



SOUTH AUSTRALIA - ADDITIONAL EFFICIENCY MEASURES CRITERIA ASSESSMENT OUTCOME

Project Reference No:	753594
Outcome:	Compliant with the Efficiency Measures assessment
Date recommended to proceed to public comment	19 March 2021
Date recommended to proceed to the Australian Government's detailed assessment stage	31 May 2021

Overview

The project will be replacing 4.0ha of failing drip tube, upgrading manual field filtration to automatic flush on 12.0ha and upgrading the automation system on the whole 41.0ha property located at Lyrup in the SA Riverland.

The existing tube is old (15-20 years) with a highly variable dripper output rate. The patch is not operating within design specification due to tube that has deteriorated over time and significant now contains a large number of squirting emitters. The project will also be installing new 23mm PC tube to bring the area back to the original design specification.

The reliability of the old existing solenoids is problematic in that when they have failed it has caused valves to remain open and over water the vines or have failed to open resulting no irrigation being applied. This is a significant issue with regard to crop loss, vineyard management, disease pressure and water consumption. Replacing solenoids on all the valves will alleviate this problem and make the system more reliable.

The secondary field filtration system will also be upgraded on several sections of the property with the new automatic system resulting in more efficient back flushing operations and less blockages.

The works will also generate water savings in addition to the volume that is nominated for transfer to the Australian Government and the retained savings will assist the business to be better adapted to periods of reduced water availability. The retained savings will also increase the overall supply of water available within the consumptive pool which will provide benefits beyond the farm gate.

The works will facilitate best practice irrigation management and minimise drainage beyond the crop root zone which can have an adverse impact on surrounding wetlands, floodplains and the River Murray. All project works will occur within the existing irrigation footprint of the property meaning there

will be no impact or disturbance on native vegetation and other important ecological assets. Given the region's strong reliance on tourism and River Murray based recreation to drive the economy these are important outcomes of the project.

A conservative water return of 3.0ML, or 0.07ML/ha per annum is expected to be generated from 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 3.0 ML to the environment, with the applicant retaining 11.25 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)
Automation System Upgrade	41.0	0.25	10.25	3.0
Surface Drip Replacement	4.0	1.0	4.0	
Total Water Saving			14.25	

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)	<p>6a. Please refer to attachment B provided by the Central Irrigation Trust (CIT).</p> <p>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 within the SA MDB region. 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.</p> <p>9a. Please refer to response to 6b.</p> <p>9b. Please refer to response to 5b.</p>	Y	<p>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.</p> <p>The application has also provided evidence that the relevant network operator, the Central Irrigation Trust, is involved in or aware of the project.</p>
Potential Direct Water Market Impacts (Criteria 7a, 7b, 7c, 7d)	<p>7a. Refer to Attachment B confirming that the volume of water access entitlements owned and the period of ownership.</p> <p>The project has been independently assessed which included the provision of formal quotations to establish the budget for the</p>	Y	<p>The application has demonstrated that:</p> <ul style="list-style-type: none"> • The water rights to be transferred as part of the project have been independently verified as a conservative estimate of the water savings that can be generated and that the project will not transfer more water than the project will save.

	<p>project. This assessment confirms that only a conservative volume of the assessed water saving has been nominated for return to the Australian Government 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.</p> <p>7b. Attachment B (Central Irrigation Trust Summary) verifies that the nominated water access entitlement meets the 3 year ownership requirement.</p> <p>7c. As described in 7a. this project will generate water savings in addition to the volume that has been nominated for transfer. Much of the properties annual water requirements are for the production of permanent crops so the retained savings will reduce demand while increasing supply. This will mean that post project there is a net positive increase in water availability which will ensure there is no direct impact on water reliability as a result of this project or others given the same outcomes are being achieved with respect to water demand and supply.</p> <p>7d. As described above in 7c. this project will generate a net increase in water supply post project based on the properties annual irrigation requirements. A very small volume (3ML) of water is proposed to be transferred</p>		<ul style="list-style-type: none"> • The water entitlements to be transferred have been held for a minimum of 3 years at the time of application. <p>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 may put downward pressure on water market prices.</p>
--	--	--	---

