

Regulation of Australian; Water reform in the Irrigation Industry

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Focus of this Submission

1. The focus of this submission is to highlight the importance of soundly based regulation as a key component of the water reform process. Irrigation in northern Victoria is used as an example.
2. This Submission is relevant to Terms of Reference 2 and 4;
 - a. *identify where there is greatest scope to pursue regulatory objectives in more efficient ways, and*
 - b. *assess whether the current level at which matters are regulated is appropriate and if better coordination across governments would reduce unnecessary overlap.*

Background to the submission

3. This submission will;
 - a. provide a brief overview of the regulatory framework that exists in Victoria, with particular regard to the protection of natural and social resources impacted by irrigated horticulture and associated industries.
 - b. provide comment on how regulatory objectives can be achieved in an efficient and effective manner, and will make comment on the choice between using incentives, regulation and taxes on bringing about change. It will use experience gained through the implementation of the regulatory framework relevant to this purpose, and
 - c. will suggest that the changes in the use of water between industries and locations through water trade, the investments in water savings, and impact of climate change necessitates changes in the way in which the use of irrigation water is regulated in northern Victoria and elsewhere in the southern Basin.

The use and management of land for agricultural purposes within northern Victoria

4. North of the Dividing Range in Victoria, the major use of irrigation water is used for the production of dairy products, meat and horticulture. The major drivers of change in these industries have been the benefits of increasing the economies of scale at the farm level, and Council of Australian Governments (COAG) reforms in the water industry (Intergovernmental Agreement on a National Water Initiative 1994). For irrigation, these initiatives are rolled out under guidelines (Managing irrigation induced salinity (various dates)). The implementation of the reforms is regulated under Ministerial Determinations. (Ministerial Determinations 2009).

5. The present drivers are a drying climate, adjusting to an imbalance between water used for agriculture and water used for the environment, and economic factors driven by world markets.
6. These changes have coincided with a higher appreciation of conservation value by the wider community that affects the use and management of public land, native vegetation protection, protection of biodiversity and the recognition of the need for water for environmental purposes.
7. The changes have also coincided with a greater involvement of the Federal Government in direct funding of projects previously the role of the states, and the introduction of Acts of Parliament by the Australian Government that addresses the aspects relevant to the management and protection of Water and Biodiversity.

The regulatory framework

8. This Submission will take the agreement of COAG on Water Reform as the starting point. The COAG Agreement was applied in Victoria having regard to the following regulatory mechanisms designed to protect environmental and social values, These are;
 - a. Murray-Darling Basin Ministerial Council Cap on Diversions
 - b. Reviews of the use and management of Public Land by the Victorian Environmental Assessment Council.
 - c. Biodiversity Strategies at the State and Federal levels
 - d. The Water Act (Vic) 1989 and the Water Act (Aust) 2009
 - e. The Basin Salinity Management Strategy
 - f. The Nyah to SA Border Salinity Management Plan and other Salinity Management Plans.
9. Because these mechanisms have evolved separately, and at different times, they can seem like a confusing jumble. However, close observation reveals strong and consistent themes within each. Once they are put together, it becomes clear that collectively they determine the limits to:
 - a. How much land is available for irrigation development
 - b. How much water is available for irrigation development
 - c. How much salt can return to the river as a result of development
 - d. How much impact on environmental values and social values is acceptable.
10. The Planning Act (Vic) provides the overriding framework by which the intent of the various Acts and Regulations can be applied in a systematic and effective manner. The Planning Act (Vic) relies on the myriad of other Acts and Regulations to set the standards, processes and authority for the evaluation of the impacts of irrigation changes and development on environmental and social values. Local Government plays a key role in the coordination and processing of applications for development under the Planning Act (Vic)
11. Coordination across the three levels of Government; Australian, State and Local is not so clear-cut. The Murray Darling Basin Agreement is a standout example

of operational and effective coordination and cooperation between Federal, State and local regulatory frameworks. An irony is that the Murray Darling Basin Authority is much maligned in its role of managing and protecting the water resources of the Basin, yet was the only Federal body attempting to work with the States and local agencies to achieve a coordinated management of an important natural resource.

