



Murray Irrigation

Inquiry into food production and supply in NSW

**LEGISLATIVE ASSEMBLY
COMMITTEE ON ENVIRONMENT AND PLANNING**

Submission

28 FEBRUARY 2022

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1 Executive Summary

Introduction

Murray Irrigation welcomes the focus of this inquiry on our food production system.

The world-wide food system is extremely complex. However, it has a complex task in meeting the diverse needs of over 6 billion people across the globe. There is emerging evidence that the prices will rise in the medium term, in part driven by the pressures on the production system which will impact input cost. NSW's food sector is flexible and will respond to market signals.

Food security issues could result in higher prices but NSW has the capacity to respond

Murray Irrigation is well placed to supply staple food to consumers in Australia and internationally. Our region produces with minimal carbon emissions, being a gravity fed system with minimal energy needs. It has ideal soils and systems to ensure sustainability of production and is situated in the middle of Melbourne, Sydney and Adelaide, serving the majority of Australia's population as well as export ports.

While a holistic and comprehensive review of the food sector is welcome the consideration of the food sector should focus on underlying drivers of food security over time. Threats to food security will manifest in an increase in food prices. It is our view that the resilience of the production system and inputs should be a critical component of analysis and any policy response.

Shortages of inputs across the supply chain are likely to be the key threat to food security. Risks that have been identified for the Murray region include:

- shortage of fuel (diesel) and Adblue (urea) for food production and distribution in the case of a national fuel emergency;
- ongoing workforce availability constraints;
- persistent decrease in water availability across the production system (dryland and irrigated agriculture); and
- shortage of fertilisers, chemicals and stockfeed for dairy production.

Action is needed in the short-term

These issues are not just future threats. There are current works and policy under the Basin Plan that need to be delivered to deliver environmental outcomes and protect productive capacity. More time and flexibility is needed for Sustainable Diversion Limit Adjustment Mechanisms to be achieved and Government should be open with communities on its progress.

Climate change is projected to have critical ramifications on river flows and temperatures in our region. Many Governments have indicated that R&D, greater innovation, and technology take-up are important contributors to businesses developing best-practice adaptation strategies.

The irrigation food sector contributes to the work funded through levies to various Research and Development Corporations (RDCs) to coordinate investments in research and development. However, NSW should increase the level of engagement with key industries across the State to ensure that research is aligned with the needs on the ground. Options should include system or landscape scale improvements, not a focus solely on-farm.

We need positive change to restore growth and food security – we suggest the creation of unitary, legislated Regional Development Corporations to deliver this holistic change. Existing, overlapping institutional arrangements with a focus on small grants programs are not working. There should be hard objectives for growth and active facilitation of establish complementary industries.

Inquiry into food production and supply in NSW

When considering the role of Indigenous food and land management practices it is critical that role of water is considered, and we note the NSW Government commitments in its State-wide Water Strategy.

We are keen to explore partnership opportunities with local First Nations people to improve environmental and cultural outcomes and welcome engagement to work on proactive initiatives that support our communities.

Partnerships are needed

Importantly trust and accountability between governments and communities needs to be rebuilt. Communities need to be at the centre of conversations about matters affecting their future and the strategic implications of decisions on issues such as food security should be evaluated.

Real partnership requires real effort on both sides. Often regions have to pitch ideas to a range of different programs and waste enormous amounts of social capital and individual effort on dead ends.

