



SOUTH AUSTRALIA - ADDITIONAL EFFICIENCY MEASURES CRITERIA ASSESSMENT OUTCOME

Project Reference No:	483049
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	31 May 2021

Overview

The applicant is seeking to undertake integrated renewal and modernisation of a 16.0ha wine grape and stone fruit growing property located near Glossop in the SA Riverland region. The property was heavily impacted by a severe hailstorm in December 2019 which has prompted the proponent to undertake selective redevelopment within the property.

The key components of this will be the removal of 1.94ha of stone fruit which will be replanted to lower water use wine grapes and the redevelopment of 2.6ha of existing but under-performing wine grape patches. A further 6.9ha of overhead and under-vine sprinkler irrigation will be upgraded to surface drip irrigation and the pump and primary filtration servicing the property will also be upgraded as part of the project.

The works will improve the profitability of the property by addressing existing irrigation system inefficiencies which will increase both the yield and quality of the fruit produced. The works are also expected to result in the creation of an additional employment position and all goods and services will be supplied and delivered by local works contractors.

The works will also deliver improved environmental outcomes through the improved efficiency of irrigation ensuring that drainage volumes are reduced and accessions to local drainage disposal basins are minimised.

A conservative water saving of 18.4ML, or 1.2ML/ha is nominated for the proposal.

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 18.4 ML to the environment, with the applicant retaining 9.8 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 Vine Sprinklers – Surface Drip	4.4	2.0	8.8	18.4
Overhead Sprinklers – Surface Drip	2.5	2.5	6.3	
Pump and Primary Filtration incl. VSD	16.0	0.35	5.6	
Stone fruit to winegrape conversion	1.9	3.9	7.5	
Total Water Saving			28.2	

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)	9. Please refer to response to 5b and 6b. 6a. Please refer to Attachment B from the Central Irrigation Trust (CIT). 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.	Y	The application has demonstrated that the delivery partner has consulted with relevant industry bodies, 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. Refer to Attachment B confirming that the volume of water entitlement owned and the period of ownership. The project has been independently assessed which included the provision of formal quotations to establish the budget for the project.	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 can be generated and that the project will not transfer more water than the project will save.

	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. 7b. Attachment B confirms that the proponent has held the nominated water entitlement for greater than 3 years. 7c. This proposal involves the transfer of a relatively small volume of water (18.4ML) and therefore is not expected to have a direct impact on the reliability of water. This is consistent with other proposals that have been submitted by the Delivery Partner where conservative volumes have been nominated for transfer under the program and with retained savings being generated for all projects - in this case (9.8ML) 7d. As outlined above in 7c. this project will generate lasting water savings given the permanent horticulture production system that is in place. The water savings assessment indicates a total water saving of 28.2ML with a return of only 18.4ML so the net outcome is an increase in supply for the proponent of 9.8ML.		• 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.
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Contribution to Proponent Businesses and Irrigation District Viability (Criteria 4a, 4b, 4c)	4a. The property where the works are proposed is located within the Berri Irrigation Trust in the SA Riverland. The existing on-farm irrigation system is old and inefficient and the project will modernise this infrastructure. This investment will assist the property to remain a viable and profitable irrigated enterprise into the future which will have broader benefits to the irrigation district/region. 4b. The property is located within the Berri Irrigation Trust and is serviced by the water delivery systems provided by the trust. There is a high density of irrigated properties in the adjacent area that are all serviced by the Berri Irrigation Trust and therefore the infrastructure will remain a critical component of the trust operations into the future. The system is also fully piped and pressurised which ensures flexibility in the broader system operation. 4c. As described in criteria 4b. the property is located within the footprint of the Berri Irrigation Trust. The trust is responsible for the delivery of significant volumes of irrigation water to customers within this footprint. Improvements in on-farm irrigation efficiency assist the trust to manage drainage which has benefits at a whole of trust level as well as contributing to the objectives of regional salinity and water management	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 winegrape 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 and the trust more broadly which is consistent with current business plans.
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	plans.		
Support for Regional Economies (Criteria 5, 6c)	5a. As described in Criteria 2a. all works associated with this project will be undertaken by local contractors meaning the investment will remain in the local community and region. The works will increase the productivity of the property which will have positive benefits on casual employment on-farm and also indirect employment along the supply and distribution chains. The works are anticipated to generate an additional 1xFTE of employment to assist with the on-going management of the property. 5b. Currently the property is operating inefficiently both from a water use and production perspective and the proposed works will address the current limitations with the on-farm irrigation system and the overall productivity (\$/ML) of water use. The on-farm irrigation efficiency works will also assist the proponent to be better adapted to reduced and/or more volatile water availability in the future which will provide benefits at a local, network and regional scale. 5c. As has been mentioned in the responses to previous criteria the property is located within the Berri Irrigation Trust and the works are focused on investing in the property to	Y	The application has demonstrated that the project will: • Support the winegrape industry which is an important sector of the Riverland and SA State economy. • Maintain and potentially increase regional employment 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.

