

Government of South Australia

Department for Environment and Water

SOUTH AUSTRALIA - ADDITIONAL EFFICIENCY MEASURES CRITERIA ASSESSMENT OUTCOME

Project Reference No:	929814
Outcome:	Compliant with the Efficiency Measures assessment
Date recommended to proceed to public comment	22 December 2020
Date recommended to proceed to the Australian Government's detailed assessment stage	19 March 2021

Overview

This project involves upgrading the irrigation infrastructure on a 26.5ha stonefruit property located at Lyrup in the SA Riverland region.

Water savings are generated by modernising the existing irrigation system which will include new pump, variable speed drive, mainline and conversion of the existing under-tree sprinkler to surface drip irrigation. The automation system will also be upgraded, and new soil moisture monitoring probes will be installed.

Water savings generated in addition to the volume nominated for transfer, will help ensure the business's resilience and long-term sustainability and viability during periods of reduced water availability. The overall annual irrigation demand of the property will significantly reduce and this will have a net positive impact on the consumptive pool.

The project is expected to increase the annual turnover of the business by approximately 10% which will provide flow on benefits to the local and regional economy. For example, additional seasonal employment is likely to occur due to increase in on-farm production.

The property is located adjacent to the downstream confluence of the River Murray and Pike River. This is an area of high ecological value and managing irrigation induced impacts is a priority objective at the local and regional scale. The works will facilitate best practice irrigation management ensuring the

impact of irrigation activity on the surrounding floodplain, wetlands and the river corridor is reduced. Maintaining and enhancing the health of priority ecological assets will ensure the strong contribution that eco-tourism and recreational activities make to the local, regional and state economies continue.

A conservative water saving of 24.3ML, or 0.9ML/ha is expected to be generated through the project works.

Part 1 - State Assessment - Efficiency Measures criteria

Assessment Approach

This State Assessment is reliant on the information provided by the applicant. The comments provide a summary of the information provided by the applicant which is deemed relevant by the assessor to demonstrate that the Efficiency Measures – Agreed Criteria have been met.

Water Savings Substantiation

The water savings expected to be achieved by the project have been verified by an Independent Approved Irrigation Professional.

The water savings substantiation is provided at Attachment A.

The project is expected to return a conservative 24.3 ML to the environment, with the applicant retaining 81.6 ML of water savings.

Water Saving Component	Area ha	Water Saving (ML/ha)	Estimated Water Saving (ML)	Total volume of Eligible Water Rights offered for transfer (ML)
Under-Tree Sprinkler Drip Conversion	26.5	2.0	53.0	
Crop Type Change: Stonefruit to Citrus	18.5	2.14	39.6	24.2
Soil Moisture Monitoring	26.5	0.5	13.3	24.5
Total Water Saving			105.9	

Efficiency Measures Criteria	Project Responses to Efficiency Measures Criteria	Adequate Response Y/N	State Assessment
Evidence of engagement with community, industry and government agencies during project design (Criteria 9, 6a, 6b)	 6a. Refer to email correspondence dated 31 July 2020 from Central Irrigation Trust to Delivery Partner (Attachment B). This evidence confirms consultation with the relevant network operator or water corporation. 6b. The Delivery Partner was engaged by the Australian Government in December 2018. Since this time the Delivery Partner has undertaken extensive consultation on the Water Efficiency Program with key stakeholders. Direct engagement with industry and commodity groups, irrigation infrastructure operators, Local Government, Regional Development organisations has occurred on the program. The works proposed through this project are consistent with regional plans and strategies on sustainable land and water management practices and building resilience and adaptability into the irrigated agriculture sector. 9. Please refer to responses 5b and 6b. 	Y	The application has demonstrated that the delivery partner has consulted with relevant industry bodies, relevant Irrigation Infrastructure Operators, local governments and regional development organisations on a strategic regional approach to developing projects under the Water Efficiency Program. The application has also provided evidence that the relevant network operator - Central Irrigation Trust, is involved in or aware of the project.
Potential Direct Water Market Impacts (Criteria 7a, 7b, 7c, 7d)	7a. Attachment C to the proposal confirms that the volume of water entitlement owned and the period of ownership. Attachment A to the proposal verifies that	Y	 The application has demonstrated that: The water rights to be transferred as part of the project have been independently verified as a conservative estimate of the water savings that

