

# Guidelines

## Guidelines

for developing  
recycled water schemes  
in horticulture



**Natural Heritage Trust**

*Helping Communities Helping Australia*

An Australian Government Initiative

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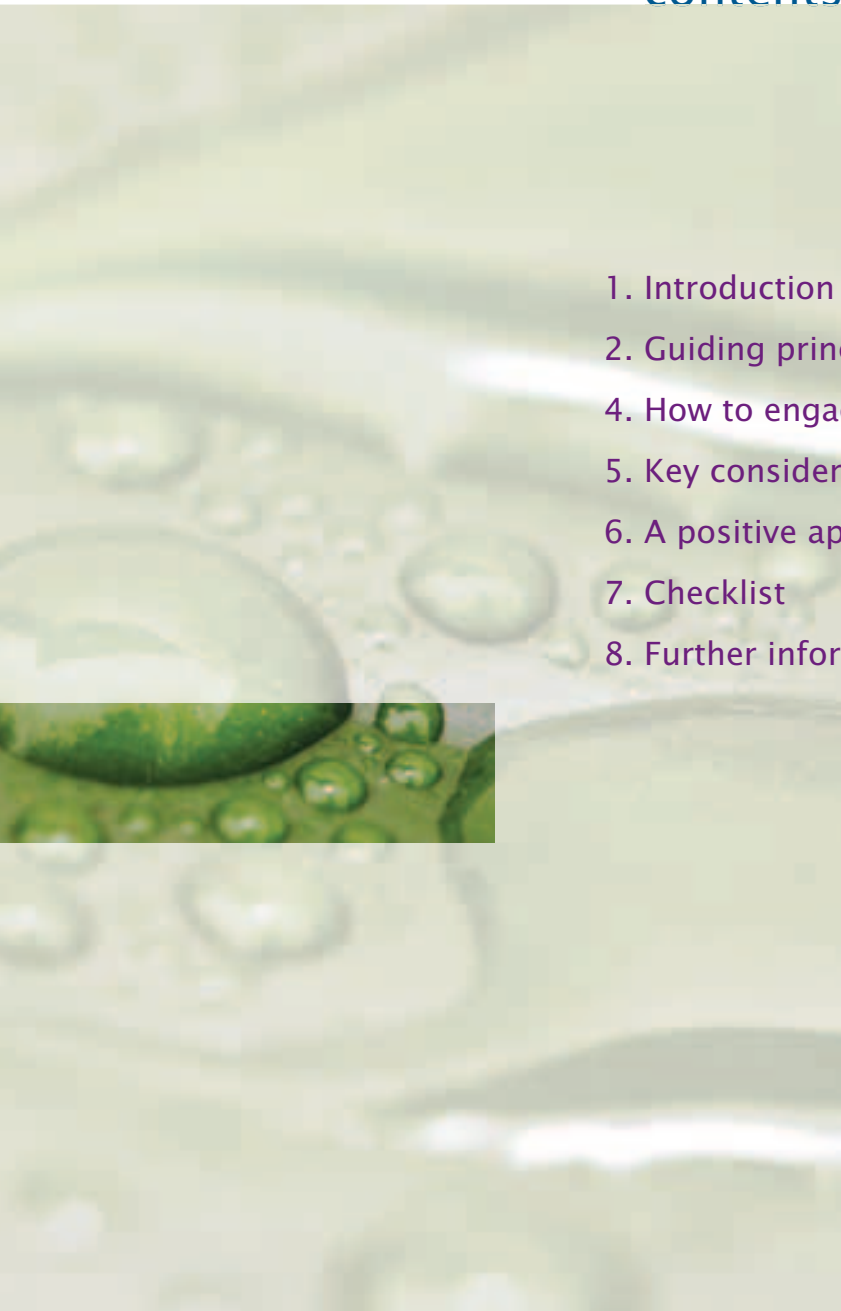

