

Building Our Community in Advance and Increasing Resilience to Climate Change Project Overview

COUNCIL NAME

Murray River Council

WEB ADDRESS

<https://www.murrayriver.nsw.gov.au/Home>

SIZE

11,865 square kilometres

POPULATION

12,000

Overview of the project

In 2020, Murray River Council (MRC) developed an [Adverse Event Plan](#) (AEP) via input from the local community to prepare for and recover from the impact of adverse events – be it drought, flood, fire or pandemic. To support the AEP, Western Murray Land Improvement Group (WMLIG) conducted a range of initiatives for Murray River Council's (MRC) [Building Our Communities in Advance Project](#), via funding from Local Government NSW.

This Case Study provides an overview of the range of initiatives and outcomes, and linkages to NSW DPIE Increasing Resilience Climate Change objectives. In total eight case studies were completed:

- Edward Wakool Land Stewardship Incentive Program and Environmental Assessment Pilot
- WMLIG Community Foundation
- WMLIG Agri-Innovation Precinct – Organic Waste Circular Economy Pilot
- BOM Making the most of weather and climate information
- NSW DPIE Predicting Weather Patterns – Know, Assess, Respond
- Water Market and Trading Information Session
- Community Energy and Benefits Programs
- Native Grass Soil Aeration Trial

The project deliverables align with many aspects of NSW DPIE's [Western Enabling Regional Adaptation](#) report, and other local, regional and State and Federal Government plans and reports.

In relation to MRC's AEP, the project builds on resilience principles and strategies of under the following themes, '**a community-led recovery**', '**plan in the good times to be prepared for the bad times**', '**continuous learning and improvement**', '**build resilience with adaptive methods**', '**diversify the economy and capture value at home**', '**build the capacity of the community**', and '**provide clear, timely and accurate communication**'.

How the project was carried out

The project included a mix of on ground activities, workshops, desktop scoping studies and related funding application development, which are summarised below;

- On ground activities: Soil aerator trial and environmental assessments conducted by our staff and consultants on pilot farms.
- Workshops x 2 with 4 presentations: NSW DPIE Predicting Weather Patterns Information Session, BOM Making the most of weather and climate information, Water Market and Trading Information Session from Aither and Ruralco.
- Desktop scoping documents and associated products: Edward Wakool Land Stewardship Incentive Program and Environmental Assessment Pilot including an EG&S farm questionnaire, Community Foundation, WMLIG Agri-Innovation Precinct – Organic Waste Circular Economy Pilot, Community Energy.

The following is a summary of education, planning products and tools produced as a result of the project:



Table 1: Summary of education resource and planning products listed on the WMLIG website and confidential Information Listed on the DPIE report Portal.

Communication and planning products provided on WMLIG web site	Confidential material provided on portal only
Environmental Accounting Carbon Pilot Report	Farm assessment questionnaire
Community Foundation Scoping Document	Glencoe Soil Carbon Report
Community Energy Scoping Document	Glencoe Preliminary Biodiversity Stewardship Site Assessment
EVORIL Technical Notes and Pasture Establishment Considerations document (not funded by this project)	Ruralco Presentation – Southern Australian Water Markets
Case Study: Edward Wakool Land Stewardship Incentive Program and Environmental Assessment Pilot	One Basin CRC Quickstart Project design and development report
Case Study: WMLIG Community Foundation	Edward Wakool Land Stewardship Incentive Program
Case Study: WMLIG Agri-Innovation Precinct – Organic Waste Circular Economy Pilot	Aither presentation – Southern Murray Darling Basin Water Markets
Case Study: BOM Making the most of weather and climate information	Questionnaire results case study - Predicting Weather Patterns Information Session
Case Study: NSW DPIE Predicting Weather Patterns – Know, Assess, Respond	Questionnaire results case study – Water market Information Session
Case Study: Water Market and Trading Information Session	
Case Study: Native Grass Soil Aeration Trial	
Case Study: Building Our Community in Advance and Increasing Resilience to Climate Change Project Overview	
Carbon and biodiversity assessment Lessons Learned YouTube video	
Soil Aerator YouTube video	
Predicting weather patterns YouTube video	
NSW DPIE Predicting Weather Patterns presentation	
BOM Making the most of weather and climate information	
Pasture Establishment Considerations – Economically Viable Options for Retired Irrigation Land	
WMLIG Agri-innovation Precinct Proposal	

