



Elwah Pumpers Scheme Modernisation

Assessment against Socio-Economic Criteria as part of the Off-Farm Efficiency Program

November 2023

Table of Contents

Table of Contents	2
Section 1: Overview	3
1.1 Project Summary	3
1.2 About Elwah Pumpers Group	3
Section 2: Project Description	6
2.1. Project outputs at a glance.....	6
2.2. Project Scope.....	6
2.3. Project Delivery	8
2.4. Licencing and Approvals	8
Section 3: Socio-Economic Criteria	8
3.1. Preparing for the future	8
3.2. Benefits to industry	9
A local approach to delivery	10
3.3. Benefits to community	11
3.4. Environmental benefits	12
3.5. Supporting the Murray Darling Basin Plan	12
3.6. Cultural impacts and benefits.....	13
3.7. Community support and engagement	14
3.8. Positive Economic Outcomes	14
3.8.1. Management of future lifecycle costs.....	14
3.8.2. No impacts to the water market	14
3.9. Water savings shared between the environment and water users	14

Section 1: Overview

1.1 Project Summary

The Elwah Pumpers Scheme Modernisation Project will help to create a climate resilient economy through the delivery of infrastructure that replaces outdated and inefficient systems. This will increase water security and water quality and strengthen the future viability of the region. It will improve delivery efficiency from 65% to 91%, while also increasing delivery capacity of the system from 90ML per day to 150ML per day.

Elwah Pumpers have identified areas within their open channel system that currently experience considerable water loss through seepage and the proposed works will address these issues.

The Elwah Pumpers Group is proposing a **\$15,791,433** project for channel rationalisation and realignment, lining to existing channel areas, an upgrade of a pump station and new metering and automation systems that will deliver **410ML** of Murrumbidgee Domestic and Stock water entitlements to the environment.

The project will involve:

- Channel realignment, including High Density Polypropylene (HDPE) lining of 5.4km of existing and new channel (high loss section) and construction of a further 23.3km of new channel system.
- Rationalisation of existing 37km channel
- Refurbishment of pump site and installation of new pump and rising main
- Metering, automation, easements and fencing.

The project will support local industry and regional economies by creating employment opportunities through project construction and procurement of supply services. More broadly, the improved security and level of supply delivered to irrigation businesses is expected to provide long-term drought and climate resilience and productivity improvements, generating flow-on benefits to the regional economy, including local employment opportunities.

1.2 About Elwah Pumpers Group

Elwah Pumpers Group are located in the Hay District of South-Western NSW across the traditional lands of the Wiradjuri people. The Hay LGA encompasses the township of Hay and villages of Maude and Booligal with a population of approximately 2828 (2021 Census). The area is renowned for its agricultural industry particularly in wool, rice and cotton. In 2022 the Gross Regional Product (GRP) of the region was \$189 million with Agriculture accounting for 40% of total GRP.

Elwah Pumpers is a joint water supply scheme, operating as an incorporated association, that operates an open channel system to deliver irrigation and stock and domestic water to 10 landholders from the Murrumbidgee River. Elwah Pumpers have a pump station located on the southern side of the Murrumbidgee River, approximately 15km to the east of Hay, NSW.

Elwah Pumpers was formed in the 1960's and an open channel was built shortly afterwards. At the time of construction water was attached to the title of the landholdings, and transmission losses were able to be tolerated at a much higher rate when water was tied to land title and not able to be traded on an open water market as it is today.

Currently the Elwah Pumpers scheme delivers irrigation water through a 37km open channel scheme, which is only currently viable when it is linked with the pumping of other classes of water when allocations allow, in order to absorb transmission losses.

The Elwah Pumpers scheme has high water conveyance losses of 35% from the river offtake point to farm outlet point in an average water use year.

In low allocation years, more water, as a percentage of total use, is required to wet up the channel because the channel is used less frequently due to this inefficiency. This results in an increase of conveyance loss to 46%. For example, 100ML pumped at river, will equate to deliver on farm of 54ML in a low allocation year. In an average year, 100ML pumped at the river equates to a delivery of 65ML. The project will result in delivery efficiencies of 91% such that 100ML of pumped river water, will equate to 91ML delivered. This results in increased agricultural productivity by reducing variability of crop production from year to year.

