



INDUSTRIAL WASTE RESOURCE GUIDELINES

INDUSTRIAL WATER REUSE

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GLOSSARY OF TERMS

AGWR: *Australian Guidelines for Water Recycling, Phase 1 2006* (NWQMS). These are available at www.ephc.gov.au

Dual Pipe Guidelines: EPA publication 1015, *Guidelines for Environmental Management – Dual pipe water recycling: health and environmental risk management* (2005). These are available at www.epa.vic.gov.au/water/wastewater/wastewater.asp

End user: A person or organisation that will reuse the industrial water, for example construction companies or site owners.

EIP: Environment Improvement Plan. A plan covering the use of industrial process water that manages identified risks and thereby ensures protection of the environment and human health (see section 5).

HACCP: Hazard Analysis and Critical Control Points.

Hazard: A biological, chemical, physical or radiological agent that has the potential to cause harm.

Hazardous event: An incident or situation that can lead to the presence of a hazard (i.e. 'what can happen and how').

Industrial Waste Resource Guidelines: EPA Victoria's Industrial Waste Resource Guidelines provide a compendium of relevant guidelines (including these), standards and codes relating to the *Environment Protection (Industrial Waste Resource) Regulations 2009*.

Industrial water: Water produced from processes at industrial or commercial premises. It includes all waterborne waste from these facilities except sewage.

Management controls: Preventive measures, procedures or actions implemented to reduce the risk and likelihood of a hazardous event occurring.

Proponent: The individual, party or joint group of parties proposing the industrial water reuse scheme and using the environment improvement plan (EIP) as their guiding document.

Risk: Risk is the likelihood of a hazardous event occurring and causing harm to an exposed population or environment.

Risk assessment: An assessment undertaken to identify potential hazards and understand the likelihood and consequences of these occurring. The risk assessment will help determine appropriate management controls needed to reduce and avoid the risks.

Risk characterisation: An assessment undertaken to identify and characterise potential hazards and their risks (for example, assessing the source water quality, and characterising what water quality parameters pose a risk to the environment, human health or product specifications).

Supplier: A person or organisation that supplies (including producing or treating) the industrial water for reuse.

Trade waste: Any waterborne waste (other than sewage) which is suitable, according to the criteria of an Authority, for discharge into the Authority's sewerage system; or any other matter which is declared by a by-law made under the Water Act to be trade waste.

Use of Reclaimed Water Guidelines: EPA publication 464.2, *Guidelines for Environmental Management: Use of Reclaimed Water*. These are available at www.epa.vic.gov.au/water/wastewater/wastewater.asp

User: See 'End user'.

This guidance forms part of the Industrial Waste Resource Guidelines (IWRG), which offer guidance for wastes and resources regulated under the *Environment Protection (Industrial Waste Resource) Regulations 2009* (the Regulations). Publication IWRG632 – June 2009.

INTRODUCTION TO THE GUIDELINES

Reusing industrial water can play an important part in reducing the demand on Victoria's precious drinking water supplies. These Guidelines provides guidance on how to assess and manage the health and environmental risks associated with reusing industrial water.

It is important to apply the waste hierarchy when considering reusing industrial water. Industries need to firstly explore opportunities to avoid and reduce their water and resource consumption by implementing water conservation measures and cleaner production initiatives. Improved resource efficiency can reduce the volume of water needed, as well as increase the volume and improve the quality of industrial water available for reuse.

EPA partners with industries and businesses to improve their entire production process, including water reuse opportunities where appropriate. For more information please contact our Sustainable Solutions Unit.

1. WHAT IS INDUSTRIAL WATER?

Industrial water is wastewater produced from processes at industrial or commercial premises. It includes all waterborne waste from these facilities except sewage. The quality and quantity of industrial water produced is highly variable depending upon a range of factors, including the following:

- The raw process material
- The industrial process that generates the water, for example: raw material washing, finished goods wash water, process filtrates, centrifugations and pressings, and boiler and cooling tower blow down
- The number of times the water has been reused – potentially increasing or decreasing the concentration levels of contaminants
- The characteristics of the products and surfaces the water contacts
- Reactions that occur during the industrial process
- Additives such as biocides, antiscalants and pH adjusters
- The temperature of the water

Under the *Environment Protection (Industrial Waste Resource) Regulations 2009*, all liquid industrial waste (including industrial water) that is not used in accordance with these Guidelines, or discharged to sewer under a trade waste agreement is a category A prescribed industrial waste (PIW). See section 3 for the approvals and exemptions for reusing industrial water.

2. WHAT CAN INDUSTRIAL WATER BE USED FOR?

With appropriate management, which may include treatment, industrial water can be reused for a wide range of purposes including industrial uses (for example, cooling and material washing) or non-industrial uses (for example, irrigation and toilet flushing).

