Hon Alannah MacTiernan MLC
Minister for Regional Development; Agriculture and Food;
Minister Assisting the Minister for State Development; Jobs and Trade

Our ref: AB 00195-17

Mr Rick Wilson MP
Chair
Standing Committee on Agriculture and Water Resources
PO Box 6021
Parliament House
CANBERRA ACT 2600

Dear Mr Wilson

HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON AGRICULTURE AND WATER RESOURCES INQUIRY INTO WATER USE EFFICIENCY IN AUSTRALIAN AGRICULTURE

Submission by

Alannah MacTiernan MLC
Minister for Agriculture and Food, Western Australia

On 28 April 2017, the Premier, Hon Mark McGowan MLA received an invitation from Dr Anna Dacre, Committee Secretary, to submit to the House of Representatives Standing Committee on Agriculture and Water Resources inquiry into water use efficiency in Australian agriculture. I welcome the opportunity to make this submission on behalf of the Government of Western Australia.

Western Australia's agrifood sector comprises of more than 13,500 businesses and is a provider of world-class premium safe products. In particular, irrigated agriculture presents a significant opportunity for growth in the Western Australian agricultural sector. The Government of Western Australia is leading work to capitalise on this opportunity by focusing on growth and development in the north of the State and security of land, water use and intensification in the south.

Our government through the Departments of Agriculture and Food, Western Australia (DAFWA) and Water (DoW) is building water security for the agricultural sector. The projected growth in agricultural water demand is significantly faster than historical growth. To ensure ongoing security of water supply for agriculture, we will need to ensure efficient water use and innovations in agriculture, particularly as we manage the impacts of climate change.

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Western Australia strongly supports the intent of the Commonwealth's water use efficiency and water infrastructure funding and is committed to remaining engaged with our Australian Government counterparts on building a robust and sustainable sector.

There are some concerns set out in this submission about the administration and the eligibility criteria of these funds that I understand will impact on the efficacy of delivering these objectives in Western Australia. Western Australia has benefited from National Water Infrastructure Development Funding, Sustainable Rural Water Use and Infrastructure Program (SRWUIP) projects and indirect Commonwealth investment in the Ord. We believe there could have been significantly greater water use efficiency and economic benefit outcomes if State and Commonwealth work together to implement State agricultural infrastructure priorities.

There is a great opportunity to better collaborate with Western Australia's growing water irrigation sector to enable resilience and flexibility in a changing climate and market conditions.

Western Australia has identified a number of agricultural irrigation projects that will significantly demonstrate greater productivity and water use efficiency while ensuring triple bottom line outcomes. Of top priority to Western Australia are the Myalup-Wellington Project and Southern Forests Irrigation Scheme. The Myalup-Wellington Project will transform Western Australia's largest water storage in the south of the State into a reliable water source for agriculture after it has been plagued with high salinity for many years.

The Southern Forests Irrigation Scheme will provide a reliable water source to the highly productive Southern Forests region that will underwrite the significant investment by growers in high value horticulture. Both of these projects currently have applications for funding with the Commonwealth Government through the National Water Infrastructure Development Fund – Capital Component. Western Australia's submission sets out our achievements and the State's next irrigated agriculture priorities.

Western Australia is keen to work with the Federal government on for a truly national program for agricultural water use efficiency that benefits all Australians prosperity.

HON ALANNAH MACTIERNAN MLC
MINISTER FOR AGRICULTURE AND FOOD

Attachment 1:

House of Representatives Standing Committee on Agriculture and Water Resources Inquiry into water use efficiency in Australian agriculture

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Minister for Agriculture and Food, Western Australia

03 JUL 2017

Attachment 1

House of Representatives Standing Committee on Agriculture and Water Resources Inquiry into water use efficiency in Australian agriculture

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1. Agricultural water use in Western Australia

The Gross Value of Agricultural Production (GVAP) in Western Australia's agrifood sector is $7.9 billion. Domestic food retail sales are worth $13.9 billion and agrifood export value is worth $7.8 billion.

