Review of the *Plumbing and Drainage Act 2002*

Discussion paper

June 2014
Table of contents

Table of contents........................................................................................................................... 1

Purpose.......................................................................................................................................... 3

Background ................................................................................................................................... 3

   Historical perspective .............................................................................................................. 3
   Plumbing and drainage in Australia ......................................................................................... 4

Context ........................................................................................................................................... 5

   Licensing for plumbers and drainers ...................................................................................... 6

1. Discussion ............................................................................................................................... 6

2. Structural review and regulatory simplification ................................................................. 9

3. Approval and inspection process ......................................................................................... 10

   3.1 Existing approval and inspection process ....................................................................... 11

4. Improving technical practicality of existing requirements ............................................ 13

   4.1 On–site sewage treatment plants .................................................................................... 13
   4.2 Greywater treatment plants ............................................................................................. 17
   4.3 Chief Executive Approvals .............................................................................................. 18
   4.4 Bathroom Pods and Demountable (Portable) Buildings ................................................ 19
   4.5 Private sanitary combined drains .................................................................................... 21
   4.6 Temperature control in hot water systems ...................................................................... 23
   4.7 Backflow prevention devices .......................................................................................... 27

5. How to provide comments ..................................................................................................... 29

Appendix 1 ................................................................................................................................... 30

   Categories of work .................................................................................................................. 30

Appendix 2 ................................................................................................................................... 34

   Building classifications ........................................................................................................... 34
Purpose

This discussion paper outlines potential improvements to the regulation of plumbing and drainage work in Queensland.

The Government recognises the construction industry as one of the four pillars of Queensland’s economy with its contribution of around $60 billion for the 2013-14 year. The plumbing industry plays a critical role in this sector by ensuring public health and safety is maintained through the provision of safe water and sanitation services.

The Queensland Government is undertaking a comprehensive review of the State’s plumbing requirements. The review aims to promote efficiencies, cut red-tape and reduce compliance costs for the plumbing and building industries and homeowners. The review will make a significant contribution to the Government’s target of reducing red tape by 20 to 25 per cent.

The review coincides with the upcoming expiry of the Plumbing and Drainage Regulation 2003 (PDR) and the Standard Plumbing and Drainage Regulation 2003 (SPDR). It is a legislative requirement that Regulations are reviewed every 10 years to ensure their continued relevance to the economic, social and general wellbeing of the people of Queensland. It is considered that this review may well identify obsolete and redundant requirements that can be repealed.

To achieve these outcomes the review will focus on:

• streamlining requirements to reduce the regulatory burden on industry, without compromising public health and safety; and

• reducing red tape, time delays and associated costs for housing providers, plumbing licensees, local governments and homeowners.

Proposals in the discussion paper will contribute to the State and Federal Governments’ reform agenda to further reduce red tape without impacting on the health and safety of the community.

The Department of Housing and Public Works is seeking feedback from plumbing and building stakeholders, local governments and the community on the issues raised in this discussion paper.

Background

Historical perspective

Plumbing and drainage has played a significant role, particularly over the past 200 years, in improving public health and safety and delivering a safe water supply and effective drainage in communities across the world.

Our modern plumbing laws stemmed from the experiences of industrialisation in England. In the 1800s, the rivers of the Thames, Fleet and Walbrook were open sewers, the Thames the most foul of all. Drains were poorly designed and were constructed from the rough brickwork
or masonry. As a result sewage often mixed with public water supplies and diseases such as cholera, typhoid and dysentery were rife.

The understanding that diseases were transmitted through water and waste took hold slowly as scientific discoveries progressed in the 19th and 20th centuries. However, it was not until 1848 that England passed the national Public Health Act. This legislation, which would become a model plumbing code for the world to follow, mandated minimum sanitary arrangements for every house, whether a flushing toilet, or a privy, or an ash pit. The government also released five million British pounds for sanitary research and engineering, and commenced construction of a comprehensive sewer system.

Plumbing and drainage in Australia

Australia and other developed countries have not been immune from the health impacts caused by poor plumbing and drainage. Even in the last 25 years, there have been outbreaks of disease caused by problems with drinking water supplies and disposal of liquid waste\(^1\).

In Indigenous communities across Australia, it has been noted that individual life expectancy is affected by, among many factors, poor drinking water and sanitation\(^2\). Poor plumbing and drainage design, installation and maintenance can directly contribute to these outcomes.

It is not only health impacts that can be created by plumbing and drainage. Safety issues can also be present.

Scalding from hot water is a known hazard and young children, older persons and people with a physical or cognitive impairment are typically at-risk\(^3\). Information published by the Department of Health notes that “every day more than three children under five years of age present to a hospital Emergency Department in Queensland for the treatment of scalds, mainly caused by hot tap water and spilt food and drinks in the family home”\(^4\).

In our everyday life, plumbing and drainage remain as essential pieces of infrastructure for our buildings and our communities.


Context

The last major review of Queensland’s plumbing and drainage legislation was undertaken in 2000 - 2001 and resulted in the creation of the *Plumbing and Drainage Act 2002* (PDA). The PDA governs:

- the assessment and approval of plumbing and drainage work
- the licensing and compliance of plumbers and drainers
- the approval of on-site sewerage facilities
- other plumbing and drainage matters, such as backflow prevention devices, tempering valves and water meters.

As part of the Queensland Government’s goal to achieve a 20 per cent reduction in regulatory burden by 2018 and to cut red tape, the Department of Housing and Public Works is conducting a comprehensive review of plumbing laws. The review includes key issues that have been raised by stakeholders and the public. It will look at all of Queensland’s plumbing legislation, regulations and codes, allowing proposals for reform to be developed holistically. This approach will ensure all opportunities for the reduction of red tape and regulatory burden can be considered with a view to improving consistency and clarity.

Key potential improvements that may benefit industry and the community have been identified in the following areas:

- Review of the existing structure of the Act, Regulations and Codes and existing provisions to simplify and clarify existing requirements and make them easier for industry participants to understand and implement.
- Review of the existing arrangements for the approval and inspection of plumbing and drainage work.
- Enhancing the practicality of existing plumbing and drainage requirements by addressing a number of issues that have been raised by industry and local government.

The review will focus on specific improvements to the:

- **PDA**
  The PDA provides the regulatory framework for plumbing and drainage and outlines the relevant performance and assessment requirements. It also establishes the basis for the plumbing regulator, the Plumbing Industry Council, and the licensing regime for plumbers and drainers.

- **Standard Plumbing and Drainage Regulation 2003 (SPDR)**
  The SPDR details specific laws to ensure plumbing and drainage work is compliant. The PDR and SPDR are subordinate pieces of legislation of the PDA.

- **Plumbing and Drainage Regulation 2003 (PDR)**
  The PDR details the types of plumbing and drainage licences and the type of work that only a licensed person can undertake.

- **Queensland Plumbing and Wastewater Code (QPWC)**
  The QPWC is designed to provide performance solutions to meet certain requirements of the PDA, and operates under the SPDR. This ensures that standards set by the QPWC can be maintained, while allowing for flexibility and innovation in technologies, materials and methods for plumbing and drainage. The QPWC is also used to adopt Queensland specific variations to the Plumbing Code of Australia (PCA).
The review will also consider the interaction of Queensland laws with national plumbing codes and standards including the:

- **Plumbing Code of Australia (Volume Three of the National Construction Code series)**
  Since 2011, the PCA has provided a national set of technical requirements for all areas of plumbing which can be adopted by states and territories. The PCA is administered by the Australian Building Codes Board on behalf of the Australian Government and State and Territory Governments, and supplements the Building Code of Australia (Volumes One and Two of the National Construction Code series). Queensland has adopted the PCA with some variations to account for local conditions.

- **Australian Standards**
  Australian Standards are technical standards developed by an independent body, Standards Australia. Australian Standards ensure the safety, performance and reliability of a range of products, services and systems. Australian Standards play a particularly important role in the plumbing industry where key standards form the backbone of regulatory frameworks across the country. Reliance on these key standards facilitates the adoption of consistent plumbing standards and work practices. Given this reliance it is necessary to ensure that standards are regularly reviewed to keep pace with technological improvements and reflect best practice.

### Licensing for plumbers and drainers

On 2 August 2012, the Legislative Assembly directed the Transport, Housing and Local Government Parliamentary Committee to inquire into and report on the operation and performance of the Queensland Building Services Authority in its regulation of the construction industry.

The Parliamentary Committee tabled its report which included 41 recommendations in November 2012. The Government’s response to the report supported the recommendation to transfer the licensing system and roles and functions of the plumbing regulator to the Queensland Building and Construction Commission (formerly the Queensland Building Services Authority). The transfer of the roles and functions is anticipated to take place in September 2014.

