



**RICEGROWERS' ASSOCIATION  
OF AUSTRALIA INC**

**SUBMISSION TO THE INQUIRY INTO  
WATER USE EFFICIENCY IN  
AUSTRALIAN AGRICULTURE**

**March 2017**

## 1. INTRODUCTION

The Ricegrowers' Association of Australia (RGA) welcomes the opportunity to participate in the Inquiry into Water Use Efficiency in Australian Agriculture.

This submission is in response to the terms of reference issued by the Standing Committee on Agriculture and Water Resources.

## 2. THE RICEGROWERS' ASSOCIATION OF AUSTRALIA

The RGA is the collective voice of rice growers in Australia. The RGA represents the interests of around 1200 voluntary members. The main objective of the RGA is to provide members with strong and effective representation on issues affecting the viability of their businesses, their communities and their industry.

The RGA is made up of eight branches located across the Riverina rice growing regions of NSW. Each branch annually elects representatives to form the RGA Central Executive. The Central Executive represents their respective branches in determining RGA policy and projects.

The RGA is a member of the National Farmers Federation, National Irrigators Council and NSW Irrigators Council.

## 3. THE AUSTRALIAN RICE INDUSTRY

The Australian rice industry is located predominantly within the Riverina region of south-west NSW, with two small industries also situated in the Northern Rivers region of north NSW and in Northern Queensland.

The Australian rice industry is reliant upon irrigation, mainly sourced from the Murray and Murrumbidgee valleys. Provided water is available, the Australian rice industry is considered one of the world's most successful, delivering significant yields while leading the world in water use efficiency.



For the five year period to 2015/16, Australian rice yields averaged 10.2 tonnes per hectare, with an average yield of 11.0 tonnes per hectare recorded in 2015/16. According to the United Nations Conference on Trade and Development (UNCTAD), Australia is classified as the most efficient

producer of rice in the world. The Australian rice industry is also a world leader in water usage at 12 megalitres per hectare, with the world average being 15 – 20 megalitres per hectare, and with some countries using upward of 50 megalitres per hectare.

The regions rice growing success is mainly due to the temperate climate, the largely pest and disease free growing environment (requiring minimal chemical use), the heavy clay soils and the gravity fed irrigation systems which ensure efficient water delivery and use.

In a typical year the Australian rice industry produces around eight hundred thousand tonnes of paddy rice with a farm gate value of around \$350 million. The total industry value is well over \$1 billion each year. This makes the rice industry a significant economic contributor to the Riverina region of NSW. Furthermore, it is argued that a multiplier should be applied to this figure to account for the numerous times these profits change hands within the community. Needless to say, the towns of Griffith, Leeton, Coleambally, Finley, Jerilderie, Deniliquin, Wakool and Moulamein are highly dependent on rice production for their social and economic wellbeing.

Additionally, rice growers have individually invested over \$2.5 billion in land, water, plant and equipment and collectively invested around \$400 million in mill storage and infrastructure through SunRice.

While the NSW rice industry is very small by world standards, it remains a competitive supplier of premium rice products into world markets.

#### 4. THE RGA'S POSITION

The RGA provides the below responses to each of the terms of reference.

The RGA's responses are both from the perspective as lead agency for two consortiums that are Delivery Partner's for the current ***On-Farm Irrigation Efficiency Program (OFIEP)***: the Murrumbidgee Valley and NSW Murray Consortiums, and as a representative of rice growers, many of whom have participated in the On-Farm Irrigation Efficiency Program, and previous similar programs (such as the regional ***Land and Water Management Plans (LWMPs)***), or whose respective Irrigation Infrastructure Operators have participated in the ***Private Irrigation Infrastructure Operators Program (PIIOP)***.

##### **Adequacy and efficacy of current programs in achieving irrigation water use efficiencies**

The RGA strongly supports government programs developed to assist rice growers and other irrigators and irrigation companies to invest in or otherwise adopt new technologies within their irrigation systems.

We note that the RGA developed the first instalment of the OFIEP in association with the Murray Darling Basin Authority (MDBA) in around 2008, completing two initial rounds of the program. Responsibility for the OFIEP was then transferred to the Department of Agriculture and a further five rounds have now been undertaken.