	ensure it is sustainable and viable in the longer term. The project does not involve any reduction in held delivery shares within the trust and therefore these fixed charges will continue to be met by the project proponent into the future and ensure the productive capacity of the irrigation district is maintained. 5d. The project works are expected to create 1 x new full time position post works due to the improved productivity of on-farm water use. The increased capacity will also support jobs along the supply chain including wineries and transport and logistics. All goods and services will be supplied and delivered by local contractors which will contribute a direct economic stimulus in the local community and broader region. 6c. While this project will deliver significant positive benefits to the proponent these benefits will extend beyond the farm gate through investment in the local community both for the project works and in the longer term. The project will also deliver a volume of retained water savings for the proponent which will assist to increase water supply at a local, regional and Basin scale.		
Social and Environmental Benefits (Criteria 2a, 2b, 2c,)	2a. This project is proposing to modernise an existing horticultural property in the SA	Y	The application has: Described the expected socio-economic and

	Riverland region. The property was badly damaged by a severe hailstorm in December 2019 which has prompted the proponent to redevelop areas of the property that have low water productivity both in terms of efficiency and yield. The proposed works include a pump and primary filtration upgrade, conversion of existing under vine sprinklers to surface drip irrigation and the removal of higher water use stone fruit patches which will be redeveloped to lower water use wine grapes. All goods and services for the project will be supplied and delivered by local contractors meaning the program investment will remain in the local community. Post project it is predicted that an additional full time position will be created to assist in the operation and management of the property. The increased productivity will also have flow on benefits to harvest contractors and local wineries with increased fruit volumes to process. Without the investment the property is very likely to struggle to remain viable into the future. The improved efficiency of water use will ensure the impact of irrigation activities on local environmental assets including floodplains, wetlands and the River Murray are minimised. 2b. N/A - this project involves on-farm works		environmental benefits of their proposed project which include: ○ Increased productivity in terms of return per megalitre for the business and region. ○ 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. Accordingly, 2b is not applicable. The project is below the \$4 million threshold for large projects and is not required to address criteria 2c.
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	and not the upgrade of shared amenity sites as referenced in this criteria. 2c. N/A- Project is under \$4 million		
Comply with all relevant laws including work health and safety laws. (Criteria 2d)	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. 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.	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.
Business Resilience, including Drought and Climate Change Impacts (Criteria 10a, 13a, 12)	10a. Please refer to response to 5b. 13a. As has been referred to in previous responses the project works will decrease annual demand with a share of the total saving to be retained by the proponent. The reduction in demand and access to retained savings will enable the proponent to be better adapted to periods of reduced and/or variable water availability which is most important for permanent horticulture and which is expected will occur more frequently into the future. 12a. As described in 7a. the project proposal has been individually assessed and the assessment confirms that a conservative	Y	The application has demonstrated that the project will: • Modernise existing inefficient irrigation systems which will position the business to capitalise on returns for winegrape production in the SA Riverland. • 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. • 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.