For this reason, this discussion paper does not address any issues surrounding the licensing of plumbers and drainers.

### 1. Discussion

The introduction of safe water supply and sanitation systems throughout the 20th Century has resulted in significant health benefits to society, including the reduction of water-borne epidemics and preventable diseases, like cholera, typhoid and dysentery.

The World Health Organization (WHO) has identified that plumbing is a key public health issue of the present and future. It is easy to dismiss this issue as one faced only by
developing nations, but the “spread of disease can occur as easily in both developed and developing countries as a result of improper plumbing system design and maintenance”\(^5\).

In Australia the plumbing and drainage industry is regulated in all states and territories and plays a critical role in protecting public health, safety and the environment by ensuring that:

- plumbers and drainers are suitably qualified to perform the work for which they are licensed
- plumbing systems are installed properly, minimising any potential risks to water supply and sanitation systems.

The PDA incorporates many of the early learnings about effective collection and transport of water and waste. It adopts the PCA which in turn adopts a number of Australia / New Zealand Standards. The PCA and standards represent the best practice in plumbing and drainage, and draw on experience and knowledge gained over many hundreds of years.

All states and territories provide for regulation of plumbing and drainage. Not all adopt the PCA, and not all the legislation is completely consistent. Variations have been developed by individual jurisdictions, but they all embody the objective of protecting public health and safety.

The table below shows the plumbing and drainage legislation across other jurisdictions in Australia.

**Table 1—Plumbing and drainage regulation in Australia**

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Legislation</th>
<th>Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>Plumbing and Drainage Act 2011</td>
<td>Plumbing and Drainage Regulation 2012 and Home Building Regulation 2004</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Plumbers and Drainers Licensing Act 1983</td>
<td>Building Regulations and Plumbers and Drainers Licensing Regulations</td>
</tr>
<tr>
<td>South Australia</td>
<td>Water Industry Act 2012 and Public and Environmental Health Act 1987</td>
<td>Plumbers, Gas-fitters and Electricians Regulations 2010</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Building Act 2000</td>
<td>Plumbing Regulations 2004</td>
</tr>
<tr>
<td>Victoria</td>
<td>Building Act 1993</td>
<td>Plumbing Regulations 2008</td>
</tr>
</tbody>
</table>

\(^5\) Transcript of radio interview on health aspects of plumbing, Mr Russ Chaney, Executive Secretary, World Plumbing Council: [www.who.int/water_sanitation_health/hygiene/plumbingradio/en/](http://www.who.int/water_sanitation_health/hygiene/plumbingradio/en/)
Potential improvements

Option 1 (a)—Deregulate the plumbing and drainage industry

The plumbing and drainage industry in Queensland is comprehensively regulated with considerable penalties for work that is undertaken without the appropriate licence, approvals or not in compliance with the applicable standards. This regulation can be seen by some as unnecessary red tape, imposing a considerable burden on industry and the community.

Against this is the ongoing risk posed to the health and safety of the community from non-compliant plumbing and drainage work.

Disease-causing micro-organisms, such as bacteria, viruses and protozoans continue to be found in contaminated water sources across the world. These organisms include disease-causing bacteria, such as salmonellae and E.coli, disease-causing viruses such as Hepatitis A, and diseases-causing protozoans like Giardia and Cryptosporidium. The type and number of organisms people can be exposed to and their spread in the community depends on the effectiveness of the plumbing, drainage and sewage treatment systems.

While reducing the regulatory burden and reducing red tape are important aspects of assisting the building and construction industry, it is also important that adequate standards are maintained to protect public health. Important factors recognised internationally and relevant to the Queensland plumbing and drainage industry include:

- provision of safe water to all members of the community
- water should be supplied from accessible and hygienic fixtures
- buildings should be supplied with safe piping for delivery of water
- liquid wastes should be disposed of promptly and hygienically
- backflow of sewage and contaminated water into potable water supply should be prevented
- materials and work quality should comply with appropriate quality standards
- plumbing installations should be tested and disinfected prior to use
- adequate training for plumbing professionals
- plumbing systems should be properly maintained.

The following table sets out the benefits and disadvantages of deregulating the Queensland plumbing and drainage industry.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant reduction in red tape for industry</td>
<td>Increased risk to public health and safety caused by the removal of accepted practice and legislative requirements for undertaking plumbing and drainage work.</td>
</tr>
<tr>
<td></td>
<td>Loss of certainty for industry and the community regarding appropriate standards for plumbing and drainage work.</td>
</tr>
<tr>
<td></td>
<td>Loss of records and plans of work currently used by local government and water service providers to plan and maintain plumbing and drainage infrastructure.</td>
</tr>
</tbody>
</table>
**Potential improvements**

**Option 1 (b)—Maintain Queensland’s current regulatory system, with some improvements to reduce red tape and improve understanding and practicality**

The current Queensland system of regulating plumbing and drainage work has for the most part been successful in minimising risks to the health and safety of the community posed by unsatisfactory plumbing and drainage practices. As an alternative to deregulating the industry there are a number of opportunities to refine existing requirements, reduce red tape, respond to industry and community issues and enhance the practicality of the existing regime.

The following table sets out the benefits and disadvantages of refining the current plumbing and drainage regulation.

**Table 3—Benefits and disadvantages of refining plumbing and drainage regulation**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Building on existing regulatory arrangements makes it easier to retain the health and safety benefits achieved under the current system.</td>
<td>• Industry may be reluctant to adopt reform proposals.</td>
</tr>
<tr>
<td>• Maintaining potential to reduce red tape for the industry and the community.</td>
<td>• Further training may need to be undertaken.</td>
</tr>
<tr>
<td>• Responsive to recent innovations and technologies.</td>
<td></td>
</tr>
<tr>
<td>• Mandates safe and reliable plumbing practices.</td>
<td></td>
</tr>
<tr>
<td>• Offers relevant guidance to industry and the community on acceptable plumbing and drainage practices.</td>
<td></td>
</tr>
</tbody>
</table>

2. **Structural review and regulatory simplification**

As part of the Government’s commitment to reduce the regulatory burden on industry, a structural review of existing plumbing laws and associated codes is being undertaken.

The aim of this review is to promote industry understanding of regulatory requirements by adopting a logical grouping of similar provisions in appropriate legislative instruments. Feedback received from several major key stakeholders including licensees and key industry stakeholders has consistently indicated that the plumbing laws and associated codes are too burdensome and confusing. For this reason it is considered that there is potential to simplify and clarify existing plumbing and drainage requirements to make them easier to understand and apply.

**Potential improvements**

**Option 2.1—Structural review of Acts, Regulations and Codes and regulatory simplification**

Over time, regulatory environments change and legislation needs to be revised to ensure that requirements continue to meet community expectations. It is proposed to review all
Review of the Plumbing and Drainage Act 2002 and associated regulations and codes

existing legislation, regulations and codes to clarify inconsistent and ambiguous provisions and remove redundant and obsolete requirements.

In addition, it is also proposed to review the existing structure of the PDA, regulations and codes to make it easier for users to identify the requirements that are relevant to them. The review will also seek to ensure that the structure is appropriate to meet the needs of industry and the community.

In this context, it is relevant to note that amending Acts of Parliament is a complex and time consuming process, with amendments potentially taking up to 18 months to be passed. By contrast, the process for amending a regulation is simpler and quicker making it more flexible and responsive to change.

To facilitate a more flexible regulatory environment for plumbing and drainage it is proposed to transfer administrative provisions from the PDA into a regulation, to allow Government to quickly respond to future required legislative changes that will benefit both the plumbing industry and Queensland. It is expected that this could involve transfer of the following administration provisions from the PDA to a regulation:

- Part 4—Compliance assessment
- Part 5—Chief Executive Approvals
- Part 6—Investigation and enforcement by local governments.

The transfer of administration provisions from an Act to a regulation does not result in a dilution of power or obligation. It simply transfers the provision into the most appropriate regulatory instrument.

Simplifying regulation can also be achieved by reviewing technical provisions in the regulations and codes and transferring them to the appropriate legislative vehicle. For example technical provisions (including but not limited to product certification, installations, fittings and fixtures) may be more appropriate in the QPWC instead of the regulations.

The following table sets out the benefits and disadvantages of undertaking a structural review of the Act, Regulations and Codes and simplifying existing regulatory requirements.