Western Australia produces high quality horticulture with a GVAP of $702 million and $158 million worth of horticulture products were exported.

Western Australia agriculture uses approximately 590 GL of water per year, which is 32% of the total volume of water abstracted of 1860 GL in 2014–15.

Approximately 510 GL of water is used for irrigated agriculture and 80 GL for dryland farming and pastoralism.

60% (355 GL) of water for agriculture is self-supplied mainly from individually owned groundwater bores but also by diverting water from rivers, on stream dams and from farm dams that capture overland flow.

40% (235 GL) of water for agriculture is supplied by a water supply scheme to irrigation areas including Ord, Carnarvon, Waroona, Harvey Collie and the Preston Valley. Large dams are used to supply these areas except for Carnarvon where groundwater is sourced from bore fields adjacent to the Gascoyne River.

It is noted that these figures are estimates as comprehensive metering of the amount of water taken and used is not required for all water licences. Some other water taking activities are exempt from metering due to the lower risk to the water resource and other water users.

A. The adequacy and efficacy of current programmes in achieving irrigation water use efficiencies

B. How existing expenditure provides value for money for the Australian Government

2. Adequacy, efficacy and value for money of current programs in achieving Australian government outcomes

The drive for greater agricultural water use efficiency in Western Australia has been primarily funded by the Government of Western Australia and the agricultural sector. This section sets out where collaboration with the Commonwealth has benefited water use efficiency outcomes. This includes the National Water Infrastructure Development Fund, and the *Sustainable Rural Water Use and Infrastructure Program (SRWUIP)* programs.

This section also highlights examples of State and private sector projects which have achieved some level of improved off farm and on farm water use efficiency without Commonwealth assistance.

The Government of Western Australia, through DAFWA and DoW, is building water security for the agricultural sector. The forecasted projected growth in agricultural water demand (between 1.7 per cent and 2.5 per cent per year) is significantly faster than historical growth.

Agricultural water security in Western Australia is undertaken through three strategies:

1) sustainable allocation of groundwater and surface water resources based on scientific evidence to support decisions;
2) securing new water sources and supplies to increase the area irrigated; and
3) efficient water use and innovations for agriculture, including for a drying climate in the south west.

The DoW's state water supply planning has estimated that the State's water use for agriculture will increase from 590 GL in 2014 to 1300 GL by 2050. In the north of the State, the area irrigated is set to expand by several times its current extent using water from the Ord River Dam and groundwater in the West Kimberley and Pilbara. The area irrigated in the Kimberley is set to increase to 60,000 ha using water from the Lake Argle Dam. In the West Kimberley and Pilbara groundwater is available to grow irrigated agriculture in this unique environment and social context. In the south of the State, farmers are adapting to a hotter and drier climate future.

In Western Australia, the agricultural sector is striving to achieve better water use efficiency and making the most from available water by producing as much high quality produce as possible per megalitre of water. This is demonstrated by two approaches to water use efficiency:

a) irrigators making better use of their on-farm water supplies, through efficient irrigation system design, technologies and management; and
b) economic efficiency where water savings are traded off-farm or used for a higher-value crop, or to enable that multiple crops are grown over a year.

Royalties for Regions is a major government-funded program in Western Australia, administered by the Department of Regional Development. Through the Royalties for Regions program, up to 25% of the State's mining and onshore petroleum royalties is being returned to regional areas as additional investment in projects, infrastructure and community services.

Seizing the Opportunity Agriculture is a $350 million Royalties for Regions initiative assisting Western Australia's agrifood sector to capture growth and development opportunities associated with increasing global demand for food production. As one of 13 programs funded under the *Seizing the Opportunity Agriculture* initiative, *Water for Food* was allocated $40 million to deliver eleven projects with the aim of significantly increasing irrigated agriculture across Western Australia. A further $87.5 million was approved late last year to expand the *Water for Food* program and build on the existing successful projects.

