

Public Health and Wellbeing Regulations Sunset Review regulatory impact statement

Chapter 3: Aquatic facilities

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Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.

© State of Victoria, Department of Health and Human Services, August 2019.

ISBN/ISSN 978-1-925947-82-3

Available from the [Engage Victoria website](https://engage.vic.gov.au/) <https://engage.vic.gov.au/>.

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The following chapter is an extract of the regulatory impact statement for the proposed Public Health and Wellbeing Regulations (2019).

Information on infringements, consultation, implementation, evaluation and the exposure draft regulations are contained in the full regulatory impact statement available on the [Engage Victoria website](https://engage.vic.gov.au) <<https://engage.vic.gov.au>>.

This extract was prepared to assist stakeholders who access the report by accessing a specific category on the Engage website.

Introduction (and invitation to comment)

Overview

The Public Health and Wellbeing Regulations 2009 (the current regulations) were made under the *Public Health and Wellbeing Act 2008* (the Act) and are due to sunset on 15 December 2019. New regulations are needed to replace them.

The remaking process provides an opportunity to revisit whether regulations are still needed and, if so, whether there are ways to improve them.

Public health regulations provide a framework for businesses, councils and individuals to protect the health and wellbeing of Victorians. Understanding how these regulations, and any proposed changes, will impact on Victorian business and the Victorian community is critical to the effective operation of the regulatory framework.

The current regulations include several regulatory areas, and the subject matter varies widely. In some ways these regulatory areas are distinct in their nature; however, their overall objective gives effect to the Public Health and Wellbeing Act.

To the extent that the regulatory areas are different, the department consulted key stakeholders to ensure any issues were understood and the impact of proposed solutions would be acceptable. This preliminary consultation has informed the proposed regulations and a summary is provided in the 'Consultation' chapter.

Purpose and objective

Victorians enjoy one of the highest standards of health and wellbeing in the developed world. This could not be achieved without laws and regulations that protect and promote public health and wellbeing.

The Act

The current regulations were made under the Public Health and Wellbeing Act. The purpose of the Act is to provide a legislative framework that promotes and protects public health and wellbeing in Victoria.

The state has a significant role in promoting and protecting the public health and wellbeing of Victorians.

Public health and wellbeing includes the absence of disease, illness, injury, disability or premature death and the collective state of public health and wellbeing. Public health interventions are one of the ways in which the public health and wellbeing can be improved and inequalities reduced.

The regulations

As set out in the Public Health and Wellbeing Act, the aim of the regulations is to achieve the highest attainable standard of public health and to prevent disease and illness while minimising costs for regulated industries.

Public health regulations provide a framework for businesses, councils and individuals in the practical application of the Act.

The regulatory impact statement

The purpose of this regulatory impact statement is to provide information and analysis to review how these regulations, and any proposed changes, will affect Victorian business and the Victorian community and contribute to the effective operation of the regulatory framework for public health.

The current regulations are due to expire on 15 December 2019. New regulations are needed to replace them.

Preparation of the new regulations

Before new regulations are made, the *Subordinate Legislation Act 1994* requires completion of the following four steps shown in Figure 1.

Figure 1: The four steps of making new regulations



Preliminary consultation

The department undertook preliminary consultation with key stakeholders to inform development of the proposed regulations. The proposed regulations address a range of matters for giving effect to the Act and therefore different stakeholders were engaged on different matters.

A summary of the preliminary consultation that has occurred is provided in the 'Consultation' chapter of this regulatory impact statement.

Public consultation: regulatory impact statement, evaluation and implementation

This regulatory impact statement has been prepared to meet the requirements of the Subordinate Legislation Act, enabling public consultation on the proposed regulations. The regulatory impact statement presents the range of matters addressed in the proposed regulations in separate chapters. Each chapter includes the regulatory objective for the matters addressed in the chapter, an assessment of the costs and benefits of the proposed regulations and possible alternatives.

In most cases the regulatory impact statement considered and analysed three regulatory options: to remove all regulation, to remake the current regulations without change, or to strengthen the requirements set out in the current regulations. The extent of the analysis of the regulatory options varies but is consistent with the need for regulatory change. In most cases the recommended option for each regulatory area is to strengthen the current regulations.

Each of the regulatory areas included within the regulatory impact statement has a specific implementation plan that will support awareness and understanding of any changes, preparedness and compliance. Information about implementing the proposed regulations can be found in the 'Implementation' chapter.

The proposed regulations will operate for up to 10 years. Evaluation has a key role in ensuring the intended improvements of the proposed regulations (appropriately effective and proportionate) are borne out and align with government objectives on an ongoing basis. Each of the regulatory areas included within the regulatory impact statement has a specific evaluation plan. Information about the evaluation, including public consultation, can be found at the end of the regulatory impact statement.

The proposed regulations are included as an attachment to this document.

Consideration of submissions

Public comments and submissions will be considered before the new regulations are made.

Final decision

The decision to make or not to make the proposed regulations will be informed by the public comments and submissions received. Notice of the decision will be published as soon as practicable after the decision has been made.

Small business impact and competition assessment

Small businesses may disproportionately experience the impacts from regulatory requirements for a range of reasons, including relatively limited resources to interpret compliance requirements or to keep pace with regulatory changes, and the cumulative effect of different requirements.

Most of the proposed regulations propose simplified and streamlined regulatory definitions and requirements compared with the current regulations, particularly where stakeholder feedback has raised issues about ambiguity of the intention of regulations. Any regulatory proposal needs to be scrutinised carefully to assess whether it is having an adverse impact on the ability of firms or individuals to enter and participate in the market. In line with the *Victorian guide to regulation*, new legislation (both primary and subordinate) needs to demonstrate that it will not restrict competition, unless benefits of the restriction outweigh the costs and the objectives of the legislation can only be achieved by restricting competition.

In instances where restrictions on competition have been identified, the benefits of the restriction outweigh the costs and the objectives of the legislation can only be achieved by restricting competition. For example, the registration of a premises by local government for the purposes of infection control standards creates an additional cost for starting a health and beauty service business. However, this cost is offset by the reduced risk of disease in the community and the reduced risk of an infectious disease outbreak.

Structure of the regulatory impact statement and the proposed regulations

This regulatory impact statement and the proposed regulations have grouped the regulations according to either how the regulations are administered or the regulation's purpose in the Act. These are broadly grouped into:

- regulations administered by councils
- regulations administered by the department
- regulations related to managing and controlling infectious diseases, micro-organisms and medical conditions
- other regulations.

Regulations administered by councils

- Vector-borne infectious disease control
- Registered premises – infection control
- Aquatic facilities

Regulations administered by the Secretary to the Department of Health and Human Services

- Cooling tower systems

- Legionella risks in certain premises (water delivery systems)
- Pest control

Management and control of infectious diseases, micro-organisms and medical conditions

- Notifications of infectious diseases, micro-organisms and medical conditions
- Closed court orders for prescribed diseases
- Immunisation and exclusions – schools and childcare
- Escort agencies providing information to sex workers and clients

Other regulatory provisions

- Prescribed senior officers (Chief Health Officer delegations)
- Tissue donations
- Consultative councils.

What isn't included in this regulatory impact statement

The Public Health and Wellbeing Act

The Public Health and Wellbeing Act is the legislation under which these regulations are made. The matters that can be set out in the regulations are confined to what is required under the Act. The requirements under the Act are not the subject of this review, only the details set out in the regulations. During the process of the review and consultation it is likely that potential improvements to the Act may be identified, but that is not the focus of this regulatory impact statement.

Public Health and Wellbeing Regulations relating to prescribed accommodation

Regulations relating to prescribed accommodation will not be considered within this regulatory impact statement (rr. 13 to 27). Separate new regulations relating to prescribed accommodation will be made in 2020. In the interim, the operation of the prescribed accommodation regulations will be extended in their current form for 12 months to allow further time for review and consultation.

The extension of the prescribed accommodation regulations provides an opportunity to separate regulations relating to prescribed accommodation from the other regulations made under the *Public Health and Wellbeing Act 2008*. It is intended that the extended prescribed accommodation provisions will be contained in the renamed 'Public Health and Wellbeing (Prescribed Accommodation) Regulations 2009' and will operate separately from the proposed Public Health and Wellbeing Regulations 2019.

Public Health and Wellbeing Regulations relating to HIV testing

The Public Health and Wellbeing Act prescribes special requirements for HIV testing and these requirements are included in the 2009 regulations. The need to review and modernise these requirements is an issue that a range of sector stakeholders have been raising for some years. Overwhelmingly, the sector has supported a repeal of relevant sections of the Act relating to pre and post HIV testing. The Victorian Parliament recently passed the Public Health and Wellbeing Bill 2019 to repeal the HIV testing specific provisions (ss. 131 and 132) on the basis that they stigmatise people with HIV and are outdated. As a result, the prescribed regulations will not need to be made.

Invitation to comment

In accordance with the *Victorian guide to regulation*, the Victorian Government seeks to ensure that proposed regulations are well-targeted, effective and appropriate, and impose the lowest possible burden on Victorian businesses and the community.

The regulatory impact statement process involves assessing regulatory proposals and allows members of the community to comment on proposed regulations before they are finalised. Such public input provides valuable information and perspectives and improves the overall quality of regulations.

The Public Health and Wellbeing Regulations 2019 (the proposed regulations) will replace the Public Health and Wellbeing Regulations 2009 (the current regulations). A copy of the proposed regulations is published with this regulatory impact statement.

Public comment is invited on the regulatory impact statement and the proposed regulations.

The consultation period is 60 days. Please note that all comments and submissions received will be treated as public documents.

Submission deadline

Comments and submissions should be received by the Department of Health and Human Services no later than 5.00 pm, Monday 30 September 2019.

How to make a submission

Preferred method

The [Engage Victoria website](https://engage.vic.gov.au) <https://engage.vic.gov.au> is the preferred method for receiving submissions. The website includes specific questions for each regulatory area and allows for additional feedback to be provided.

Email

If you are unable to use the preferred method above, submissions can be received by [emailing the department](mailto:phwa.enquiries@dhhs.vic.gov.au) <phwa.enquiries@dhhs.vic.gov.au>.

Post

If you are unable to use the preferred method above, submissions can be received by post marked 'Submission to the Review of the Public Health and Wellbeing Regulations 2009' and addressed to:

Chief Health Officer
Regulation, Health Protection & Emergency Management
Department of Health and Human Services
GPO Box 4057
Melbourne VIC 3001

Where can I obtain copies of this regulatory impact statement and the proposed regulations?

Copies of this regulatory impact statement and the proposed regulations can be obtained from the [Engage Victoria website](https://engage.vic.gov.au) <https://engage.vic.gov.au>.

How can I be updated on the progress of the review?

The [Engage Victoria website](https://engage.vic.gov.au) <https://engage.vic.gov.au> enables you to register to receive updates on the progress of the review of the current regulations.

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This extract was prepared to assist stakeholders who access the report by accessing a specific category on the Engage website. This is not intended to limit the scope of submissions; the department welcomes submissions from all interested parties.

Chapter 3: Aquatic facilities

Victoria regulates aquatic facilities, such as public swimming pools, to minimise the spread of illness. Our aquatics industry is constantly evolving with changes to the regulations necessary to address new and emerging trends, technologies and practices that pose a potential threat to public health.

Problem analysis

Victoria regulates aquatic facilities to manage the risk of illness associated with publicly accessible swimming pools. The current regulations aim to minimise the spread of infectious diseases by setting minimum water quality standards. Over the past 10 years there has been an increase in the number of outbreaks of *cryptosporidiosis* linked to regulated aquatic facilities.

Hazard

Aquatic facilities have been associated with cases and outbreaks of illness due to harmful micro-organisms. These harmful micro-organisms can be introduced from faecal matter or the environment. In addition to gastrointestinal illness, exposure to water in aquatic facilities presents other potential health risks including skin and respiratory infections. Aquatic facilities can amplify illnesses affecting the community, with the risk of passing on illness increased if pool water is not properly treated or if the aquatic facility is not well managed. The World Health Organization's 2006 *Guidelines for safe recreational water environments*¹ provides a comprehensive list of the microbial risks to users.

The regulations manage public health risks from bacteria and viruses but are not designed to address public health risks from persistent pathogens such as *Cryptosporidium*. The risk of infection from bacteria and viruses in pool water is generally managed with routine disinfection using chlorine or bromine, combined with ongoing filtration, attentive maintenance and effective faecal incident response policies. Operators of aquatic facilities would generally remove faecal matter and appropriately disinfect pools regardless of requirements in the regulations, but a majority may not do this to the same standard as currently set out in the regulations and guidelines.

Outbreaks related to swimming pools

Contaminated pool water in aquatic facilities can be the source of illness that affects a community. Each year, sporadic outbreaks of illness are associated with aquatic facilities, with widespread outbreaks of illness affecting multiple regions of Victoria detected every three to four years. Further details of a large outbreak related to aquatic facilities are outlined in this chapter. Of all the microbiological hazards, *Cryptosporidium* is responsible for the most outbreaks of illness associated with aquatic facilities.

