Government of South Australia
Department for Environment and Water

SOUTH AUSTRALIA - ADDITIONAL EFFICIENCY MEASURES CRITERIA ASSESSMENT OUTCOME

Project Reference No:	Reference No 84383
Outcome:	Compliant with the Efficiency Measures assessment
Date recommended to proceed to public comment	10 September 2020
Date recommended to proceed to the Australian Government's detailed assessment stage	18 December 2020

Overview

This project involves the installation of Drip Irrigation system on two winegrape properties (covering 9ha) located in Monash in the South Australian Riverland.

Property 1 - Low throw sprinkler to Drip irrigation system, back-up filtration and flushing submains, new pump including VSD, main filtration and controller

Property 2 - Overhead sprinkler to drip irrigation system, new mainline, back up filters and flushing submains. Relocation of pump from Property 1, new pump shed, filter & controller. Soil moisture monitor.

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 proposed modernisation works will reduce the annual irrigation requirement by 27.4ML across the 9.3ha of vineyards. Approximately 75% (20.7ML) of the water saving will be retained by the applicant which will deliver further adaptation, resilience and flexibility to future climate variability and water availability.

The project is expected to return a conservative 6.7 ML to the environment, with the applicant retaining 20.7 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)
Upgrade to drip irrigation	9.3	2.95	27.4	**6.7**
Total Water Saving			**27.4**	

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. Please refer to Attachment C-E which has been provided by the Central Irrigation Trust. 6b. The Delivery Partner has consulted extensively with local irrigation industry stakeholders including IIO's, commodity groups, RDA and Local Government on the Water Efficiency Program who are all supportive of investment that occurs consistent with socio-economic criteria. 9a. As outlined in criterion 4 the two properties where the irrigation modernisation works are proposed to occur are located within the Berri Irrigation District serviced by the Central Irrigation Trust. Representatives of CIT have been consulted about the program and specifically the approach to customer participation. A revised Attachment C_E has been prepared by the Central Irrigation Trust for this proposal and has been	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.

Efficiency Measures Criteria	Project Responses to Efficiency Measures Criteria	Adequate Response Y/N	State Assessment
	included as supporting documentation. The proposal is also well aligned to a number of the key themes within Riverland Wine's Strategic Plan (2014-2019) including Competitiveness, Market Growth & Profitability & Sustainability. 9b. The consultation with key regional bodies has assisted to identify the opportunities for the local region and this proposal is consistent with strategic directions and the vision and goals of these bodies.		
Potential Direct Water Market Impacts (Criteria 7a, 7b, 7c, 7d)	7a. The water savings nominated for this proposal are based on accepted industry benchmarks for the types of irrigation modernisation activities being undertaken. The nominated water savings have been subjected to a technical assessment by an Independent Approved Irrigation Professional (IAIP). The methodology for the water savings is described in more detail in Criterion 12. 7b. Attachment C_E to the proposal confirms that the nominated water access entitlement has been owned by the proponent for a minimum of 3 years. 7c. The water access entitlement to be returned (SA All Purpose Class 3) will not impact on the reliability, or yield of other	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. • 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.

Efficiency Measures Criteria	Project Responses to Efficiency Measures Criteria	Adequate Response Y/N	State Assessment
	entitlements across the Basin. 7d. The project will generate additional savings that the proponent can elect to make available on the annual allocation market or retain to reduce any future demand they may have on the broader water market, with either option assisting to soften demand and hence price.		
Contribution to Proponent Businesses and Irrigation District Viability (Criteria 4a, 4b, 4c)	4a. As mentioned in the response to criterion 2 this project will deliver significantly increased productivity in terms of returns per ML to the participating enterprise, which will in turn facilitate increased business profitability. The modernisation works will position the business to capitalise on improved returns for winegrape production in the SA Riverland. 4b. The vineyards to be modernised are part of Central Irrigation Trust's Berri Irrigation District which is the largest of CIT's irrigation districts in terms of water delivered to customers. The works will therefore contribute to the longer term sustainability of the business and the irrigation district more generally. 4c. The proposal is located inside Central Irrigation Trust's Berri district. The works will contribute to the longer term viability of 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 improved returns for winegrape production in the SA Riverland. • The project will contribute to the longer term viability of the properties which will provide benefits across the irrigation district and the trust more broadly which is consistent with current business plans.

