

Introduction

1. This covering report provides explanation and background for changes and issues still outstanding or raised following discussion at meeting 40. A number of details still require further development and refinement.
2. The issues covered in this report include:
 - a. the inclusion of explanations and reasons for the objectives and reasons
 - b. water quality attributes tables for surface and groundwater quality
 - c. Māori roles and interests
 - d. Controls on damming
 - e. Frost protection
 - f. Trigger flows
3. Other topics still requiring development, refinement or further analysis include the following topics which will be addressed in the next few weeks and included in the next iteration of the Plan draft.
 - a. Water management zones and supporting maps
 - b. Duration and expiry dates
 - c. Monitoring provisions

Section 1 Explanations and Reasons

4. This section of the Plan Draft was perhaps helpful in providing context and explanation for the policies and objectives, but is purely optional content in regional plans. The narrative is informative and could easily co-exist alongside the RRMP, particularly as a feature of the s32 report, or other companion documentation to the Plan Change and ultimately the RRMP when it is operative.
5. If there is pressure to keep this in the Plan Change (ie. In the RRMP eventually), then there is a need to take caution about how elaborate this narrative becomes and how much detail (or not) is in here. The more text that is included the more scope for unnecessarily contesting details.
6. The justification for the provisions (in some detail) is an integral part of the s32 report. That means for those situations where a hearing panel amends provisions as a result of submissions there is a further explanation (S32AA) and hence all the necessary explanations are held in a single place.
7. If a provision requires explanation the question should be asked – can we improve the expression so that intent and meaning is absolutely clear? So to that extent, if you are considering the policies, please provide feedback as to whether you think it is sufficiently clear.
8. Staff and independent planning advice is that this section be deleted from the plan change. It has therefore now been excluded from the draft.

Section 2 Priority Allocation and Iwi/ Māori Roles and Interests

1. The Treaty Partners Working Group have raised a concern about priority access to water in relation to iwi roles and interests.
2. There is a much wider issue of iwi rights and interests relevant at a national scale and it is unlikely to be resolved at a local scale. Over the past several years the Government has expressed its intention to the Freshwater Iwi Leaders Group (ILG) and to the Waitangi Tribunal to develop options for changes to the freshwater allocation regime which recognise iwi rights and interests. The issue is also recognised by the Land and Water Forum who have advocated that this needs to be resolved at a national level in order that regional planning can be properly advanced. This lack of resolution is hindering progress towards establishing a more durable freshwater management framework at a national level.
3. The nature of these rights and interests and how they are to be provided for are therefore still issues subject to national debate. They might include things like mechanisms that relate to the ongoing use of those resources, decision-making roles in relation to care, protection, use, access and allocation, but nothing is yet certain or clear.
4. However, despite this, it is also important to consider if any circumstance or situation in the TANK Plan Change area relevant to iwi roles and interests in water (as required by the NPSFM) need to be provided for in a different or better way than currently provided for in the Regional Resource Management Plan.

Involvement in decision making during plan preparation

5. One of the key ways that the council and community can provide for iwi roles and interests is in their involvement in the decision making required for Plan Change processes.
6. This is achieved in a number of ways with a principal and significant measure in Hawke's Bay being the establishment of the Regional Planning Committee in 2012 even though legislation permanently establishing that Committee was not passed by Parliament until 2015. The RPC's primary responsibility is to oversee and have a key decision making role in relation to RMA plan preparation. This is a significant and key governance role
7. A range of other initiatives including through the Māori Committee and involvement by Māori in the council's asset management and operational activities are also relevant in relation to management of waterbodies. For a number of the council's operational activities, hapū and marae have a history of working together to enhance local waterways (for example, Te Karamu project, Peka Peka wetland enhancement and Waitangi Estuary improvements).
8. In respect of the TANK Plan Change, and in spite of some challenges about representation and as Treaty settlements have been progressively resolved during the TANK process, the Council has worked hard to ensure Māori presence around the TANK table has been explicitly provided for and supported.
9. Over the past 6 years there has been a changing landscape as the roles of both the RPC members and the mana whenua members in TANK have been refined and clarified. This also resulted in changes to the TANK Terms of Reference where a distinction between governance roles and the roles of TANK members in providing relevant input, advice and consensus decision making were made.

10. The significance of tangata whenua involvement in the TANK process was acknowledged in the decision making framework and which is illustrated in the “wiring diagram” accompanying the ToR changes (attachment 1). The framework recognised a key and distinct role for tāngata whenua involvement and input into the TANK process. This was primarily through the establishment of a Mana Whenua Group. While it was a little slow to be reflected through real change in the TANK decision making process, better resourcing and clarity around needs in the last 18 months have enabled this mechanism to work much more effectively.
11. Council has also provided further resourcing to ensure Māori contribution in this TANK project to the decision making is well informed and properly accounted for (through funding provided for additional consultant advice and assistance to the Treaty Partners Group (formerly the Mana Whenua Working Group)).