With respect to the current On-farm Irrigation Efficiency Program, the RGA notes the following benefits of the program:

- The program has led to the adoption albeit by a relatively small proportion of irrigators of improved management systems. It has incentivised participants to upgrade their water infrastructure, often within a shorter time-frame than would otherwise have been achievable for many participants (see Case Study 1 below). It has also provided the participants with the

opportunity to develop confidence in more modern systems without incurring the levels of debt that would have been incurred without the program.

- Many participants have reported either a reduction in average water use (per tonne of crop) and/or an increase to yields and are generally pleased with the outcome of their respective projects. Many participants from earlier rounds have participated in later rounds indicating that participation was considered a good business decision for their respective businesses.
- Noting that the purpose of the program is to recover water for the environment as part of the Murray-Darling Basin Plan, the current On-farm Irrigation Efficiency Program has provided a more palatable alternative to direct water 'buy-backs'.

### ***Case Study 1: The Gribbles – Developing now, planning for the future***

Chris and Belinda Gribble of 'Ropa' operate an irrigated cropping property near Yenda, in the Murrumbidgee Irrigation Area. Depending on water allocations their rotation is based around rice as the main summer crop, with wheat, canola and faba beans in the winter crop phase.

Chris is the third generation of his family on that property, his grandfather Roy grew his first rice crop on that farm in 1928. The Gribble's have always been early adopters of new technology with both Roy, and particularly Chris's father Paul, witnessing many changes in their farming careers, from working with horses to GPS Guidance precision agriculture.

They began laser landforming paddocks in the early '80's, having a mixture of border check and parallel contour systems. The layout for rice (needing ponded water) always compromised other crops which invariably suffered some degree of water logging during irrigation due to the time required for water to completely drain off the bay. This not only limited yield and subsequent water efficiency, but also the flexibility of the winter crop rotation with winter legumes such as faba beans not an option on the 'rice' layout.

With this in mind Chris participated in the On Farm Irrigation Efficiency Program. He redeveloped an area of his property to not only gain increased yields and water efficiencies, but to provide more flexibility in rotational choices for increased efficiencies within the whole system.

#### ***Sustainability Outcomes***

This year Chris will be planting the 88th rice crop on 'Ropa'. It is important to him and his family to continue to improve the health and thus sustainability of his farming system. His time farming and the 88 years that his family has been on the farm has seen extended droughts, floods, high water tables; and waterlogging, sodicity and salinity issues. Throughout this, the Gribbles have been on a continual quest to improve their farm system, adapting to new technologies and information.

Chris has used precision agriculture and variable rate technology for a number of years. He also includes as part of his program regular soil and moisture testing, and the use of soil amelioration products such as gypsum, lime and manures.

The yields that Chris achieves today for the water applied is considered a benchmark in the region. As an example Chris achieved a rice yield last year of 13.4T/ha using 9.7ML/ha water (1.4T of grain per ML) on the new layout.

Chris believes that being able to participate in the On Farm Irrigation Efficiency Program has provided the opportunity to modernise a part of his irrigation layout a number of years before he may have been able to by relying on using farm cash flow. This modernisation has helped to further increase not only his productivity but the health and sustainability of his farm.

The RGA also notes the following costs of the program:

- While the On-farm Irrigation Efficiency Program is considered a more palatable alternative to direct water 'buy-backs', the program does still remove water and hence productive irrigation capacity that results in negative economic and social consequences for the relevant industries and communities, especially in the long-term. One example of this is the increase to both temporary and permanent water prices over the past decade as a consequence of water recovery from within the Basin. For this reason the RGA does not support the proposed COFFIE program.
- Some participants are now highly capitalised. This is particularly the case for participants who undertook the program planning to rely upon, or to continue their historic reliance upon the temporary, and to a lesser degree, the permanent water markets. Due to reduced water availability under the Basin Plan recovery program and other market fundamentals, there has now been a paradigm shift in water pricing that now precludes some irrigators from the market in some cases, resulting in over-capitalisation for some participants. We note however that other participants have successfully diversified their businesses to limit this risk.
- Most projects involved a significant investment over and above the initial contracted budget, which have been met by the participants. Obviously large unexpected capital outlays can be problematic for many businesses. There are two main reasons for the unexpected increases to the project costs:

1. *The time-lag in the Commonwealth approving the proposed projects:*

Most rounds of the OFIEP experienced a significant delay between the participants' submitting the expressions of interests to the Commonwealth, and the Commonwealth approving the projects and funding (up to and longer than 12 months). This time-lag was particularly problematic for participants as the project budget (including both the value of water and project costs) was 'locked-in' at the expression of interest stage and could not be reviewed at time of contract signing. Hence participants were exposed to cost increases incurred during this period. This led to many participants either significantly over-spending or otherwise withdrawing their projects.