The primary objective of *Water for Food* is to identify water and land resources, as well as irrigation technologies, that can enable Western Australia's fresh food and animal protein production to increase its contribution to regional economies by at least 50% by 2025 and twofold by 2050. It will assist Western Australian food producers to respond to the opportunity presented by the strong growth in demand for high quality food both locally and in Asia.

2.1 Projects under the National Water Infrastructure Development Fund

The National Water Infrastructure Development Fund has allowed the Government of Western Australia and the private sector to undertake planning necessary to build or augment existing water infrastructure, including dams, pipelines or managed aquifer recharge. The Government of Western Australia agrees with the Commonwealth that this will help secure water for agriculture and deliver regional economic development benefits, while also protecting our environment. It is noted that these projects have only just commenced so comments on their success are premature.

Prefeasibility projects relevant to making better use of available water resources are:

a) Wellington Dam feasibility work to enable the use of non-potable water from the Wellington Dam to be used for irrigated agriculture ($1 million).
b) Oakover pre-feasibility work to investigate options for the development of a 5,000 ha irrigation scheme on Warrawagine Station and adjacent land, with water sourced from the dewatering surplus of nearby Woodie Woodie Mine as well as local groundwater ($269,000).
c) Pilbara Irrigated agriculture feasibility work to demonstrate that groundwater with managed aquifer recharge combined with conjunctive water use located along the alluvial rivers in the Pilbara region ($960,000).
d) Ord Irrigation Cooperative siphon pre-feasibility, business case and conceptual design for new distribution channels and a siphon structure under the Lower Ord River to service new land under irrigation ($162,000).
e) Ord Stage 3 detailed examination of the economic feasibility of the Ord Stage 3 development ($2.5 million).

This submission will outline in section 3.1 some preliminary comments on the fund administration to date).

2.1.1 Myalup – Wellington

The Myalup-Wellington project is an industry-led initiative, proposed by Collie Water to reduce salinity in Wellington Dam, Western Australia's second largest reservoir with a capacity of 185 GL.

It is a significant economic development project involving private proponent Collie Water, the State Government and the Commonwealth, to substantially increase production capacity, create jobs and economic uplift in the under-developed Collie River Irrigation District and Myalup Irrigated Agricultural Precinct.

The project is a major opportunity to help diversify Western Australia's regional economy through irrigated agriculture. Currently, just 6557 ha of the available 34,600 ha of the Collie River, Harvey and Waroona districts are irrigated.

It is proposed that saline water flowing into Wellington Dam be diverted from the Collie River East Branch to a mine void, with that water then treated in a new desalination plant located near Collie. The existing Burekup Weir will be replaced with a new weir further upstream to enable water to be delivered under gravity pressure through a new pipe network, replacing the open channels and saving up to 15 GL of water from leakage and evaporation.

Collie Water's proposal is estimated to cost $380 million and requires both private and public sector investment. The Commonwealth Government has invested $1 million towards due diligence and feasibility assessments. Funding is being sought through the Commonwealth's National Water Infrastructure Development Fund – Capital Component.

The State Government has committed $37 million through Royalties for Regions for irrigation infrastructure for this important project. This is in addition to $5.7 million allocated to the Water for Food Myalup-Wellington Water for Growth project.

2.1.2 Southern Forests

The Southern Forests project will underpin agricultural growth and investment in one of the most significant horticultural areas in the southern half of the State. Working with local stakeholders, the project has identified new water supply options as well as options to significantly increase availability by improving current water use efficiency.

One option is the potential for an irrigation scheme in the Warren-Donnelly and Southern Blackwood regions, consisting of pipeline and pumping infrastructure, which would enable water to be bought and sold. The scheme has been designed in conjunction with Tasmanian Irrigation Pty Ltd, and has been modelled on the successful Tasmanian Irrigation public private partnership approach. This approach will embed a user-pays system, minimising future risk to the government and ensuring users have 'skin in the game'. This will drive growth in the region and bring desperately needed investment in industry diversification and employment.