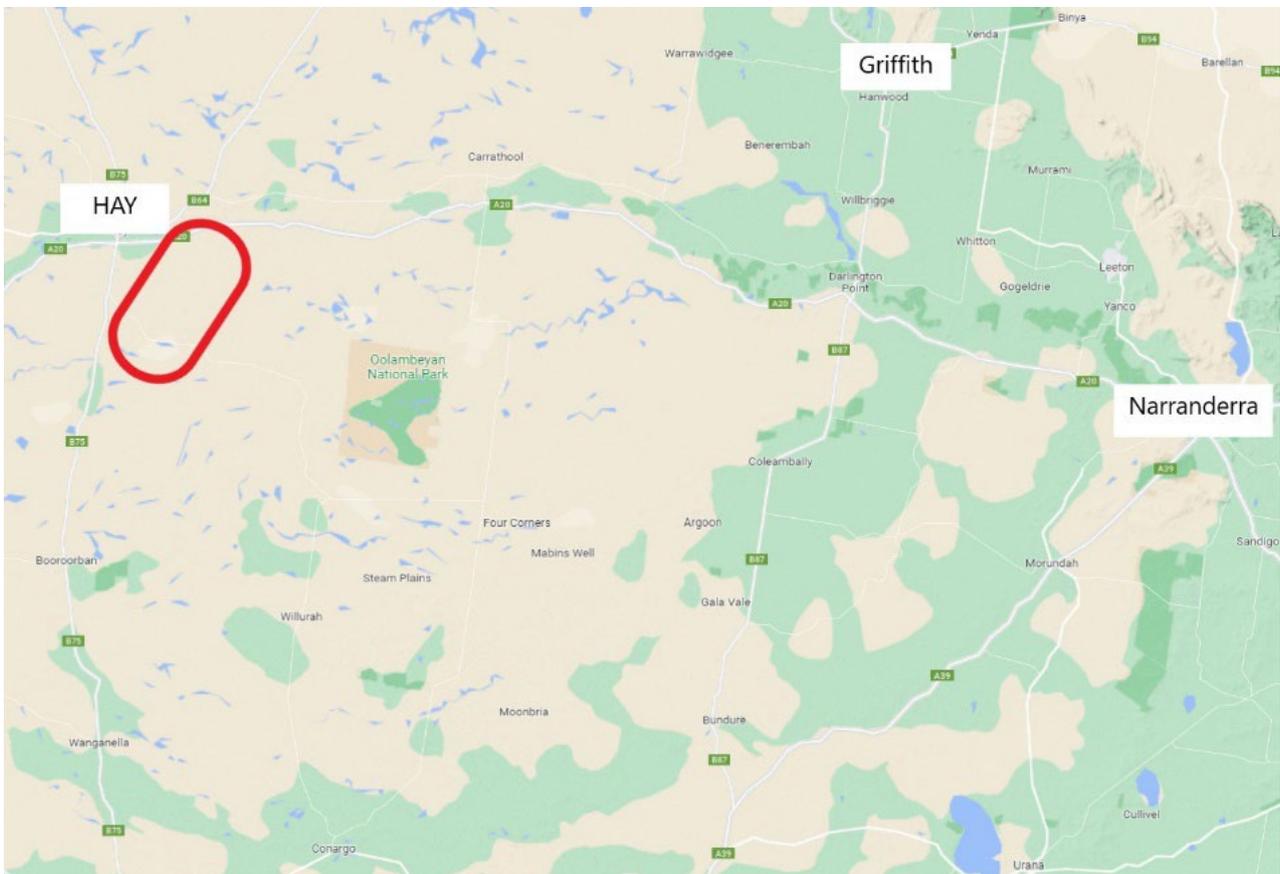


Figure 1 Location of project to the region (in red)