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# Introduction

*"The continued growth of our cities along with Australia's climate, available water storages, and the increasing pressure on our water supplies is cause for concern. In order to manage this increasing demand for water from our cities and maintain continued economic growth we can encourage the public to use less water but we will also have to find alternative sources of water".*  
(Prime Minister's Science, Engineering and Innovation Council)

A valuable water resource that has been under-utilised in Australia is treated wastewater from sewage treatment plants. Recycling (reclamation and reuse) of wastewater provides significant benefits for the community and the environment by increasing available water resources and decreasing pollutant loads to surface and coastal waters.

Many horticultural regions are well positioned to use recycled water as a safe, secure and sustainable water source, helping to alleviate pressure on traditional surface and ground water sources. Some have already embraced its use.

Schemes that recycle water from urban wastewater have proved to be sustainable. Australia already has over 270 schemes that use recycled water in agriculture and more than 300 schemes that recycle water for urban, industrial and environmental uses. Many of these schemes have been operating successfully for more than 20 years.

## About these guidelines

These guidelines provide a summary of the key requirements and procedures when planning and implementing wastewater recycling schemes in horticulture. The primary aim is to help scheme proponents, in conjunction with other stakeholders, plan a comprehensive and positive approach to water recycling schemes. Importantly, these guidelines should assist all stakeholders to better understand each other's expectations.



# Guiding principles

The guiding principles provided below outline the basic elements or requirements that should be met when planning and implementing wastewater recycling schemes in horticulture.

## The need for planning and communication strategies

Comprehensive plans are crucial components in the development of recycled water schemes. These plans must include thorough communication strategies engaging all stakeholders and helping them understand recycled water use. Stakeholders can then make informed decisions about water recycling and most importantly develop trust in the people that approve, manage and monitor its use (ie the water will be fit for the intended purpose).

## Inclusion of all stakeholders

Proponents of wastewater recycling should include all stakeholders in decision making when planning and implementing their schemes. Ultimately, acceptance of a scheme will not occur unless the confidence of all stakeholders (ie regulators, water suppliers, primary producers, wholesalers and retailers, community and consumers) has been secured.

## Communication Strategy

A good communication strategy should involve: relevant government departments (eg Human Services, EPA, Department of Primary Industries); growers; suppliers; wholesalers; packers and merchandisers; industry associations (eg Farmer Associations); quality assurance programs and auditors; retailers; mass media; special interest community groups and the general public.

## Technologies are proven and safe

Water recycling has been practiced around the world for more than half a century and water treatment technologies are well proven. They are so advanced that recycled water (from effluent) is used for drinking water in some countries (eg Singapore). These treatment processes are normally managed through well recognised risk management procedures (eg Hazard Analysis and Critical Control Points - HACCP). With such systems in place, water of any specified quality can be produced consistently and made 'fit-for-purpose' (ie safe for the intended purpose).

## Compliance, monitoring and reporting

All reuse schemes require a monitoring and reporting program to comply with regulatory standards and legislation and ensure the quality of agricultural produce is not compromised. Recycled water is monitored intensely to ensure it is fit for the proposed irrigation use. This usually provides a level of quality assurance above that achieved with more traditional water sources. All processes involved in the verification and approval of reuse schemes should be open, transparent (eg available on a website) and not overly complex. Measures must be in place to ensure that the regulatory arrangements to protect public health and the environment are fully complied with on an on-going basis.





# Guiding principles continued

## Managing public health and environmental risks

Risks to humans (bacteria, viruses and parasites) and to the environment (salts, sodium, nutrients and contaminants) from recycled water use are effectively managed by applying state/territory regulations supplemented by national, state and territory guidelines. These guidelines advise on minimum standards for recycling wastewater and draw on risk management protocols and proven wastewater reuse technologies to ensure recycling is safe. Proper and effective regulatory arrangements give the community confidence in recycled water schemes. Recycled water schemes must therefore comply with state/territory regulatory arrangements which are overseen by the designated government departments (eg environmental or health departments). It is the responsibility of the water treatment authority to ensure the recycled water meets appropriate standards approved by the government.