Swallowing pool water contaminated with *Cryptosporidium* oocysts (the infectious form of *Cryptosporidium*) can lead to illness, commonly presenting as gastroenteritis. Enteric symptoms usually include watery diarrhoea associated with cramping abdominal pain, dehydration, weight loss, fever, nausea and vomiting. Symptoms can last for four to 21 days. Less commonly the infection may involve the lungs, gall bladder and pancreas. Beyond the usual supporting care for people with gastroenteritis, there is no specific treatment for cryptosporidiosis. The impact of illness on an individual can range from mild to severe; the cost to the economy is detailed in the appendix. Internationally, outbreaks of cryptosporidiosis have resulted in deaths, most notably the largest documented

¹ World Health Organization 2006, *Guidelines for safe recreational water environments, Volume 2: Swimming pools and similar environments*, WHO, Geneva

outbreak in US history – the 1993 Milwaukee cryptosporidiosis outbreak. This resulted in 403,000 people falling ill and 69 deaths, mostly among the elderly and immunocompromised people.²

Exposure

Exposure generally occurs when someone ingests water that has been contaminated by the hazard. The Department of Health and Human Services provides guidance on preventing protozoa contamination within aquatic facilities through the 'Healthy Swimming' campaign and faecal incident response policies. Some aquatic facilities install additional treatment processes to remove or inactivate protozoa; however, the effectiveness of these treatment processes depends on a range of factors that influence pathogen inactivation including the design of the facility, the capability of the system, treatment system maintenance and the operation of the facility.³

Sport and Recreation Victoria has a competitive process for funding new pools or upgrades to existing pools. This process includes a range of funding criteria that encompass pool safety. Applications for constructing an aquatic facility must comply with the Building Regulations for the relevant local government authority to issue a certificate of occupancy as part of planning approval processes. These processes may consider factors that influence the spread of pathogens. There are incentives for aquatic facility operators to:

- maintain water treatment plants
- attend to water quality
- adjust pool chemistry
- record water test results
- undertake remedial action.

Failure to maintain these could lead to poor water quality, reduced bather amenity and reputational impacts.

Vulnerability

The following user groups are likely to develop more serious illness if they contract disease such as cryptosporidiosis from aquatic facilities:

- the elderly, young children and pregnant women who may be more susceptible to dehydration resulting from diarrhoea
- immunocompromised people who are at risk of serious or life-threatening illness.

Examples of people with weakened immune systems include:

- AIDS patients
- cancer and transplant patients who are taking immunosuppressive drugs
- those with inherited diseases that affect the immune system.

A high proportion of children use public aquatic facilities (59 per cent of people with swimming pool memberships are children).⁴ Young children are more likely to contract cryptosporidiosis than the broader population. Analysis of Victorian case notifications from 2009 to 2018 identified higher case numbers in young children, particularly those under five years of age (over 27 per cent of all case notifications over the 10-year period, Figure 3.1⁵). Young children have a higher risk of infection from waterborne pathogens due to their:

- immature immune systems
- tendency to spend longer periods in the pool
- likelihood of ingesting more pool water

² Corso et al. 2003, 'Costs of Illness in the 1993 waterborne *Cryptosporidium* outbreak, Milwaukee, Wisconsin', *Emerging Infectious Disease*, vol. 9, no. 4, United States Centers for Disease Control and Prevention

³ More details on the risk categorisation of aquatic facilities is in the appendix.

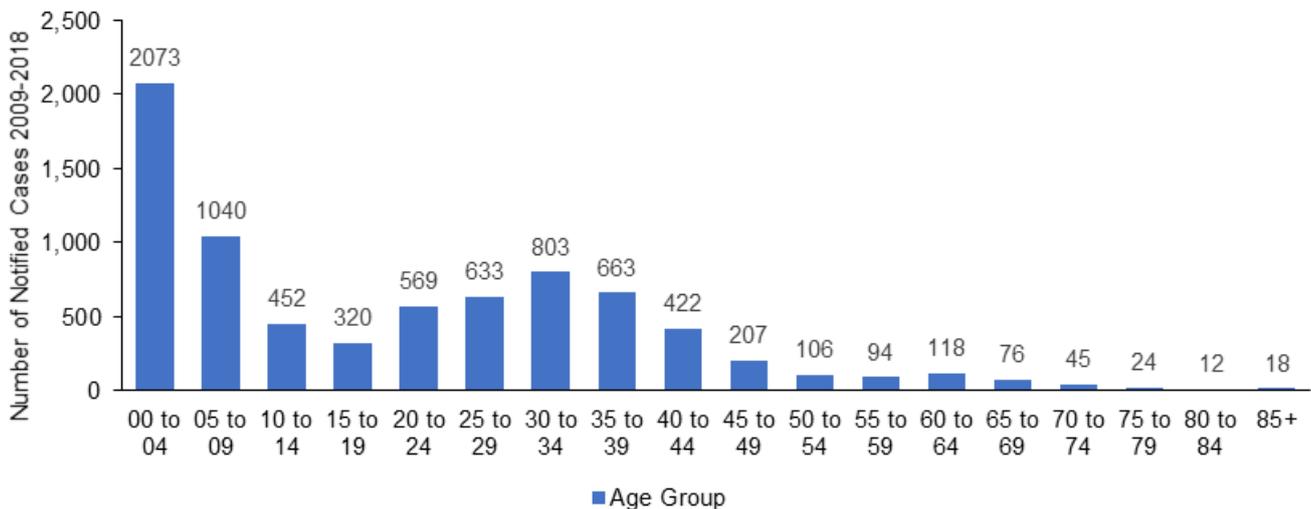
⁴ Life Saving Victoria, Aquatics and Recreation Victoria 2018, *Victorian public pools state of the sector report 2017–2018*, Victoria

⁵ Department of Health and Human Services (Victoria). Interactive infectious disease surveillance reports, Victoria

- engaging in activities that lead to water ingestion (for example, splashing, diving or water play).

Young children are also prone to introducing faecal contaminants into the pool due to their poor hygiene, reduced continence and use of ineffective swim nappies.

Figure 3.1: Laboratory-confirmed cryptosporidiosis cases notified to the department by age group, Victoria, 2009 to 2018



A multifaceted approach to reducing illness associated with public aquatic facilities



Public aquatic facilities are important for maintaining and promoting active lifestyles. Outbreaks⁶ of illness in public aquatic facilities can be debilitating for those affected (particularly the vulnerable), time-consuming and costly to manage, so prevention efforts are preferred. The department takes a multifaceted approach to prevent outbreaks including:

Regulatory framework – public health and wellbeing legislation with a focus on minimum water quality requirements.

Risk management – disease surveillance, guidance and response protocols to manage water quality and responding to incidents affecting water quality. These include *Water quality guidelines for public aquatic facilities – managing public*

health risks, Cryptosporidiosis outbreaks in aquatic facilities – prevention and response plan and incident response protocols.

Leadership and education – working with other Australian health regulators, keeping abreast of emerging issues, promoting improved facility design and promoting community awareness through the ‘Healthy Swimming’ education campaign.

Stakeholder engagement – working collaboratively with aquatic facility designers and operators, local government, industry associations and other government departments.

The regulation review presents an opportunity to address issues that have been identified through stakeholder consultation with the aquatics industry, facility operators, local government, industry associations, health regulators and water quality specialists.

⁶ Aquatic facility outbreak is defined as two or more unrelated cases of cryptosporidiosis who swam at the same facility during their incubation period (one to 12 days) and where the onsets of illness were less than 28 days apart.

Emerging issues that may contribute to increased disease burden

The following issues are emerging concerns that may adversely contribute to increasing the disease burden associated with aquatic facilities. These issues are broader than the scope of the regulations, but regulatory options must consider that future risks associated with aquatic facilities are likely to be higher than in the past 10 years.

Climate change – a warmer climate

Outbreaks of illness associated with aquatic facilities, particularly cryptosporidiosis, are expected to increase with climate change as patronage increases on hot days. In addition to increasing demand for access and the availability of aquatic facilities for public use, climate change may also affect the availability of water and energy. The water restrictions imposed on aquatic facilities during the millennium drought led the aquatics industry to find novel solutions to conserve water. This included many facilities exploring options to use alternative water supplies within their facilities including rainwater for irrigation, showers and topping up pools. Some facilities treated and reused filter-backwash water. These initiatives have the potential to increase public health risk. Furthermore, as energy costs increase and incentives to reduce energy use (carbon footprints) continue, some aquatic facilities may consider switching off pool treatment systems when the facility is closed rather than leaving them to run overnight. This potentially results in poorer quality water and therefore increases the risk to public health. In the absence of regulations, the trends of climate change and higher energy cost could act as an incentive for lower standards particularly for small private operators of aquatic facilities.

Technology changes and applications – interactive water features

Interactive water features, also known as ‘active water spaces’, ‘spray parks’, ‘water parks’ or ‘splash pads’, have gained popularity in recent years, with some local government areas installing them. These interactive water features have several features:

- they are generally located in a public space (such as a park or square) and are managed by a local council.
- they are free to access and are often unfenced
- they provide children (and adults) with the opportunity to interact with water features such as fountains, spray nozzles, slides and showers
- there may or may not be a pool of water associated with the facility (many are ‘zero depth’ and based on soft rubberised matting)
- the water is generally drained off the surface, collected, treated and reused at the facility.

In 2017 the department conducted a spray park survey, which 28 of Victoria’s 79 local councils completed. The survey identified that 15 of the 28 councils had interactive water features in their local government area. Most were operated by local council staff, with monitoring and inspections conducted infrequently.

Limited data is available on the contribution of interactive water features such as spray parks to waterborne illness in Victoria. In 2012 a gastroenteritis outbreak was linked to an interactive water feature in Seville, Victoria. Fifteen children who had used the interactive water feature became ill with vomiting and diarrhoea of unknown cause. Faecal indicator bacteria were identified in water samples taken from the facility during the investigation, and operational, maintenance and hygiene issues were identified.

In Western Australia, a five-year-old child contracted a *Pseudomonas* infection resulting in partial blindness. The infection allegedly occurred when the child visited an interactive water feature with suspected poor water quality. An investigation of the water quality at the spray park determined the facility was noncompliant with the state-based regulations, resulting in a period of shut down. The water supply system required disinfection and treatment upgrades to be installed.

Following this incident, health regulators from New South Wales and South Australia amended their aquatic facility legislation to include the regulation of interactive water features within the scope of their legislation to manage the potential public health risks. These facilities present unique challenges in the maintenance of water quality and management of public health risk. In general, these facilities exhibit the following features:

- they can be susceptible to a high level of chemical, physical and microbiological contamination from the environment including stormwater runoff, birds, animals and footwear
- they are used almost exclusively by children and often do not have easily accessible hygiene and toilet facilities
- water is extensively sprayed and aerosolised, making incidental and intentional ingestion and inhalation of water more likely
- they are often unstaffed during operating hours, meaning contamination and other maintenance incidents can go unnoticed and unaddressed.

Interactive water features do not usually contain a pool of water; therefore they do not meet the current definition of an aquatic facility under the Victorian regulations while still posing a public health risk to users.

Technology changes and applications – lagoons including surf parks

Lagoon pools with recirculating water supplies are an emerging type of aquatic facility. A number of these facilities have been proposed in Australia with one currently in construction in Victoria. Lagoon pools can be differentiated from natural water bodies or natural lagoons as they are artificially constructed and have water recirculated within the system. Lagoon pools may include cable parks if the water within that system is recirculated and treated. Lagoon pools may also be identified as surf pools or surf parks which rely on wave technology as an artificial means to generate waves for users to surf and recreate. There is limited information available on the public health risks associated with these lagoons. Users are typically immersed in recirculating water that is likely to be ingested and inhaled by users.

In 2018 a surfer visiting a cable park and surf resort in Texas died from an infection with the environmental pathogen *Naegleria fowleri*. *Naegleria fowleri* infection is very rare but often fatal and requires water containing the pathogen to be inhaled through the nasal cavity.

The *Model Aquatic Health Code* published by the US Centers for Disease Control and Prevention has termed these facilities as 'special use aquatic venue' due to an inability for these facilities to meet existing design standards. However, specific requirements for these types of facilities are yet to be developed by the Centers for Disease Control and Prevention. These types of aquatic facilities will be captured in the proposed definition of aquatic facilities which is consistent with the approach taken in Western Australia.

Technology changes and applications – floatation tanks

Floatation tanks (also referred to as sensory deprivation tanks or isolation pods) are heated, highly saline, fluid-filled enclosed tanks designed for individual therapeutic use. The fluid consists of a near-saturated solution of water and Epsom salt (magnesium sulphate). The fluid may or may not be treated with a chemical disinfectant and is circulated through a filter only when the tank is not occupied. Additional treatment such as ultraviolet (UV) disinfection may also be installed as part of the treatment process. The saline solution is generally changed every six to 12 months due to the large amount of salt required to prepare the fluid.

It is unclear whether floatation tank use poses a risk to public health. This device is used by multiple people and without proper disinfection or recycling of water may spread disease and negatively impact on public health outcomes. To date there have been limited studies on the health risks associated with these tanks. Western Australia incorporates floatation tank regulation in their aquatic facility legislation. New South Wales has drafted guidance for managing floatation tanks. There is uncertainty whether floatation tanks meet the current definition of an aquatic facility; however, due to the unique water chemistry it is unlikely floatation tanks would comply with the current regulations. There are currently no nationally or internationally accepted standards for managing water quality risk in floatation tanks.

Potential degradation of water treatment – ageing infrastructure

In a review of the Sport and Recreation Victoria database in 2016, 153 facilities were found to be 26 years old or older.⁷ More than half of the aquatic and recreation centres in Victoria are likely to need repair or upgrading. The

⁷ Victorian Auditor-General's Office 2016, *Local government service delivery: recreational facilities*, 2015–16:29

age of these facilities presents an ongoing challenge for facility operation, maintenance and compliance with legislation. As facilities age, there is a greater chance that aging infrastructure, that is not rejuvenated or enhanced, may not effectively disinfect the water in an aquatic facility.

Objectives of the regulations

The regulations are intended to address the risks to public health associated with aquatic facilities, which provide conditions for spreading disease and illness. The public nature of many aquatic facilities increases the risk that these facilities can cause large outbreaks of disease.

Requirements of the regulations

As both the specific hazards and the vulnerable population cannot be controlled for, the public health intervention focuses on the possible exposure from water in aquatic facilities.

The regulations define aquatic facilities and prescribe operational, maintenance and testing requirements for these facilities. These requirements were established to provide the minimum water quality standards required to protect human health. The regulations also specify record-keeping requirements.