2.1 Industrial uses

With appropriate controls, industrial water can be reused on-site, or at an alternative industrial site, for many industrial processes, including the following:

- material washing
- process rinse water
- crate and pallet washing
- hardstand and vehicle washing
- industrial fire protection
- cooling
- in production line
- pH adjustment
- boiler or cooling tower feed water supplement.

2.2 Non-industrial uses

With appropriate controls, and where risks can be managed to an acceptable level, industrial water may potentially be reused for the following uses, such as:

- crop irrigation (surface and subsurface)
- landscape irrigation (surface and subsurface), including irrigation of municipal parks and gardens
- construction (for example road compaction)
- dust suppression
- fire protection
- toilet flushing at non-residential facilities
- heating/cooling (air-conditioning) systems
- commercial car washing facilities or depots
- commercial laundries or washing machines at non-residential facilities.

Any proposed use of industrial water must be underpinned by a specific health and environmental risk assessment. Uses that are not specifically included in the above list should be discussed with EPA and DHS. Industrial water is not considered suitable for drinking, food preparation, personal washing, swimming pools and spas and laundry trough uses.

3. DO I NEED ANY APPROVALS?

3.1 EPA

The assessment process for industrial water reuse schemes is specified in Figure 1. As illustrated, it is important to identify the proposed end use(s),

volume(s), and the source water quality to understand whether EPA approval or notification is required.

EPA approval

Under the *Environment Protection (Scheduled Premises and Exemptions) Regulations 2007*, EPA approval is required for premises on or from which industrial wastewater effluent not generated at the premises, exceeding a design or actual flow rate of 5000 litres per day, is discharged or deposited.

Although waste discharges into the environment are typically subject to works approvals and licensing by EPA, an exemption from these statutory processes is provided for where:

‘an effluent reuse scheme or activity which meets discharge, deposit and operating specifications acceptable to the Authority’.

The exemption acknowledges that, in contrast to a waste discharge, industrial water reuse can be sustained as a resource. These Guidelines define the acceptable discharge, deposit and operating specifications referred to in the Regulations. Therefore, compliance with these guidelines forms a critical component of exemptions from EPA works approval and licensing requirements.

It should be noted that the exemption only extends to the use of the industrial water reuse scheme. Construction of a treatment plant may still be subject to works approval and licensing requirements.

EPA approval of an Environment Improvement Plant (EIP) is the mechanism for obtaining an exemption from works approval and licensing for the industrial process water recycling scheme.

The EIP must document the risk assessment and the appropriate management controls to ensure that the industrial water reuse scheme is protective of public health and the environment. Proponents need to accept liability for the risk assessment and its outcomes, and will need to demonstrate that the risk assessment was undertaken by a suitably qualified person, whether that is staff from the supplier, end user or a third party.

The risk assessment approach is discussed in sections 4 and 5.

In many situations, the reuse of industrial water will pose minimal risks (for example, cooling water that has not been used for other purposes). Where a proponent can demonstrate the appropriate expertise and resources, and that the source water and/or end use is similar or of low risk, EPA may approve a regional EIP with overarching management framework.

Such a framework could enable the reuse of similar-source industrial water for a range of proposed end uses (for example, dust suppression, crop and

municipal parks and gardens irrigation), or enable a range of industrial water sources (i.e. washdown water, cooling tower blow down) for a specific low risk end use (i.e. road construction). Under such a framework, the proponent(s) could then approve the individual site EIPs and management controls based on the risk assessment process and EIP templates where appropriate.

EPA notification

Written notification to EPA is required where industrial water is supplied from an EPA licensed premises, which has licence and/or site Environment Improvement Plan (EIP) conditions directly controlling the management of that industrial water source.

Under these circumstances, a licence and/or site EIP amendment may be required to ensure that industrial water reuse is compliant with licence/site EIP conditions.

Regardless of whether EPA approval or notification is required, industrial water must be used in a safe and sustainable way that protects the environment and public health. Industrial water reuse must also meet any relevant obligations such as Occupational Health and Safety, Food Standards or product standards.

All industrial water reuse schemes should undergo a preventive risk assessment and management process to ensure they exercise due diligence and manage the risks, from an environmental, public health, and business and worker safety point of view. As discussed further in section 4, the level of assessment and management required depends on the industrial water source quality and the proposed use(s).

Industrial water that is not reused must be discharged or disposed of appropriately in accordance with the *Environment Protection Act 1970* and the *Environment Protection (Industrial Waste Resource) Regulations 2009*. Any spills or discharges of industrial water may be subject of statutory/enforcement action under the Environment Protection Act.

3.2 Water authority

Industrial water that is not reused must be discharged or disposed of appropriately. If it is disposed of to sewer, this must be conducted in accordance with the relevant trade waste by-laws, trade waste agreements and the relevant statutory provisions. Check with your local water authority for more information.