Recognition of Kaitiakitanga

12. A second way in which Māori roles and interests can be acknowledged through policy, is by providing for their kaitiakitanga role and responsibilities and ensuring the way in which water is managed accounts for their traditions and whakapapa.
13. The current RPS and RRMP plans already cover these aspects of Māori involvement. This TANK Plan Change draft builds on this and also reflects this explicitly, in objectives and policies. Methods of implementation that give further effect to this are yet to be drafted. They will include specific measures to address development and implementation of mātauranga Māori including complementary initiatives happening at a national level as other councils also seek to develop robust and durable systems. On-going implementation of the Plan also relies on Māori involvement in development of cultural monitoring, community action in mitigation work, including riparian planting programmes, wetland development and regular review of plan implementation.
14. Establishment of the RPC was the Crown’s preferred model of co-governance of natural resources in the Hawke’s Bay region. It is well beyond the scope or ability of the TANK Plan Change to amend established co-governance arrangements over the region’s natural resources.
15. In relation to co-management arrangements in Hawke's Bay, there are numerous examples of iwi/marae/hapū/whānau working cooperatively with others to improve both large and small parts of the region. Those initiatives occur without specific direction and endorsement of the efforts in a planning document prepared under the RMA. Directing arrangements for co-management of some, or all natural resources within the TANK area is beyond the scope of this TANK plan change and even if it could, there are many other (non-RMA) factors that would need to be considered by all prospective co-management parties.

Priority Access To Water

16. At meeting 40, the mana whenua suggested Policy 33 be amended to include priority for iwi in relation to their rights and interests in freshwater.
17. As noted above, this is potentially a very significant issue in the wider context of freshwater allocation nationally.
18. However within the context of this plan change we have explored potential water related issues in relation to land to be returned through Treaty settlement processes once legislation has been

passed. In relation to the TANK area, the two principal claims both yet to pass into legislation, relate to Heretaunga and Ahuriri hapū. Offers and agreements for return of lands through these Treaty settlement processes are documented in signed Deeds of Settlement between the Crown and claimant groups.

19. If the returned land has a potential irrigation demand associated with it and if there is no applicable water permit, any irrigation development is now constrained by the “fully or over-allocated” status of most water bodies in the TANK catchments. Water that is returned (through consent reviews or lapsing of consent for example) might be reserved for use on that land to recognise the interdependence of land and water as well as the continuing historic inequality by not providing water in addition to land.
20. However, the scale and extent of lands earmarked to be returned is relatively modest as only public/Crown-held land can form part of settlement. The Crown cannot force return of privately owned land. However, we have made enquiries to the Office of Treaty Settlements and are informed that all land earmarked for return to TANK catchment Treaty settlements is mostly reserve or protected land or land unsuitable for irrigation.¹ There is no need for reservation of water for these lands (this is still subject to further fact checking).
21. As part of Treaty Settlements, opportunities may also arise for Treaty settlement groups to purchase further land. In this case, it could be expected that any such land purchases in the TANK catchments would be made with the full knowledge that water supplies are fully and in some cases over-allocated. Due diligence by purchasers (not just Iwi) should include assessment of any water permit transfers that could be made with the land purchase in order to carry out any planned activities that might be dependent on water. Reservation of water for land purchased sometime in the future by Treaty settlement entities is therefore not recommended.
22. Reserving water for use by Māori in any other way crosses into the national decision making around iwi rights and interests in water and staff note that this Plan Change does not have the scope or ability to resolve this.
23. The Treaty partners group do not agree with this analysis. They have not yet been able to provide a considered and full response at this time.

Section 3 Prohibition for Damming (Policy 40)

1. The TANK Group is seeking a prohibition on the damming of the Tutaekuri and Ngaruroro Rivers and this was supported at meeting 39. Further, at meeting 40, TANK members agreed additional prohibitions on instream dams in other tributaries, including the Taruarau (large tributary of the Ngaruroro River), Mangaone, and Mangatutu rivers (large tributaries of the Tutaekuri River). The Omahaki Stream is a smaller tributary of the upper Ngaruroro, and was also nominated because it is a source of trout recruitment. (See attachment 2 for a map showing locations of these streams)
2. Before adopting a prohibition on damming, a plan change would need to consider;
 - a. The specific effects of concern and the way in which the activities to be prohibited give rise to these effects or the risk of them.

¹ The one clear exception to this is in the Ahuriri hapū settlement in which “Ahuriri Station” is earmarked for return. “Ahuriri Station” is commonly referred to as the LandCorp Farm near Hawke’s Bay Airport. It is generally not irrigable land

- b. The reason for the selection of specific rivers that are to be subject to the prohibition, and
 - c. Whether the prohibition is the best way of ensuring objectives can be met, and effects can be avoided/mitigated
3. The specific effects of concern are the impact of dams on the natural flow, water quality regimes, sediment regime, fish migration and natural character. Adverse effects from damming are further listed in Policy 41.
4. The TANK Group is in agreement with the prohibition in Policy 44 on damming the Ngaruroro and Tutaekuri as it reflects their recognition of the highly valued instream uses and values of these two rivers, including those related to natural character and landscape, habitat for indigenous species and recreational activities including angling and rafting.
5. There are also strong marae/hapū connections and whakapapa to these rivers. The values assessments for these rivers indicate a strong desire for a high level of stewardship for the entire river and little to indicate that any part of the river requires higher levels of protection than other parts. However, protection of the rivers' headwaters from damming would be consistent with their overall expression Te Mana o Te Wai and the concept of ki utu ki tai for these significant mainstems.
6. While there was no disagreement with the proposal to extend the damming prohibition to a number of tributaries at the meeting, there is potentially greater interest in damming tributaries, rather than mainstem rivers, and this decision warrants further evaluation if it is to remain and be robust enough to stand up to s32 rigour and challenges beyond notification of a proposed TANK plan change.
7. The RPS (via Change 5) acknowledges a range of non-site specific values relevant to all of these rivers, as well as cultural values and values associated with recreation, birds, stock and domestic water, and native fish. In addition, the following specific values are listed for the rivers;