Efficiency Measures Criteria	Project Responses to Efficiency Measures Criteria	Adequate Response Y/N	State Assessment
	properties which will provide benefits across the irrigation district and the Trust more broadly which is consistent with current business plans.		
Support for Regional Economies (Criteria 5, 6c)	5a. The winegrape industry is a critical sector of the Riverland region with the farmgate income for Riverland winegrape growers being $175M in the 2019 season (Source: Riverland Wine). Ensuring the on-going sustainability and profitability of the winegrape industry has major flow on benefits to local towns, the Riverland region, the State and the nation. 5b. As described in other responses the wine sector is of critical importance to the economy of the Riverland. Investing in works that improve the profitability and resilience of winegrape businesses ensures that the economic contribution can be sustained over time. 5c. This proposal will modernise an existing irrigation enterprise which will have flow on benefits to the irrigation district as a whole. 5d. All works will be undertaken by local contractors and the works will not result in any changes to on-farm employment. 6c. This proposal involves only a small	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. • Improve the profitability and resilience of winegrape businesses and ensure that the economic contribution can be sustained over time. • 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 proposal is also well aligned to a number of the key themes within Riverland Wine's Strategic Plan (2014-2019) including Competitiveness, Market Growth & Profitability & Sustainability.

Efficiency Measures Criteria	Project Responses to Efficiency Measures Criteria	Adequate Response Y/N	State Assessment
	percentage of assessed water savings being returned to the Australian Government. The savings retained by the proponent will assist beyond the farm gate as the additional water will be available to the annual allocation market.		

Social and Environmental Benefits (Criteria 2a, 2b, 2c,)	2a. This proposal is expected to deliver positive socio-economic and environmental outcomes at the farm, local, regional and State levels.
	
	The project involves upgrading two existing winegrape properties located near Barmera in the SA Riverland (refer attached property maps).
	
	As part of the upgrade, the existing overhead sprinkler irrigation system on a 5.8ha property will be converted to automated, surface drip irrigation to optimise irrigation management and efficiency. A second 3.5ha vineyard which is currently irrigated with low throw sprinklers will be upgraded to surface drip irrigation. A new pump and automation will also be installed at the 3.5ha vineyard.
	
	Across the 9.3ha of vineyards the proposed modernisation works have been independently assessed to reduce the annual irrigation requirement by 27.4ML. Approximately 75% (20.7ML) of the water
		Y	The application has:
			• Described the expected socio-economic and environmental benefits of their proposed project which include:
			  ○ Increased productivity in terms of return per ML 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

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	saving will be retained by the applicant which will deliver further adaptation, resilience and flexibility to future climate variability and water availability. All works will be carried out by local contractors which will deliver further economic stimulus to the region. The proposed works will also ensure the longer term sustainability and viability of the enterprise which will contribute on-going benefits to regional primary production support businesses. 2b. N/A 2c. N/A		applicable. • 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)	2d. The Delivery Partner has well established Work, Health and Safety (WHS) processes that have been specifically developed to best manage Australian Government funded irrigation infrastructure projects.	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 responses to criteria 5 and 9. 12a. Attachment C_E to the proposal confirms that the nominated entitlement volume for return has been owned by the applicant for the minimum 3 year period.		The application has demonstrated that the project will: • Address under-performing irrigation areas which will allow water to be used as efficiently as possible while maximising output (yield). • Generate additional water savings that will be

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	As outlined in criterion 7 the nominated water savings for this proposal have been prepared using industry benchmarks for the types of activities proposed. The project budget has also been formed through provision of formal quotes from reputable local service providers. 13a. As covered in responses to other criteria the proposed works are expected to generate significant productivity improvements for the enterprise and hence improved enterprise level profitability and flexibility. This will provide the enterprise with an increased ability to endure and adapt to future climate variability. In addition to increased profitability the proposed works will deliver significant improvements to irrigation efficiency and the water saving dividend (20.7ML) retained by the applicant will provide a buffer against future climate variability.		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.
Cultural Benefits **(Criteria 8a, 8b, 8c)**	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	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

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	enables irrigated businesses to be more sustainable into the future delivers significant benefits at the local community, regional and State scale. 8b. All goods and services associated with the implementation of this proposal will be sourced from local suppliers and as such will provide economic stimulus for the local community. The water recovered through this proposal will assist in delivering a healthy, working River Murray and Murray-Darling Basin which will support improving the level of protection of Aboriginal and community values. The Delivery Partner is continuing to investigate opportunities to increase the use of indigenous contractors however currently there are no such businesses operating in the irrigation service industry in the project location. 8c. N/A		required to identify cultural heritage sites and manage any impacts in accordance with relevant Commonwealth and State laws.

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
While the amount of water to be recovered is relatively small, it is the cumulative impact of additional water recoveries that amount to significant third party impacts.	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.
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.	

