

## Building capacity

based on Street map 11

Water is being recycled all over Australia for a variety of uses. To protect the health of people and the environment, treatment technologies used in water recycling schemes need to meet agreed performance targets. Across Australia there is currently no consistent approach to validating that they do so. The Australian Water Recycling Centre of Excellence engaged Water Quality Research Australia to deliver a national framework for validating treatment technologies.

After much consultation, the project team, comprising researchers, industry specialists and regulators, has designed a workable, accepted framework. The next steps are to fill some of the knowledge gaps and negotiate with industry and government to have the framework implemented.

### What is validation?

The *Australian Guidelines for Water Recycling (2006)* require that a treatment technology or process be validated before the water recycling scheme is operational. Validation is the confirmation that the treatment technology meets the specified performance targets. The guidelines describe the concept of and need for validation but do not specify how the validation should be done.

### What researchers need

There is wide acceptance that there is a gap between researchers and the intended audience for their work—the water-recycling industry, regulators and utilities. Research reports are often dense, complex and hard for practitioners and policy officers to access, interpret and apply. For a national validation framework to be successfully adopted, this gap needs to be closed.

### What industry needs

Designers, technology suppliers and operators need to be able to:

- understand the processes and plants
- install and operate appropriate hardware
- operate all equipment to required levels of performance and reliability.

Accessible, affordable and relevant courses and, for operators in particular, formal qualifications, are essential.

### What regulators need

Regulators need to be well versed in the appropriate guidelines and regulations for water recycling. They need to know enough about the processes involved to be able to form realistic opinions about regulatory aspects of system performance. They also need a working knowledge of statistics so that they understand the interpretation of performance data and can make authoritative rulings about compliance and validation.



Photo sourced from Seqwater

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## Current practices

Formal teaching, training and education fall into three broad categories:

- **Industry-based:** These courses are the most flexible and are responsive to the needs of both learners and employers. Teachers are drawn from a reservoir of industry practitioners.
- **University-based:** Processes for introducing or changing degree courses are generally rigid. Universities have more flexibility with short courses.
- **Vocational Education and Training sector-based:** Curriculum development is slow, bureaucratic and expensive. Courses can only be offered when student numbers ensure viability. Knowledgeable teachers are scarce. The number of registered training organisations (RTOs) is limited. Accreditation of an RTO for a given scope can be generic, so unreasonably abbreviated courses can be offered, resulting in hollow qualifications.

There are few imperatives for employers to hire only qualified operators, so many employers engage inadequately trained staff.

Before the internet, capacity building, knowledge management and information dissemination in the water industry followed long-standing practices centred on printed material (mainly scholarly journals, industry magazines and reports), face-to-face training courses, seminars and workshops. Personal networks were important, as were the activities of learned societies and associations.

Technology has had a profound impact on knowledge transfer, education, training, capacity building and data management. The array of media, channels, tools and approaches available is bewildering and the limits are more in human inventiveness than in technology. At the same time, it is hard to separate fads from significant developments and there is a risk of the medium being more important than the message.

Photo sourced from the Australian Water Recycling Centre of Excellence







“Consultations undertaken around Australia indicate that the framework concept has widespread support across government, regulatory, utility and technology stakeholders.”



Photo sourced from WaterCorporation

## Emerging methods

A review of the literature showed that:

- few strategies have been evaluated
- the emphasis is on networking and interaction rather than technology
- knowledge brokers play an important role
- communities of practice may be useful
- connectivity on a 24/7 basis supports learning.

Emerging practices and concepts seem to focus on social media, portable devices and flexible approaches, in a context known as ubiquitous learning (or u-learning).

More flexible, tailored educational and training offerings are emerging. Universities, RTOs, industry players and entrepreneurs are combining forces and independently offering a diverse range of courses in different formats.

A community of practice around water-sensitive cities is emerging, and the same concept could be applied in validation. The National Recycled Water Regulators' Forum is a community of practice that has evolved among water-reuse regulators.

## What is a knowledge broker?

The role of knowledge broker goes beyond that of knowledge transfer in that they bring together the researchers with the people who use the research.

## What is a community of practice?

A community of practice is a voluntary, self-organising, focused group of individuals and organisations, used for informal exchanges among practitioners. For example, a community of practice has evolved among water reuse regulators – the National Recycled Water Regulators' Forum.

Up to now, they have often been associated with professional or industry associations, with formal structure and direction. These days they operate more loosely, with minimal bureaucracy.



## Choosing appropriate tools

To maximise adoption of the national validation framework, the tools for building capacity need to be matched to the people and the goals. For example, while websites are an effective tool for reaching a variety of audiences – including the community – journal articles would reach a more specialised audience, such as researchers or scientists. Further examples of available tools can be found in Street Map 5.

## Key attributes of effective capacity-building tools

- Industry ownership
- Current
- Relevant
- Fit-for-purpose
- Affordable
- Based on sound science
- Credible
- Accessible
- Responsive
- Evaluated

## Recommendations

- Review the literature in more depth to fill gaps, especially in the area of emerging capacity-building tools such as social media and apps.
- Develop effective evaluation criteria for all the tools used.
- Develop a detailed selection guide for selecting tools for capacity building tasks. Offer explicit advice on using each tool, emphasising new and emerging areas.
- Develop and apply evaluation methods so that the efficacy of each tool, and of capacity building generally, can be assessed.

## National Validation Framework factsheet suite

This brochure is based on a 'road map' report funded by the Australian Water Recycling Centre of Excellence. The 'road map' describes a national approach for validating treatment technologies, and was based on extensive consultation with stakeholders.

This brochure is one of a series that describes the outcomes of the first stage of this national validation project.

Other brochures in the series cover:

- > An overview of the draft National Validation Framework
- > Perspectives of water recyclers, technology suppliers and regulators
- > Validation of various treatment systems
- > Building capacity in the industry

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