3.3 Local government

Local council permits may be required for the building or alteration of structures that may be associated with the industrial water reuse scheme. Local Government officers may become involved if industrial water is not



managed appropriately and creates a nuisance. Check with your local council for more information.

3.4 Plumbing Industry Commission

While individual approvals from the Plumbing Industry Commission (PIC) are not required for industrial water reuse schemes, the PIC does conduct a 5% random audit of plumbing work that requires a compliance certificate to ensure it complies with all regulations. For industrial facilities that generate industrial water, all plumbing must be carried out by an appropriately qualified and licensed plumber. Plumbing includes, but is not limited to, drainage, mechanical services including cooling towers, roofing (stormwater), water supply, fire sprinkler systems and backflow prevention. In particular, any reuse of industrial water in cooling towers must comply with the *Building Act* 1993. Contact the PIC on 1800 015 129 or visit www.pic.vic.gov.au for more information.

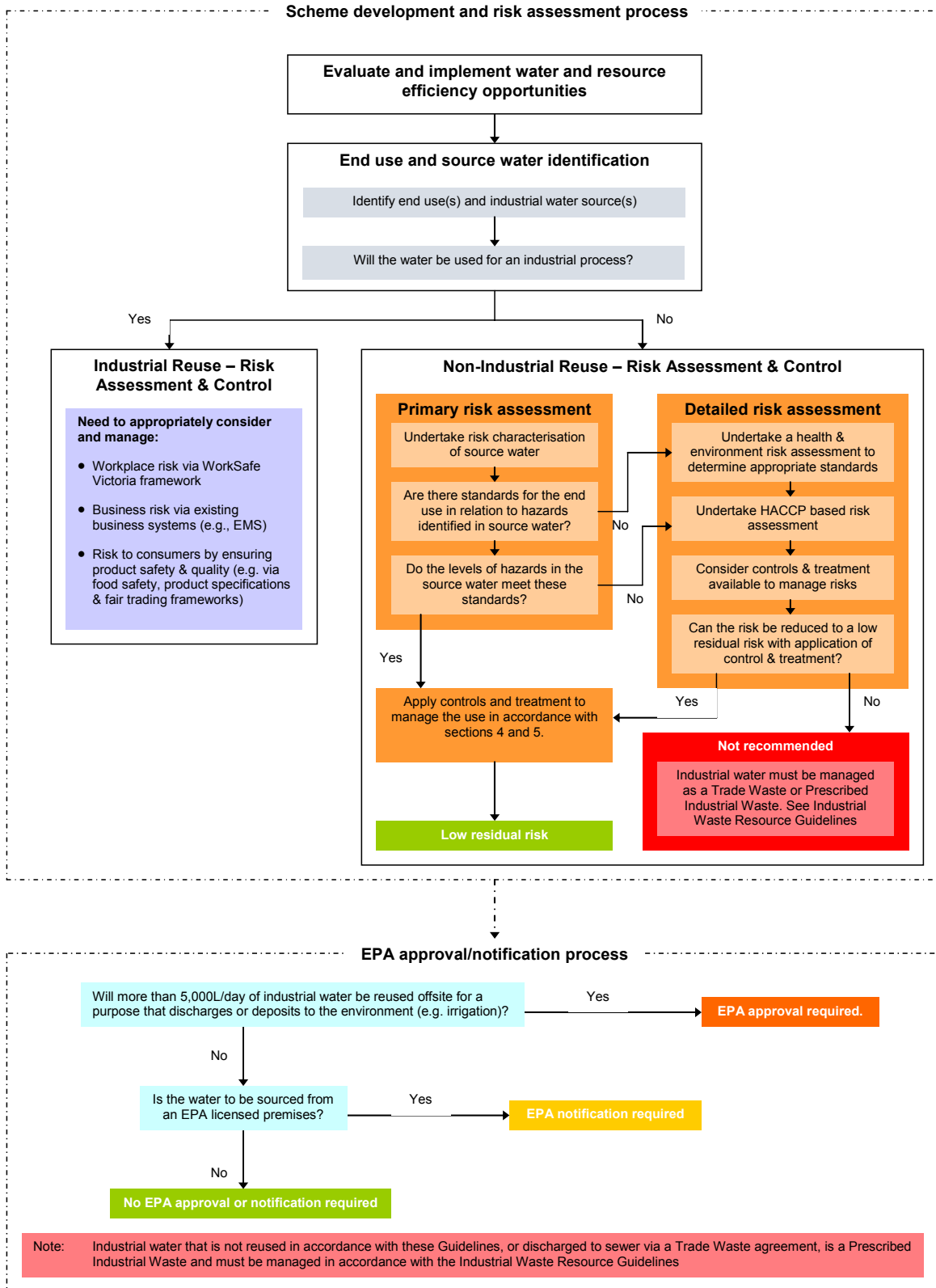


Figure 1: Assessment and approval process for industrial water reuse schemes



4. RISK MANAGEMENT

To reuse industrial water in a safe and sustainable way it is important to identify, assess and appropriately manage the risks. To do this, a risk assessment should be undertaken on the proposed scheme to identify potential hazardous events and understand the likelihood and consequences of these occurring. The risk assessment will help determine any appropriate management controls needed to reduce and avoid the risks.