The requirements relating to these facilities are made under the general provisions of s. 232 of the *Public Health and Wellbeing Act 2008* and the management and control of infectious disease, micro-organisms and medical conditions under s. 238 of the Act. Where required, authorised officers also use their powers under the Act to monitor and enforce compliance with the regulations.

The Act allows Victoria's Chief Health Officer to authorise departmental or local government environmental health officers to investigate, eliminate or reduce a risk to public health. These powers can be applied to managing public health incidents in aquatic facilities when required.

Options

This section outlines options to address the overarching regulatory objectives to minimise risks to public health associated with aquatic facilities. Due consideration is given to the principles of the Act including evidence-based decision making, the precautionary principle, primacy of prevention, accountability, proportionality and collaboration in assessing these options. Furthermore, stakeholder feedback identified the following key outcomes to be addressed in the options:

- **reduction** of public health harm
- **risk-based** regulation where premises are regulated in accordance with their respective public health risk profile (the risk profile is influenced by the type of activity and the visitors such as vulnerable populations including children and immunocompromised people)
- **clarification** on the scope of aquatic facility definition, roles and responsibilities and the expectations of the responsible person
- **agility** to encompass emerging risks associated with novel facilities.

Regulatory frameworks in other Australian jurisdictions

Experience from Australia and international jurisdictions suggests that effectively regulating and managing pathogens (including *Cryptosporidium* risk) in aquatic facilities requires a multifaceted risk management approach that involves:

- good facility design and construction to facilitate hygiene and reduce faecal contamination
- optimal hydraulic design for effective water circulation and turnover

- robust multiple treatment barriers, recognising no single barrier is effective against all pathogens
- effective surveillance and monitoring
- adequate incident response policies
- proactive health protection messaging to promote hygienic practices among patrons
- technically competent operators.

The regulation of aquatic facilities is varied across Australia; however, there is consistent acknowledgment of the need to address the burden of disease associated with aquatic facilities.

In Australia, each jurisdiction is in different stages of reviewing existing guidance and legislation to better address public health risks in aquatic facilities. Some jurisdictions such as Western Australia, New South Wales and South Australia have prescriptive regulations that outline requirements in the relevant Act and regulations, while Queensland and the Northern Territory rely on guidance to inform their aquatics industry. The mix of regulatory instruments (for example, legislation, regulations, orders and guidelines) differs between jurisdictions.⁸

However, key features in other frameworks that do not currently exist in Victoria include:

- interactive water features (including spray parks and interactive fountains) – these facilities have been linked to outbreaks of illness, particularly among young children (Western Australia and New South Wales have included interactive water features in their legislation to help reduce the risk of cryptosporidiosis outbreaks)
- a requirement for aquatic facilities to be registered through local councils
- an approval process for all aquatic facilities, which includes criteria outside of public health
- requirements of pool users.

Queensland and the Northern Territory detail in guidance the water quality and record-keeping parameters for public aquatic facilities in their jurisdictions. The remaining states and territories detail the water quality, operational and record-keeping requirements in their respective public health legislation.

Key differences in the Victorian regulatory requirements in comparison with other jurisdictions include:

- disinfection requirements for outdoor pools – with/without cyanuric acid
- bromine levels in indoor pools
- no requirement for continuous online water quality monitoring.

Coordination and delegation models for regulating aquatic facilities

In Victoria, the state and local governments are jointly responsible for regulating aquatic facilities.

Delegated decentralisation to local government has been the preferred model. This provides benefits to the community through timely response, improved service areas and coverage of the regulatory requirements. Environmental health officers provide services to areas within set geographical areas. They take a collaborative approach and have established relationships with operators of aquatic facilities through regulating other public health risks (such as prescribed accommodation and food safety requirements).

There are risks with a non-prescriptive decentralised approach led by local government. For example, there may be limited capacity to collect systematic data on the nature and extent of compliance problems. There is also potential conflict of interests for councils that monitor compliance on aquatic facilities that are run and owned by the same council. There may be varied interpretations and application of the definition by councils, such as only applying the regulation definition ‘publicly accessible’ pools to include pools and spas in hotels, motels and other like contexts, but to exclude pools found in apartment buildings.

The department could play a greater role by centralising the regulation of aquatic facilities, similar to the approach used for cooling towers across Victoria; however, the advantages and benefits of decentralisation would be lost. The department considers local government to be best placed to engage in ongoing discourse and training with aquatic facility operators and to improve practices and compliance over time alongside the other public health risks that environmental health officers deal with on a regular basis. Regarding potential conflicts of interest, councils

⁸ Refer to the appendix regarding regulatory arrangements in Australian jurisdictions.

have duties and obligations under legislation through the *Local Government Act 1989* that governs their operations and performance reporting, and have mechanisms for transparency under the *Freedom of Information Act 1982*.

The department continues to play a role as a central coordination body. The department provides information dissemination and parameters for priority state programs that have benefits beyond individual communities (such as identifying the emerging risk of *Cryptosporidium*). The department develops and sets minimum standards for water quality that provide a proportional response to the health risks associated with aquatic facilities in the broader context of public health risks in Victoria.

Consultation

The department has undertaken extensive consultation with the aquatics sector, local government, other government departments and health regulators nationally and internationally to understand the effectiveness of the current regulations and emerging issues. These discussions have helped shape the policy options to improve how public health risks can be managed through regulation.

Consultation began in 2017 and was designed to ensure views, concerns and feedback of key aquatics industry stakeholders were heard and considered as part of the review process. The focus of the targeted consultation process is to engage the parties who are most likely to be directly affected by changes to the regulations.

The department undertook targeted engagement with key stakeholders in addition to publishing the *Public aquatic facilities – Public Health and Wellbeing Regulations 2009 sunset review discussion and option paper* in July 2018.

Feedback to date has been grouped into seven key areas of improvement:

1. **Public health harm reduction:** Extend the scope of the regulations to address the broader range of potential pathogens (including *Cryptosporidium*).
2. **Regulated premises:** Clarify aquatic facility definitions, include emerging risks from interactive water features and consider applying the regulations to privately owned (but publicly accessible) aquatic facilities. There is no requirement in the regulations for aquatic facility operators to notify or register with the department or local government and therefore the precise number, location and type of public aquatic facilities regulated in Victoria is unknown.
3. **Responsible person:** Clarify the definition and regulatory responsibilities for regulators and regulated premises and include competency-based requirements. Under the currently regulatory framework, there are scenarios where the council would serve as the owner, operator, regulator and investigator of an aquatic facility (for example, during a cryptosporidiosis outbreak at a large community aquatic facility).
4. **Risk-based regulation:** Shift from a 'one size fits all' regulatory framework to a risk-based categorisation of aquatic facilities that is proportionate to the facility risk profile (risk factors such as 'bather load', vulnerable populations and facility-specific factors).
5. **Incorporate operational guidelines:** To support the change in scope and inclusion of a risk-based approach, the regulations should incorporate (by reference) guidelines as the 'reasonable steps' for maintaining water quality.
6. **Inspection and enforcement:** Both the department and local government have limited regulatory tools to monitor and enforce compliance with the regulations. The department currently has no visibility into the level of regulatory activity being undertaken by councils in relation to aquatic facilities or into the level of compliance among facilities. For example, there is currently no requirement for facilities to report serious incidents (for example, loose faecal incidents, treatment barrier failures or pathogen detection) to the department or to local government. Because the role of local government as a regulator is not specifically defined in the regulations, councils may choose to scale back on costly, non-mandated regulatory activities like aquatic facility inspections and water testing.
7. **Design principles:** The regulations do not include measures to prevent contamination such as building design to facilitate pre-swim showers to address bather shedding risks.

This consultation feedback informs the four options considered in this regulatory impact statement:

- Option 1: Retain the current regulations without changes
- Option 2a: Strengthen the regulatory requirements to address public health risks
 - Option 2b: Strengthen the regulatory requirements to address public health risks including registration of all aquatic facilities
- Option 3: Remove the current regulations.

Option 1: Retain the current regulations without changes

This option retains the existing regulations and regulatory framework with no changes to the regulatory requirements. Aquatic facilities will continue to have operational requirements to ensure consistency in routine water treatment to manage water quality risks.

Public health risks from *Cryptosporidium* continue to be addressed proactively by the aquatics industry, with guidance provided by local government and the department. Record-keeping requirements would ensure local government has access to treatment and verification records during compliance inspections.

The department in conjunction with Queensland Health have developed *Water quality guidelines for public aquatic facilities – managing public health risks* (water quality guidelines).⁹ The purpose of these guidelines is to assist organisations and aquatic facilities to reduce risks to public health. These guidelines also provide advice to local and state government environmental health officers to help fulfil their regulatory and advisory roles.

In these guidelines, there are recommended approaches to manage public health hazards, including developing a water quality risk management plan, treatment processes and validation requirements; water circulation and turnover times; managing water balance; monitoring, verification and record keeping; healthy swimming practices, incident response procedures; and operator training.

Aquatic facility operators are expected to adhere to and implement the processes and standards outlined in these guidelines. Local government regulators are expected to regulate aquatic facilities which can be supported by the use of these guidelines.

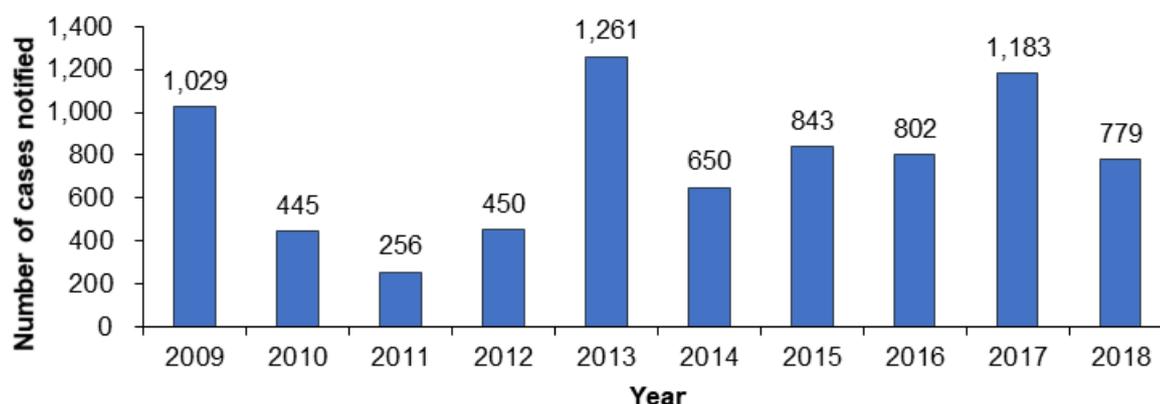
Disease burden and outbreaks not addressed by the current regulations

The number of cryptosporidiosis cases notified to the department each year highlights the significance of this illness and its impact on the Victorian population. The number of cryptosporidiosis cases in 2017 and 2018 represented the third most commonly notified gastrointestinal infection in Victoria (Figure 3.2).¹⁰

⁹ [Water quality guidelines for public aquatic facilities: Managing public health risks. Consultation Draft July 2018](https://www2.health.vic.gov.au/public-health/water/aquatic-facilities/quality-guidelines) <<https://www2.health.vic.gov.au/public-health/water/aquatic-facilities/quality-guidelines>>, Victorian Government

¹⁰ The number of cases of cryptosporidiosis reported to the department does not reflect the actual number of cases of cryptosporidiosis in the Victorian community. It is likely that the actual number of cryptosporidiosis cases in the community is 10-fold higher. Source: Padiglione A, Fairley CK 1998, 'Early detection of outbreaks of waterborne gastroenteritis', *Water*, vol. 25, no. 6, pp. 11–15.

Figure 3.2: Laboratory-confirmed cryptosporidiosis cases notified to the department by year, Victoria, 2009–2018



Option 2a: Strengthen requirements to manage public health risks

This option strengthens the existing regulations and proposes measures to address new and emerging trends, technologies and practices that may pose a risk to public health. Changes proposed by this option include broadening the definition of an aquatic facility to accommodate new and emerging trends, updating standards and requirements to improve risk management, requirements for all aquatic facilities to adhere to Water Quality Guidelines (published on the department’s website), risk-based characterisation of aquatic facilities and introducing registration requirements and infringement penalties to facilitate compliance.

Definition of aquatic facility

The proposed regulations would clarify the definition of an aquatic facility to address ambiguity and include emerging types of aquatic facilities to ensure local government and aquatic facilities have clear accountability of their responsibilities. This option would detail the types of facilities that are defined as an ‘aquatic facility’. Examples of facilities and the associated risk categories are described in Table 3.1; this is not an exhaustive list of the types of facilities.

Table 3.1: Aquatic facility risk categories including examples

| Low- to medium-risk facilities ¹¹ | High-risk facilities |
|---|--|
| <ul style="list-style-type: none"> Residential apartment pools Diving pools Lap pools (25 m and 50 m pools) Gym pools Resort pools Holiday park pools Motel pools Theme park wave pools | <ul style="list-style-type: none"> Spas Interactive water features Wading pools Learn-to-swim pools Program pools Hydrotherapy pools School pools Water slides Shallow-depth interactive play pools Pools used by incontinent people Aged care facilities Retirement village pools Lagoons with unrestricted access |

¹¹ Low- to medium-risk facilities may be classed as high-risk depending on the visitors and the types of activities carried out at that facility.