There were two main financial drivers that resulted in cost increases for participants:

- a. Substantial increase to the value of water - resulting in an opportunity cost for the potential participants.
- b. Changes in the economy resulting in cost increases for the project, for example a change in the exchange rate could result in quite a significant increase to the cost of purchasing an overhead irrigator.

The withdrawal of projects also results in a cost for the delivery partner who had already incurred the costs for the administration of the project to date, however does not receive an administration fee for the project as it is not funded.

It is suggested that a rolling approval process (for example every 1-2 months) could assist in addressing this issue.

2. *The large increase in demand for supplies and contractor services:*

It is argued that the program resulted in inflated supplier/contractor costs for participants. This is due to there being a very large increase in the demand for irrigation products and services at the time when participants were required to undertake the individual projects. Hence suppliers/contractors were able to take advantage of this increase in demand by increasing prices. Hence the cost of the on-farm works significantly increased at the time of undertaking the works (in other words, if the on-farm works were undertaken outside the time-frames for the OFIEP works, then participant could have avoided these inflated prices).

Furthermore, many suppliers and contractors have geared their businesses significantly to meet the increased demand for their products/services. The concern for suppliers and contract service providers is what will happen to their businesses once the OFIEP program concludes, including their extensive and expensive equipment and employees who have been significant investments.

### **How existing expenditure provides value for money for the Commonwealth**

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Firstly it is important to note that programs like OFIEP, and PIIOP are not grants – they are structured around the core notions of public and private co-investment and meaningful Government commitment to structural adjustment.

With respect to the current OFIEP and PIIOP programs, the need for structural adjustment has resulted from the implementation of government policy that does not directly target the Irrigation Infrastructure Operators/individual irrigators, but has resulted in real and direct negative third-party impacts for both parties.

For the current program, the relevant government policy is the Murray Darling Basin Plan, and previous water recovery programs including Water for Rivers, WaterSmart Australia and The Living Murray.

In addition to providing a mechanism to assist with structural adjustment, these programs have allowed the federal government to continue its Murray Darling Basin Plan water recovery program.

Noting that both programs have allowed the federal government to recover significant parcels of water for the environment, the RGA argues that these programs do represent good value for money for the Commonwealth government.

To add to this argument, we note that for most projects participants have invested their own funds above and beyond the funding they received for the sale of their water entitlements to the Commonwealth.

The model of using Delivery Partners to administer the program has also represented value for money for the Commonwealth as the government does not have the capacity or networks to administer these types of programs by themselves.

### **Possible improvements to programs, their administration and delivery**

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#### ***Possible improvements to the OFIE program – the perspective of a Delivery Partner***

The RGA acts as a lead agency for two consortiums that are Delivery Partners for the current On-Farm Irrigation Efficiency Program (OFIEP): the Murrumbidgee Valley and NSW Murray Consortiums. Through this role, the RGA has identified the following opportunities to improve the delivery of the OFIEP:

1. At current, Delivery Partners are required to determine their administration cost at the expression of interest stage of the program. The total administration cost a Delivery Partners can claim is up to 8% of the value of the project delivered. Hence the actual administration funding received is determined by both the number of projects approved and the value of those projects.

However at the expression of interest stage, the Delivery Partner cannot determine which of the proposed projects will receive funding from the Commonwealth. This means it is very difficult to determine whether or not the administration fee received will adequately compensate the Delivery Partner for the cost of delivery the program. For example, if 50 projects valued under \$50,000 receive funding, then the total administration funding received by the Delivery Partner would be less than \$200,000 and consequently the delivery partner will make a loss in delivering the program. On the other hand, if 50 projects valued at greater than \$1 million receive funding, then the total administration fee received will likely over-compensate the Delivery Partner for the associated administration cost. Consequently delivery partners are incentivised to focus solely on projects with large values, hence limiting the opportunities for participants who wish to undertake smaller scale projects.