	to the Australian Government and therefore the project will not directly increase the price of water.		
Contribution to Proponent Businesses and Irrigation District Viability (Criteria 4a, 4b, 4c)	<p>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 term viability.</p> <p>The proposed works will ensure the internal irrigation infrastructure operates as efficiently as possible and enable the applicant to continue contributing to the on-going network running costs into the future.</p> <p>4b. The property is located in the Lyrup Irrigation Trust and is serviced by water delivery systems provided by the trust. There is a high density of properties in the surrounding area that are all serviced by the Lyrup Irrigation Trust and therefore the infrastructure will remain a critical component of the trust operations into the future.</p> <p>The project works are focused on on-farm upgrades that will have no impact on existing off-farm supply infrastructure, or any other customers within the network.</p> <p>4c. The proposal is located inside Central Irrigation Trust's Lyrup irrigation district. The</p>	Y	<p>The application has demonstrated that:</p> <ul style="list-style-type: none"> • 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 wine grape production in the SA Riverland. • The project will contribute to the longer term viability of the property, which will provide benefits across the trust and irrigation district more broadly, consistent with current business plans.

	works will contribute to the longer term viability of the properties which will provide benefits across the irrigation district and the Trust's service footprint more broadly which is consistent with current business plans.		
Support for Regional Economies (Criteria 5a, 5b, 5c, 5d, 6c)	<p>5a. As described in 2a. all materials and labour for this project will be supplied through local irrigation businesses and contractors. The wine grape industry is a primary economic driver of the Riverland region and therefore proposals that invest in under-pinning the continuing viability of irrigated businesses ensures that this contribution will be sustained.</p> <p>5b. Currently the property is not operating as efficiently as it could be and the proposed works will address the current limitations with respect to on-farm irrigation management. The benefits of improving the productivity of on-farm water use extend beyond the farm gate and provide flow-on benefits to the local community, region and the State.</p> <p>The on-farm irrigation efficiency works also assist the proponent to be better adapted to reduced and/or more volatile water availability in the future and secure additional supply relative to pre and post annual irrigation requirements.</p> <p>5c. As was described in criteria 4 the properties where works are proposed are all</p>	Y	<p>The application has demonstrated that the project will:</p> <ul style="list-style-type: none"> • Support the wine grape industry, which is an important sector of the Riverland and SA economy. • Maintain and potentially increase seasonal employment along with engaging local contractors during the redevelopment and construction phase. • Generate benefits for the broader region and not just the applicant through the 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.

	<p>served by the Central Irrigation Trust (Lyrup District). The trust is fully piped and no reduction in water delivery rights will occur as a result of the project. The works will ensure the properties are viable into the future which is a positive outcome for the trust and its broader customer base.</p> <p>5d. No proposed works will not impact on existing employment or regional jobs noting existing labour is provided by the owner/operators.</p> <p>6c. While the project will deliver significant positive socio-economic outcomes for the participant these benefits will extend beyond the farm gate as a result of direct program investment in the local community and increased productivity which will provide a broader regional and State level benefit.</p> <p>The proposal will also generate retained water savings for the applicant which will increase the volume of water available in the consumptive pool which will deliver benefits at the broader sMDB scale.</p>		
Social and Environmental Benefits (Criteria 2a, 2b, 2c,)	<p>2a. The works proposed through this project will assist the business to significantly improve the productivity of its on-farm water use.</p> <p>The works will directly facilitate an increase in annual revenue that is derived from the existing irrigated crops which will assist with</p>	Y	<p>The application has:</p> <ul style="list-style-type: none"> Described the expected socio-economic and environmental benefits of their proposed project, which include: <ul style="list-style-type: none"> Increased productivity in terms of return per megalitre for the business and region.