The scope of public aquatic facilities is interpreted in various ways by different local governments, with some choosing not to regulate aquatic facilities available to discrete user groups such as hotel and motel pools, hydrotherapy pools and swim schools. In practice, this means that the 300 council-owned pools are consistently subject to the regulations; however, bodies of water with similar characteristics and subsequent risks to public health are not currently subject to inspection and compliance oversight by local government. At a minimum, there are 82 school and university pools and 184 Learn to Swim schools currently within the scope of the regulations that may not be actively regulated by local government.¹² Additional facilities that would be regulated would include pools in hotels and motels, as well as pools in apartment complexes. The department estimates that there are upwards of 250 hotels and motels with pools across Victoria. Apartment complexes with pools would further increase this total; however, the department does not have accurate figures on the number of pools in apartment complexes. These facilities would be listed in the expanded definition with minimum requirements for local governments to oversee compliance with the regulations.

In recent years 'interactive water features', also known as 'active water spaces', 'spray parks', 'water parks' and 'splash pads' have gained popularity, with a number of councils installing these facilities. These facilities are increasingly being linked to outbreaks of illness. These interactive water features are currently outside the scope of the current regulations. Regarding emerging facilities, there are a number of Lagoon pools with recirculating water supplies proposed in Australia with one currently in construction in Victoria, the department does not have a reliable estimate of how many of these facilities will be constructed in the future; however, these are identified as an emerging health risk and would be captured in the proposed regulations. Western Australia and New South Wales have included 'interactive water features' within the scope of their regulations; other jurisdictions are currently reviewing aquatic facility regulations and guidance to include 'interactive water features'.

The proposed regulations would broaden the scope of aquatic facilities to include a definition for 'interactive water feature'. Currently there is no register of these types of premises, so the department does not have an estimate of how many additional aquatic facilities would be covered under the expanded definition.

Clarity on roles and responsibilities and strengthen penalties and infringements

The responsible person of an aquatic facility would be clarified to enable consistent oversight of aquatic facilities. Local government authorised officers are responsible for responding to public health risks associated with aquatic facilities. Local government officers, in many cases, may also be interpreted as the 'responsible person' for managing aquatic facilities. In some cases, in the current definition of a responsible person of an aquatic facility, it may not be clear as to who is the responsible person.

A new definition of 'aquatic facility operator' would provide greater clarity as to who is responsible for complying with requirements in the regulations. This will mean local government authorised officers and aquatic facilities would be better placed to oversee and ensure compliance, consequently contributing to reduce public health risk from aquatic facilities.

The proposed changes also include the introduction of infringement notices as an additional tool for local government to effectively respond to public health risks for high-risk facilities to facilitate compliance. Introducing infringements provides local governments with flexibility in overseeing compliance in an approach that aligns with other jurisdictions including New South Wales and Western Australia.

Requirement to manage pathogenic micro-organisms in water

Standards and requirements for aquatic facilities

This option retains existing regulations prescribing the standards and requirements for aquatic facilities but expands these requirements to a larger number of facilities with similar risk profiles. Compliance with these standards and requirements would continue to provide consistency across the industry for managing the risk of infection from exposure to pathogens in aquatic facilities. The regulations would, however, be strengthened by key changes including:

¹² Life Saving Victoria, Aquatics and Recreation Victoria 2018, *Victorian public pools state of the sector report 2017–2018*, Victoria

- a new requirement for aquatic facilities to manage pathogen risks. This is to address emerging issues such as the risk of cryptosporidium outbreaks that are not adequately addressed under the existing regulations.
- a new requirement for high-risk aquatic facilities to register with their local council. This is to provide local council with an up-to-date list of aquatic facilities with potential risks to public health and provide a mechanism for compliance through inspections and adherence to minimum standards. This would better address the public health risks and remove ensure all aquatic facilities with similar risk burdens are regulated in the same manner.

Duty to minimise risks

This option would require new obligations on aquatic facility operators. The regulations would require an aquatic facility operator to manage the risks to human health arising from pathogenic micro-organism in the aquatic facility in accordance with the regulations and the water quality guidelines.

As described in option 1, water quality guidelines are published on the department's website and are designed to assist organisations and aquatic facilities reduce risks to public health.

Microbiological quality of aquatic facility water

Regulations dealing with microbiological quality of water would be remade, replacing 'thermotolerant coliforms' with '*Escherichia coli*'. This considered to be a minor technical change to align with Australian and international naming conventions. This change would not have a practical impact on aquatic facilities operators.

Outbreak response provisions

This requirement would relate to the requirement to manage pathogenic micro-organisms in the water. Currently the regulations set out the obligations of an aquatic facility operator in the event of a case or outbreak of legionellosis. The regulations would be broadened to provide for other infectious disease cases or outbreaks.

If the department or council notifies an operator that the water is suspected or implicated as a source of infection, the obligations under option 2a would require:

- the operator to provide a sample of the water to a laboratory within 24 hours to test for the pathogenetic micro-organism
- the operator provide the test results to the Secretary to the department or council authorised officer within 24 hours of receiving the laboratory report
- disinfect the aquatic facility in accordance with any directions given by the secretary to the department or council.

***Cryptosporidium* risk**

Outbreaks of cryptosporidiosis linked to aquatic facilities are an ongoing public health issue in Victoria, and a variety of factors can influence the incidence and severity of an outbreak. Experience from Australia and overseas suggests that the effective regulation and management of *Cryptosporidium* risk in aquatic facilities requires a multifactorial approach. *Cryptosporidium* is difficult to detect through sampling, therefore a specific incidence or suspected outbreak response plan for *Cryptosporidium* is outlined in the water quality guidelines.

Categorisation and registration of aquatic facilities

To provide for proportional regulation that is consistent with public health risk, the proposed regulations would prescribe category 1 and category 2 aquatic facilities.

Category 1 aquatic facilities are higher risk due to the types of activity carried out and a greater burden of disease based on user profile (vulnerable groups such as children and immunocompromised people).

Category 2 aquatic facilities present a lower public health risk; however, may still host large numbers of bathers, which presents an increased public health risk.

The proposed criteria and requirements for category 1 and category 2 are outlined in Table 3.2.

Table 3.2: Proposed criteria and requirements for category 1 and category 2

| Category | Criteria | Proposed requirements |
|------------|---|--|
| Category 1 | <p>A category 1 aquatic facility is:</p> <ul style="list-style-type: none"> a) used by the public, whether free of charge or on payment of a fee; or b) is used in association with a class or program that is offered free of charge or on payment of a fee; or c) provided at an early childhood service, school or other educational institution; or d) is located at any of the following premises— <ul style="list-style-type: none"> • a public hospital; • a multipurpose service¹³; • a denominational hospital; • a private hospital; • a privately operated hospital within the meaning of the <i>Health Services Act 1988</i> | <p>Category 1 aquatic facilities are required to:</p> <ul style="list-style-type: none"> • register annually with council • manage risks in accordance with the regulations and Water Quality Guidelines • maintain the current water quality requirements in the regulations • at the discretion of Council may be subjected to an inspection for water quality compliance • maintain records • respond to suspected or implicated cases or outbreaks of illness associated with microbiological hazards linked to the aquatic facility • be subjected to improvement notices, enforcement orders and penalties regarding noncompliance. |
| Category 2 | <p>A category 2 aquatic facility is located in:</p> <ul style="list-style-type: none"> a) residential apartment complex; or b) the premises of a hotel or motel or hostel. | <p>Category 2 aquatic facilities are required to:</p> <ul style="list-style-type: none"> • manage risks in accordance with the regulations and Water Quality Guidelines • maintain the current water quality requirements in the regulations • maintain records • respond to suspected or implicated cases or outbreaks of illness associated with microbiological hazards linked to the aquatic facility • at the discretion of Council may be subjected to an inspection for water quality compliance • be subjected to the nuisance provisions of the regulations. |

Higher risk category 1 aquatic facilities would be included in the scope of the registered business provisions of the Act by prescribing aquatic facilities to be a class of business that poses a risk to public health under s. 68(f). This option would effectively strengthen local government’s ability to regulate and oversee compliance with the regulations with powers of entry and stronger legal footing to investigate and understand public health risks associated with these facilities.

Categorisation based on risk profile would provide a proportionate and targeted approach. The risk classification by category would provide requirements that to ensure treated water reaches all areas of the facility and that polluted water is removed efficiently thereby reducing the pathogen risk of the aquatic facility. This is particularly relevant for vulnerable groups in our community such as young children, the elderly and people with low immunity; as such, facilities where it is expected to have a high proportion of these vulnerable groups would be high risk aquatic facilities.

The categorisation of aquatic facilities according to risk is consistent with the approach taken in other jurisdictions, bringing Victoria in closer alignment with the legislative framework in Western Australia, New South Wales and the

¹³ The functions of a multipurpose service are the provision of any or a combination of the following— (a) public hospital services; (b) health services; (c) aged care services; (d) community care services; and further criteria as defined in the *Health Services Act 1998*.

guidance provided in Queensland and internationally in the *Model Aquatic Health Code* published by the US Centers for Disease Control and Prevention.

All aquatic facilities would continue to be subject to the prescribed standards and requirements to manage inherent public health risks associated with aquatic facilities. This option introduces a requirement for category 1 aquatic facilities to be registered with the local council with prescribed standards and requirements for aquatic facilities is to be a condition of registration. Category 2 facilities would be regulated for the first time in Victoria; however, compared with category 1 present a lower public health risk and would be exempt from registration. Local governments would have limited powers to oversee compliance and may choose to use nuisance provisions to investigate potential public health risks associated with category 2 aquatic facilities. The framework used to register category 1 aquatic facilities cannot be applied to category 2 aquatic facilities. To do so would require amendments to the Act, which is outside the scope of this review.

The proposed regulations prescribe the items to be included in registration applications for category 1 aquatic facilities including the type of aquatic facility.

Responding to microbiological noncompliance

This option includes a requirement for aquatic facility operators to notify the council if a sample of water taken from the aquatic facility and delivered to a laboratory for testing does not comply with the microbiological parameters. Where an aquatic facility fails to meet the regulatory requirements in three successive microbiological samples, the facility would be ordered to close until actions have been taken to mitigate the risk to public health, such as intensive disinfection through hyperchlorination.

Option 2b: Strengthen the regulatory requirements to manage public health risks, including registration for all facilities

This option is an extension of option 2a. It considers the potential public health risk associated with all public aquatic facilities and would require all facilities to be registered with local government (in option 2a, only category 1 aquatic facilities would be registered).

This would expand registration and inspection beyond the aquatic facilities to include pools in residential apartment buildings (owned and maintained via owners corporations) and hotel and motel pools

This approach would provide consistent application of all regulatory requirements across all aquatic facilities (similar bodies of water with similar pathogen risks). While this approach manages public health risk, there would be a significant increase in the number of aquatic facilities registered. These bodies of water can contain the same pathogens that cause illness, but there may not be the associated vulnerable populations using these additional facilities. As such, this option is not aligned with the proportionality principle of the Act and would require significant resourcing from local governments, which may not be warranted for lower risk facilities.

Option 3: Remove the current regulations

Removing or reducing requirements in the regulations would result in inconsistent approaches across aquatic facility operators and lead to an increase in illness and outbreaks related to pathogens in aquatic facilities.

Without regulations, the Act provides provisions relating to nuisances, which are reactive and general in nature. The Act does not provide prescriptive guidance about acceptable water quality and managing suspected or implicated outbreaks in aquatic facilities. Addressing poor water quality standards and managing outbreaks would be highly difficult in this context.

The regulations outline minimum requirements to assist aquatic facilities in managing complex water chemistry. In the absence of regulations or aquatic facility operational requirements outlined in option 1, the management of public health risks would likely vary from facility to facility, reflecting the varied experiences of operators, the age and efficacy of the existing treatment processes, and the financial capacity for the operator to proactively manage pathogen risks in water.

The aquatics industry has self-regulatory mechanisms to review and audit pool safety and water quality. These are paid services that base their water quality and public health criteria on the existing regulations. In the absence of regulations, criteria used by industry to review pool water quality may vary or diminish.

The reliance of co-regulation through other legislative frameworks would not address public health risks associated with aquatic facilities. For example, the construction of aquatic facilities requires local governments to issue a certificate of occupancy for aquatic facilities with the requirements pertaining to the Building Regulation requirements. These do not include public health risks or water quality requirements.

Impact analysis

In the absence of regulations, the department expects there would be reduced cleaning and maintenance in aquatic facilities (below the standards set by the current regulations). As such there would be, on average, more infectious micro-organisms in the water, and more users of aquatic facilities would get ill and the likelihood of outbreaks of infectious diseases due to aquatic facilities would increase. This would increase the overall disease burden in Victoria from using aquatic facilities. There will be more discussion of these impacts in option 3.

Based on consultations with industry, the analysis below assumes that operators, in aggregate industry would undertake 80 per cent of the testing requirements set out in the regulations if the regulations were not in place. This would reflect that situation where some operators undertake less than the minimum in the regulations (due to reasons such as lack of awareness, costs, and operational pressures). The options below will be compared with the status quo, option 1, due to the difficulty of estimating the base case of no regulation.

