Coleambally Irrigation Co-operative Limited
ABN 75 951 271 684
Registered Office: Brolga Place, Coleambally 2707
Phone 02 6954 4003 - Fax 02 6954 4321

Coleambally Irrigation Co-operative Limited

Addendum to Submission

to the

Productivity Commission

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Submitted by:

Murray Smith, Chief Executive Officer, Coleambally Irrigation Co-operative Limited PO Box 103, Coleambally NSW 2707

1.0 Introduction

The following discussion is offered in relation to subject matter raised in relation to a Commission Conference Paper, *Third-party effects of water trading* (July 2005). These comments add to my earlier comments contained in a submission relating to the Commission's study into *Rural Water Use and the Environment: The Role of market Mechanisms*. As such these comments should be read in conjunction with my earlier submission.

2.0 Implicit Water Rights and Trade

The Conference Paper makes some specific references in this section that do warrant response.

2.1 Economic Lives of Assets

Heaney et al. (2004) suggests that "*….water may become more mobile as these investments reach the end of their economic life…*".

The useful lives for a cross section of assets in CICL's technical asset register are set out below.

TABLE 2. ASSET USEFUL LIVES

Asset Type	Useful Life (years)
Channels	80 to 120 (depending on size)
Regulators	60 to 100 (depending on size)
Bridges	60 to 100 (depending on size)
Culverts	50 to 100 (depending on size)
Drainage inlets	40
Dethridge outlets	40
Flow meters	50

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However it must be understood that asset life varies around a statistical mean and that in another 20 years all of CICL's channels will not need replacing. We have a rolling works program that in some cases extends the working life beyond design life rather than a complete replacement of the asset. For example we have replaced three bridges in the last three years yet our renewals profile suggests no major investment with bridges until 2031, and we have carried out works on another bridge to extend its useful life. As such CICL's investment decisions are driven by condition assessment and rationalisation where possible. However they are equally made on ensuring the operational life of the total irrigation system in perpetuity to the extent that no legacy costs are passed to future generations of irrigators.

3.0 Reliability of Supply

The Conference Paper indicates that:

> *Prior to the introduction of tradeable entitlements, unused allocations from irrigators who did not exercise all or part of their entitlement were returned to the resource pool and reallocated.*

Whilst this may be correct for High Security water, it is not the case for General Security water with the development of 'carryover' provisions. For example in the Murray Valley this provision is up to 50% of entitlement and in the Murrumbidgee 15%. This aspect is discussed in my earlier submission.

3.1 Water Losses

My previous submission covers this topic in some detail, however the Conference Paper indicates that:

> *Evaporative and conveyance losses are not specified separately from the allocation or entitlement.*

In terms of the Irrigation Corporations in NSW this is not the case. CICL has a specific Access Licence for losses and the position with losses is reported monthly to State Water and annually to DNR as part of a review of our compliance to licence conditions. There is also a 15% carryover provision.

The resource assessment in the Murrumbidgee Valley that leads to the Announced Water Allocation has been significantly impacted by the very significant unaccounted river losses of 2002, 03 and 04. As you would expect river losses are accounted for before any consideration of provision to irrigators. There is some evidence to suggest that due to the low surface water allocations in these years groundwater was pumped extensively corresponding to a significant drop in water tables in some areas. Perhaps the resultant change in hydraulic gradient increased the recharge from the river to the groundwater system in these years.

3.2 Return Flows

Unlike other Irrigation Corporations, on privatisation CICL received no drainage credit provision for water returned to the river systems. To my knowledge the IQQM model makes no provision for drainage returns. This creates the market environment for CICL to eliminate drainage from our system and maximise use internally to customers.