	<p>under-pinning the current levels of on-going and seasonal employment.</p> <p>All goods and services will be sourced from within the local region meaning the program investment will deliver a direct economic stimulus.</p> <p>Irrigated agriculture is a primary driver of the Riverland economy and therefore the project will ensure that this important economic contribution continues well into the future. The Riverland region is also very reliant on tourism and the associated recreation activities that the River Murray provides. This project will ensure that irrigation induced impacts on the River Murray and surrounding floodplains and wetlands are minimised and that the ecological and recreational values are maintained and enhanced.</p> <p>2b. As this project is only small scale and focused specifically on on-farm upgrades there will not be any direct impacts on social values such those community assets described in this criterion.</p> <p>2c. N/A</p>		<ul style="list-style-type: none"> ○ Improving the business' 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. <ul style="list-style-type: none"> ● The proposed works are on-farm and will not affect the amenity value 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.
Comply with all relevant laws including work health and safety laws. (Criteria 2d)	<p>2d. The Delivery Partner has well established WHS management procedures in place which have been specifically tailored to the implementation of Australian Government irrigation efficiency programs.</p> <p>The proponent will be required to complete a</p>	Y	<p>The application has demonstrated that the applicant and delivery partner have an understanding of all relevant legislation and/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.</p>

	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.		
Business Resilience, including Drought and Climate Change Impacts (Criteria 10a, 13a, 12)	<p>10a. Please refer to response to 5b.</p> <p>12a. As described in 7a. the project proposal has been independently assessed and this assessment confirms that a conservative volume of the total water saving is nominated for return. The project works budget has also been substantiated through formal quotations.</p> <p>13a. As has been described in the responses to previous criteria the project works will 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 enable the applicant to better manage challenges induced by climate variability.</p>	Y	<p>The application has demonstrated that the project will:</p> <ul style="list-style-type: none"> • Modernise existing inefficient irrigation systems, which will position the business to capitalise on returns for wine grape production in the SA Riverland. • Generate additional water savings that will be retained by the applicant to improve their capacity to better manage periods of reduced water availability. • Provide the enterprise with an increased ability to endure and adapt to future climate variability and water availability by generating productivity improvements and improving profitability.
Cultural Benefits (Criteria 8a, 8b, 8c)	<p>8a. The works will facilitate social and lifestyle benefits for the proponent ensuring that they can continue to be an active member of, and contributor to their local community. Irrigated agriculture underpins the Riverland community and therefore investment that</p>	Y	<p>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.</p>

	<p>enables irrigated businesses to be more sustainable into the future delivers significant benefits at the local community, regional and State scale.</p> <p>8b. The properties are located in a small community that is heavily reliant on irrigated agriculture. The irrigation sector provides the critical population mass to support local sporting and community clubs and inter-related tourism businesses.</p> <p>During implementation the project will contribute direct economic stimulus through the engagement of local service providers and the works will assist with securing employment within the local community.</p> <p>The water recovered through the project will also be used to contribute to the longer term health of the Murray-Darling Basin including priority local floodplain and wetland assets which are critical for the tourism sector.</p> <p>8c. N/A</p>		<p>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.</p>
--	--	--	---

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
It is clear this project will have negative socio-economic impacts at a broader regional level as there will simply be less water available for agriculture.	<p>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.</p> <p>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.</p> <p>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.</p> <p>Additionally, all proponents of on farm projects in South Australia under the efficiency measures program have retained a portion of the water savings generated from their projects. This is increasing supply and putting downward pressure on water market prices.</p> <p>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.</p> <p>South Australia continues to encourage participation in on-farm efficiency measures projects to generate positive outcomes for irrigators and regional communities, and is assessing all applications in full accordance with the Murray-Darling Basin Ministerial Council agreed socio-economic criteria.</p>
Any project that decreases the total pool available to food production results in negative outcomes.	
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.	
South Australia remains the only State not adhering to the agreed socio-economic criteria.	
Evidence suggests that those who participate in on-farm	Both the ABARE and Aither reports have acknowledged that it is difficult to separate the