12. This submission will draw on the following;
 - a. The Murray-Darling Basin decisions to cap diversions, combined with the Water Act (Victoria) 1989, and now the Basin Plan, that effectively limits the volume of water available for development.
 - b. The Basin Salinity Management Strategy(MDBA 2015), combined with the Victorian Government response to Salinity Management Plans in Victoria effectively limits the amount of salt that can be disposed into the river. This provides a further limit on how much water can be traded into the higher salinity impacts zone of the Mallee.
 - c. The Water Act Victoria that obliges the managers of water used for irrigation to have regard to the protection of the water resource, the need to manage salinity and drainage that arise as a consequence of irrigation, and to a lesser extent the protection of the wider environmental values.

A balanced use of regulation and pricing mechanisms rather than the use of government funding

13. The Deakin Project completed in Victoria in 2002 (Government of Victoria 2002), identified 2 potential pathways for irrigation development, being either;
 - a. a new irrigation district under-written by Government, or
 - b. irrigation development by private companies under strict regulation.
14. The Committee that undertook the study found that a sufficiently robust and cost effective new irrigation development scheme was not economically or practically feasible. Instead, the Committee recommended that irrigation development be allowed to proceed under private diversion and be funded through private investment.
15. A Regional Task Force was established to oversee and manage the protection of the environment. The process and standards for environmental protection would be achieved through regulation.
16. The role of the Regional Task Force was promulgated on achieving intent of the COAG Water Reform on the Victorian side of the River in the mallee zone downstream of Nyah (via Swan Hill) . To date, there has been 40 000 Ha of Irrigation development in this region. Production from this development now dominates the local economy (Jaensch and Cooke 2012).
17. The Deakin Project provides a clear example where the strategic use of regulation, delivered in a coordinated and timely manner achieved an outcome that would not have been otherwise possible. The alternative would have required substantial government funding.

Surety and practicality of regulation

18. The establishment of taskforces for overseeing the role of regulation in protecting against unnecessary environmental and social impact has become common practice in Victoria. The Taskforce approach provides an opportunity to develop innovative measures to avoid, minimize and mitigate impacts.
19. Examples that rise from this and other taskforces are;
 - a. the laying of pipes in cleared agricultural land rather than on vegetated roadsides and public reserves meant that impacts on environmental values were minimized, allowing timely approvals, and vastly improved surety for the project proposal.
 - b. the refurbishment and renewal within the footprint of exiting easements under the Northern Victoria Irrigation Renewal Project, now titled the Connections Project,
 - c. the focusing of irrigation development on cleared agricultural land to avoid environmental damage, and
 - d. minimizing the impact of irrigation on river salinity through impact zoning, in combination with levies to offset the impact of development.

An opportunity to achieve economy of scale in horticultural development

20. Large holdings, up to 2000 Ha under one freehold title and adjacent to the River became the focus for irrigation expansion downstream of Nyah on the Victorian side of the River (Jaensch and Cooke 2012). These large holdings came about as a consequence of the Mallee Land Act (1950). Under the Mallee Lands Act the original freehold titles of 640 acres were resumed by the Government, amalgamated into multiple contiguous titles and released back to fewer but chosen farmers to continue cropping and grazing.
21. The large increase in area of irrigation downstream of Nyah since 1994 occurred on a few very large holdings. These holdings were of land used for wheat cropping, and the chosen irrigation crops were able to be managed and tendered by mechanical means..
22. Large areas of freehold land, that had been cleared of native vegetation and used for agriculture could be readily converted to horticulture under the existing land use provisions of the Planning Act Victoria. The planning, design and approval processes could be completed generally in 3-6 months, and certainly within the period between planting seasons.
23. The crops chosen could be mechanically planted, pruned and harvested, in part or whole. These large areas of contiguous horticultural provided a sound base for vertical integration of growing, processing, packaging and marketing.
24. The Connections Program in the Goulburn Murray Irrigation District (GHD 2015) opened opportunities to achieve similar economies of scale in the dairy industry. Dairy farms have been bought and amalgamated into larger complexes providing opportunities for dairies to have capacity to milk 600-1000 or more cows at one site. The source of the land was from the multiple small allotments of the Soldier Settlement and other government schemes.
25. The trade in water from small farms to large farms provided opportunities to change to more profitable crops. In doing so, this opened up the potential to

substantially improve economies of scale. Being able to sell water separate to land in both time and space provided an opportunity for many irrigators to retire, and do so at a time of their choosing (Cummins *et al.* 2008).