## Changes in technologies and practices

Initial use of recycled water may require modifications to current farming practices. Horticulturalists must implement these changes to secure the recycled water. For example, Customer Site Management Plans may be required that need to be reported on annually. Recycled water scheme owners and regulators will also need to keep abreast of improvements in treatment technologies and changes in regulatory requirements that will occur from time to time.

## Community acceptance and trust

Positive community perceptions of recycled water schemes can only be achieved through wide-spread trust in the relevant authorities, technologies, regulatory arrangements and compliance measures underpinning such schemes. The track record of established schemes and the experience of regulatory bodies (eg their scientific and technical advisers) is a very positive basis on which to build public confidence.

### National Guidelines

National Guidelines help ensure best practice across Australia, giving the States a minimum standard and framework to work from when developing guidelines specific to their individual requirements. See “Further Information” for more details.





## How to engage with stakeholders

Maintaining full stakeholder engagement and a genuine partnership throughout the planning and implementation process is essential for the success of water recycling schemes. The following will assist in initiating and maintaining this engagement:

### Identify key contacts

All stakeholder groups involved with the recycled water and the produce grown should be identified and encouraged to nominate the appropriate representative(s) to participate in the planning of the recycled water scheme. To the extent practical, utilise existing stakeholder networks and communication processes. However, the development of new and purpose-specific networks may be required. Opportunities for individuals from the wider community to participate or comment should also be provided.

### Determine key objectives

Identify the key objectives of all stakeholders so they understand each other's concerns, interests and expectations. Be clear and open about the benefits and possible costs associated with the scheme.

### Undertake thorough planning

With stakeholders identified and engaged, plan a comprehensive and positive approach to the water recycling proposal. This plan should run together with an extensive communication strategy, helping to maximise the acceptance and use of recycled water. The planning process should remain flexible and be adaptable to changing circumstances.

### Maintain active public relations

Relevant and factual information with the appropriate degree of detail for the specific stakeholders is crucial in developing an understanding and acceptance of produce grown with recycled water. A combination of proactive and reactive approaches is required, dependent on individual stakeholder's requirement for information and their level of knowledge.

The general public's acceptance of recycled water is influenced by attitudes, emotions, accepted practice and trust of those who are responsible to make sure it is safe (eg regulators and scientists). As a result, acceptance of produce grown with recycled water will improve with information from trusted scientific and regulatory sources, targeted education, transparency and gradual exposure.



## Key considerations for stakeholders

While stakeholders may have differing concerns, interests and expectations, the following are likely to be key considerations for:

### Governments

Public health and environmental protection through guidelines and regulations; which department regulates and approves recycled water use; what are the external costs or benefits; funding arrangements and partnerships; community service obligations; allocation of water rights; alternative uses; water availability; demand by horticultural producers; cost of treatment; state/regional policies; economic, environmental and social sustainability; public acceptance; acceptable risk as defined by the community and growers; cultural heritage; planning; and regional development.

### Water suppliers

Public health and environmental protection; quality of water is fit for purpose; communication plan; water supply and demand; costs (establishment and operational); infrastructure and servicing; training for recycled water manufacturers and users; users' concerns; and risk allocation.

### Primary producers

Water supply, demand and reliability; business opportunities; fit for intended purpose; water quality and product compliance; pricing; environmental obligations; training required; monitoring and reporting; and modifications required to current management.

### Wholesalers and retailers

Market place compliance; stakeholder education; consumer perceptions; quality control; and consumer acceptance.

### Community and consumers

Health and environmental compliance; product safety; quality control; price; and transparency (for the development of trust).



## A positive approach

Water reclamation and reuse offers a win-win scenario for the environment and horticultural producers alike and should be promoted as such.