Project partner education resource and planning documents promoted as part of the project include:

- Murray Murrumbidgee Climate Change Snapshot (NSW OEH, 2014)
- Western Enabling Regional Adaptation (NSW DPI 2017)
- Climate-ready revegetation. A guide for natural resource managers. (Macquarie University, 2018)
- MRC Adverse Event Plan

REFERENCES

See individual case studies

Outcomes now and in the future,

It is clear that the strategic objectives of NSW DPIE and Local Government NSW State wide programs align with the strategic program objectives of MRC and WMLIG. This is evident in the range of case studies and deliverables conducted as part of the Building our Communities in Advance Project.

The scoping documents are being used as reference documents to scope up future projects, as well as provide information to other groups and agencies (e.g. Murray Local Land Services and community groups in the NSW Murray Catchment regarding learnings from environmental assessments methodology testing).

WMLIG will provide project information with relevant document links to resources to the local community on WMLIG's mail out subscription (490 people) and the regional community as part of the Murray Landcare Collective. The broader NSW community will have access to information via the NSW Landcare Gateway (60,000 volunteers and staff), and welcome the opportunity for MRC to capture recommendations for local and regional community strategy and economic development plans in the future.

It is anticipated that the community will use the resources available from workshops and scoping and planning documents to make informed decisions for business planning purposes. WMLIG will routinely promote the availability of this information via the mail out list and other engagement platforms and products. Key recommendations and opportunities in the future are summarised below:

Weather:

- Internet connectivity is a major issue in the local region and impacts on the ability of businesses to access timely weather data information. Connectivity also has implications for future applications of smart farming technology. MRC's Draft Community Strategic Plan

Energy:

- The NSW Government is actively supporting Community Operated Renewable Energy (CORE) projects through the Regional Clean Energy Program (RCEP). These programs could be an option for the community to pursue in the future. WMLIG would welcome the opportunity to partner with MRC to secure resources that would further scope community support and create a community vision to help make a Community Energy Project a success. A CORE resource would:
 - perform pre-feasibility studies to scope what is feasible, viable and desirable.
 - define project technology, scale and site; and develop an initial business case.
 - create an engagement strategy and associated tools, engage with the community and build support.
- Community benefits programs associated with several large renewable energy projects in the future will provide an opportunity for financial grants to support community events, projects and activities.
- WMLIG are scoping community benefit opportunities with social enterprise energy retailers such as Energy Locals, which would support community projects.

Environmental markets and biodiversity:

- Environmental assessment method use choice needs to be carefully in NSW as pre 1750 vegetation map data is not available in all areas to use for methods such as Habitat Hectares and AñN. **WMLIG would welcome the opportunity to access pre 1750 map data so local people can conduct environmental assessments and not rely on external consultants.**
- Local, State, Federal Governments need to consider how EG&S contract agreements are passed on to Regional Emergency Services (the contracts maybe confidential), as this alters the value of landscape assets and prioritisation considerations for emergency service resource provision.



- WMLIG will continue to seek funding and partners to aggregate landscape scale corridors and pest and weed control action groups for environmental transactions utilising its newfound and evolving knowledge in the EG&S market.
- Local management of biodiversity will underpin resilience to the mixed farming, irrigation and riverine ecosystems.
- There is currently a range of EG&S programs, however many are in their infancy, and some markets, such as the carbon market have been very complex regarding the methodology and verification process. Value to the farmer is also questionable, with income split roughly 50:50 between the farmer and brokers and consultants. EG&S product risk is likely borne by the landholder, so this information needs to be taken into account before embarking on a carbon farming contract.
- Environmental and green provenance market opportunities for landholders (see Economics section).

Water:

- There are many factors that affect water pricing and water buybacks have contributed to increased water prices. Allocation prices are likely to be higher in the future and vary from year to year. The future climate sequence will be the highest driver of prices in the future.
- Businesses need to consider water strategies to manage risk against potential temporary allocation price volatility to ensure water security in times of extreme dry. Balance capital requirements with risk mitigation using a range of options/ products that are available.

