Government of South Australia
Department for Environment and Water

SOUTH AUSTRALIA - ADDITIONAL EFFICIENCY MEASURES CRITERIA ASSESSMENT OUTCOME

Project Reference No:	763514
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

This project is proposing to undertake integrated irrigation upgrades on a 12.0ha winegrape property located near Cobdogla in the SA Riverland region.

The primary water savings for the project will be achieved through the installation of a new automation and control system which will automate the pump operation and the 12 irrigation valves on the property. As the property contains a large number of valves relative to the irrigated area the installation of automation and control with remote access capability will deliver water savings and improve operational efficiency. A new variable speed drive pump and new primary filtration will also be installed to replace the existing pump and filter which is under capacity resulting in water and power inefficiencies.

All goods and services for the project will be supplied by local irrigation contractors meaning that the program investment will remain in the local community and provide a direct economic stimulus. The works are expected to generate increased yields which will result in improved profitability for the enterprise.

As the works will directly address existing inefficiencies in the water management on the property the irrigation induced impacts on the adjacent floodplain, wetland and Riverine environments will be minimised predominantly through a reduction in drainage accessions.

A conservative water saving of 3.9ML, or 0.33ML/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 3.9 ML to the environment, with the applicant retaining 9 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)
New Pump with Variable Speed Drive	12.0	0.375	4.5	3.9
Automation and Control System	12.0	0.5	6	
Automatic Primary Filtration	12.0	0.2	2.4	
Total Water Saving			**12.9**	

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)	9. Please refer to response to 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, 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. Refer to Attachment B confirming that the volume of water entitlement owned and the period of ownership. The project has been independently assessed and this process included the provision of formal quotations to establish the nominated	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.

	budget for the project. This assessment confirms that only a conservative volume of the assessed water saving has been nominated for transfer 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. 7b. Attachment B verifies that the nominated water access entitlement meets the 3 year ownership requirement. 7c. As the property involved in this proposal produces a permanent crop (winegrapes) existing owned 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 described above in 7c. this project will generate a net increase in water supply and will not directly increase the price of water.		• 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.

Contribution to Proponent Businesses and Irrigation District Viability (Criteria 4a, 4b, 4c)	4a. The property is located within the distribution network of the Cobdogla 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. 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. 4b. The property is located within the Cobdogla 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 Cobdogla 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 operation and management of the system. 4c. As described in criteria 4b. the property is located within the footprint of the Cobdogla 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	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.

	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 plans.		
Support for Regional Economies (Criteria 5, 6c)	5a. As outlined in 2a. all project related goods and services will be sourced from local service providers so investment will remain in the regional community and provide direct economic stimulus. The works will also ensure the business is more viable and able to continue the contribution it makes to the local community through employment and expenditure. 5b. Currently the property is not operating as efficiently as it could be and the proposed works will address the current limitations with irrigation management. The benefits of improving the productivity of on-farm water use extend beyond the farm gate and will provide flow-on benefits to the local community, region and the State. 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. 5c. As mentioned in responses to previous criteria the property is located within the Cobdogla Irrigation Trust and the works are focused on investing in the property to ensure it is sustainable and viable in the	Y	The application has demonstrated that the project will: • Support the winegrape industry which is an important sector 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.

	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. 5d. The proposal will under-pin existing direct employment and also ensure employment along the supply chain via harvesting, processing and distribution of wine grapes is maintained and potentially enhanced. 6c. While the project will deliver 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 works will ensure the property is viable and sustainable into the future and continues to contribute product to local processing facilities which will assist with underpinning jobs along the supply and distribution chains. The project will also generate retained 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 proposal is only small scale however it will facilitate an improved profitability for the business involved. The community in which the project is located is under-pinned by the viticulture industry and therefore investment that	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 megalitre for the business and region.

	contributes to the long-term sustainability of local businesses provides flow on benefits to the regional community. 2b. As this project is focused on on-farm works it is not expected to directly contribute to amenity values within the local community. 2c. N/A- Project is under $4 million		○ 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.
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. 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	10a. Please refer to response to 5b.	Y	The application has demonstrated that the project

and Climate Change Impacts (Criteria 10a, 13a, 12)	13a. As has been described in previous criteria the works to be undertaken through this proposal are projected to generate significant year in year out water savings of which only approximately 30% is nominated for transfer to the Australian Government. The proposal will generate retained savings that will assist the proponent to better manage climate variability especially where this results in reductions in water availability in dry seasons. Additionally when allocations are high the proponent will have surplus water relative to annual production requirements that can be made available on the seasonal allocation market which will provide an additional revenue stream and broader flow-on benefits with respect to water supply in the Southern Murray-Darling Basin. 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 transfer. The project works budget has also been substantiated through formal quotations and the funding request is consistent with the quoted costs to deliver 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.
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.	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

	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 economies this will provide further benefits. 8b. The project will engage local contractors to deliver all works which will provide a direct economic stimulus within the local community. It is these same local agricultural service businesses that in turn support local community and sporting organisations via sponsorship. The Riverland region and the small towns within the region are very reliant on a sustainable irrigation industry to drive their local economies. Improvements in water management also help to assist to deliver flow-on benefits to local and regional environmental assets such as the River Murray and wetlands and floodplains. 8c. N/A project is under $3 million		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.