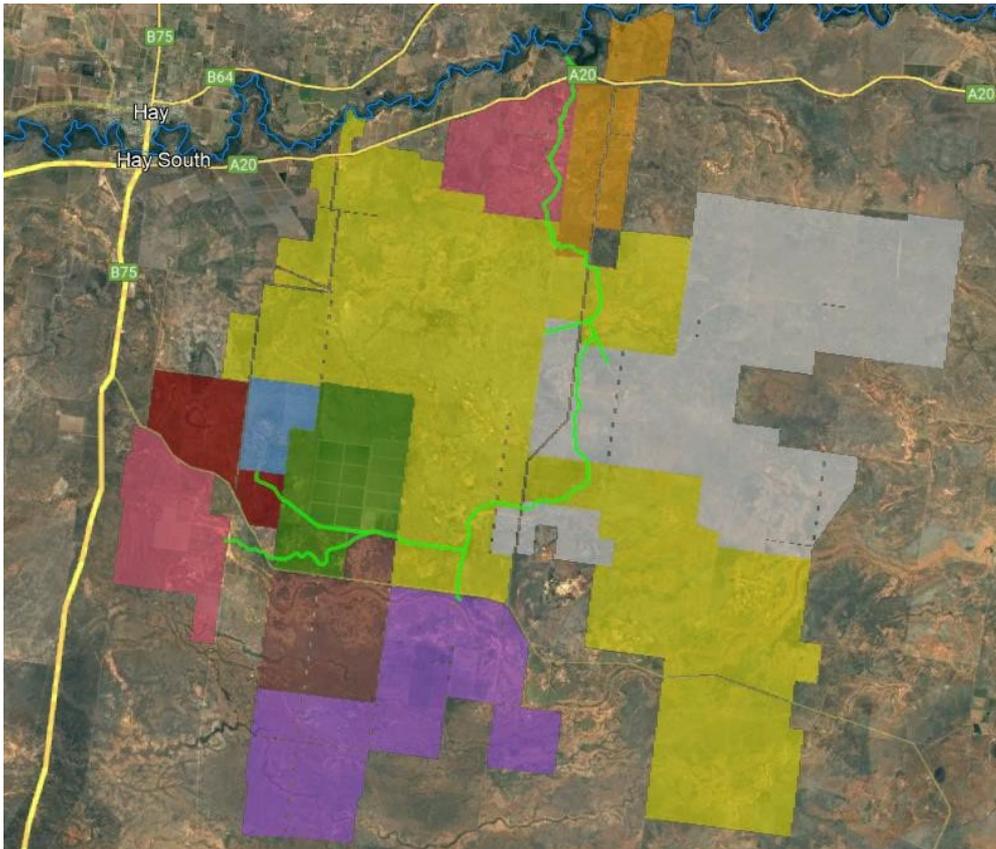


Figure 2 shows the existing irrigation scheme, source: Pinion Advisory, 2023.



Figure 3 shows the existing Elwah Pump Station on the Murrumbidgee River proposed to be upgraded. Source: Pinion Advisory, 2023.

Section 2: Project Description

2.1. Project outputs at a glance

The project will modernise the existing irrigation scheme with new infrastructure including:



1 new pump station and rising main



Realignment and lining of channel



Rationalisation of existing channel



Metering, automation, easements, and fences

2.2. Project Scope

In August 2022 the Gunbar, Hay, Booligal, Carrathool and Goolgowi (GHBCG) Water Group was awarded \$1.24 million under the Off-farm Efficiency Program (OFEP) to investigate the feasibility of providing increased water security and quality to the Hay region through modernising existing water delivery systems and constructing new infrastructure, including the Elwah Pumpers. The feasibility project findings have informed the Elwah Pumpers Scheme Modernisation project proposal.

The feasibility study identified that a modernised single water delivery system would increase the delivery capacity of the Elwah Pumpers system to enable more efficient delivery of water in larger and shorter pulses of water for subsequent on-farm use and storage.

This would include a new channel system, a pump station, and lining and realignment of high loss sections within the existing channel system. The project will include:

- A new pump station and rising main
- 5.4km of new and existing channel lined with HDPE
- 23.3km of new channel
- 5 water meters and 4 regulators
- Automation, water ordering system, and radio network

- 47km of fencing and gates
- Construction of 6 easements
- Construction of 13 crossings

The modernised single water delivery system will result in:

- Improve delivery efficiency from approximately 65% to 91%
- Water saving of 493 ML.
- Return 410ML of water entitlements for the environment.

