



Secure Safe Domestic Water for the Central and Lower Darling Region

**Report on the 2017-18 Institute for Land Water and Society, Charles Stuart
University (ILWS-CSU) Community Engagement Program**

April 2018

The Institute for Land Water and Society, Charles Stuart University (ILWS-CSU) Project

Setting the scene

The Institute for Land Water and Society, Charles Stuart University (ILWS-CSU) undertook community engagement activities in the Central and Lower Darling region in 2016, 2017 and early 2018. Generally, the focus was on the provision of secure safe domestic water (SSDW) from private supplies on rural and remote properties and rainwater tanks in towns and settlements. The activities questioned meeting critical human water needs as pursuant to Section 86A of the *Water Act 2007*. This project is part of the **SEGRA Challenge: *Securing Adequate Safe Domestic Water for Rural and Remote Regional Australia***.

The MDBA provided \$5 000 in sponsorship for the March 2012-2018 activities. All ILWS-CSU and MDBA funds for the initiative have been expended. Further resources are needed to move the project forward in 2018 and beyond.

Background

Literature review and governmental and stakeholder consultations undertaken from October 2015 to March 2018 by ILWS-CSU found that the sufficiency and quality of water resources used for domestic purposes in rural and remote regional Australia is largely unknown and the potential health risks arising from this situation are poorly dimensioned.

The overarching aim of this multi-staged collaborative action SSDW research project is to: *support the sustainable provision of adequate safe domestic water supplies for people in rural and remote regional Australia*. The objectives to be achieved to attain the aim are as follows.

- Detail and evaluate the roles and responsibilities of governmental bodies with respect to the provision of public and private domestic water supplies.
- Document community attitudes, understanding and behaviour with respect to the provision of adequate secure and safe domestic water supplies.
- Provide broad quantitative and qualitative information on the sources, adequacy, quality and levels of water treatment of water being used by Local Government Authorities (LGAs) in meeting statutory water planning and services requirements.
- Document the status of sources, adequacy, quality and treatment provisions used privately in remote settlements and public facilities, commercial enterprises and isolated properties in vulnerable catchment areas.
- Propose long term integrated management measures to ensure that domestic water supplies for communities, individual homes, isolated homesteads, community facilities and business premises are adequate and safe.

For this project, domestic water is operationally defined as: *Water used day to day by people for indoor and outdoor household and commercial purposes including drinking, preparing food, bathing, washing clothes and dishes, brushing teeth, watering gardens, swimming pools and children's play.*

Securing adequate safe domestic water for rural and remote regional Australia goes beyond potable/drinking water supplies. As defined, domestic water encompasses all uses by which people can come into physical contact with their water resources. And, because of its quality, the water may or may not be a risk to their health.

Nationally, little assistance is provided by any level of government to reduce potential health risks from non-scheme water in rural and remote regions. Similarly, managing potential health risks from rainwater tanks is a private responsibility. Guidelines on using non-scheme supplies, including rainwater tanks, are issued by state health authorities. LGAs often provide domestic water using water tankers to rural properties when supplies run out in times of prolonged drought. And this situation is well demonstrated in the Murray Darling Basin (MDB).

Australia wide, State and Local Governments only have statutory responsibility for the quantity and quality of scheme water provided to rural cities, towns and settlements. People on farming and pastoral properties are left to their own devices to secure adequate domestic water supplies and ensure that the water being used is not a health risk. This inequity could be considered a serious gap in policy and practice. And arguably, this has implications for economic productivity and the quality of life for people in the Central and Lower Darling (C&LD) region of the MDB.

Progressing the SSDW project

Over the past three years ILWS-CSU has committed \$75 000 in research funds as well staff resources to the SSDW project in the Gulf of Carpentaria and Northern Darling Basin in Queensland and the C&LD in NSW. With some \$40 000 being spent on the three sets of activities in the C&LD region. Additionally, resources have been expended by the SEGRA Foundation in initiating and progressing the initiative. Letters of support for the initiative have been obtained from the MDBA, the Murray Darling Association, the Queensland Murray Darling Committee, the Local Government Association of Queensland and the Gulf of Carpentaria focused North West Queensland Regional Organisation of Councils.

Broken Hill City Council (BCC), the Pastoralists Association of West Darling (PAWD), the Darling River Action Group (DRAG) and the Lifeblood Alliance have provided support for the initiative by way of:

- Optimising existing communications networks
- Dissemination of material on the risks of poor quality water supplies
- Encouraging stakeholder participation engagement events at regional locations

Policy underpinning for a SSDW initiative in the Central and Lower Darling (SSDW-C&LD)

Without doubt, assured supplies and reduction of health risks from unsafe water must be a priority across rural and remote regions of the MDB. Biophysical conditions in the catchments feeding the Central and Lower Darling have been shown to exacerbate issues relating to the adequacy and quality of non-scheme domestic supplies.

