development is the concept of sustainable management of natural and physical resources as defined by the RMA and given

effect to through regional and district plans. In this context the First Review of the Hastings District Plan was undertaken during the preparation to PPC9. Without going into too much detail the District Plan has a strong emphasis on integrated management (Refer Section 2.3 Plan Philosophy and Integrated Management):

- (a) Protection of versatile soils for food and fibre production (Refer to section 2.8 Rural Resources Strategy in particular).
- (b) Provision for Housing and Industrial growth in line with the compact model of the HPUDES2010 (Refer to Section 2.4 Urban Strategy in particular).
- (c) Avoiding, mitigating or remedying the actual and potential effects of land use activities on water and soil resources in particular. (Refer to OBJPP09 and PPP19 in particular).

20. From an economic development perspective, the Council is conscious that Hastings District has a land-based production and processing economy that is dependent upon the potential of the versatile soils of the Heretaunga Plains. Access to sufficient water is a critical component in realising that potential. The prosperity of the both the rural and urban populations of the District are dependent upon these land-based primary industries and some significant processing industries rely on both a secure supply of primary produce and access to reliable and clean water for processing. It is important therefore that the right balance between protection and use is found and agreed upon.

21. From a region wide perspective, Hawke's Bay is also a primary production based economy that manufactures high quality products to deliver to overseas markets. While Hastings is recognised as the industrial heart of the Hawke's Bay region, much of this product flows through the Port of Napier to overseas markets. Predominating industries in Hastings are linked to the strong fertile soils of the Heretaunga Plains, such as processing primary produce, manufacturing and engineering for the agri/hort sector.

22. The primary and manufacturing sectors in particular rely on water as a key input in the growing and processing of the districts quality produce and these activities deliver value and jobs to the Napier Hastings sub-region region. The leading manufacturing activities in the sub-region are fruit/vegetable processing, meat

products, wood products, beverages, structural metal products and machinery/equipment manufacture.

23. Agriculture and Fishing provided \$522 million or 7% of the Napier Hastings sub-region Gross Domestic Product (GDP) in 2020 and 8080 jobs in 2020 (10.7%). Of these 4092 were in horticulture and 2587 in support in industries.
24. Manufacturing contributed to \$940.1 million, or over 12.6% of the Napier Hastings subregion GDP and employed around 8,859 people (11.8%). In 2020, Hastings District accounted for approximately 67% of total industrial employment across Napier-Hastings and Napier City the balance of 33%.
25. Of the sub-region's zoned industrial land base of 1736 ha, 299 ha or 22% are in industry classes described in the Regional Industrial Study as "wet industries", i.e. dependant upon raw product or processing involving more than just domestic water supplies². Using the same classification these industries employ 5,620 people, or 63% of the manufacturing jobs, and \$628 million of the manufacturing GDP, or 67% of the total.
26. What this demonstrates is that access to available water combines with the productive non-urban land base of over ½ million hectares, including 74,000 ha in highly versatile Land Use Capability Classes 1-3, to support primary production and directly related industrial employment of many thousands of people (close to 14,000) and hundreds of millions of dollars annually (over \$1bn).
27. In that respect Market Economic Limited and iPansophy were engaged by HBRC to assess the economic and social impacts of management scenarios that reduced allocations for groundwater takes and increased minimum flows for surface water abstractions from the Ngaruroro and Tūtaekurī Rivers during the TANK process.
28. The detail for the various scenarios was supplied by the Agfirst and Nimmo Bell modelling for the farm and industry scale impacts, while the wider regional and national economic impacts were modelled by Market Economic Limited. This analysis provided comparisons between the base case (Scenario A) and the following changes:
 - (a) Scenario A contaminant mitigation measures on pastoral land.

² ANSIC Classes C11-13, C15, C17-20

- (b) Scenario B increasing the minimum flows for the Tūtaekurī and Ngaruroro Rivers.
 - (c) Scenario C decreasing the security of supply for groundwater takes to a 9 in 10-year reliability (the minimum flows remained the same as for scenario B) and therefore reducing allocation below 90Mm³.
29. The significance of the economic impacts was mainly seen in relation to the water management scenarios, rather than the management measures for improvement in water quality. The modelled economic impacts were very significant for the economic and social wellbeing of the region and potentially out of proportion to environment benefits that would be achieved. The Section 32 report covers this point (at Section 8.2.5 pages 148-151 and Table 50 at page 287) in more detail, but there are some additional points I wish to make about investments in industrial land capacity.
30. The HDC has in recent years rezoned 175 ha of land at Omahu Road and Irongate, to add to approximately 30 ha of vacant land at Whakatu. A further 50 – 60 ha of land at Tomoana is planned in HPUDS2017, to meet industrial demand for the foreseeable future.
31. Many millions of dollars (\$16m to date with a further \$16 planned in the future) of public investment in services has been made to make this land available to business in order to create employment and prosperity for the community, as well as a \$20M investment in the Te Ara Kahikatea Arterial linking the Whakatu industrial zone to the Hawke’s Bay Expressway. It is important therefore that the industries seeking to relocate from outside the region to these areas, and those from within the region seeking to expand, have access to sufficient water to meet their needs on an efficient and sustainable basis.
32. In this respect, it should be borne in mind that comparatively small water resources can have substantial benefits for the region’s economy by comparison with many rural land-based resources, or provide processing capacity that forms part of the farm gate to market value chain that contributes to the value of the versatile soil resource.
33. HDC has had workshops on the PPC9, both as a consultation draft and as a formally notified proposed plan change. As summarised above, its concerns with the Plan

Change relate mainly water quantity limits and allocation provisions, and how those could affect the productive and production related urban economy, in addition to the workability of the provisions relating to its municipal supply and stormwater discharge functions, and that is reflected in its submissions.

34. Having said that, HDC accepts that there is now a new reality around freshwater resources nationally and within the Heretaunga Catchments as a result of:
 - (a) Greater national direction on freshwater management, urban development and protection of versatile soils.
 - (b) Heightened public awareness and expectations on water quality.
 - (c) Groundwater /surface water connectivity in the TANK catchments is much greater than previously understood.
 - (d) The scale of potential over-allocation versus actual allocation is better understood in the TANK catchments.
 - (e) Greater understanding of abstraction effects on groundwater and surface water levels in the TANK Catchments.
 - (f) Increased innovation in water use and allocation management.
 - (g) Integration of Three Waters thinking and Government Review.

35. It also accepted that these challenges will not be met taking a short or even medium-term view (5-10 years) and cannot be satisfactorily addressed through a modified 'business as usual' approach. The HDC has therefore decided to take a positive, but focussed and pragmatic approach, to seeking changes to PCC9 that would enable the HDC and the community to better position themselves to rise to the challenges of growing within the limits of the water resource. Specifically, it seeks changes to PPC9 that will better enable HDC to take a longer-term strategic approach that works within the limitations of the current water resources, and to facilitate growth through investment in augmentation; innovation and excellence in water management, and changing community awareness and behaviour.

36. In light of that HDC endorsed officers commencing work separately on a possible long term strategic approach beyond the plan change process in the form of an intergenerational water strategy to help facilitate economic and urban growth

within the limitations of current and future freshwater resources of the Heretaunga Plains, underpinned by the following principles (abbreviated – see **Attachment B** for a fuller description).

- (a) **Kaitiakitanga - Intergenerational** - sustainable growth through excellent leadership and guardianship - providing enough for now while creating room for the future.
- (b) **Toitū te Taiao – Sustainable** – economic objectives and environmental outcomes are complimentary - economy within sustainable environmental limits and approaches.
- (c) **Te Ararau – Adaptable** - resilience, multiple pathways – flexibility within parameters to change and evolve to new opportunities beyond our current practice.
- (d) **Oranga Hapori – Societal** - community wellbeing – HDC takes a lead role in working with others, taking our people with us.
- (e) **Mana Taurite** – Equitable -accessibility, affordability and equity for our community.

37. The relief sought by the HDC on PPC9 should be seen in this context. The HDC is not attempting to avoid a conservation and demand approach to urban water use, nor is it attempting to create scope for increased *overall* abstraction for urban growth or increased economic rural or industrial activity.

38. Rather, it is promoting a pragmatic approach to meeting water quantity objectives while focussing on ambitious improvement to other water quality attributes, that recognises the considerable dependency of people and community on adequate water supplies, now and in the future. It also seeks to recognise the considerable exiting investment in economic activities that underpin the health and economic and social wellbeing of the community.

39. In that respect the Council supports the stepped approach to water quantity management promoted by PPC9 and the mitigation of effects and providing for some growth through augmented supply where practicable and environmentally sustainable. This will require a holistic approach to allocation of the total natural and augmented freshwater resources. I return to this later in my evidence.

40. The remainder of my evidence relates to municipal water allocation policy in general terms. More detail around specific submission points on municipal and source protection, stormwater and economic transition matters will be given by the other Council witnesses.

BASIS FOR INTEGRATED MANAGEMENT OF FRESHWATER AND URBAN DEVELOPMENT

41. Central to the Councils' submissions on municipal supply is the concept of integrated management of natural and physical resources, in particular the physical resources represented by urban areas and water as the natural resource to support it through municipal reticulation systems.

42. In that respect Section 30 of the RMA provides that the functions of regional councils include:

- (a) the establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the natural and physical resources of the region.
- (b) the establishment, implementation, and review of objectives, policies, and methods to ensure that there is sufficient development capacity in relation to housing and business land to meet the expected demands of the region; and
- (gb) the strategic integration of infrastructure with land use through objectives, policies, and methods.

43. In my view this imposes a positive obligation on the HBRC to consider not only the effects of urban development on freshwater in PPC9, but also the needs of urban development for freshwater and the infrastructure to support it, including through water allocation regimes and supplementary water supply infrastructure such as storage.

44. In that respect, under Policy 15 of the 2020 version of the National Policy Statement for Freshwater Management (**NPSFM**) communities are to be enabled to provide for their social, economic, and cultural wellbeing in a way that gives effect to national and community values for freshwater. It is accepted that the NPSFM sets parameters and bottom lines for freshwater attributes and provides for compulsory values which must be given effect to through setting limits and targets, regardless of the requirements in other planning instruments in line with King Salmon.³

³ *Environmental Defence Society Inc v The New Zealand King Salmon Co Ltd* [2014] NZSC 38, [2014] 1 NZLR 593.

45. Compulsory values have been set by the NPSFM for ecosystem health and human health for contact recreation. The NPSFM also requires that regional councils set limits and targets, including measures that prevent or reduce over-allocation, both in relation to water quantity and the capacity of the environment to assimilate diffuse discharges from land use on water quality. However, the NPSFM does allow for choices to be made within those parameters through the National Objectives Framework, including in relation to community values for freshwater. So, within bottom lines, choices can be made on appropriate limits and allocation priorities to achieve community values, including economic and social values. Once sustainable limits have been set to protect instream values, the regional plans must manage the allocation and re-allocation of the water available for abstraction and the application of nutrients to land in an equitable way among a wide range of water users.
46. In doing so, the HBRC must promote integrated management of natural and physical resources and must, in accordance with section 30(b) RMA, proactively ensure that there is sufficient development capacity in relation to housing and business land. Under section 30(g) RMA, this includes consideration of the integration of strategic infrastructure to support it. In adopting an integrated approach to this, ki uta ki tai as required by Te Mana o te Wai, requires that local authorities must encourage the co-ordination and sequencing of regional or urban growth (Clause 3.5 (1)(d) NPSFM) and authorities that share jurisdiction over a catchment must co-operate in the integrated management of the effects of land use and development on freshwater (3.5 (3) NPSFM)

INTEGRATED MANAGEMENT IN HAWKE'S BAY/HERETAUNGA

47. In terms of cooperation on an integrated management approach, this can be seen in the adoption of LAWMS by the HBRC in 2011. Prior to this in 2010, over 100 people from throughout the region participated in the Hawke's Bay Regional Water Symposium called by the HBRC to discuss the most important issues around water quantity. The need to integrate land use and water quality was strongly identified and LAWMS was the result of a subsequent stakeholder-based strategy development process (page 3 LAWMS) to chart a way forward on this.
48. LAWMS outlines the region's vision and strategic directions (page 1 LAWMS) for the future management of land and freshwater with an overall vision of:

“In Hawke’s Bay, land and water are highly valued, used wisely and sustainably managed

– by all, for all.”

49. Key drivers (page 9 LAWMS) for this included increasing competition for the water resource for residential, industrial, agricultural and recreational purposes. It also recognised increased competition for agricultural land by primary producers and by urban and industrial expansion, but noted that HPUDS2010, largely addressed this issue.
50. While LAWMS is a non-statutory document its stated purpose is to provide a common focus for the management of land and water in Hawke’s Bay in order to achieve improved economic and environmental outcomes (page 6 LAWMS). In that respect LAWMS contains a number of policies and priority actions (pages 21 and 22 LAWMS) that are relevant to managing land and freshwater resources on a catchment basis and underpinned by the following principles:
 - (a) The need to move from short-term thinking to long term thinking (page 8-LAWMS).
 - (b) Efficient water use is paramount. It is recognised that users need to move from a position of self-interest to collective interest in order to gain efficiencies and make the best use of available water (page 4 LAWMS).
 - (c) Measuring, recording and reporting water use, so that there is transparency about how much is used and when, is a critical element for improved water management (page 4 LAWMS).
51. LAWMS promoted that work be undertaken to determine an allocation model which most fairly distributes the allocable volume, including considering apportioning part of the allowable allocation to different water uses (Policy 3.5 LAWMS), presumably including municipal supply.
52. Large scale community storage infrastructure, which can provide increased water security in water scarce catchments, was recognised in the LAWMS policies as a key element of long-term sustainable solutions. They also recognised that potential demand and supply impacts as a result of climate change and potential land use change needed to be understood. Significantly in the current context it promoted a Regional Water Demand and Availability Study and that consideration be given to

how such infrastructure may be funded, built and operated for the benefit of all (Policy 3.8 LAWMS).