The *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1)*, 2006 (AGWR) provides a best practice risk management framework. The main steps, taken from the AGWR and highlighted in Figure 2, can be applied to industrial reuse schemes. The level of assessment and management required depends on the risks associated with the scheme.

The twelve elements of the risk management framework should be applied to industrial water reuse schemes and addressed in the relevant management

document(s). For schemes requiring EPA approval this needs to be an EIP (see section 3.1 and 5). Schemes not requiring EPA approval should develop an EIP or similar management plan that helps individual businesses best manage their scheme.

The EIP can reference other relevant documents for further detail as appropriate (for example, water quality supplied may be principally managed through a deed of agreement or contract between end user and supplier).

Some aspects may be more relevant for the supplier and not the end user, and vice versa, or for long-term schemes compared to short-term schemes. For many schemes it may be more appropriate to develop separate EIPs for the supplier and end user(s) to ensure clear lines of responsibility. EIPs should include the relevant measures and controls for those parties using it as their management document. Section 4.2.4 discusses document management in more detail. For further information on any of the steps described below please refer to the AGWR.

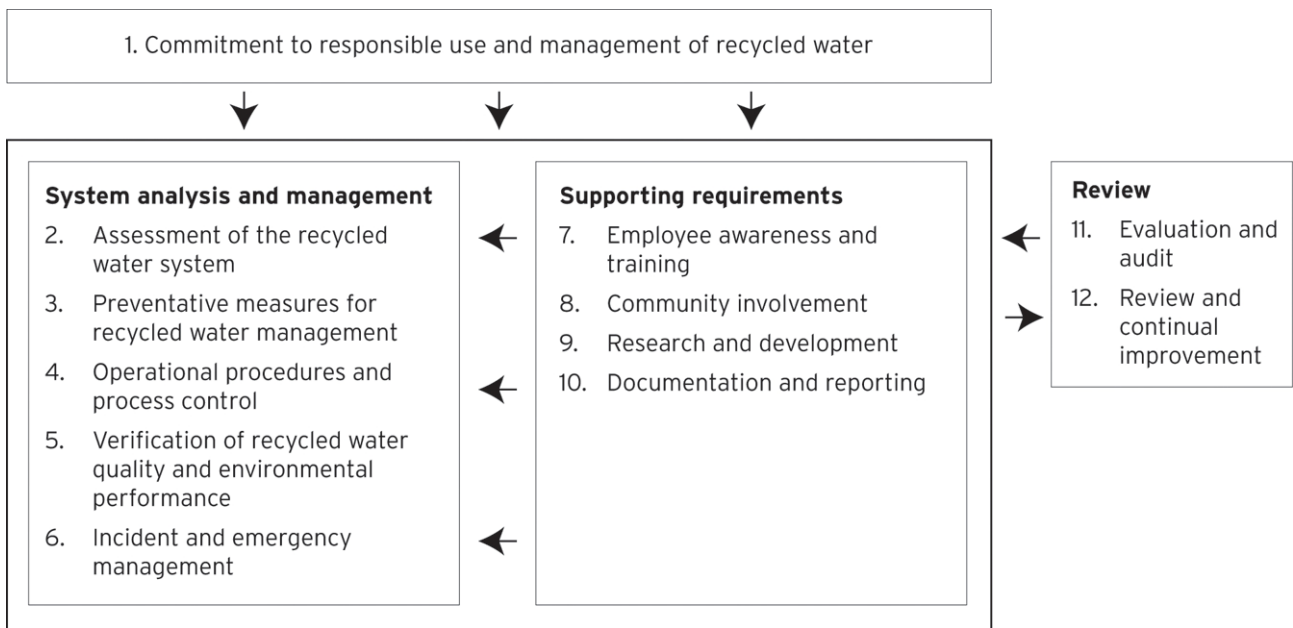


Figure 2: Risk management steps

Source: *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1)*, 2006 (AGWR)

4.1 Commitment to responsible use and management

It is important that relevant staff, in particular senior management, commit to the necessary management controls, operations and procedures involved in the scheme. Sign-off is required from the appropriate level of senior management for each relevant party (for example, user, supplier and any companies involved in the transport need the appropriate level of management commitment to undertake their role and responsibility).

In some cases this commitment may be reflected in documents such as deeds of agreements or contracts between parties. Organisations can help ensure this level of commitment by including the relevant roles and responsibilities as key performance indicators, or similar, for appropriate staff.