Option 1

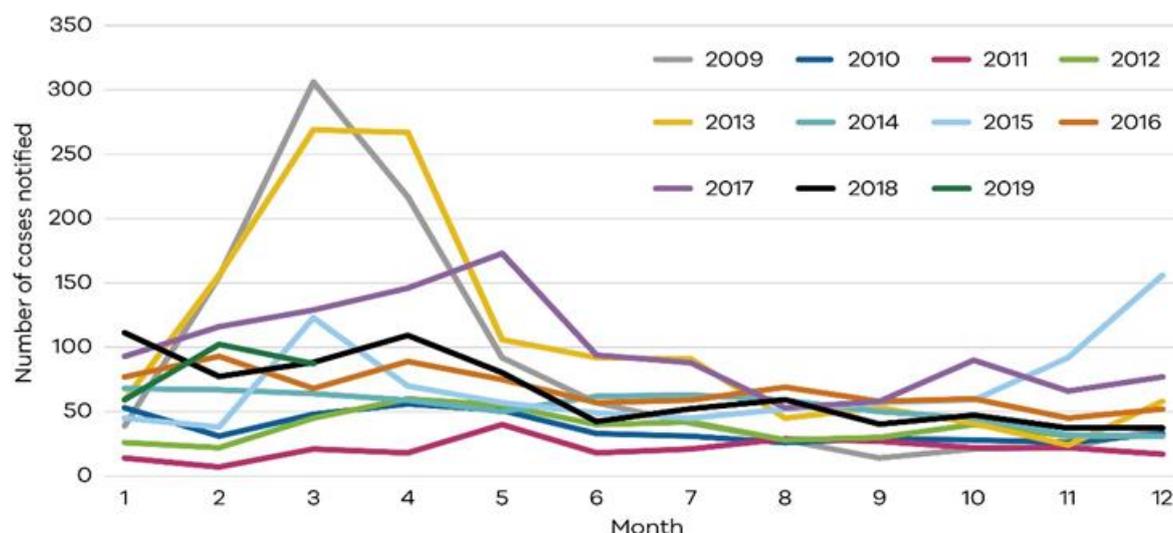
Potential outcomes of option 1

- The regulations continue to manage public health risks from bacteria and virus; however, the regulations do not adequately address pathogens such as *Cryptosporidium*, and outbreaks of cryptosporidiosis continue to be associated with aquatic facilities.

Option 1 does not address the risk of cryptosporidiosis arising from aquatic facilities.

Figure 3.3 shows the laboratory-confirmed cryptosporidiosis cases notified to the department from 2009 to 2018. This depicts the levels of cryptosporidiosis affecting the Victorian community throughout the year. Each year, sporadic outbreaks of illness are associated with aquatic facilities and are typically detected in the warmer first six months of the year. The phenomenon of widespread outbreaks of illness affecting multiple regions of Victoria are detected every three to four years, as observed in 2009, 2013 and 2017.

Figure 3.3: Laboratory-confirmed cryptosporidiosis cases notified to the department by month, Victoria, 2009 to 2018



The current regulations do not focus on preventing pool contamination, and aquatic facilities are not required to address potential risk of outbreaks by pathogens such as *Cryptosporidium*. Aquatic facilities could therefore be compliant with the regulations but still be the source of an outbreak of illness.

In 2013, Victoria experienced a prolonged period of outbreaks of cryptosporidiosis across the state with 1,261 confirmed cases notified to the department. The majority of these cases occurred during the summer months, with 921 cases notified between 1 January and 20 June 2013. Of these 921 cases, 433 were investigated and 244 were linked to 39 outbreaks. These outbreaks were traced back to 39 aquatic facilities (associated with a total of 48 outbreaks) in metropolitan Melbourne and regional Victoria (Table 3.3).

Table 3.3: Types of aquatic facilities associated with outbreaks, and facilities with repeat outbreaks in the 2013 cryptosporidiosis outbreak period

| Number | Community aquatic and recreation facility | Large facility with interactive water features | Private swimming school | Outdoor facility (including one caravan park) | Total |
|--|---|--|-------------------------|---|-------|
| Total number of outbreaks associated with these facilities | 29 | 7 | 10 | 2 | 48 |
| Number of facilities with repeat outbreaks | 4 | 3 | 2 | 0 | 9 |

Most outbreaks were linked to community aquatic and recreation facilities (64 per cent), followed by private swimming schools (21 per cent), large aquatic centres with interactive water features (10 per cent) and two outbreaks associated with outdoor aquatic facilities (5 per cent). Not only do these facilities have outbreaks, these same facilities have repeated outbreaks following an initial outbreak. The repeat outbreaks are likely to occur due to increased cryptosporidiosis higher patronage numbers and/or the vulnerability of users. These types of aquatic facilities are identified as 'high-risk' facilities in other jurisdictions such as Western Australia and New South Wales.

Option 1 has the following positives and negatives associated with the approach.

- The regulations continue to limit outbreak response provisions to Legionella bacteria, which is not typically the pathogen of concern associated with aquatic facilities.

- The definitions used to inform how the regulations are applied continue to be ambiguous, resulting in poor understanding among local government regulators and aquatic facilities in the need to comply with the regulations.
- All aquatic facilities will be regulated in the same manner regardless of the risk profile to ensure compliance with the regulations.
- Local government continues to manage public health risks relating to aquatic facilities; however, they may not be aware of the number of aquatic facilities in their municipality, particularly those that are potentially high-risk.
- Local government would have scant data about aquatic facility compliance given there is no requirement for aquatic facilities to report regulatory compliance results. This means that it is difficult for local government to allocate resources to address compliance as the quantum of risk is unquantified.
- In the absence of prescriptive compliance expectations for co-regulators, inspection frequencies and regulatory oversight will continue to be inconsistent across the state and do not reflect a strategic risk-based approach.
- The frequency of local government compliance inspections of council-owned aquatic facilities are currently low, with an average of 1.61 inspections conducted per council-owned facility in 2017–18.¹⁴ Local government has indicated that the frequency of inspections is likely to decrease in the absence of legislative requirements to undertake compliance activities.
- Regulators have limited regulatory tools to monitor or enforce compliance with the regulations.
- The current definition of ‘aquatic facility’ will not adapt to evolving technologies (such as the popularity of ‘interactive water features’) and changing industry practices.

This option is not aligned with the principles of the Act or with other jurisdictions and fails to adequately address the burden of disease, particularly the risks associated with vulnerable people.

Cost to industry to implement the regulations

The costs attributed to the current regulations (option 1) relate to efforts, above what is undertaken in the absence of regulations, to test for minimum standards in terms of water quality and testing. The department does not have figures on the level of compliance by industry. As such the costs below assume full compliance, in implementing the option there may be a degree of noncompliance.

Each facility has a testing cost burden of \$94,415 over the 10 years (in 2019 dollars), and there are 300 aquatic facilities that must undertake this testing.

Total costs for industry to implement option 1: \$29,705,414 over 10 years (in 2019 dollars), with the cost to be apportioned to the regulations (20 per cent of this total) being \$5,941,083 over 10 years (in 2019 dollars).¹⁵

Cost to government to implement the regulations

The costs of administering the regulations for registered premises are borne by local government. Based on surveys of local governments and departmental estimates, the minimum costs for inspections and compliance would be as follows:

Total net present value minimum costs for local government to regulate aquatic facilities (over the next 10 years): \$734,903

These estimates are based on regulating registered premises. Aquatic facilities are regulated by the same workforce (environmental health officers) and are expected to follow similar processes of risk assessment and compliance operations. Local governments own and operate many aquatic facilities in Victoria, and it is expected that the costs to regulate these facilities is resourced through revenue activities; however, specific funding is determined by the individual local government (such as fees to use aquatic facilities).¹⁶

¹⁴ [Know Your Council](https://knowyourcouncil.vic.gov.au/) <https://knowyourcouncil.vic.gov.au/>, Victorian Government

¹⁵ Details on how costs for industry to implement the regulations has been calculated can be found in Appendix: Costs for industry

¹⁶ Details on how costs for government to implement the regulations has been calculated can be found in Appendix: Costs for government

Options 2a and 2b

Potential outcomes of option 2a

The potential outcomes of option 2a, compared with the current regulations (option 1) are:

- less disease burden associated with aquatic facilities
- more consistency with regulatory requirements in other Australian states and territories
- more consistency in how the legal obligations of aquatic facilities are applied and enforced – authorised officers will have clarity of the enforcement process and stronger requirements to investigate and manage aquatic facility noncompliance
- proportionality in regulation through applying risk-based approaches to managing risk
- extended training for authorised officers and others involved in aquatic facilities management (this could be addressed during a 12-month transition period where aquatic facilities and local government can work together with support from the department to comply with the new regulations, which will be enforceable from 15 December 2020)
- the need for some local governments to add resources (staff, databases and so on) to adequately manage their regulatory obligations
- temporary closures of aquatic facilities by councils when investigating repeated noncompliance (however, with greater emphasis on prevention and up-stream controls, temporary closures may decrease over time)
- indirect impact that may see operators, who now must comply with regulations, who maintain a pool choose not to because of compliance costs.

Potential outcomes of option 2b

The potential outcomes of option 2b, compared with the current regulations (option 1) are:

- less disease burden associated with aquatic facilities
- more inconsistency with the regulatory requirements of other Australian states and territories
- more consistency in how the legal obligations in aquatic facilities are applied and enforced
- clarity of the enforcement process among authorised officers and stronger requirements to investigate and manage aquatic facility noncompliance
- less focus from local governments on higher risk facilities due to requirements to register both category 1 and category 2 facilities
- extended training for authorised officers and others involved in aquatic facilities management (this could be addressed during a 12-month transition period where aquatic facilities and local government work together with support from the department to comply with the new regulations, which will be enforceable from 15 December 2020)
- the need for some local governments and aquatic facilities to allocate more resources to regulating aquatic facilities (staff, databases and so on) to properly manage their regulatory obligations
- indirect impact of placing increased burden on small hotels and motel operators, which may find compliance costs too high to continue to offer a pool as part of their facilities.

Cost to industry to implement the regulations

Each facility has a testing cost burden of \$94,415 over the 10 years (in 2019 dollars). While these costs are prescribed in the regulations, it is expected that aquatic facility operators would undertake most of these tests with a similar frequency in the absence of the prescribed requirements. The department estimates, based on industry consultation, that the regulations increase the burden of testing on aquatic facilities in Victoria and that only 80 per cent of testing would occur in the absence of regulations, as operators may prioritise other business pressures over addressing public health risks.

If the scope of the regulations (as outlined in option 1) increases the number of facilities regulated from 300 to 566, there would be an **additional burden of \$28,517,197 over 10 years (in 2019 dollars)** associated with testing, with the additional cost of the regulations (20 per cent of this total) being **\$5,703,439.49 over 10 years (in 2019 dollars)**. This is the incremental additional increase in costs associated with option 2.

Combined with the costs in option 1, there would be a total cost of **\$11,644,522 over 10 years (in 2019 dollars)**.¹⁷ This is the total cost of option 1, plus the incremental increase in cost from option 2, over 10 years.

Under the proposed expansion of the regulations to require registration, local governments would have discretion to charge a fee to register an aquatic facility.

The cost charged would be expected to broadly match the cost of current registered premises registration, the mid-point of which has been estimated at \$200 (further details of this estimation is in the 'Registered premises' chapter). However, this could be higher if local governments decide that aquatic facilities need additional separate assessment processes on top of standard registered premises assessments that require a higher fee to be charged.

Total net minimum cost for industry of requiring registration of aquatic facilities in Victoria (over the next 10 years): \$1,360,984 (in 2019 dollars)¹⁸

Cost to government to implement the regulations

The costs of administering the regulations for registered premises are borne by local government, with partial cost recovery from the regulated industry. Based on surveys of local governments and departmental estimates, the minimum costs for the proposed regulatory regime would be as follows:

Total net present value minimum costs for local government to regulate aquatic facilities as registered premises (over the next 10 years): \$1,386,518 (in 2019 dollars)¹⁹

The department estimates that approximately 89 per cent of these costs would be recovered through fees on industry (based on cost recovery for other registered premises), as outlined above. Specific circumstances within a local government municipality will vary depending on the approach and decisions of the individual local government (fees charged). The intensity of regulation would vary across municipalities.

Option 3

In the absence of regulations for aquatic facilities, the department expects that the practice of cleaning and maintaining aquatic facilities would most likely continue, as this is an observable requirement to maintain reputation and standards expected of aquatic facilities. However, these standards may be gradually reduced because it is difficult for customers to observe the microbiological quality of swimming water and to understand the effectiveness of the treatment processes. There are also negative incentives, up to a point, regarding the use of chemicals such as chlorine to clean water. These chemicals reduce micro-organisms; however, some facilities may choose not to use chemicals to 'enhance' the swimming experience. As such, there would be less incentive to undertake thorough disinfection beyond what is observable to clients. Operators might avoid intentionally hyperchlorinating or reduce operating hours to undertake cleaning and consequently reduce costs to run the facility.

As most aquatic facilities already have adequate cleaning and filtration systems, it is predicted that removing regulation would gradually see new businesses not install high-quality systems to meet best practice infection control practices.

Over time, the absence of regulations would adversely contribute to poor public health outcomes. While removing the regulations may not have an immediate negative impact on public health outcomes, it would be expected to result in worse health outcomes through a greater burden of illness such as gastroenteritis and other diseases associated with poor water quality. This would be expected to have cost impacts for the population through

¹⁷ Details on how costs for industry to implement the regulations has been calculated can be found in Appendix: Costs for industry

¹⁸ Details on how costs for registration has been calculated can be found in the appendix

¹⁹ Details on how costs for government to regulate registered premises were calculated can be found in Appendix: Costs for government

increased expenditure for health costs and lost output from work absences. At the extreme end of the scale, there would also be increased outbreaks of illness in the community that may require intervention by the Chief Health Officer and the shutdown of specific aquatic facilities until water quality can be improved.