### Table 4—Benefits and disadvantages of structural review and regulatory simplification

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation is easier to understand.</td>
<td>Perceived as change.</td>
</tr>
<tr>
<td>Promotes consistency.</td>
<td>Further training may need to undertaken.</td>
</tr>
<tr>
<td>Removes duplication.</td>
<td></td>
</tr>
<tr>
<td>Potential to reduce regulatory burden.</td>
<td></td>
</tr>
<tr>
<td>Reduces licensee reliance on plumbing inspectors for advice.</td>
<td></td>
</tr>
<tr>
<td>Higher degree of compliance.</td>
<td></td>
</tr>
<tr>
<td>Can respond easier to changes in practices and technologies.</td>
<td></td>
</tr>
</tbody>
</table>

3. Approval and inspection process

The introduction of the notifiable work scheme for existing houses and the removal of the need to obtain approvals for this work has significantly reduced red tape, delays and costs for licensees, local government and consumers. It is estimated that these savings will equate
to approximately $18 million per year for Queensland and has served as a model for the type of improvements that can be realised when key industry stakeholders work together with the State and local governments to improve existing regulatory requirements.

Since the introduction of the notifiable work scheme, Building Codes Queensland has worked with key industry and local government stakeholders to identify further incremental changes that could be implemented to reduce regulatory burden for industry while at the same time maintaining appropriate levels of health and safety for the Queensland community.

### 3.1 Existing approval and inspection process

The SPDR defines four categories of plumbing and drainage work in Queensland, being: compliance assessable work, notifiable work, minor work and unregulated work. For more information on these categories refer to Appendix 1.

Compliance assessable work for new buildings is considered to pose the most risk to public health, safety and the environment. Given the risks involved with this type of plumbing and drainage work compliance assessable work is subject to local government approval and inspection.

The approval and inspection process for compliance assessable plumbing work is divided into two stages:

- **permit**—application to commence work for new buildings (current timeframe of twenty (20) business days); and
- **inspection**—of work to gain a compliance certificate to ensure compliance with the standards.

Permit applications from plumbers and drainers are lodged with local governments and must be assessed along with any plans. If local government is satisfied the proposed work meets the legislative requirements it issues a permit. Once the permit is issued, the licensee can commence the work.

The licensee must then contact local government at specific stages of work (i.e. for a new house, underslab, rough-in (behind plaster sheeting), fit-out (fitting of fixtures) and final) and request an inspection of the work. The local government must inspect the work within 48 hours of receiving the request or set an agreed time with the licensee. The inspection is undertaken by a plumbing inspector who is also a licensed plumber/drainer, and if the work complies with all the relevant laws and standards, a final compliance certificate is issued.

Currently, local governments can opt-out of the permit process by resolution. Queensland’s three largest local governments, (Brisbane City Council, Gold Coast City Council and Moreton Bay Regional Council), have resolved to opt-out of the permit process for detached dwellings. They have advised that it has resulted in a benefit for both industry and licensees by reducing timeframes.

**Potential improvements**

Industry stakeholders and local governments have identified the approval and inspection process for plumbing work performed under the category of compliance assessable work as a key area for reform.
Reforming the approval and inspection process for compliance assessable work will provide the opportunity to reduce plumbing approval timeframes, construction costs and support the Government’s commitment to reduce red tape.

**Option 3.1—Remove the requirement to obtain a permit for certain types of buildings**

Legislation could be amended to reduce approval timeframes by removing the requirement to obtain a permit for low risk compliance assessable work. To ensure local government is aware of work being undertaken, an application to trigger the process would still need to be lodged. However, the time taken for local government to assess the application and provide notification that work can commence could be significantly reduced from twenty business days to two business days.

It is proposed to remove the requirement to obtain a permit for:
- new houses (class 1a buildings⁶) and new garages/carports (class 10 buildings); and
- new duplexes and row houses; provided each dwelling has a separate individual connection to local government/service providers sewerage and water infrastructure.

This proposal would not apply to properties proposing to:
- include an on-site sewerage treatment plant
- include a trade waste connection; or
- connect the premises to a combined drain.

This reform would allow construction work to commence one month earlier, resulting in reduced construction times associated with the construction of new class 1 (e.g. houses) and 10 buildings (e.g. garages).

The following table sets out the benefits and disadvantages of removing the permit process for the construction of new class 1 and 10 buildings.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Be able to undertake plumbing work up to one month earlier.</td>
<td>• Less rigour and oversight.</td>
</tr>
<tr>
<td>• Simplified approval process.</td>
<td>• Reduced opportunity to identify potential issues at an early stage.</td>
</tr>
<tr>
<td>• Lower development holding costs.</td>
<td></td>
</tr>
</tbody>
</table>

**Option 3.2—Reduce the application timeframe for more complex types of buildings**

Plumbing and drainage work associated with larger buildings such as multi-unit residential or office buildings (i.e. class 2 to 9) is more complex. Due to the additional complexity sufficient time is needed by local government to assess all plans to ensure the relevant standards are followed.

To support the construction and building industry it is proposed to reduce the current assessment timeframe by 50 per cent from twenty business days to ten business days for the permit process.

---

⁶ Refer to Appendix 2 for a list of building classifications
The table below sets out the benefits and disadvantages of reducing the permit application time for complex types of buildings (class 2 to 9).

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Undertake plumbing and drainage work up to two weeks earlier.</td>
<td>• Increased pressure on local government resources.</td>
</tr>
<tr>
<td>• Lower development holding costs.</td>
<td></td>
</tr>
</tbody>
</table>

4. Improving technical practicality of existing requirements

Building Codes Queensland maintains regular consultation with key plumbing stakeholders through the Plumbing Industry Consultation Group (PICG). The primary purpose of the PICG is to provide a forum to consult on proposed changes to plumbing legislation. However, the PICG also provides an excellent opportunity for industry stakeholders and local government to raise issues that are affecting the plumbing and drainage industry in Queensland.

A number of these issues are included in the following discussion that seeks to identify potential improvements to existing technical requirements imposed on the plumbing and drainage industry.

4.1 On–site sewage treatment plants

Many areas of Queensland are not serviced by a centralised sewerage network. The non-sewered areas of the State are most commonly serviced by septic tanks or on-site sewage treatment plants. The resulting effluent is either treated and diverted for re-use (greywater only) or applied to land application areas.

The function of an on-site sewage treatment plant is to receive and treat domestic sewage by means of aerobic and/or anaerobic processes and, where required, disinfection so as to produce an effluent appropriate to the land application area.

An on-site sewage treatment plant must protect public health by minimising the risks associated with the treatment of sewage and its ultimate discharge to the environment.

On-site sewage facilities that are appropriately designed, sited and maintained can provide satisfactory waste management solutions. However, anecdotal reports suggest that many systems are underperforming\(^7\) and, as a result, pose an increased risk to public and environmental health.

Environmental impacts caused by the discharge of poorly treated sewage may include pollution of groundwater, streams and waterways along with degradation of soil and vegetation. Apart from the environmental effects caused by poorly or untreated wastewater, failing systems also pose a health risk through direct human contact. This can not only lead to upset stomachs, but can also lead to more serious conditions caused by bacteria and

\(^7\) Anecdotal evidence suggests failure rates of between 60 and 80 per cent.
viruses. Children are particularly at risk when they play in areas that are polluted by the discharge from poorly serviced or maintained on-site sewerage treatment plants.

Failing on-site sewerage systems can have the following adverse impacts to both the occupants of the property and public in general:

- spread of infectious bacteria, viruses and other organisms in the wastewater
- cause odours
- attract pests (mosquitoes, flies and rodents)
- contribute to the pollution of groundwater, streams and waterways
- cause degradation of soil and vegetation.

Owners/occupiers play a crucial role in ensuring that on-site sewage treatment plants are regularly maintained and that the system continues to effectively treat the waste water. The failure of on-site sewerage systems is generally attributed to one of three factors:

- operation of the system (loading rates, mechanical malfunctions, pump failure)
- maintenance (lack of regular servicing, maintenance and testing)
- siting and design issues (soil types, subsurface water entering system during flooding events).

With increasing awareness about the impacts and consequences of poorly performing systems there is a growing concern from local governments about how to manage these systems. The current standards are also coming under scrutiny as to whether they can ensure adequate treatment performance.

Local governments are currently obliged to maintain service information (record keeping only) for on-site sewage facilities and greywater facilities. They have advised that these notifications are simply stored and don’t offer any value.

Also, many maintenance providers do not supply the required service certificates which leaves local governments in the position of following up a document they place limited value on. These issues result in significant cost and administrative burden on local governments.

It has also been identified that there are gaps in the legislation covering the recording, inspection, auditing and monitoring of these systems. As the current regime is not mandated, local governments are reluctant to charge a fee for service and they have competing demands and limited financial resources. The resource burden for inspecting these systems can be considerable as they are often placed in geographically diverse locations. This often results in local governments not having the trained resources to monitor these activities and they generally only inspect properties following a complaint.

