Government of South Australia
Department for Environment and Water

SOUTH AUSTRALIA - ADDITIONAL EFFICIENCY MEASURES CRITERIA ASSESSMENT OUTCOME

Project Reference No:	981448
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 is planning to extend an existing area of pipe and riser system to service an additional 7ha of border check irrigation. The piped supply will also provide improved flow rates to 4ha that will remain serviced by an earthen channel delivery system.

In addition the project is also proposing to install a new siphon (metered supply direct from the River Murray) which will significantly improve command of water to 32ha of border check irrigation. Currently 13 irrigation bays areas are serviced by an existing siphon that requires long lengths of delivery channel to be filled each time irrigation occurs. The new siphon will enable the areas to be operated independently of each other which will improve flow rates at the bay outlets and hence the efficiency of irrigation.

A conservative water saving of 10.7ML per annum is expected 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.

7ha of earthen channel delivery system will be replaced with a new pipe and riser system. A water saving of up to 0.5ML/ha is expected to be achieved with the piped supply system based on the Goulburn Broken Catchment Management Authority Water Savings Calculator.

The increased command to the 4.0ha area that will remain earthen channel delivery is expected to achieve water savings of up to 10% of annual water use through improved flow rates to the area.

The new siphon will provide significantly increased command to 32.0ha of border check irrigation and it is anticipated this will save a further 10% of annual water use through the increased flow rates provided at the bay outlets.

The project is expected to return a conservative 10.7 ML to the environment, with the applicant retaining 19.6 ML of water savings.

Water Saving Component	**Area ha**	**Water Saving (ML/ha)**	**Estimated Water Saving (ML)**	**Total volume of Eligible Water Rights offered for transfer (ML)**
450mm Pumped pipe and Riser	7.0	0.5	3.5	10.7
Improved Flow Rates/Command (via Piped Supply)	4.0	0.3	1.2	
Improved Flow Rates/Command (via New Siphon)	32.0	0.8	25.6	
Total Water Saving			**30.3**	

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. 6b. This proposal is located within the Lower Murray Reclaimed Irrigation Area (LMRIA). A number of feasibility studies have been undertaken by Local & State Government and the Regional Development Authority (RDA) on alternative land-use options for the LMRIA. Irrigated production within the LMRIA is seen to provide triple bottom line outcomes in that it generates economic activity, which in turn supports jobs and active land management delivers environmental outcomes through the adoption of sustainable agriculture systems. 9a. The Delivery Partner has consulted with Local Government and key industry sectors including DairySA and SA Dairy Farmers Association (SADA) on the opportunities for investment through the Water Efficiency Program to assist with building the resilience and adaptability of water dependent businesses in the Murraylands region. As this proposal involves a private diverter it does not have any impact on local irrigation infrastructure operators. 9b. The consultation with key regional bodies has assisted to identify the opportunities for	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 proposed project is not located within an irrigation network, so the application is not required to provide evidence that the relevant network operator or water corporation is involved in or aware of the project.

	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. Attachment E verifies that the volume of water access entitlements nominated for transfer have been held by the proponent since 1 July 2009. The proposal has also been subject to an independent technical assessment which confirmed the proponent is seeking to return 35% of the verified water savings. 7b. As mentioned above water licensing instruments confirm that the nominated water access entitlements have been held since 1 July 2009. 7c. The works will generate water savings that will be retained by the proponent. This will provide the proponent with increased adaptability against fluctuating water availability and an additional income through making additional water saving available via the annual allocation market. 7d. The proponent is only seeking to return a small volume of water, which in itself will not materially impact on the price of water, however any impact would contribute to overall downward pressure on water prices given a greater amount of savings are to be retained by the proponent. The value of permanent water entitlements has also continued to increase over the past 12	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.