Relevant Public Comments to be responded to	Response to Relevant Public Comments
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. 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.
Independent research over a number of years, most recently from the University of Adelaide, has demonstrated that irrigators who participate in on-farm projects are highly likely to purchase additional water following the implementation of the project and the resulting increase in enterprise profitability.	

Relevant Public Comments to be responded to	Response to Relevant Public Comments
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.

[redacted] – Water Saving Methodology

Water Savings Substantiation – WEP Technical Assessment

Project ID: [redacted]

Crop Type: Winegrapes

Project Summary:

The project will involve undertaking integrated irrigation upgrades across 2 properties totalling 9.3ha which are located in the SA Riverland region of South Australia. The works are expected to generate water savings of 6.7ML and contribute to the longer term sustainability and profitability of the farming enterprise.

Water Saving Methodology:

On one property a total of 3.5ha of under vine sprinkler irrigation will be replaced by surface drip irrigation which is expected to generate water savings of up to 1.5ML/ha through more targeted irrigation and a reduction in the wetted area. A new 7.5kW pump, primary filtration, back up filtration, flushing submains and an irrigation controller upgrade are also included in the project works and while these upgrades will generate day to day operational and management efficiencies as the property is a single irrigation valve a conservative saving of 0.5ML has been assigned to these works.

On a second property, 5.8ha of existing overhead sprinkler irrigation will be converted to surface drip irrigation which is expected to generate water savings of up to 2.5ML/ha through more efficient and targeted application of irrigation. A new mainline, submains, primary & secondary filtration and flushing submains will also be installed and the system will be fully automated. The improved management and operation of the system due to the irrigation system modernisation is expected to generate further water savings of 0.5ML/ha. A continuous logging soil moisture probe will also be installed which will contribute to more informed irrigation decision making and generate savings of up to 0.5ML/ha.

Water Saving Activity	Area ha	Water Saving (ML/ha)	Total Water Saving (ML)	Conservative Water Saving (ML)
Overhead Sprinkler to Surface Drip Conversion	5.8	2.5	14.5	
Under Vine Sprinkler to Surface Drip Conversion	3.5	1.5	5.3	
Mainline, Automation & Control (New)	5.8	0.5	2.9	
New Pump, Filtration, Automation	3.5	0.5	1.8	
Soil Moisture Monitoring (New)	5.8	0.5	2.9	
Total Water Saving			**27.4ML**	**6.7ML**

Project Budget:

Project costs have been based quotes provided by the [redacted].

[redacted] – Water Saving Methodology

Irrigation Design:

Irrigation Designs have been completed by a certified designer for the irrigation system and are included as attachments to the project 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.

Declaration by Independent Approved Irrigation Professional

A: Project details

Assessor Name: [redacted] **Date:** [redacted]

CID No: [redacted] **Client name:** [redacted]

Project Name: [redacted] **Project No.** [redacted]

Submitted by: [redacted] **Irrigation Design by:** [redacted]

B: Project Scope

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:

i. 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;

   a. *Comment: The project proposal is installation of new drip irrigation systems, pumps, filtration and soil water monitoring equipment over 2 properties totalling 9.3Ha.*

   b. *The projected water savings from irrigation system and water management upgrades are considered reasonable and suitable for the winegrape crop grown.*

ii. the rationale for the water savings assessment is clearly explained;

   a. *Yes, described in Attachment to application. The water savings that should be achieved from the installation of new irrigation system and water management equipment on the 2 properties are considered realistic.*

iii. the projected water savings will be achieved while maintaining the agricultural production potential of the Property on which the Works would be completed as part of a Project;

   a. *A calculated 75.3ML is being retained by the grower for production. This represents a quoted 82 ML annual usage minus a 6.7 ML/ha of water savings, over a planted area of approx. 9.3 ha. This resultant 7.5 ML/ha surplus is sufficient for wine grapes to achieve full production.*

iv. the engineering solutions they entail are achievable and appropriate to the needs of the Eligible Irrigator and the Property/s;

   a. *The new drip irrigation system with new filtration and dripline flushing manifolds are suitable and should meet the needs of the irrigator and crop grown. Irrigation system design by certified irrigation designer.*

   b. *The irrigation management equipment with remote download is achievable and appropriate to meet grower needs.*

v. the projected costs are reasonable and realistic, and within the expected range for that type of infrastructure and scale of installation; and

   a. *Yes, costs are within the range expected for the supply and part installation of new drip irrigation system and irrigation management probes.*

Signed as the Independent Approved Irrigation Professional for this Project

[redacted]

Name

[redacted]

Signature

[redacted]

Date