53. The LAWMS policies also recommended that water conservation and demand management strategies be developed by municipal and industrial water users and published online (Policy 3.11 LAWMS). Urban water supplies would not be subject to minimum flows bans but the volume taken would be restricted in accordance with conservation strategies to minimize the impacts on the freshwater ecosystems (Policy 3.9 LAWMS). The strategies would include extra conservation procedures for low flow restriction periods and educational initiatives for the community.
54. In terms of actions, an urban demand and water conservation strategy for the Hastings District was considered a priority action (page 29 LAWMS) (discussed in the evidence of Mr Chapman). It also noted that rainwater collection and recycling for domestic supply should be enabled by District Plans and engineering codes of practice (Policy 3.11 LAWMS).
55. The 2010 Water Symposium participants had identified a wide range of values for each of the major catchment areas in Hawke's Bay. LAWMS distilled these down to a list of high-level values which HBRC considered to be the key drivers for each catchment. In respect of the Heretaunga Catchment (page 36 LAWMS) this included the following (**emphasis added**):
 - (a) Cultural values
 - (b) Life supporting capacity of rivers, lakes and wetlands
 - (c) **Municipal water supplies**
 - (d) Substantial existing and some potential economic development (includes tourism)
 - (e) Native and trout fishery
 - (f) Recreation.
56. The policies and drivers outlined in LAWMS set the strategic context for introducing Chapter 3.1A into the Regional Policy Statement (**RPS**) through Change 5 to the RRMP as set out in the explanation and reasons to the objectives A as follows:

HBRC has undertaken a process to assess freshwater values in Hawke's Bay. This included beginning with a Regional Water Symposium in 2010, followed by a process involving stakeholder representatives to develop the Hawke's Bay Regional Land and Water Management Strategy and a second Land and Water Symposium in 2011. This process helped HBRC to understand how to prioritise and strengthen policy options and management decisions for the different catchments.

57. The Issue Statements in Chapter 3.1A recognise that multiple and often competing values and uses of fresh water can create conflict in the absence of clear and certain resource management policy guidance and that integrated management of land use and water quality and quantity increases the ability to promote sustainable management of the region's natural and physical resources.
58. OBJLW1 seeks that fresh water and the effects of land use and development are managed in an integrated and sustainable manner which includes (among other things and in no particular order of priority):
- 5) recognising the regional value of fresh water for human and animal drinking purposes, **and for municipal water supply (emphasis added)**;
 - 6) recognising the significant regional and national value of fresh water use for production and processing of beverages, food and fibre;
59. OBJ LW2 seeks that the management of land use and freshwater use recognises and balances the multiple and competing values and uses of those resources within catchments and that the RPS and regional plans provide clear priorities for the protection and use of those freshwater resources. POL LW1 requires that regional plans (**emphasis added**):
- f) take a strategic long term planning outlook of at least 50 years to consider the future state, values and uses of water resources for **future generations**;
 - g) **aims to meet the differing demand and pressures** on, and values and uses of, freshwater resources to the extent possible;
60. Specifically, Policy LW1.2 requires that when identifying methods and timeframes in regional plans to achieve limits and targets required by Policy LW1.2(e) it is necessary to have regard to:
- 4a) allowing reasonable transition times and pathways to meet any new water quantity limits or new water quality limits included in regional plans. A reasonable transition time is informed by the environmental and socio-economic costs and benefits that will occur during that transition time, and should include recognition of the existing investment; and

61. POL LW2 1) gives priority, subject to achieving Policy LW1.3 (relating to life supporting capacity mauri and contact recreation), to maintaining, or enhancing where appropriate, the primary values and uses of freshwater bodies shown in Table 2A. It refers to evaluating and determining the appropriate balance between any conflicting values and uses within (not between) columns and ahead of secondary values for the Greater Heretaunga / Ahuriri Catchment Area (amongst others). Primary values for this catchment area in Table 2A include (in addition to natural values):

- **Urban water supply for cities, townships and settlements and water supply for key social infrastructure facilities (emphasis added).**
- Freshwater use for beverages, food and fibre production and processing and other land-based primary production.

62. What I consider that this demonstrates is, that in pursuing integrated management of land use and development and freshwater resources, the RPS requires that sufficient weight to be given to the current and future needs of urban communities and their development for water. That brings us to the planning framework for urban growth and municipal demand in terms of integrated management and natural and physical resources.

PLANNING FOR URBAN GROWTH NEEDS

63. The NCC, HDC and HBRC jointly prepared and adopted HPUDS2010 as referred to in the LAWMS. This was also a collaborative and integrated approach by the partner Councils to plan for and manage urban growth on the Heretaunga Plains for the period 2015-2045. The strategy takes a long-term integrated view of urban landuse and infrastructure over a 30 year horizon and was and still is founded on a series of guiding principles. These are summarised in the following diagram and include notably *“Productive value of its land and water resources are recognised and provided for and used sustainably”*.

Figure 1 - Summarised form of Guiding Principles in 2010 HPUDS (Source: HPUDS Ch1.6)



64. In implementing these principles, HPUDS2010 (and as reviewed in 2017) seeks to achieve a compact development form through greater intensification, in order to avoid unnecessary urban development on the Heretaunga Plains. As the thrust of HPUDS is to avoid urban development over versatile and productive soils and prevent urban sprawl, it recognised that this would necessarily involve a transition away from greenfields development to intensification within the existing developed areas over time.
65. Dwelling growth needs and business land needs for the HPUDS study area were projected out to 2045. From this the number of greenfields, infill and rural dwellings that will be required to meet these growth needs were in line with the preferred settlement pattern. To this end HPUDS 2010 identified specific areas for greenfields development out to 2045. These were reflected as a 'rounding or squaring off' of the urban boundary and sought to limit such development to these areas only, in addition to areas identified in the earlier strategies that had not yet been fully developed.
66. Defined growth areas on the urban edge, in conjunction with intensification, was considered to be more efficient and cost effective from an infrastructure and servicing point of view than other options. This approach would also ensure land use

and infrastructure could be co-ordinated, development well planned, and growth on the versatile land of the Heretaunga Plains avoided as much as possible. It also meant water supply needs could be serviced through the existing bore and network infrastructure.

67. At the time HPUDS noted (at 5.24.1 HPUDS) that the aquifer had capacity to cope with additional demands from urban growth, however the long-term sustainable allocation from the aquifer had yet to be determined. In that respect it recommended consideration be given to the preparation of Integrated Catchment Management Plans to assist with co-ordinated decision-making in relation to surface and groundwater management.
68. HPUDS2010 also recognised that the supply of water for the existing and future population of the Heretaunga Plains is an important local government role (at 5.25 HPUDS) and an increasing demand for water by both urban and rural uses would place pressure on the allocation of the resource. It observed that a sustainable water supply requires a long-term balance between the supply of water and the demand of users, with both a reduction in water supply and potential increases in demand can affecting this balance. In that respect it referenced the need to improve the community knowledge and understanding of water conservation and water management issues. It signals the following key approaches (amongst others) in relation to water supply:
 - (a) Increasing emphasis on water conservation methods and efficient use of the water resource.
 - (b) Sufficient drinking water supply planning and investment to support intensified growth in a planned, rather than reactive, manner.
 - (c) Undertake a collaborative approach to the identification and use of alternative water supplies in the Heretaunga Plains.
 - (d) Emphasis on sustainable development.
69. It also recommended the development of a water supply strategy across the Heretaunga Plains and to promote, collaborate, educate and encourage low-impact urban design, and investigate the provision of incentives and mechanisms for effective water use/re-use. These were all important precursor statements to the HBRC/Provincial Growth Fund funded Regional Water Needs Assessment currently

underway and signal the importance of integrated management of freshwater resources and urban development.

70. A key feature of HPUDS' ongoing implementation is the commitment to scheduling of 5 yearly reviews. This provides an opportunity to check actual growth against projected growth and other changes in circumstances that may have occurred over the preceding 5 years. The reviews also provide the opportunity to make adjustments as necessary, bearing in mind the need for integrated management.
71. HPUDS 2010, was based on research undertaken in 2009 with much of that research based on the 2006 census. The first planned five yearly monitoring and review was delayed from 2015 to 2016 due to the Canterbury earthquakes delaying the 2011 census to 2013 and in turn delaying the production of subnational population and household projections.
72. The 2016 HPUDS review involved the same collaborative approach between the three partner Councils. The Review was ultimately adopted by three partner Councils in 2017 and resulted in updated servicing provisions being incorporated into the LTPs for 2018-2028 and the associated thirty-year infrastructure strategies. Notably the review occurred prior to the National Policy Statement on Urban Development Capacity (**NPSUDC**) and its specific obligations.
73. Like LAWMS, HPUDS is non-statutory document, but has been given effect to through changes to the RPS and District Plans. Change No 4, introducing Chapter 3.1B **Managing the Built Environment** to the RPS, which was declared operative on 1 January 2014.
74. The issue statement for Chapter 3.1B) (ISS UD1) acknowledges the potential for sporadic and unplanned urban development (particularly in the Heretaunga Plains sub-region), to have adverse effects of on:
 - (a) The natural environment (land and water).
 - (b) The efficient provision, operation, maintenance and upgrading of physical infrastructure or services (particularly strategic infrastructure); and
 - (c) The economic social and cultural wellbeing of the Region's people and communities.

75. The explanatory statement to this issue also notes that effective management of growth in the region is necessary to ensure development occurs in a planned, sustainable manner and that ad hoc management of urban growth can have adverse effects on people and communities, and on the natural environment (**land and water**), including sensitive natural environments (streams, wetlands, lakes and rivers). It also notes that managed growth intervention recognises the important role that efficient infrastructure (e.g. road, rail, ports, airports, electricity networks, telecommunications, drainage, **dams, water and wastewater networks**) plays in supporting settlement growth and prosperity (all **emphasis** added).
76. OBJ UD4 seeks to enable urban development in the Heretaunga Plains sub-region, in an integrated, planned and staged manner, which allows for the adequate and timely supply of land and associated infrastructure. POL UD1 requires that territorial authorities must place priority on:
- (a) The retention of the versatile land of the Heretaunga Plains for existing and foreseeable future primary production, and
 - (b) Ensuring efficient utilisation of existing infrastructure, or
 - (c) Ensuring efficient utilisation of planned infrastructure already committed to by a local authority, but not yet constructed.
77. POL UD9.2 requires that in the Heretaunga Plains sub-region, the sequencing of development for greenfield growth areas shall be based on (among other things) the availability and costs of infrastructure services (**water, wastewater, stormwater**, transport and electricity distribution (**emphasis** added)). In my view the concept of efficient use of water infrastructure under an integrated management approach cannot be entirely separated from access to or provision for freshwater supplies to meet growth in demands.
78. As noted above, one of the functions of regional councils under section 30 RMA is the establishment, implementation, and review of objectives, policies, and methods to ensure that there is sufficient development capacity in relation to housing and business land to meet the expected demands of the region. A similar function is given to Territorial Local Authorities under section 31 RMA.
79. In that respect specific requirements are placed on both regional and district councils in undertaking those functions through the National Policy Statement on

Urban Development 2020 (NPSUD). Objectives of the NPSUD relevant to integrated management of land use and development and freshwater resources are as follows (all **emphasis** added):

- (a) Objective 1: New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, **now and into the future**.
- (b) Objective 2: Planning decisions improve housing affordability by supporting competitive land and development markets.
- (c) Objective 6: Local authority decisions on urban development that affect urban environments are: **integrated with infrastructure planning and funding decisions**; and strategic over the medium term and long term; and responsive, particularly in relation to proposals that would supply significant development capacity.

80. The NPSUD policies require Tier 1, 2, and 3 local authorities to provide at least sufficient development capacity at all times, to meet expected demand for housing and for business land over the short term, medium term, and long term, (defined as 3, 4-10 and 11-30 years respectively). Under Clause 3.2 (2) NPSUD, in order to be sufficient to meet expected demand for housing, the development capacity must be:

- (a) Plan-enabled - by the zoning, objectives, policies, rules, and overlays that apply in the relevant proposed and operative RMA planning documents; and
- (b) Infrastructure-ready - the provision of adequate development infrastructure to support the development of land for housing or business use.

81. The Napier Hastings Urban Area is Tier 2 Urban Environment under the NPSUD and local authorities that share jurisdiction over urban environments in tier 1 and 2 Urban Environments must work together when implementing the NPSUD (Policy 10).

82. Tier 1 and 2 local authorities must also set housing bottom lines for the short-medium term and the long term in their regional policy statements and district plans (without going through a schedule 1 process). The purpose of the housing bottom lines required by this clause is to clearly state the amount of development capacity that is sufficient to meet expected housing demand in the region, plus the appropriate competitiveness margin. The housing bottom lines must be based on

information in the most recent publicly available Housing and Business Assessment (HBA) for the urban environment.