4.2 System analysis and management

4.2.1 Assessment of the industrial water system

Assessment of the industrial water system should involve the following:

- Identification and assessment of possible and proposed industrial water source(s) and end use(s) (including likely short and long-term exposure scenarios and potential hazards).
- Identification of hazards and understanding of source water quality (monitoring to clearly establish source water quality, particularly for parameters of concern based on known or likely inputs via the specific industrial process).

Industrial water can present a wide array of hazards due to the presence of chemical (some of which may be reactive), microbiological, physical, and radiological agents. Without adequate protection, people or the environment can be exposed to these hazards when industrial water is reused. Potential common hazards may include the following:

- Pathogenic organisms
- Nutrients (nitrogen and phosphorus)
- Biodegradable organics (composed principally of proteins, carbohydrates and fats)
- Refractory organics which tend to resist conventional methods of wastewater treatment (for example, phenols and agricultural pesticides)
- Dissolved inorganics (for example, calcium and sodium)
- Metals (for example, arsenic, barium, cadmium, chromium, lead, mercury and silver)
- Suspended solids
- Organic and inorganic compounds with toxicity

- Non-pathogenic organisms that may cause odour, or corrosion and scaling of equipment
- Risk assessment of hazards, consequences and their likelihood

The risk assessment is mainly based on source water quality and proposed end uses, but it needs to consider all aspects of the industrial water use scheme including collection, supply and storage. While this section discusses the environmental and public health-related risks, proponents will need to ensure they assess the workplace, business and consumer-related risks (see Section 4.2.2).

There are two stages of risk assessment - primary and detailed - depending on the existence of recognised standards for hazards in the particular source water and whether the application of management controls can reduce risk to an acceptable (low) level. The primary risk assessment establishes whether applicable standards exist for the end use in relation to the industrial water hazards. These may include state, national or international standards, or knowledge gained from similar risk assessments.

The appropriate standards need not necessarily have been developed especially for the specific end use. Some may have been developed to manage a similar risk profile. For example, standards for heavy metal levels may be based on threshold limits for contaminated soils. Where applicable end-use standards exist, the proponent(s) need to determine if the industrial water meets these standards.

If end-use standards do not exist for the hazards in the source water, and the level of risk warrants it, proponents will need to determine appropriate standards through a more detailed risk assessment. The AGWR provides guidance on how to calculate water quality standards to protect public health from the risk of pathogenic microorganisms in the source water, and water quality standards for protection of the environment. Safe concentrations of any chemical contaminants in the source water should also be determined for the protection of human health. An appropriately qualified individual/consultant should be engaged to undertake this assessment.

An assessment is also required to determine how risks can be reduced to a low residual level. The Hazard Analysis and Critical Control Point (HACCP) approach described in EPA publication 1015, *Guidelines for Environmental Management: Dual Pipe Water Recycling Schemes: Health and Environmental Risk Management* (2005) (Dual pipe guidelines), is recommended for this assessment. HACCP is an industry-recognised preventive risk management system that identifies, evaluates and controls hazards associated with the production of safe food or water. It focuses on preventing substandard water being delivered for use, by ensuring that treatment steps, controls, monitoring and verification that are essential

for achieving the required water quality objectives are in place.

4.2.2 Preventive measures for industrial water management

As described in Section 4.2.1, industrial water can present a wide range of risks to the environment, human health, occupational health and safety, business and/or consumer. To effectively manage risk, it is important to identify preventive measures and management controls rather than rely on reactive measures. Proponents need to identify existing and alternative or additional preventive measures and management controls required to reduce risks to an acceptable level.

EPA publication 464.2, *Guidelines for Environmental Management: Use of Reclaimed Water* (Use of reclaimed water guidelines), and the Dual pipe guidelines describe risk management controls that may also be applicable for some industrial water schemes. Potential preventive management controls may include the following:

- **Collection controls** – for example, managing or cleaning the catchment area, using less chemicals in the process, diverting some streams and only collecting from lower risk parts of the process, diverting off-specification quality water to sewer, bunding chemical storage area in accordance with EPA guidelines, staff awareness and training.
- **Storage controls** – for example, ensuring the storage is suitably designed to relevant engineering standards, preventing contamination with covering, diverting excess or overflow to sewer, diverting off-specification quality water to sewer, bunding chemical storage area in accordance with EPA guidelines, signage, staff awareness and training.
- **Treatment controls** – for example, ensure appropriate treatment standards for end use. The type and level of treatment required will depend on specific risk factors. For example, chlorination to manage health risks, simple triple interceptor to remove oils and fats, filter to remove suspended solids, monitoring and verification, or staff awareness and training.
- **Supply controls** – for example, plumbing standards and fixtures such as backflow prevention, air-pressure gaps between taps, appropriate transport vehicles and cleaning of them, signage, staff awareness and training.
- **End-use controls** – for example, application rates/volumes/times to ensure water remains on reuse site, monitoring to ensure no long-term impact, dual-pipe supply for toilet flushing, plumbing standards such as backflow prevention, air-pressure gaps between taps, signage, staff and user awareness and training.