River	Values	Other information
Ngaruroro River (above cableway)	High natural character Native fish habitat Recreational trout fishing and trout habitat	Extensive information provided as part of the WCO about the significance of the <ul style="list-style-type: none"> • indigenous species incl fish, • bird habitat • natural character and scenic values • trout fishery. • recreational uses (angling rafting) • tikanga Māori values
Tutaekuri R	High natural character values Native fish habitat Recreational trout fishing and trout habitat (above the	

	Mangaone confluence)	
Taruarau R	Recreational trout angling and trout habitat	Upper Ngaruroro Tributary The Taruarau basin is dominated by regenerating shrub cover. Some exotic production forests exist on Crown land under forest lease east of Kuripapango, and there is an area of private farmland in the lower Taruarau catchment. Whitewater rafting is also an activity carried out on this river There is a large intact wetland complex of the upper Taruarau catchment – Ngamatea East Swamp
	High natural character	
Omahaki. (Not specifically mentioned in the RPS)		It is known to be one of several tributaries that are sources of recruitment for the rainbow trout population in the lower Ngaruroro River. Is there any information to suggest that the river is of such noteworthy or additional value that a prohibition on damming is necessary to protect them? The total area of the Omahaki catchment is 7400 ha, around 4% of the Ngaruroro catchment. Sheep/beef and Manuka/kanuka shrubland dominate the catchment with respective areas of 2400 ha (32%) and 2600 ha (34). Most of the remainder of the catchment is covered by exotic forest with an area of about 2000 ha or 27% of the Omahaki catchment. The total modelled annual sediment load of the Ngaruroro River is 704 000 tonnes, with the Omahaki catchment contributing 21 000 tonnes/year or 3% of the total sediment load.
Mangatutu River	Recreational trout angling and trout habitat	These two Tutaekuri tributaries together are more than 55% of the Tutaekuri catchment area. The total area of the Mangaone and Mangatutu catchments are 34 000 and 12 000 ha respectively, and collectively make up a large proportion of the hill-country in the Tutaekuri Catchment. Sheep/beef is the dominant land use, covering 47% (16 000 ha) of Mangaone catchment and 40% (4800 ha) of the Mangatutu Catchment. Dairy covers 10 and 12 % of the land area in the Mangaone and Mangatutu catchments respectively; exotic forestry, 19 and 13%; and Manuka/Kanuka, 6 and 21%. Indigenous forest is less than 10% of the land area in both catchments. Hill-country erosion is a major issue in the two catchments with modelled annual losses of 172 000 tonnes in the Mangaone Catchment and 51 000 tonnes in the
	High natural character	
Mangaone River	Recreational trout angling and trout habitat	

		Mangatutu Catchment. Collectively, the two catchments contribute about 60% of the total sediment load of the Tutaekuri catchment.
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Discussion

8. The TANK Group has previously considered whether there is a need to assign significance to specific water body values (see Meeting 34). They elected instead to determine water management measures based on the needs of all relevant values and make decisions about the appropriate level that would provide for them. They have acknowledged that even as they accommodate the needs of all values, their decisions may result in one value being better provided for than another value. This approach can be effective where several unrelated values are dependent on a similar attribute (such as flow) and it is a matter of deciding where on a spectrum of flow choices the management decision lies.
9. However, for some rivers some of the values that can be provided for must be considered as alternatives – it is either impossible to provide for both at the same time, or one value is much more favoured. For example for a river that has potential for a dam to provide water for abstraction or flow enhancement at low flows, the plan cannot also provide the same or similar ongoing level of protection for say, natural character or white water rafting.
10. The TANK Group approach to decision making for the tributaries listed above reflects a values based approach to the management of these rivers where the preferred values are instream and specifically natural flow regimes and natural character. Note that abstraction and out of stream storage in a reservoir would not be prohibited by this damming prohibition.

Costs of a damming prohibition

11. There has been no assessment as to the impact such a prohibition has on other values for the river and the water within it for these 4 additional catchments. These catchments contain extensive farming areas.
12. The costs are essentially opportunity costs. A theoretical opportunity to dam water (for a range of reasons) would be removed – there has been no detailed examination of the possible demand for a dam or the benefits of a dam. The demand for new dams has probably been low because water was still available for abstraction until recently.
13. Dams may also be used for other purposes such as hydro-electric power generation.
14. The National Policy Statement for Renewable Electricity Generation states renewable electricity generation activities throughout New Zealand; and the benefits of renewable electricity generation are matters of national importance. (This has led to including in Policy 38 reference to hydroelectric generation.)
15. There are a wide range of benefits (described in draft policy 38) that cannot now be assessed or provided by construction of dams on these rivers. While they are theoretical benefits as there is no current proposal to dam these catchments for any reason, a prohibition does not allow the range of benefits of a damming proposal to be considered for any future application.