It is therefore suggested that the Commonwealth investigate opportunities to limit the impact of the value of the projects on the total administration funding received by the delivery partner. One option for consideration is to provide the delivery partners with a base (start-up) administration fee and then pay the delivery partner on a project basis, rather than a flat percentage of the total funding received.

2. The current project methodology of funding a group of projects (sub types) rather than individual projects meant some lower water cost/better value projects did not receive funding due to being grouped with higher water cost/lesser value projects. Hence it is recommended that projects be assessed individually.
3. As outlined above, another criticism of the current OFIEP is the lag-time in the Commonwealth administering the project. This is particularly relevant to the time it takes from the point where proposed projects are submitted to the Commonwealth for consideration, to the point in time that the Commonwealth signs the funding agreement with the delivery partner to enable the approved projects to commence. In the past this process has taken the Commonwealth greater than 12 months.
4. On the other hand, the RGA seeks that there be more flexibility in time-frames for the individual participants to complete the on-farm efficiency works, in particular when weather prevents the participants from completing the works. For example, the wet weather events experienced during 2016 delayed many participants from completing their on-farm works within the schedule set out in the funding agreement.
5. The RGA feels that the design of future on-farm efficiency programs should not be focused on a single input/commodity such as water savings. Rather the program should take a broader view and encompass energy and other input savings to ensure that the overall efficiency impact for the business is positive. There are a number of examples where participants have upgraded their infrastructure to achieve water efficiencies however the upgraded infrastructure is significantly more energy intensive.
6. There is a real risk of micro-management of the delivery partner by the Commonwealth, rather than being prepared to contract an outcome (evidenced by processes such as the technical review of projects, the payment processes, the delivery partner audits etc.). It is suggested that the Commonwealth should investigate opportunities to reduce the reporting/administration demands placed on delivery partners, and to provide more guidance

regarding the administration costs that can be claimed, and the process of claiming these costs.

7. It is important that delivery partners do not have a conflict in administering the OFIEP. For example, appointing delivery partners associated with infrastructure providers should never have occurred, due to conflicting interests.
8. Finally, it is argued that the OFIEP would have been aptly labelled an irrigation productivity program rather than an efficiency program. The reasoning for this is that, while the program generally results in a reduction to average water use per tonne of crop, generally the end result is that the participant will use more water per hectare of land developed. This is because often the new layouts/technologies allow the participant to more intensely irrigate the developed land. For example, the development of layouts that reduce water-logging may allow for two crops to be planted in a paddock per annum rather than one.

### ***Possible improvements to the OFIE program – the perspective of an irrigator participant***

While the Delivery Partner model works very well for participants, the RGA notes the following opportunities to improve the delivery of the OFIEP from the perspective of a participant:

1. As outlined above, many projects involved significant investments over and above the initial contracted budget, which have been met by the participants. Obviously large unexpected capital outlays can be problematic for many businesses. As outlined above there are two main reasons for these budget over-runs:
  - The time lag experienced by participants from the point in time when they submit an expression of interest to the point-in-time when the Commonwealth approves and funds the delivery of the program (sometimes over a year); and
  - The supply and demand issue for contactors and the rising costs of irrigated infrastructure.
2. The current projects delivery model does not incentivise participants to manage funding in a prudent manner while they await expenditure on projects. In particular, the contractual obligations of the projects require the participants to return all interest accrued in bank accounts to the Commonwealth. Rather than requiring the return of the interest earnings, it is recommended that participants be incentivised to accrue interest too modestly help them cover any increased project costs.
3. Another flaw identified by participants is the lack of coordination between different irrigation efficiency programs. For example, a number of OFIEP participants have completed works on farm, however have later had their water delivery outlet upgraded through the PIIOP program, and the outlet may not be ideally suited to the OFIEP works completed on farm, hence reducing the value of those works.