the project has been independently assessed and included the provision of formal quotations to establish the budget for the project. This assessment confirms that only a conservative volume of the assessed water saving has been nominated for return and that additional savings will be retained by the proponent. The water savings are based on industry benchmarks (crop and irrigation system type specific) that have been collated over a long period of time from on-farm water use studies and investigations.	 can be generated and that the project will not transfer more water than the project will save. The water entitlements to be transferred have been held for a minimum of 3 years at the time of application. The project will generate water savings above the volume returned to the environment and will effectively increase the water available for productive uses in the consumptive pool. The increase in available water will have no direct impact on reliability, and will put downward pressure on water market prices.
7b. Attachment C to the proposal confirms the water nominated for transfer has been held by the applicant for 3 years.	
7c. As the property involved in this proposal produces permanent tree crops water is committed to on-farm production on an annual basis. The project works will however reduce the annual irrigation demand through the improved efficiency of on-farm water use and as a result there will be no direct impact on the reliability of water as a result of this project.	
This outcome (reduction in irrigation demand) will be replicated through other projects so at a cumulative scale is expected to generate additional water for irrigated production.	
7d. As this project along with all others	

	funded through the program will generate retained savings in addition to the volume nominated for transfer it will not directly increase the price of water. The cumulative implementation of projects is expected to generate additional supply noting that only the conservative volume of water savings are transferred.		
Contribution to Proponent Businesses and Irrigation District Viability (Criteria 4a, 4b, 4c)	 4a. The property is located within the distribution network of the Lyrup Irrigation Trust which is managed by the Central Irrigation Trust. The existing delivery infrastructure is fully piped and therefore the proposed works will have no impact on the current network configuration or longer viability. The proposed works will ensure the internal irrigation infrastructure operates as efficiently as possible and enable the applicant to continue contributing to ongoing network running costs into the future. 4b. As outlined in the response to 4a. the property is currently serviced by a fully piped and pressurised supply system and within a long-established irrigation area which will continue long into the future. The property is also surrounded by other permanent horticulture enterprises that are also serviced by the same supply network so the system will continue to be used for many years to come to support existing development. 4c. As outlined in both 4a. and 4b. the 	Y	 The application has demonstrated that: The project will contribute to the longer term sustainability of the business and the irrigation district more generally. The project is focused on modernising existing inefficient irrigation systems which will position the business to capitalise on returns for stonefruit and citrus production in the SA Riverland. The project will contribute to the longer term viability of the property which will provide benefits across the irrigation district.

	property is serviced by an irrigation infrastructure operator whose business plan is reliant on its customers being viable and sustainable into the future. This project will significantly improve the productivity of on- farm water use and also increase annual turnover for the property which is consistent with longer plans for the irrigation infrastructure operator.		
Support for Regional Economies (Criteria 5, 6c)	 5a. All works will be carried out by contractors and service providers located in the region meaning the investment will provide direct regional stimulus. The upgrades are also expected to create additional seasonal employment requirements post project which will also provide direct and indirect benefits to the local community and region more generally. 5b. The works proposed as part of this project will generate significant and lasting water savings and ensure any irrigation induced impacts on the surrounding wetland, floodplain and rivers (Murray & Pike) are minimised. Water savings will be achieved through proven irrigation modernisation activities which provides a high degree of confidence that predicted outcomes will be delivered. 5c. This project represents a long-term investment in the local irrigation district. The works will increase the productive capacity of 	Y	 The application has demonstrated that the project will: Support the stonefruit and citrus industries which are important sectors of the Riverland and SA economy. Maintain and potentially increase seasonal employment during the harvest period along with engaging local contractors during the redevelopment and construction phase. Generate benefits for the broader region and not just the applicant through sourcing of local farm input supplies by the participating business and generating regional employment. Increase regional and Basin wide productivity through increasing the volume of water available for consumptive uses on the water market.