4.0 Reliability of Delivery

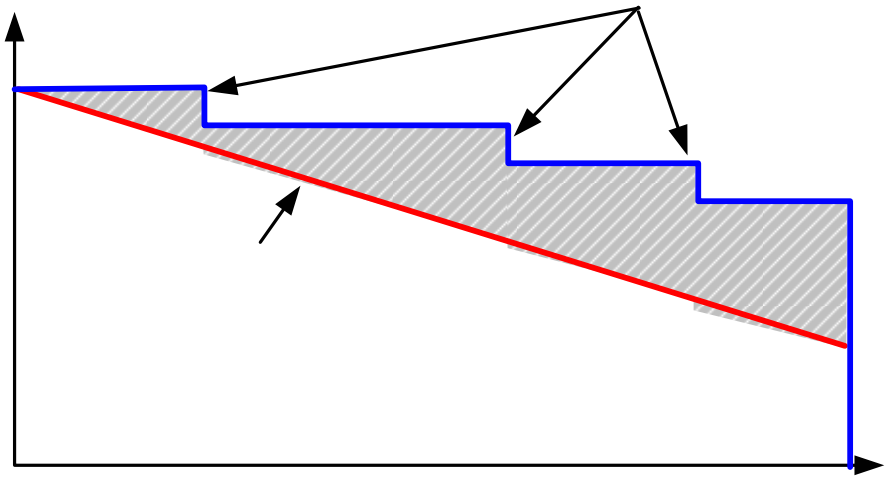
CICL's Exit Fee

CICL's exit fee proposal arises from an agreement CICL signed with the NSW Government, that requires CICL to progressively phase out volumetric barriers on permanent water trade by 2014. The agreement allows CICL to recover the costs of stranded water supply and distribution assets (made uneconomic by the removal of barriers to trade) through an exit fee levied on departing water entitlement.

Joint distribution assets are not readily decommissioned, mothballed or rationalised especially when only a handful of users exit the system or when exit is geographically randomly distributed. A compounding factor is a licensing requirement imposed on CICL that restricts the co-operative's ability to discontinue services to properties.

Figure 4.1 below illustrates how stranded asset costs arise in the irrigation delivery system as a result of water entitlement exiting the area. Revenues decline with entitlement volumes as they are effectively linearly related to the volume of entitlement held within the district. Costs or expenditure requirements are fixed in relation to the volume of entitlement up to the point where it becomes possible to restructure part of the system and reduce costs. Restructuring opportunities such as the closing down of part of the irrigation network can only proceed if all users on the part of the network to be closed down agree to relinquish their rights to the irrigation service. Accordingly costs respond to changes in entitlement volumes in discrete steps. Moreover because many of the networks assets and operating systems are used jointly by all users the change in expenditure levels is always less than the decline in revenue. Stranded asset costs are the difference between revenue and costs as represented by the shaded area.

FIGURE 4.1. STRANDED ASSET COSTS ILLUSTRATION



As an outcome of the NWI agreement, NSW private irrigation corporations, including CICL, signed a heads of agreement with the NSW Government in 2004 to remove the barriers to outward permanent trade. The heads of agreement provides for the use of financial mechanisms for dealing with stranded asset costs. The agreement defines stranded or fixed costs as:

> *Capital costs of infrastructure, the annual overhead costs associated with operating and maintaining the system and annual administration costs* [Heads of Agreement between NSW Government and NSW Irrigation Corporations, June 2004]*;*

The heads of agreement and the NWI provide irrigation corporations with the option of introducing support mechanisms such as exit fees, tagged entitlements, access fees and long term contracts on outward water sales to recover stranded costs, provided the mechanism used does not become a barrier to trade:

> *62. Recognising the need to manage the impacts of assets potentially stranded by trade out of serviced areas, the Parties agree to ensure that support mechanisms used for this purpose, such as access and exit fees and retail tagging, do not become an institutional barrier to trade (paragraph 60(v) refers).* [Intergovernmental Agreement on a National Water Initiative, June 2004]

The NWI does not define how exit fees are to be calculated or what constitutes a barrier to trade. Further guidance on the design of the exit fee has been provided in a series of workshops and discussions on exit fees involving the NSW irrigation corporations, the NSW Government and the National Water Commission. Participants at these workshops agreed that:

- the exit fee would be reviewed by the NSW pricing regulator – the Independent Pricing and Regulatory Tribunal (IPART);
- the relative share of revenue raised from existing retail service and volumetric charges was solely a decision of the irrigation businesses, whereas exit fees will be structured according to the fixed costs of water delivery; and
- there should be no increase in costs to those irrigators that remain as a result of trade out of an area. [This is largely consistent with a principle of IPART's Developer Costs.]