83. There are specific requirements for the preparation of HBAs under the NPSUD (Clause 3.6). The purpose of an HBA is to (Clause 3.20 (1)):
- (a) Provide information on the demand and supply of housing and of business land in the relevant tier 1 or tier 2 urban environment, and the impact of planning and infrastructure decisions of the relevant local authorities on that demand and supply; and
 - (b) Inform RMA planning documents, FDSs, and long-term plans; and
 - (c) Quantify the development capacity that is sufficient to meet expected demand for housing and for business land in the short term, medium term, and long term.
84. If a local authority determines on the basis of an HBA that there is insufficient development capacity over the short, medium, or long term, it must (Clause 3.7):
- (a) Immediately notify the Minister for the Environment; and
 - (b) If the insufficiency is wholly or partly a result of RMA planning documents, change those documents to increase development capacity for housing or business land (as applicable) as soon as practicable, and update any other relevant plan or strategy; and
 - (c) Consider other options for increasing development capacity; and otherwise enabling development.
85. So, there are positive obligations for **both** regional councils and territorial authorities to actively plan to accommodate urban growth demand in a way that improves housing affordability and is supported by planning and necessary infrastructure. In that respect Clause 3.12 requires that every tier 1 and tier 2 local authority must also prepare, a Future Development Strategy (FDS) every 6 years and must review its FDS every 3 years to determine whether it needs updating. This must be completed in time to inform the preparation of the next LTP.
86. The purpose of an FDS is to promote long-term strategic planning (Clause 3.13) by setting out how a local authority intends to (all **emphasis** added):

- a)i) achieve well-functioning urban environments in its existing and **future urban areas**; and
- ii) provide at least sufficient development capacity, **over the next 30 years** to meet expected demand;
- b) assist the **integration of planning decisions** under the Act with infrastructure planning and funding decisions.

87. If more than one tier 1 or tier 2 local authority has jurisdiction over an urban environment, those local authorities are jointly responsible for preparing the FDS (Clause 3.12(3) NPSUD). Importantly every tier 1 and tier 2 local authority must have regard to the relevant FDS when preparing or changing RMA planning documents (Clause 3.17 NPSUD). I consider HPU DS to be in the nature of a FDS for the purpose of the NPSUD and it is appropriate for PPC9 to have due regard to it. I note that every FDS must in turn be informed by every other National Policy Statement.

88. Given the directive references to infrastructure planning and funding for housing and business land capacity the NPSUD seems, in my view, to stray outside the sustainable management ambit of the RMA and into the purpose of the LGA. I make no particular observation on that, other than it would seem to apply equally to regional councils as it does to territorial authorities in the context of integrated management. In that respect ensuring sufficient water availability for municipal growth would appear to be part of demonstrating sufficient capacity, not just the adequacy of the delivery infrastructure.

89. I also note the requirement of Section 14(1)(h) of the LGA that in taking a sustainable development approach, a local authority should take into account (**emphasis added**)—

- i) the social, economic, and cultural well-being of people and communities; and
- ii) the need to maintain and enhance the quality of the environment; and
- iii) the reasonably foreseeable **needs of future generations**.

which would seem entirely appropriate in relation to PPC9 and the requirements on the NPSUD as articulated **at present** in HPU DS2017. The needs of future generations are of particular relevance in terms of changing demand to which I now turn.

CHANGING URBAN DEMANDS

90. Understanding the demand for water to support foreseeable urban growth is therefore fundamental to sufficient allocation. We can expect that demand expectations will change over time, so it is important that allocation decisions are based on the latest information, especially given the commitment in HPUDS to regular reviews to account for changing circumstances.
91. To illustrate this, HPUDS2010 was based on research undertaken in 2009, with much of that research based on the 2006 census based sub-national population and household projections produced by Statistics New Zealand (SNZ) and further developed by Economic Solutions Limited (ESL). HPUDS2010 therefore used a projected population and household growth over 30 years from 2015-2045 of 8255 people, and because of demographic changes this translated to 8014 households for the HPUDS study area (see **Attachment C** for a Map).
92. The 2016 review was based on the 2013 census based subnational population projections. The HPUDS Study Area actual population growth over 2009-2015 as estimated by SNZ in 2015 was 5,500 or 4.4%. This was 1080 higher than projected in 2009 for the same time period, or nearly 25% higher than projected. In terms of household growth this was estimated at 3,063 or a 6.3% increase in household numbers from 2009 to 2015. The 2009 based projection for total households in 2015 was 50,910 so the growth was 545 household higher or around 21% higher.
93. Looking forward for the period 2015-2045 HPUDS2017 used the 2013 Census based subnational projections, but further enhanced by ESL to derive a slightly more optimistic outlook using a scenario mid-way between the medium and the high projection scenarios. This resulted in new growth projections between 2015 and 2045 of 16,485 people and 10,610 households (compared to 8255 and 8014 respectively).
94. The 2018 census based subnational projections have recently been released, but not household projections. In addition, SNZ have revised their estimates of population growth between 2013 and 2020. This covers an extraordinary period of significantly higher international net immigration into the Country than previously experienced, which has significantly increased housing demand, resulting in accommodation shortages and contributed (among other drivers) to record house price inflation. This has resulted in the 2015 base point for the HPUDS 2017 projections being short by

approximately 2850 people⁴. This means the original 2009-2015 estimate was under projected by 3930 people or 85%. Further, the 2017 projection for the 2015-2020 period under projected the estimated actual based on the 2018 census by 7,250 (12,350-5,100) or 140%.

95. The SNZ 2018 census-based projections from 2020-2045 are 19,154 under the medium growth scenario or 39,943 under the high growth scenario. This compares with the HPUDS2017 projections of 16,485 people for the 2015-2045, or 11,385 for the 2020-2045 period with a 2010-2020 under projection of 11,180). These growth projections will likely form the basis of the next review of HPUDS which is due to commence in the second half of this year, following the completion of the Housing Assessment required by the NPSUD to be produced by June of this year.
96. A summary of the figures given above is as follows:

Population Change	2009-2015	2015-2020	2020-2045	2015-2045
HPUDS2010 (2009 Census Base)	4420	3171	5084	8255
HPUDS2017 (2013 Census Base)	5500	5100	11385	16485
SNZ Actuals Estimated at 2020	8350	12351		
SNZ 2020 Medium Projection	8350	12351	19154	31506
SNZ 2020 High Projection	8350	12351	39943	52294
HPUDS2010&2017 v SNZ 2020	3930	7251	Sum →	11182

97. As a FDS the HPUDS 2021 review will likely feed into the next round of Council LTPs in 2023. Given the step change in actual growth and forward projections, together with the changing planning frameworks in the form of the NPSUD and the Proposed National Policy Statement on Highly Productive Land (NPHPVL), there is a strong prospect that the review will consider substantially different proposed settlement growth pattern options than the current HPUDS. These may include potential greater development in the hills and new or extended settlements remote from the main urban areas, which in itself may produce different challenges for obtaining water.
98. In that context I do not consider it appropriate for PCP9 to lock in policy development around water allocation for municipal supply to a particular version of HPUDS, especially given that these need to be reviewed every three years and updated a minimum of every six years. As illustrated above, the growth projections upon which

⁴ Figures used here after 2015 are pro-rated for HPUDS Area at 95% of the combined Territorial area population. To the extent that urban growth rates are likely higher than out rural areas, this potentially under-estimates the impact slightly.

HPUDS2017 were based are likely to significantly under count actual growth. PPC9 should be setting policy guidance around allocation, and those policies should ideally be more enduring than the 10-year regional plan review cycle when considering integrated management of natural and physical resources.

99. To emphasise the point, it is noted that the HDC consent for municipal water supply take was issued in 2010 based on HPUDS2010 projections, which as noted were lower than the 2017 review projections. At that time Hastings 'gave back' existing substantial consented surplus capacity. The NCC consent on the other hand was granted in 2008 and still has surplus consented capacity, well in excess of its projected needs under HPUDS2017 growth scenarios. That consent does not expire until 2027 and there is no guidance in PPC9 about how current municipal allocations will be re-allocated, other than that there should be no increase in allocation (according to the Section 42A report).
100. In that respect I consider that the section 42A report makes unfounded assumptions around the ability of the existing municipal consents to meet the needs of municipal supplies to meet urban growth demands based on the current version of HPUDS and expectations around the reasonable efficiency gains. I do not consider that a Plan Change that is essentially setting policy around allocation and use is the place to determine what is reasonable in terms of need, or to determine the practicality/benefits and costs of demand and conservation management measures; that is the purpose of the resource consenting process. Mr Chapman and Ms Sweeney will provide further evidence on this point.
101. Policy 14 of the NPSFM also requires that freshwater is managed as part of New Zealand's integrated response to Climate Change. Increasingly decisions about land and water will need to be made against the backdrop of the government's desire to move New Zealand towards a low carbon economy as signalled by the Zero Carbon Act. In respect of urban development that may well result in new or different drivers that could impact on water supply arrangements in ways not yet appreciated, reinforcing the need for the policy settings to be resilient to changing circumstances.
102. The LAWMS referred to this in 2010, including a policy that potential demand and supply impacts as a result of climate change, and potential land use change, needed to be understood (Policy 3.14 LAWMS). It recommended an action to complete a regional water demand and availability study, which as I noted earlier is now underway.

MUNICIPAL ALLOCATION CONCEPTS

103. The staged approach adopted in PPC9 in relation to setting limits and targets and the uncertainty around augmentation and supplementary allocation measures (as represented by the HBRC's own submission on this point), means PPC9 does not have in my view, a highly developed or well understood long term allocation regime. The only real allocation is that provided in [Pol 59] with 20% of the available high flow being reserved for use for cultural values.
104. It would appear that any further allocation system is left to a future plan change once the current consents are re-allocated and augmentation schemes for mitigation and potential supplementary allocations for storage of high flows have been determined. The time frame for this is broadly considered to be 10 years when PPC9 provisions reach their maximum review period under the RMA (as it stands at present).
105. That may well be a pragmatic approach to the current situation and the Councils support the staged approach, that does not necessarily reflect the needs of urban communities for long term planning of municipal supplies to support urban growth demands as required by the NPSUD.
106. In that respect the policy structure of PPC9, to the extent possible and within the scope of submissions, needs to reflect a number of considerations which I consider are relevant to consideration of municipal supply allocations. I have included a fuller discussion in **Attachment D**, however for present purposes, I make the following points of emphasis:
- (a) *Sufficient Allocation* - unlike businesses, urban growth is a function of many individual and business decisions and suppressed growth due, for example, insufficient water supplies can have adverse effects on communities e.g. housing affordability, lost business opportunities and reduced profitability margins which flows into labour markets. A sufficient allocation should provide what is necessary to meet a community's needs over a reasonable time frame (i.e. 35 years). This needs to be determined in accordance with the NPUD and the FDS at the time the allocations are made or reserved is the appropriate basis for then assessing water supply needs after applying a robust water conservation and demand approach.

- (b) ***Holistic Allocation*** – water allocation should be treated holistically to account for the interconnectedness of water bodies and limitations on the volume of harvested and stored water that can be made available, which is a key element of long-term sustainable solutions. How this limited resource is accessed and funded needs to be subject to efficiency and equity considerations.
- (c) ***Efficient Allocation*** - Allocations from groundwater, surface water and high flow storage need to be able to be accessed efficiently, including providing access to water as close to the source as possible to avoid unnecessary infrastructure and treatment. To the extent possible the Plan should therefore enable transfer or reallocation of water resources to achieve efficient outcomes, particularly for municipal supplies.
- (d) ***Prioritised and Equitable Allocation*** - An equitable allocation of a community resource therefore implies considering the needs of the whole community, both now and into the future. In that respect apportioning and reserving sufficient allocation for municipal needs into the future should be part of that consideration and communities should “first call” on groundwater and surface water allocation. They should only be required to contribute to flow mitigation proposed to achieve environmental objectives if required directly in relation to that take, i.e. before accounting for the additional cumulative effects of commercial abstractors, at least until further clarity is available on the nature, operation and benefits of such schemes and certainly in respect of essential human health needs.
- (e) ***Active Allocation Management*** - An efficient and equitable allocation regime will require a highly developed accounting system as provided in Clause 3.29 (6) of the NPSFM including measuring or modelling the amount of take, proportion by category of use and proportion of available take allocated. Such a system should also enable active management of allocations over time by projecting demand and supply, including planned storage and augmentation schemes, for the short, medium and long term over 30 years, in much the same way that NPSUD does for urban development capacity. This should allow for water known to be required to the future to be allocated to other uses in the interim.

107. While a reserved allocation for municipal supplies is not directly contemplated by PPC9 as notified (although that is a possibility, as discussed in the evidence of Mr Drury) aspects of the Councils' relief sought are intended to achieve outcomes consistent with these principles and to ensure options for the future are not foreclosed. For instance, the Councils seek relief requiring that they not be faced with the stark option of contributing to a scheme or ceasing abstraction (POL TANK 39, discussed in the evidence of Mr Drury), and providing increased ability for the transfer of permits, which assists with efficiency measures described above.

SUBMISSIONS

108. Against this background I address the Council's submissions in a general way, with the evidence of Mr Chapman, Ms Sweeney and Mr Drury addressing specific points in more detail.

109. Overall, the submissions seek changes to the policies and rules to provide the Councils with more flexible and agile options and multiple pathways, in order to meet their statutory obligations to support housing and business capacity to meet growth demands. This includes greater flexibility for transfers of water for and between municipal use to support urban growth.