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.
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.	

	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.
Evidence suggests that those who participate in on-farm 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.	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.

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: [redacted]

Crop Type: Wine Grapes

Project Summary:

The project will be replacing existing pumping infrastructure with a new pump and motor that has an integrated VSD and the primary filtration will also be replaced at the same time. A new automation and control system has been included to automate the pump as well as the field valves, the works will encompass the whole 12.0ha area planted to winegrapes located near Cobdogla in the SA Riverland.

A conservative water saving of 3.9ML, or 0.33ML/ha is expected to be generated from the

project. **Water Saving Methodology:**

The current pumping infrastructure is aging and fixed speed servicing 12 irrigation valves across the 12.0ha property and therefore the installation of a new pump set coupled with a VSD and automation will provide the irrigator with complete flexibility within their irrigation system management.

The irrigator will be able to manipulate the system to deliver the exact plant water requirements based of varietal needs reducing over pumping and excessive water use. As shown on the irrigation design one of the 12 x existing irrigation valves is also under vine sprinkler irrigation and therefore has quite a different flow rate to the valve units containing surface drip irrigation. The new pump with VSD will allow this valve to be irrigated as a standalone irrigation shift and therefore ensure the application rate best meets vine water requirements.

The installation of a new automation and control system will be particularly beneficial for irrigation management and labour efficiency as the system contains 12 x irrigation valves which is quite intensive for a property of its size. With a remote access control and automation system that can send notifications the applicant will be able to manage the system more efficiently and accurately and monitor water use preventing over irrigation, while protecting their vineyard during extreme weather events.

The installation of a new automatic main filtration unit will increase the capacity of the properties primary filtration system with the existing filtration being under capacity which limits the planted area that can be irrigated in a single shift and the operation of the filtration system itself. The new primary filtration will also ensure that system maintenance activities occur as efficiently as possible reducing the amount of water and labour that is used to maintain the performance of the irrigation system. The filtration unit will also be capable of managing varying water quality through the use of the pressure differential device.

Water Saving Activity	**Area (ha)**	**Potential Water Saving (ML/ha)**	**Potential Water Saving (ML)**	**Conservative Water Saving (ML)**	**Conservative Water Saving (ML/ha)**
New Pump with Variable Speed Drive	12.0	5%^	4.5		
Automation and Control System	12.0	0.5	6.0		
Automatic Primary Filtration	12.0	0.2	2.4		
		TOTAL	**12.9**	**3.9**	**0.33**

^ 12.0ha x 7.5ML/ha x 5% = 4.5ML

Project Budget:

Project costs have been based on quotes provided [redacted].

Irrigation Design/Plan:

An Irrigation Design has been completed by a professional 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

Declaration by Independent Approved Irrigation Professional

A: Project details

Assessor Name: [redacted] **Date:** 7/10/20

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

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

Submitted by: [redacted] **Irrigation Equipment 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 to fully Automate the existing 12Ha property , including new remote access irrigation control system, new pump/motor including VFD and upgraded primary filtration system ..*

   b. *The projected water savings of 12.9ML (3.9ML offer ,0.33ML/ha) from the upgraded irrigation system components are considered reasonable and realistic for Wine grape production on this property in the Riverland area.*

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

   a. *Yes, described in Attachment to application. I agree with the methodology used to calculate the water savings. The water savings that should be achieved from the installation of new pump upgraded primary filtration and irrigation system automation (12.9ML savings from published data) are considered realistic and achievable.*

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 185.8ML (189.73ML CIT class 3 entitlement -3.9ML offer) will be retained by the grower for production. This available volume is more than adequate to meet full water requirements of approx. 85ML for the currently planted 12 Ha of Wine grapes.*

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

   a. *The upgrades to pump/motor including VFD , upgraded automatic primary filtration system and new remote access irrigation system automation will improve irrigation system operation efficiency and reduce labour time. The changes are appropriate to meet the needs of the property and irrigator.*

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

a. *Yes, costs are within the range expected for the supply and installation of the pump/motor , primary filtration and system automation components.*

Signed as the Independent Approved Irrigation Professional for this Project

[redacted]

Name

Signature

7/10/20

Date