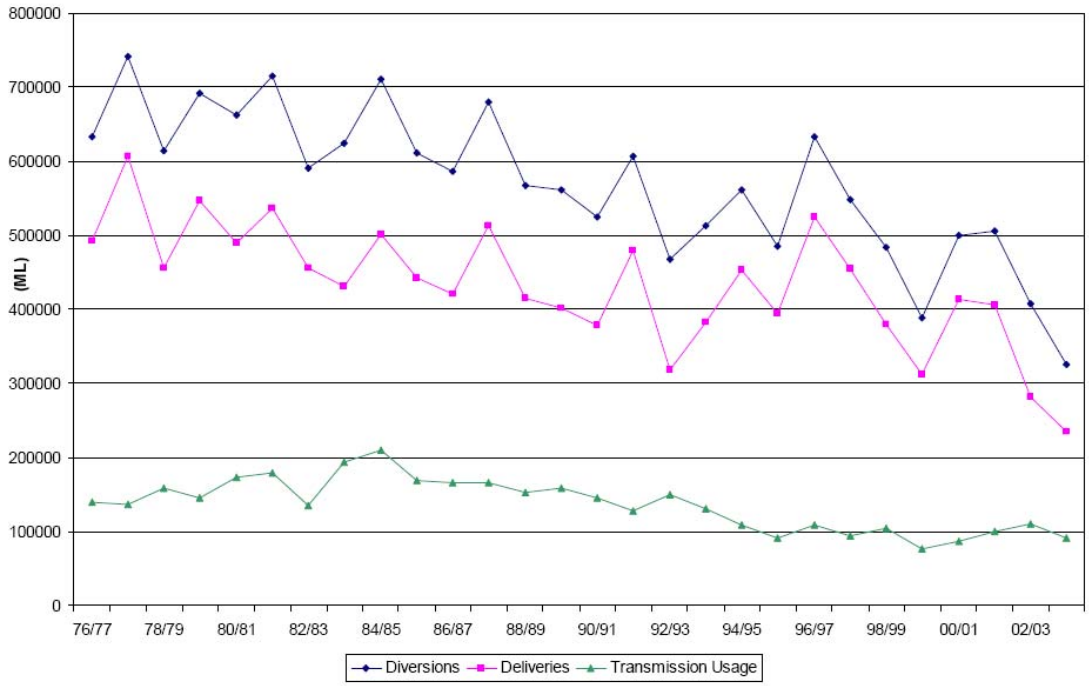
These principles and those agreed to by the MDBC (as discussed in my earlier submission) have been adopted for the calculation of CICL's exit fee.

For the purpose of calculating the CICL exit fee the full nominal water entitlement is taken to be the volume of water that can be traded i.e.

- 489,672 ML of irrigator entitlement + 200 ML of purchased general security + 1644 ML of anamolies = 491,516 ML

The actual volume of water delivered to irrigators varies from year to year. The long terms benchmarked average deliveries is 550 GL per annum (i.e. around 120% allocation). In the recent drought diversions have fallen as low as 240 GL (see 4.2).

FIGURE 4.2. DIVERSIONS, DELIVERIES AND LOSSES IN THE COLEAMBALLY IRRIGATION AREA FROM 1976/77 TO 2003/04 (ML)



The value of the 491 GL of irrigator entitlement at current market prices for general security water of $700/ML is approximately $343 million. The water entitlement is the district's most valuable asset. SKM re-valued CICL assets using the MEERA (Modern Engineering Equivalent Replacement Asset) valuation technique. A MEERA valuation values an existing asset by reference to an equivalent assets that replicates the existing asset most efficiently while providing the same level of service. The valuation process completed by SKM took into account technological change, over design and system reconfiguration. The replacement cost of an asset was assessed by using the prevailing market costs for supply and installation of similar assets in similar conditions.