110. They seek changes to PCC9 that will better enable the Councils' to take a longer term strategic approach that works within the limitations of the current water resources to the extent reasonably practicable, and to facilitate growth through investment in augmentation; innovation and excellence in water management, as well changing community awareness and behaviour.

111. In particular, they do however, also seek to ensure PPC9 gives greater recognition of the unique nature of urban growth demands and the need to recognise HPUDS and subsequent reviews as providing guidance around minimum demands. Greater recognition of wider community needs beyond just human biological health needs, is also sought when considering priority for municipal community supplies.

112. In terms of the wider economy and the need to transition to the new use limits, the Councils submit that consideration be given to growth planned at the time of the original consent yet to be given effect to, when replacing industrial and commercial takes, and the ability to consider exceptional/high value opportunities when allocating and re-allocating water versus blanket prohibition. The Councils also

submit that greater flexibility should be given for transfers of water as a means of enabling opportunity, and to support urban growth for existing industrial users within limits. This would include allowing territorial authorities to manage some individual allocations on a collective basis (i.e. bundling) for urban activities not supplied from existing municipal systems, to encourage efficient use and create headroom for growth. Submission points relating to these matters are considered in Mr Drury's evidence.

113. The Councils consider that investigation of flexible management initiatives such as augmentation and global consents should, as far as possible, occur ahead of the consent replacement process to avoid potentially severe impacts on users in the interim. Taking a longer term view the Councils make the point that consideration needs to be given to determining the long-term sustainable equilibrium of the groundwater resource (up or down) alongside other matters when reviewing the allocation limit, rather than maintaining ground water levels for their own sake.

114. In respect of municipal allocation, I highlight the following remedies sought by the two Councils and dealt with more specifically by MS Sweeny as follows:

(a) OBJ16 Amend Objective 16 Water Quantity to:

Include reference to successive versions of HPUDS

(b) POL39 Flow Maintenance - Amend Policy 39 to:

Provide for a Water Conservation Strategy approach for municipal takes rather than a requirement to cease.

(c) POL48 Water Use Change/Transfer Amend Policy 48 to:

Allow transfers to be a tool for managing urban growth.

(d) POL50a Water Allocation-Priority Amend the Policy 50a to:

(i) Include successive versions of HPUDS.

(ii) Not limit the measure of efficiency to the 'Infrastructure Leakage Index 4' tool.

(e) Rule TANK 10 Surface and Groundwater Takes Amend Matter of Discretion 5 to:

- (i) Refer to a Leakage Index of 4 *or better*
 - (ii) Rate and volumes of take limited to the projected demand for the urban area provided in HPUDS 2017, *or successive versions*.
- (f) Amend Rule 62a relating to transfers to:

Refer to Transfers to meet communities needs instead of just human health needs.

Add the following advice note shown in bold italics:

“For the purpose of (i), the transfer of water from a municipal supply to a point of take servicing industrial uses with a demand of greater than 15m³ per day is not considered to be a change of use.”

COMMENT ON S 42A REPORT

115. In respect of the Section 42A report I will first make a point of clarification in relation to paragraph 32 which states:

The interim agreements were supported in principle by most parties, but three parties could not confirm support. Hastings District Council had requested further time to assess the report but did not see any obvious issues based on initial consideration.”

116. Having given further consideration to the Interim Report the Council resolved, after the HBRC had finalised the report, to endorse the Interim Agreements. I would point out at this point that the Interim Agreement Report at page 48 stated:

Access to water is a critical component in unleashing the productive capacity of the versatile Heretaunga Plains soils for food and fibre production. The prosperity of the region’s rural and urban populations is dependent upon the land based primary industries and some significant processing industries rely on a secure supply from primary produce and access to reliable and clean process water. In combination, the wealth created by these productive and processing industries flows on into most other sectors of the economy. In short, the ability of the community to enjoy and appreciate the natural and physical attributes of the region, including water bodies, is dependent upon the ability to work in the region and freshwater is central to that. It is important therefore that the right balance between protection and use is found and agreed upon.

117. At paragraph 80 of the Section 42A report, there is reference to PPC9 giving effect to a range of community values and uses including cultural values associated with recreation, birds, stock and domestic water and native fish. In my view, there should also have been acknowledgement of the freshwater values relating to municipal water supply and the economic wellbeing of the community as a whole as reflected

in OBJ16 and Figure 1 in PCC9. At paragraph 103 there is reference to there being submissions from mana whenua, representatives of Mangaroa Marae, settlement treaty government entities, farmers, wine growers and environmental groups. It is also important to acknowledge the submissions of the territorial authorities providing drinking water and water to support the general health and wellbeing of over 100,000 people.

118. At paragraph 1211 the section 42A report refers to HPUDS as enabling the HDC and NCC in particular the ability to account for growth while ensuring abstraction does not increase due to increasing populations and demand. It states that the HDC and NCC will be required to demonstrate efficient use, water conservation and work together with the HBRC to develop integrated planning approaches.
119. As I referred to earlier, demonstrating efficient water use and conservation is part of determining a sufficient allocation for municipal needs, but ensuring no increase in municipal abstraction is not able to be assumed into the future. The HBRC will need to work within the NCC and HDC to develop an integrated approach to meet urban needs within overall resource limitations, which require active management of the available resource to achieve priority allocations.
120. At 1236 the 42A report acknowledges that PPC9 recognises that territorial local authorities have obligations to provide for future growth and re-allocating consents based on actual historical water use could impede the HDC and NCC in fulfilling these obligations. The report however fails to acknowledge is that the HBRC similarly has obligations under the NPSUD2020 and Section 30 RMA. Is also fails to acknowledge that same situation can occur if greater levels of growth than anticipated by HPUDS2017 eventuate or are likely to eventuate. PPC9 needs to provide a policy framework that proactively manages and responds to those situations if they arise.
121. At paragraph 1234 the report correctly identifies that a hierarchy does not exist between the NPSFM2020 and NPSUD2020. Local authorities have obligations under both national policy statements. It notes that the NPSFM2020 provides guidance at clause 3.5 on integrated management, but the NPSUD2020 does not contain clauses providing equivalent detail on approaches to integrated management, or direction on how to manage freshwater resources. I am unsure what the officers take from this, but I note that clause e) in Clause 3.5 to "*encourage the **co-ordination and sequencing** of regional or urban growth*" (*emphasis* added) is relevant to urban growth management specifically, while Clause 3.5(4) of the NPSFM requires District

Plans to include provisions that avoid, remedy or mitigate adverse effects of urban development on water bodies.

122. At 1237 the report correctly identifies that OBJ TANK 16 largely aligns with the NPSFM2020 hierarchy of obligations and specifically prioritises water for domestic supply after the essential needs of people, although it is noted that the Section 42A report recommends a change to Obj16 to refer to reasonable domestic needs, ahead of existing and future demand for domestic supply and municipal uses (as opposed to supply). It does acknowledge that consents to take freshwater held by territorial authorities not only provide for the health needs of people (through supply for residential drinking water, hospitals, rest homes etc.), they also include cultural, social and economic uses (through supply to religious meeting places, parks and gardens, restaurants, swimming pools, shops, and industry). In the Councils view these are important elements supporting mental health and general wellbeing in an urban setting.
123. At 1238 the report also correctly identifies that improving water use efficiency is a key method of enabling growth to continue while avoiding over-allocation and at 1239 invites HDC and NCC to provide further information on how they allocate and manage use within their reticulated systems, how they might give effect to the NPSFM2020 hierarchy of obligations and intend to improve efficient water use moving forward. Mr Chapman and Ms Sweeny's evidence will go some way to doing that, but I note that the resource consent process, or other specific allocation mechanism, is the appropriate place to demonstrate demand and efficient use, including the option of installation of water meters, which is an option HDC and NCC *may* seek to implement as the Report notes at paragraph 1240.
124. At paragraph 1636 the report notes that given the tension between increasing urban demand and the over-allocated nature of the freshwater resource in the Heretaunga Plains, urban and development growth will need to be provided for through alternative measures, such as improving efficient use and water conservation. At paragraph 1638 it goes on to state that like all water users in the Heretaunga Plains, territorial authorities must also be constrained in their water allocations and find alternative sustainable methods of meeting demand. There is no acknowledgement here, that municipal and other community uses are *not* like other users, or that their needs and the drivers of demand are vastly different and less discretionary or controllable. The report makes no mention of augmentation, or re-allocation of

other allocations to meet the priority use for community supplies that is implicit in the statutory framework in my view.

125. Comments in relation to the Section 42A report on more specific submission points will be made in the evidence the other Council witnesses.

CONCLUSION

126. While the HDC and NCC generally support the pragmatic stepped approach proposed by PPC9, it considers greater recognition of the priority and specific needs of people and communities for municipal and community supplies is needed. In addition, a policy framework that looks out beyond the ten years life of the plan is needed to account for the long-term nature of urban planning and the need for integrated management of natural and physical resources, integrated strategic management of infrastructure and providing sufficient development capacity to meet the housing and business growth needs of urban areas in the short, medium and long term.

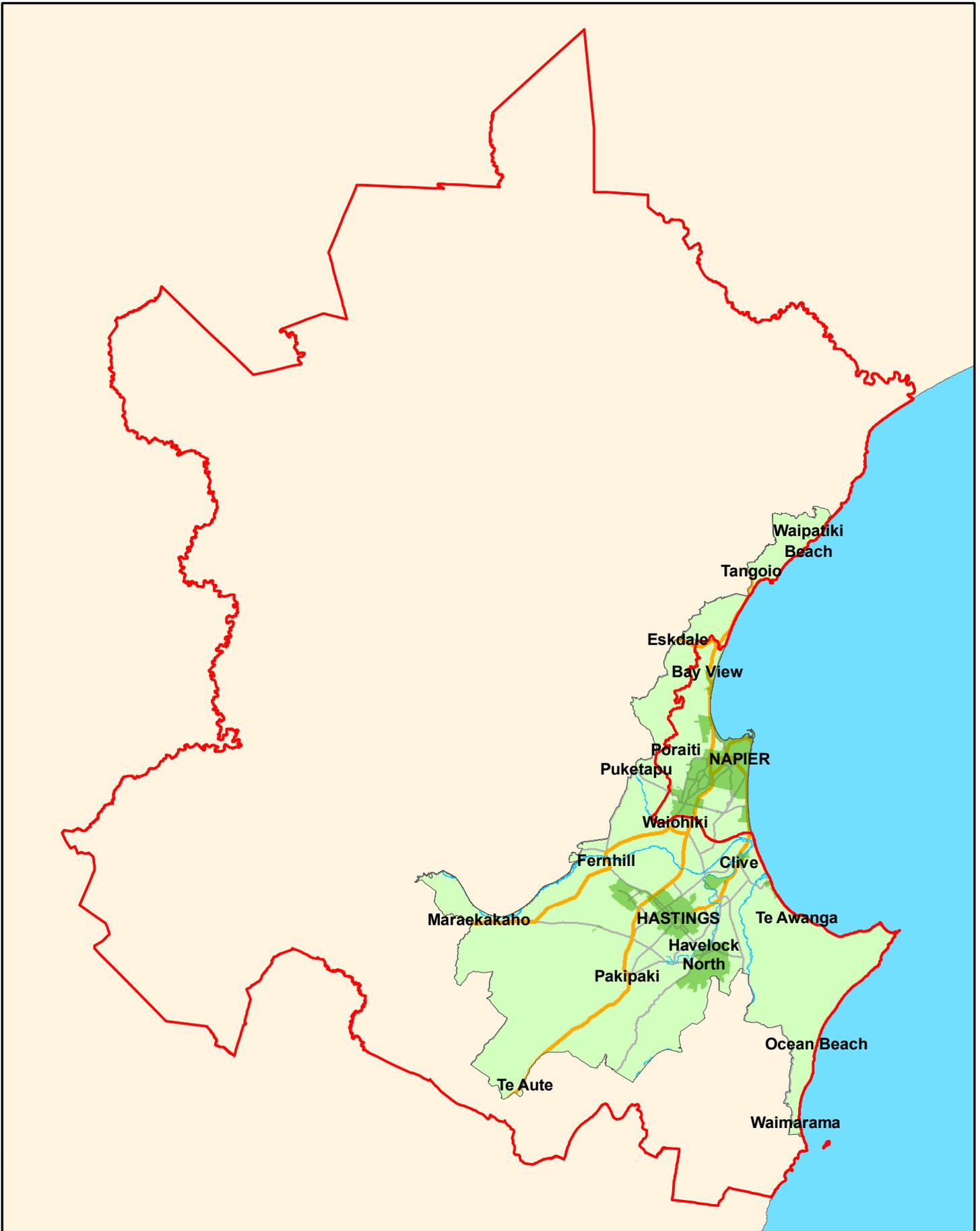
Mark Clews
BRP Hons 1, MNZPI
Principal Advisor District Development
Hastings District Council

Attachment A

Qualifications and Experience of Mark Anthony Clews

1. My name is Mark Anthony Clews, I hold a Bachelor of Regional Planning Degree with First Class Honours conferred by Massey University in 1985. I am a full member of the New Zealand Planning Institute and have had over 35 year continues experience in a variety a planning and resource management roles with the Hastings District Council and prior to that the Hastings and Upper Hutt City Councils.
2. Since 2010 I have acted as the Council's Principal Advisor District Development, but have previously held senior executive and management roles in Strategic Planning, Resource Policy and Development Management and control; in relation to both rural and urban development, infrastructure planning, natural hazards mitigation and adaptation and urban design.
3. In my current role I have represented the Hastings District Council's interests the Hawke's Bay Regional Council's freshwater management planning processes since 2011, when I was a member of the Reference Group for the preparation to the Land and Water Management Strategy, which was initiated in response to the 2011 National Policy Statement on Freshwater Management. I subsequently represented Council in relation to Change 5 to the Regional Resource Management Plan, which introduced new Regional Policy Statement provisions in the form of Chapter 3.1A Integrated Land Use and Freshwater Management. In that role gave evidence at first level hearings and ultimately represented Council as a Section 274 party in successful Environment Court (*Federated Farmers v HBRC Env-2013-WLG-000053*, *Fish and Game Council HB Env 2013-WLG-000054* , *Horticulture NZ v HBRC Env-2013-WLG-000055*) sponsored mediation on all but one reference (*Ngati Kahungunu Iwi Inc v Hawkes Bay Regional Council Env-2013-WLG-000050*).
4. I subsequently represented the Council on the Regional Councils Tūtaekuri, Ahūriri, Ngāruroro and Karamū (TANK) catchment stakeholder group from its inception in 2012 until its conclusion in 2018. I subsequently assisted the council in preparing comments on the consultation draft for Proposed Plan Change 9 and later in the preparation the formal submissions and further submissions that are before the commissioners at this hearing.

