

8. Water management options

Workshops 1 and 2 explicitly asked participants to identify water management options – including one or more storage dams in the Wairoa/Lee catchment area. For each water management option, participants – working in small groups – had to identify whether the option maintained or did not maintain the core values identified earlier. (See Appendix Three for examples of values and management options documentation). Wairoa and Lee valley residents and those interviewed also talked about a variety of water management options.

Individuals were also asked to identify what surety of supply would be enabled by each management option as well as how they thought the management options they had articulated could be financed. The responses in the ‘surety of supply’ data indicates that not everyone in both workshops (despite Joseph Thomas’s explanation in workshop 2) was 100% clear about the technical meaning of the term or the relationship between surety of supply and water restrictions. While there appeared to be an intuitive understanding between surety of supply, the capacity of different options to ensure surety of supply, and how these were related to potential water restrictions, some responses appear to represent what people would like to think could eventuate rather than an assessment based on knowledge of technical solutions to water shortages and water management practices. (See recommendation three.)

8.1 A single storage dam in river

The location, size and design of the storage dam, which is unknown at present, were seen as factors impacting on water quality, river flows, intrinsic environmental values, scenic values, and recreational activities. If the dam was far enough back in the catchment and water was released to mimic the ‘natural’ flushing of the river during heavy rainfall, then these values could be maintained, as well as the integrity of the estuary and coast. However, in workshop 2 people said that the mauri and wairua of the river would not be maintained, and fish would need a ‘fish ladder’ to be able to access the higher reaches of the river.

Participants in both workshops thought that the aquifers would be protected and drinking water quality maintained.

Reliability of supply would be retained but participants in both workshops expressed a range of responses in relation to productive use and efficiency. While some saw productive use and efficiency being enhanced, others saw potential problems such as:

- More available water leading to a ‘use more’ approach to irrigation (with new uses of water coming on stream, too).
- The use of extra water to irrigate land that is not currently irrigated could lead to further water shortages in future years.
- In the event of the above scenario, the only real gains will be the availability of more land for productive use. Some participants argued that unless surety of supply can be improved in a sustainable way there is little point in investing in a storage dam.

Some thought that strong management systems would need to be put in place to ensure efficient water use if the dam option goes ahead.

A number of workshop and focus group participants and interviewees saw hydro-electricity power generation as a potential spin-off from construction of a storage dam, but people were adamant that irrigation needs were more important than power generation. Lee Valley focus group participants thought that the storage dam would have to be a large structure for hydro, and that this would pose a potential threat to safety of residents in the valley and downstream, given the potential for earthquakes in the area. The same group raised the question of amenity values with pylons in the valley. The main benefit of hydro was perceived to be an economic contribution to the cost of building a storage dam, which could reduce the costs borne by Waimea residents.

Table 3: Single storage dam in river – surety of supply

Surety of supply	Up to 1:5	1:10	1:20
Workshop 1 Participants	3	8	18
Workshop 2 participants	6	7	9
Total	9	15	27

Options for financing the dam included:

User pays. Most commonly this was broken down into three sources of funding, with the bulk of the funding coming from irrigators with residential rate payers and TDC also contributing. Levies on irrigators could be determined through either the amount of water consumed - “by shares proportional to water right to take” or on a basis of “he who benefits most pays the most,” or per hectare irrigated. Most commonly it was thought that irrigators (who are seen as creating the greatest demand) should bear the majority of the cost, with contributions from residential and industry ratepayers, TDC and possibly central government.

A second option was for costs to be shared between irrigators, residents, TDC and central government. The contribution from central government varied from paying the entire costs to providing a loan which would – in part – be paid back, to funding 10 – 50% of the costs. In the Water Programme of Action public meeting a number of people thought that large storage solutions should be funded by central government, especially those that contribute to long-term planning and water management.

These findings are relevant for Wairoa and Lee Valley residents who stated that they appreciated that water is needed on the plains, but wanted to know who was going to pay for potential storage options in the Lee/Wairoa catchment area.

Table 4: Number of times potential funders were specifically mentioned.