The workplace, business and consumer-related risks also need to be managed, particularly if the water is to be reused for industrial purposes.

- **Workplace risk** – the primary exposure for many industrial water reuse schemes will be to employees and visitors to the workplace. This workplace risk is managed by WorkSafe Victoria's occupational health and safety framework and is discussed further in sections 4.2.5 and 4.3.1.
- **Business risk** – the suitability of the water for the particular end use is also a business risk and should be managed via existing business risk management systems. For example, some management controls may need to be included in internal business management systems, such as an environmental management system (EMS).
- **Risks to consumers** – specific regulatory frameworks control the risks to consumers in relation to product safety and quality, for example, food safety is regulated by the *Food Act 1984*, and the *Fair Trading Act 1999* provides a framework for the safety of goods that are intended to be used, or are of a kind ordinarily used for personal, household or domestic purposes.

These management controls should be set out in an EIP or similar management document that describes the proposed end use(s), source water quality, supply and management of the reuse scheme. See sections 4 and 5.

4.2.3 Operational procedures and process control

Operational procedures and process controls need to incorporate the relevant management controls that have been identified. For example, industrial process controls to ensure suitable water quality, operational procedures are developed for the use of industrial water such as protective clothing and safety equipment and application rates.

The relevant EIP or agreement should include or refer to the document(s) that describes the operational procedures and process control.

4.2.4 Verification of industrial water quality

The industrial water quality needs to be continuously verified, both at the source and end use. This will involve monitoring and testing, but only as appropriate (not necessarily continuous online monitoring). Verification monitoring and testing programs should be developed based on the risk assessment and can be reflected in the appropriate document (for example, by either suppliers as part of their supply agreement, or end users as part of their EIP and risk management). Refer to the AGWR for more detailed information to assist in developing a verification program.

It is important to identify what parameters and characteristics need to be monitored, at what point in the process, and how often they need to be monitored.

For example, visual monitoring at source and/or end use may be sufficient if the main parameter of concern can be visually identified, while in other cases, testing may be required at source and/or end use to ensure certain quality levels are appropriate.

The EIP should include, or refer to the relevant document(s), that sets out the verification program, including who is responsible for the associated tasks (for example, monitoring and testing). For example, in many cases monitoring and quality assurance of industrial water quality will be the responsibility of the supplier as part of their supply agreement. In other cases it may be the role of the end user to verify water quality immediately prior to use. This will depend upon appropriate expertise, resources and the contractual arrangements between supplier and end user.

4.2.5 Incident and emergency management

It is important to have appropriate processes and procedures in place to manage any incident or emergency should they occur (for example, wash bays for washing after a spill and reporting requirements for incidents and emergencies). While these Guidelines do not specify notification procedures, it is likely that in developing a suitable procedure, EPA or WorkSafe may need to be notified of certain incidents associated with some schemes (for example, EPA to be notified of any spills or discharges of industrial water to waterways or stormwater; WorkSafe to be notified of any significant injury or illness to a worker related to the reuse of industrial water).

The EIP should include or refer to the relevant document(s) that describes the incident and emergency management procedures, including who is responsible for the associated tasks (for example, clean-up of spills, system checking or shut-down and incident reporting to necessary parties).

4.3 Supporting requirements

4.3.1 Employee awareness and training

Employees and staff working with industrial water need to be aware and appropriately trained in any relevant procedures and processes, and their responsibilities (for example, trained in testing and monitoring processes and aware of incident and emergency management procedures). Relevant employees need to be aware and competently trained to ensure the necessary risk management controls are effective.

The EIP should include or refer to the document(s) that describe(s) the employee awareness and training program, including who is responsible for the associated tasks (for example, conducting training, developing awareness materials and signage and ensuring all staff have attended training).

4.3.2 Community involvement

The community need to be appropriately informed throughout industrial water reuse projects. The extent and form of information provided should reflect the specific scheme and site circumstances (for example, proximity to sensitive land uses or level of community interest). The main goal is to provide stakeholders and the broader public with balanced and objective information to assist them in understanding the industrial water source and how its use will be managed.

In some instances this may be through education and awareness programs to ensure that public access is restricted and any incidents are reported, or to ensure community confidence in the process and inform appropriate lines of communication if any concerns. In some instances proponents may also wish to promote the use of alternative water sources to enhance their reputation.

Where there is significant community interest, any stakeholder concerns should be acknowledged with feedback on how the issues will be managed and how their input has influenced the EIP and management of the industrial water.