Soil and emissions reduction:

- There have been no statistically significant improvement to dry matter production determined as a result of soil aeration in the short term (<8 months), which is suspected to be due to the immaturity of the trial at this stage.
- WMLIG would like to continue ongoing monitoring of the soil aerator trial sites to ascertain change over the longer term, develop reports and conduct a field day to the broader community in the future.
- WMLIG is trialling biochar production from rice and other organic waste residues, that will be used as a feed additive for methane reduction in ruminants, ameliorate soils and reduce fertiliser inputs.
- WMLIG would welcome collaborations and funding to support future biochar and biofertiliser trials. The potential value of the project is not unique to this region and any lessons learned can be transferable to other regions.
- WMLIG is using the Agri-innovation scoping document as a reference document for a One Basin CRC application for a pilot titled 'Organic Waste Conversion – Generating useful products and inputs for agriculture and food and fibre manufacturing industries'.

Social:

- The project provided one social networking opportunity at Wakool via the workshop, Water Market and Trading Information Session from Aither and Ruralco.
- Information from workshops and communication products build the capacity of the community via the theme of continuous learning and improvement.
- Critical to the fundamental role in building and strengthening communities are volunteers. During the COVID-19 pandemic there has been an estimated reduction of at least 45% in volunteer availability nationwide. A regionally focused re-engagement campaign to set up a community foundation could provide the opportunity to attract volunteers back where their input can be demonstrated as having an important impact on a holistic, democratic approach to community program funding, wealth building, resilience building, recovery, and a hands-on role in the community's future.
- A Community Foundation would provide community engagement and strong risk management opportunities to prepare the community for chronic stresses and episodic shocks.

Economic (direct) / Waste Reduction:

- Workshop catering and venue hire (\$32.40)
- Advertising (\$504.90)
- Consultants / businesses:
 - Soil testing for farm carbon assessment
 - Farmlab software use
 - iPads for infield data collection (\$796.40)
 - Farm biodiversity rapid assessment - Bio-Conservancy Australia (\$2,025)
 - Soil sampling equipment - auger \$88.52 and penetrometer \$416 and hardware \$303.19 (\$807.71)

- Accounting for Nature environmental assessment training (\$990)
- Melbourne University (for Impact Innovation) – One Basin CRC Quickstart Project design and development report (1,870)
- Travel (\$667.20)
- Presentation – Aither (\$2,090)

Economic (In-kind - estimated)

- Ruralco \$1,500, NSW DPIE \$2,000, BOM \$2,000, Farmlab \$1,000, Carbon8 \$5,000

Economic (indirect – potential opportunities and co-benefits):

- The project has provided information that can be readily accessed by farmers to make informed decisions regarding weather forecasting and water markets. Internet Connectivity to access information to manage and mitigate business risk can further improve business financial returns.
- The soil aerator project has the potential to encourage the uptake of low input agriculture, reducing costs for farmers, and encourage improved grazing strategies of native grasses taking advantage of out of season rainfall events and reducing the need for supplementary feed.
- Scoping documents will be used in the future as reference documents for projects that:
 - Seek opportunities for producers to access environmental markets.
 - Utilise agricultural and Municipal wastes in the circular economy (e.g. biochar), providing new business opportunities, potentially reduce agricultural fertiliser input costs and improve soil moisture holding capacity, reduce methane from livestock and thus improve feed conversion efficiency.
 - Develop a agri-innovation Precinct
 - Community Energy would provide renewable energy solutions and opportunities for businesses to become net carbon emitters, leverage niche product markets and support businesses to be self-sufficient in times of adverse events if backup power storage was provided
 - WMLIG would welcome funding (estimated cost \$80,000) to establish and support a skilled working party that would examine the most appropriate legal entity for a Community Foundation
 - A Community Foundation provides an opportunity to provide new sources of income and leverage dollar for dollar funding that supports community capacity building outcomes, many of which have economic co-benefits.
 - A Community Foundation would have reserve funds ready to hit the ground to support self-reliance and a community-led recovery in an adverse event.
 - Environmental and green provenance market opportunities for landholders. The region is a nationally significant biodiversity hotspot with potential to protect threatened species, enhance biodiversity, drawdown carbon and provide green provenance certification for sustainably managed properties:
 - Local food and fibre producers have an opportunity to certify products to sustainability credential standards and leverage regional (e.g. River Country®) produce to access niche high value markets from conscientious buyers.
 - Through the adoption of best practice and supported by new business models for private land management including biodiversity and carbon, the agricultural sector is more resilient to climate and commodity market cycles, strengthening the regional economy.