16. The bar for actually constructing a dam can be set relatively high where the instream values of rivers are significant and benefits must consequently also be very significant before 'over-turning' instream values.
17. Staff are recommending the group consider
 - a. Providing more information to support the damming prohibition or to consider the following two options
 - b. a discretionary activity status (i.e. the status quo of rules currently in the RRMP for large dams). It means an application to dam any tributary will be assessed on its merits and with reference to applicable policies and rules for dams and effects on river values. .
 - c. a noncomplying activity status. This is a high test as either the effects must be no more than minor or the activity is not contrary to objectives and policies.
18. This reflects the uncertainty around impacts of a dam and allows the council to understand the adverse effects and merits of any proposal on a case by case basis. A discretionary activity allows an application to be declined or conditions to be imposed. In making decisions both policies 40 and 41 will be relevant, as will those relating to wetlands and values to be considered.

Section 4 Frost Protection

1. Frost can cause extensive crop damage and loss depending on the time of year and stage of growth. Frost protection is critical for ensuring there is a viable crop. A range of frost protection methods are used including irrigation, helicopters, wind machines and fans. Water can be abstracted from either groundwater or surface water depending on availability.
2. Frost protection in Hawke's Bay is most often required for grapes but other crops are also protected from damage by frost, including kiwifruit and some arable crops. It is infrequently required for pipfruit. Kiwifruit frost risk is generally experienced in March/April pre-harvest while for other crops it is more an issue in spring.
3. Frosts in the Heretaunga Plains are generally radiation frosts occurring on cloudless, still nights. Cold air is heavier than warm air and as the ground radiates heat during the night, cold air is trapped at ground level, with significantly warmer air above. Less frequent are advective frosts when winds transport a cold air mass into a region and air mixing techniques are unlikely to provide protection. Radiation frosts are much more common in the Heretaunga Plains. ²
4. Radiated frosts are so described because radiation (heat energy) is lost to the atmosphere. Radiation will not pass through moving air so various techniques to move air are used by growers. This includes helicopters and wind machines. There can be some mixing of inversion layers when they occur at the correct altitude as inversions can occur at any height.
5. Advective frosts can only be combatted by the introduction of heat, or physical protection from the advective or "polar" blasts. Advective frosts always happen with some wind or breeze bringing cold air into the environment.

² Kathleen is this right?

6. Susceptible buds can be protected from frost by spraying water over them to encapsulate them in ice (ice is formed at 0°C, and most buds can tolerate temperatures slightly below this). The plant tissue is effectively insulated from the severity of the frost by the ice. But the ice must not thaw or else we get “wind chill” which amplifies the frost effect. This means water must be continually applied (minimum 4mm/ha/hr) until air temperatures are comfortably above 0°C. The other benefit of water is groundwater in the Heretaunga plains is typically 12.5°C so when applied it releases a lot of latent heat energy as it cools to zero.
7. Radiated frosts are the most frequent (85%) and easiest to protect, advective frosts are the most damaging and the one where water is a very effective control option.
8. Other measures include frost fans and helicopters and can also include frost protection structures. Frost fighting is perhaps technically simple, but it is expensive, so research continues into different management alternatives.

Trends

9. A NIWA study³ showed a significant warming trend was detected when temperature data were examined nationally. This is evident as reduced frost days, and increasing minimum and frost temperatures. However, the study also detected a distinct regional pattern in the trends, with two regions having increased frost frequency (parts of the Wairarapa, and the lower Canterbury Plain south to below Dunedin) and that the coastal and low lying zones of the country generally exhibited no change – showing no trend, or slight increases or decreases in frost occurrence that were not statistically significant.
10. At least for the foreseeable future frost risk remains for the TANK catchments and frost protection an on-going management requirement.
11. According to a frost analysis for the Plains⁴, there is considerable spatial variability in the location and severity of frost risk across the Heretaunga Plains and adjacent TANK catchments. Frost probabilities tend to be much higher in Kereru and Havelock North than in other parts of the Heretaunga Plains. The risk of light or moderate frost extends right to the end of October at these locations, with a very low probability of light frosts in the first week of November. These locations also had a risk of severe frosts in October.
12. Note that severe frosts destroying around 70% of the Hawke’s Bay summer fruit⁵ in 2003 and 50% in 2007 both occurred in early November. Vineyard production⁶ was almost wiped out in 2001, again during early November. While less frequent later in the season, the later the frost occurs in the season the more potential for damage to crops.
13. There were also locations with a lower frost risk, Napier (Nelson Park), Hastings, Hastings Fire Station, Dartmoor and Taradale. In these areas frost risk is largely over by the end of September. Urban areas can create warmth and this may also impact on the severity and frequency of frosts in these areas.

³ Assessing Hawke's Bay Frost Risk NIWA Client Report: AKL2003-128 October 2003 NIWA Project: HBG04101

⁴ Frost maps for the Hawke’s Bay NIWA Client Report: 2008-30 May 2008 NIWA Project: ELF08227 / 1

⁵ B McKay pers comm

⁶ E Taylor pers comm.