	months in the absence of water recovery programs. The project will generate additional savings that the proponent can elect to make available on the annual allocation market which will assist to soften demand and hence price.		
Contribution to Proponent Businesses and Irrigation District Viability (Criteria 4a, 4b, 4c)	4a. The proponent is a private diverter for the purposes of irrigation water delivery and the proposed works will contribute to the future viability and sustainability of the business by improving the productivity and efficiency of on-farm water use. 4b. The proposed works are aimed at improving the operating efficiency of the existing irrigation system. All areas of the property that will be subject to works are currently actively irrigated and the works will ensure irrigation is as efficient and productive as possible. Importantly, the works will overcome existing inefficiencies that if not modernised may become unviable into the future impacting on farm profitability. 4c. While the proposal is located within an irrigation district/trust, the trust only provides drainage services and not water delivery and therefore the proposed works are consistent with existing management plans for the trust.	Y	The application has demonstrated that: • The project will contribute to the future viability and sustainability of the business by improving the productivity and efficiency of on-farm water use. • The project is focused on modernising existing inefficient irrigation systems which will underpin irrigation management into the future and will not upgrade water supply infrastructure where the system, or parts of the system, are not going to be used in the future. The project is not located within an irrigation network, so the application is not required to take account of relevant irrigation business' strategies or plans.
Support for Regional Economies (Criteria 5, 6c)	5a. As mentioned in a prior response the works will be undertaken by local contractors	Y	The application has demonstrated that the project will:

	ensuring investment supports the local economy. The farm also supplies a boutique dairy company so continuity and security of supply will underpin jobs both on-farm and off-farm along the supply chain. 5b. The works will ensure a family owned and operated dairy enterprise is profitable and sustainable moving forward and best adapted to manage varying levels of water availability which is most important given the reliance on on-farm produced stock feed. 5c. As has been mentioned, the proposal is located within an irrigation district however the district only provides drainage management services. The works will assist the on-going viability of the enterprise which will have flow on benefits to the irrigation district as a whole. 5d. The proposal will assist to underpin on-farm jobs along with jobs further up the supply chain e.g. dairy factory. 6c. As the proponent is a certified organic producer there is a strong reliance on the production of on-farm feed supplies for the dairy operation. This means that allocations derived from existing held water entitlements are utilised on-farm year on year. These works will ensure the farm is as efficient and productive as possible and the implementation of the project works will not have negative impacts both for the local or		• Ensure a family owned and operated dairy enterprise is profitable and sustainable moving forward and best adapted to manage varying levels of water availability which is most important given the reliance on on-farm produced stock feed. • Assist the on-going viability of the enterprise which will have flow on benefits to the irrigation district as a whole. • Guarantee continuity and security of supply which will underpin jobs both on-farm and off-farm along the supply chain. • 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.

	broader region.		
Social and Environmental Benefits (Criteria 2a, 2b, 2c)	2a. This proposal is expected to generate positive economic and environmental impacts at the farm, local community, regional and State scale. The proposed works will provide the business with further adaptation and resilience through improved productivity and profitability. The works will be undertaken by local contractors ensuring the investment delivers stimulus to the local economy. The farm is also certified organic and the works will assist with producing 'home grown' feed in a cost effective and water efficient manner. 2b. N/A - the proposed works are on-farm there will not be enhanced amenity of public spaces. 2c. N/A	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 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	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

	irrigation infrastructure projects. Development approval via Local Council will be required to undertake the proposed installation of a new siphon and this will be obtained prior to the project commencing.		will comply with all relevant laws including work health and safety laws.
Business Resilience, including Drought and Climate Change Impacts (Criteria 10a, 13a, 12a)	10a. As has been outlined in responses to other criterion this proposal is seeking to improve the productivity of on-farm water use of a medium scale dairy farming operation. Being an organic producer, the proponent has a heavy reliance on 'home grown' stock feed to ensure compliance with organic certification and manage cost of production pressures. This business model means that allocations derived from held water access entitlements are utilised on-farm on an annual basis and currently some of the irrigation areas are not performing as efficiently as they could be. The proposed works will address under-performing irrigation areas which will allow water to be used as efficiently as possible while maximising output (yield). The retained water savings generated through the proposal will also improve the capacity of the proponent to better manage periods of reduced water availability. 12a. The proposal has been subjected to an independent technical assessment for a certified irrigation professional. The proponent is not seeking to return a water volume that exceeds the assessed water	Y	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 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.

	saving. 13a. The works have been assessed to generate annual water savings of 30.3ML however only 10.7ML of this will be returned to the Australian Government. The retained savings will provide the proponent with an improved capacity to adapt to fluctuating water availability. The retained savings will also enable the proponent to improve the productivity of on-farm water use.		
Cultural Benefits **(Criteria 8a, 8b, 8c)**	8a. The Murraylands region is dominated by primary production with the sector accounting for approximately 34% of gross regional product. While industry segments such as dairy have declined in recent times, there remains a critical mass to support both on-farm and off-farm employment and service provision. This proposal will contribute to the on-going sustainability and resilience of a family owned dairy farming enterprise in the SA Murraylands region and ensure the primary production sector continues to be a strong driver of the local and regional economy. 8b. The proposal will see the engagement of local contractors to undertake the works which will ensure the economic stimulus provided by the project remains in the local community. The works will also ensure the participating enterprise remains viable and profitable into the future which will underpin local employment as well as jobs further	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.

	along the dairy supply chain. 8c. N/A		

In-Principle Recommendation

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

Part 2 - State Response – Public Comments

Relevant Public Comments to be responded to	Response to Relevant Public Comments
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 applicant is a private diverter and is not located within an irrigation network, so the application is not required to take account of relevant irrigation business' strategies or plans.