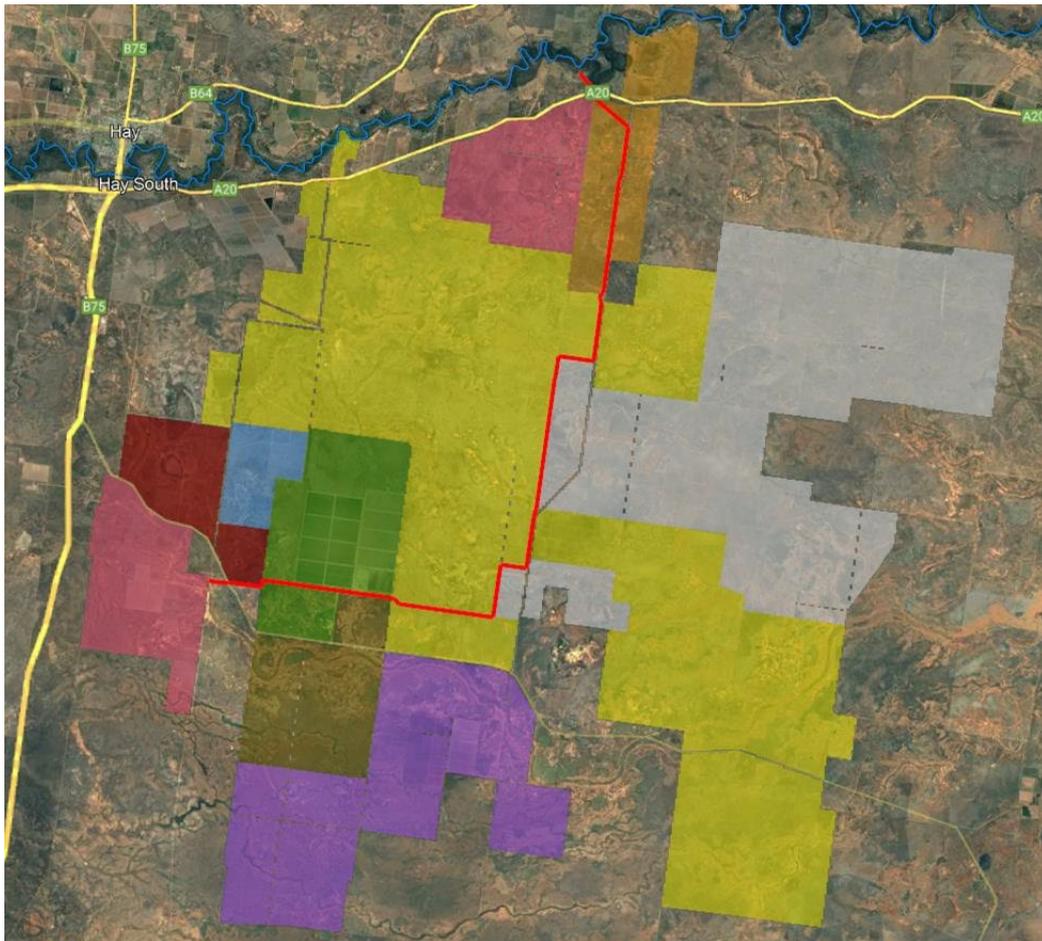


Figure 4 shows the proposed modernised irrigation scheme, source: Pinion Advisory, 2023.

2.3. Project Delivery

The feasibility project identified that the Elwah Pumpers Scheme Modernisation will be delivered as follows:

- Construction approvals
- Channel procurement, materials and construction
- River pump station preparation – pump mechanics and electricity
- Modernised rationalised channel to outlets
- Outlets installed from modernised channel.
- Construct council road crossing

A scoping approval report has also been commissioned which provides details on the construction approvals required throughout the lifecycle for this project.

The concept design for the Elwah Channel modernisation project optimally utilise the water resources, minimises losses, and maximises water accessibility for both domestic use and irrigation needs. The concept designs take into account factors such as terrain, hydrology, and community requirements, enabling the modernisation project to be not only cost-effective but also environmentally sustainable.

2.4. Licencing and Approvals

Elwah Pumpers Group proposes to engage a specialist water infrastructure project manager to oversee the program of works including the delivery of all necessary planning approvals.

As part of the feasibility study a thorough review of the required licences and approvals necessary for the delivery of the Elwah Pumpers project was conducted. Works include a Statement of Environmental Effects, Development Applications, Applications for owners' consents (Crown Lands), cultural heritage surveys and biodiversity offsets. Consent is required for works in road reserves, licences are required for Crown Licences and Works Approvals.

Elwah Pumpers Group have engaged with the Hay Local Aboriginal Land Council (Nari Nari Tribal Council). The group have committed to use local First Nations groups for cultural heritage studies.

Section 3: Socio-Economic Criteria

3.1. Preparing for the future

It is crucial for primary producers and rural communities in the area to prepare for climate change by investing in water efficiency infrastructure. Climate change is already challenging regional areas through altered weather patterns, including prolonged droughts, heatwaves, and unpredictable rainfall. These changes directly impact water availability, making it essential to manage water resources more efficiently.