5. Relevant to this hearing I have, since 2010 to the present, represented Council's interests on the Technical Advisory Group and provided advice to Council, in the preparation and review of the Heretaunga Plans Urban Development Strategy, which I refer to in evidence.



HPUDS Boundary



HASTINGS
DISTRICT COUNCIL

Map Produced using ArcMap



Scale 1:500,000



Projection: NZTM
Datum: D_NZGD_2000

Original Size: A4
Date: Monday, 27 January 2020

DATA SOURCE: Cadastral information derived from the Land Information New Zealand's Core Record System (CRS).
CROWN COPYRIGHT RESERVED

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DISCLAIMER: The Hastings District Council cannot guarantee that the data shown on this map is 100% accurate.

Attachment C

Intergeneration Water Strategy Principles Adopted by Hastings District Council.

- a) **Kaitiakitanga - Intergenerational** - sustainable growth through excellent leadership and guardianship - providing enough for now while creating room for the future. Smart growth, innovation and water excellence to facilitate population growth and prosperity.
- b) **Toitū te Taiao – Sustainable** – economic objectives and environmental outcomes are complimentary - economy within sustainable environmental limits and approaches, rather than holding to current levels. People/ animals/environment share impacts and benefits of life-giving waters.
- c) **Te Ararau – Adaptable** - resilience, multiple pathways – flexibility within parameters to change and evolve to new opportunities beyond our current practice. Potential infrastructural investment in sustainable resource use to meet growth objectives.
- d) **Oranga Hapori – Societal** - community wellbeing – HDC takes a lead role in working with others, taking our people with us, whilst recognising different perspectives to improve water availability for our community.
- e) **Mana Taurite – Equitable** -accessibility, affordability and equity for our community as a basic right embodying needs before wants, fairness for all, cultural recognition & redress.

Attachment D

Allocation Concepts

Sufficient Allocation

1. Unlike businesses, urban growth is a function of many individual and business decisions that are not able to be controlled by central or local governments. Unmanaged and even actively discouraged growth can have adverse effects on existing society e.g. housing affordability, lost business opportunities and reduced profitability margins which flows into labour markets. This is recognised by the NPSUD which requires local authorities to proactively plan for and support urban development growth needs as discussed earlier, and fundamental to this is the ability to access sufficient water resources water for **the full range of urban services**.
2. In my view, in a resource scarce environment sufficient allocation implies no more than is necessary to meet a community's needs over a reasonable time frame. Dealing with the last point first a proxy for reasonable timeframes would in my view, be the maximum consent durations for water takes, i.e. 35 years, given the infrastructure required, and the community and private assets supported, will often have lifetimes of 100 plus years. It is difficult to conceive of activities for which this maximum duration would be appropriate ahead of urban water supplies, other than nationally and regionally strategic infrastructure.
3. On the first point, growth demand needs to be determined in accordance with the NPSUD requirements over the short medium to long term, the latter being 30 years, using a variety of growth projection scenarios. In terms of integrated management, the adopted growth scenario used in the FDS at the time the allocations are made or reserved, is the appropriate basis for then assessing water supply needs. The Councils have a submission point on this.
4. As noted in HPUDS a sustainable water supply requires a long-term balance between the supply of water and the demands of users and both reduction in water supply and potential increases in demand can affect this balance. In this respect sufficient in my view, means after applying all reasonably practicable measures to reduce water demand, including conservation, re-use, technological efficiency, and reduced waste at individual and community levels. This may include metering and water charging, but as noted earlier, those are not matters for assumption or proof at the Plan Change level. Rather they are, matters to be tested at the allocation stage through resource consents or other allocation system.

5. It is not reasonable in my view for PPC9 to assume that current consented allocations for municipal needs over the next 30-35 years will be able sufficient to meet the community's reasonable needs through reasonably practicable conservation and demand measures. Further, it is not reasonable to expect that by capping allocation the needs of the community will somehow be reduced below what is reasonable, or that impracticable conservation and demand strategies will somehow become practicable.
6. While there may be an element of “if needs must” in managing use, I do not consider that this is a reasonable basis for integrated management and solid urban planning. There is either sufficient or insufficient allocation to meet a community’s needs at any point in time. Further, reducing the concepts of sufficient supply to drinking water and human health only, undermines the concept of quality urban environments and ensuring capacity for growth. That would, in effect, discouraging growth by reducing urban amenity values, which in my view, also contribute to physical and mental wellbeing. The Councils’ have a submission point on this.

Holistic Allocation

7. An alternative proposition promoted in submissions of others and the Section 42A Report is that if, even with expected efficiency gains, the current permit allocations for municipal supply cannot meet the foreseeable demand, then those needs will need to be subject to alternative water supplies being available or new resources (such as through storage).
8. The LAWMS recommends that water allocation is treated holistically to take into account the inter connectedness of water bodies. It also promotes that high flows are able to be harvested and stored and promotes large scale community storage infrastructure, noting that this can provide increased water security in water scarce catchments and is recognised as a key element of long term sustainable solutions. In my view holistic allocation would include that resource as well, as that resource will also be limited by the capacity of the environment to support the level of high flow take. As noted earlier, this seems also to be recognised in the LAWMS as it recommends completing a Regional Water Demand and Availability Study.
9. Any allocation from high flow storage will need some form of consent or approval from the HBRC, so in the context of PPC9 policies, sufficient municipal allocation needs to be considered in relation to the total resource availability, including augmented or supplementary supplies.
10. These potential supplementary supplies need to be seen as a community resource, not a private resource for development and use by individuals and companies, because the resource is not

limitless. In terms of sufficient allocation for municipal supplies, these may need to be supplemented from large scale community storage if existing ground and surface water supplies are unable to provide all the water needed. How this resource is accessed and funded needs to be subject to efficiency and equity considerations.

11. That is not to say that municipal authorities, or even individuals cannot provide their own separate storage from rainfall, or a consented winter allocation (if allocated fairly from the total community resource for the activities in question), or stormwater capture for reuse, but for municipal supplies this will not generally be practicable in large volumes.

Efficient Allocation

12. Allocations from groundwater, surface water and high flow storage need to be able to be accessed efficiently. Central to that is the flexibility to achieve outcomes in a cost-effective manner and that is particularly important if a sufficient municipal supply needs to be augmented from supplementary off river storage. For example, it would be highly inefficient to pipe water from storage, or from rivers used to convey stored water, to an urban community past irrigators accessing groundwater. Transferring the irrigators groundwater allocation to the urban supply allocation and supplying the irrigator with supplementary stored water closer to source for all or part of their needs would avoid massive costs. To the extent possible the Plan should therefore enable transfer or reallocation of water resources to achieve efficient outcomes, particularly for municipal supplies. The Council have a submission point on this.

Prioritised and Equitable Allocation

13. Objective 2.1 and Clause 1.3 (5) or the NPFM 2020 introduces the following priorities in relation to the fundamental concept of Te Mana O Te Wai:
 - (a) first, the health and well-being of water bodies and freshwater ecosystems
 - (b) second, the health needs of people (such as drinking water)
 - (c) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.
14. Clearly municipal supplies fall within the ambit of b) and c). In that respect an important point to make is that (b) is not limited to drinking water, and I touched on this earlier. To the extent that there may be some argument about elements of community use supported by municipal supplies

that do not fit in b), but in c), some further discussion around priorities and equitable access is needed in considering any allocation regime.

15. In that respect the LAWMS also recommends the development of an allocation model which most fairly distributes the allocable volume and to consider apportioning part of the allowable allocation to different water uses. In that respect apportioning and reserving sufficient allocation for municipal needs into the future should be part of that consideration.
16. In my view equitable allocation of a community resource implies considering the needs of the whole community, both now and into the future. Access to a share of the allocatable resource according to different activities should reflect the needs of the community as whole first, and sectors and individuals second and third and there is some support for this in Obj16 as recommend to be amended in the section 42A report.
17. In the latter case prior reliance on an existing water allocation should not prevail over changing demand for new beneficial activities. In any event the needs of the community to grow should be provided for ahead of existing users, but applying the concept of “sufficient” supply i.e. after all reasonable conservation and demand measures are accounted for. In that respect however, I note that there are no existing use rights for water takes and such an approach would imbed the concept of grand-parenting.
18. That part of the water resource that is not reserved to for the health and well-being of water bodies and freshwater ecosystem to meet part (a) of clause 5 above is still part of the “commons” (the other part being for Te Mana o te Wai). To that extent equitable access should not be left to market forces or individual transactions outside of the allocation regime for the total resource. The Councils therefore support the HBRC submission to take the lead on and ownership of storage and mitigation of effects.
19. The Councils’ position is that community use (not just municipal supplies) should have “first call” on groundwater and surface water allocation. Communities should only help finance the mitigation to achieve environmental objectives and any “top up” to achieve sufficient allocation for municipal needs if that would be required for those takes alone, i.e. *before accounting* for any commercial, industrial, or irrigator use. In other words, if environmental limits would not be breached by the municipal and community use and no mitigation is required, then no community funding should be required (beyond investment in robust demand and conservation strategies) if by adding irrigation and industrial or commercial abstraction cumulative effects then need to be mitigated achieve freshwater objectives; those effects should be funded by those commercial

users and not urban or other community uses, at least in respect of essential human health component.

20. In the event that community impacts require mitigation of the nature contemplated by the HBRC submission, then that component could potentially be funded from a targeted rate to ensure there are no inequities as between municipal users or other community supplies and individual domestic takes.
21. Having said that, the Councils would however, be open to a further discussion on this once an allocation regime and flow maintenance schemes are more advanced and greater clarity is available on the nature, operation and benefits of such schemes.

Active Allocation Management

22. An efficient and equitable allocation regime will require a highly developed accounting system as provided in Clause 3.29 (6) of the NPSFM including measuring or modelling:
 - a) amount of freshwater take; and
 - b) the proportion of freshwater taken by each major category of use; and
 - c) where a take limit has been set, the proportion of the take limit that has been allocated.
23. The purpose of the accounting systems (Clause 3.29(2) NPSFM) is to provide the baseline information required:
 - a) for setting target attribute states, environmental flows and levels, and limits; and
 - b) to assess whether an FMU is, or is expected to be, over-allocated; and
 - c) to track over time the cumulative effects of activities (such as increases in discharges and changes in land use).
24. In the Councils' view, to enable the municipal supply allocation concepts discussed above to be given effect to, such a system should also enable active management of allocations over time by projecting demand and supply, including planned storage and augmentation schemes, for the short, medium and long term over 30 years, in much the same way that NPSUD does for urban development capacity. This will help to ensure that environmental objectives and allocation limits are able to be achieved while ensuring there is sufficient water available in time to meet municipal

growth needs, including by ensuring any required reductions in other non-priority takes are implemented in time. In that respect I refer to Section 30(4)(d) of the RMA which provides that:

“A rule to allocate a natural resource established by a regional council in a plan under subsection (1)(fa) or (fb) may allocate the resource in any way, subject to the following:

- a) the rule may not, during the term of an existing resource consent, allocate the amount of a resource that has already been allocated to the consent; and*
- b) nothing in paragraph (a) affects section 68(7); and*
- c) the rule may allocate the resource in anticipation of the expiry of existing consents; and*
- d) in allocating the resource in anticipation of the expiry of existing consents, the rule may—*
 - i. allocate all of the resource used for an activity to the same type of activity; or*
 - ii. allocate some of the resource used for an activity to the same type of activity and the rest of the resource to any other type of activity or no type of activity; and*
- e) the rule may allocate the resource among competing types of activities; and”*

25. This would enable water reserved to meet future urban demand to be allocated in the interim to other beneficial activities according to allocation priorities and allow time to implement water saving measure and/or any necessary landuse transition. I am aware that a water accounting system is being developed as part of the Regional Water Demand and Availability Assessment referred to earlier.