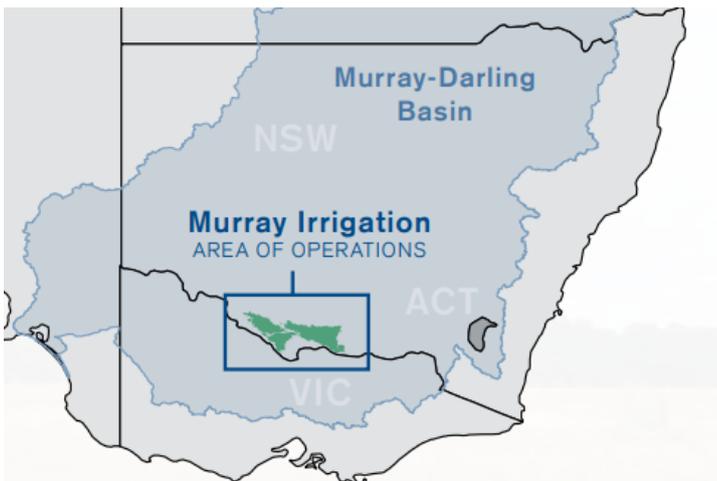
We would like to partner with government to focus on achieving environmental outcomes instead of recovering more water, this can be achieved by utilising water in intelligent ways for both consumptive and environmental benefits. Regional communities are ready to implement efficient and effective complementary measures with environmental water.

We are also ready to co-invest in regional communities in ways that will stimulate long term sustainable economic growth and activity.

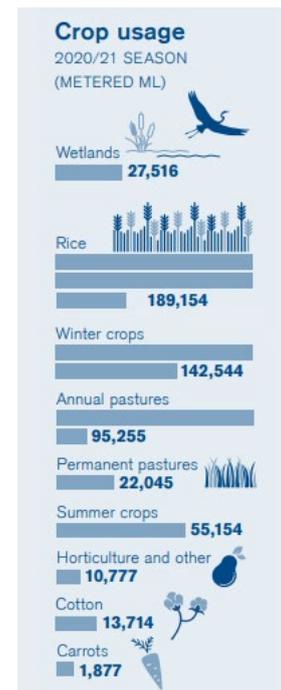
Murray Irrigation and our farmers are well placed to tackle these challenges going forward in an environmentally sustainable way; however they must be supported by good government policy.

2 Introduction

Located in Southern NSW, Murray Irrigation operates Australia's most efficient open channel water distribution system, delivering reliable productive irrigation water to over 2,100 family-owned landholdings through 2,778km of gravity fed channels and across 724,000 hectares in the Southern Riverina.



The Murray Irrigation area of operations provides a large proportion of NSW's dairy production and around 50% of rice production in Australia, along with maize, tomatoes and carrots.



2.1 Food Security and the Value Chain

The FAO has outlined a definition of food security and has four interrelated elements: availability, access, utilisation and stability.

- Availability is about domestic food supply and trade.
- Access - covers economic and physical access to food.
- Utilisation - A person's health, feeding practices, food preparation, diversity of their diet and intra-household distribution of food all affect a person's nutrition status.
- Stability is about being food secure at all times. Food insecurity can be transitory with short term shocks the result of a bad water allocation season, a change in employment status, or a rise in food prices.

We welcome that the enquiry is examining all aspects of the food value chain. Items of key interest to Murray Irrigation are:

- Improving food security and equitable access to food.
- Preserving productive land and water resources.
- Managing the impact of climate change.
- Limiting the impact food production has on the environment, including overfishing.
- Consideration of workforce challenges and skills development.
- Development and growth of the food industry (raw or processed) as an export.
- Consideration of Indigenous food and land management practices

2.1.1 Observations

We note that the expenditure on food averages around \$237 per household per week in Australia, or around 16% of total spending. However, food security and price rises would affect the poor the most as they spend a higher portion of their income on food. Poorer people in Australia spend nearly 19% of their income on food compared to 14% for those on high incomes¹.

