Struggling Upstream

Efficient Water Allocation on the Waitaki River and Elsewhere

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Overview

• Competition on the Waitaki and elsewhere

• An efficient water allocation framework

• The Waitaki Bill (RMA Amendment Bill)

• Does the Bill fit an efficient framework?

• In-stream flows and the Whanganui River

• Conclusions
Competing Uses on the Waitaki

• Dominant (non-consumptive) use in upper reaches is hydro-generation

• Irrigation is a major (consumptive) use. Most new applications are for irrigation

• Recreational activities – fishing and jet boating

• Cultural value to local Maori

• Environmental values
Dealing with competing uses

- No regional plan for Waitaki – so no indication of how much water is available or how it should be allocated

- RMA allows for the allocation of water by first-in first-served

- No mechanism for dealing with competing applications for the same water

- Waitaki is but one example of water allocation issues for NZ resulting from increasing demand
An efficient water allocation framework

• Efficiency = allocative efficiency: resources allocated to maximise the total value to society

• Based on economic theory – how to allocate scarce resources to maximise allocative efficiency

• Based on recent experience from other countries
  – Australia, England and Wales, Chile, Mexico, U.S.
An efficient water allocation framework
1. Well-defined property rights

• What are property rights?

• Water rights should clearly specify what may be taken, and be made tradable and independent of use

• Indefinite time-limit to encourage long-term investment

• If rights are to be time-limited, their duration should be significant enough for investment
An efficient water allocation framework

2. Preservation of existing property rights

- Water users make investment decisions based on the security of their rights

- Truncating existing rights (whether explicitly or due to uncertainty) can:
  - reduce the value of investments
  - deter future investment
  - lead to stranded assets

- An efficient framework would provide for the protection of rights already established
An efficient water allocation framework
3. Management of flow variability

• River flow variability can have adverse effects on water users

• Priority system: define rights by volume and allocate rights by priority

• Proportional system: define rights by a share of the resource

• Both systems foster efficiency when rights are fully tradable
An efficient water allocation framework
4. Tradable water rights

- Flexibility - water can be moved to its highest valued use to meet changing societal values

- Efficiency of use – wasting water bears an opportunity cost

- Enables water to be obtained from fully allocated catchments
  - e.g. High Court action pending on whether the upper Waitaki is fully allocated to Meridian and existing users
An efficient water allocation framework

4. Tradable water rights (cont.)

• Water rights in NZ already tradable – yet little trading occurs
  Does this suggest a tradable rights framework is unnecessary?

• Markets do not need a lot of transactions to be efficient

• High transaction costs - water rights in NZ defined on use

• Markets do not operate in a vacuum - need appropriate institutional arrangements to enable trade

• Arrangements include:
  – determination of fully allocated resources
  – good information flows
  – public register of water rights
  – monitoring and enforcement of rights
An efficient water allocation framework
5. Regulatory and administrative oversight

• Administrative allocation where there is no scarcity: First-in first-served is a sensible approach with tradability

• Planning to determine the extent of resource allocation

• Facilitating trading via information exchange, monitoring and enforcement

• Administrative approval of trades to minimise third-party effects
An efficient water allocation framework

6. Building on the existing framework

- RMA and related case law provides a good underlying basis for efficient water allocation – but is in need of some development

- Type of water market exists: wholesale electricity market conveys information on the value of water

- Electricity price provides a lower bound for the value of water on rivers with existing hydro-generation
The Waitaki Bill

• Government establishes a Water Allocation Board

• Board prepares framework that becomes a regional plan

• Board’s framework determines water available for competing uses

• Environment Canterbury allocates (Waitaki) water rights based on the RMA and the framework – can consider competing uses by cost-benefit analysis
The Waitaki Bill (cont.)

Total water available in Waitaki catchment

Less: water for in-stream, domestic, stockwater and firefighting uses

Water available for competing uses
RMA Part II, cost-benefit analysis, existing rights

Hydro-generation
Irrigation
Other

Applications for new water rights
Does the Bill fit an efficient framework?

Positives

• Develops a much-needed catchment plan for the Waitaki

• Amended version (based on Select Committee report) allows for some unspecified sharing amongst users

• Maintains a lot of the existing responsibilities of local government under the RMA
Does the Bill fit an efficient framework?

Negatives

• Limited protection of existing property rights

• Administrative allocation decisions made at a one-off point in time with little flexibility

• Tradability of rights based on existing arrangements in RMA and rights defined on a use basis
In-stream flows and the Whanganui River

• Genesis granted 35 year rights to continue operation of Tongariro Power Development Scheme on Whanganui River

• Local iwi appealed to the Environment Court on grounds that Whanganui has significant cultural and spiritual value to Maori

• Environment Court limited term on consents to 10 years to balance national interest factors with Maori belief, and provide for a “meeting of the minds”
In-stream flows and the Whanganui River Questions raised

• Under RMA, Maori would **not** be reallocated Genesis’ water rights

• Maori cultural values would be met by resetting minimum flows

• Raises two important questions:
  – should compensation be paid when minimum flows are reset?
  – could in-stream uses be defined as tradable property rights?
Compensation for in-stream flow adjustments

- Credible compensation preserves investment incentives for water users

- Issues in Australia:
  - water users bear the risk of droughts or climate change
  - governments bear the risk of policy changes and compensate water users for foregone water
  - who bears the risk of new scientific evidence for environmental flows?
Tradable in-stream rights

• In-stream water rights could be bought and sold like consumptive water rights

• Potential for efficiency gains from longer term re-allocation and from temporary trades e.g. purchase of in-stream flows to prevent crop damage during a drought

• But, who does the trading?
  – independent group(s): problems due to public good nature of instream flows
  – local government: accountability issues – whose interests do they serve
Conclusions

• Issues on the Waitaki and Whanganui are an indication of the future of water allocation in NZ

• A tradable water rights framework can more effectively meet the demands of competing users than the current administrative system

• The right institutional setting is important – even in the absence of tradable rights