Potential Improvements

Option 4.1 (a)—Service persons required to only provide notification to local government on failed systems

The legislation could be changed so that a service person would only be required to provide a written report to local government where critical issues have been identified and that the system is failing. This would provide benefit to the local government, as they would be immediately notified of a failing system. The local government would then be able to determine how to address the non-compliance and take appropriate enforcement action.
Only having to maintain reports for failed systems would also reduce administrative and cost burden for local governments.

Table 7—Benefits and disadvantages requiring only requiring notification for system failures

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Less red tape for local government.</td>
<td>• Reactive.</td>
</tr>
<tr>
<td>• Minimises operation cost for local governments and plumbers.</td>
<td>• No independent scrutiny of all systems.</td>
</tr>
<tr>
<td></td>
<td>• Potential for systems to be unreported over long periods of time.</td>
</tr>
<tr>
<td></td>
<td>• Open to abuse.</td>
</tr>
<tr>
<td></td>
<td>• Minor maintenance problems may be overlooked and/or not rectified.</td>
</tr>
</tbody>
</table>

Option 4.1 (b)—Impose minimum testing requirements for on-site sewerage systems—Local government to inspect/audit/monitor

Change the legislation to impose a minimum annual testing regime which would require local governments to administer the proposed regime to inspect, audit and monitor on-site systems. Local governments would continue to be responsible for any follow-up or enforcement action. Owners would still be responsible for maintaining and servicing their system. A fee would need to be charged for this service as it would put resource pressure on local governments and this would increase costs for the homeowner.

This option could include a risk-based approach that rewarded owners of systems. For example if a system complied for two consecutive years then the system would not need to be inspected for another five years. Systems that failed would need to be tested annually until they achieved compliance for two consecutive years. Better records and access to testing results would allow options to be developed to ensure the systems are not tested unnecessarily while at the same time ensuring that public health issues are adequately addressed.

Table 8—Benefits and disadvantages of requiring local government to inspect, audit and monitor systems

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Independent oversight.</td>
<td>• Increased pressure on local government resources.</td>
</tr>
<tr>
<td>• Consistency of testing.</td>
<td>• Increased cost burden for community.</td>
</tr>
<tr>
<td>• Ability to recover fees to fund inspection programs.</td>
<td></td>
</tr>
<tr>
<td>• Local government would be the single point of control over inspections in their area.</td>
<td></td>
</tr>
<tr>
<td>• There would be a ‘one-stop-shop’ for consumers.</td>
<td></td>
</tr>
<tr>
<td>• Risk-based methods would reward owners of compliant systems.</td>
<td></td>
</tr>
</tbody>
</table>

Option 4.1 (c)—Local government providing reports to provide for data analysis of on-site systems and greywater systems

The legislation could be amended to require that local government provide annual reports to the State government on the operation of on-site and greywater systems in their area. Currently the department does not have information detailing the total numbers of systems installed, types and size of systems and details of failure rates. Under this proposal the state
government would obtain data from across the state on the performance of individual systems and other trends. Publication by the State government of the overall State-wide picture could in turn be used by local government to plan their audit and inspection activities.

Table 9—Benefits and disadvantages of minimum annual testing

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Supports health and safety of the community.</td>
<td>• Increased pressure on local government resources.</td>
</tr>
<tr>
<td>• Centralised records and ability to obtain data on the performance of systems across the State.</td>
<td>• Creates more red tape.</td>
</tr>
</tbody>
</table>

Option 4.1 (d)—Undertake a comprehensive review of on-site sewage systems

Currently, the health and environmental impacts of on-site systems are largely unquantified. Numerous cases of disease outbreaks and environmental contamination have been reported, however one of the most significant cases in Australia was that of a viral Hepatitis A outbreak at Wallis Lakes, in New South Wales. It was reported that 444 local residents fell ill with Hepatitis A after eating shellfish from the lake, which was contaminated with untreated effluent. It was discovered that the contamination was caused by poorly maintained and failing on-site systems.

The task of identifying contributing factors for failing systems can be complex and variable, but it has been reported by local government that failure rates are estimated to range from 60 to 80 per cent. These failures range from minor to major depending on the system, location and frequency of servicing.

In order to achieve a more sustainable approach to managing these systems a more appropriate means of assessment is required. It has been suggested that currently in Queensland there is a lack of relevant scientific data or analysis of appropriate performance of on-site systems. Very often anecdotal evidence is relied upon. Without this knowledge issues are unable to be addressed appropriately or consistently across the State. In order to achieve and implement a standardised framework that addresses these issues, it has been suggested that a full review be considered.

The review could also look at the standards and process currently in place for testing and approval of systems. This could include looking at the following issues:

- A thorough examination of the evidence to determine the potential causes of failure of these systems.
- Whether the current testing standards adequately represent the conditions that the system will be exposed to when installed and whether this is responsible for the failure of the system.
- Considering provisions that permit the cancellation of approvals where it is found that a particular type of system has failure rates beyond acceptable standards.
- How innovative systems are approved where there is no specific testing process.
- Investigating options to improve Australian Standards to remove the need for Queensland specific testing standards.
Table 10—Benefits and disadvantages of undertaking a comprehensive review of on-site sewage systems

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• An holistic assessment of the existing state of systems can be made.</td>
<td>• Delay to improvements to the current system.</td>
</tr>
<tr>
<td>• Evidence based assessment of issues.</td>
<td>• Increased administrative burden for local government to provide information.</td>
</tr>
<tr>
<td>• Allows for more consistent reliable data to be obtained from local governments.</td>
<td></td>
</tr>
<tr>
<td>• Rigorous analysis.</td>
<td></td>
</tr>
<tr>
<td>• Obtaining specialist technical advice.</td>
<td></td>
</tr>
<tr>
<td>• Thorough examination of the issues.</td>
<td></td>
</tr>
</tbody>
</table>

4.2 Greywater treatment plants

Since 2006 Queensland has allowed the diversion of bath, basin, laundry or shower greywater can be treated by treatment plants which collect, store, direct, treat, and disinfect greywater to specific standards. These systems must have a Chief Executive Approval and be approved for installation by local government.

The QPWC provides for the approval of grey water treatment plants and sets the effluent criteria for grey water use. Since 1 January 2008, in both sewered and unsewered areas, appropriately treated grey water can now be used for following purposes:

• toilet flushing
• laundry use (cold water source to washing machines)
• vehicle washing
• path and wall wash down
• lawn and garden spray irrigation.

It is important that water is used efficiently and conserved wherever possible. Greywater reuse is encouraged by government to help conserve water. However, minimum water treatment standards need to be achieved so that public health is not compromised and there is minimal degradation to the environment. Bacteria, viruses and parasites can be present in greywater and pose a risk to public health. Therefore, a level of caution should be exercised with greywater reuse. Poorly treated greywater also includes nutrients such as nitrate, phosphorus and sodium, which if not managed appropriately can over time cause nutrients to build up and degrade soils and kill vegetation. Poorly managed systems may also cause odours and pollute nearby waterways.

Currently, there are 18 greywater treatment plants with Chief Executive Approval. However, anecdotal evidence from local governments indicates that there has been minimal uptake of greywater treatment systems. This could be due to the relatively high costs of installation and maintenance.

Ensuring appropriate separation or setback distances between the greywater systems and nearby water sources is a crucial issue. Care must be exercised when designing land application areas to ensure they are acceptable and approval should only be granted if the property has suitable site conditions. Suitability will involve consideration of soil type, lot size, setback distances, slope and whether the location is within a flood prone area.
Understanding and assessing these risks more consistently will minimise the impacts on health and the environment, and will provide a more standardised approach to the assessment and management of greywater treatment systems.

A clear understanding of the health and environmental impacts is considered necessary to ensure that only suitably designed greywater treatment systems are used. In particular there are concerns about surface irrigation and the risk to human health associated with untreated greywater effluent. Ensuring greywater is treated to an appropriate quality for its intended end use(s) is critical. The current criteria for greywater reuse are stipulated in the QPWC. Although the Code may be considered satisfactory for ‘low’ risk areas, concerns have been raised as to whether they would be appropriate for all end use(s).

**Option 4.2—Undertake a comprehensive review of greywater systems**

It is proposed to undertake a detailed investigation of greywater treatment systems and the use of greywater generally to gain a current understanding of relevant issues. This review could include the use of greywater, where it is used, setback distances and land application areas, potential risks and public health issues, and lessons learnt since their introduction. Similar issues to those raised about on-site sewerage systems are relevant to greywater systems and the reviews could be combined to consider these issues at the same time.