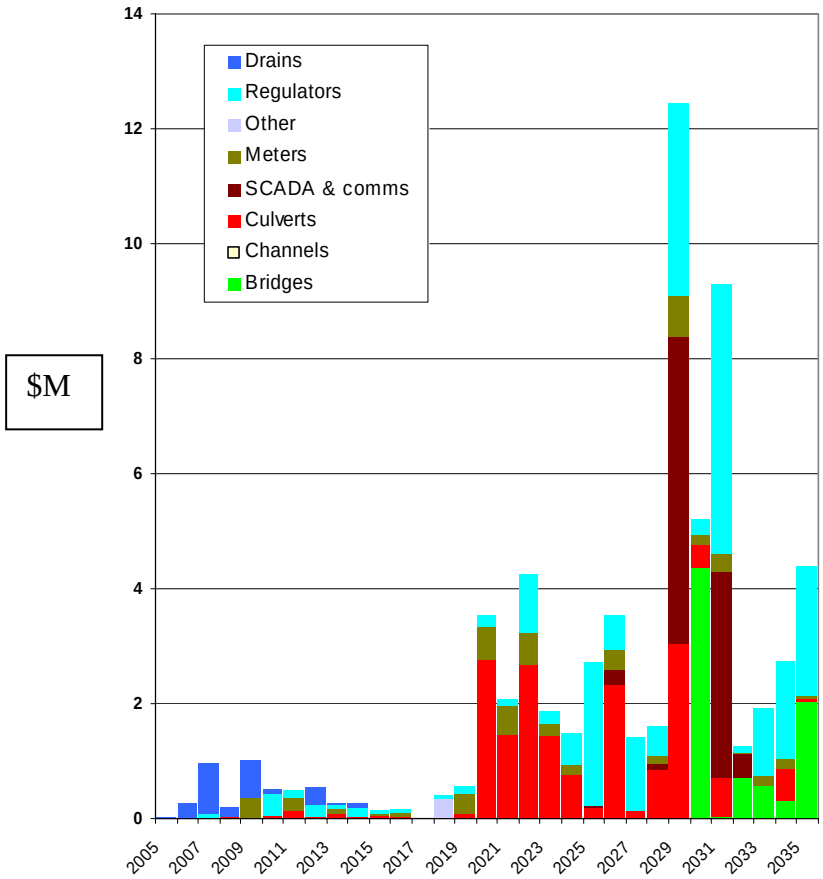
The total replacement value of CICL network assets was $137.9 million (see Table 4.1).

TABLE 4.1. REPLACEMENT VALUE OF DELIVERY INFRASTRUCTURE ASSETS

Type	Replacement Value ($)
Bridges	$25,237,400
Channels	$19,485,091
Culverts	$19,008,560
Drains	$32,579,441
Meters	$5,210,213
Other	$1,674,774
Regulators	$24,901,033
SCADA & comms	$9,811,390
Total	**$137,907,902**

The future profile for asset replacement based on the SKM assessment of useful lives and replacement values is shown below. Over 50 years a total of $91 million will be required to replace or renew assets reaching the end of their useful lives. Replacement expenditure will increase significantly in the next decade and peak in the period 2020 to 2030 with expected replacement of many reinforced concrete structures such as culverts, bridges and regulators.

FIGURE 4.3 . REPLACEMENT/RENEWALS PROFILE - INFRASTRUCTURE ASSETS ($MILLION PER YEAR)



Uncertainties affecting the forecast of long term funding requirements include the accelerated deterioration of some concrete assets such as bridges bringing forward the replacement date and changes to regulatory obligations including OH&S and public safety requirements affecting the cost of asset renewal and replacement. Recent investigations have shown that aggregate materials in the concrete used in bridge construction were not adequate. There is anticipated to be a very significant funding short-fall in bringing bridges up to the necessary standards. As such it is now proven that the NSW Government in dismissing many of the findings of the engineering reports prepared leading up to privatisation have transferred a legacy cost from Government to the Coleambally irrigation community.

Expenditure on operations, maintenance (O&M) activities represents a significant proportion of CICL's total annual costs. The business employs 35 equivalent full time employees (EFTs) across five O&M program areas – (1) Engineering and Water Distribution, (2) Asset Renewals and Maintenance, (3) Natural Resource and Environment, (4) Information Systems, and (5) Finance and Administration.

Historic OM&A costs for the period FY2000/01 to FY2004/05 are set out in Table 4.2.