Frost Protection Demand for Water

14. While there is an on-going risk from frost, the potential future demand for frost protection is unknown, except in relation to understanding where land use change might increase water demand for this end use or where new technology reduces reliance on water.
15. The TANK horticultural representatives consider that significant land use change at a scale that changes overall demand for frost protection water is unlikely unless other things change (e.g. market demand for crops.) There is currently an interest in new apple production but otherwise little to guide predictions of land use or technology change that might affect the total frost protection water demand.
16. The adverse effects arising from frost protection takes are generally minor and relate to
 - a. Impact on instantaneous flow of a stream either directly or through a stream depletion effect. This effect is generally brief given the short duration of the take.
 - b. Timing of the take. Brief reductions in flow at times when spawning fish may be sensitive to drying out.
 - c. Cumulative impact on groundwater levels. However, the total volume of frost protection water is relatively minor compared to the total groundwater abstraction given the short duration of a take and its relative infrequency
 - d. Drawdown effects on neighbouring bores – again a relatively small impact given the small duration
 - e. Run-off or through flow. Depending on local soil and drainage characteristics, and given the likelihood that soils are already wet, much of the applied water will flow back to ground or surface reducing overall impact on water bodies.
17. The Heretaunga Plains water model accounted for frost protection water within the total water abstractions modelled. However, the modellers note that the instantaneous rate of water take in litres per second could be quite high, but it only occurs for very limited periods (hours at most) and infrequently during spring (1 – 1.25 frosts per week in limited areas as the long term median for September) and this results in the total volume of the frost water take being almost insignificant compared to the total irrigation and municipal takes and on a par with the permitted water takes.
18. The consents issued for frost protection water from groundwater currently amount to about 1.5Mm³/year with about 356m³/yr taken from surface water resources.

Existing Frost Protection Water Demand and Management Options

19. There are currently no limits for frost protection water. This demand is not managed through annual allocations but by very limited duration instantaneous takes. The adverse effects are generally minor and can be managed for surface water takes by flow triggers.
20. There are a mixture of approaches to managing frost water. Some takes are measured as part of the allocated volumes while others are not. Some are subject to minimum flow conditions and some are not. It is desirable to have a consistent even handed approach set out in the TANK Plan.

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21. The very limited demand for frost protection water coupled with its essential role in crop management means on-going access to a defined amount is consistent with other water allocation decisions (for example, the on-going provisions for small scale permitted takes).
22. The management options include
 - a. preventing further allocations or
 - b. allowing limited new abstractions.
23. The recommendation is that water for use for frost protection will be allocated in litres per second. . There will be no ability to reallocate this water to other use such as irrigation
 - a. Applications for frost protection water from the HPWMZ groundwater be considered as a discretionary activity. This is to be a separate allocation in litres per second in addition to the total groundwater allocated volume in Mm³/year

An option of an allocation limit for groundwater has also been considered but given the

 - i. essential nature of this water take for crop protection, coupled with
 - ii. the relatively minor cumulative impacts of the take, and
 - iii. the anticipated low future demand for further frost protection water

no specific allocation limit is being recommended.
 - b. Applications for new surface water takes for frost protection will continue to be provided for as a discretionary activity provided that any future take is subject to a minimum flow to protect fish habitat. Consideration of the cumulative abstraction rate from a stream is also necessary to ensure that the rate of take does not cause adverse effects on a stream. This is particularly important for smaller tributaries.

Section 5 Trigger Flows

Please refer to section 3 of the discussion document circulated for Meeting 38 especially paragraphs 1 - 31. New information is now added to that discussion.

1. With each review and new Plan generation, information available to make decisions is further refined and developed, and understanding of land and water management methods is improved. IFIM and RHYHABSIM studies have been carried out in the past to help determine flow regimes that would ensure these species are appropriately provided for.
2. The RHYHABSIM modelling demonstrated that further reductions in river flow would compromise the protection of habitat for flow-sensitive species such as torrentfish. The potential for groundwater use across much of the Heretaunga Plains to deplete river flows demonstrated the importance of total allocation limits on surface and groundwater to manage further reductions in fish habitat.
3. In addition to the importance of allocation limits to manage adverse effects of abstraction on river flows, the other flow management tool used are trigger flows, which nominate the point at which restrictions are placed on linked water takes. The trigger flow does not dictate river flows or halt flow recession. The recovery of river flows, as a consequence of triggering restrictions in existing takes, is most effective at the lowest river flows. Raising the trigger flow substantially offers diminishing benefit for river flows because the flow depletion effect of those linked takes

is relatively small at higher flows. In addition, more information is now available through more sophisticated modelling based on the SOURCE Flow model and groundwater models.

4. There are several items of information relevant to the decision making for the Ngaruroro River trigger flows for managing the effect of surface abstraction on river flows.
 - a. economic, social and cultural impacts of imposing take restrictions on the ecosystem attributes for flow (this will be reported on separately by Dr Anthony Cole (iPansophy and Garry McDonald (Market Economics)
 - b. the assessment of the appropriate flow requirements for the identified river values of the Ngaruroro River and the conclusions of the WCO applicants.
 - c. other management decisions made to improve aquatic ecosystems and meet objectives for freshwater (and the estuaries) including new abstraction limits where none existed previously.
 - d. the robust and comprehensive implementation plan and community commitments to the implementation and to ecosystem health improvements
5. There is a wide range of management measures being introduced in the plan change. They particularly address water quality concerns, especially in relation to deposited sediment, macrophyte growth, stock access, risk of algal blooms and improved MCI in the karamu catchment and in both the Tutaekuri and Ngaruroro rivers and consequently the Waitangi estuary. A number of new provisions will address these land use and contamination issues.