The EIP should include or refer to the document(s) that describes the level of community involvement, including who is responsible for the associated tasks (for example, complaint response, developing community education material and erecting signage).

EPA's Community and Stakeholder Engagement team can provide further advice to businesses on how to plan and conduct community consultation.

4.3.3 Research and development

While research and development activities are voluntary, it is important that where research and development opportunities are practicable, they are recognised and used. This includes all issues related to industrial water reuse, such as investigation of innovative processes and solutions and validation of outcomes. Increased knowledge of sources and potential hazards, in particular chemical hazards, and how these can be managed is vital to the successful and safe uptake of industrial water as an alternative water source. To increase the efficiency and effectiveness of research and development activities, proponents may seek to work collaboratively with other businesses within their industry sector, or those facing similar issues.

If research and development opportunities are being explored, the EIP may include or refer to the relevant document(s) that describes the research and development, including who is responsible for the associated tasks (for example, exploring research opportunities, conducting literature reviews, developing research programs, reporting and sharing of outcomes).

4.3.4 Documentation and reporting

Maintaining appropriate documentation and reporting is important to ensure effective scheme management and communication to relevant staff and stakeholders. Aspects such as operational procedures and process controls, monitoring procedures and requirements, and incident and emergency management should all be documented. The amount of documentation and reporting will depend on the individual scheme and the complexity of management controls and regulatory approvals required for the industrial water reuse scheme (for example, users may have to report volumes and locations of industrial water used to their supplier or EPA). Appropriate documentation and reporting should be determined on a scheme-by-scheme basis.

Effective documentation and reporting ensures the relevant people can appropriately manage schemes and make informed decisions on any actions that may be needed. In many cases, suppliers and end users will need separate EIP documentation and reporting procedures to more easily manage their own roles and responsibilities.

Suppliers should keep a register of all schemes they supply with industrial water, and users should keep a register of where and how they use the industrial water.

The relevant EIP or agreements should include or refer to the document(s) that describes the documentation and reporting, including who is responsible for the associated tasks (for example, record keeping and reporting).

4.4 Review

4.4.1 Evaluation and audit

Evaluation and audit of industrial water reuse schemes is needed to understand whether the preventive management controls in place are effective and whether they are being implemented appropriately. It is important to demonstrate that users and suppliers meet their obligations in terms of water quality and management of end use.

The level of evaluation and audit and activities involved will be different for suppliers and end users, and will vary depending on specific schemes (i.e. long-term schemes as opposed to short-term schemes). Again it may more suitable for some schemes to have a separate EIP or management document for suppliers and end users.

The EIP should include or refer to the relevant document(s) that describes the evaluation and audit processes, including who is responsible for the associated tasks (for example, evaluating results and conducting audit) and the method and frequency of how these will occur. These Guidelines do not include formal requirements for an EPA-appointed auditor to

undertake scheme audits, however large and complex schemes should consider a third party audit process.

4.4.2 Review and continual improvement

Review and continual improvement is an ongoing and continuous process. It is important to constantly review the effectiveness of the scheme management system and improve where appropriate. The scheme should be reviewed from source water to end use, including reviewing the risk identification assessment process (that is, are there any new hazards present, are new end use standards applicable), operational procedures, monitoring, incident management, research and development documentation and reporting and auditing arrangements. For some short-term schemes the review and continual improvement component may not be applicable, however lessons learnt should be applied to improve any future schemes.

The EIP should include a description of how the scheme will be reviewed and continuously improved, including who is responsible for the associated tasks (for example, review EIP, check legislative requirements and understand advances in science and technology).



5. ENVIRONMENT IMPROVEMENT PLAN (EIP)

The development of an EIP is a key component of sustainable industrial water reuse and is necessary for exemption from EPA works approval and licensing provisions as described in section 3. An EIP should combine important business planning and everyday site management practices to ensure a safe, sustainable and compliant industrial water reuse scheme.

5.1 Suggested EIP content*

Commitment by senior management and relevant staff
Description of scheme <ul style="list-style-type: none"> • roles and responsibilities of all parties • source of industrial water (and any treatment required) • type and method of end use (including quantity of industrial water being reused) • maps/plans as necessary showing location of reuse scheme, warning signs, sensitive features and other relevant information as necessary
Site management and operating conditions <ul style="list-style-type: none"> • roles and responsibilities of all parties • treatment and supply reliability controls (e.g. storage or overflow requirements) • end use controls (e.g. application rates, backflow prevention and bunding) • access controls - public and/or stock, including withholding periods (if relevant) • inspection and maintenance programs • OH&S controls • training and awareness programs
Description of health and environmental risks <ul style="list-style-type: none"> • Public health • Worker safety • Air emissions • Water • Waste • Stormwater • Groundwater • Land (soil and plant health)
Incident and emergency management <ul style="list-style-type: none"> • roles and responsibilities • incident response, notification and reporting • complaint response
Assessment and monitoring <ul style="list-style-type: none"> • roles and responsibilities • monitoring and testing programs • maintenance programs
Community involvement <ul style="list-style-type: none"> • roles and responsibilities • education and awareness programs
Review <ul style="list-style-type: none"> • roles and responsibilities • audit programs • review programs • reporting programs

* Note that some of the recommended content will be more applicable to the end user as opposed to the supplier, and vice-versa, as well as long-term versus short-term schemes.