Recycled water schemes offer substantial environmental benefits to our society including:

- Reduction of nutrient loads into aquatic environments.
- Substitution for higher quality water, freeing up this water for other productive uses and environmental flows.
- Reductions in groundwater extractions.

There are benefits to agricultural enterprises through:

- Greater certainty of water supply and an assured water quality.
- Recycling of valuable nutrients to agriculture, while minimising environmental impacts.
- Security for investment in irrigation activities.
- Produce meeting required quality assurance (QA) and environmental management standards.





## Checklist

- ☐ Have all stakeholders been identified?
- ☐ Has an engagement strategy been developed that is well planned, has defined objectives, utilises existing key contacts and networks, and will engender trust and confidence in the authorities and the scheme?
- ☐ Does your comprehensive stakeholder engagement strategy and partnership program include a communication plan?
- ☐ Do you have a comprehensive range of information about recycled water (eg fact sheets) ready to give to stakeholders, and the ability to efficiently produce others on topics nominated by stakeholders?
- ☐ Have you completed a whole of scheme water balance, including reticulation and buffering capacities?
- ☐ Have you determined the most appropriate technology to treat or use the recycled water?
- ☐ Have you checked with the appropriate authorities that the proposed systems can ensure the safety of the public and environment when irrigating with recycled water?
- ☐ Have you ensured that you meet all appropriate guidelines and regulations for your state and region?
- ☐ Is the recycled water fit for the intended purpose?
- ☐ Do you have the appropriate monitoring, reporting and quality assurance program/s in place?
- ☐ Have the economic, social and environmental costs been considered?



## Further information

### National guidelines

ANZECC & ARMCANZ, NHMRC (2000) *Guidelines for sewerage systems: Use of reclaimed water*. NWQMS Document 14\*.

[www.deh.gov.au/water/quality/nwqms/index.html](http://www.deh.gov.au/water/quality/nwqms/index.html)

\* New national guidelines for recycled water are being developed and should be available for public comment in late 2005.

### State Recycled Water Use Guidelines Available On-line

NSW - <http://www.environment.nsw.gov.au/water/effluent.htm>

Qld - [www.epa.qld.gov.au/register/p01212aa.doc](http://www.epa.qld.gov.au/register/p01212aa.doc)

SA - [www.environment.sa.gov.au/epa/pdfs/recycled.pdf](http://www.environment.sa.gov.au/epa/pdfs/recycled.pdf)

Tas - [www.dpiwe.tas.gov.au/inter.nsf/WebPages/CDAT-5JV3TW?open](http://www.dpiwe.tas.gov.au/inter.nsf/WebPages/CDAT-5JV3TW?open)

Vic - <http://epanote2.epa.vic.gov.au/EPA/Publications.nsf/PubDocsLU/464.2?OpenDocument>

### Websites for more information on recycled water

ATSE Water Recycling Report

[www.atse.org.au/index.php?sectionid=597](http://www.atse.org.au/index.php?sectionid=597)

National Program for Sustainable Irrigation

[www.npsi.gov.au/default.asp](http://www.npsi.gov.au/default.asp)

Coordinator Recycled Water Development in Horticulture

[www.recycledwater.com.au](http://www.recycledwater.com.au)

CRC for Water Quality and Treatment

[www.waterquality.crc.org.au](http://www.waterquality.crc.org.au)

Department of Environment and Heritage

[www.deh.gov.au](http://www.deh.gov.au)

Australian Heritage Commission

[www.ahc.gov.au](http://www.ahc.gov.au)

Murray Darling Basin Commission

[www.mdbc.gov.au](http://www.mdbc.gov.au)

Department of Agriculture, Fisheries and Forestry

[www.daff.gov.au](http://www.daff.gov.au)

National Environmental Protection Council

[www.ephc.gov.au](http://www.ephc.gov.au)