In turn, this affects achievement of the statutorily based policy objectives of 'critical human water needs' for the MDB. And these are defined in subsection 86A of the Water Act 2007 and Chapter 11 of the *Basin Plan* and cover all uses of surface and ground water for domestic purposes. To quote from the *Act*:

86A Critical human water needs to be taken into account in developing Basin Plan

(1) Without limiting section 21, the Basin Plan must be prepared having regard to the fact that the Commonwealth and the Basin States have agreed:

- (a) that critical human water needs are the highest priority water use for communities who are dependent on Basin water resources; and*
- (b) in particular that, to give effect to this priority in the River Murray System, conveyance water will receive first priority from the water available in the system.*

(2) Critical human water needs are the needs for a minimum amount of water that can only reasonably be provided from Basin water resources, required to meet:

- (a) core human consumption requirements in urban and rural areas; and*
- (b) those non-human consumption requirements that a failure to meet would cause prohibitively high social, economic or national security costs.*

Appreciating the situation

Essential first steps towards understanding whether or not this statutory requirement is being met in the MDB include at the property scale:

- qualitatively informing awareness raising of potential health risks from inadequate and poor quality domestic water supplies
- spatially dimensioning the sources and quality of non-scheme domestic supplies being used in remote communities and on agricultural and pastoral properties
- undertaking property scale water quality screening of all sources of water being used (surface, groundwater, rainwater tanks)
- providing information on remedial actions to reduce the impacts of poor quality domestic water supplies

Work in the Central Darling 2017

Work towards introducing the SSDW initiative in the C&LD was undertaken in April, May and October 2017 and included the following.

- Preparation and dissemination of briefing material for key stakeholders
- Telecoms with the:
 - General Manager, Central Darling Shire Council (CDSC)
 - Mayor and General Manager, Broken Hill City Council (BHCC)
 - Chairman, Pastoralists Association of West Darling (PAWD)
 - Water Unit, Environmental Health Branch, NSW Health
- Informal meetings and discussions on the project with Mayor and Councillors BHCC
- Participation and presentation at the AGM PAWD in Broken Hill on 19 May
- Discussions with key representatives of the Darling River Action Group (DRAG) re support for the initiative

- Presentations at 'Lifeblood Alliance' River Road Shows in Broken Hill and Menindee on 7 and 8 September
- Interview on initiative with ABC Broken Hill and a briefing for ABC AM
- Informal telephone discussions with officers of the NSW Government and community members involved in NRM and water related activities in the MDB

MDBA sponsored engagement and awareness raising activities March 2018

An engagement workshop and informal discussions were held in Broken Hill on 19 March 2018. The Department of Primary Industries-Water consultation activity on 'NSW Water Reforms' in Broken Hill on the 20th provided an opportunity to discuss the SSDW initiative with officers of government and stakeholders.

Information on the project was provided to the Wilcannia Aboriginal Land Council on 21 March and a very productive meeting was held with members of Menindee Lakes Aboriginal Land Council on the 22nd. Information on the reduction of health risks and simple water treatment technologies is to be provided to both Land Councils.

From 20-23 March, 'informal conversations' were undertaken at Wilcannia, Menindee and Pooncarie with small groups and individuals. As well, visits were made to discuss safe water issues with commercial operators and rural producers.

Broadly, the meetings and discussions covered:

- recognising and acknowledging the potential health risks arising from poor water quality
- possibly needing to screen private supplies for coliforms and test for other pathogens and contaminants
- availability of information and governmental guidelines on managing private water sources (surface, groundwater, rainwater tanks), including simple technical approaches to filtration and disinfection
- initiating collaborative action to raise awareness and assist people to be self-sufficient and ensure that private domestic supplies are adequate and safe

The public meeting in Broken Hill on the evening of the 19th of March 2018 (as part of the MDBA sponsored activity) received good media coverage with stories in the *Barrier Daily Truth* on 19 and 20 March and on the ABC program *The World Today* on the 20th. The journalist who wrote the ABC story said that the online news item had been well reviewed.

As well, the story has been disseminated on stakeholders *Facebook* pages and social/public media coverage by Charles Stuart University. Promotion of the SSDW initiative is ongoing in the regional media and on CSU social media sites.

Challenges encountered

Water related issues in the MDB in general and particularly in the Central and Lower Darling are long standing and occupy a particularly crowded space in the 'public psyche'.