### ***The COFFIE program and additional productive water recovery***

The RGA does not support any further efficiency programs designed to recover productive water for the environment, including the proposed ***Commonwealth On-Farm Further Irrigation Efficiency (COFFIE)*** program.

The RGA's reasoning for this is that the purpose of any such program would be to recover an additional 450 gigalitres of productive water for the environment, taking the total Basin Plan water recovery from 2750 gigalitres to 3200 gigalitres.

The RGA does not believe this additional 450 gigalitres of water should be sourced from productive use. The RGA has severe concerns about the social and economic impacts this additional recovery would generate for remaining irrigator's, industries and communities.

This is particularly pertinent noting that under the Basin Plan the additional 450 gigalitres of water must be sourced from the Southern Basin, however at current there is neither a set benchmark by which the social and economic impacts for the Southern Basin can be measured, nor a social and economic impacts study completed to date for the whole of the Southern Basin.

The best available evidence of the impacts for the Southern Basin to date is contained in two Victorian reports, one commissioned by the Goulburn Murray Irrigation District Leadership Forum, and the other undertaken by the Victorian Government. Both reports detail the severe socioeconomic impacts for Victorian irrigators, industries and communities due to recovery to date. It is likely that the consequences for rice growers and their communities will be just as serious. We further note the Murray Darling Basin Authority socio-economic report for the Northern Basin which also demonstrates significant impacts for local industry and communities due to water recovery.

Furthermore, noting the current funding available for the COFFIE program via the Water for the Environment Special Account, it is likely that the purchase price for the water entitlements will be near equal to the market value for water. Therefore it would be unreasonable for an irrigator to participate in the program.

### ***Land and Water Management Plans***

The Land and Water Management Plan programs, which commenced in the late 1990's, provide a great example of how public and private co-investment can achieve significant efficiency outcomes for irrigators', without removing water from productive use. The program was administered by the respective Irrigation Infrastructure Operator's and was funded by the New South Wales government.

For the Coleambally Irrigation Area, a \$16M Government investment triggered \$104M worth of investment from irrigators'. Investment was focused on improving farm layouts in order to achieve a multi-purpose outcome of lowering the water table, protecting local habitats and improving water use efficiency on farm. This program represented significant value for money for the New South Wales government. We note that this program did not seek to recover any water from irrigators'.

### **Other matters, including, but not limited to, maintaining or increasing agriculture production, consideration of environmental flows, and adoption of world's best practice**

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#### ***Research and development to improve irrigation efficiency***

The drive for irrigation water use efficiency has seen the development of new agronomic practices within the Australian rice industry. The adoption of new short season rice varieties and "delayed permanent water" management by Riverina rice farmers is allowing a reduction in water use of up to 2.5 megalitres per hectare against traditional aerially seeded rice.

Furthermore the Australian rice industries current breeding program has a key objective to develop an aerobic variety of rice (i.e. will not require flood irrigation) suitable for the temperate climates of the Riverina rice growing regions. This proposed rice variety will represent a further significant advancement in water use efficiency for the rice industry.

The RGA strongly encourages the Federal government to invest in research and development programs that focus on developing techniques, practices and technologies that improve irrigation

water use efficiency. Further government investment in key research and development programs, such as the rice breeding program, will allow Australian irrigators to achieve these significant advances in efficiency within a shorter timeframe.

**Case study 2 – focus on water use efficiency drives productivity in the rice industry.**

*The Australian rice industry leads the world in improving water use efficiency. Over the past 20 years, rice growers have drastically improved their water use efficiency, using 50 per cent less water than the global average to produce each kilogram of rice.*

*Significant investment have been made by industry, in partnership with the Government, in developing new rice varieties – that meet both customer demand and produce more rice using less water per tonne of production.*

*Given that it often takes more than 10 years to develop a new variety of rice, this has been a sustained commitment by the industry over many years. New varieties have qualities such as shorter grower seasons or improve cold tolerance that mean less water can be used to produce more rice.*

*YRK5 is one of the latest varieties to hit the paddock and has a much shorter growing season than older varieties – and provides a real opportunity for rice farmers to change their traditional crop rotations, maximise soil moisture availability, and water use efficiency.*