TABLE 4.2. OM&A COSTS ($ THOUSAND PER YEAR)

	2000/01	2001/02	2002/03	2003/04	2004/05
Employee Costs	2,468	2,227	2,280	2,260	2,576
Plant/Vehicle	292	207	229	183	224
Operations	2,041	3,499	3,066	1,974	2,894
External Services	344	0	90	0	0
Administration	299	458	272	291	318
Other	146	222	149	270	162
Total	**5,590**	**6,614**	**5,996**	**4,978**	**6,174**

CICL is largely a fixed cost businesses as can be seen when comparing Figures from Table 4.2 with water deliveries to farm as shown in Figure 4.2 i.e. less water to deliver does not translate to less cost in delivering it. I expect that most other Irrigation Corporations are very similar.

CICL has a two-part tariff i.e. access component based on a customer's entitlement and a variable usage component charged on metered usage. In CICL's case the cost is split roughly on a 70/30% basis. However if the access component was based entirely on CICL's fixed costs it would see this split shift to a 95/5% basis. Such scenarios have been trialed in other irrigation areas around Australia, however this led to perverse and unintended outcomes. It was found that in Queensland that when irrigators were paying 95% of the cost of irrigation water if they used it or not, that they generally tended to use it. This had the effect of exacerbating some environmental impacts and reduced the amount of water that was active in the market. Getting an appropriate balance between fixed and variable charges significantly reduced the need for additional wide ranging and prescriptive policy intervention (which in turn would probably have unintended consequences).

5.0 Water Quality

Water quality aspects were covered in some detail in my previous submission. However some additional CICL policy elements as outlined below will provide the Commission with a more complete understanding of some of the mechanisms being employed with a view to continual improvement in a suite of water quality parameters.

A policy for approving water transfers has been implemented by CICL. Transfers between Coleambally farms and into the CIA require prior approval according to a three tiered scale based on Irrigation Intensity. Transfers leading to irrigation intensity below 120% (7.2 M/ha) of allocation are considered routine. Above 7.2 Ml/ha and below 8.1 Ml/ha will be approved only where a farm complies with set Best Management Practice (BMP). Transfers leading to a total water use above 8.1 Ml/ha (approx. 130% of allocation) will need to meet special BMP's as well as demonstrate compliance with all on-farm aspects of the LWMP i.e. EM31 survey, Whole Farm Plan, recycling and storage, during a Review of Environmental Factors on irrigation intensity on the receiving farm.

By way of an example, the Breach by a Customer of CICL's Environmental Protection Licence is shown overleaf.

If chemicals in the drainage system exceed the notification or action level specified in the Environment Protection License, it results in the following additional costs:

1. Additional monitoring as specified in the Chemical Contingency Plan with a focus to identify the source of pollution.
2. Ensuring that the flow of contaminated water from the identified source has been stopped. This may require 'works'.

Other potential costs may include:

3. Works to reduce chemical concentrations at CICL's discharge points. These works could be 'dilution flows' on an event basis or the storage of polluted water.

4. Fines imposed by the Department of Environment and Conservation.

This policy below outlines how CICL will pass costs on to the customer pursuant with section 18.3 of the Customer Contract.

1. Cost of additional monitoring due to elevated levels of chemical in the drain, with a focus to identify the source of pollution

The Chemical Contingency Plan clause 1.1 (f) allows CICL to charge a fee to the responsible customer for additional monitoring and other works related to an incident of discharge of polluted water into CICL's drainage system.

CICL becomes aware of the incident of chemical contamination of drainage water in two ways:

i. Either the customer informs CICL that due to some reason (generally a bank blow-out following a rainfall event) the polluted water has escaped his property and has entered in to the CICL drainage system; or

ii. CICL is made aware of an incident via the established monitoring system(s)

If the incident is reported by the customer then CICL is not required to find the source of the pollution. However, if the elevated levels of chemical are detected through CICL's monitoring program(s) it requires much more effort and additional cost to locate the source of pollutant.

Cost should be apportioned in one of the following two ways:

a) If a customer informs CICL within 24 hours of the chemical incident, a fee of $100 be charged per inlet draining polluted water into CICL's drainage system

b) If CICL identifies the source of pollution to a particular drainage inlet through its own resources (sampling or otherwise), a fee of $600 be charged per inlet draining polluted water into CICL's drainage system

2. Cost of works to prevent chemical entering CICL's drainage system

This component generally involves the cost of temporarily blocking the drainage inlet into CICL's drainage system and is borne by the customer.