Before an Independent Hearing Panel

In the matter of the Resource Management Act 1991

And

In the matter of Proposed Plan Change 9 to the Hawke's Bay Regional Plan
(Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments) (**PPC9**)

**Statement of evidence by Paulina Ximena Wilhelm Moreno
on behalf of Napier City Council**

Dated 11 May 2021

INTRODUCTION AND SCOPE OF EVIDENCE

1. My name is Paulina Wilhelm and I am the Manager, City Development, at the Napier City Council (**NCC**). I have held this position for the last four years. I am a Forestry Engineer with a Masters in Natural Resource Management from Massey University (2002) and I hold a Masters in Economics. I have nearly 20 years' experience in policy development and the latest 12 of those I have led teams involved more specifically in environmental and RMA policy. I am authorised to give this evidence on behalf of NCC.
2. This evidence is given in support of NCC's submission on Plan Change 9 (**PC9**) to the Regional Resource Management Plan (**RRMP**). NCC has worked closely with Hastings District Council (**HDC**) in preparing its submission, and in the preparation of evidence to support that position. Like HDC, NCC supports the overall direction of PC9, but seeks amendments which:
 - (a) Ensure priority for, and protection of, municipal and community water supply.
 - (b) Appropriately provide for stormwater management.
 - (c) Provide some flexibility to support economic and social wellbeing.

3. I have read the evidence of Mr Mark Clews, the Principal Advisor, District Development, at HDC, and largely adopt his evidence. Mr Clews' evidence provides significant background and detail on a range of regional matters which apply equally to NCC as to HDC. Where Mr Clews has provided HDC-specific references to policies and plans, the purpose of this evidence is to provide the Independent Hearing Panel with references to the equivalent documents for NCC. Using Mr Clews's headings, I also make further comment from NCC's perspective as appropriate. If not stated otherwise Mr Clews evidence **accurately reflects NCC position on the various topics and I support this evidence.**
4. NCC has also called evidence from Mr Russell Bond on water supply and stormwater management within Napier City, which will be drawn on through the planning evidence of Ms Annette Sweeney.

STRATEGIC CONTEXT FOR SUBMISSIONS

5. In the section of his evidence titled 'Strategic Context for Submissions', Mr Clews refers to a number of HDC strategic documents which are relevant to informing HDC's position on PC9. NCC shares many statutory documents with HDC, in particular HPUDS 2010 and now 2017, and the Hawke's Bay Regional Policy Statement.
6. NCC also participated in the TANK process from inception alongside HDC advocating for the inclusion of NCC's roles and interests. These roles and interests as stated in Mr Clews evidence are:
 - (a) Abstracting groundwater for municipal supply and discharging urban stormwater to freshwater receiving bodies.
 - (b) Having landuse planning responsibilities under the RMA that affects freshwater.
 - (c) Advocating for district rural and urban dwellers' economic and social wellbeing where this is dependent upon water quality and quantity.

Napier City Long Term Plan

7. In terms of NCC's Long Term Plan, NCC's sustainable development approach is articulated in its current Long Term Plan 2018-2028 (**LTP**), and the Draft Long Term Plan (**DLTP**) which NCC is currently consulting on.

8. The Draft LTP mission statement is:

To provide the facilities and services and the environment, leadership, encouragement and economic opportunity to make Napier the best city in New Zealand in which to live, work, raise a family, and enjoy a safe and satisfying life.

9. The most relevant strategic goals in relation to NCC submission to PC9 are:

- a) The water we supply will be clear and meet health standards.
- b) We will improve the quality of our stormwater, including water discharged to the estuary.
- c) We plan for growth in a pro-active, managed and resilient way.
- d) Our services and facilities provide for the social, cultural and recreational needs of our community.
- e) We will use our influence and resources to advocate for economic growth.

10. Providing services and infrastructure that meets the community's needs, providing water that is clean and safe, and providing a safe and healthy city that supports community resilience and wellbeing are identified as key Council outcomes. Consistent with the current LTP, the DLTP also recognises water as being a key focus, including the provision of clear clean drinking water and managing the quality of Napier's stormwater to support the sustainability of our city and lifestyle.

11. As referenced in the evidence by Mr Bond, the DLTP signals an investment in water supply over the next 10 years of \$74 million. The key projects include the provision of two main bore fields with treatment plants and to replace the Enfield reservoir and related pipes. Securing the ability to abstract groundwater for municipal supply is therefore imperative to justify this level of investment and allow for Napier's future growth.

12. Over \$26.3 million has been allocated in the DLTP for projects focused on improving stormwater quality and flood relief. The key projects include the creation of a stormwater treatment wetland, direct improvements to the outfalls and a channel which will move water much faster to a specific area. It will then drain gradually into the estuary reducing flooding and improving stormwater quality. A detail of these projects is referenced in Mr Bond's evidence.

13. The revised Infrastructure Strategy (IS) (2021-2051) which informed the capital plan for the DLTP also highlights the priority to invest in water supply and improving

stormwater to support Napier’s future growth. The projects within the Strategy are valued at over \$2 billion over the next 30 years. Approximately 50 percent of this investment is for water and stormwater improvements. It is important to note the IS was developed using the population and household projections based on the 2013 census data and in light of recent population projections released by SNZ based on the 2018 population census the IS and supporting information will change considerably including future water demand. I expand this point further in my evidence to support flexibility of water allocation for municipal supply (within limits) to be included in PC9.

Napier City District Plan

14. NCC’s District Plan was made operative in November 2011 and is currently going through a review process. The current plan is now outdated and does not reflect the current legislative requirement under the NPS UD nor the NPSHPL.
15. The revised Draft Plan seeks to incorporate the requirements of the NPS UDC and other relevant national directives. The new plan advocates for an integrated management of the natural and physical resources supporting compact and well-connected housing developments, protecting versatile soils for future food production, mitigating the effects of land use activities on water resources and having a holistic approach to managing stormwater.
16. The Draft Plan also seeks to implement the overarching intention of HPUDS enabling high density compact residential developments and securing the future availability of productive land within the Heretaunga Plains. Currently Napier is exploring areas for future growth different to what is in HPUDS 2017. The potential new greenfield and infill areas for future development seek to address the requirements of the NPS UD and the NPS – Highly Productive Land as well as the avoidance of natural hazards such as flooding and risks associated with climate change. Access to sufficient water to supply future urban growth is critical for delivering a resilient community and providing for Napier’s residents wellbeing.
17. From an economic point of view the Plan recognises that:

... the City has a direct relationship with the regional economy, an economy that is linked to primary production. The Council recognises this through the sustainable management of highly versatile soils.

18. I note Mr Clews's observation that land based production and the processing economy, dependent on the potential of versatile soils and access to water, is critical for Hastings District's economy and I would echo this for Napier. I support Mr Clew's evidence specifically in relation to enabling future economic growth for land based and processing industries. These sectors are the backbone of the Hawkes' Bay economy and provide employment to a large percentage of the Napier and Hastings population.

Sub-Regional Industrial Land Strategy

19. A Sub-Regional Industrial Land Strategy jointly developed by NCC and HDC in May 2020 supports NCC's submission in relation to providing for economic growth when within sustainable limits. The aim of the strategy is to accommodate the industrial development for the next 30 years with a focus on demand projections for the next 10 years. The strategy highlights the importance of adequately servicing industrial land to enable future economic prosperity in the Region.
20. Specifically, the Strategy recommends the following strategic shift of relevance to PC9 (emphasis added):

In addition to providing general supply of greenfield industrial land within the sub-region, that supply should also include capability for the needs of different industrial sectors with **infrastructural servicing** to cater for the needs of **both dry and wet¹ industries** and different site size requirements.

21. Industrial areas are a key focus for employment and economic prosperity within the Region. In Napier, the Onekawa-Pandora industrial areas account for about 50% of the total Napier industrial employment and for Hastings leading industrial employment localities are at Omahu and central Hastings and the percentage of employment provided in these areas is 46%².
22. Napier has very limited land to supply future demand for large scale industrial developments. This issue was one of the main instigators for developing a sub-regional approach to industrial land supply. I therefore support Mr Clews evidence in relation to the potential economic impacts of PC9. I would specifically like to highlight paragraph 31 of his evidence stating *"It is important therefore that the industries seeking to relocate from outside the region to these areas, and those from*

¹ Generally defined as having process water and trade waste discharge service requirements.
² Supporting report to the RILS titled 'Economic Assessment of Napier-Hastings Industrial Sector' 28 November 2019.

within the region seeking to expand, have access to sufficient water to meet their needs on an efficient and sustainable basis". The viability of Whakatu and Tomoana industrial areas are of priority for Napier's economic prosperity, and this is reflected in its submission requesting to add an 'exceptional circumstances policy' for new water consents that have a high economic impact within the Region.

23. I also emphasise Mr Clews' comments at paragraphs 21-26 regarding the importance of water to the Hawke's Bay economy.

PLANNING FOR URBAN GROWTH NEEDS

24. In reviewing this section and the Changing Urban Demand section of Mr Clews evidence I adopt this in full. In particular, I support the comments in paragraphs 85 to 91 of his evidence related to the imminent review of HPUDS in the context of the new population projections, the NPSUD and the NPSHPL. Because these are major considerations in developing a FDS, a degree of flexibility needs to be provided in PC9 to enable future urban growth and not only constrain growth to the current HPUDS 2017.

CONCLUSION

25. Generally, NCC is supportive of the overall direction of PC9 and seek to ensure the sustainable management of water resources in the TANK catchment. In presenting its submission, NCC is not attempting to increase abstraction beyond what is believed to be needed to cater for the future health, social and economic wellbeing of Napier residents. NCC is supportive of a water conservation approach for the future viability of the water resources and its taking a proactive approach to maximise efficiencies in its municipal water use. The long-term view for managing water resources in the Region proposed in PC9 and the specific priority given to municipal supply is also supported.

Paulina Wilhelm
11 May 2021

Before an Independent Hearing Panel

In the matter of the Resource Management Act 1991

And

In the matter of Proposed Plan Change 9 to the Hawke's Bay Regional Plan (Tūtaekurī, Ahuriri, Ngaruroro and Karamū Catchments) (**PPC9**)

Statement of evidence by Russell Bond on behalf of Napier City Council

Dated 11 May 2021

INTRODUCTION

1. My name is Russell Bond and I have been employed since October 2019 in the position of Manager Water Strategy by the Napier City Council (**NCC**). I am primarily responsible for the Council's three water services, that is, drinking water, stormwater and wastewater services.
2. My role includes responsibility for the delivery of 3 waters services across Napier City including treatment, distribution, collection and disposal. I am also a key advisor to Council on strategic issues that could impact on our ability to continue to operate and deliver 3 waters services, ensuring that we minimise the risk to public health and safety, continue to meet our stated levels of service and protect the environment, both now and in the future.
3. I have 23 years' experience in the water industry, working for the following Councils and organisations; Far North District (Impact Services - LATE), Hamilton City, Hauraki District, Central Otago District, Clutha District, Queenstown Lakes District (Veolia), Water Management & Design (Consultant) and Napier City.
4. This evidence has been prepared to provide background and context for the planning evidence of Ms Sweeney, in relation to Plan Change 9 to the Hawke's Bay Regional Resource Management Plan (TANK Plan Change) (**PC9**) being promoted by Hawke's Bay Regional Council (**HBRC**). My

evidence specifically outlines NCC's approach to municipal water supply, and its approach to ensuring maximum efficiency in use of its current allocation, and to stormwater management.

5. In preparing this statement of evidence I have read the draft evidence of Mr Chapman on behalf of Hastings District Council (**HDC**), including the attachment to Mr Chapman's evidence prepared by Matthew Kneebone. His evidence addresses a number of matters which apply equally to NCC.
6. I have also read, and endorse, the evidence of Ms Sweeney, on behalf of HDC and NCC

SCOPE OF EVIDENCE

7. My evidence addresses the following matters:
 - (a) Part 1 - Water Supply:
 - (i) An overview of Napier water supplies;
 - (ii) How NCC manages demand for water;
 - (iii) How efficiency is currently being measured, and future efficiency plans that are in place;
 - (iv) Anticipated growth, and how this is to be catered for;
 - (v) Source protection;
 - (b) Part 2 - Stormwater Management:
 - (i) An overview of Napier stormwater systems;
 - (ii) How medium and high risk sites are identified and managed;
 - (iii) NCC's strategic objectives for stormwater.

PART 1 – WATER SUPPLY

OVERVIEW OF NAPIER WATER SUPPLIES

Overview

8. Today Napier City's water supply system consists of only one distinct supply area or community - the Napier Community (NAP001). The Napier community consists of a single distribution zone –

Napier (NAP001NA), supplying water to urban and rural areas. Approximately 93% of Napier's population is serviced by reticulation system and around 10 million m³ of water is produced annually.

9. Once the water is abstracted from the Heretaunga Plains aquifer it is supplied to pressure zones via bore pumps, reservoirs and pump stations.

(a) The system comprises:

- 9 registered groundwater bores (of which seven: A1, C1, T2, T3, T5, T6, T7) are in production mode; T1 and T4 are not intended to be put online again in the future
- 8 booster pump stations
- 11 reservoirs (Enfield, Taradale 1, Taradale 2, Thompson 1, Thompson 2, Thompson 3, Otatara, Halliwell, Tironui, Franklin Small, Franklin Large)
- 488 km pipe mains

10. The bores have been drilled to depths of between 40 and 90 metres below ground level and are screened for the bottom three to nine metres. They flow under artesian pressure, but bore pumps are used to provide the pressures required in the reticulation system. Flow meters installed on the bore head's pipework are validated every year (as required by water take consent condition).