	the property and hence region through increased fruit yields and quality all while achieving significant water savings. 5d. As outlined in 5a. due to the reconfiguration of the property the works are expected to generate additional seasonal employment while maintaining the existing level of on-going employment. The works will provide a direct injection of investment during the implementation phase and post project will support employment along the picking, packing and distribution chains. 6c. The Delivery Partner was engaged by the Australian Government in December 2018. Since this time the Delivery Partner has undertaken extensive consultation on the Water Efficiency Program with key stakeholders.		
	Direct engagement with industry and commodity groups, irrigation infrastructure operators, Local Government, Regional Development organisations has occurred on the program.		
	The works proposed through this project are consistent with regional plans and strategies on sustainable land and water management practices and building resilience and adaptability into the irrigated agriculture sector.		
Social and Environmental Benefits (Criteria 2a, 2b, 2c,)	2a. This project will occur at Lyrup which is located in the SA Riverland region. Irrigated	Y	The application has:

agriculture is the primary driver of the economy in this region and therefore investment which underpins the long term viability and sustainability of this sector is vital for local communities and the region more generally.	 Described the expected socio-economic and environmental benefits of their proposed project which include: Increased productivity in terms of return per megalitre for the business and region.
This project is expected to create additional seasonal employment which will have flow on benefits to the local community through the accommodation and hospitality sectors. Local contractors and service providers will be engaged to undertake the works which means program investment will deliver a direct stimulus to the local and regional community. The property is located adjacent to the Pike River floodplain which is an area of high ecological value. The efficiency works will ensure any irrigation induced impacts on the surrounding wetlands, floodplains and river corridors are minimised and hence ensure the health of these important assets is maintained and enhanced into the future. 2b. While the works proposed under this project are all on-farm as outlined in 2a. the property is located adjacent to the Pike River floodplain which is an area of high ecological value. Tourism and recreation are key sectors for both the local and regional community and as such protecting priority assets from any irrigation induced impacts is most important to ensure that triple bottom line	 Improving the business's long term resilience and viability which will have flow on benefits to the local, regional and State economies. Sourcing of goods and services for the project from local companies which will add further economic stimulus to the Riverland community. Increased regional and Basin wide productivity through increasing the volume of water available for consumptive uses on the water market. The proposed works are on-farm and will not affect the amenity to local communities of weirs, storages and parks. The project is below the \$4 million threshold for large projects and is not required to address criteria 2c.

	outcomes can continue to be achieved		
	2c. N/A		
Comply with all relevant laws including work health and safety laws. (Criteria 2d)	2d. The Delivery Partner has well established Work Health and Safety management procedures in place which have been specifically tailored to the implementation of Australian Government irrigation efficiency programs.	Y	The application has demonstrated that the applicant and delivery partner have an understanding of all relevant legislation or regulation that will require approval prior to works commencing and that they will comply with all relevant laws including work health and safety laws.
	The proponent will be required to complete a Risk Assessment specific to the project activities and demonstrate that all required insurance is in place and current prior to the project works commencing and any funds being paid.		
and Climate Change Impacts (Criteria 10a, 13a, 12)	10a. Please refer to response to 5b.12a. As was outlined in the response to criterion 7a. the project will generate water	Y	 The application has demonstrated that the project will: Modernise existing inefficient irrigation system
	savings in addition to the volume that is nominated for transfer. The water savings have been based on accepted industry		which will position the business to capitalise on returns for stonefruit and citrus production in the SA Riverland.
	requirements and verified as part of the independent technical assessment of the proposal (Attachment A). The project budget has been prepared using quotations provided		 Generate additional water savings that will be retained by the applicant to improve the capacity of the proponent to better manage periods of reduced water availability.
	by reputable service providers. Project costs have been reviewed as part of the independent technical assessment. 13a. As has been described in the responses		 Provide the enterprise with an increased ability to endure and adapt to future climate variability and water availability by generating productivity improvements and improving
	to previous criteria the project works will		profitability.

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	generate water savings in addition to the volume that is nominated for return to the Australian Government. These retained savings will assist the enterprise to be more resilient during periods of reduced water availability which are expected to be more common, or volatile into the future. The project works will also assist the business to increase its annual turnover which will also provide the applicant to better manage challenges induced by climate variability. The project works will deliver benefits beyond the farm gate as a result of reducing its annual irrigation demand and creating additional supply within the consumptive pool.		
(Criteria 8a, 8b, 8c)	 8a. As has been addressed in other criteria the property where works will occur is located in a small irrigation district in the SA Riverland region. While only supporting a small population community-based sporting organisations and club's act as hubs for the local community. Much of the volunteers and patronage is from local property owners and therefore an investment in sustainable irrigated production represents a direct investment in the community. 8b. As outlined above in 8a. the property is located in a small community that is heavily reliant on irrigated agriculture. The irrigation sector provides the critical community mass to support local sporting and community 	Υ	The application has described the expected cultural benefits of the proposed project, including the strategy for increasing the cultural benefit to participants and their communities through local sourcing of goods, services and labour. The total project value is below \$3 million and is not required to identify cultural heritage sites and manage any impacts in accordance with relevant Commonwealth and State laws.