**Table 11—Benefits and disadvantages of undertaking a comprehensive review of greywater systems**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A full assessment of the holistic program can be made.</td>
<td>• Delay to improvements to the current system.</td>
</tr>
<tr>
<td>• Evidence based assessment of issues.</td>
<td>• Increased administrative burden for local government to provide data.</td>
</tr>
<tr>
<td>• Additional time allows for more consistent reliable data to be obtained from local governments.</td>
<td></td>
</tr>
</tbody>
</table>

**4.3 Chief Executive Approvals**

On-site sewage and greywater treatment plants can pose significant risks if they are not designed and installed correctly. To mitigate risks of failure, on-site sewage treatment plants (where the sewage generated on the property is less than that of 21 equivalent persons) and greywater treatment plants must obtain a Chief Executive Approval. The Department of Housing and Public Works assesses the requirements for the Chief Executive Approval against the testing parameters contained in the QPWC.

To obtain a Chief Executive approval in Queensland all compliance, checking, monitoring, testing and sampling is required to be overseen by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ). Samples are required to be taken and tested by a National Association of Testing Authorities (NATA) approved laboratory for the relevant parameters in the QPWC. All documents must then be submitted to the department to assess the whether the system meets the requirements of the QPWC and the PDA. The department does not charge a fee for assessing applications.

The assessment of systems places an administrative burden and cost on the department and is arguably something that could be done by the private sector. The Queensland Commission of Audit has challenged all departments to consider, from a contestability perspective, whether it is the most efficient deliverer of services.
In addition, when approving on-site sewerage and greywater facilities, local governments must ensure that the treatment plant has been given the necessary approval. The owner of the treatment plant must also ensure that the system continues to comply with the requirements of the Chief Executive Approval, which includes complying with the manufacturer’s requirements.

**Potential improvements**

**Option 4.3 (a)—Review the Chief Executive Approval process**

A comprehensive review of the Chief Executive Approval process would assist the department to better understand whether the process is working efficiently to protect public health and safety.

The review could look at whether the assessment of Chief Executive Approvals should be undertaken by one or more accredited bodies. Under this model the department’s role could be limited to monitoring and overseeing the assessment bodies rather than reviewing every application for approval. Accredited bodies would have to demonstrate that they have the expertise to assess the application against the relevant codes and standards. The accredited bodies would charge fees for assessment and approval of applications. Local governments would rely on the certificate issued by the assessment body in the same way they rely on Chief Executive Approvals issued by the department.

**Table 12—Benefits and disadvantages of reviewing the Chief Executive Approval process**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Potential to reduce red tape.</td>
<td>• Increased burden on state government to administer accredited providers.</td>
</tr>
<tr>
<td>• Considering whether the department is the best provider.</td>
<td>• Increase in cost for assessment of Chief Executive Approvals.</td>
</tr>
<tr>
<td>• Potential to free-up resources for government.</td>
<td>• Department may not have direct control of approval systems.</td>
</tr>
</tbody>
</table>

**4.4 Bathroom pods and demountable (portable) buildings**

Prefabricated bathroom units can be constructed in a factory and may include a toilet, shower, handbasin or combination of these connected by internal plumbing and drainage within the structure. They are designed to fit neatly into a space and be connected to the water plumbing and drainage (waste pipe work) at the site. This way the complete unit can be purchased and installed easily on the site. Units are manufactured in Australia for use interstate and overseas. Likewise, these products are being imported into Australia.

Demand for the use of prefabricated units has increased significantly in recent times and is likely to increase due to the potential to source inexpensive alternatives to locally assembled units.

Owing to the prefabricated nature of these units, the internal plumbing and drainage is often obscured behind walls. This makes it very difficult for plumbing inspectors to inspect the work prior to installation of the unit. Under current laws, it is a requirement that work be inspected before the cladding or lining covering is fixed, commonly called the "rough-in" stage. Plumbing inspectors are unable to confirm if the unit complies with plumbing and drainage legislation by looking at the unit, for example whether the correct type and size of pipe has been used or whether the fittings and fixtures have a WaterMark. It may also be
difficult to conduct testing and commissioning of the fixtures and fittings, for example to ensure that they meet appropriate pressure tests.

The PDA requires that, in most cases, new plumbing and drainage design must be approved by local government and all work must be inspected for compliance by a local government inspector. Fixtures and fittings must also comply with the legislation and in most cases are required to be certified under the WaterMark scheme.

The WaterMark scheme ensures that important plumbing and drainage items are suitable for use and meet minimum safety requirements. This applies to products manufactured in Australia and also those imported into Australia. It is not illegal to sell items without a WaterMark symbol, but it is illegal to install them as plumbing work.

Plumbing inspectors, as part of consultation on the review of the PDA, raised concerns about the growing number of products and prefabricated units that do not include WaterMark fixtures and fittings or that the work does not otherwise comply with the legislation.

In addition to the difficulties faced by local governments in inspecting the work, manufacturers have advised that they face difficulties in complying with the legislation. For example, given their implementation of strong quality assurance systems in a factory setting they suggest that it should not be necessary for every unit to be inspected. Product manufacturers have also raised concerns that existing requirements limit their ability to manufacture and export products across Australia or overseas.

**Potential improvements**

**Option 4.4 (a)—Prohibit the sale of products without a WaterMark**

One suggestion that has been put forward is to prohibit the sale of products without a WaterMark. This is not considered a popular option by many as it represents an effective restraint of trade. It would also have the potential to impact on industrial and agricultural activity that are not regulated by plumbing laws. It would also not solve the issue of access to plumbing and drainage for the purpose of inspection, testing and commissioning. A local government inspector may still request that the lining cladding be removed so that they work can be physically inspected.

**Table 13—Benefits and disadvantages of prohibiting the sale of products without a WaterMark**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain public health and safety.</td>
<td>Restraint of trade.</td>
</tr>
<tr>
<td>Products are tested to meet a national standard.</td>
<td>Increased cost of products.</td>
</tr>
<tr>
<td>Reduce failure rates.</td>
<td>Administrative burden on business to check stock.</td>
</tr>
<tr>
<td></td>
<td>Unintentional consequences for industrial and agricultural activity.</td>
</tr>
</tbody>
</table>

**Option 4.4 (b)—Introduce a random inspection quota**

Another suggestion is to change the legislation to allow a percentage of units to be manufactured without inspection. For example, Brisbane City Council recently introduced a "POD certification" process to permit a Brisbane manufacturer to conduct operations on a 24/7 basis. As part of the agreement, Council randomly inspects one in twenty of the units.

---

8 This distinction is important because there is no requirement for fittings used in either an industrial or agricultural context to comply with the WaterMark requirements.
covered in the agreement. This allows the company to manufacture units for export interstate and overseas. They have to complete a form and pay the relevant fee for inspection on the selected unit. Under this risk-based approach, the company must still ensure that the plumbing and drainage work complies with the legislation. While this assists the company, it means that 95 per cent of units are effectively self-certified. This could potentially place the community at increased risk of being exposed to plumbing and drainage that does not comply with legislation.

Other states have taken a different approach. For example, in the Australian Capital Territory (ACT) a licensed contractor supervises the installation and manufacture of these units and issues a certificate of compliance, even if the unit is manufactured overseas.

Table 14—Benefits and disadvantages of allowing manufacturers to self-certify a percentage of products

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Reduces red tape.</td>
<td>- Greater reliance on risk management systems adopted by manufacturers to maintain appropriate compliance with plumbing standards.</td>
</tr>
<tr>
<td>- Lower compliance costs.</td>
<td>- Not all products will be tested.</td>
</tr>
<tr>
<td>- Reduces delays in production and construction.</td>
<td>- Risk of non-compliance.</td>
</tr>
<tr>
<td></td>
<td>- Local government may still require inspection on the installation of the products.</td>
</tr>
</tbody>
</table>

Option 4.4 (c)—Provide certification of compliance to be undertaken

Other suggestions include permitting an "approved person" or "competent person" to provide certification that prefabricated units comply with the plumbing and drainage legislation. This would not be self-certification as it would require an independent third party to undertake inspections and ensure compliance with Queensland requirements. The proposal would rely on the third party being approved by local or state government to ensure they have the required skills and competencies to assess the work for compliance.

In the ACT licensed contractors have been permitted to supervise the installation and manufacture of these units and issues a certificate of compliance, even if the unit is manufactured overseas. In signing the certificate of compliance the licensed contractor is taking on the responsibility of using approved products and methods of installation.