Bores, Boosters and Storage Reservoirs



- Critical Water Mains
- Water Mains
- ▲ Boosters
- Bores
- Storage Reservoirs
- State Highway
- NapierGIS.DATALOADER.LINZ_NAPIERROADPARCELS



Source Water

11. Groundwater is abstracted from the Heretaunga Plains aquifer. The Heretaunga Plains is underlain by Quaternary fluvial, estuarine-lagoonal, and marine deposits in-filling a subsiding syncline. Borehole data indicate the deposition during the low sea level stands of the Last Glaciation was dominated by alluvial gravels accumulated from the bed load of the braided river systems of the Ngaruroro, Tutaekuri and Tukituki rivers. These materials make up the primary aquifer of the Heretaunga Plains. Overlying fine-grained materials deposited subsequently across much of the eastern Heretaunga Plains comprise an aquitard that confines the aquifer. Within the depositional sequence, river-channel gravels form an interconnected unconfined-confined aquifer system containing groundwater recharged from land surface recharge and the Ngaruroro River bed at the inland margin of the plain, 20 km from the coast. At the coast, gravel aquifers extend to a depth of 250m. The multiple gravel layers are in general highly transmissive.
12. Groundwater age tracers indicate that most of the wells within the Holocene unconfined gravel fans of the Ngaruroro River and Tukituki River contain relatively young water with mean residence time (MRT) 0-10 years, and from the area of the main water loss from the Ngaruroro River towards the coast, the groundwater within the confined aquifer becomes progressively older. The drinking water wells southwest of Napier contain water with MRT between 20-40 years.
13. Further down the coast, the groundwater becomes significantly older with MRT 40-80 years, and close to the coast the water is even older, indicating sluggish flow at this part of the aquifer. Greater groundwater flow velocities in the confined aquifer toward the coast is indicated further south in the centre of the Plains. A tongue of very young groundwater with MRT <5 years extends nearly half way towards the coast, and the groundwater near the coast is still relatively young with MRT 27-34 years.
14. At the southern margin of the confined aquifer, older water of MRT >70 years prevails, again indicating more sluggish flow at the margin of the aquifer. Only around the Holocene gravel fan of the Tukituki River very young groundwaters of MRT <10 years occur. Mudstone and limestone outcrops (e.g. the hills to the west of Taradale) ensure there is negligible groundwater contribution to the Heretaunga Plains aquifer from these outcrops. More details on Heretaunga Plains can be found in GNS Science Consultancy Report 2017/33: Heretaunga Plains Aquifer: Groundwater Dynamics, Source and Hydro chemical Processes as Inferred from Age, Chemistry, and Stable Isotope Tracer Data; April 2018.

15. Groundwater age dating for all of the bores has shown the water to have been underground for longer than 12 months and compliance with DWSNZ Bore water security criterion 1 has been demonstrated. Modelled mean residence times (MRT) of groundwater for all 7 wells ranges from 18.1 years to 94 years and Minimum Residence Time ranges from 2.0 to 11.6 years. GNS Science issued latest Groundwater residence time assessment for NCC wells in December 2019 for samples taken in April 2019 D#940948. Last sampling event for residence time testing has been done in September 2020, awaiting results.

Bores

16. T3, T5, T7 and C1 bores are installed below ground level in sealed chambers. All mentioned bores' dry chambers, lids with seals, sump pumps, water detection systems with alarms and drainage pipes have been completely refurbished in 2017. The bore chambers include sump pumps and alarms connected to SCADA to alert the operators should flooding of the chambers occur. In case water level inside the dry chamber would reach highest sensor, the bore automatically shuts down and cannot be put back online without operators visiting the site and conducting inspection and rectifying issues.
17. A1, T2 and T6 bores have been raised in 2017, with bore heads at least 0.5 metres above the estimated 100-years flood levels.
18. The bores are continuously monitored for pump performance, pressure and flow. Data is telemetered to the Council office and alarmed to the operators.
19. Council undertakes a year round water conservation programme aimed at minimising demand. This is intended to ensure that only infrastructure that is required is installed and to promote a responsible and informed approach to water use amongst customers. After the secure bore status has been regained for the 7 of the bores, the supply complies with the DWSNZ Section 5 - Protozoal Compliance Criteria from 1 July 2018 again.

Water Take Consent

20. The Council's resource consent responsibility is a very important issue so far as the management of water supply activity is concerned. The resource consents associated with the water supply are tabled below.

Issuer	Consent #	Purpose	Description	Expiry date
HBRC	WP060658Ta	Public Water Supply	One consent is held for all source bores. The consent allows for the abstraction of water at a rate not exceeding 784 L/s and 387,744 m3/week	31 May 2027

21. All environmental monitoring and reporting is undertaken by the 3 Waters Team and Environmental Solution Team to the Hawke's Bay Regional Council. There are no enforcement or abatement notices for resource consents currently in place.

Pipe Reticulation

22. Approximately 488km of water mains ranging in diameter from 50mm to 550mm distribute water to customers. Of the 488km of mains pipe material range, including asbestos cement (37.3%), PVC (33.7%), CI (12.6%), PE (6.3%), ST (4.9%) and other minor lengths of ductile iron, ABS and unknown pipe materials. Service history provided no indication of any major service delivery issues with the water network.
23. Soil properties in the area where pipes have been installed varies depending on whether or not it was submerged prior to the earthquake. This variation influences the performance of metallic pipes and fittings with some areas less prone to corrosion than others. This is an issue which Napier City Council manages through an asset management system which utilises Accela asset management software.
24. Regular flushing of the wider network is not required as demand means that 'fresh' water is maintained within the system. Flushing of cul-de-sacs in the areas that have been recognised as most problematic, has been reintroduced as an ongoing activity starting October 2018, in other parts of reticulation flushing is undertaken if a need is demonstrated (clarity customer complaints). Mains cleaning is undertaken with 'pigging' and flushing. Council's operational objective is to clean (pig) at least 50 km of mains annually and this is undertaken during winter period when water demand is low. An extensive pigging programme has been undertaken in winters 2018-2020, focusing on areas with highest customer complaints percentage and low FAC reticulation results.

Storage

25. Two reservoirs, Enfield (11,021 m³) on Hospital Hill and Taradale 1 & 2 (combined around 18,000 m³), located at an elevated site behind Taradale, are filled from the reticulation system and provide storage to balance demand. Both reservoirs have the same top water level so operate in unison. The reservoir levels control the bore pump stop/start. The Enfield and smaller Thompson reservoirs 1-3 (on Bluff Hill) supply the bulk of the water to residents in this geographical part of Napier and the Taradale 1 and 2 reservoirs supplies water mostly to the Taradale residents.
26. A number of smaller reservoirs or pump stations supply customers in elevated locations. Seven booster pump stations are used to transfer water to more elevated pressure zones. Church Road Booster is used to increase the supply capacity of the Taradale source pumps within the Enfield reservoir system by fully utilising the pressure capacity of the 450mm Tamatea trunk main.
27. Water is taken from a trunk main in the Napier system and pumped to the Bay View, using Tannery booster (close to corner of Prebensen Drive and Shed Road) as a primary and Westshore booster as a secondary booster station. Bay View has in the past been supplied by the dedicated Tannery Bore as well, but supply from this bore has been discontinued in 2016.
28. Eleven storage tanks on seven sites provide the storage required to balance peak demand and meet firefighting and other emergency requirements throughout the zones. At strategic points in the system, pressure control valves are used to maintain reticulation pressure within desirable operational limits by utilising the higher pressure available in adjacent pressure zones or from pumping trunk mains.

Reticulation Water Quality

29. In the past, supply with secure groundwater meant that treatment of the source water has not been required, significantly influencing the way the water supply system has developed. As urban development spread south, so too did the reticulation network. Additional bores and pump stations were easily installed where development occurred. Most of the pump stations pumped directly into the reticulation system since the water was not required to be conveyed any great distance from source to the customer. The required trunk main infrastructure was minimal and generally located to service areas remote from the aquifer. In the Napier City area, this approach meant that, all the bores and pump stations were located in an area of the aquifer which had poor aesthetic quality. Since the amalgamation with Taradale Borough, the original development

strategy was discarded in favour of developing a pumping and distribution trunk main infrastructure that takes advantage of the better quality water in the Taradale area.

30. Prioritising use of good quality water from the Taradale area has resulted in high but fluctuating pressures in much of the network, particularly Taradale and contributed to an increased risk of pipe failure and customer complaints. Since 1995 a number of pumping trunk mains have been installed to separate the bulk supply and distribution functions of the network.
31. A new hydraulic model of the reticulation network was developed in 2017, calibrated in 2019 and used when developing the Water Supply Network Master Plan. The model is used to identify capacity issues, pipe renewal options, effects of development, levels of service, the impact of shutdowns and tracing water source and age in the network. The supply as it is now configured supplies a consistently high aesthetic quality water throughout the city at constant pressure.

Backflow

32. Backflow within the reticulation system is managed through a comprehensive programme. All premises in industrial zoned land (existing and new) are required to have at least a testable double check valve if the hazard is assessed as medium or lower. Reduced Pressure Zones (RPZ's) are required at any site that is assessed as having a high hazard. All backflow devices are installed at the boundary regardless of any devices that are installed within buildings on the site. Any other sites that present a backflow risk are identified when a land use or building use change is made. Any other sites that Council considers to be a risk is required to have a testable backflow device installed. The type of backflow devices required is determined by the activity on the site and the risks that relate to that activity. All backflow devices are tested annually by Council. Requirements for backflow prevention are set in the Code of Practice (D-M).
33. Any new residential properties have manifolds with check valves (non-testable) installed and Council has a programme underway to replace all existing beyond-repair manifold service connections with check valve manifolds.

Resilience

34. In the event of an extended power outage, the reservoirs can provide up to 30 hours of average demand. At the moment Napier is not meeting 24h storage requirement for peak summer demand. Elevated areas that are pumped are supplied with water in the event of a power outage, but with considerably reduced pressure.

35. The system is fully automated and effectively operates itself. There are however inherent complexities that arise from the number of bores supplying the network, the way the bores are spread across the network and the size and extent of the system.

Other Water Services

36. NCC has put two four-taps Dechlorinated Water Stations at York Avenue (SW part of Anderson Park) and at Marine Parade (north of NZ National Aquarium) in July 2019 and July 2020, respectively, in order to provide the public access to dechlorinated water. The water is taken from the reticulation. Treatment consists of 20 and 1 µm cartridge filtration, a carbon filter to remove the chlorine and a stay-on UV reactor (min 40 mJ/cm²; with UV sensor) installed just before the taps. UV malfunction triggers automatic site shutdown (via solenoid valve) and SCADA alarm.
37. There are two separate trains, each feeding two tower taps. Water is tested monthly against Total Coliforms and E. coli, sampled from dedicated sampling tap. Cartridge filters chosen due to eliminate potential discoloured water issues and for effective UV treatment downstream. UV treatment decided upon potential for increased HPC count coming from carbon filter. Risk Assessment workshop on appropriate treatment held on 15 May 2019.

WATER CONSERVATION AND DEMAND MANAGEMENT

38. Napier City currently uses a summer water restriction process to manage seasonal demands and this is effective at ensuring that the Council is able to manage the City's consumption within the limits of the current resource consent take. The demand is primarily an education and engagement process with our Community. This reduces the stress on the current infrastructure and the impacts on the water take sources. NCC is currently initiating the second year of a 3 year contract of Leak Detection Surveys. This contract will ensure the whole City water network has been assessed for leaks over the 3 year period. NCC has a programme of work detailed in the Water Supply Master Plan to install and implement DMA (District Metered Area) zoning across the City to monitor and manage leakage and improve the efficiency of leak detection resources to targeted zones. The online monitoring of both flow and water quality at the entry points of

these zones will allow staff to respond earlier to issues that would otherwise be overlooked until a citywide survey is completed.