Outstanding Waterbodies and the WCO process

6. The TANK Group has identified a range of values for the Ngaruroro River. The RPS (via Change 5) also provides further information about the values to be provided for. The Plan Change draft objectives currently distinguish the Upper Ngaruroro (provisionally defined as being upstream of the Taruarau River confluence) from the lower reaches and seeks the maintenance of the upper river water quality and quantity.
7. The objectives for the lower reaches include improvement in the lower reaches and tributaries, where necessary, to support healthy ecosystems including torrentfish (among other things). Some areas where improvement in quality is necessary are identified through the attribute states specified in Table 1.
8. Meanwhile, the WCO application also notes the presence of torrentfish in the river and their conservation status. The supporting information for the WCO application notes the presence and diversity of native fish in the lower river and notes the exceptional habitat for torrent fish in the braided reach of the lower river.
9. These findings are also reflected in decision making by TANK in relation to their identification of the habitat and biodiversity values for indigenous species and including in particular torrent fish and indigenous birds in the Ngaruroro River. The WCO and the TANK members understand torrentfish to be the most flow-demanding of New Zealand's indigenous fish fauna.

10. The TANK draft objectives for the Ngaruroro River (and Tutaekuri) Rivers also specifically acknowledge the abstractive demand for water by people and communities for their health, social, economic and cultural well-being.
11. In the applicants' second draft of the WCO they are seeking maintenance ⁷ of the current water quality, flows and channel in the lower river. This includes the current pattern of water abstraction and the low flow trigger currently in the RRMP and provides also for the current patter of land use. This conclusion is noteworthy as it acknowledges the existing health and diversity of native fisheries and establishes (in their opinion) the existing management regime as adequately providing for them. (note the applicants advise this may not be the final form of the Order)
12. As noted above the TANK Group explored the option of assessing the significance of values (mtg 34). This would be in relation to deciding whether a value was outstanding or locally or regionally significant or some other scale that ranks the values in relation to each other.
13. Despite referring to information (like that provided by the RiVAS assessment) about the relative importance of different rivers for a specific value, the Group did not seek to further develop this sort of analysis or develop criteria to help decide significance or to assign levels of significance to values.
14. Other elements of the RMA and the NPSFM are however obliged to consider this aspect. There are two other processes –a Plan Change to implement RPS Policy LW1A about identification of outstanding freshwater bodies and the WCO application to determine the values of the Ngaruroro and Clive are outstanding and warrant protection under a WCO.
15. Should either of those processes consider that some values of the Ngaruroro or Tutaekuri Rivers are more significant than other values, subsequent changes to the TANK plan change may be necessary to ensure consistency and to ensure the relevant provisions can be given effect to. The outstanding waterbodies work is programmed for notification later this year and in advance of the TANK Plan Change.

Water Management Decisions to Date

16. In addition to decisions about values and management objectives, The TANK Group has made decisions about priorities for management and has made the following decisions;
 - a. Firstly, provided for the rivers' mauri, and the health of their aquatic ecosystems. The Group has used measures or attributes relating to water quality and flow in order to make decisions for these values. It has used a critical values approach and has made decisions about water quality state around what value is the most sensitive. Flow related decisions using this approach are to be confirmed at this meeting.
 - b. Recognised the higher natural character and state values of the upper rivers in relation to the objective to maintain these rivers and to prohibit damming.
 - c. Provided next for water use for human health and well-being. It has done this in a number of places including in relation to municipal supplies and exemptions for the

⁷ <https://www.epa.govt.nz/assets/FileAPI/proposal/NSP000041/Board-minutes-directions-and-correspondence-Correspondence-to-decision-maker/Applicants-Memorandum-of-Counsel-Second-Draft-Order-8-Dec-2017.pdf>

human health component in management requirements, including reservation for future community use and priority during low flow periods.