*For most rice varieties, the ideal planting window is early to mid – October, while YRK5 can be planted up until early December – which means it can be either drill sown or aerially sown into a November harvested canola or cereal crop stubble. While rice growers have sown cereals following rice, the new variety means a rotation of winter / summer / winter crop is now a reality. This harnesses the residual soil moisture from the last cereal irrigation thereby further reducing the water requirements of the rice crop, and the cereal crop benefits from the weed and disease control provided by the anaerobic soil conditions during the rice season.*

*The new variety also provides greater flexibility in a cropping and livestock system. A 12 month rotation of fat lambs reared on a clover based pasture turned off in early winter; followed by a clover hay crop cut in late spring which can then be sown to YRK5 provides the multiple benefits of three complementary production cycles - with livestock, the nitrogen fixing action of clover, and the weed control benefits of rice.*

**Irrigation efficiency and environmental outcomes**

Furthermore the RGA seeks that the federal government recognise the many environmental services being delivered by modern water efficient irrigation farm infrastructure. In particular the Bitterns in Rice program, administered by the RGA in a partnership with a number of other government and private organisations, demonstrates how irrigation infrastructure can provide valuable environmental outcomes. The Bitterns in Rice program highlights how the Riverina rice crop supports the largest known population of the nationally threatened Australasian Bittern.

There is a known conflict between the pursuit for irrigation efficiency in rice production and the provision of habitat for the Bitterns. The adoption of the new efficient irrigation rice growing technologies and practices often significantly reduces the capacity of the Riverina rice fields to provide the surrogate wetlands necessary to assist the recovery of this critically endangered waterbird. This is because the objective of many of these technologies/practices is to reduce the period of flooding within the rice fields. However this also results in a reduction to the period of time for the natural development of prey (bittern food) in the rice crop and a reduction to the period of time these birds have to nest and have the offspring fully fledge.

As demonstrated in the Central Valley of California, rice farming irrigation infrastructure (layouts) can be used to create surrogate wetland habitats from rice fields. These are ponded by the efficient supply of environmental water through irrigation infrastructure at controlled depths and for targeted timeframes. This practice is providing habitat for hundreds of thousands of waterbirds, comprising over 230 water bird species including migratory waders.

Australian rice growers want to support the recovery of the Australasian Bittern, however as water is their most significant input cost, they will need to receive support to provide the ponding period required for successful Bittern breeding.

Further government investigation and investment into research and on farm infrastructure will enable rice farmers to efficiently deliver environmental water to natural and constructed wetlands to create habitat for a range of targeted species.

### ***Efficiency in river operation and environmental flows***

While the irrigation industry has been extremely proactive in developing and investing in irrigation infrastructure and practices to ensure the Australian irrigation industry is the most efficient in the world, unfortunately the same standards of efficiency have not been applied to river system operations or environmental water management.

To this end the Government and responsible agencies must constantly seek efficiencies in the storage and delivery of water and the use of environmental water, while ensuring minimal third party impacts. Through improving the efficiency of water storage and supply we can increase the total supply of water available to all water users. While on the other hand, through improving the efficiency of environmental watering (seeking to achieve the same environmental outcomes with less water) we can reduce the environmental demand for water.

Noting that on average over 20,000 gigalitres of water flows throughout the Murray-Darling Basin system each year, a 2% increase in the efficiency of river operation (i.e. by reducing seepage and evaporation) will achieve at the very least an additional 400 gigalitres of high reliability water resource for water users. For the rice industry, an additional 400 gigalitres of water supply is equivalent to an additional 4.4 million tonnes of rice per annum or \$1.3 billion of farm-gate value (based on a value of \$300 per tonne).

## **5. CONCLUSION**

Noting that water is the most significant input cost for rice growers, the RGA supports the government's co-investment in irrigation efficiency programs, but not at the expense of further water recovery.

The RGA believes that co-investment in irrigation infrastructure represents value for money for the Commonwealth and in particular encourages the Commonwealth to review the Land and Water Management Plan model when considering the design of any future irrigation efficiency program. Furthermore the RGA encourages the government to look into opportunities to invest water efficiency research and development, including projects that incorporate environmental outcomes, and to seek out opportunities to improve the efficiency of river operations and environmental water management.

The RGA thanks you for the opportunity to participate in this inquiry.

## 6. CONTACTS

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