Table 15—Benefits and disadvantages of introducing ‘approved persons’ to provide certification

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Reduces red tape.</td>
<td>- Reliance on third party assessment.</td>
</tr>
<tr>
<td>- Lower compliance costs.</td>
<td>- Onus on local government to certify ‘approved persons.’</td>
</tr>
<tr>
<td>- Reduces delays in production.</td>
<td>- Maintains local or state government control over the person who completes inspection.</td>
</tr>
</tbody>
</table>

4.5 Private sanitary combined drains

A combined drain is a privately owned sewerage pipe running between a series of adjacent houses. The sewage from each house drains into the combined drain and then into the service provider's sewer. This drainage was generally installed by the original owners to minimise their costs of connection to the sewer. Many of these drains are now more than 50 years old and require frequent maintenance and repair. Drains often have defective joints, or
are damaged by ground movement. As a result, tree roots can enter the drains and cause blockages.

Combined drains are generally no longer permitted and current practice is to ensure that each property is provided with a separate sewerage connection point. Combined drains are commonly found servicing residential properties in older inner suburban housing areas, however some commercial and industrial properties are also connected via combined drains. The ageing of existing combined drains and the materials used in the early to mid-1900s (e.g. “Vitreous Clay” pipe with rubber ring joints) have resulted in regular maintenance problems for combined drains. Additionally the impacts of increased dry weather periods have also created the need for combined drains to be repaired or replaced.

In Queensland there are approximately 29 830 known private sanitary combined drains across 17 local governments

<table>
<thead>
<tr>
<th>Local government</th>
<th>Number of combined drains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brisbane City Council</td>
<td>Approx. 28,000 properties</td>
</tr>
<tr>
<td>Redland Shire Council</td>
<td>Approx. 50 properties</td>
</tr>
<tr>
<td>Ipswich City Council</td>
<td>Approx. 100 to 200 properties</td>
</tr>
<tr>
<td>Isaac Regional Council</td>
<td>Approx. 60 properties</td>
</tr>
<tr>
<td>Tablelands Regional Council</td>
<td>Approx. 10 properties</td>
</tr>
<tr>
<td>Southern Downs Regional Council</td>
<td>Approx. 450 properties</td>
</tr>
<tr>
<td>Scenic Rim Regional Council</td>
<td>Approx. 30 properties</td>
</tr>
<tr>
<td>Cairns Regional Council</td>
<td>Approx. 50 properties</td>
</tr>
<tr>
<td>Maranoa Regional Council</td>
<td>Approx. 100 to 150 properties</td>
</tr>
<tr>
<td>Rockhampton Regional Council</td>
<td>Approx. 100 to 300 properties</td>
</tr>
<tr>
<td>Moreton Bay Regional Council</td>
<td>Approx. 30 properties</td>
</tr>
<tr>
<td>Toowoomba Regional Council</td>
<td>Approx. 100 properties</td>
</tr>
<tr>
<td>Logan City Council</td>
<td>Approx. 50 properties</td>
</tr>
<tr>
<td>Gladstone City Council</td>
<td>Approx. 100 properties</td>
</tr>
<tr>
<td>Townsville City Council</td>
<td>Approx. 100 properties</td>
</tr>
<tr>
<td>Central Highlands</td>
<td>Approx. 50 properties</td>
</tr>
<tr>
<td>Sunshine Coast Regional Council</td>
<td>Approx. 100 properties</td>
</tr>
</tbody>
</table>

The responsibility for private sanitary combined drains rests with the property owner/s. There can be significant delays in performing repairs and undertaking maintenance on this infrastructure due to disputes between property owners, which often include:

- allocation of costs to perform repairs associated with combined drains;
- denying access to perform repairs; and
- structures built over existing combined drain.

Resolving these types of disputes can take some time (delays of between four to six weeks are common) and there can be excessive costs involved when one of the owners refuses to allow access onto their property. Combined drains failures also have the potential to lead to serious health and safety concerns for adjoining residents and the community.
A number of local governments are experiencing significant problems trying to facilitate repairs and maintenance outcomes for combined drains as they do not have ownership of this infrastructure.

Other jurisdictions

Thames Water, the governing body for sewerage and water infrastructure within the United Kingdom and Wales, had over 300,000 premises connected to their sewerage infrastructure via an existing sanitary combined drain. On 1 October 2011, water and sewerage companies in England and Wales became responsible for private sewers and combined drains, which were previously the responsibility of property owners. To reduce the overall impact of a chargeable fee, Thames Water imposed a flat fee across all of its rateable properties.

The United Kingdom and Wales example delivered significantly improved health and safety benefits to communities while at the same time removing excessive and unreasonable costs for affected owners of combined drains.

Potential improvements

Option 4.5—Transfer ownership of private sanitary combined drains to local government and network service providers

Legislation could be amended to support the transfer of private sanitary combined drains to local governments and network service providers. These providers have the experience and the specialised equipment to manage the repair and maintenance of complex sanitary drainage systems.

Transferring this infrastructure will provide clarity to the community as to the access rights associated with performing repairs, provide certainty with regards to ongoing maintenance and repairs and support better health and safety outcomes for the community.

The following table sets out the benefits and disadvantages of transferring ownership of private sanitary combined drains to local government and network service providers.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralise maintenance of drainage systems</td>
<td>Consideration would need to be given to entry powers to properties.</td>
</tr>
<tr>
<td>Fewer neighbourhood disputes.</td>
<td>Increase local government maintenance costs.</td>
</tr>
<tr>
<td>Drains are maintained appropriately.</td>
<td>Levy or fee structure may need to be introduced to provide cost recovery for the local government or network service provider.</td>
</tr>
<tr>
<td>Improved records of where and what type of infrastructure is in place.</td>
<td>The extent and condition of the transferred asset may not be known.</td>
</tr>
</tbody>
</table>

4.6 Temperature control in hot water systems

Since 1998 it has been a requirement of the PCA for hot water systems (including solar, heat pump, gas or electric resistance systems) to deliver water in certain circumstances at a set temperature. Temperature limits are required to minimize the risk of scalding to those at greatest risk from scalding children, the aged, the sick and people with disabilities.
In order to comply with the PCA, hot water systems must be designed, constructed, installed, replaced, repaired, altered, maintained, tested and commissioned in accordance with AS/NZS 3500.4:2003 (Plumbing and drainage—Heated water services) (AS/NZS 3500.4:2003).

Clause 1.9.2 of AS/NZS 3500.4:2003 states that all new hot water installations must ensure that water delivered to sanitary fixtures, primarily used for personal hygiene use, is regulated to reduce the risk of scalding and does not exceed:
- 45 degrees Celsius for early childhood centres, primary and secondary schools and nursing homes or similar facilities for young, aged, sick or people with disabilities
- 50 degrees Celsius in all other buildings.

The storage of hot water must also be kept at a temperature above 60 degrees Celsius to avoid the likelihood of the growth of Legionella bacteria.

Common methods of satisfying this requirement are installation of a tempering valve, thermostatic mixing valve or a water heater with integrated temperature control (referred to for convenience as temperature limiting devices or TLDs).

In Queensland, a temperature control device must be installed in the following situations:
- installation or replacement of a water heater (including like-for-like replacement)
- installation of a new fixture used primarily for personal hygiene purposes.

A temperature control device is not required to be installed when:
- changing tap ware
- replacing an existing fixture used primarily for personal hygiene (same position)
- replacing tap washers or a shower head
- extending of hot water piping not associated with the installation of new fixtures
- undertaking general maintenance or replacement of pipe work, valves or fittings associated with a hot water system.

Other jurisdictions

Many other jurisdictions across Australia have interpreted the application of tempering valves differently based on the use of the words ‘All new heated water installations.’ Queensland considers that the term new in this instance includes new installations, replacements, alteration, additions and repairs to existing installations. This is supported by the scope of the standard of AS/NZS 3500.4:2003 outlined in clause 1.1.

The inconsistency of the application on a national level has resulted in some confusion in the Queensland plumbing industry about the application of tempering valves. The department has previously provided advice and guidance on the application of installing tempering valves through newsflashes and at industry meetings.

A brief summary of the approaches take by other jurisdictions to the installation of temperature limiting devices is set out in the following table (Table 18).
Table 18—Inter-jurisdictional comparison of the requirements to install a temperature limiting devices

<table>
<thead>
<tr>
<th></th>
<th>QLD</th>
<th>ACT</th>
<th>NSW</th>
<th>NT</th>
<th>SA</th>
<th>Tas</th>
<th>Vic</th>
<th>WA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement with a ‘like for like’ hot water system</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes/No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Replacement with a hot water system other than ‘like for like’</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes/No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reposition of hot water system</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes/No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Potential improvements

Option 4.6 (a)—Clarification of installation requirements for like-for-like replacement of existing systems

Currently, there is inconsistency in the interpretation of when a temperature control device should be installed. Queensland’s interpretation of the application is that a temperature control device must be installed when a new hot water system is installed or replaced. This interpretation ensures that over time as systems are replaced or installed that buildings will have a temperature control device installed. In 2010 this advice was provided to industry through a Building and Plumbing Newsflash.