Potential outcomes of option 3

The potential outcomes of option 3 are as follows:

- Removing or reducing prescriptive requirements related to maintaining water quality to protect public health would lead to variability in water quality and, while difficult to quantify, it is reasonably foreseeable that the burden of disease in the community associated with aquatic facilities would increase. There are widely documented cases from Victoria, nationally and internationally on the association of recreational water and disease.²⁰
- The public health risks associated with aquatic facilities would be further exacerbated with climate change and population densification, resulting in increased patronage at facilities.
- Local government would have limited powers to manage public health risks associated with aquatic facilities. In the absence of prescriptive requirements and enforcement provisions, authorised officers lack powers of entry and tools to direct corrective actions to immediately cease harm. Therefore, the ability for authorised officers to manage public health risks in response to an outbreak or suspected outbreak would be compromised.
- In the absence of regulatory requirements, the aquatics industry would need to take greater responsibility to understand and mitigate public health risk. For example, the absence of prescriptive water quality requirements would result in greater flexibility to manage water quality. However, this could also result in inadequate or no treatment measures being applied and inconsistencies in water quality across the sector. The department's published guidance for aquatic facilities could help operators minimise the public health risks; however, there would be no requirement for facilities to adopt the guidelines.
- Consistency in how local government assess public health risks relating to water quality would be difficult to apply in the absence of specific water quality parameters and detailed regulatory oversight and inconsistency may increase without regulation. The requirements of aquatic facilities should be consistent and predictable to avoid confusion and to create a stable regulatory environment and foster business confidence. The regulatory approach should be applied consistently across regulated parties with like circumstances.
- Public complaints about aquatic facilities would be more difficult for local government and the department to manage in the absence of legislation including clear powers of enforcement.
- There is a greater risk of aquatic facilities adopting inadequate treatment systems and products that use chemicals that are not approved by the Australian Pesticides and Veterinary Medicines Authority for use in aquatic facilities. These chemicals have the potential to be harmful to human health. Aquatic facility managers and operators are not typically trained or required to have specialist expertise in appropriate water quality treatment. Using treatment systems or chemicals that are unsafe or not approved for use in public aquatic facilities may result in poor water quality or exposing bathers to chemicals not intended for swimming pools. This circumstance is likely to increase in the absence of regulation.
- There could be a lack of impartial specialist expertise from councils to support the aquatics industry to build a knowledge base about treatment processes. This could result in aquatic facilities investing significant expenditure on treatment systems that do not meet their requirements.
- There may be insufficient records available to verify adequate treatment. This would hinder the ability to determine whether water quality is or was appropriately managed to protect public health.
- There are short-term benefits for aquatic facility operators as no regulation would provide discretion to allocate resources to other amenities in the facility or reduce entry fees as a consequence of reducing spending on cleaning and maintenance. Reducing entry costs may make entering aquatic facilities an economically viable

²⁰ Baldurssoon S, Karanis P 2011, 'Waterborne transmission of protozoan parasites: review of worldwide outbreaks – an update 2004–2010', *Water Research* vol. 45, pp. 6603–6614.

See the appendix for departmental estimates on the total burden of disease associated with aquatic facilities in Victoria.

option for more people in Victoria, even when considering the potential greater health risks that swimming in water with potentially higher pathogen contamination.

This option is inconsistent with each of the principles of the Act and with the regulatory approaches adopted in other jurisdictions, resulting in increased burden of disease associated with aquatic facilities. It is important to acknowledge that aquatic facilities provide important environments for teaching safety skills around water. It is therefore paramount that the community can be confident that the aquatic facilities they use to learn to swim and other water safety skills would not cause illness.

Burden of disease

The department estimates that, at a minimum, the potential burden of disease of gastroenteritis in Victoria under option 1 were pursued (status quo) as a result of exposure to aquatic facilities (estimated as a probability infection as a consequence of visiting) over theoretical 10 years is:

Total net present value of potential burden of disease from gastroenteritis as a result of exposure to aquatic facilities in Victoria: \$25,383,314 over 10 years (in 2019 dollars)²¹

Option 1 would maintain this existing level of disease burden which doesn't address pathogens such as *Cryptosporidium*. Options 2a and 2b would be expected to reduce the disease burden by increasing the number of bodies of water that fall under the regulations (and ensure that minimum standards are enforced). The department does not have accurate estimates of the level of improvement that option 2 would provide; however, it is expected to provide minimum standards and mechanisms to address potential burdens of disease from bodies of water (that would be then considered aquatic facilities) that were previously unregulated from an infection control perspective.

In the absence of regulations, the department expects that the burden of disease would increase under option 3.

With reduced cleaning and maintenance in aquatic facilities (below the standards set by the current regulations) there would be more infectious bacteria in the water, and more users of aquatic facilities would get ill. This would increase the overall disease burden in Victoria from using aquatic facilities.

Proposed approach

Adopting option 3 (the base case, removing or reducing the regulations for aquatic facilities) would potentially have:

- a negative impact on the health of the Victorian population by increasing the likelihood of infectious disease in the community due to poorly maintained aquatic facilities
- a negative impact on the Victorian economy in the event of an outbreak due to the possible closure or reduction in facility operations to prevent further infections
- a positive impact on the operations of aquatic facility operators in the short term by providing greater flexibility to reduce servicing and maintenance standards
- a positive impact on the costs of local government in the short term, by reducing the requirements to meet their regulatory obligations.

Option 1 maintains the current burden of disease and water quality standards in public aquatic facilities. Whereas options 2a and 2b are expected to have a positive impact on health outcomes of the Victorian population by reducing the likelihood of infectious disease in the community due to poorly maintained aquatic facilities and the associated impacts of an outbreak attributed to an aquatic facility.

By increasing the level of oversight and regulation of aquatic facilities, option 2 (both 2a and 2b) is expected to improve health outcomes more significantly than option 1 by changing behaviours and environments and improving the operation of aquatic facilities (regarding water quality management).

²¹ Details on how burden of disease has been calculated can be found in the appendix.

The requirement for aquatic facilities to manage pathogen risks in option 2 are expected to have a positive impact in Victoria by reducing the economic costs of an outbreak of infectious disease and assist in reducing the reputational risk of exposure sites in the event of an outbreak.

Option 2 (both 2a and 2b) would be expected to improve health outcomes; however, the quantum of the increase is unable to be reliably estimated; however, because *Cryptosporidium* is currently not addressed, there is expected to be improved outcomes for Victorians as a consequence of regulating.

There is a limited evidence in Victoria for the precise number of infections from aquatic facilities in both options 1 and 2; however, as outlined above there is a case for addressing *Cryptosporidium* risks.

Both options would require operators to ensure a higher level of water quality management than what may occur in the absence of regulations. Option 2 (both 2a and 2b) is expected to increase costs for aquatic facility operators relative to option 1 by increasing the number of operators required to adhere to the regulations as well as placing more specific requirements on these operators. Option 2b would have a much larger impact on operators in Victoria than 2a due to the expanded scope. However, it is unclear whether this would have a subsequent improvement in public health outcomes. The additional costs associated with 2b, particularly registration of all aquatic facilities, it expected to outweigh the potential public health benefits.

These qualitative criteria have been scored in absolute terms in Table 3.4, with a score between –10 and +10.

Given the focus on the public benefits of the regulations and the Act, the health impacts have weighted important (0.4) alongside the potential economic impacts of an outbreak (0.1). The impacts on aquatic facility operators has been weighted as important due to the potential impact on their day-to-day operations (0.4), and to a lesser degree the associated impact on local government (0.1). Multiplying the scores (–10 to +10) by the weightings gives a total possible score between –10 and +10 for each option.

Table 3.4: Analysis of options regarding the regulation of aquatic facility operators

| | Option | Health impacts Score / weight | Potential economic impacts Score / weight | Cost on aquatic facility operators Score / weight | Cost on local government Score / weight | Total (range: –10 to +10) |
|----|--|----------------------------------|---|---|---|----------------------------------|
| 1 | Retain the current regulations without changes | +4 / 0.4 | +4 / 0.1 | –3 / 0.4 | –3 / 0.1 | 0.5 (1.6 + 0.4 + -1.2 + -0.3) |
| 2a | Strengthen the regulatory requirements to address public health risks | +7 / 0.4 | +7 / 0.1 | –5 / 0.4 | –6 / 0.1 | 0.9 (2.8 + 0.7 + -2 + -0.6) |
| 2b | Strengthen the regulatory requirements to address public health risks including registration of all aquatic facilities | +7 / 0.4 | +7 / 0.1 | –9 / 0.4 | –9 / 0.1 | –1 (2.8 + 0.7 + -3.6 + -0.9) |
| 3 | Remove the current regulations | 0 / 0.4 | 0 / 0.1 | 0 / 0.4 | 0 / 0.1 | 0 |

Based on the above impact analysis the department's preferred option is option 2a: Strengthen the regulatory requirements to address public health risks.

Appendix

Risk categorisation of aquatic facilities

Recreation in any aquatic environment will have potential risks due to the communal, shared aquatic environment. Public aquatic facilities are more likely to have an increased number of users, which consequently increases the level of risk.

The types of aquatic facilities currently accessible to the Victorian public are varied. A range of factors will affect water quality including the operation, maintenance, size, age, visitation and user demographics of the pool. The US Centers for Disease Control and Prevention and Western Australia Health²² have characterised the risk associated with different types of aquatic facilities using two key factors: the type of visitation and vulnerability of users.

The level of risk of an aquatic facility is determined with considerations relating to the type of activity carried out at the facility and the vulnerability of users. For example, a residential swimming pool used by a family would have low public health risk, whereas a residential swimming pool used for a commercial business to run a private swim school would have a high level of risk. A swim school with scheduled classes would have increased patronage from members of the public, with vulnerable groups such as children attending who are more susceptible to serious illness if exposed to poor water quality.

The risk profile and operational and maintenance regime of a residential apartment lap pool would be different, for example, from a toddler pool. Toddler pools are more likely to be contaminated with faecal matter due to low continence rates in young children and the likelihood of young children wearing swim nappies that leak. Table 3.5 provides a summary of the types of aquatic facilities and the corresponding risk categories as taken from the *Water quality guidelines for public aquatic facilities – managing public health risks*.

Table 3.5: Aquatic facility risk categories

| Low- to medium-risk facilities ²³ | High-risk facilities |
|---|--|
| <ul style="list-style-type: none"> • Residential apartment pools • Diving pools • Lap pools (25 m and 50 m pools) • Gym pools • Resort pools • Holiday park pools • Motel pools • Theme park wave pools | <ul style="list-style-type: none"> • Spas • Interactive water features • Wading pools • Learn-to-swim pools • Program pools • Hydrotherapy pools • School pools • Water slides • Shallow-depth interactive play pools • Pools used by incontinent people • Aged care facilities • Retirement village pools • Lagoons with unrestricted access |

Some aquatic facilities install additional treatment processes to remove or inactivate *Cryptosporidium*, such as UV disinfection. The effectiveness of treatment depends on several factors including hydraulic design to treat full flow, the design capability of the treatment system and the operation and maintenance of the treatment systems.

²² US Centers for Disease Control 2018, *The Model Aquatic Health Code (MAHC): An all-inclusive model public swimming pool and spa code*, US Department of Health and Human Services, Atlanta, GA; Department of Health 2015, *Code of practice for the design, construction, operation, management and maintenance of aquatic facilities*, Western Australian Government, Perth.

²³ Low- to medium-risk facilities may be classed as high-risk depending on the visitors and the types of activities carried out at that facility.

In 2010 the Municipal Association of Victoria published *Public Health Wellbeing Act 2008: Guidance manual for local government authorised officers* to support local government to interpret and implement the regulations. Despite this guidance being available, consultation feedback highlighted the inconsistency in the interpretation of the regulations by different local government areas.

History of regulation

Infectious disease regulations have historically included requirements for maintaining water quality in publicly accessible aquatic facilities.

Implementing the current regulations

Role of local government

The obligation to comply with the regulations sits with the responsible person who owns, manages or controls the aquatic facility. There is no specific requirement for local government to register or monitor the compliance of aquatic facilities, and regulatory surveillance and compliance monitoring at aquatic facilities varies greatly between local government authorities. Some councils allocate resources to routinely inspect aquatic facilities to monitor compliance, while other councils take a complaints-based approach and check compliance – for example, checking compliance with testing and record-keeping requirements when investigating complaints or suspected outbreaks at aquatic facilities.

The local government performance reporting framework was introduced in the 2014–15 financial year. The framework requires all councils to report on the quality of services, including aquatic facilities, in their annual performance reporting. The inspection reporting component only applies to council-owned or managed aquatic facilities, and over the past three financial years the average number of health inspections carried out on each council aquatic facility were 1.68 in 2014–15, 1.68 in 2015–16 and 1.71 in 2016–17.²⁴ The distribution of council-run aquatic facilities across Victoria ranges from none in one council area to 13 in a non-metropolitan council. Most councils have between two and six council-run aquatic facilities in their local government area, which account for 200 (or 72 per cent) of the 278 council-run aquatic facilities.

Role of the Department of Health and Human Services

The Water Unit within the department's Health Protection Branch develops policy and guidance relating to aquatic facilities and supports local government in administering the legislation.

To support the operation and management of public aquatic facilities, the department publishes guidance for local government and the aquatics industry. The *Pool operators' handbook* is the reference for aquatic facility operators and is also used by local government environmental health officers to inform their compliance activities. The handbook has been replaced with the water quality guidelines.

Departmental divisional public health officers liaise directly with local government to manage public health risks associated with aquatic facilities and work closely with the Communicable Disease Prevention and Control Unit to coordinate the investigation of notifiable communicable diseases. This includes suspected cryptosporidiosis outbreaks linked to aquatic facilities.

Once outbreaks are linked to aquatic facilities, the department works with local government and the implicated aquatic facility to ensure corrective actions are promptly taken to mitigate the risk of cryptosporidium. For example, when an outbreak of cryptosporidiosis is linked to an aquatic facility, the department notifies the local government environmental health area and will request that the operator takes corrective actions, which may include a reactive hyperchlorination to disinfect the facility as outlined in the department's *Cryptosporidiosis outbreak prevention and response plan*. High levels of chlorine are required to inactivate *Cryptosporidium*. The hyperchlorination response procedure is generally conducted overnight and may require the facility to close early, or open late the next day.

²⁴ [Know Your Council](https://knowyourcouncil.vic.gov.au/compare-councils) <<https://knowyourcouncil.vic.gov.au/compare-councils>>

The department, supported by international evidence from bodies such as the US Centers for Disease Control and Prevention, urges people to shower with soap before swimming, the US Water Quality and Health Council in a 2012 survey found 44 percent of people do not believe it is necessary to shower before going in the pool and only 32 percent of respondents surveyed say they always shower before swimming. A thorough shower with soap helps remove perspiration, body oils, cosmetics and traces of urine and faecal matter on the body and does not introduce them into the water in an aquatic facility. Since 2013 the department has developed an extensive 'Healthy Swimming' campaign designed to address public health risks from bather shedding and to influence behaviour change for bathers to carry out key steps for healthy swimming including pre-swim showers.