Once the source of contamination is identified, CICL requests the customer to prevent further contamination of CICL's drainage system by blocking the drainage inlet. In most cases, the customer complies. However, in instances where the customer does not comply, CICL acts to prevent further contamination of the drainage system by undertaking necessary works.

Where CICL incurs costs to prevent further discharge of pollutants into the CICL drainage system, all costs shall be transferred in full to the customer.

This reinforces CICL's Chemical Contingency Plan (Clause 1.1 (d, e, f)).

3. Works to reduce chemical concentrations at CICL's discharge points after the chemical has entered the drainage system.

During the LWMP Review this issue was discussed in detail. The Review did not consider "dilution flow" as a viable option as it does not solve the problem. The construction of a storage or the installation of checks in CICL's drainage system to catch spills were discussed in several meetings.

At the time, it was deemed that the cost should be borne by the community in all the above scenarios as these works could be available to all customers over a period of time.

This policy concurs with the LWMP Review outcomes and recommends that any costs associated with the construction of a storage and the installation of drainage system checks, should be borne by the community.

4. Fines imposed by the Department of Environment and Conservation.

CICL has been issued a license under Protection of Environment Operations Act 1997 for undertaking a scheduled activity. The scheduled activity that CICL undertakes is "irrigated agriculture" and is defined as ***Irrigated agriculture****, being the irrigation activities of an irrigation corporation within the meaning of the Irrigation Corporations Act 1994, but not including the irrigation activities of individual irrigators in areas administered by any such irrigation corporation*.

A change in the definition of irrigated agriculture would be required before CICL can be fined for an activity carried out by the customers.

However, **if** CICL is fined at some future time, the fine should be transferred to the customers (assuming the contamination of CICL's drainage system occurred due to customers' actions) based on following factors:

- Concentration of pollutant
- Estimated (by CICL) volume of polluted discharge
- Customer's cooperation with CICL
- Implementation of the LWMP On farm options
- History of previous incidents of discharging polluted water

The following table proposes a points system that can be used to transfer the fine imposed on CICL to the customers.

Note that the concentration of the pollutant is the critical factor. Penalty points as described below will only be activated if the concentration of the pollutant exceeds the notification level as specified in the EPL. Pollutant levels below the notification level will not attract any penalty points and no further action will be taken.

Criteria	Magnitude	Penalty Points
Concentration of pollutant	Less than notification level	No penalty points
	>notification level and < action level at the farm drainage point	5
	>action level and less than 5 x action level	10
	> 5 x action level	20
Estimated volume of polluted discharge from property drainage point	Less than ¼ ML/day	5
	¼ ML/day – ½ ML/day	10
	½ ML/day – 1 ML/day	15
	> 1 ML/day	20
Cooperation with CICL	Spill is reported within 24 hours	5
	Spill reported between 24-72 hours	10
	Spill not reported	20
Implementation of the LWMP On farm options	A LWMP compliant recycle system is in place	0
	Installation of a compliant recycle system has commenced	5
	No action has been taken to install a compliant recycle system	20
Contribution to pollution of Licenced Discharge Point	No breach of Licence levels at downstream Licenced Discharge Point	0
	Contributing to Notification Level at the downstream Licenced Discharge Point	10
	Contributing to Action Level at the downstream Licenced Discharge Point	20
Sub-Total		Max 100 per incident
History of previous incidents	Multiply sub-total points for this incident by the number of offences incurred within last 3 calendar years from instigation of this policy (2006/07 rice season)	
Total Points for the incident		

Points should be calculated for all farms involved in an incident when the concentration of the pollutant exceeded the notification level at the nearest sampling point, as specified in the Environment Protection License. In the case of a number of incidents having occurred, costs can then be split based on the penalty points incurred by the offending parties.

Each fine incurred by CICL would be distributed to customers as follows:

- Summation of the total penalty points accumulated by CIA customers
- Calculation of the fine per penalty point ($fine divided by points)
- Apportion fine to customers based on penalty points accrued by each farm

Given the improvement in environmental outcomes in relation to chemicals in drainage water it is reasonable to concur that CICL's policies in this area are effective.