Water Balance Table - NCC Internal Review | Based on Ahuriri & Westshore Leak Detection

System Input	Authorised Consumption	Billed Authorised Consumption		Billed Metered Consumption		Billed Metered Residential		Billed Metered Commercial		Revenue Water
		m³	%	m³	%	m³	%	m³	%	
9,468,372 m³	6,881,846 m³ 72%	6,560,235 m³ 69.2%		2,065,434 m³ 21.8%		238,875 m³		200 m³/cy		6,550,235 m³ 69.2%
		311,411 m³ 3.3%		4,484,801 m³ 47.4%		1,826,559 m³		3880 m³/cy		
		Unbilled Authorised Consumption		Unbilled Metered Consumption		Billed Unmetered Residential*		174 m³/cy		
		311,411 m³ 3.3%		0 m³ 0.0%		4,173,390 m³		4162 m³/cy		
		Apparent Losses		Unauthorised Consumption		Billed Unmetered Commercial*		311,411 m³		
		83,274 m³ 0.9%		9,468 m³ 0.1%		311,411 m³		4162 m³/cy		
		Unavoidable Real Losses		Customer Meter Inaccuracies and Data Handling errors		Non Revenue Water		2,918,137 m³		
		378,518 m³ 4.0%		73,806 m³ 0.8%		30.8%				
		Avoidable Real Losses		Leakage in Transmission & distribution Mains						
		2,144,934 m³ 22.7%		2,109,806 m³ 22.3%						
2,606,728 m³ 27.5%		Storage Leaks and Overflows from Storage Tanks								
		0 m³ 0.0%								
		Service Connection Leaks up to the Meter								
		413,846 m³ 4.4%								

2020 Q3

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Assets	Valve	Hydrant	Rider	Main	Toby	Service	Private	Total	Infrastructure Density
West Shore	86	75		18 km	283	283	283		40.1 assets/km main
Bay View	128	101		33 km	687	687	687		49.3 assets/km main
Ahuriri	134	126		16 km	339	339	339		57 assets/km main
# Elements	348	302		67 km	1,309	1,309	1,309		48.7 assets/km main

Leaks	Valve	Hydrant	Rider	Main	Toby	Service	Private	Total	Leak Density
West Shore	7	6	0	3	20	3	2	41	
Bay View	1	5	1	0	0	1	12	20	
Ahuriri	0	9	0	1	6	3	7	26	
# Leaks	8	20	1	4	26	7	21	87	3,389.52

Est. m³/day	Valve	Hydrant	Rider	Main	Toby	Service	Private	Total	CARL (excl Private Leaks)
West Shore	48 m³/day	32 m³/day	- m³/day	281 m³/day	39 m³/day	43 m³/day	7 m³/day	450 m³/day	1,565.4 l/con/day
Bay View	4 m³/day	8 m³/day	86 m³/day	- m³/day	- m³/day	29 m³/day	26 m³/day	153 m³/day	185.5 l/con/day
Ahuriri	- m³/day	73 m³/day	- m³/day	3 m³/day	34 m³/day	60 m³/day	34 m³/day	204 m³/day	503.4 l/con/day
Est. m³/day	53 m³/day	113 m³/day	86 m³/day	284 m³/day	73 m³/day	132 m³/day	67 m³/day	808 m³/day	566.2 l/con/day

% of Asset Leaking	Valve	Hydrant	Rider	Main	Toby	Service	Private	Total	Leakage per km
West Shore	8.1%	8.0%		16.6%	7.1%	1.1%	0.7%		
Bay View	0.8%	5.0%		0.0%	0.0%	0.1%	1.7%		
Ahuriri	0.0%	7.1%		6.1%	1.8%	0.9%	2.1%		
Total	2.3%	6.6%		6.0%	2.0%	0.5%	1.6%		0.9834

Est. Assets in Network	3,756	2,885		488	26,741	26,741	26,741	
Est. Leaky assets	86	191		29	531	143	429	
Est. Leaky Asset m³/unit/day	567	1,080		2,063	1,490	2,706	1,365	
Potential Leaks by Source m³	207,059	394,152		752,904	543,842	987,828	498,209	3,383,994

39. Recent results from the Leak detection work has indicated an estimated 22% avoidable leak result which is higher than previously estimated 15%. The active investigation has highlighted the risks of Council's network in the gravels and the water not being noticeable by coming to the surface. NCC is looking to further improve its activities in this area of our work.

EFFICIENCY MEASURES

Water Balance

40. A water balance is a 'top-down' approach for identifying where water supplied into a water supply distribution network is utilised, and is typically used to establish the level of water loss occurring in a water supply network. Nationally adopted definitions, performance indicators and practices for calculating a water balance (and which are also used internationally) have been used in this exercise.
41. The Napier water supply system is a partly metered system, with the majority (94%) of connections unmetered. Therefore, assessing unmetered water use is critical to the satisfactory calculation of real water losses. This is a significant challenge, especially considering the seasonal variation of water use in Napier where water use in summer can be 50% higher than that in winter. Several approaches have been taken to establish the water consumption for unmetered residential properties with some certainty. Unmetered residential water use has been assessed at 580 litres/connection/day for the 2019/2020 water balance, down from 660 litres/connection/day assessed for the 2018/2019 water balance. A sensitivity analysis on the assessment of unmetered residential water use (and therefore the corresponding level real water losses) has also been completed.
42. It should also be noted that in the absence of customer metering, the extent to which leakage is occurring on the private water supply systems is also uncertain. Leakage from private underground service pipes has been assessed using the best available information (based on international data).
43. The results of the water balance for the Napier water supply are provided in Table 1.1 below. The percentage that each component represents is also shown along with the percentage of Non-Revenue Water (NRW), at 21.2%, which comprises the three water balance components as shown.

Table 1.1: Summary of Water Balance Results for Napier for 2019/2020

Supply Area	System Input Volume m ³	Billed Metered Consumption m ³	Billed Unmetered Consumption m ³	Unbilled Authorised Consumption m ³	Apparent Losses m ³	Real Losses (CARL) m ³
Napier	9,468,372	2,065,434	5,398,339	311,411	50,777	1,642,411
Percent of Total	100.0%	21.8%	57.0%	3.3%	0.5%	17.4%
				Non-Revenue Water = 21.2%		

44. Water loss performance indicators are shown in Table 1.2 below. This includes the Infrastructure Leakage Index (ILI). The ILI is the ratio of actual water losses (Current Annual Real Losses or CARL) to the Unavoidable Annual Real Losses (UARL), which is a theoretical calculation of what water losses levels can be achieved (at the current pressure) with ‘first class’ water loss management. The ILI is a proven performance indicator which is used internationally. The results shown in Table 1.2 are included are for the last four years and and indicate that the results for 2019/2020 show a significant improvement on previous years.
45. The volume of assessed real losses has decreased significantly in 2019/2020, even though no special water loss reduction initiatives were undertaken in 2019/2020. The improvement is most likely due to repair of several large leaks that could have previously been leaking badly over extended periods.

Table 1.2: Summary of Water Loss Performance Indicators

Supply Area	Current Annual Real Losses (CARL) l/conn/day	Unavoidable Annual Real Losses (UARL) l/conn/day	Infrastructure Leakage Index (ILI)	DIA Performance Measure – Percentage Real Losses
Napier 2019/2020	168	45	3.7	17.3%
Napier 2018/2019	223	45	4.9	19.8%
Napier 2017/2018	201	46	4.4	18.8%
Napier 2016/2017	192	46	4.2	18.4%

46. It is noted that using percentages to express real water losses is not recommended and in fact can be very misleading as it relates water losses to water consumption. Water systems with high consumption benefit, while systems with low water use are penalised (with what appears to be a high level of real water losses) when in fact this may not be the case.
47. The results shown in Table 1.2 demonstrate the improvements that have been made by the Council in recent years and show that the Council’s water service now meets the ILI target of less than 4 included as an efficiency benchmark for municipal water supplies in PPC9.

SOURCE PROTECTION ZONES

48. Council has established Source Protection Zones for the existing and future bores, using analytical method. These Source Protection Zones are included in the maps proposed to form part of the Regional Plan under PC9.

PART 2 – STORMWATER

OVERVIEW OF NAPIER’S STORMWATER SYSTEMS

49. NCC hold a number of consents relating to the Stormwater activity, as follows:
- (a) DP110266W - To divert and discharge stormwater, excluding runoff that is not a consequence of rain, from any open drain system or piped stormwater drainage system to

water, including discharges to land in a manner that subsequently results in the stormwater entering water (Thames and Tyne Waterways).

- (b) DP110274Wa - To divert and discharge stormwater collected from a part of the Napier Hill and the Napier Central Business District (CBD) area from any open drain system or piped stormwater drainage system, including discharges to land in a manner that subsequently results in the stormwater entering water, via the Browning Street, Tennyson Street and Dalton Street outfalls, to the coastal marine area (CMA) at Marine Parade Beach.
- (c) CD990516Wa - To discharge stormwater from part of Napier City urban area and surrounding rural land into the Ahuriri Estuary via the Westshore tidal gates.
- (d) CD070023W - To discharge stormwater collected from the Burns Road catchment area to the Bridge Street end of the Iron Pot.
- (e) CD960274Wc - To discharge stormwater from the Cross Country Drain into the Coastal Marine Area.

50. NCC manages its stormwater activity through a number of policy and regulatory documents. The following have specific influence over the stormwater activity.

- (a) Stormwater Bylaw 2020, which came into force on 1st February 2020. The purposes of the bylaw are to:
 - (i) Protect the public stormwater system, and the land, structures, and infrastructure associated with that network from damage, misuse or loss.
 - (ii) Manage the development, maintenance and use of the public stormwater network, and the land, structures, and infrastructure associated with that network, and provide for the conditions on which connections to the public stormwater network may be made or maintained.
 - (iii) Ensure that discharges into the public stormwater network are appropriately managed at source, and do not damage the network or compromise the Council's ability to comply with any applicable network discharge consent and Council's water quality targets for receiving environments.
- (b) Code of Practice for Subdivision & Land Development March 2019
 - (i) The current revision is in a review process where stormwater infrastructure is a key focus. NCC is looking to improve water quality through treatment and point of entry

devices to manage water quality discharges to our environment. This will ask developers and Council projects to consider and meet both water quality and quantity issues with regard to the projects they are designing and constructing. The review document is currently in the final stages prior to its adoption by Council

(c) Stormwater Master Plan 2020

- (i) The Stormwater Master Plan has been developed to understand the investment required to improve the network to manage the flooding risk and meet the 1:50 flood protection requirement detailed in the Building Code. This plan has only looked at the hydraulic constraints of the NCC network.
- (ii) The Stormwater Master Plan has identified a work programme for a 30 year programme that has an estimate spend greater than \$1Billion.
- (iii) Council has selected Maraenui and the CBD areas as key areas to start investing in as a result of the November 2020 floods that these areas experienced.

(d) Stormwater Quality Master Plan

- (i) With the adoption of the Stormwater Bylaw, Code of Practice for Subdivision & Land Development and the renewals of stormwater consents, Council has identified the need to have a Master Plan focused on the improvement of water quality in our environment and activities as a City.
- (ii) The Master Plan will identify key areas of the City that will require development of treatment devices and ponding/planted areas. The options will look at improving water quality and providing better fish passage and habitat.
- (iii) This work has been funded in the current draft LTP for years 2022-24

(e) Napier City Council 2021/31 Draft Long Term Plan

- (i) Lagoon Farm Diversion 2021/29 - this project is looking at developing a regional park with wetlands and water storage facilities to improve the discharge into the Ahuriri Estuary

- (ii) Ahuriri Estuary & Coastal Edge Masterplan 2021/31 - the work programme for this strategy is designed to improve the water quality of the Estuary and improve the health of the ecosystem. This plan was adopted in July 2018.
- (iii) Stormwater Pump Station Screen Upgrades - this is a programme of work to improve the bar screens at the stormwater pump sites to automate and improve the efficiency of solids removal for our sites.
- (iv) Depot City Service Site Stormwater Discharge Improvements 2023/24 - NCC recognises the need to “lead by example” when asking the wider community to improve the discharge quality from commercial sites. NCC’s Depot site is home to our operational workforce with a large industrial yard space.
- (v) Waterway Quality Monitoring - there are a number of projects in the LTP that will involve installing water quality monitoring for our open water network. This work will advise our selection and design of treatment solutions and will also provide immediate response and awareness of any issues relating to unwanted discharges that need to be prevented entering the Ahuriri Estuary. There is also a project looking at sediment core samples to understand any historic network contamination that requires remediation.
- (vi) Ecological Improvements to Drains - NCC is looking to invest each year to the value of \$70k for planting and improving the ecology of the waterways and their embankments.
- (vii) Humber Street Stormwater Treatment Facility 2025/27 - the installation of a treatment facility is to ensure the impacts of the industrial activity in the Pandora area is treated to reduce the impact on the Ahuriri Estuary. NCC is half way through a 3 year sampling programme in this area to assist with the treatment selection of this facility.

MANAGEMENT OF SITES OF RISK

51. In 2018, all high and medium-high risk sites in the Pandora Industrial zone supplied an Environmental Management Plan (EMP) at the request of NCC, identifying their site management for the prevention of contaminating stormwater, inclusive of site improvement timeframes. These sites are also part of a Stormwater Working Group held under the Thames-Tyne resource

consent, at least annually, where site representatives are informed of current initiatives for surface water protection, and invited to converse with DOC, Forest & Bird, NCC, and HBRC.

52. The Council's Stormwater Bylaw which came into effect in February 2020 allows Council to require a EMP as part of the application for approval for connection to Council's network. This is generally required where the site is high risk or has had past contamination issues.
53. Many of the high-risk sites (initially defined from HBRC's Hawke's Bay Waterway Guidelines) are also trade waste customers of NCC, meaning NCC visit them monthly or 3-monthly. The trade waste visits cover Onekawa, Ahuriri, Awatoto and Pandora industrial areas. NCC plan to approach the Onekawa Industrial area for EMP's from the higher risk sites, and to form another Stormwater Working Group, when the new Westshore Tidal Gates resource consent is initiated.

STRATEGIC OBJECTIVES

54. Napier City has an immediate strategic focus on improving the surface flooding resiliency of private properties in Napier & Bayview, up to and including the 50-year return period for the existing (2020), 15-year (2035) and 30-year (2050) development horizons. The focus of the current network is a physical one of water management, however with each stage of improvement the project will look to include the water quality objectives into the project as and when the opportunity allows.

CONCLUSION

55. This statement has provided an overview of the Napier City municipal water supply and demonstrated the approach NCC is taking towards ensuring efficient use of the water and meeting industry best practice efficiency standards whilst ensuring that regulatory requirement for delivery of safe drinking water are achieved.
56. NCC also has a significant stormwater programme identified and has significant funds committed to it. The environmental focus of NCC's water services (including stormwater) has increased greatly over the years with the creation of the Environmental Solutions Team within the Infrastructure Directorate. The team act as an internal auditor of our Water Services activities and provides an intermediate regulator to capture our performance before it becomes a consent condition issue.

57. NCC has prioritised resources and promotes that the Water Activities are its number one priority. This is reflected in the current Draft LTP 2021/31 with 50% of the capital expenditure programme dedicated to Water Activities. The water objectives from the Community are very clear and ask the Council to provide “safe”, “clean”, “resilient” & “sustainable” water services.

Russell Bond

11 May 2021