Regulatory arrangements in Australian jurisdictions

The regulatory approach to manage public health risks associated with public aquatic facilities varies across Australian states and territories. The public health aspects of aquatic facilities are typically covered in public health legislation for each Australian jurisdiction except Queensland and the Northern Territory. A summary of the public health legislation and guidance for each of the Australian jurisdictions is provided below. Some of the key differences in the regulation of aquatic facilities between Victoria and the other jurisdictions have been highlighted in Table 3.6.²⁵

Table 3.6: Key differences in aquatic facility regulations compared with Victoria

| Jurisdiction | Key differences in comparison with Victoria |
|------------------------------|---|
| Australian Capital Territory | <ul style="list-style-type: none"> • Regulations only cover territory-owned public pools |
| New South Wales | <ul style="list-style-type: none"> • Local councils maintain a register of public pools in their area • Pools must be fitted with an automated disinfectant dosing system • The definition of 'swimming pool' includes residential pools used for commercial purposes, splash parks and interactive fountains |
| Northern Territory | <ul style="list-style-type: none"> • No specific regulations in place but reference made to territory-based guidance |
| Queensland | <ul style="list-style-type: none"> • Local councils can make local laws to regulate aquatic facilities |
| South Australia | <ul style="list-style-type: none"> • Water quality standards are maintained through specific requirements for pool operators • Obligations of the public include: <ul style="list-style-type: none"> ○ a person must not enter a public swimming pool or spa pool if: <ul style="list-style-type: none"> ▪ the person is suffering from an open wound or sore ▪ the person knows or has reasonable cause to suspect that he or she is suffering from a notifiable condition that could be transmitted to others in the pool ▪ the person or any clothing that he or she is wearing is not reasonably clean • Pools must be fitted with an automated disinfectant dosing system |
| Tasmania | <ul style="list-style-type: none"> • Councils must monitor water quality in accordance with relevant guidelines • 'Recreational water' includes both natural bodies of water and aquatic facilities • Annual reporting to the Department of Health regarding facilities and sampling results |
| Western Australia | <ul style="list-style-type: none"> • Prescriptive criteria that go beyond public health risks include pool design, treatment, treatment and operator competencies • Aquatic facilities are registered and their risk classified from level 1 to 4 • Local council environmental health officers must inspect aquatic facilities and take water samples monthly • There is a general provision for pool users relating to hygiene and use of facilities • The regulations cover splash parks and temporary inflatables |

²⁵ The source documents of the regulations and guidelines for Australian jurisdictions are outlined in the appendix.

Regulators of aquatic facilities

Other aspects of risk outside of public health are managed by the following agencies using the appropriate legislation and guidance. These operate in parallel to the regulations. Design standards and workplace obligations contribute to improve health outcomes although they do not directly address water quality risks nor do they prescribe requirements to manage water quality for aquatic facility operators.

Victorian Building Authority

The Victorian Building Authority oversees the *Building Act 1993* and the Building Regulations 2018, which prescribe requirements for the design, construction and installation of swimming pools, spas and their safety barriers. A building permit is required to ensure the construction of swimming pools complies with the Building Act, regulations, national construction code and relevant Australian Standards.

WorkSafe

Occupational health and safety is governed by WorkSafe under the *Occupational Health and Safety Act 2004* and is monitored and enforced by WorkSafe Victoria. WorkSafe's constructive compliance strategy uses a combination of incentives and deterrents to improve workplace health and safety. WorkSafe is also responsible for the *Dangerous Goods Act 1985*, which applies to aquatic facilities due to the on-site handling and storage of dangerous chemicals such as chlorine.

Life Saving Victoria

Life Saving Victoria is the peak water safety body in Victoria that oversees the Platinum Pool Program – an industry self-regulation scheme that assesses compliance with criteria set out in the *Guidelines for safe pool operation* (GSPO). The GSPO is the authoritative document guiding pool managers in the safe operation of aquatic facilities and includes guidance for facility design, general operations, technical operations, first aid and supervision, low-patronage pools and programs. Life Saving Victoria is currently working with Emergency Management Victoria to develop a Victorian code of practice to address public pool safety and preventable deaths.

Other agencies

Sport and Recreation Victoria

Sport and Recreation Victoria works closely with local government and the industry and sport sector to develop community infrastructure including aquatic and recreation centres and upgrades to existing community aquatic facilities.

Australian jurisdictions' legislation, key policies and guidance

Table 3.7 outlines the legislation, key policies and guidance for aquatic facilities in other Australian jurisdictions.

Table 3.7: Legislation, key policies and guidance in other Australian jurisdictions

| Jurisdiction and responsible department | Legislation | Key policies and guidance |
|---|---|---|
| Victoria Department of Health and Human Services | <i>Public Health and Wellbeing Act 2008</i> Public Health and Wellbeing Regulations 2009 | <i>Pool operators' handbook 2008</i> <i>Public Health and Wellbeing Act 2008 guidance manual for local government authorised officers 2010</i> |

| Jurisdiction and responsible department | Legislation | Key policies and guidance |
|---|--|---|
| <i>New South Wales Ministry of Health</i> | <i>Public Health Act 2010 Public Health Regulations 2012</i> | <i>Public swimming pool and spa pool advisory document (2013)</i> |
| <i>Queensland Queensland Health</i> | <i>Public Health Act 2005</i> | <i>Swimming and spa pool water quality and operational guidelines (2004)</i> |
| <i>South Australia SA Health</i> | <i>Public Health Act 2011 Public Health (General) Regulations 2013</i> | <i>Standard for the operation of swimming pools and spa pools in South Australia (2013) Guideline for the inspection and maintenance of swimming pools and spa pools in South Australia (2013)</i> |
| <i>Western Australia Department of Health</i> | <i>Health (Miscellaneous Provisions) Act 1911 Public Health Act 2016 Health (Aquatic Facilities) Regulations 2007 (all regulations under review)</i> | <i>Health (Aquatic Facilities) Regulations 2007 Code of practice for the design, operation, management and maintenance of aquatic facilities (2015)</i> |
| <i>Tasmania Department of Health and Human Services</i> | <i>Public Health Act 1997</i> | <i>Recreational water quality guidelines 2007</i> |
| <i>Northern Territory Department of Health</i> | <i>Public and Environmental Health Act 2016 Public and Environmental health Regulations 2014</i> | <i>Public health guidelines for aquatic facilities (2006)</i> |
| <i>Australian Capital Territory ACT Health</i> | <i>Public Health Act 1997 Public Pools Act 2015</i> | <i>A code of practise to minimise the public health risks from swimming/spa pools: part A (1999)</i> |

Burden of disease

There are several illnesses that can be acquired from contaminated water in aquatic facilities. For example, there is a risk of gastroenteritis from swallowing water in an aquatic facility that is contaminated with faecal matter (for example, cryptosporidiosis is a parasitic infection that commonly presents as gastroenteritis). The regulations aim to reduce the potential exposure to the public to infectious diseases described in the problem section above. In a general sense, these risks are low, but these are facilities frequently used by the general population.

Table 3.8 shows theoretical examples of the types of health interventions required to treat gastroenteritis. Symptoms of watery diarrhoea, cramping, abdominal pain, vomiting and fever can last for anywhere from four to 21 days. There is no specific treatment other than supportive care. The costs below are not exhaustive and are approximate costs for the health system, which may be borne by the individual or taxpayers more broadly. The costs are generalised: the costs for an individual would reflect their personal circumstances, including the treatment required, and other related factors.

Table 3.8: Approximate costs to treat gastroenteritis

Simple gastroenteritis

| Type of medical intervention | Quantity | Per unit cost | Total |
|------------------------------|----------|---------------|----------------|
| Pharmaceuticals | | | \$28.22 |
| General practitioner visit | 1 | \$37.60 | \$37.60 |
| Total | | | \$65.82 |

Moderate gastroenteritis

| Type of medical intervention | Quantity | Per unit cost | Total |
|--|----------|---------------|-------------------|
| Pharmaceuticals | | | \$28.22 |
| General practitioner visit | 2 | \$37.60 | \$75.20 |
| Public hospital admission – other infectious and parasitic diseases without complications – same-day admission | 1 | \$4,244 | \$4,244.00 |
| Total | | | \$4,347.42 |

Severe gastroenteritis

| Type of medical intervention | Quantity | Per unit cost | Total |
|---|----------|---------------|--------------------|
| Pharmaceuticals | | | \$28.22 |
| General practitioner visit | 3 | \$37.60 | \$112.80 |
| Public hospital admission – infectious and parasitic diseases with severe or moderate or catastrophic complications | 1 | \$14,426.00 | \$14,426.00 |
| Total | | | \$14,567.02 |

Note that these do not reflect individual patient experiences, and the disease burden will depend on several factors. Also, these cost estimates do not reflect the complete burden of disease associated with lost income from absences from work, as well as possible reduced quality of life while managing the impact of a disease over a prolonged period.

Applying these costs to a theoretical example of possible infection rates as a chance per visitor to an aquatic facility in Victoria provides an indication about the potential burden of disease that is mitigated by enforcing minimum standards.

Burden of disease of gastroenteritis in Victoria over 10 years

The department estimated, based on the current regulations (option 1) the potential burden of disease that may be present in Victoria based on acquiring an illness due to contaminated water in an aquatic facility. This is estimated as follows:

Total net present value of potential burden of disease from gastroenteritis in Victoria: \$25,383,314 over 10 years (in 2019 dollars)²⁶

²⁶ Further details on the burden of disease estimation can be found in the technical appendix.

This is calculated using the following assumptions:

- The number of aquatic facilities increases by 1 per cent per year (forecast from revenue growth 2014 to 2019).
 - 566 aquatic facilities is used as the current number of facilities. The current regulations broadly target the 300 council-owned facilities; however, all 566 facilities have the characteristics associated with impacting on the burden of disease in Victoria (open to the public and high numbers of visitors from the general population).
- The number assumes each aquatic facility has 100 visitors each day each year (in practice this may be higher or lower depending type of service, time of year, consumer demand and the number of staff).
- The chance of simple gastroenteritis per visit: 0.1 per cent chance per visit (one in 1,000 visits).
- The chance of moderate gastroenteritis per visit: 0.01 per cent chance per visit (one in 10,000 visits).
- The chance of severe gastroenteritis per visit: 0.001 per cent chance per visit (one in 100,000 visits).
 - Note the percentage chance assumed here does not reflect actual practices at aquatic facilities in Victoria and is used for theoretical purposes only.
- The number assumes no improvement in practice or technology (in either risk reduction at aquatic facilities or in medical treatment, and that the cost of treatment per year only increases by the rate of inflation (assumed at 3 per cent per year).

Costs for local government

The main cost to local government to enforce the regulations is the time environmental health officers take to inspect aquatic facilities, respond to complaints, undertake proactive compliance and for enforcement activities. At the discretion of each local government, the municipality may choose to conduct more rigorous or frequent inspections and annual compliance processes as needed, but these are not prescribed by the regulations.

Based on a sample of local government environmental health officers undertaken for the impact assessment, and industry numbers from Aquatics and Recreation Victoria, the costs are estimated as follows:

- number of council-owned aquatic facilities in Victoria: 300
- average time allocated for an initial inspection: up to two hours (reported average was 1.87 hour for other registered premises)
- average time allocated for annual inspection: one hour (reported average was one hour for other registered premises)
- estimated time allocation for travel, administration, responding to complaints, public education and capacity building: one hour per premise per year
- average labour cost (per hour): \$46.60 per hour (\$1,771 per week, assuming 38 hours per week, before taxes, excluding superannuation)²⁷
- 75 per cent loading for overheads: \$81.55 per hour.

There are also a number of hotels, motels and similar accommodation with pools that would be covered by the new regulations. The department does not have data on the geographic placement of these pools across Victoria; however, it is expected that these would be more likely concentrated around key areas for tourism and not evenly distributed across the state. These additional facilities are not included in the estimated costs for local government; however, because these would be captured in the regulations, it would be expected that councils with high levels of tourism activities would have an increased number of aquatic facilities that would require registration and inspection to ensure compliance.

Cost over 10 years

- Growth of the number of aquatic facilities per year: 1 per cent
- Estimated wage inflation rate per year: 3 per cent
- Discount rate per year: 4 per cent (real)

²⁷ Occupational & Environmental Health Professionals, [ANZSCO ID 2513](https://joboutlook.gov.au/) <<https://joboutlook.gov.au/>>

Costs for industry

The prescribed requirements relating to water testing for industry are shown in Table 3.9.

Table 3.9: Prescribed requirements relating to water testing for industry

| Test | Frequency | Tests per year | Cost per test | Total cost per year per aquatic facility |
|---|-------------------------------|----------------|-----------------------|--|
| Free chlorine and total chlorine | Four-hourly, four times daily | 1,460 | \$2.76 (five minutes) | \$4,029.60 |
| Free bromine and total bromine | Four-hourly, four times daily | 1,460 | \$2.76 (five minutes) | \$4,029.60 |
| Total alkalinity | Weekly | 52 | \$2.76 (five minutes) | \$143.52 |
| Cyanuric acid (if required) | Monthly | 12 | \$2.76 (five minutes) | \$33.12 |
| Total | | 2,984 | | \$8,235.84 |
| <i>20 per cent of the cost of testing attributable to the cost of implementing the water testing requirements (department estimate)</i> | | | | \$1,647.17 |

Cost per test is assumed as an estimate of the time it takes for aquatic facility staff to take a test. It assumes the cost of time is the minimum hourly wage of \$18.93 plus 75 per cent loading for overhead and on-costs – \$33.13 per hour. Based on consultations with industry, tests are assumed to take five minutes per test; however, some facilities use automatic testing facilities that lower this ongoing cost (but have a higher upfront capital cost and associated maintenance).