By investing in water efficiency infrastructure, Elwah Pumpers will enhance their resilience to climate-related challenges. Efficient and modernised water distribution networks will enable efficient utilisation of limited water supplies and maintain agricultural productivity even during periods of water scarcity.

The project will contribute to long-term sustainability by conserving water resources and reducing overall water consumption. This not only helps mitigate the impact of climate change but also supports the ecological health of the Murray Darling Basin, preserving the environment and biodiversity for future generations.

Additionally, preparing for the future through water efficiency measures fosters social cohesion and community resilience. Collaborative efforts to manage water resources more effectively can bring rural communities together, facilitating the exchange of knowledge, best practices, and the development of adaptive strategies.

The analysis from the feasibility project final report concluded that the proposed investment in this project would deliver a positive socio-economic outcome due to water efficiency improvements for a community that is strongly dependent on the viability of agriculture.

The proposed project provides an opportunity to realise significant community and regional benefits and increase water savings, while preparing water users for the future.

The feasibility project assessed the merit of Elwah Pumpers Scheme Modernisation and found it will deliver a positive economic stimulus to the region, including embedded climate resilience in the community, increased economic productivity, a healthier environment and job creation.

This project will enable the delivery of water during periods with reduced water availability. The new water delivery system will be able to maintain production whereas the existing inefficient water delivery system meant that during low water availability/allocation periods the irrigators could not grow a crop.

Historically, all 10 properties included irrigation in their mixed farming enterprises, but the poor channel condition has reduced this to only 3 properties that have tolerated the losses and taken water for irrigation since the millennium drought. Rationalisation and modernisation of the channel is expected to increase the number of properties that include irrigation activities – leading to increased production and flow-on benefits to communities.

The Project will embed sustainability within the local economy by allowing production to continue in drier years. This has a flow on effect of retaining local jobs reliant on a productive primary industry sector. As a result of the increased delivery efficiency of the upgraded system it will allow Elwah Pumper to grow cotton in years of low water allocation. In 2020/21 the production of cotton accounted for \$23,000,000 in agricultural product or 31% of all agricultural production for the Hay LGA and accounted for 24 local jobs. In previous years of low allocation, due to the inefficiency of the scheme, water was not used for productive purposes. The Elwah Pumpers project will result in increased production stability over time ensuring local jobs are created and retained in dry years.

3.2. Benefits to industry

Elwah Pumpers project will enable the delivery of water during periods with reduced water availability. The project will support positive socio-economic outcomes by improving the productivity of grazing (cattle and sheep) and cropping operations.

The new water delivery system will now be able to maintain production whereas the existing inefficient water delivery system means that during low water availability/allocation periods the irrigators will not grow a crop. On basic modelling within the Elwah Pumpers there is identified potential for irrigation production to rise by more than 50%.

The project will allow landholders to look at alternative crops/production, and under current production systems has a potential to add at least 5 permanent employees to the combine businesses operating within the water scheme, servicing a combined landholdings of over 25,000 ha and within that area irrigation production land of 3132 ha.

Currently the scheme supports an annual gross cotton production of \$3M per annum across the scheme. As a result of the project, the scheme is predicted to realise an increase in gross cotton production value to into the local economy of \$7.2M per annum this would be also coupled with winter cereal \$2.4M per annum and pasture production and the potential for higher earning permanent production systems.

It will provide a better supply of livestock water to allow an increase in livestock watering points and flows, allowing the adoption of more sustainable rotational and regenerative grazing practices which may lead to businesses being able to explore biodiversity and carbon credit opportunities.

The feasibility project identified improvements in farming if this project were to proceed, including an increase in margin for beef livestock from \$483 to \$513 (per ha), as well as increased livestock benefits due to increased security of water supply. Landholders will have the ability to produce fodder and grain which can be stored for use in dry years, increasing drought resilience.

With lower conveyance losses and pumping costs, the viability of agricultural productivity will greatly increase, it will allow more consistency of production from year to year, allowing landholders to produce in years they would not normally be able to.

It will allow the landholders production systems to become more profitable, freeing up capital for further on farm development, allowing their businesses more efficient and ensuring sustainable long-term outcomes.

A local approach to delivery

It is proposed that Elwah Pumpers work in collaboration with Boxyards Road Water Users Group, who are also submitting an application under the OFEP. Both projects are in the Hay LGA and in working together will realise economies of scale during delivery. It is proposed that the projects engage a Project Manager to deliver both projects. The group would form a Project Steering Group (PSG) to oversee the projects. Financials would be kept separate for each entity. A local delivery approach will be adopted to deliver this program of works. This provides significant benefits in terms of both value for money and flexibility of delivery (through collaboration on resources and procurement processes with Boxyards Road Water Users Group).