Benefits and lessons learned

Benefits

The project builds on MRC's AEP resilience principles and strategies under the following themes, '**a community-led recovery**', '**plan in the good times to be prepared for the bad times**', '**continuous learning and improvement**', '**build resilience with adaptive methods**', '**diversify the economy and capture value at home**', '**build the capacity of the community**', and '**provide clear, timely and accurate communication**'.

The project deliverables align with many aspects of NSW DPIE's Western Enabling Regional Adaptation report, and other local, regional and State and Federal Government plans and reports. Projects have been identified in the future that can improve adaptation and resilience outcomes in the future and WMLIG will seek to include them in the MRC's Community Strategic Plan.

WMLIG welcomes government and Industries to partner with the group in the future for knowledge exchange and project realisation.

Lessons learned

Weather:

- A lack of understanding on how to interpret some BOM communication products was fed back to the BOM as an improvement opportunity.
- Communications infrastructure is required to enable businesses to access weather data for informed decision making.

Energy:

- Community Operated Renewable Energy (CORE) projects may be available through the Regional Clean Energy Program (RCEP) in which WMLIG could provide support.
- Social enterprise energy retailers such as Energy Locals are available that can support community projects.

Environment and biodiversity:

- NSW needs to provide pre 1750 vegetation map data to use for environmental assessment methods in this region. Currently scientifically robust and rigorous methodology is very costly and requires outside of region expertise which is holding the region back from entering into EG&S market transactions.
- Local, State, Federal Governments need to consider how EG&S contract agreements are passed on to Regional Emergency Services (the contracts maybe confidential), for advert event planning.
- Landholders need to be wary of entering into carbon markets. WMLIG is looking at a farmer owned model to provide farmers a fair price which incentivises uptake and provides an income for community groups to become self-reliant, and deliver upon community wealth building outcomes. WMLIG welcomes funding opportunities to fund pilot landscape scale aggregated products to take to market such as wildlife corridors.
- Funding for agricultural, NRM and community capacity building is required to continue to improve business and innovation and NRM outcomes.
- Circular economy projects are being trialled in the future to improve a range of environmental and agricultural productivity outcomes. Waste problems are unique to this region, and WMLIG welcomes the opportunity to partner with government and other impart any learnings to other regions.
- WMLIG welcomes the opportunity for partners to join in pilot program working groups such as the One Basin CRC waste to biochar and biofertiliser trial.

Scio-economic

- Critical to the fundamental role in building and strengthening communities are volunteers. Local, State and Federal Government needs volunteer support to deliver upon the Adverse Event plan. WMLIG see the development of a Community Foundation as being key to delivering upon this objective whilst enabling social networking and self-reliance.
- Innovative waste management solutions, environmental markets, education and agricultural innovation, improved communication infrastructure for business decision making and smart farming, alternative and renewable energy investment builds self-reliance, buffers the community against climate and market cycles, creates jobs and ultimately strengthens the rural economy.

The Building Our Community in Advance Project summarises these opportunities in Table 2. This table also audits the alignment of objectives against the current draft MRC Community Strategic Plan document for consideration by MRC.

Table 2: Alignment of Project Outcomes for Future MRC Community Strategic Planning. Audit of what's Included and Excluded:

MRC Building our Communities in Advance Project (Adverse Event Plan) Identified outcome / future project opportunity	Draft MRC 10-Year Community Strategic Plan (CSP) Included (Yes / No) audit and CSP section reference
Communications infrastructure and enabling technologies - e.g. improved internet connectivity	Yes. <ul style="list-style-type: none"> • Connected communities – Digital connectivity & communication infrastructure (6.5). • Tomorrow's technologies - Enable Smart Agriculture (7.5), promote advanced technologies (7.6)
Secure resources to scope a Community Energy Project	Yes <ul style="list-style-type: none"> • A place of prosperity and resilience – Alternative and renewable investment alternatives (5.4). • Tomorrow's technologies – Community based energy generation (micro grids) (7.7), waste to energy (7.8). <i>Suggest the CSP specifies the need to source / advocate for funding for waste circular</i>