A whole-of-region integrated scheme will lead to efficient water allocation and use by matching supply with demand, allow water to move between enterprises, be adaptable to a changing climate and allow the market to set the price.

The scheme is a significant alternative to the inefficient and underutilised current irrigation systems where each individual farmer builds a dam on their own property to self-supply their irrigation requirements. This system requires a suitable dam site on a stream with a reliable water supply and has significantly constrained the development and expansion of the irrigation industry in the region. Under an integrated scheme, irrigation rights will be provided at 95 per cent average annual reliability, taking into account climate change modelling.

The scheme is consistent with the Australian Government's *Competitiveness in Agriculture* White Paper, which cites irrigated agriculture as key strategic investment area for the National Water Infrastructure Development Fund. The State government prioritised this project as one of only nine in January 2016.

This will create a whole-of-region approach to commercial water security for existing producers and would open the door for developing new irrigated areas within the scheme's reach. Benefits to the region will include increased water use efficiency, investment, a strengthened economy and the creation of sustainable employment opportunities.

The Scheme follows on from the $3.6 million first stage Water for Food Southern Forests Water Futures project, which investigated new water supply options and increasing water availability to meet productivity expansion plans for the Southern Forests region. The proposed Scheme will cost an estimated $80 million. The Government of Western Australia has committed $19 million, with a further $10 million registered by local growers who want to be part of the Scheme. Funding is being sought through the Commonwealth Government's National Water Infrastructure Development Fund – Capital Component. The Scheme's design can be scaled and delivered in stages to accommodate available funding.

2.2 Successful collaborative Commonwealth, Government of Western Australia, and private investment to achieve off farm irrigation water use efficiencies

Western Australia has been the recipient of two *Sustainable Rural Water Use and Infrastructure Program (SRWUIP) – Murray-Darling Basin non gap bridging projects:*

a) Harvey Pipeline ($35 million)
b) Gascoyne Pipeline ($6.6 million).

The collaboration with Commonwealth funding in these cases has assisted in achieving significant water use efficiencies in irrigated agriculture as set out below in Sections 2.2.1 and 2.2.2.

2.2.1 Harvey Pipeline

Harvey Water is a private sector cooperative delivering water to members, small private irrigators and industrial users in the south west of the State. It delivers water via a gravity fed pipe and channel system, using some 2,000 individual supply points, sourcing water from seven dams along the Darling Scarp from Waroona in the north to Wellington Dam near Collie in the south. The system spans over 112,000 hectares, with more than 450 km of pipelines and 250 km of channels.

The water supplied is non-potable but is suitable for providing prime dairy and beef cattle grazing pastures, horticultural irrigation and water for industrial use. The regional economic benefits are significant, with an estimated $100 million/year from agriculture/horticulture from the water supplied.

Harvey Water has invested over $18 million of its own funds since 1996 in improving water delivery efficiency by various methods but most importantly by installing 174 km of pipe to replace open channels. This work is ongoing and to date has led to water efficiency savings of approximately 17 GL of water per year due to water not being lost through seepage and evaporation.

The SRWUIP contribution of $6.6 million to the first stage of the program, completed in 2008–2009 enabled the construction of a pipeline to replace existing open irrigation channels with a fully integrated piped irrigation system. This phase demonstrated that the previous 30% losses could be reduced to 2% or less. This has enabled Harvey Water a saving of 10 GL that the cooperative was entitled to trade. The water saved was traded to the Water Corporation to be used to improve security of critical urban water supplies in the Perth metropolitan region and providing benefits to the environment.

2.2.2 Gascoyne Irrigation Pipeline Project

Carnarvon is an important supplier of horticultural produce to Western Australia's domestic market, especially during the winter months, when approximately 60 per cent of Perth's vegetables are supplied from the Carnarvon horticultural district. At full water availability, production can be worth up to $100 million/year and about 40 per cent of Perth's fresh import supplies. The Carnarvon horticultural district is approximately 2,000 ha in area, of which approximately 1,550 ha is cultivated at any one time. Major crops include bananas, table grapes, tomatoes, capsicum, cucurbits (pumpkin, cucumber and melons), avocados and mangoes.