clubs and inter-related tourism businesses.		
The project is projected to create additional seasonal employment which will provide a direct benefit to the community through accommodation and hospitality.		
The project will source all goods and services from the local and regional community meaning the program investment will remain the local region and provide a direct economic stimulus.		
8c. N/A		

In-Principle Recommendation

The application has adequately addressed the Efficiency Measures – Agreed Criteria and demonstrated that the project will have neutral or positive socio-economic impacts and not have negative third party impacts on irrigation systems, water markets or regional communities. Accordingly, the South Australian Government provides in-principle approval for the project and recommends that the application proceed to the **public comment stage**.

Part 2 - State Response – Public Comments

Relevant Public Comments to be responded to	Response to Relevant Public Comments
Any project that decreases the total pool available to food production results in negative outcomes as there will simply be less water available for agriculture. On-farm projects reduce the total amount of water available to agriculture. While this proponent claims they will become more efficient with their water use, agriculture as a whole in the Basin will be worse off as there is simply less for agriculture to use.	The South Australian Government prefers efficiency measures to recover water for the environment, as they provide real and positive outcomes to irrigation businesses, while supporting communities that would otherwise be hard hit by the reduction in regional productivity or the closure of businesses through water leaving the consumptive pool through buybacks. Unlike water buybacks that remove water from the consumptive pool, efficiency measures increase the volume of water available. Properly constructed efficiency measures projects recover water that is effectively "lost" through evaporation, leaky infrastructure and inefficient irrigation systems or overwatering and is unavailable for use until projects are completed.
	The water savings for all South Australian on-farm projects have been independently verified as a conservative estimated of water savings. Those water savings were not previously available to the consumptive pool.
	Additionally, proponents of all on farm projects in South Australia under the efficiency measures program have retained a portion (ranging from 12 percent to 89 percent) of the water savings with this increasing supply and putting downward pressure on water market prices.
	Accordingly, South Australian projects are increasing the water available for consumptive uses across the southern connected Murray-Darling Basin and have not reduced the amount of water available for agricultural use.
On-farm efficiency measures are creating upward pressure on water prices as reported in independent research completed by ABARES and Aither and do not meet principle 7d – Projects must not directly increase the price of water	Both the ABARE and Aither reports have acknowledged that it is difficult to separate the impact of water recovery from other major trends such as climate change and the significant growth in industries and as such the findings should be treated with caution.

Independent research over a number of years, most	https://onlinelibrary.wiley.com/doi/full/10.1111/1467-8462.12396?af=R This study found
recently from the University of Adelaide, has demonstrated	that some on-farm program participants subsequently purchased water to increase their
that irrigators who participate in on-farm projects are	irrigated production. The study did not however directly link this to participation in the
highly likely to purchase additional water following the	program and noted that many other demographic and economic factors are likely to influence
implementation of the project and the resulting increase in	business decisions. In fact, it is specifically stated that the study did not attempt to define or
enterprise profitability.	separately quantify direct and indirect effects of on-farm efficiency measures projects on
	water prices.
	The ABARES study also evaluated many projects that would not meet the criteria agreed by
	the MDB Ministerial Council and as a result, no conclusions can be drawn between the
	findings of this study and on-farm efficiency measures projects that have been submitted
	since these criteria were agreed.
	The Aither report appears to treat water recovered through on-farm efficiency measures the same as buybacks. This fails to recognise that on-farm efficiency measures are reducing demand by the same amount and in most cases more than the corresponding reduction in
	supply.
	Accordingly, it would be incorrect to infer that South Australian on-farm projects are directly attributable to increased water use and higher water market prices when they are consistently reducing water demand and increasing supply.
	Any expansion of irrigated area and hence water use that occurs post on-farm project is an
	indirect effect of the program and is likely to be driven by many other complex and
	interrelated economic and social factors. These indirect impacts are not considered as part of
	the socio economic assessment.

The application does not provide details of how it will impact the irrigation network, nor does it provide details of the local and regional plans for the area and how the project aligns with relevant objectives.	These criteria have been addressed in various places in the application and the proponent has demonstrated that their proposed project will:
	 Increase productivity in terms of return per ML for the business and region.
	 Improve the business's long term resilience and viability which will have flow on benefits to the local, regional and State economies.
	 Source goods and services for the project from local companies which will add further economic stimulus to the Riverland community.
	 Increased regional and Basin wide productivity through increasing the volume of water available for consumptive uses on the water market.
	The application has also provided evidence that the relevant network operator is involved in or aware of the project.