Importantly, the entities are proposing to target high participation of local contractors in delivering the works. The applicants consider that this is possible because the works will primarily involve installation of civil infrastructure, including pump stations, and pipelines and channel upgrades and there are many skilled local contractors who have been involved in supporting other modernisation projects. The projects will target 90% of expenditure being directed toward local (Riverina based) contractors and suppliers, thus achieving a high local employment outcome.

This approach will increase local employment and provide upskilling opportunities, with significant flow on benefits to the wider community. The proponents will leverage established relationships with suppliers in the local and the wider Riverina area. These relationships extend from procurement of services and products for civil works, including earth moving, gravel supply,

concrete, pipes, formwork, hire of heavy machinery, and the supply of automation hardware and software. The applicants consider that this is possible because the works will primarily involve installation of civil infrastructure, including pump stations, and pipelines and channel upgrades and there are many skilled local contractors who have been involved in supporting other modernisation projects.

Elwah Pumpers have discussed local capability and content with water infrastructure specialists. These entities have the ability to delivery part/all of the project and have expressed interest in being involved in the procurement process.

3.3. Benefits to community

The project provides an opportunity to realise significant community and regional benefits and increase water savings, setting up water users for the future. One of the key benefits to the community is that increased water security and reliability will have a direct and positive impact on the long-term economic viability of the region.

In addition, as the Hay LGA heads into another dry period, the construction costs impact of \$15.8 million will account for an additional 22 direct local jobs created or retained within the local economy during construction and one ongoing role post construction. The project will provide additional economic sustainability for the region.

The Elwah Pumpers project will assist the local Hay LGA to build a climate resilient economy. As the weather variability has impact, the longer-term sustainability of the primary production sector is of critical importance for population stability. The continued decline in rural and remote communities is directly related to the health of primary production sector. From 2001 – 2011, the region was impacted by the Millennium drought. This saw a drop in gross regional product of 28.5% (year on year) and a corresponding decline in population of 17%. To arrest the decline, primary production will need to realise efficiencies in production, particularly the efficient use of water. By reducing water wastage and optimising agricultural practices, the Elwah Pumpers Group will lower production costs, improve yields, and enhance the profitability of their operations. This, in turn, leads to increased job opportunities, higher incomes, and a strengthened local economy.

Employment benefits through the application of a local delivery model for the construction of the assets that will target 90% local (Riverina region) resourcing. The economic impact of the Elwah Pumpers project includes:

- Employment benefits through increased productivity and drought resilience, thereby both increasing on-farm employment and reducing the boom-and-bust employment cycle because water will be able to be delivered efficiently to farm during low water availability periods – where currently the losses are prohibitively high.
- Improved skills from both employment and training that will be gained by use of local resources in both the construction and implementation phases of the project. This is particularly important to help address the declining population.
- Improved mental health outcomes by the increased resilience of the farming systems. Mental health and welfare suffer during periods of drought, the improved system reliability

and improved water delivery will provide material benefits to water security and as a result there will be subsequent gains for regional mental health and welfare.

3.4. Environmental benefits

In addition to the return of 410ML of water entitlements for environment, the projects will deliver local environmental benefits including:

Figure 5 is an example of water logging and salting of land as a result of flood water being held up by channel structure and not being allowed to take its natural course. The consequence to the environment is raised salinity on the east side triggering soil degradation. The project will include the installation of syphons under the channel to allow flood waters to pass. This allows water to take a more natural flow which can result in a rejuvenated floodplain environment. Inundation in these areas that have had overland flooding excluded, will increase biodiversity, in particular wetland shrub species such as lignum and nida goosefoot.

In addition, disused and rationalised channels will be backfilled to restore grasslands and shrublands and allow flows along natural drainage lines.