<p>projects do require additional water and do enter the water market, thus driving up the price. There is no guarantee that this project will not enter the market.</p>	<p>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.</p> <p>The ABARE report draws heavily on a recent study undertaken by ABARES, available at https://onlinelibrary.wiley.com/doi/full/10.1111/1467-8462.12396?af=R This study found that some on-farm program participants subsequently purchased water to increase their irrigated production. The study did not however directly link this to participation in the program and noted that many other demographic and economic factors are likely to influence business decisions. In fact, it is specifically stated that the study did not attempt to define or separately quantify direct and indirect effects of on-farm efficiency measures projects on water prices.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
--	---

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.

1 PROJECT DETAILS:

CID Name:		Date:	21/10/2020
CID No:		Client Name:	
Project Name:		Project No:	
Submitted By:		Contractors:	

2 PREAMBLE AND PROJECT SCOPE:

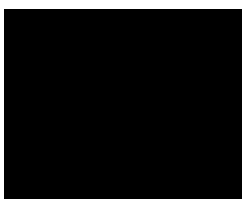
The above project was assessed on the below mentioned scope and is limited to project data supplied, including any documentation and designs as being true and correct in every respect.

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

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

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

- 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;
- the rationale for the water savings assessment is clearly explained;
- 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;
- the engineering solutions they entail are achievable and appropriate to the needs of the Eligible Irrigator and the Property;
- the projected costs are reasonable and realistic, and within the expected range for that type of infrastructure and scale of installation; and
- the projected water savings they will generate represent the conservative or minimum feasible volume that could be derived from completing the Works.



Certified Irrigation Designer



Water Savings Substantiation – Water Efficiency Program (WEP)

Technical Assessment



Crop Type: Wine Grapes

Project Summary:

The project will be replacing 4.0ha of failing drip tube, upgrading manual field filtration to automatic flush on 12.0ha and upgrading the automation system on the whole 41.0ha planted area located at Lyrup in the SA Riverland.

A conservative water saving of 3.0ML, or 0.07ML/ha is expected to be generated from the project.

Water Saving Methodology:

The existing tube is old (15-20 years), with a highly variable dripper output rate. The patch is not operating within design specification due to tube that deteriorated over time and significant number of squirting emitters. The project will be installing new 23mm PC tube to bring the area back to the original design specification.

The expected water saving for this component of the project is up to 1.0ML/ha

Reliability of the old existing solenoids is problematic in that when they fail it causes valves to remain open and over-water the vines, or they fail to open as scheduled resulting in no irrigation being applied. Where valves do not activate as scheduled it can require other valves to be irrigated while catching up missed irrigations due to irrigation shift configurations resulting in the over-watering of some areas. This is a significant issue with regard to crop yield and quality, general vineyard management, disease pressure and water consumption. Replacing the solenoids on all the valves along with the internal farm communication system will alleviate this problem and ensure the system is much more reliable.

A potential water saving of 0.25ML/ha is proposed for the automation system given that there is already automation installed on the property albeit its reliability is problematic.

The secondary field filtration system (4 x units) will also be upgraded on several areas of the property with the new automatic flushing filters expected to assist with delivering more uniform watering across the upgraded sections and also result in significant labour savings compared to the existing manual field filtration units.

Water Saving Activity	Area (ha)	Potential Water Saving (ML/ha)	Potential Water Saving (ML)	Conservative Water Saving (ML)	Conservative Water Saving (ML/ha)
Automation System Upgrade	41.0	0.25	10.25	3.0	0.07
Surface Drip Replacement	4.0	1.0	4.0		
TOTAL			14.25		

Project Budget:

Project costs have been based on quotes provided [REDACTED]

[REDACTED].

Irrigation Design/Plan:

Due to the low volume/low complexity nature of the proposal and the fact the proposed works will not require any changes to internal distribution systems no irrigation design/plan has been provided.

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.