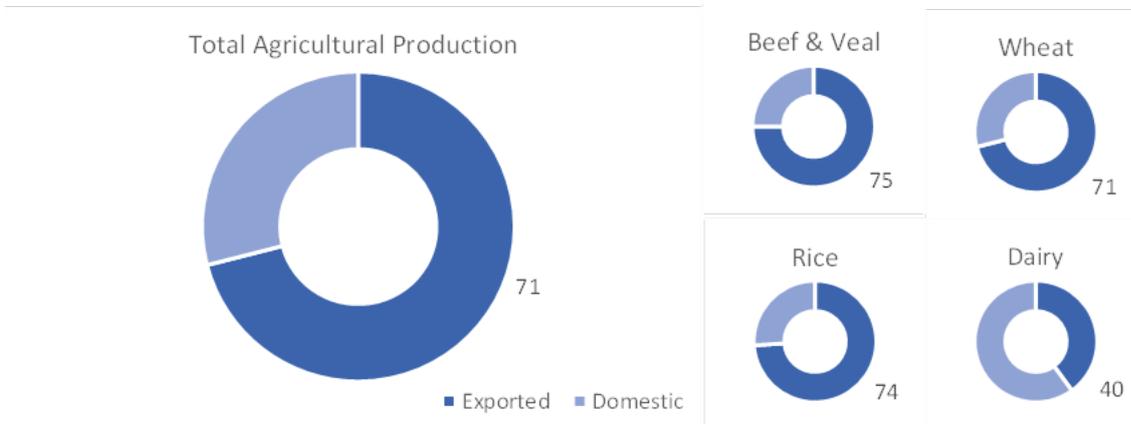
Australia provides almost 90% of its domestic food requirements² and we are a net exporter of food. This does not mean that Australia is fully self-sufficient in food supply. Imports are increasingly important in the sector. Some ingredients, additives and packaging materials that are inputs to domestic production are only made overseas and Australia relies on imports for some important foods. For example, seafood imports from other countries accounted for approximately 66% of Australia's total seafood consumption³ though a significant proportion of Australian product, which could supply the domestic market, is sold to overseas countries due to higher prices. It should also be noted when considering these issues that categories and types of food are highly substitutable.

¹ Australian Bureau of Statistics (2017) Household Expenditure Survey, Australia: Summary of Results.

² ABRES website - www.awe.gov.au/abares/products/insights/australian-food-security-and-COVID-19 accessed 22/02/2022

³ For the year 2012-2013.

Figure 1. Proportion of Food used for Domestic Demand



It is our view that any consideration of the food sector be based on facts, focus on underlying drivers of food security and be evidence based. The world-wide food system is extremely complex, however, it has a complex task in meeting the diverse needs of over 6 billion people and any problems should be well specified before any actions are undertaken by governments.

There are also a set of underlying trends that are important to consider when assessing the food sector. Significant change is inevitable as consumers expect more information about the provenance of their food. Underpinning this is a growing demand from consumers, and in some cases countries, for improvements in ethical and environmental sustainability of the production system and increasingly along the supply chain.