Central govt	TDC	Residents/Rate payers	Irrigators	Industry	Hydro
10	13	21	28	2	2

8.2 A storage dam or dams out of river

This option was the second option for both workshops, and one that also emerged from the Wairoa Valley focus group discussion:

Harvest side of the valley, a small tributary and pipe water over – won't interfere with river ecology and reduce warming and preserve in-stream values (Wairoa Valley focus group).

For this option most values were retained, although there was uncertainty about the mauri and wairua of the river, but as long as the water stored did not come from another catchment the impact would be less than a storage dam – or dams – in the river.

There were uncertainties around efficient water use similar to that expressed in relation to an in-river storage dam.

In terms of cost, this option was seen as potentially more expensive, but the cost could be spread over a number of years lessening the need to service an initial large loan, thus reducing the short to medium term financial demands on TDC, irrigators and other ratepayers. Funding options were similar to those proposed for a single in-river storage dam.

People were less certain about surety of supply, with only 11 responses, 9 of which thought this option could provide for a 1:20 surety of supply.

8.3 A series of weirs in the lower stretches of river

This option was identified in both workshops and by the Lee Valley Focus Group. However there was much less certainty about the ability to retain core values with this option, especially those relating to river flows and ecology. The focus group participants thought that a series of weirs would be more acceptable in the lower stretches of the Lee River compared to a storage dam in the same part of the river, both in terms of amenity value, and recreation opportunities (except for kayakers), but they were also concerned about potential for flooding.

Small dams would not affect the landscape (focus group)

Only 11 people in total (from the two workshops) indicated what surety of supply they thought weirs would provide.

Table 5: Weirs in river – surety of supply

1:2 1:5 1:10

8.4 Estuary and river mouth options

In workshop 1, damming the estuary and harvesting water at the Waimea River mouth and pumping upstream on demand were options identified. Participants in the Lee Valley focus group also identified the possibility of harvesting water closer to the sea in times of high river flow. Damming the estuary was seen as preserving river and environmental values except those pertaining to the coast, and preserving values relating to employment and economic livelihood. The costs of this option were probably not viable, especially as it was stated – but not documented – that a desalination plant would also be required.

Harvesting water at the river mouth, likewise, did not deal with the issue of tidal influences, and harvesting this water would benefit only those irrigators close to the river mouth as it would be too expensive to provide the necessary infrastructure to pump the water further inland. Consequently, user pays was the dominant mechanism for funding this scheme. Another major drawback to this scheme was the need to be able to anticipate a dry spell and ensure the water was harvested at peak flow times.

Table 6: Estuary and river mouth options – Surety of supply

Surety of supply 1:5 1:10 1:20

Dam the estuary 3

Harvest water at river mouth 3 3 1

8.5 On-farm water storage

This was an option identified in workshop 2 and also discussed briefly in the Lee Valley Focus group with the following comment made:

Growers used to have storage ponds on their properties but have filled them in to grow more because water is cheap from TDC (focus group).

It was suggested that farmers should pay for on-farm storage, with surety of supply documented by only five people and varying from 1:2 to 1:20. While people said that the river and habitat values would be preserved, it was uncertain whether this option would contribute to aquifer protection or efficient use.

8.6 Piping water from Lake Rotoiti

This management option emerged in workshop 1, although piping water from other sources was identified as an option, but not explored, in workshop 2. Some focus group participants and individual interviewees also identified piping water from Lake Rotoiti as an option.

Need a bigger scheme than the proposed dam – eg pipeline from Lake Rotoiti instead of all

these smaller schemes (interview).

The ability of this option to meet the values identified in workshop one was uncertain, especially in relation to sustaining intrinsic environmental values and the scheme's affordability. While it was perceived that the water from the Lake could be gravity-fed, the cost of infrastructure to deliver the water to irrigators was not addressed. The option of piping this water into the river at a point that would contribute to replenishing the aquifers would not be tenable for iwi where mixing of waters from different catchments is not culturally acceptable. Canals, rather than pipes, as mechanisms for water delivery were seen as potentially creating new recreational opportunities.

The possibility of hydro connected to this scheme was also mentioned with funding costs of the scheme being met by the energy provider. Perceptions of surety of supply are depicted in Table 7.