In this context, it was somewhat difficult to draw attention to SSDW as a focusing issue for public meetings. People are distracted by (for example):

- day to day concerns over the lack of water for rural properties, Aboriginal communities and towns where people are dependent on water from the Darling (surface and ground)
- ongoing worries over the potential health risks from blue-green algae and other contaminants in water drawn from the Darling River
- debate over the quality of water supplied to Broken Hill and Menindee from aquifers under the Menindee Lakes system
- lack of water quality data gathered and evaluated by an independent body or bodies
- issues arising from the extensive media coverage of environmental and related water allocation and management in the Northern Basin and the implications for Central and Lower Darling
- consultations and debate over the 'Water Reforms' being proposed by the NSW Government
- not having any spare time for engagement activities because of heavy work and family commitments

ILWS-CSU originally intended to hold the sponsored activities in November 2017. Being cognisant of the above constraints, a time that suited diverse agendas was negotiated with key stakeholders. March 2018 was agreed to 'be as good as it could get' in light of what was occurring in the 'water space' in the Central and Lower Darling.

Benefits of ILWS-CSU approach

The community engagement activities undertaken by the ILWS-CSU are beneficial to the MDBA and regional stakeholders because they provide an independent and impartial mechanism to:

- contend that the successful implantation of Basin Plan is key to ensuring that surface and ground water resources of the Murry Darling Basin catchments will be safeguarded
- inform stakeholders of the policy and statutory underpinnings for meeting critical human water needs provided by Section 86A of the *Water Act* 2007 and Chapter 11 of the Basin Plan
- discuss the roles and responsibilities of the NSW Government and Local Government Authorities in the provision of scheme water and ensuring that these supplies do not present any threats to public health
- promote awareness of the health risks from poor quality private domestic supplies
- explain that people using private domestic water sources (surface, ground, rainwater tanks) are responsible to ensure that their supplies are adequate and not a health risk
- foster collaboration and self-sufficiency in seeking to ensure that domestic supplies on rural and remote properties and from rainwater tanks in towns and settlements are secure and safe

The 'grass-roots' approach used for informal discussions provides insights into the concerns of members of the public that may not be gleaned from formal meetings and information sessions. Unstructured discussions often stray into areas not covered by traditional mono-disciplinary researchers. As such, they provide a tool for gathering 'research intelligence' to support the development of 'needs driven' inter and cross disciplinary projects to address people focused 'wicked problems' challenging the implementation of the Basin Plan.

Additionally, the less formal approach facilitates understanding of how stakeholders gain information on water adequacy and quality issues and develop deeply held and often misinformed opinions on the inter and intragovernmental mechanism for managing the water resources of the MDB.

These perspectives are valuable for designing research projects aimed at better understanding of attitudes and behaviours towards the use and treatment of private domestic water supplies. And developing awareness raising tools and techniques for changing attitudes and fostering risk reduction behaviour.

Key findings and observations

Understanding critical human water needs from the perspectives of communities and people who are dependent on the surface and ground supplies in the MDB is a fundamental to the success of implementation of the Basin Plan. Especially, from the 'bottom-up'.

Engagement activities undertaken in 2017-18 have confirmed that the lack of adequate and safe domestic water on rural and remote properties is of serious concern in the C&LD. A range of issues have been raised at public forums and are well documented in the media. Governments are being urged to address these concerns as matter of urgency.

Collectively, these issues point to poor quality domestic water being a potential constraint to sustainable social and economic development. Specifically, for small settlements in the C&LD region and for the MDB in general.

The key findings to date from engagement activities are summarised as follows.

1. Awareness of water quality issues and health risks

- Personal awareness of possible health risks from poor quality domestic supplies (rainwater tanks, surface supplies, shallow and deep bores) is poor
- Many people are complacent as to the potential health risks from rainwater tanks
- Attitudinal and behavioural change towards domestic water quality is pivotal to reducing health risks from all water sources on rural and remote properties and from rainwater tanks in towns and communities
- NSW Health guidelines for managing private domestic supplies including rainwater tanks are available on-line and this resource needs to be promoted to people on rural and remote properties and to people in towns and communities who are using rain water for potable purposes

- Proactive information dissemination is needed to reduce misconceptions with respect to governmental responsibility for meeting critical human water needs

2. Water quality and rural health data

- Data on the adequacy and quality of untreated domestic supplies from all sources (including rainwater tanks) in the C&LD is vastly inadequate.
- Health and related problems (including presentations for medical treatment and hospitalisation) arising from the quality of poor quality private domestic water supplies have not been dimensioned.
- Rural focused public health data is needed to help quantify the economic and social costs of poor quality water in the C&LD region and reinforce health promotion initiatives.