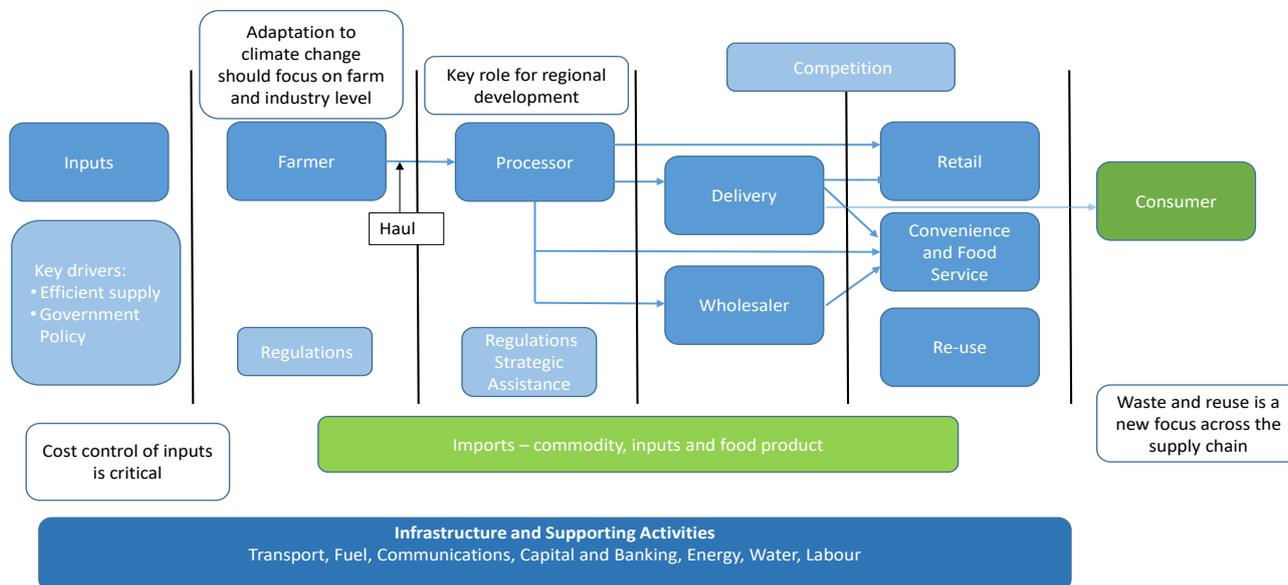
There is also evidence that the food prices will rise over the longer term, in part driven by the demands on production systems which impact costs, and in part due to higher demand and constraints on supply.

NSW's food sector is flexible and can and will respond to market signals, namely, higher prices. The agricultural sector itself has experienced long periods of low incomes from drought and depressed prices. Any higher prices paid for food may have positive effects on regional areas through higher incomes, boosts in employment and increased investment.

2.1.2 A framework for consideration of issues

The food sector cuts across a range of policy areas and departments. These include agriculture, fisheries, rural infrastructure, indigenous affairs, water, environment, drought, emergency management, animal welfare, waste, health, poverty, education, immigration, defence, industry, transport and affordability/welfare considerations. Figure 2 provides a framework for considering issues along the value chain of the food sector. Government has both direct and indirect influences on the sector.

Figure 2. Food Sector Supply Chain



There are a number of characteristics of a food system that pre-disposes it to failure, that is, not meeting the needs of the people. In 2011 the Commonwealth outlined:

- Scale factors — whether the food supply chain can meet the needs up to a certain population.
- Scope factors — whether the food supply chain can supply types of foods at a certain level.
- Temporal factors — whether the food supply chain can manage a resilient response to a disruption for a certain period of time.
- Distributional factors — whether the food supply chain is less resilient for some sections of the community than others, such as low income households.

Experience in Australia has shown that scale and scope factors have not been critical risks.

In the past, floods have had temporary impacts on food security through reduced availability and higher prices. This is particularly the case for food that cannot be imported. Higher prices for some kinds of food such as fresh vegetables may result in poor outcomes for some sections of the community.

When examining threats to food security in the future, it is likely that the effect of most threats would be an increase in food prices.

Looking forward, shortage of inputs are likely to be the key threat to food security. Risks might include:

- shortage of fuel (diesel) and Adblue (urea) for food production and distribution in the case of a national fuel emergency
- ongoing workforce availability constraints
- persistent decrease in water availability across the production system (dryland and irrigated agriculture)
- shortage of fertilisers, chemicals and stockfeed for dairy production

The elements have direct impacts on the volume of production and the price that households face during the weekly shop.

There are three broad key enablers that influence the impact inputs have on prices:

- Research & development to improve efficiencies and increase output when an agricultural output is an input into another food system (such as feed for dairy)
- Regulation of primary food production
- Coordination and targeted investment in supply chains

Improving food security involves encouraging sustainable productive farming systems, well managed natural resources, and policies to enhance productivity and associated labour skills over time.

2.1.3 The role of water in the Food System

As an irrigation company we would like to emphasise that we are producing food in the driest inhabited continent on earth. Right across the nation our water resources are under increasing pressure from policy threats, a growing population, changing industry, community needs and a more variable and changing climate. We manage the largest gravity-fed irrigation system within NSW which operates with a very low carbon footprint.