To ensure the consistent application of this interpretation it is proposed to amend the regulation to clarify that a temperature control device must be installed when a

- new hot water system is installed or replaced (including like for like replacements)
- new fixture used primarily for personal hygiene purposes is installed.

The proposal would include specific offence provisions for licensees who fail to comply with the legislation.

The following table (Table 19) sets out the advantages and disadvantages of this option enshrining the interpretation in regulation

Table 19—Benefits and disadvantages of clarifying the requirements to install tempering valves.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Significantly reduced risk of scalding.</td>
<td>• Additional cost in some situations.</td>
</tr>
<tr>
<td>• Clarifies intention of Australian Standard.</td>
<td>• Increase regulatory burden.</td>
</tr>
<tr>
<td>• Promotes consistency across industry.</td>
<td></td>
</tr>
</tbody>
</table>

Option 4.6 (b)—Exclusion of centralised hot water installations

Complex hot water system arrangements such as centralised hot water installations are often used in medium and high density residential and commercial buildings, where there are multiple tenancies. These arrangements can consist of a number of heating units and installations that service multiple lots.

All hot water systems installed in new buildings (including multiple tenancy buildings with centralised heated water installations) must comply with AS/NZS 3500.4:2003, including the installation of tempering valves.

When replacing part of, or repairing, a failed centralised heated water system it may be impractical to require temperature control devices to be installed. For example, where there
is a bank of hot water systems and one system fails it would be costly and impractical to install a temperature control device on each system. However, when a centralised hot water installation is replaced in its entirety tempering valves may be able to be installed.

It is proposed to exclude certain centralised hot water systems from the requirements to install temperature control devices on like for like replacement.

The following table (Table 20) sets out the advantages and disadvantages of requiring temperature control devices to be installed only when the entire centralised hot water installation is being replaced.

Table 20—Benefits and disadvantages of requiring temperature control devices when replacing an entire centralised hot water installation

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduced risk of scalding.</td>
<td>• Additional cost.</td>
</tr>
<tr>
<td>• Many of these systems because of their capacity service public buildings and this would reduce the risk to first time users.</td>
<td>• Technical complexity when systems are not like for like.</td>
</tr>
</tbody>
</table>

Option 4.6 (c)—Retrofitting existing hot water systems at time of point of sale and lease

Following the recent death of a child by scalding, the State Coroner recommended that the Queensland Government consider retrospective installation of temperature control devices in hot water systems at point of sale or lease.9

The retrofitting of temperature control devices is not always practical due to the significant cost of retrofitting a valve, or other device, into an existing unit. Additionally, reconfiguring existing plumbing to accommodate a tempering valve may require access to walls and/or ceilings to expose the existing pipe work.

Since 1998 all new buildings have been constructed to include a hot water system with a temperature control device and following government advice in 2010, replacement hot water systems should also include a temperature control device.

As plumbers are now routinely installing temperature control devices in hot water systems and given the typical life span of a hot water system is 10 to 15 years, over the coming years all of Queensland’s hot water systems will have a device fitted.

The following table (Table 21) sets out the advantages and disadvantages of requiring all hot water systems to be installed with a temperature control device.

Table 21—Benefits and disadvantages of retrofitting tempering valve to all hot water systems at sale or lease of a property

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Reduce risk of scalding.</td>
<td>• Additional cost.</td>
</tr>
<tr>
<td>• Consistent approach to safety like electric safety switches.</td>
<td>• Technical complexity when systems are not like for like.</td>
</tr>
<tr>
<td></td>
<td>• Water delivery temperature may not be high</td>
</tr>
</tbody>
</table>

---

9 Inquest into the death of C a 15 month child, file number 24/2005, 24 June 2011, Magistrate John Lock, Brisbane Coroner
enough when only one valve is installed near the heater.
- New pipe work may need to be provided.

4.7 Backflow prevention devices

There are numerous examples of death and disease that have occurred due to contaminated water being siphoned into the reticulated water supply. This can be caused by a break in the water pipe that results in a low pressure siphon effect.

A backflow prevention device is a plumbing product that prevents the reverse flow of water from a potentially polluted water source entering another supply such as a drinking (potable) water supply system. There are various types of backflow prevention devices and the type that needs to be installed, and its cost, will depend on its suitability to the specific situation. This is based on the associated potential risk of contamination to drinking water supplies.

Under the Queensland Development Code, for example, a backflow prevention device needs to be installed with a rainwater tank when it is supplying water to the household’s internal fixtures (toilets and washing machine) and has a back-up water supply from the reticulated town water service.

Currently, in Queensland there is some uncertainty about what is the acceptable type of backflow prevention device required for a particular situation. While the Australian Standard (AS/NZS 3500.1:2003) provides guidance based on a general hazard rating, some plumbing inspectors and industry practitioners remain unclear about what type of device should be installed in certain circumstances.

For example, the type of backflow prevention device needed is based on the position of a rainwater tank i.e. aboveground, partially or fully buried. While the Queensland Development Code offers a choice of device, it is also not completely clear about what needs to be installed for the various positions of a tank.

As the PCA also references the Australian Standard, it does not specify particular requirements for backflow prevention devices across different plumbing situations.

For situations with a higher risk of cross-contamination, the device is required to be inspected and tested annually by local government to ensure that it is working properly and continuing to protect drinking (potable) water supply systems. The cost of these annual tests varies between local governments, but they can result in significant costs to industry, particularly when multiple testable backflow prevention devices are required for a single building.

The residential care industry has provided two examples where the cost of maintaining multiple testable backflow prevention devices is having a significant impact on the operation of particular buildings.

Disability access showers

Under recent changes to the Australian Standard (AS1428.1), which is called up by the National Construction Code, there is a requirement to ensure that all bathrooms in residential care buildings are accessible to people with disabilities. In practical terms, this means that the shower hose for the bathroom must be long enough to allow a person sitting in a wheelchair to be showered. Industry has raised an issue with this as some room configurations can result in the shower head being able to be potentially immersed in the toilet bowl. Plumbing inspectors on identifying this potential have required the installation of
a testable backflow prevention device for each affected shower unit in the building. The resulting cost to residential care building operator can be significant.

*Chemical cleaner dispensers*

Testable backflow prevention devices can also be required for chemical cleaning dispensers. In this case the residential care industry has pointed to new devices which rely on innovative technology to ensure that cleaning chemicals can not be siphoned back into the reticulated water supply of the building.

Despite this, the manufacturer has been unable to obtain the necessary WaterMark certification to authorise installation of the product as an acceptable solution. The residential care industry has raised this as an example of plumbing standards not keeping pace with advances in technology. The industry raised the concern that their members are required to either install ‘redundant’ testable backflow prevention devices and pay for annual testing or to resort to higher risk work practices for staff resulting from the manual handling of cleaning chemicals.

*Potential improvements*

**Option 4.7—Provide for clarification of the types of backflow prevention devices required for specific situations**

To help ensure the plumbing industry select, install and, where required maintain, the correct backflow prevention device, a framework of categories and situations could be developed to assist the device selection from the Australian Standard.

In order to make this clarification, two possible options could be explored:

- work with the Australian Building Codes Board to update the PCA and/or the Australian Standard; or
- develop Queensland-specific requirements.

With the lengthy timeframes required to obtain amendments to the Australian Standards, in the interim a Queensland specific variation to the standard could be made. This could provide the clarification needed to be able to determine the hazard rating of the water supply system which then determines the suitability of the device to be installed. It also has potential to reflect recent technology innovations that are now commercially available.

**Table 14—Benefits and disadvantages of introducing specific requirements for the installation of backflow prevention devices**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The most suitable device is installed for the situation.</td>
<td>• Cost of testing and compliance for certain devices.</td>
</tr>
<tr>
<td>• May reduce installation and testing and compliance costs.</td>
<td>• Possible perception that safety standards are being lowered for backflow prevention.</td>
</tr>
<tr>
<td>• Reduces risk from potential polluting water supply.</td>
<td></td>
</tr>
<tr>
<td>• Promotes innovative technologies.</td>
<td></td>
</tr>
</tbody>
</table>
5. How to provide comments

**Online:**
You can complete the online survey at the Get Involved website [www.getinvolved.qld.gov.au](http://www.getinvolved.qld.gov.au).

Please note: the survey will take approximately 30 minutes to complete.

To request a copy of the survey to be sent to you, email buildingcodes@qld.gov.au.