The need to appreciate the difference between transaction and transformation costs

26. The regulations governing the development of irrigation downstream of Nyah since 1994 (Jaensch and Cooke 2012), requires that water infrastructure between the point of river off-take, and the farm be a sealed system. These modern piped systems involve no measurable loss of water between the river off-take and the distribution point often within the farm boundary. Anabranches and wetlands were not allowed to be used to convey water to irrigation farms or for the disposal of drainage water.
27. Water for this irrigation development was largely sourced from gravity irrigation districts, on the riverine plains upstream of Nyah. Irrigation water from the gravity districts is conveyed through earthen channels, creeks and wetlands where losses due to seepage and evaporation is as high as 30% of delivered water.
28. The water left behind was equivalent to 30 % of the traded water in some cases, and has been the focus of projects directed at recovering some of this lost water.
29. The purpose of the regulation that disallowed the use of the wetlands and waterways for irrigation purposes, was to enable the wetlands and waterways to be managed for environmental outcomes, and the need to maintain flexibility for possible future improved wetland management.
30. These wetlands and waterways are now being managed for environmental outcomes with considerable success.
31. Whilst these regulations may be seen as imposing an unnecessary transaction cost, they should be evaluated in the context of being a sensible transformation cost.

The need for greater use of regulation- reconfiguring irrigation districts Part 7 A, Water Act 1989 (Victoria)

32. The GMW Connections Project Stage is designed to save water by creating a world leading irrigation system to boost irrigator productivity and to help communities and foster healthy waterways and wetlands.
33. It is claimed to be the most significant investment in modernising irrigation

infrastructure in Australia. It is a \$1 billion investment to upgrade irrigation infrastructure to ensure the future of irrigated agriculture and bolster the economy in northern Victoria.

34. The project is recovering water lost from system inefficiencies through channel automation and remediation, upgrading meters and realigning the historical layout of the irrigation channels.
35. Water savings generated from the project are being transferred by Victoria to the Commonwealth to assist in meeting environmental water recovery targets under the Murray- Darling Basin Plan.
36. The mid-term review of GHD (2015) determined that the project is unlikely to achieve its outcomes on time and budget and recommend improvements to the delivery of the project is required.
37. The Report identified that a solely voluntary approach to achieve savings through either connecting direct to the backbone, or exiting the irrigation industry is not achieving the savings predicted in the original Business Plan. This is impacting on the affordability and deliverability of the program.
38. Irrigation districts when originally designed and developed did not take account of the need to reconfigure districts in the future. The Water Act (Victoria) was silent on the potential future need for some reduction or change of the footprint of irrigation. In 2005 the Water Act (Victoria) 2009, was amended to allow for an Irrigation District to be reconfigured, under a formal and ultimately compulsory process. .
39. One obvious option not canvassed in the report was that of enacting Part 7 A of the Water Act (Vic) 1989, to bring about a collective outcome involving irrigators on a common channel. Part 7a provides a process that in the case of a common and collective agreement not being able to be reached, then the minister can force a reconfiguration that may even involve cessation of irrigation to that site.

Regulation when the volume of water available for irrigation is declining and the demand is rising..

Declining catchment yields

40. Over the past twenty years and particularly the last ten years, there appears to have been a substantial decline in the reliability of both High Reliable Water Share and Low Reliable Water Share.
41. The decline may reflect an unusually dry period, but is most likely to be due in part or whole to the effect of climate change.
42. Most water traded for irrigation development is held as a High Reliability Water Share. At the time of unbundling the reliability of the High Reliable Water Share was deemed to be that 100% allocation would be available for all but 4:100 years (Government of Victoria (1999)). There has been 3 such events in the last

10 years on the Murray and 4 events on the Goulburn. Low Reliability Water Share has all but disappeared(GMW Website).