Irrigation occupies a very small portion of Australia – 5% of tilled agricultural lands – but produces 30% of all agricultural production⁴. In the Murray region key staples include rice, dairy and wheat.

For the farmers whose livelihoods depend almost entirely on viable annual allocations from the NSW general security water entitlements held in southern NSW, the overwhelming concern is fair and reliable access to water.

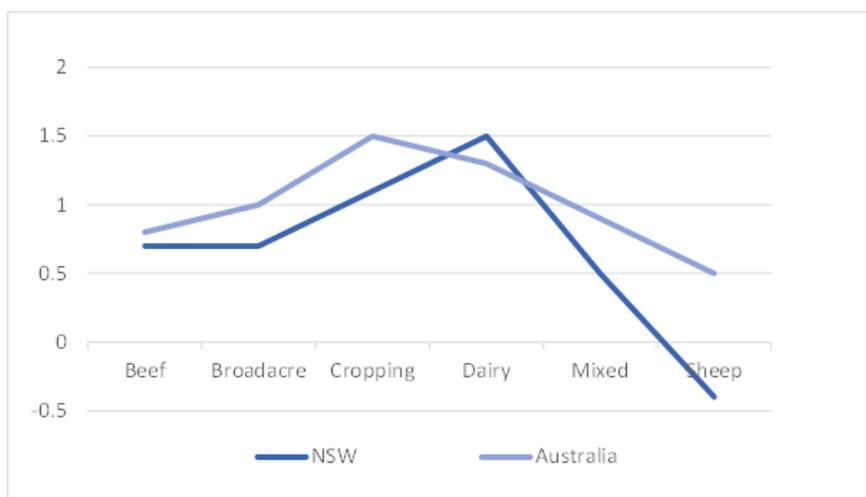
3 Responses to Specific Terms of Reference

3.1 Improving food security and equitable access to food

Stable and efficient food production systems are critical to providing for food security and equitable access. Australia's food system has been well serviced by an industry that has been constantly striving for improvements, whether through breeding programs or adoption of technologies.

However, the productivity story is mixed and over time industries have differing level of performance over the past.

Figure 3. Food sector productivity performance over time



Source: ABARES (2022) Selected industry annual productivity performance 1988–89 to 2019–20.

⁴ National Program for Sustainable Irrigation 92006) Irrigation in Australia Facts and Figures.

Productivity in cropping and dairy industries has been relatively high. This is during a period where the irrigation sector has seen massive change.

We have a direct relationship with all our customers and water users. This provides unique opportunities to communicate, research, test and adopt methods and practices to lift productivity and food production in NSW.

3.2 Preserving productive land and water resources

Productive land and water resources are the foundation for an affordable food system.

Murray Irrigation has had a long history of working to protect the resources that are the foundation of our industries and livelihoods. In the 1980's and 1990's Land and Water Management Plans were developed to guide a holistic and jointly funded (by irrigators and Government) long-term plan to protect the environment and ensure sustainable food systems.

These forward-looking programs have evolved into a strong sustainability focused relationship with all water users. This provides unique opportunities to communicate, research, test and adopt methods and practices to lift productivity and food production in NSW.

The Basin Plan has been another major step in this journey and Murray Irrigation have been proactively involved in its implementation. We do note that the Basin Plan is yet to be fully implemented and it has caused significant adjustment pressure and pain.

The Murray-Darling Basin Plan expressly recognises that supply measures are a Sustainable Diversion Limit (SDL) adjustment mechanism that enable water recovery to be reduced where equivalent environmental outcomes could be achieved through use of works and alternate measures.

These include environmental infrastructure works, rule changes and constraint easing. They were included in the Basin Plan with the aim of reducing the socioeconomic impacts.