6.0 Policy Options

Across all areas of policy development there is a need for the capture of relevant and accurate data. Government needs to dedicate more resources to accurate metering and understanding system losses within the river systems. Rivers are natural features, but regulation has changed a raft of these features, in particular the relationship between surface and groundwater. In better defining and understanding river losses this relationship between groundwater and surface water is critical, as a reduction in river losses through operational changes or engineering works could reduce the recharge of aquifer systems. That's not to say such actions shouldn't be undertaken, but it does indicate the complexity of building suitable policy to develop an appropriate triple bottom line environment when accurate reliable data is not available.

Piping of open channels, and indeed some river sections has been promoted by some commentators as a means of significantly reducing system losses. In some cases this may be possible, however we look forward to showing you the limitations of such concepts during your visit.

6.1 The Randall Framework

The Conference Paper focus in this area is on other costs and liabilities. However under this framework there would be a clear need for the identification of other beneficiaries e.g. tourism and recreation which in turn would have environmental externalities associated with their operation. Take for example a river-boat operation at Echuca. Under a natural system these would only be able to operate intermittently at best. They now enjoy twelve month a year operation due to the supply of stored and released irrigation water, yet such businesses carry none of the storage and distribution cost of the water that makes their business viable. Environmental externalities could include such things as increased bank erosion (not to mention the effects of power boats and bank erosion).

Whilst Government may extract licence fees for such activities and limit access via this means (hyperexclusion), the licence fees are not put towards the delivery of the water service etc or remedial environmental activities.

6.2 Reliability of Supply

NSW Irrigation Corporations support Tagging as the means for minimising the incidence of third party impacts between zones and jurisdictions. A number of papers have been written on this by both Murray and Murrumbidgee Irrigation. I understand that the NSW Government also supports this position. Exchange rates have a huge potential to be wrong and lead to significant third party impacts. Such mechanisms are fine for Governments as they don't bear the risk.

The Conference Paper flags issues with the development of exchange rates and identifies the need to quantify 'accurately' conveyance losses. Whilst Irrigation Corporations may have invested heavily in latest technology metering devices, the same can't generally be said for Government. As such there is little faith that could be put in the veracity of river loss figures.

6.3 Reliability of Delivery

It should be noted that CICL is required to place seven day water orders with State Water, as this is the travel time from the dam to our river offtake. Other customers have similar arrangements, however sharp changes in weather conditions can cause under and over ordering.

The Coleambally distribution system was designed with the intention of serving a much larger area and as such many of our main channels have spare capacity. However CICL has considered pricing arrangements based on capacity share in some instances (I expect similar to congestion pricing).

The Conference Paper uses rice as a specific example of a crop that could exacerbate peak period irrigation congestion. I'm not sure that rice causes any different outcome to a wide range of other annual summer crops, including trees and vines, where water needs peak in summer. The varieties of rice now available see planting occur from September through to the first week of December. Additionally rice settles in to a relatively stable water demand over the irrigation season, which in terms of seven day water orders is much easier to manage efficiently. Row and tree crops have much more variability dependant on climatic factors such as evaporation (temperature and wind) and frost.

6.4 Water Quality

Salinity Credits

As part of the LWMP review CICL explored the opportunities of trading salinity credits. The MDBC maintains a register of salinity credits and they appear keen for a market to develop but have not taken any initiative to set up/develop a market even though their salinity and drainage strategy allows trading of salinity credits. I suspect the MDBC believes that there are not enough buyers and sellers.

To the best of my knowledge salinity trading is not available in Victoria.

CICL can discharge up to 28,000 tons of salt through our drainage system in to creeks ultimately joining the Murray River. However initiatives undertaken by CICL will now only see us discharging a maximum of 15-20,000 tons of salt (significantly less in the last four drought years). In our section of the Murray catchment one EC credit is equivalent 2,800 tons of salt per year. This means CICL have 3-4 EC units of spare capacity in an average year. We have built this capacity in the last 10 years through adoption of Total Control Channel

Technology, on-farm recycling systems and through introducing improved irrigation techniques.

CICL remains keen to trade credits to assist recoup some of our past investment and fund additional initiatives in this area.