The pool of water used for interruptible crops appears to have declined

43. The concept of interruptible crops was not appreciated or recognized prior to 2007 (Cummins 2010). It took the coincidence of drought and water trade for these terms to become appreciated and used. It made sense to not plant crops such as wheat and rice, but to sell the saved water. For dairy it made sense to continue to irrigate until the price of water reached a point that it made sense to sell water and buy fodder. In the case of permanent horticulture it made sense to buy water to protect the current year's crop, and save the trees so that they would provide yields in future years. The drought appeared to enhance trade from the lower value interruptible crops to higher value non- interruptible crops.
44. The acquisition of around 20 % of High Reliable Water Share by the Commonwealth Environmental Water Holder may have further shifted the balance of water utilized by interruptible crops to the environmental water accounts. The water acquired for environmental water purposes is now outside the tradable water pool on which the water market operates. This may have further exposed permanent plantations to higher risk of water shortages in sub 100% water allocation years.

Matching the supply of water to the evaporative demands of the crops

45. Water traded into the Mallee Zone of the 3 States is used on crops such as table grapes, citrus, almonds and olives. Three factors are important;
 - a. the recently planted horticultural crops have a greater demand for water than the annual pastures from which this water is derived, due to both crop type and geographic location,
 - b. in the case of horticultural crops, there is no substitute for water, unlike the dairy that can feed cows with hay or grain in time of shortage. The hay or grain can be held over from year to year or sourced from dryland farms,
 - c. the evaporative demand may also be increasing due to climate change, and
 - d. rainfall in the catchments and in northern Victoria, may be shifting from the cooler to warmer months and seasonal allocations in timing and volume would be delayed.

Summary and recommendations

46. The irrigation industry in the southern connected basin will need to adjust to major challenges. These challenges relate to;
 - a. The effect that climate change is having on catchment water yields and hence the reliability of the High Reliability Water Share,
 - b. The use of the water market to trade water to support horticulture for which there is no substitute for water as an input,
 - c. The achievement of economies of scale made possible through water trade may continue as there are further potential large holdings available in the mallee,

- d. The acquisition of around 20 % of High Reliable Water Share for environmental purposes and consequential reduction of the size of the tradable water pool.
 - e. The inability or reluctance to reconfigure the residual multiple small irrigation holdings so that the losses associated with supply of small units of water to these holdings can be freed up.
47. Collectively, these challenges have interrelated causes and potentially inconsistent outcomes especially if treated individually.
48. Continuation of government investment directed at specific inputs such as upgrading infrastructure either in the supply to the farm or on the farm is unlikely to address the fundamental issues facing the irrigation industries.
49. The economic reality of economies of scale and the need to cluster processing and packaging means that the highest performing industries will continue to pull water from areas of lower value crops, especially those grown on small holdings. It may be wise to direct future Government expenditure to bring about reconfiguration, rather than to continue to invest in attempting to improve the efficiency of water supply infrastructure¹.
50. The irrigation industry in the southern connected basin will need to adjust to major challenges as outlined in this Submission. A high level Strategy aimed at addressing the future needs of the irrigation industry is needed urgently. Such a strategy would guide how incentives, taxes and government investment would be applied.
51. The focus of this Submission is to highlight the need for a sound and strategic framework to guide the use of regulation across the industry. The Strategy would focus on how to best deliver the two Terms of Reference;
- a. *identify where there is greatest scope to pursue regulatory objectives in more efficient ways, and*
 - b. *assess whether the current level at which matters are regulated is appropriate and if better coordination across governments would reduce unnecessary overlap*

End of Submission

¹ Despite there being considerable government investment aimed at improving water use efficiency in the irrigation industries, there does not appear to be any reliable data or analysis of the effectiveness of this investment. At best there are accounts of the volume of savings between the off-take and the farm, but this does not necessarily lead to efficient water use and management.

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² References have been selected largely on the basis as being available electronically. The chosen references are necessarily the original or most appropriate source. The original documents are available through Libraries and should be accessed when detail is important.