NSW is responsible for developing and implementing approved supply projects by 2024; failure to implement projects by this date may mean further water recovery.

Case Study 2 - Basin Plan & Sustainable Diversion Limit Adjustment Mechanism

Under the Basin Plan Sustainable Diversion Limits (SDLs) are set to protect the environment. In recognition of finding a balance between environmental outcomes and maintaining our production base in the southern Basin, the Plan allows for adjustments to surface water SDLs.

In 2017, the Basin states and the Australian Government agreed on a package of 36 SDLAM supply projects across the southern connected Murray-Darling Basin to offset 605 GL of water recovery.

The delivery and timelines of these projects in NSW is at risk. Some of these projects have been substantially revised including the Yanco Creek Offtake Project and the Menindee Lakes project. The impact of this on the food production in the long term is unclear.

The SDLAM program is inflexible and is not transparent. Crucially it is not adaptive and not focussed on balanced outcomes. There is a significant risk any failure in implementation of the program will result in even more water taken from productive use and threaten the viability of major schemes such as Murray Irrigation. If this occurs the adjustment in the industry will have major socio-economic impacts and potential for poor environmental outcomes as land is moved to irrigation outside the tight environmental regulation provided under an irrigation operating licence.

In its 2020 evaluation of the Basin Plan the MDBA found that more than 2,100 GL of water has been recovered for the environment and is now held and managed by the Commonwealth Environmental Water Holder, state environmental water holders and through The Living Murray program. This level of recovery, we note, is in line with the delivery of the Basin Plan.

It has had a major impact on the level of water for food production available in the Murray region, as shown by Figure 4.

Figure 4. Water availability over time



In response, to lower water availability the adoption of technology in water management is prevalent and growing. For example, our Murray Irrigation channel network is controlled, monitored and measured by a highly sophisticated SCADA control system.

Across the wider Murray region and along the Murray River there have been examples of significant downstream agricultural development that has not taken into account the environmental, social and economic impacts of delivering extra water required for greenfield sites, including the impacts on upstream communities.

It is important to ensure the maintenance of a critical and viable mass of food producers in established irrigation areas which are located much closer to key storages, with economies of scale and surrounding infrastructure. This will contribute directly to provision of agricultural sectors that can provide a diverse and affordable range of staple foods in the national interest.

3.3 Managing the impact of climate change

By 2030 the Murray/Murrumbidgee region is projected to experience an average of 8 more days above 35°C per year and continue to rise to 23 days per year by 2070.

Climate change projections do not paint a rosy picture for food production systems. Along with the above projection on temperature, rainfall is projected to increase in summer and autumn and decrease in spring.

Into the future it will be important that planning reflects contemporary best practice and ensure climate change is taken into account in water planning. Within the Murray-Darling Basin the Basin Plan itself is a plan for the adaptive management of water resources - we would like to see these adaptive management principles be exercised as changes unfold based on evaluation of outcomes on the ground.

At a local level, integrated waterway and catchment management, and responding to a drying and more variable climate will be critical.

We agree with the Productivity Commission from its 2020 report that triggers (for example based on hydrological or environmental conditions) should be identified that indicate when there is a demonstrable need to rebalance environmental and consumptive uses⁵.

These triggers should be transparent, scientifically robust, evidence based and provide certainty for water users. The current water planning arrangements have a 10-year adaptive planning horizon.

We also support the NSW Government to 'Improve drought planning, preparation and resilience'⁶. We also wish to highlight and note 'Action 5.2 Invest in R&D and new technologies to lift water productivity in NSW industries'.

We agree that R&D, greater innovation, and technology take-up are important contributors to businesses developing best-practice adaptation strategies. Research is also essential to inform ways in which the NSW water sector can support existing and developing agribusinesses to lift their productivity.

The irrigation food sector contributes to the work funded through levies to various Research and Development Corporations (RDCs) to coordinate investments in research and development.