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]

Re Proposal Reference No. [redacted]

Declaration by Independent Approved Irrigation Professional

- I declare, as an Independent Approved Irrigation Professional agreed to under the Deed, that:
  a) I have carried out the technical and practical feasibility assessment for the Works; and
  b) I have had no previous involvement in preparing this Project Proposal.
- I certify that the Project Works are technically and practically feasible, including that:
  a) the projected water savings they will generate are reasonable and realistic, including being appropriate to the crops, soils, climates, water delivery system and topography of the Eligible Irrigator's Property;
  b) the rationale for the water savings assessment is clearly explained;
  c) the projected water savings will be achieved while maintaining the agricultural production potential of the Property on which the Works would be completed as part of a Project;
  d) the engineering solutions they entail are achievable and appropriate to the needs of the Eligible Irrigator and the Property;
  e) the projected costs are reasonable and realistic, and within the expected range for that type of infrastructure and scale of installation; and
  f) the projected water savings they will generate represent the conservative or minimum feasible volume that could be derived from completing the Works.

Signed as the Independent Approved Irrigation Professional for this Project

[redacted]

Signature

Date 05/03/2020

[redacted]

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

Project ID: [redacted]

Crop Type: Annual & Perennial Pasture (Dairy)

Project Summary:
This project is proposing to extend an existing area of pipe and riser system to service an additional 7.0ha of border check irrigation on a biodynamic dairy farm located near Murray Bridge in SA. The piped supply will also provide improved flow rates to 4.0ha of adjacent border check irrigation. In addition the project is also proposing to install a new siphon (metered supply direct from River Murray) which will significantly improve command of water to 32.0ha of border check irrigation.

A conservative water saving of 10.7ML per annum is expected to be generated from the nominated works.

Water Saving Methodology:
7ha of new pipe and riser will be added onto an existing piped supply system which was installed in 2017, currently the 7ha area is serviced by an earthen channel delivery system. A water saving of up to 0.5ML/ha is expected to be achieved with the piped supply system as heavy clay soils are present in the upgrade area which are well suited to surface irrigation in addition to the general management efficiencies the piped supply provides.

A 4.0ha area will remain earthen channel delivery however it will benefit from the newly installed piped supply through improved flow rates to the area. The increased command is expected to achieve water savings of up to 10% of annual water use.

The 11ha described above is used to grow annual pasture with starter/finishing irrigations and as such water use is based on 3 x irrigations of 1ML/ha (3.0ML/ha) per season.

A new siphon will also be installed which will provide significantly increased command to 32.0ha of border check irrigation. Currently 13 bays are serviced by a single siphon meaning large volumes are required for channel filling and flow rates are reduced at the irrigation bays located a long distance from the siphon point. A water saving of up to 10% of annual water use is expected to be generated through the increased flow rates provided at the bay outlets.

The 32ha described above is used to grow perennial pasture (ryegrass/lucerne) and as such water use is based on 8 x irrigations of 1ML/ha (8.0ML/ha).

Water Saving Activity	Area ha	Water Saving (ML/ha)	Total Water Saving (ML)	Conservative Saving (ML)
450mm Pumped Pipe & Riser	7.0ha	0.5ML/ha*	3.5	
Improved Flow Rates/Command (via Piped Supply)	4.0ha	10%^	1.2	
Improved Flow Rates/Command (via New Siphon)	32.0ha	10%^^	25.6	
Total Water Savings			**30.3ML**	**10.7ML**

*GBCMA Water Savings Calculator

^4ha x 3ML/ha x 10% (Annual Pasture)
^^32ha x 8ML/ha x 10% (Perennial Pasture)

Project Budget:

Project costs have been based quotes provided by [redacted]

Irrigation Design:

An Irrigation Design has been completed by a certified designer for the irrigation 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.