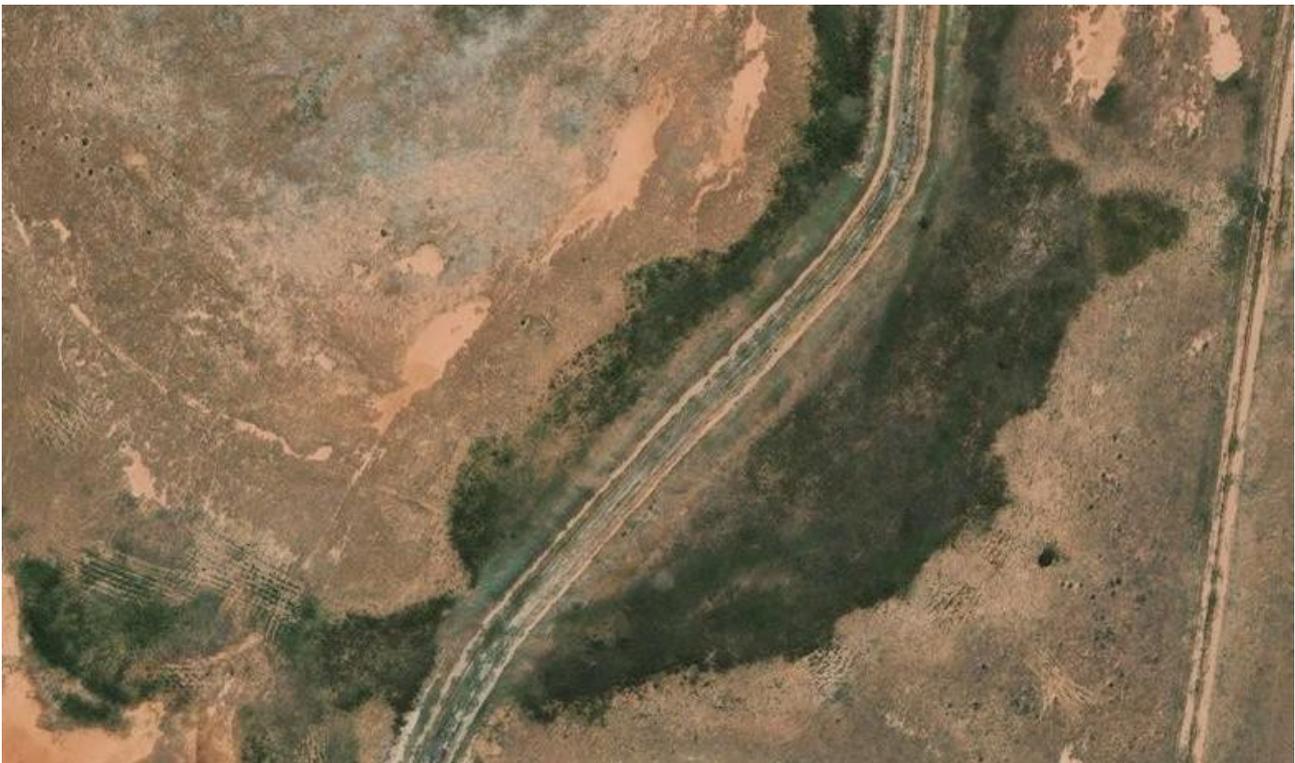


Figure 5 Water logging and salting of land adjacent to a leaking section of the Elwah Channel

3.5. Supporting the Murray Darling Basin Plan

The project aligns with the objectives of the Murray Darling Basin Plan by promoting water conservation, equitable water allocation, environmental protection, climate change adaptation, and regional development. It exemplifies the basin plan's integrated and balanced approach to managing water resources for the benefit of all stakeholders and the long-term sustainability of the basin's ecosystems and communities through:

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- **Water Conservation:** The project focuses on optimizing water use in rural communities and agricultural operations. By reducing water losses and improving water management practices, the project contributes to overall water conservation. The project will return 410 ML of Domestic and Stock water to the environment. This aligns with the basin plan's objective of ensuring a sustainable water supply for all stakeholders, including the environment.
 - **Enhanced Water Allocation:** The project will ensure more accurate measurement and allocation of water resources. This ensures that each stakeholder receives a fair and equitable share of the available water, promoting transparency and reducing conflicts over water allocation. Proper water allocation is a key component of the basin plan's goal to balance the needs of various users.
 - **Improved Environmental Outcomes:** The Murray Darling Basin Plan places significant emphasis on restoring and maintaining the health of the basin's ecosystems and water-dependent environments. By optimizing water use through efficiency measures, more water can be dedicated to environmental flows, helping to protect and rejuvenate wetlands, rivers, and habitats critical for native flora and fauna.
 - **Climate Change Adaptation:** As climate change impacts water availability and exacerbates drought conditions in the basin, investing in water efficiency infrastructure becomes crucial for adapting to these challenges. The project's implementation enhances resilience to climate variability, which is a fundamental aspect of the basin plan's long-term vision for sustainable water management.
 - **Regional Economic Development:** A well-executed water efficiency project can lead to increased agricultural productivity and economic growth in rural communities. By supporting primary producers and other water users in maximizing water use efficiency, the project fosters stronger and more sustainable regional economies.
 - **Stakeholder Collaboration:** The success of the Murray Darling Basin Plan relies on collaboration among various stakeholders, including farmers, communities, environmental groups, and government agencies. The implementation of the project involves engaging and collaborating with these stakeholders, promoting a cooperative approach to water management, and advancing the broader goals of the basin plan.