6. ROLES AND RESPONSIBILITIES

6.1 End user and supplier

The roles and responsibilities of each party need to be set out in the EIP, or appropriate management document. These Guidelines do not set any requirements on which party is responsible for actually undertaking the risk assessment and/or developing the appropriate risk management controls. It is recognised that each scheme will vary as to whether the supplier, end user or a suitably qualified third party has the resources and expertise to undertake the risk assessment and/or develop appropriate management controls.

Details on who undertakes the risk assessment or develops the appropriate management controls etc, can be set out in contractual supply arrangements as negotiated between end user and supplier. For example, in some cases the supplier may only need to supply source water quality information to the end user, who will then undertake the full risk assessment and develop management controls. Whereas, in other cases, the supplier may conduct a risk assessment on the source water quality and proposed end uses, and develop a standard EIP for end users to adopt to their specific site and implement.

6.1.1 End user

The end user must ensure that prior to reusing the industrial water a risk assessment has been conducted and appropriate risk management controls are in place. The end user must use the industrial water in a safe and sustainable manner and ensure any necessary approvals/notifications have been obtained (see section 3). This includes ensuring that a risk assessment of the water source(s) and proposed use(s) has been undertaken, which has then been used to identify and implement appropriate preventive risk management controls. These will need to be documented in an EIP (where EPA approval is required), or similar management document that addresses section 4).

6.1.2 Supplier

The supplier (including producers and treaters) must ensure that prior to supplying the industrial water it will be managed and reused appropriately, and any necessary approvals/notifications have been obtained (see section 3).

This includes exercising due diligence to ensure end users are aware of the risks associated, and have put in place appropriate management controls based on a risk assessment of the water source and end use. The supplier will also need to develop and implement any appropriate management controls identified for their process. Any preventive risk management controls need to be documented in an EIP (where EPA approval

is required), or similar management document, that addresses section 0.

The supplier must put in place mechanisms for ensuring schemes supplied with industrial water comply with any approved EIP (for example, independent monitoring or contractual arrangements).

In most cases the industry producing and supplying the industrial water will need to undertake a risk characterisation of their industrial water and be able to provide their potential customers with the information necessary to assess and manage its reuse in a safe and sustainable way.

6.2 EPA Victoria

EPA administers the *Environment Protection Act 1970* and State environment protection policies including the *State environment protection policy (Waters of Victoria)*. The Act provides the legal framework by which environmental objectives, goals and regulations are established throughout the State for industry, commerce and the general public. EPA is responsible for developing, implementing and enforcing environmental guidelines including those for the development of safe and sustainable water recycling schemes.

It is EPA's responsibility to ensure these Guidelines are implemented effectively throughout Victoria by assessing reuse proposals against these Guidelines (see section 3). While EPA does not have any statutory timelines in which to assess an EIP, we commit to providing timely assessment of reuse EIPs and can provide early advice on the understanding that project timelines can be restrictive between tender processes and end use activities.

EPA is also responsible for reviewing these Guidelines when needed to reflect additional information or research.

6.3 The Department of Human Services

The Department of Human Services (DHS) administers the *Health and Wellbeing Act 2008* and is responsible for the enhancement and protection of health and well being of all Victorians. DHS provides advice on public health policy and water related issues.

6.4 WorkSafe Victoria

WorkSafe Victoria administers the *Occupational Health and Safety Act 2004* and is the manager of Victoria's workplace safety system. WorkSafe Victoria takes the lead role in the promotion and enforcement of health and safety in Victorian workplaces and provides advice about occupational health and safety policy related to industrial water reuse.



6.5 Local government

Local councils are responsible for protecting the public health and environment within their municipal area and are responsible for permitting septic tank installations. Local government may be involved if industrial water is not managed appropriately and creates a nuisance.

6.6 Water authorities

Water authorities supply water and sewerage services and may have other roles such as waterway management, drainage or floodway management functions. Under the *Water Act 1989*, water authorities can make bylaws on trade waste, and under the *Water Industry Act 1994*, water authorities can make regulations in relation to trade waste, such as the need to obtain trade waste agreements for industrial wastewater discharges.

6.7 Plumbing Industry Commission

The Plumbing Industry Commission (PIC) administers the *Plumbing Regulations 1998* that sit under the *Building Act 1993*, and enforces standards and regulatory requirements for plumbing work, including plumbing for reuse.