- d. Provided water as a priority for the irrigation of land and the processing of primary production.
17. A range of decisions have also been made to improve the management of land and freshwater within the TANK catchments that are also relevant to the maintenance or improvement of mauri and aquatic ecosystem health of the two rivers. They serve to illustrate that river and aquatic ecosystem health, especially in such a diverse landscape, does not depend solely on trigger flows for rationing abstraction. The effects of water takes for the range of community needs are managed by trigger flows and allocation limits but are also mitigated by improved water and land management.
18. In contrast to the WCO application, the TANK members have shown greater willingness to acknowledge the wide range of values and uses of the rivers and have agreed that appropriate limits that provide for this range of values are necessary. They have considered a wide range of measures that enable the values to be met in a sustainable manner and in a way that also provides for the needs of future generations
19. The TANK Group is achieving this by adopting an integrated, mountains to sea, ki uta ki tai approach that also focuses on the impacts of land use on the health of aquatic ecosystems in tributaries as well as in the mainstems of the rivers. The TANK Group has addressed not only the trigger flow regime, but also the following:
- a. damming prohibition on the mainstems, and possibly on a small number of named tributaries.
 - b. targets for the reduction in a number of key contaminants including dissolved nutrient and sediment in the mainstem and the tributaries. This will have the flow on effect of improving MCI scores for the rivers and contributing to the health of the Waitangi Estuary
 - c. widespread improvement of riparian land management across the catchment and including stock exclusion.
 - d. acknowledgement of the stream depletion effects of groundwater takes on the Ngaruroro River and new policy direction to explore measures to reduce this impact.
 - e. reduced allowance for permitted activities to reflect the full and some cases over-allocation of the groundwater surface resources linked to the main rivers.
 - f. reducing allocation of water to prevent further depletion of river flows
 - g. flow enhancement measures to remedy the effects of stream depletion.
20. These management provisions clearly illustrate that improved ecosystem health is not just a function of river flow, it is also a function of the way land, including riparian margins is managed. They also recognise that community well-being is provided by access to water for abstraction and that adverse effects of human interactions do not necessarily always have to be avoided – sometimes they must be remedied or mitigated.

21. The work being done by the TANK Group is also demonstrating that good relationships between stakeholders can be extremely influential in changing behaviours and increasing understanding about values and agreeing visions for the future. The fostering of these relationships including through the plan implementation provisions that provide for on-going input into implementation can continue to be powerful in affecting positive change within our river environments.

Decision Making – Ngaruroro River

22. Council staff are proposing given

- a. the wide range of measures to manage quality and quantity (including allocation of water, and mainstem damming) already adopted providing for environmental outcomes
- b. the community commitments to improved ecosystem management (as evidenced by the implementation plan and commitment to on-going management involvement) providing for community well-being.
- c. agreement that the health of torrent fish provide a proxy measure for understanding impacts on ecosystem health and the lack of evidence that native fish populations are negatively impacted by the current flow regime
- d. the significant adverse effects on social, economic and cultural well-being if trigger flows are raised

That

1. The status quo trigger flow of 2400l/sec at Fernhill for restricting takes and managing any future flow enhancement schemes be adopted for the Ngaruroro River and
2. Council makes a commitment to better understanding state and trends of the indigenous fishery. HBRC will seek DoC assistance and Mana whenua input in managing this work through the implementation plan.

Decision Making - Tutaekuri River

23. Council staff are proposing given;

- a. the uncertain but likely minimal environment benefits of an increased trigger flow
- b. the wide range of measures to manage quality and quantity (including allocation of water, and mainstem damming) already adopted providing for environmental outcomes
- c. the community commitments to improved ecosystem management (as evidenced by the implementation plan and commitment to on-going management involvement) providing for community well-being.
- d. the significant adverse effects on social, economic and cultural well-being if trigger flows are raised

That

1. The status quo trigger flow of 2000l/sec at Puketapu for restricting takes and managing any future flow enhancement schemes be adopted for the Tutaekuri River and
2. No further water is allocated for abstraction from the Tutaekuri (there is still about ?? l/second unallocated water within the current allocation limit.

3. The default allocation for abstraction from the Mangaone and Mangatutu be set at 10% of the MALF as a default interim measure
 4. Council makes a commitment to better understanding state and trends of the indigenous fishery. HBRC will seek DoC assistance and Mana whenua input in managing this work through the implementation plan
24. At Meeting 41 you will be asked to decide if you agree, agree with conditions or disagree with this proposal. It is particularly important that if you do not agree with this proposal, that you state the reasons why and also provide reasons to support any alternative position. We suggest you consider benefits and costs of any alternatives in relation to environmental, social cultural and economic well-being of the community. .
25. We would also encourage you to think about the environmental outcomes you are seeking and to consider whether other measures might be more effective in meeting them. Are there other measures, management pathways or initiatives that could be further developed?
26. If a consensus decision cannot be made, the notified provisions will be firstly decided by the RPC. The RPC would be assisted by a full understanding of the remaining concerns identified under paragraph 23. If the group is unable to agree on a consensus position this information will be used to assist the RPC in making decisions about what the notified Plan Change will include
27. Note that if the TANK cannot make this decision collaboratively, the RPC is also likely to find the decision difficult and it is likely debate will continue to the Environment Court with its associated costs. (We observe that money spent advocating a flow in the Environment Court could be better spent in implementing mitigations and that this work would commence sooner if the plan was made operative sooner – it might be useful to consider how this money might be spent now to achieve improved environmental outcomes rather than plan to spend it through Court action.)