Gascoyne Food Bowl Initiative projects has received over $76.05 million in investment funding through the Western Australian Government's Royalties for Regions program. The Cooperatives have invested $4.47 million and the Australian Government invested $6.6 million in the Gascoyne Irrigation Pipeline. By partnering with the Commonwealth and Gascoyne Water Asset Management Co-operative (GWAMCO) investment, it will deliver over $102.1 million in infrastructure and related projects at the close of the project.

The Gascoyne Irrigation Pipeline Project (GIPP) involved construction of a new irrigation distribution pipeline opening in April 2012. The project replaced the old asbestos concrete pipe with 31 km of modern high density polyethylene pipeline. The upgrade of the GIPP provided for increased water flows for existing plantations and new horticultural developments in Carnarvon and allowed for more efficient use of water, more effective distribution and in turn benefits the environment by not overstressing water resources. The GIPP is now servicing 180 growers and 1,550 hectares under horticulture in the Carnarvon horticultural precinct, with provision for future Gascoyne Food Bowl expansion of the precinct by 400 hectares. Installation of supervisory control, data acquisition and telemetry controls has led to better data collection and availability consistent with the National Water Initiative. The Gascoyne Food Bowl Initiative has allowed the Gascoyne Water Cooperative to put its full water allocation (3.6 GL) at > 30% reduction in cost, enabled access to the new water (1 GL): and any surplus water not taken up by the Gascoyne Food Bowl Initiative proponents to be temporarily traded. The GIPP has enabled water resources to be used more efficiently; more effectively distributed and benefited the environment by reducing stress on water resources.

2.2.3 Ord River Irrigation Area

Western Australia has also collaborated with the Commonwealth to co-fund a stimulus package for the Ord region. Western Australia's Lake Argyle is the largest fresh water storage on mainland Australia. A key priority of the State Government is to realise the potential of available Kimberley water resources to create a viable community and strong agricultural sector.

Ord Stage 1 Lake Argyle was completed in 1971 and services 14,000 ha of irrigated farming land. 335 GL are currently allocated to Stage 1 of the Ord River Irrigation Area. DAFWA has a long history of supporting the development of agriculture in the Kimberley region, including resource investigations and crop trials. Existing irrigated farmland is being used for a variety of agricultural crops including mangoes, citrus, watermelons, rockmelons, pumpkin, chickpeas, sandalwood and chia.

Since the mid-1990s, there have been several investigations into the potential of expanding the irrigation area. None of these progressed due to a number of issues including water availability, native title claims and environmental approvals.

In October 2005, the WA Government, the traditional owners and pastoral and agricultural interests signed the Ord Final Agreement that addressed native title and Aboriginal heritage issues. It also opened the way for development of land at Goomig, Knox, Mantinea, Packsaddle, Ord West Bank and Ord East Bank.

In 2008, the Western Australian Cabinet approved $220 million for expansion of the Ord project. In 2009, the State and Commonwealth Governments agreed to co-fund a stimulus package for the Ord region through a National Partnership Agreement. This became the Ord-East Kimberley Development Plan (the OEKD Plan). The aim of the plan was to develop a sustainable and stronger economy and improve the socio-economic outcomes for Aboriginal people in the East Kimberley. It included two key projects:

a) Expansion of the Ord irrigation system at a cost of $220 million which involved:
   - delivering water and road infrastructure to service about 8,000ha of land at Goomig;
   - subdivision and sale of the 8,000 ha in up to 25 lots;
   - scoping for land at Mantinea (4,000 ha), Ord West Bank (1,300 ha) and Packsaddle (1,380 ha), and work to consider land at Knox (8,000 ha), Victoria Highway, Carlton Hill, Bonaparte Plain and the Keep River Plain (NT).
b) A Commonwealth-funded building program costing $195 million for 27 social infrastructure projects, including new educational and health facilities by June 2010.