	volume of the total saving is nominated for return. The projects works budget has also been substantiated through formal quotations.		
Cultural Benefits (Criteria 8a, 8b, 8c)	8a. As has been outlined in the responses to previous criteria the project is expected to generate positive outcomes at a local and regional community scale. The project works will ensure an existing irrigated business remains viable and sustainable into the future which is very important given the Riverland region of SA is heavily reliant on a prosperous and high performing irrigated agriculture sector. The transfer of a share of the water savings generated from the project to the Australian Government will also ensure that a portfolio of water is available to e-water managers to assist with the maintenance of priority ecological assets across the Murray-Darling Basin. With tourism and recreation also key drivers of the Riverland and State economy investments such as this provide flow on benefits to the local and regional communities via enhanced environmental outcomes that in turn deliver social and economic benefits at many scales. 8b. As described in 8a. this project is a great example of the triple bottom line outcomes that are delivered through community and government partnerships. During implementation the project will contribute direct local economic stimulus through	Y	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.

	engaging local service providers and the works will assist with securing employment within the local community. The water recovered through the project will also be used to underpin the longer-term health of the Murray-Darling Basin including priority local floodplain and wetland assets which are critical for the tourism and recreation sectors. 8c. N/A project is under \$3 million		
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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.	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, 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. 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. 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.
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

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.	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. 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. 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.
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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:	11/09/2020
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.



Water Savings Substantiation – Water Efficiency Program (WEP)

Technical Assessment

Project ID: [REDACTED]

Crop Type: Wine Grapes & Stone fruit (existing)

Project Summary:

The applicant is seeking to undertake integrated renewal and modernisation of a 16.0ha wine grape and stone fruit growing property located near [REDACTED] in the SA Riverland region.

The property was heavily impacted by a severe hailstorm in December 2019 -

[REDACTED]

which has prompted the proponent to undertake redevelopment within the property. The key components of this will be the removal of 1.94ha of stone fruit which will be replanted to lower water use wine grapes and the redevelopment of 2.6ha of existing but under-performing wine grape patches. A further 6.9ha of overhead and under-vine sprinkler irrigation will be upgraded to surface drip irrigation and the pump and primary filtration servicing the property will also be upgraded as part of the project.

A conservative water saving of 18.4ML, or 1.2ML/ha is nominated for the proposal.

Water Saving Methodology:

The water savings for the project will be achieved through a variety of activities starting with an upgrade to the pump and primary filtration which will include the addition of a variable speed drive. The replacement of the fixed speed pump with a new pump with variable speed drive is important given the redevelopment will result in planted areas within the property having quite different irrigation requirements and this will enable irrigation scheduling to occur with maximum flexibility and efficiency.

Several patches within the property will be upgraded to surface drip irrigation from existing overhead (2.5ha) and under-vine sprinklers (4.4ha). Consistent with the water savings benchmarks (refer: *Crop Water Use by System Type & OFIEP R4 Fact Sheet*) for this type of system conversion a water saving of up to 2.5ML/ha and 2.0ML/ha respectively is expected to be achieved through the surface drip upgrades.

The final water savings component of the project is the removal of 1.94ha of stone fruit patches which will be replanted to lower water use wine grapes. The stone fruit was severely damaged by a hail storm in December 2019 and the replanting to wine grapes will provide a uniformity of crop type across the property which will assist with irrigation and general property management. Water savings are based on the *PIRSA Irrigation Requirements* spreadsheet assessing annual irrigation requirements for stone fruit at Berri compared to wine grapes at Berri. This saving is considered conservative given a field application efficiency of 85% was used for both scenarios although it is unlikely that the old full cover under tree sprinklers servicing the stone fruit was operating at that level of efficiency.

Water Saving Activity	Area (ha)	Potential Water Saving (ML/ha)/%	Total Water Saving (ML)	Conservative Water Saving (ML)	Conservative Water Saving (ML/ha)
Under-Vine Sprinklers – Surface Drip	4.4	2.0	8.8	18.4	1.2
Overhead Sprinklers – Surface Drip	2.5	2.5	6.3		
Pump & Primary Filtration incl. VSD	16.0	5%^	5.6		
Stone fruit to Winegrape Conversion	1.9	3.9^^	7.5		
TOTAL			28.2	18.4	1.2

^ 16.0ha x 7.0ML/ha x 5% = 5.6ML

^^ Apricots @ Berri = 10.9ML/ha; Wine Grapes @ Berri = 7.0ML/ha: Difference = 3.9ML/ha

Project Budget:

Project costs have been based quotes provided

Irrigation Plan:

An Irrigation Plan has been provided 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.