However, NSW should increase the level of engagement with key industries across the State to ensure that research is aligned with the needs on the ground, is practical and is subject to economic assessment. Options should include system or landscape scale improvements, not a focus solely on-farm.

We also believe that there should be an increase in the transparency on research and adaptation expenditure aligned with a strategic principles and goals outlined for the State.

Case Study 2 - Infrastructure Rationalisation – reducing our footprint

Reduce infrastructure replacement and maintenance liabilities through the removal, modification or handover of these structures. Maximise investment efficiency and utilisation of remaining infrastructure

Some examples of low-carbon infrastructure are:

- Railway infrastructure, which can reduce the number of carbon-emitting trucks
- Urban transport projects, such as Light Rail projects which reduce car usage - one of the more notable sources of carbon emissions
- Renewable energy projects (solar, wind and hydropower), which have much lower carbon emissions compared to fossil fuels

We argue that system level rationalisation has the potential to reduce energy costs, maintenance effort and in the long run avoid the replacement of concrete assets.

Policies and sharing principles that recognise the impacts of increasing climate variability, with an allocation framework that maximises the efficient use of water for both productive (food) use and environmental outcomes.

3.4 Limiting the impact food production has on the environment, including overfishing

Irrigation areas are highly modified environments. However, they are also some of the most highly managed landscapes in NSW for specific environmental outcomes.

Murray Irrigation through the long-term Land & Water Management Plan process developed a number of approaches to minimise our impact on the environment, including development of a Land Sustainability Policy and limits on water use and crop planting.

⁵ Productivity Commission (2020) National Water Reform.

⁶ NSW Government (2021) NSW Water Strategy Action 4.3 and 5.2, pg 142.

Murray Irrigation is an irrigation corporation, holding an Operating Licence that permits us to carry out the business of the supply of water. It requires Murray Irrigation to hold an Environment Protection Licence issued by the NSW Environment Protection Authority.

The Combined Water Supply and Water Use Approval requires Murray Irrigation to monitor the depth to water table within the area of operations. Murray Irrigation's Environment Policy addresses a requirement in the Approval to limit groundwater recharge and discharge of salt. The Environment Policy documents Murray Irrigation's commitment to achieving a balance between environmental responsibility and agricultural production.

Murray Irrigation typically irrigates a relatively small proportion of the area within our system each year. The watering is carried out within the natural systems. The environment through the Commonwealth Environmental Water Holder and the NSW EES are our biggest customer and, to date this year we have delivered 70,000ML for environmental outcomes. Optimising our system by placing consumptive water on-top of environmental water in natural systems is also another way of achieving environmental outcomes without the need to recover any more water. We are currently engaging with the MDBA on this initiative.

We have been involved in large scale projects to re-vitalise the waterways of the Basin including the Tuppal and Jimaringle Creeks project delivering environmental water via Murray Irrigation infrastructure. In addition, a number of our landholders participate in placing water into on-farm wetlands.

Case Study 3

In 2012 Birdlife Australia and the Ricegrowers' Association of Australia established the Bitterns in Rice project to better understand the relationship between the endangered Australasian Bittern and rice crops.

It has been established that in most years, around 19 to 50 percent of the total global population of the bittern congregate in Riverina rice crops to breed, with nests producing fully fledged young before harvest.

In early 2015, the Bitterns in Rice team launched a world first crowd-funding campaign to raise funds to catch and tag bitterns to get a better understanding of their behaviour after harvest. Murray Irrigation was pleased to support the project which will eventually see up to seven birds tagged and tracked.

The way forward for limiting the impacts of food production is a genuine partnership between government and industries. This starts with an articulation of what is important and the best way to achieve outcomes, not the development of a set of rules from afar. Data and knowledge strategies should play a key foundational role in addressing environmental and sustainability issues.

We have close interaction and relationships with each of our irrigation customers to manage not only food production but landscape environmental outcomes. We can achieve genuine triple-bottom line outcomes by maintaining a diversity of irrigated crop types throughout the region and delivering affordable food security outcomes for the State.