The water use efficiency of the irrigation and distribution systems are key to the success of the Ord. The Ord Irrigation Cooperative supplies irrigators on stage 1 of the channel system supply area. The cooperative has achieved 80% distribution efficiencies and is working to improve water scheduling and on-farm efficiencies. The Stage 2 and 3 areas are expected to have higher efficiencies with more modern automated distribution systems being constructed and requirements for on-farm recycling so that no drainage discharge occurs during the dry season.

2.2.4 CSIRO Sustainable Yields reports for Western Australia

CSIRO Sustainable Yields reports Western Australia were Commonwealth funded ($5.2 million) under the Water for the Future Initiative. The reports are a comprehensive scientific assessment of current and future water availability in major water systems across Western Australia and have provided information for future water policy decisions and investment.

2.2.5 CSIRO Northern Australia Water Resources Assessment

CSIRO's Northern Australia Water Resources Assessment project identifies the potential to increase water-related development opportunities in northern Australia. The studies include:

a) evaluate the soil and water resources;
b) identify and evaluate water capture and storage options;
c) identify and test the commercial viability of irrigated agriculture opportunities;
d) assess potential environmental, social and economic impacts and risks of water resource and irrigation development.

The $5 million program was part of the Australian Government's *White Paper on Developing Northern Australia*, for which one of the key initiatives is the development of northern Australia's water resources. It complements the DoW water investigation projects in the Fitzroy, La Grange and Knowsley areas.

2.3 Successful Government of Western Australia and private sector funded programs to achieve off farm irrigation water use efficiencies

The Government of Western Australia's *Water for Food* program has demonstrated significant benefit to the State, however, this could have had a greater scale and impact through partnership with the Commonwealth.

Set out below are two examples relevant to meeting growing irrigation water demand and water use efficiency.

2.3.1 Kimberley La Grange irrigation developments

DAFWA's recently completed *La Grange irrigated agriculture project* identified and mapped 60,000 ha of land as suitable for irrigation 180 km south of Broome. The La Grange study is a component of the Regional Economic Development Water Opportunities Project funded over four years by Royalties for Regions ($6.4 million). DAFWA closely involved traditional owners and pastoralists in the project and has developed a shared vision for the future of agriculture at La Grange. The La Grange project also developed an interactive online map for pastoralists, horticulturalists, miners and developers to identify potential water sources in the area. This has set the foundation for long-term sustainable agricultural development in the La Grange area, particularly business generation and employment opportunities for northern communities, while preserving the natural resource and its cultural significance.

2.3.2 Pilbara Hinterland Agricultural Development Initiative

Royalties for Regions has funded the $12.5 million *Pilbara Hinterland Agricultural Development Initiative* (PHADI). This project due for completion in mid-2017 is assessing the potential for irrigated agriculture in the Pilbara using surplus mine dewater and other in-situ water resources and has delivered high-impact research outcomes to assist future development decisions.

DAFWA recently conducted the first summer and winter crop trial program at the Woodie Woodie pilot site, 190 km east of Marble Bar. The trial used surplus mine dewater that revealed productive crop species could be grown in the area. DAFWA is delivering the project in partnership with the Pilbara Development Commission and the Department of Regional Development and working closely with the mining industry, Aboriginal groups and the pastoral industry.

2.4 Successful Government of Western Australia and private sector funded programs to achieve on farm irrigation water use efficiencies

Western Australia has invested with its Royalties for Regions funding to improve on farm water efficiencies. These initiatives have not included Commonwealth funding and a greater scale and impact could have been achieved through partnership with the Commonwealth.

2.4.1 *More Dollars per Drop* water use efficiency

With Royalties for Regions funding support, DAFWA undertook a water use efficiency project, 'More Dollars per Drop', to assess current use and develop innovative ways to

improve water use in the horticulture, wine and dairy industries. Project activities included free on-farm assessments of irrigation systems, sites to demonstrate new systems and equipment and development of web-based decision tools.