3. Reducing health risks

- People need to acknowledge the potential health risks from poor quality private water sources
- Water quality testing capacity is limited in Broken Hill and non-existent at the community level in the region
- Simple water quality screening and testing needs to be available to people using private supplies
- Cost effective water treatment technologies are available to reduce the threat from pathogens in all sources of water used for domestic purposes and need to be promoted and applied
- Research informed collaboration between governmental bodies, non-government organisations and communities of interest is needed to ensure that health risks to people living in rural and remote towns and on properties is reduced

Within the framework of these findings, the MDBA could continue to play a pivotal role in reducing community concerns as to the adequacy and quality of domestic water resources available in catchments of the Basin that are climatically and hydrologically vulnerable. For example, through:

- community engagement activities such as the SSDW initiative
- collaborative proactive rural health research aimed at informing risk reduction strategies and actions

Moving forward

All ILWS-CSU and MDBA funds for the initiative have been expended. Further resources are needed to move the SSDW project forward in 2018 and beyond. In this context, the following interconnected actions are needed to progress the SSDW initiative.

First, the establishment of a collaborative, possibly a not-for profit legal entity, as an independent funding mechanism for:

- SSDW research, development and demonstration activities
- supporting the delivery of projects on rural and remote properties and regional communities and settlements in Australia
- fostering education to employment linkages in sectors such as domestic water provision and treatment and public/rural health

This entity could take the form of a '*Safe Water ConneXion*' and bring together (for example):

- university institutes and researchers
- public/rural health focused professional peak bodies (eg medical, allied health, pharmaceutical)
- governmental research entities
- water technology companies
- NGOs committed to the provision of adequate safe water, nationally and overseas

Crowd and philanthropic funding could be sought to initiate and underpin the commercial viability of the enterprise. Governance could be focused by people with a deep understanding of the on-the-ground issues, commitment to resolving these issues and the ways in which commercial solutions could be applied to address them.

Second, use the *Safe Water ConneXion* as the coordinating mechanism to initiate proactive intelligence gathering to inform collaborative 'needs driven' research projects and deliver sustainable outcomes. A number of potential research areas have been identified in the course of SSDW activities to date (for example):

1. Water resources management

- Spatial information mapping and analysis of;
 - distributions of rural towns, settlements and homesteads that are reliant on private domestic water supplies
 - characteristics and extent of surface and groundwater resources (shallow and deep) used for domestic purposes and potential health risks
- Improving the level of understanding of the quality of domestic water supplies from rainwater tanks, surface and underground sources in rural and remote regions.
- Establishing a monitoring regime across an extended period of time for broad spectrum or specific pathogens and other contaminants in order to track changes in local and regional water quality conditions.

2. Water testing and treatment

- Developing innovative low cost techniques for analysing household and community domestic water supplies for pathogens and other contaminants that are a threat to population health.
- Identifying and testing simple household and community scale treatment technologies for surface water, rainwater tanks and shallow and deep bores.

3. Public and rural health

- Collating and analyse public health epidemiological data on water related morbidity and mortality and the productivity costs for rural and remote regions.
- Determining the geographic spread of and the potential health risks in rural and remote regions from specific micro-organisms, such as *Naegleria fowleri*.
- Ascertaining the barriers to changing the attitudes and behaviours of residents on isolated rural properties to the health risks from pathogens and other contaminants in domestic water supplies.

4. Awareness and education

- Evaluating the inter and intra governmental policy and governance impediments to the provision of adequate secure and safe domestic water supplies in rural and remote towns and settlements and on isolated properties.
- Integrating awareness of health related dimensions into the understandings of the cultural and economic values of water sources and their uses to Aboriginal people.
- Formulating socially and culturally appropriate awareness raising and community education programs for identifying and managing the environment and public health risks from poor quality water in remote communities and on isolated farming and pastoral properties.
- Devising innovative programs to build capacity within communities for people to undertake water quality analysis and respond to potential threats to population health.

Third, use the *Safe Water ConneXion* as a virtual hub for an integrated education and training, health promotion and communications strategies to facilitate:

- information dissemination and awareness raising
- 'job ready' technical and professional development

Operationally, this could be an integral part of the *Regional Economic Development (RED) Toolbox* and network. For example, in the C&LD this could be a collaborative network involving DRAG, PAWD, the River Lifeblood Alliance, educational facilities and the local and regional media. Awareness raising materials could be distributed to stakeholders including guidelines provided by State health departments on the management of private water supplies and rainwater tanks. As well, the *Safe Water ConneXion* links could be made to:

- commercial enterprises who provide farm scale water provision planning and management services
- businesses and industries who wish to be directly involved (for example) in innovative cost effective water quality testing and treatment
- institutions providing (for example) water and rural health focused technical training and professional development