3.6. Cultural impacts and benefits

The Elwah Pumpers area is the traditional lands of the Wiradjuri people. As part of the feasibility project, an Aboriginal and non-Aboriginal Cultural Heritage Desktop Assessment was completed. The report recommends that further archaeological and Aboriginal cultural heritage investigations are undertaken.

Elwah Pumpers have engaged with the Hay Local Aboriginal Land Council (Nari Nari Tribal Council). Letters of support have been provided by the LALC. The group have committed to use local First Nations groups for cultural heritage studies. In addition, the group have committed to use local First Nations organisations to deliver parts of the infrastructure project where possible.

3.7. Community support and engagement

The project has been developed following extensive consultation and has the support of customers, Government Water and Land Services departments, local member, Rural Fire Service, Local Aboriginal Land Council, local water advisory groups and Regional Council.

3.8. Positive Economic Outcomes

3.8.1. Management of future lifecycle costs

Under the current water management structure Elwah pumpers depreciate the infrastructure on a usage basis, all funding for replacement assets and maintenance is funded on a usage basis, with a sinking/maintenance surcharge fee on every megalitre of water pumped, this is above the direct costs associated to that pumping. For example: 1 ML Pumped \$15 Direct Cost (Energy cost) \$15 Charge (Asset/ Maintenance cost) = \$30/ML total cost.

As a result of the project Elwah Pumpers will use a fixed and variable charges approach to funding the project lifecycle costs. This approach comprises:

- Fixed charges for water supply will be function of the volume of delivery entitlement held by the customer. A renewals annuity approach will be used whereby the renewals annuity recovers the cost of forecast asset renewal and rehabilitation expenditure through a smoothed annualised charge. The fixed charge will thus cover the estimated capital costs associated with maintaining the water supply assets, along with any fixed charges payable to government.
- Variable charges for water use will reflect the annual operating costs and any water usage related charges payable to government.

3.8.2. No impacts to the water market

The water savings are generated by reducing conveyance losses, and seepage losses throughout the scheme. The conveyance losses are due to primarily seepage and evaporation. There will be no reduction in the amount of water available for consumptive use and Elwah Pumpers' net water balance will be increased by water savings exceeding the volume of water provided to the Environment. As such, there are no negative impacts on current water allocation enhancements provided to properties services by the Elwah Pumpers Scheme.

The 410 ML in savings identified are all Domestic and Stock entitlements. As such, the water is non tradeable and will not have an impact on the water market. In addition, as the entitlement is not tradeable, without the Off-farm Efficiency Program there is no mechanism for the group to realise the value of the asset to invest in an efficiency project to improve productivity and return water to the environment or deliver socio economic outcomes.

3.9. Water savings shared between the environment and water users

The Elwah Pumpers project will create water savings that will be shared between the Elwah Pumpers users and the environment. A high percentage of the water being saved will be returned

to the environment the entitlement retained by water users will still place them in a net positive position due to the overall saving created by the project.

The project will result in water savings of 493 ML/year. Of the 493 ML/year, it is proposed that 410 ML Domestic and Stock water entitlements will be offered to the Commonwealth Environmental Water Holder, a return 83% of identified savings.

In delivering the project, the Elwah group considered the most equitable class and amount of water that could be returned and still benefit all members. The 410 ML returned is the maximum amount of water that can be returned by landholders across the group.

If 100% of the identified water savings were required to be returned, some members of the group would be disadvantaged, and the project would not be supported by the group.

If approved, the Elwah Pumpers project will improve the delivery efficiency of the channel water delivery system, creating certainty of inputs (water) that support irrigation, stock and domestic water users whilst returning water to the environment. The project will result in significant increased resilience in production for landholders resulting in improved economic and employment outcomes for the community and embedded climate resilience, and sustainability for the Hay LGA.