DAFWA's work on soil moisture monitoring and irrigation scheduling is enabling horticulturalists to match plant demand and soil type, resulting in more efficient and effective water use. This has resulted in a number of produces in Carnarvon significantly improving yields without increasing their water use. There has been 30–50% improvement in productivity due to improved irrigation management.

2.4.2 Drip irrigation for tomatoes

DAFWA research on drip irrigation has meant that Swan Coastal Plain tomato producers are now making significant savings on water use. DAFWA's two year project in this area demonstrated that producers can reduce water usage by 40% without sacrificing yield. More efficient drip irrigation is expected to save an average tomato producer about 40 ML each season, saving around $20,000 in pumping and fertiliser costs.

2.4.3 Doppler radars and automatic weather station network

The Western Australian Government has committed $23 million through DAFWA to establish three high-resolution Doppler radars that will enable producers throughout the wheatbelt to enable farmers to make decision about farm inputs and harvesting. The radars complement the existing 170 automatic weather stations that DAWFA has invested in. The weather stations provide data to which is particularly useful to irrigators. With greater seasonal variability the importance of weather to agricultural production is increasing. Managed by DAFWA and supported by the Bureau of Meteorology (BoM), this investment will provide much-needed radar coverage with more precise weather information for farm businesses and rural communities across the agricultural regions.

2.4.4 Mobile apps for on-farm decision making

DAFWA has released a wide range of high-impact mobile technology apps to support producer's on farm decision making. These include:

a) Irrigate WA – assists with the implementation of correct irrigation scheduling for a variety of crops, regions and soil types.
b) Weather Stations – allows users to tap into DAFWA's network of automatic weather stations throughout the State to provide timely, relevant and local weather data to assist their operations.

2.4.5 Best practice water management

DoW works with Irrigation Australia (WA region) to improve the performance and efficiency of irrigation and promote best practice in water management. During 2015–16, both parties:

a) Worked with major stakeholders including DAFWA and the irrigation co-operatives (Gascoyne, Harvey, Preston Valley and Ord) to find opportunities to improve the performance of rural irrigation and add value to existing activities through the Rural Waterwise program.
b) Increased professional development and built capacity in the irrigation industry by delivering training courses to irrigation operators, designers and managers.
c) Ensured awareness of irrigation activities, innovation, research, and changes in legislation and regulations through the Irrigation Australia (WA region) journal, *Overflow*.

d) During 2015–16, the department had a representative on the Irrigation Australia (WA region) executive committee.

2.4.6 Mowanjum Pastoral Lease Irrigation Trial

The Mowanjum trial is a demonstration site and a robust assessment of the agronomic and economic options for "stand and graze" as an opportunity to value add and support growth of the northern beef industry. It serves as a model for other stations seeking to diversify into irrigated pasture to supplement and enhance their pastoral operations. The project is managed by Mowanjum Aboriginal Corporation with funding provided by DoW through a Financial Assistance Agreement.

In 2013 Mowanjum Aboriginal Corporation developed a business case for the development of the Mowanjum Station and secured funding through the Indigenous Land Corporation and a bank loan to undertake infrastructure and operational improvements. In 2014 Mowanjum Aboriginal Corporation partnered with the DoW for the irrigation trial.

The Mowanjum Aboriginal Corporation is committed to the irrigation trial and the community's vision for the pastoral station. The aspiration for the Mowanjum Station was to lay the foundation for a sustainable economic enterprise to enable an ongoing and reliable income so that Mowanjum can focus on community development.

The Mowanjum Irrigation Trial has seen some significant outcomes:

- A 38 hectare centre pivot irrigation system was commissioned in 2015 to access underutilised groundwater sources and develop a stand and graze operation.
- Sales of cattle and hay from the centre pivot irrigation area commenced in 2015.
- Two trainees from the Mowanjum community were appointed fulltime to work on the trial and develop their agricultural skillset.
- In March 2016 Mowanjum produced and cut more than 200 tonnes of hay and silage.
- In 2016 Mowanjum established a business partnership with Pardoo Beef Corporation, which has provided increased capacity, operational support and economic stability for the Mowanjum Station going forward.
- A range of industry partnerships have been established to support and value add to the Irrigation trial including the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Giovi Agriculture and DAFWA.