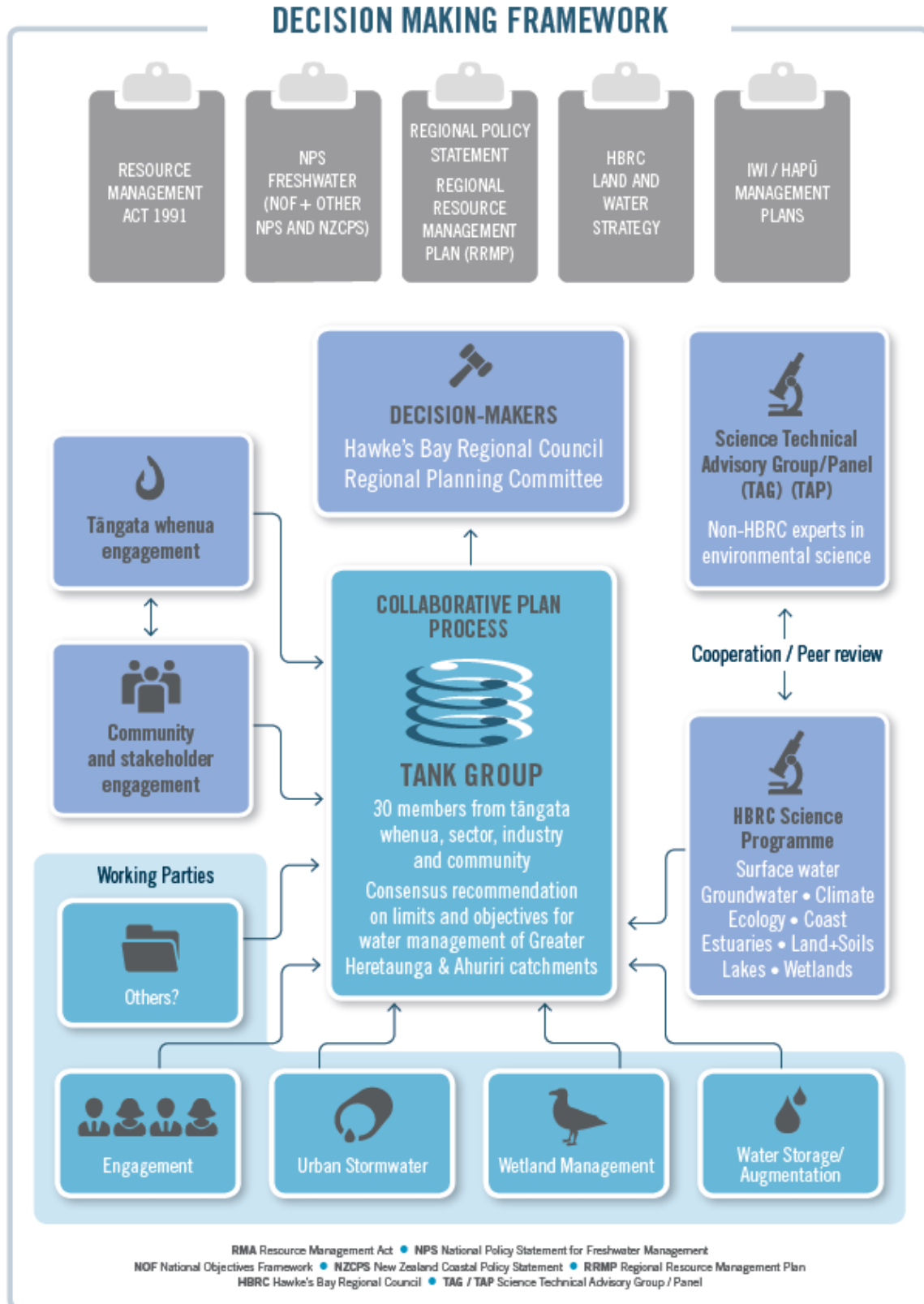
Section 6 Water meters for the less than 5 L/sec take

1. New water meter regulations were introduced by the government in 2000 that required all water takes taking water at rates more than 5l/sec to be metered. Councils could also impose additional requirements for telemetered data to be provided. The regulations provided for a nationally consistent approach to water metering, including their verification and calibration.
2. Councils are also able to make rules about meters for water takes less than 5l/sec. Decisions about any requirements for metering these smaller scale takes would depend on local water demand and supply issues. It would include consideration about the level of pressure on the resource, whether it was over-allocated or not and things like historic management of consents and the pattern of water takes (there may be a large proportion of smaller takes – or vice versa).
3. The Council has fully implemented the water metering regulations. In addition, consents to take water at rates less than 5l/sec are assessed on a case by case basis. The need for water meters for small scale surface takes are currently assessed according to state of the resource and water demand, whether allocation limits apply and as a way of managing discharge activities. For groundwater, meters are required on the basis of weekly volumes (new consents need meters if exceeding 2500m³/week just under 5l/sec if taken continuously) while existing takes only needed a meter if exceeding 5000 m³/week (8l/sec if taken continuously). Note that if 5l/sec is

taken continuously over the week, it could irrigate the equivalent of about 8ha depending on the crop type.

4. There are approximately 60 water takes that abstract at rates less than 5l/sec. Of this total about 50 already have a meter requirement as part of their condition of consent and some also are required to have telemetered takes.
5. The water resource of the TANK catchments are fully and in some cases over-allocated. The new Heretaunga Plains ground and surface water model has shown a high level of connectivity between the water bodies and has also shown that it is the cumulative effect of a large number of water takes that has an effect on surface water flow depletion.
6. For the reasons outlined above, it is recommended that all consents to take water in the TANK catchments, including those at a rate less than 5l/s be required to install a water meter. Telemetry need not be required and for HPGWMZ groundwater, the take is subject to annual recording and reporting of water use. Surface water takes will be subject to weekly water meter reading and reporting.

ATTACHMENT 1



Map showing location of named rivers