Table 7: Piping water from lake Rotoiti - Surety of Supply

1:5 1:10 1:20
1 5 8

Funding options were based around contributions from irrigators, community and local and central government, but six of the seventeen participants who provided data said that the scheme would not be economically feasible.

8.7 Water management policy changes

A number of possible policy or management changes were identified. In workshop 1 (water permit holders) these included:

- A tradeable water market (also identified in workshop 2 but not worked though)
A tradeable water market is an economic tool whereby a dollar value is placed on water which people can buy and sell (within their permit allowance). This economic tool is also a potential action for discussion in the Water Programme of Action, along with the desirability of water being made available to the highest value use. Likewise, the preliminary information from the Rural Futures public consultation process, indicates a perception that market tools may contribute to better efficiency of water use.
- Getting rid of the "use it or lose it" mentality, along with education
This refers to resource consent holders concern that if they do not use their allocation water right when they come to renew their consents their allocation will be reduced.
- Redistribution of water permits
This option involves distributing water permits to those who most needed water,

which implies mechanisms for equitable allocation that are not presently in the planning – RMA process.

- **Integrated charges for water**
This option seemed to be about charging for water – for all water users, and developing a system of charges that was integrated in some way, such as a charge per volume used.
- **Reclassifying land use**
Reclassifying land use referred to mechanisms for linking water allocation with land use that lessened the amount of water required and/or enabling more residential development on productive land because residential water demands are less than those for irrigation. While some participants said that the council would need mechanisms to determine optimum land use, farmers at the workshop said there would be strong resistance to decisions on land use being taken out of their hands.

In workshop 2 the range of policy options included:

Serve Tasman first approach

This entailed charging Nelson City Council for water that came from the Tasman area. This option appeared to be based on the assumption that Tasman currently provides water to Nelson, but this is not the case.

Better water collection and efficient use of water

This option was about exploring a range of mechanisms in relation to irrigation technologies and practices, household storage options (for storm water) and reuse of grey water. Some people said that these initiatives could be additional, rather than in place of, storage options. (See recommendation 2.)

Rationing (also identified in workshop 1 but not worked through)

Rationing mechanisms are already in place, but the means to extend these was not identified.

Reducing exotic forest in favour of indigenous bush (also identified in workshop 1 and focus groups).

This last option was based on the assumption that exotic forestry uses more water in the catchment area than does indigenous bush. Some participants in the Water Programme of Action public meeting also identified a need to learn more about the relationship between water availability and pine forestry.

Discussion of policy options

Getting rid of the “use it or lose it” policy was an option emerging in workshop 1, and interviews. There are two sides to this option. Water permits remain with the property and so contribute to private property values (interviews and workshop participants). Any reduction in allocation limits may impact upon property values and/or the ability of owners to diversify or intensify. This is a concern for the

Waimea East Irrigation Company whose consent is due to be renewed in 2006.

There are 170 shareholders/irrigators some of whom do not access their water – they're going to renew their water take next year under the RMA so may get their allocation cut. One of the strengths is the diversity of crops, therefore there is variable demand at different times of the year – eg vegetables grown in winter (land fallow in summer) because that's where the biggest economic gains are to be made. The diversity gives them an advantage compared with other irrigators. There is more and more intensification enabled by irrigation – tunnel houses and glasshouses. Land is expensive. Don't want a "use it or lose it attitude (interview).

The desire to retain current allocations, however, does not necessarily lead to efficient use of water.

The "use it or lose it" approach makes people use it – there are stories about people actually pumping water back down their wells just to make the meter turn over (interview).

However, if allocations are regularly not taken up, that water could be made available for alternative use or other users, and the council should be able to encourage those changes (interview).

Changing the "use it or lose it" approach was seen as important in the context of tradeable water rights.

Needs to be certainty about keeping or losing and if bringing in tradeable water rights people need to know they aren't going to lose it. Water rights should stay with land otherwise the land loses its productive capacity – need to retain rural A land for its contribution to the local and national economy (GDP) – it's in the national interest. If there is something new coming in, such as tradeable water rights then we need to put a peg in the ground now – allocation has to stay as it stands (interview).