The irrigation trial has been recognised as a transformational project and received the Premier's Award for excellence in 2016. The project has stimulated and encouraged other Aboriginal-owned pastoral stations across the region to consider diversifying.

C. Possible improvements to programmes, their administration and delivery

3.1 National Water Infrastructure Development Fund

The Government of Western Australia has found there to be considerable unexpected complexity in administering the National Water Infrastructure Development Fund (NWIDF) and would like the opportunity to suggest improvements that can ensure more fulsome and mature engagement in Commonwealth funding arrangements.

Some challenges experienced while engaging with the NWIDF have been:

- The time constraints on the first EOI for feasibility studies made it difficult for DoW to fully appreciate eligibility criteria for fund applications and the dynamic assessment process.
- The expectations that the Commonwealth had on jurisdictional governments to manage successful EOIs was not clear from the outset. There was insufficient opportunity for the State to make resourcing provisions for the administration of successful projects and resources had to be redirected from other priorities.

Some of these issues can be resolved in the future by clear and constant rules that are agreed upfront, more generous timeframes, and improved mechanisms for communication. Furthermore the bi lateral/multi-lateral engagement between jurisdictions and the Commonwealth on development goals could to be better tied in to the administration of the NWIDF. The Western Australian Government will ensure that there is better connection between, for example, the Northern Australia Ministerial Forum and its engagement with the NWIDF.

3.2 National Water Infrastructure Development Fund Loans Facility

The criteria for the National Water Infrastructure Development Fund Loans Facility are structured in such a way that it is difficult to see the benefit to the State. The DoW has not been able to identify a project that would meet all the criteria and need to access a loan. The loan facility poses the same challenges to the State that the fund has.

D. Other matters, including but not limited to, maintaining or increasing agricultural production, consideration of environmental flows, and adoption of world's best practice

4. Possible future investment and focus for agricultural water use efficiency programs

The agricultural sector is facing a need to increase the value of production from irrigated agriculture while using less water or by developing alternative water resources. Farmers will seek support for innovations to increase the value of production from irrigated agriculture while using less water, or by developing alternate water sources. Access to suitable land, water and infrastructure is a key element to enable the growth of output in the agriculture sector.

Water use efficiency will be a key driver to water security for Western Australia's agriculture. In 2016, the Government of Western Australia's Water Innovation Committee noted that:

> *"New technologies and farm systems are emerging that help increase the productive use of water through evapotranspiration, scheduled irrigation and controlled fertiliser use.*
>
> *Treatment systems that facilitate/simplify the use of wastewater, stormwater drainage and saline groundwater for irrigated agriculture are emerging and becoming more accessible.*
>
> *With more than one million hectares of broadacre farmland in Western Australia currently affected by dryland salinity, investment in new technologies can assist the*

areas most affected to treat brackish water and enable farmers to put this water to productive use.

The cost of water is an important factor in running agricultural businesses; in those areas that rely on pumping groundwater and/or surface water, power costs to move water are a significant impost on business. Solar power, integrated with battery storage and small smart diesel technology, will enable a more sustainable business model for operators in the agricultural sector."

An additional area for future investment is the agriculture/horticultural sector where farmers are already operating in water-stressed areas and are competing with other industries and domestic users. Funding will be needed to support better water use effectiveness, and/or structural readjustment. For example, a significant part of the abstraction from the Gnangara groundwater system is from self-supply users in the agriculture/horticulture sector. As the State moves towards meeting the objectives of the National Water Initiative of addressing over allocation, improving trading, more secure entitlements, it must meet the similar challenges of structural adjustment that other states have done with the assistance of Commonwealth funding.

The Government of Western Australia proposes that greater support in future water use efficiency investment in these future self-supply and irrigation systems could be a key to future Commonwealth, State and private partnerships.

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