Informed by advice from industry, the department believes that, in the absence of regulations, the industry would continue to conduct testing. However, it is likely that some operators (either due to lack of awareness, cost pressures or an active business strategy) would choose to undertake less testing. Previously unregulated operators may undertake even less testing. During the regulatory impact statement process in 2009 for the former regulations, industry feedback supported maintaining the current testing arrangements (in contrast with the proposed approach to reduce testing requirements from four-hourly to daily).

Based on this, the department considers a conservative estimate to be that testing intensity across the industry would be 80 per cent of the total cost, and therefore 20 per cent of the cost of testing should be attributable to the cost of implementing the water testing requirements of the regulations.

Total costs for industry to implement water testing: \$29,705,414 over 10 years (in 2019 dollars), with **the cost to be apportioned to the regulations (20 per cent of this total) being \$5,941,083 over 10 years (in 2019 dollars).**²⁸

While these costs are prescribed in the regulations, it is expected that aquatic facility operators would undertake most of these tests with a similar frequency in the absence of the prescribed requirements. The department estimates that the regulations increase the burden of testing on aquatic facilities in Victoria and that only 80 per cent of testing would occur in the absence of regulations, as operators may prioritise other business pressures over addressing public health risks.

Further to water-testing requirements, there are general obligations for operators to maintain parameters for the microbiological quality of aquatic facility water. There are no prescribed testing requirements, but the operator must ensure water is maintained within set parameters. These parameters represent the standard that these facilities should be operating at in the absence of regulations and are not expected to impose additional regulatory burden.

There are actions that operators must take if water quality does not meet standards. These are broadly expected to align with actions that would be best practice for industry, including corrective actions and reviewing the water risk

²⁸ Details on how water testing costs have been calculated and assumptions can be found in [the technical appendix](#).

quality management plan. The one additional burden would be notifying the local council within 24 hours; however, this cost is expected to be a minimal cost if it occurs.

There would also be increased costs for pools operated by hotels, motels and similar accommodation. Depending on the operating model and size of the business, these costs could vary. However, the department estimates that the costs of testing water would be broadly similar as the current prescribed requirements above (\$8,235 per facility per year). Informed by industry feedback, the department estimates that a majority of the testing is already undertaken by these facilities as part of managing the amenity of water and in line with customer expectations of for accommodation to be presented in a clean and hygienic manner.

These costs may be proportionally more burdensome for smaller operators to conduct the same tests and ensure water quality standards. These operators may, on balance, choose to reduce the period of time that they operate pools, such as only opening access to the public during summer periods.

Avoided economic impacts

There have been observable reputational impacts for aquatic facility operators and related businesses in the event of an outbreak being linked to an aquatic facility. If the department or the Chief Health Officer announces that an outbreak has occurred, there is a noticeable behaviour change by the public in response, that patronage decreases at the aquatic facility even after the public health risk has been reasonably addressed and the facility is reopened.

To shut down an aquatic facility to undertake hyperchlorination can have a large impact on the operations of these businesses during peak periods in summer, particularly for seasonal facilities that shut down during the colder seasons. This business cost could equal the entry fees for hundreds or potentially thousands of visitors depending on the time of year and the length of closure required.

Case study of the costs associated direction to undertake hyperchlorination

Following confirmed cases of cryptosporidiosis linked to visits to an aquatic facility, the operator was directed to undertake hyperchlorination as soon as practical (within 24 hours). The impacts at the facility were as follows:

- more than 400 learn to swim lessons cancelled with less than 24 hours' notice for customers
- more than 50 staff either did not work or had shift work rescheduled
- one pool was closed for 36 hours, impacting on swimming lessons, lap swimming public, squad training and club activities
- all other pools were closed for 20 hours.

This aquatic facility estimated that closure, administration, treatment and community engagement costs were \$14,000 more than if they had done nothing in response to the confirmed cases of cryptosporidiosis.

The potential economic loss from an outbreak is an incentive for aquatic facility operators to minimise the risk of an outbreak from their facility. However, because the risk of an outbreak is low, an operator may undervalue the risk that it would occur until after it has occurred. This undervaluation of risk is most likely amplified because the negative impacts of illness may only affect people visiting the facility and not the operator directly. The aquatic facility may not be identified as the source, further reducing the chance that reputational forces self-regulate operators.

In the absence of the regulations, the department would continue to respond and make announcements relating to outbreaks. It is expected that the regulations contribute to economic activity by reducing the number of outbreaks and by providing a level of confidence for the public that, in the event of an outbreak, the impact is minimised.

Technical appendix

Ten-year costing estimates for industry and local government relating to registration

Tables 3.10–3.13 should be considered alongside the discussion in the chapter. These calculations are estimates for this regulatory impact statement and are based on best-effort assumptions but should not be considered exhaustive. These estimates are based on surveys of local government officers and departmental estimates relating to registered premises.

Table 3.10: Fees for registering aquatic facilities that are charged by local government and paid by industry

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Fee (estimated average) | \$200 | \$206 | \$212 | \$219 | \$225 | \$232 | \$239 | \$246 | \$253 | \$261 | – |
| Estimated number of aquatic facilities | 566 | 572 | 577 | 583 | 589 | 595 | 601 | 607 | 613 | 619 | 5,922 |
| Cost per year | \$113,200 | \$117,762 | \$122,508 | \$127,445 | \$132,581 | \$137,924 | \$143,482 | \$149,265 | \$155,280 | \$161,538 | \$1,360,984 |
| Net present value | \$113,200 | \$117,762 | \$122,508 | \$127,445 | \$132,581 | \$137,924 | \$143,482 | \$149,265 | \$155,280 | \$161,538 | \$1,360,984 |

Table 3.11: Minimum costs for local government to regulate aquatic facilities as registered premises

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Estimated number of aquatic facilities | 566 | 572 | 577 | 583 | 589 | 595 | 601 | 607 | 613 | 619 | 5,922 |
| Cost per year | \$92,315 | \$96,035 | \$99,905 | \$103,931 | \$108,120 | \$112,477 | \$117,010 | \$121,725 | \$126,631 | \$131,734 | \$1,109,882 |
| Estimated time allocation for travel, administration, responding to complaints, public education and capacity building | \$46,157 | \$48,017 | \$49,953 | \$51,966 | \$54,060 | \$56,238 | \$58,505 | \$60,863 | \$63,315 | \$65,867 | \$554,941 |
| Average labour cost x 75 per cent loading | \$81.55 | \$84.00 | \$86.52 | \$89.11 | \$91.79 | \$94.54 | \$97.37 | \$100.30 | \$103.31 | \$106.40 | |
| Total cost | \$138,472 | \$144,052 | \$149,858 | \$155,897 | \$162,180 | \$168,715 | \$175,515 | \$182,588 | \$189,946 | \$197,601 | \$1,664,823 |

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total |
|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|
| Net present value | \$138,472 | \$138,512 | \$138,552 | \$138,592 | \$138,632 | \$138,672 | \$138,712 | \$138,752 | \$138,792 | \$138,832 | \$1,386,518 |

Table 3.12: Costs for industry – water quality testing costs for aquatic facilities

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|
| Aquatic facilities | 300 | 303 | 306 | 309 | 312 | 315 | 318 | 322 | 325 | 328 | 3,139 |
| Tests per year | 2,984 | 2,984 | 2,984 | 2,984 | 2,984 | 2,984 | 2,984 | 2,984 | 2,984 | 2,984 | 29,840 |
| Cost per test | \$2.76 | \$2.84 | \$2.93 | \$3.02 | \$3.11 | \$3.20 | \$3.30 | \$3.39 | \$3.50 | \$3.60 | \$32 |
| Cost per year per facility | \$8,236 | \$8,483 | \$8,737 | \$9,000 | \$9,270 | \$9,548 | \$9,834 | \$10,129 | \$10,433 | \$10,746 | \$94,415 |
| Cost per year for all facilities (300 in year 1) | \$2,470,752 | \$2,570,323 | \$2,673,907 | \$2,781,666 | \$2,893,767 | \$3,010,386 | \$3,131,704 | \$3,257,912 | \$3,389,206 | \$3,525,791 | \$29,705,414 |
| Net present value | \$2,470,752 | \$2,570,323 | \$2,673,907 | \$2,781,666 | \$2,893,767 | \$3,010,386 | \$3,131,704 | \$3,257,912 | \$3,389,206 | \$3,525,791 | \$29,705,414 |
| Estimated proportion of costs attributable to the regulations, above testing undertaken by aquatic facilities in the absence of regulation (20 per cent) | \$494,150 | \$514,065 | \$534,781 | \$556,333 | \$578,753 | \$602,077 | \$626,341 | \$651,582 | \$677,841 | \$705,158 | \$5,941,0823 |

Ten-year costing estimates for theoretical burden of disease in aquatic facilities in Victoria

Table 3.13: Burden of disease – theoretical example in Victorian context

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total |
|--|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------------|
| Aquatic facilities – registered premises | 566 | 572 | 577 | 583 | 589 | 595 | 601 | 607 | 613 | 619 | 5,922 |
| Visits per year (assume 100 people per facility per day) | 20,659,000 | 2,086,559 | 2,107,425 | 2,128,499 | 2,149,784 | 2,171,282 | 2,192,994 | 2,214,924 | 2,237,074 | 2,259,444 | 40,206,985 |

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total |
|--|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------------|
| Simple (0.1 per cent chance per visit) | 20,659 | 2,087 | 2,107 | 2,128 | 2,150 | 2,171 | 2,193 | 2,215 | 2,237 | 2,259 | 40,207 |
| Treatment cost | \$66 | \$68 | \$70 | \$72 | \$74 | \$76 | \$79 | \$81 | \$83 | \$86 | \$755 |
| <i>Burden per year</i> | <i>\$1,359,775</i> | <i>\$141,457</i> | <i>\$147,158</i> | <i>\$153,089</i> | <i>\$159,258</i> | <i>\$165,676</i> | <i>\$172,353</i> | <i>\$179,299</i> | <i>\$186,525</i> | <i>\$194,041</i> | <i>\$2,858,632</i> |
| Moderate (0.01 per cent chance per visit) | 2,066 | 209 | 211 | 213 | 215 | 217 | 219 | 221 | 224 | 226 | 4,021 |
| Treatment cost | \$4,347 | \$4,478 | \$4,612 | \$4,751 | \$4,893 | \$5,040 | \$5,191 | \$5,347 | \$5,507 | \$5,672 | 49,838 |
| <i>Burden per year</i> | <i>\$8,981,335</i> | <i>\$934,328</i> | <i>\$971,982</i> | <i>\$1,011,153</i> | <i>\$1,051,902</i> | <i>\$1,094,294</i> | <i>\$1,138,394</i> | <i>\$1,184,271</i> | <i>\$1,231,997</i> | <i>\$1,281,647</i> | <i>\$18,881,302</i> |
| Severe (0.001 per cent chance per visit) | 207 | 21 | 21 | 21 | 21 | 22 | 22 | 22 | 22 | 23 | 402 |
| Treatment cost | \$14,567 | \$15,004 | \$15,454 | \$15,918 | \$16,395 | \$16,887 | \$17,394 | \$17,916 | \$18,453 | \$19,007 | 166,995 |
| <i>Burden per year</i> | <i>\$3,009,401</i> | <i>\$313,068</i> | <i>\$325,685</i> | <i>\$338,810</i> | <i>\$352,464</i> | <i>\$366,668</i> | <i>\$381,445</i> | <i>\$396,817</i> | <i>\$412,809</i> | <i>\$429,445</i> | <i>\$6,326,610</i> |
| <i>Total burden of illness from visits</i> | <i>\$13,350,511</i> | <i>\$1,388,854</i> | <i>\$1,444,824</i> | <i>\$1,503,051</i> | <i>\$1,563,624</i> | <i>\$1,626,638</i> | <i>\$1,692,191</i> | <i>\$1,760,387</i> | <i>\$1,831,330</i> | <i>\$1,905,133</i> | <i>\$28,066,543</i> |
| Net present value | \$13,350,511 | \$1,335,436 | \$1,335,821 | \$1,336,207 | \$1,336,592 | \$1,336,978 | \$1,337,363 | \$1,337,749 | \$1,338,135 | \$1,338,521 | \$25,383,314 |

Accessing the full regulatory impact statement

Information on infringements, consultation, implementation, evaluation and the exposure draft regulations are contained in the full regulatory impact statement available on the [Engage Victoria website](https://engage.vic.gov.au) <https://engage.vic.gov.au>.

This extract was prepared to assist stakeholders who access the report by accessing a specific category on the Engage website. This is not intended to limit the scope of submissions; the department welcomes submissions from all interested parties.

Making a submission to the review

Public comment is invited on the proposed regulations and RIS. Please note that all comments and submissions received will be treated as public documents.

Comments and submissions should be received by the Department of Health and Human Services no later than **5.00 pm, Monday 30 September 2019**.

The Engage Victoria website is the preferred method for receiving submissions. Submissions can also be received by [emailing the department](mailto:phwa.enquiries@dhhs.vic.gov.au) <phwa.enquiries@dhhs.vic.gov.au>, or post, marked 'Submission to the Review of the Public Health and Wellbeing Regulations 2009' and addressed to:

Chief Health Officer
Regulation, Health Protection & Emergency Management
Department of Health and Human Services
GPO Box 4057
Melbourne VIC 3001

Copies of the RIS and proposed regulations can also be obtained from the [Engage Victoria website](https://engage.vic.gov.au) <https://engage.vic.gov.au/>.