Closely associated with this management option was another option identified in workshop 1 - Redistribution of water permits to people who need them. This option was seen as benefiting only a few, and did not preserve the values identified in either workshop. Other redistributive mechanisms included market tools for managing water allocation, such as tradeable water rights (workshops 1 and 2, interviews); and an integrated charge for water (workshop 1, interviews).

Matter of people valuing water – have to pay. There are meters to monitor resource consent take, but users don't pay for water on Waimea Plains (interview). Need to see water as raw material and treat it as such – this means charging (focus Group).

The concept of tradeable water rights was seen as privileging existing water permit holders, but paradoxically only contributing to retaining values when there was "plenty of water" (workshop 1). It was perceived that in times of drought there would little scope for trading.

Reclassifying land use included four management options.

- Encouraging residential development with the rationale that residential development requires less water than irrigating land for productive use (workshop 1). This option was not seen as providing for the core values identified in the workshop, except that of protecting the aquifer.
- Replacing exotic forestry with indigenous bush in catchment areas (workshops 1 and 2, focus groups). This option retained environmental and water-related values, but did not contribute to retaining employment opportunities for a number of people. Participants were also unclear what documented information exists to support the perception that indigenous bush uses less water than pine forests with the comparison being based on historical anecdotal observations of water flows in the Lee and Wairoa rivers.
- Determine the feasible crops for Tasman (workshop 1, focus group). Implicit in this option was the need to include crop type in planning that would impact on the resource consent process for water allocation. However, farmers also claimed that there would be strong resistance to such a measure (workshop 1).
- TDC buying up existing dairy farms for two reasons: (i) to reduce the amount of water used for irrigation, and (ii) economic best sense in terms of consumption of water compared to profit generated (interviews).

Need to consider agriculture and smarter use of water. If dairy farm comes up for sale TDC could buy it (interview).

Dairy farm on the Waimea Plains

A number of options for efficiency gains were also identified. These included:

- Rationing (workshop 2). While this mechanism was seen as protecting most values it was not seen as protecting against drought.
- Better collection and use of water (workshop 2, focus groups, interviews). Behaviours and policies that contribute to efficiency gains here are (i) best irrigation technology and practices (such as irrigating in the evenings); (ii) installation of rainwater storage tanks; (iii) re-use of grey water (household and industry) (workshop 2, interviews, focus groups)

People still do irrigate during the day and in wind – more education would be beneficial plus education about the pros and cons of different forms of irrigation but this is probably an economic constraint (interview).

People take water for granted – it just comes out of the tap. Storage should be done at every level (interview).

If the water is just going into the ground we should be able to use it. We don't

recycle grey water (interview).

While many of the policy related management options did not, on the whole, maintain core values – or workshop participants were uncertain whether values would be maintained – the ideas and concepts expressed were raised consistently across workshops, focus groups and individual interviews. The conclusion drawn from this data is that people see water management initiatives and conservation behaviours as important, and these need to be addressed in conjunction with structural initiatives such as the feasibility of a storage dam, or dams. In other words, both large and small-scale opportunities for better water management need to be explored and, if feasible, implemented; many people noted that water conservation is a collective responsibility.

Recommendation Two

Tasman District Council should explore multiple opportunities for planning and implementation of water conservation measures and practices. These can be linked to awareness-raising and/or educative initiatives (see recommendation three).

The other advantage of policy or behavioural options relates to the cost – all these options identified in the workshop were seen as having little or no cost. However, it did not appear that this benefit was the driver of the option identified.

One of the perceived routes to achieving the above is ongoing public education (workshops, interviews, focus groups). The management options also illustrate where public knowledge gaps are and areas for potential education.

Need social learning – people are trying to get their heads around stuff they don't usually think about (interview).

Need more time and information to thoroughly investigate the options (evaluation forms, workshops 1 & 2).

In assessing the data for areas where education may be useful, the following topics were identified:

- Local hydrology - river and aquifer systems.
- Current water management practices, including the relationship between the Tasman Resource Management Plan and water allocation consents.
- Drinking water provision and infrastructure.
- Information on irrigation technology and practices.