3.5 Consideration of workforce challenges and skills development

Labour is an essential input to food production. The Murray region has particular needs in the areas of rice milling, transport and processing but also in other key industries such as dairy and feedlots.

In 2016 the unemployment rate was 4.9% in the Edward River Council local government area compared to a state-wide average of 6.6%. Local government areas that have irrigation schemes in the southern part of NSW are consistently looking for workers, especially in times of high water availability and production. Murray Irrigation itself employs 100 people across a wide range of professional skills.

Our region faces similar challenges to much of regional NSW in attracting professional staff required for a modern agricultural sector. The move toward intensification in the industry, including dairy and increasingly horticultural industries, means that the skills mix required within the region is changing.

Labour and skills development requires partnership approaches with the food sector, local government and relevant state bodies

It should be remembered that labour issues facing food production is not solely related to access to unskilled labour. Schools, higher and vocational education providers and professional development bodies are all important contributors to the skills required.

Development of skills and training is not the only factor that influences the ability to find workers in agricultural industries. Social isolation is a normal characteristic of Australia's broadacre cropping and industries, where farming often involves small numbers of family employees operating on large areas of land. Remote and regional towns in the Murray such as the Edward River Council area have had low population growth, due in part to the reduced availability of water for irrigation. This has flow-on effects to the amenities and services available, affecting the attractiveness of the region as a place to work and live. A reduction in water availability can become re-enforcing creating dislocation and social issues. This must be considered when managing our water resources.

3.6 Development and growth of the food industry (raw or processed) as an export

The NSW Government's 20-Year Economic Vision for Regional NSW identifies global scale trends impacting regional NSW:

- The rise of Asian markets and economies;
- Rapid urbanisation;
- Demographic and social change;
- Digital disruption; and
- A new and influential trend – increasing global trade networks.

The water industry needs to be a part of the discussion of food security and industry development.

The development of industries in the past has been on the basis of 'anchor' government funding to build enabling infrastructure such as channels, road and rail.

In a more mature sector investment in food production is likely to be more 'bespoke' rather than enabling a whole industry or sector in a region.

There is a role for the three levels of government to work with the food sector. This includes:

- Working with industry to navigate planning and zoning regulations that are obstacles to regional development.
- Adopt more rigorous and transparent assessment of regional development planning strategies to prioritise investment.
- Develop strong and effective local leadership by ensuring they are integral to State level planning and given the 'status' in planning.
- Funding should be priorities to those identified in regional strategic plans.

We need for positive change to restore growth and food security – we suggest the creation of unitary, legislated Regional Development Corporations to deliver this change across existing, overlapping institutional arrangements. Core functions of these corporations could include:

- Task-focus to turn around damaged regions with hard objectives for growth;
- Commitment of long-term funding for economic stimulus;
- Funding to enhance environmental values near impacted communities, including First Nations, to contribute to the rejuvenation of those communities;
- Seek and establish complementary industries such as feedlot and dairy; and
- Value-adding initiatives - the ability to add value to our local staple foods means local employment, a more diverse cross-section of local labour skills and improved value of products produced by our landholders.

3.7 Consideration of Indigenous food and land management practices

While the consideration of Indigenous food and land management practices are important it is also critical that an examination of these issues considers the role of water.

The recently released NSW Water Strategy (August 2021) noted the role that water plays with Aboriginal culture—providing food, kinship, connection, recreation, stories, songlines and healing. Healthy waterways are critical to the culture and wellbeing of Aboriginal communities across NSW.

The Strategy prioritises the recognition of First Nations/Aboriginal people's rights and values and increases access to and ownership of water for cultural and economic purposes.

We are keen to explore partnership opportunities with local First Nations people to improve environmental and cultural outcomes and welcome engagement to work on proactive initiatives that supports our communities.

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