MRC Building our Communities in Advance Project (Adverse Event Plan) Identified outcome / future project opportunity	Draft MRC 10-Year Community Strategic Plan (CSP) Included (Yes / No) audit and CSP section reference
	<i>economy projects, not just maintain currency with EPA's Energy from Waste Policy</i>
Support environmental and green provenance market opportunities for landholders to diversify income streams against climate and commodity market cycles and leverage regional branding opportunities (e.g. River Country Food). Provide pre 1750 vegetation map data in the region to enable environmental assessments to be done locally, not by expensive accredited assessors from outside the region who use the BAM method.	<p>Yes.</p> <ul style="list-style-type: none"> A place of environmental sensitivity - Stewardship agreements for biodiversity and native vegetation management (1.6). Tomorrow's technologies - Adapt to Biodiversity and Carbon Offset (Carbon Credits) requirements (7.11). <i>WMLIG suggest the need for the CSP to advocate the need for NSW to provide pre 1750 map data to enable environmental assessment methodologies, such as Accounting for Nature or Habitat Hectares to be used by businesses in the MRC area.</i> <i>Suggest also that there is a mechanism to notify emergency services of EG&S contracts to inform resource allocation in adverse events.</i>
Improved agricultural productivity - Conduct agricultural trial work to support low input farming e.g. native grass soil aeration, biochar trials.	<p>No, not specifically. <i>Recommend MRC strengthen in CSP related to the topic below:</i></p> <ul style="list-style-type: none"> A place of prosperity and resilience – Innovation (5.11). <i>WMLIG suggest the CSP specifies the need to source / advocate for funding to conduct local innovation activities, such as on-ground agricultural trials.</i> Research and development (5.12). <i>WMLIG suggest the CSP include the need to source / advocate for funding to conduct pilot programs in the "How" section.</i>
Develop a Community Foundation - Provide for community self-reliance, social networking, volunteer re-engagement post COVID 19, community capacity building initiatives and support strong risk management opportunities to prepare the community for chronic stresses and episodic shocks.	<p>No, not specifically. <i>Recommend MRC strengthen in CSP related to the topic below:</i></p> <ul style="list-style-type: none"> Development of resilient economy- Build resilience towards adverse events – preparedness for drought, fire and flood, Covid and others (5.7). <i>WMLIG suggest CSP specifies the need to source / advocate for funding to develop a Community Foundation.</i>
Conduct community capacity building workshops and innovation forums	<p>No, not specifically. <i>Recommend MRC strengthen in CSP related to the topic below:</i></p> <ul style="list-style-type: none"> A place of prosperity and resilience - Increased educational opportunities (5.6). <i>WMLIG suggest CSP outlines the need to source / advocate for funding to conduct community capacity building education and training, not just review educational services.</i> Promotion of local attractions (5.8). <i>WMLIG suggest the CSP outlines the need to source / advocate for funding to conduct events in the region, such as an innovation forum, not just develop a Yearly Events Strategy and Marketing and Promotions Plan.</i>
Utilise agricultural and Municipal wastes in the circular economy (e.g. biochar), providing new business opportunities, reduce agricultural fertiliser input costs, improve soil moisture holding capacity, reduce methane from livestock and thus improve feed conversion efficiency.	<p>No, not specifically. <i>Recommend MRC strengthen in CSP related to the topic below:</i></p> <ul style="list-style-type: none"> A place of prosperity and resilience – Innovation (5.11). <i>WMLIG suggest the CSP outlines the need to source / advocate for funding to conduct local innovation activities, such as on-ground agricultural trials.</i> Research and development (5.12). <i>WMLIG suggest the CSP include the need to source / advocate for</i>

MRC Building our Communities in Advance Project (Adverse Event Plan) Identified outcome / future project opportunity	Draft MRC 10-Year Community Strategic Plan (CSP) Included (Yes / No) audit and CSP section reference
	<i>funding to conduct pilot programs in the "How" section.</i>
Develop and Agri-innovation Precinct in line with MRC's priority to 'grow, strengthen and sustain agriculture' over the next 20 years and beyond to support local business to access or develop and introduce advanced technologies.	Yes <ul style="list-style-type: none"> • Tomorrow's technologies – Promote advanced technologies (7.6), however <i>WMLIG suggest the CSP outlines the need to source / advocate for funding to develop the infrastructure for an agri-innovation precinct.</i>

More information

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