**Mail:**
You can mail your survey response form or written submission to:
Attention: Review of the *Plumbing and Drainage Act 2002*
GPO Box 2457
Brisbane QLD 4001

**Email:**
You can email your survey response form or written submission to:
buildingcodes@qld.gov.au

Please use “Review of the *Plumbing and Drainage Act 2002*” as the email subject line.

**Closing date for comments**
The closing date for comments is **5pm Friday 25 July 2014**.

**Where to get more information**
For more information on any of the proposals outlined in this discussions paper, please email buildingcodes@qld.gov.au.

# Appendix 1

## Categories of work

The scope of work that can be performed under each category is listed in the SPDR, schedules 2 to 4.

<table>
<thead>
<tr>
<th>Category of work</th>
<th>Description</th>
<th>Examples of work captured</th>
<th>Licence required</th>
</tr>
</thead>
</table>
| **Compliance assessable work (part 2, schedule 2 of the SPDR)** | Considered to pose the most risk to public health, safety and the environment. Given the risks involved with this type of plumbing and drainage work an approval from local government is required. All plans for work are lodged with the local government and work is inspected by a plumbing inspector at applicable stages to check for compliance with relevant plumbing laws. | Plumbing and drainage work for:  
- installing a new fixture for a building with dual reticulated water supply provided by a water service provider  
- connected to, trade waste  
- installing a fixture for a building connected to a combined sanitary drain.  
Plumbing and drainage work that complies with the performance requirements of the:  
- PCA by formulating an alternative solution that is a means of compliance with the PCA or  
- QPWC by formulating an alternative solution within the meaning of the QPWC or  
- QDC by formulating an alternative solution within the meaning of the Building Act 1975 that is a means of compliance with the QDC. | Yes |
| **Notifiable work (part 1, schedule 2 of the SPDR)** | Self-certification approval process for work considered to be of lower risk than compliance assessable work. Notifiable work does not require an approval from local government, however a Form 4—Notifiable work must be submitted to the | Plumbing and drainage work necessary for:  
- emergency work  
- extending, altering, replacing or removing existing water supply piping, other than extending or removing a fire service  
- extending or removing a fire service if the work is associated with a building development approval as defined under the *Building* | Yes |
Plumbing Industry Council. To maintain standards, local governments have the ability to audit work performed as notifiable work.

<table>
<thead>
<tr>
<th>Act 1975, schedule 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>extending, altering, replacing or removing existing sanitary drainage, other than a combined sanitary drain, for a building classified under BCA as a class 1 or 10 building</td>
</tr>
<tr>
<td>extending, altering, replacing or removing existing sanitary plumbing for a building classified under BCA as a class 2 to 9 building</td>
</tr>
<tr>
<td>work necessary for installing, replacing or removing a temperature control device</td>
</tr>
<tr>
<td>installing, replacing or removing a water heater</td>
</tr>
<tr>
<td>installing, replacing or removing a testable backflow prevention device</td>
</tr>
<tr>
<td>installing, replacing or removing a dual check valve with an atmospheric port</td>
</tr>
<tr>
<td>replacing a greywater treatment plant for a building classified under BCA as a class 1 building</td>
</tr>
<tr>
<td>installing a fixture in a building classified under BCA as a class 1 building</td>
</tr>
<tr>
<td>relocating a fixture in a building classified under BCA as a class 1 building</td>
</tr>
<tr>
<td>work necessary for installing or relocating a fixture in a building, classified under BCA as a class 10 building</td>
</tr>
<tr>
<td>work necessary for sealing a sanitary drain upstream from the connection point for a service provider's sewerage system</td>
</tr>
<tr>
<td>work necessary for sealing an existing water service downstream from a water meter for a building classified under BCA as a class 2 to 9 building</td>
</tr>
</tbody>
</table>

Plumbing and drainage work:
- other than work for sanitary drainage, necessary for installing or relocating a fixture in a building, classified under BCA as a class 2 to 9 building, of 1 or 2 storeys.

Notifiable work does not include plumbing and drainage work:
- for installing a new fixture for a building with dual reticulated water
supply provided by a water service provider
- for, or connected to, trade waste
- necessary for installing a fixture for a building connected to a combined sanitary drain
- work that complies with—
  (a) the performance requirements of the PCA by formulating an alternative solution that is a means of compliance with the PCA; or
  (b) the performance criteria of the QPWC by formulating an alternative solution within the meaning of the QPWC; or
  (c) the performance requirements of the QDC by formulating an alternative solution within the meaning of the Building Act 1975 that is a means of compliance with the QDC.

**Minor work (schedule 3 the SPDR)**

| Minor work must be performed by an appropriately licensed person, but no notification is required to either local government or the regulator. For example, repairing a broken or damaged water pipe. | Plumbing and drainage work necessary for:
- replacing, maintaining, repairing or removing a fitting or fixture
- repairing a broken or damaged pipe
- installing, replacing, maintaining, repairing or removing an apparatus, but not if the work involves the following—
  (a) work necessary for installing, replacing or removing any of the following apparatus—
    i. a temperature control device;
    ii. a water heater;
    iii. a testable backflow prevention device;
    iv. a dual check valve with an atmospheric port;
  (b) replacing a domestic water filter cartridge
    Note—Replacing a domestic water filter cartridge is unregulated work.
- sealing an existing water service downstream from the water meter for a building classified under BCA as a class 1 or 10 building
- maintaining, repairing or replacing fire hydrants or fire hose reels
- unblocking a pipe that is sanitary plumbing or sanitary drainage | Yes |
### Unregulated work
(schedule 4 the SPDR)

| Unregulated work may be performed without a license and does not require notification, such as replacing a showerhead. However, the work must still comply with any relevant technical standards or codes. | For sanitary plumbing and sanitary drainage:
- cleaning or maintaining ground level grates to traps on sanitary drains
- replacing caps to ground level inspection openings on sanitary drains
- maintaining an above or below ground irrigation system for the disposal of effluent from an on-site sewerage facility or greywater use facility.

For water plumbing:
- installing or maintaining an irrigation or lawn watering system downstream from an isolating valve, tap or backflow prevention device on the supply pipe for the irrigation or lawn watering system
- replacing a jumper valve or washer in a tap
- changing a shower head
- replacing, in a water closet (WC) cistern, a drop valve washer, float valve washer or suction cup rubber
- replacing a domestic water filter cartridge. | No |
## Appendix 2

### Building classifications

Classification Summary of Buildings and Structures defined in the Building Code of Australia.

<table>
<thead>
<tr>
<th>Classes of buildings</th>
<th>Class 1</th>
<th>Class 1a</th>
<th>Class 1b</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
<th>Class 5</th>
<th>Class 6</th>
<th>Class 7</th>
<th>Class 7a</th>
<th>Class 7b</th>
<th>Class 8</th>
<th>Class 9</th>
<th>Class 9a</th>
<th>Class 9b</th>
<th>Class 9c</th>
<th>Class 10</th>
<th>Class 10a</th>
<th>Class 10b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A single dwelling being a detached house, or one or more attached dwellings, each being a building, separated by a fire-resisting wall, including a row house, terrace house, town house or villa unit.</td>
<td>A boarding house, guest house, hostel or the like with a total area of all floors not exceeding 300 metres², and where not more than 12 reside, and is not located above or below another dwelling or another class of building other than a private garage.</td>
<td>A building containing 2 or more sole-occupancy units each being a separate dwelling.</td>
<td>A residential building, other than a class 1 or 2 building, which is a common place of long term or transient living for a number of unrelated persons. Example: boarding-house, hostel, backpackers accommodation or residential part of a hotel, motel, school or detention centre.</td>
<td>A dwelling in a building that is class 5, 6, 7, 8 or 9 if it is the only dwelling in the building.</td>
<td>An office building used for professional or commercial purposes, excluding buildings of class 6, 7, 8 or 9.</td>
<td>A shop or other building for the sale of goods by retail or the supply of services direct to the public. Example: café, restaurant, kiosk, hairdressers, showroom or service station.</td>
<td>A building which is a car park.</td>
<td>A building which is for storage or display of goods or produce for sale by wholesale.</td>
<td>A laboratory, or a building in which a handicraft or process for the production, assembling, altering, repairing, packing, finishing, or cleaning of goods or produce is carried on for trade, sale or gain.</td>
<td>A building of a public nature.</td>
<td>A health care building, including those parts of the building set aside as a laboratory.</td>
<td>An assembly building, including a trade workshop, laboratory or the like, in a primary or secondary school, but excluding any other parts of the building that are of another class.</td>
<td>An aged care building.</td>
<td>A non-habitable building or structure.</td>
<td>A private garage, carport, shed or the like.</td>
<td>A structure being a fence, mast, antenna, retaining or free standing wall, swimming pool or the like.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>