Final Recommendation

The application has adequately addressed the Efficiency Measures – Agreed Criteria and demonstrated that the project will have neutral or positive socio-economic impacts and not have negative third party impacts on irrigation systems, water markets or regional communities. Accordingly, it is recommended that the application proceed to the Australian Government's detailed assessment stage.

Water Savings Substantiation – Water Efficiency Program (WEP) Technical Assessment

Project ID:

Crop Type: Citrus, Stonefruit, Avocados

Project Summary:

The applicant is seeking to undertake a complete upgrade of the existing irrigation system on a 26.5ha stonefruit property located at **Example** in the SA Riverland. The irrigation modernisation will include new pump, variable speed drive, mainline and conversion of the existing under-tree sprinkler to surface drip irrigation. The automation system will also be upgraded and new soil moisture monitoring probes will be installed.

A conservative water saving of 24.3ML, or 0.9ML/ha will be generated through the project works.

Water Saving Methodology:

The primary water saving component of the project will be the conversion of the existing under-tree irrigation system to surface drip irrigation across 26.5ha of the property. Consistent with water savings benchmarks for this type of conversion and crop water use levels a water saving of up to 2.0ML/ha is expected to be achieved through the system conversion. The achievement of the projected water saving will be supported by integrated upgrades to the pump station, including fitting a variable speed drive, new mainline, valves, flushing sub-mains and an upgrade to the automation system.

A section of the property will also be re-developed from stonefruit to citrus (18.5ha) and a small area of avocados (1.5ha) so additional water savings will be generated through the crop conversion. Based on the PIRSA Irrigation Requirements spreadsheet stonefruit requires approximately 2ML/ha more irrigation than citrus and avocados at an 85% field application efficiency.

A new soil moisture monitoring system will also be installed as part of the project and consistent with water savings benchmarks for this activity a saving of up to 0.5ML/ha is expected to be generated. As a result of the property re-development and having a mix of crop types and ages soil moisture monitoring will be an important tool for optimising irrigation scheduling.

Water Saving Activity	Area ha	Water Saving (ML/ha)	Total Water Saving (ML)	Conservative Saving (ML)	Conservative Saving (ML/ha)
Under-Tree Sprinkler Drip Conversion	26.5	2.0	53.0		
Crop Type Change: Stonefruit to Citrus	18.5	2.14	39.6		
Soil Moisture Monitoring	26.5	0.5	13.3		
		TOTAL	105.9	24.3	0.9

Project Budget:

Project costs have been based quotes provided

Irrigation Design:

An Irrigation Design has been completed by a certified designer for the irrigation system and has been included as an attachment to the proposal.

Approvals/Environmental:

No approvals are required to conduct the works as the works are occurring on private property and the activities will not have an adverse environmental impact on the property or surrounds.

The specific irrigation efficiency improvements will contribute to reducing deep drainage beyond the crop root zone and hence improved salinity outcomes for the River Murray.



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1 PROJECT DETAILS:

CID Name:	Date:	31/07/2020
CID No:	Client Name:	
Project Name:	Project No:	
Submitted By:	Contractors:	

2 PREAMBLE AND PROJECT SCOPE:

The above project was assessed on the below mentioned scope and is limited to project data supplied, including any documentation and designs as being true and correct in every respect.

I declare, as an Independent Approved Irrigation Professional agreed to under the Deed, that:

- a) I have carried out the technical and practical feasibility assessment for the Works; and
- b) I have had no previous involvement in preparing this Project Proposal.

I certify that the Project Works are technically and practically feasible, including that:

- a) the projected water savings they will generate are reasonable and realistic, including being appropriate to the crops, soils, climates, water delivery system and topography of the Eligible Irrigator's Property;
- b) the rationale for the water savings assessment is clearly explained;
- c) the projected water savings can be achieved while maintaining the agricultural production potential of the Property on which the Works would be completed as part of a Project;
- d) the engineering solutions they entail are achievable and appropriate to the needs of the Eligible Irrigator and the Property;
- e) the projected costs are reasonable and realistic, and within the expected range for that type of infrastructure and scale of installation; and
- f) the projected water savings they will generate represent the conservative or minimum feasible volume that could be derived from completing the Works.







